VICTORIA GOLD CORP

EAGLE GOLD PROJECT

WATER LICENCE QZ14-041-01

QUARTZ MINING LICENSE QML-0011

2020 ANNUAL REPORT

APRIL 2020

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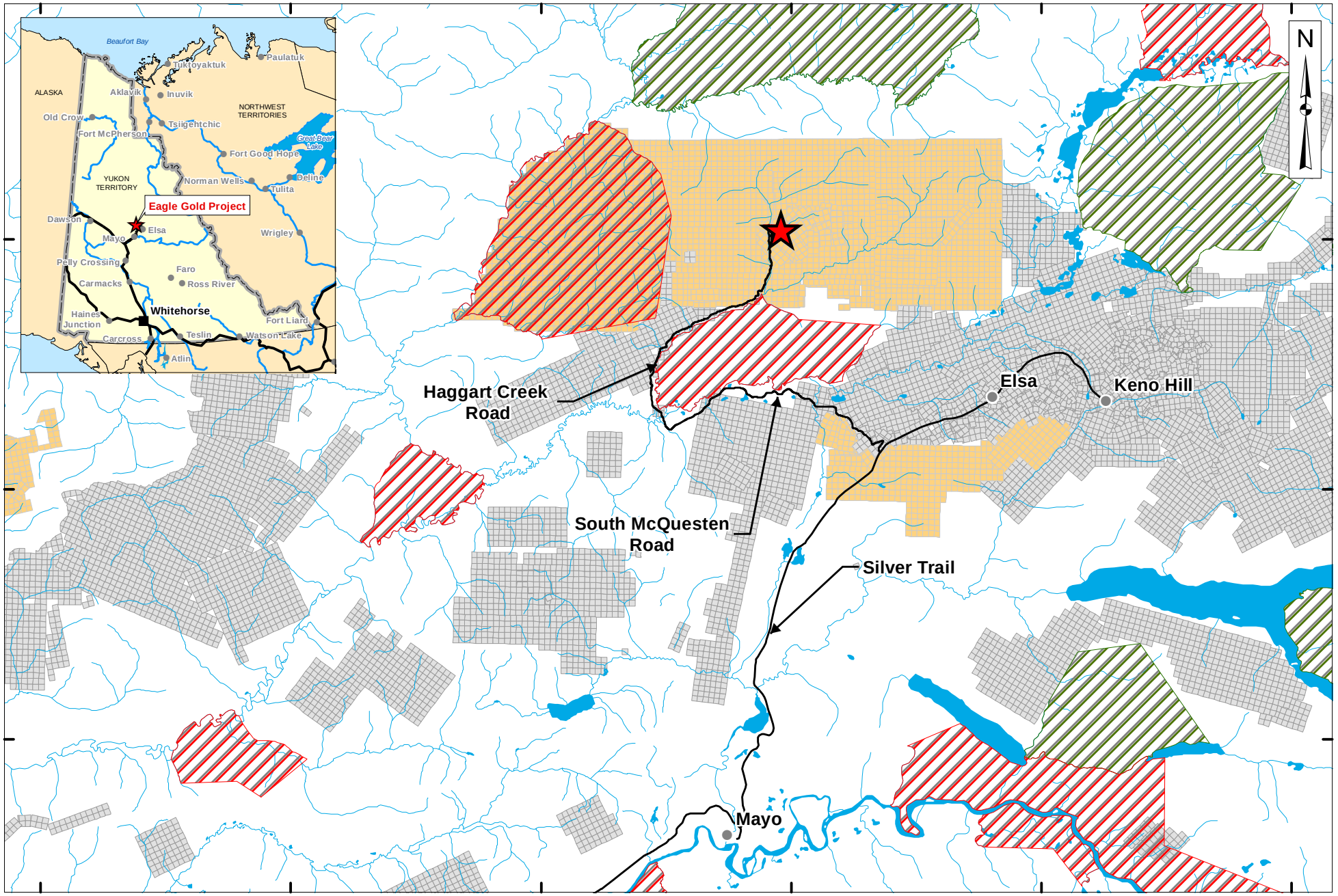
1 INTRODUCTION

Victoria Gold (Yukon) Corp. (VGC) currently operates the Eagle Gold Mine in central Yukon. The Eagle Gold Mine ('the Project') is located 85 km from Mayo Yukon using existing highway and access roads (Figure 1.1-1). The Project involves open pit mining and gold extraction using a three-stage crushing process, heap leaching, and a carbon adsorption, desorption, and recovery system over the mine life (Figure 1.1-2).

The Project is being operated in accordance with the terms of the Type A Water Use Licence (WUL) QZ14-041-01 and the Quartz Mining License (QML) QML-0011. The reporting period for this Annual Report is from January 1 to December 31, 2020 and serves to report on both WUL and QML conditions and associated management plans.



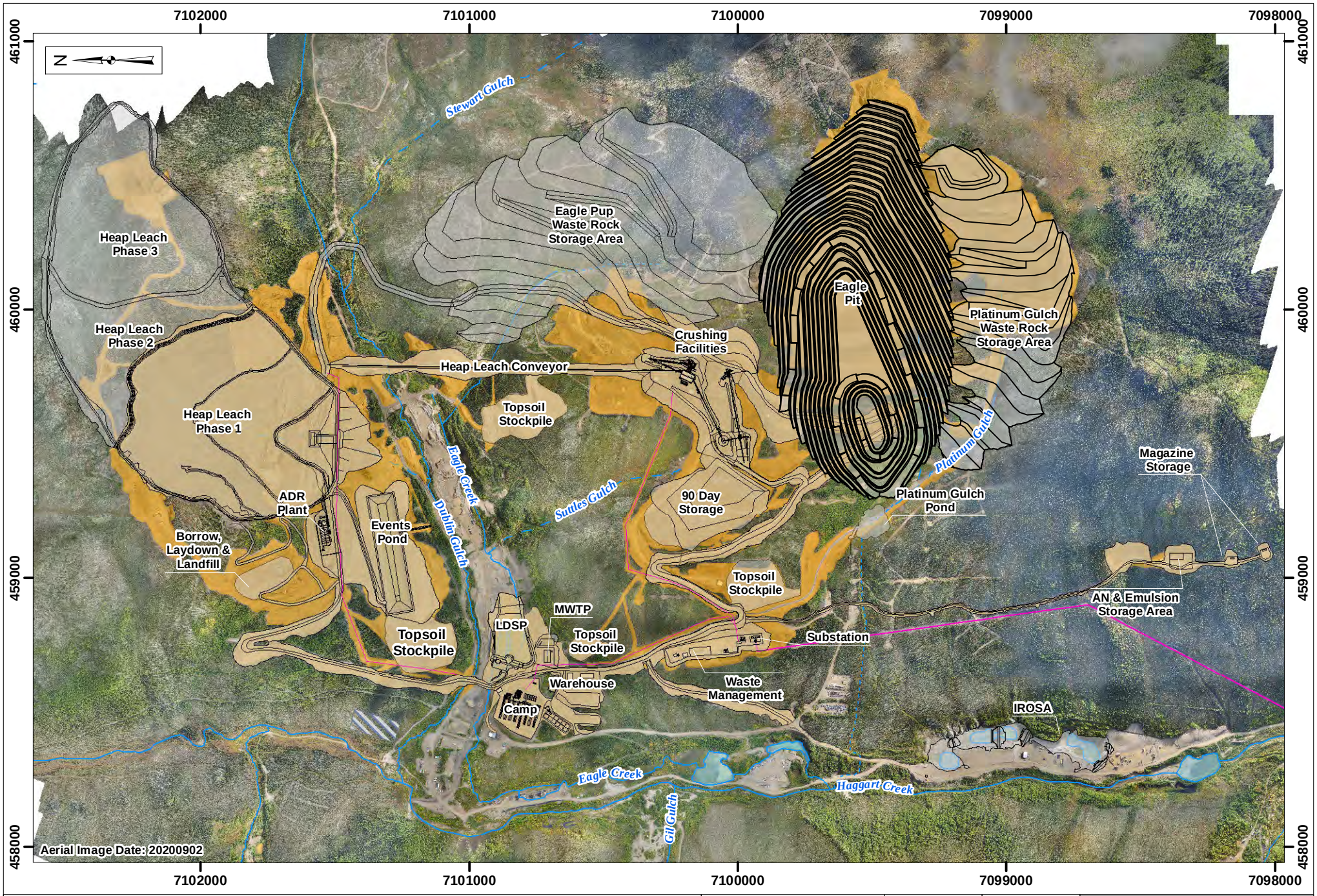
Legend:

- Eagle Gold Project
- Victoria Gold Claims
- Other Claims
- Town / Village
- Road
- Watercourse
- Category A Settlement Land
- Category B Settlement Land

VICTORIA GOLD CORP

0 3 6 12
Kilometres

Projection:	Drawn By:	EAGLE GOLD PROJECT YUKON TERRITORY
NAD 83 Zone 8N	HC	
Date:	Figure:	Project Location
2020/05/01	1.1-1	



Legend:

- Major Facility
- Site Power
- Reserved Area
- Current Construction and Mining Impacted Areas
- Watercourse - Perennial
- Watercourse - Ephemeral
- Watercourse - Intermittent

VICTORIA GOLD CORP

0 125 250 500
Metres

Projection:	Drawn By:	EAGLE GOLD MINE YUKON TERRITORY
NAD 83 UTM Zone 8N	HC	
Date:	Figure:	End of Mine Life General Arrangement
2021/03/31	1.1-2	

2 SITE ACTIVITIES

Work on the Project during 2020 included ongoing operations, as well construction activities related to operational improvements of facilities, ongoing development of the HLF, and advancement of the PG WRSA and the open pit. The configuration of major Project facilities is provided in Figure 2.1-1 and Figure 2.1-2. Appendix A provides as built designs, status reports, and quality assurance and quality control records for certain relevant facilities discussed within Section 2.

2.1 Overview of Construction and Maintenance

2.1.1 Summary of Construction Activities

Construction of all major fixed facilities required for the Mine were completed during previous reporting periods. For 2020 (and future years), the primary construction activities will relate to the ongoing development of the HLF and advancement of the WRSAs and open pit.

In 2020, in addition to the completion of minor outstanding facility construction tasks, additional construction efforts focused on improvements to Ditch A, sediment removal and low-permeable liner installation for the Lower Dublin South Pond (LDSP) forebay, ongoing construction of Ditch B in preparation for connection and use in 2021, run of mine haul road development and ongoing construction of the Platinum Gulch (PG) rock drain and Heap Leach Facility (HLF) Phase 1B area.

Additionally, the advancement of design work for the Mine Water Treatment Plant (MWTP) and truck maintenance shop commenced. These activities are intended to support construction works in 2021 and 2022.

Construction report for completed Engineered Structures as defined in QZ14-041-1 (which for 2020 includes the Ditch A performance upgrades and the completion of a subsequent phase of the HLF [Phase 1B]) are provided in Appendix A1 and A2, respectively.

Additional certifications (and inspection in the case of the HLF) by a Professional Engineer for the PG WRSA, the open pit and the HLF are provided as Appendix B1, B2 and B3, respectively.

Table 2.1-1 depicts specific construction activities conducted during each month of 2020.

Table 2.1-1: 2020 Construction Schedule

Activity	Start	Finish	2020											
			J	F	M	A	M	J	J	A	S	O	N	D
Camera installations in crusher facilities	Feb	Mar												
90-Day HDPE pipe installation	Mar	Apr												
Upgrade of shop ventilation system		Apr												
Upgrade secondary dust collection	Apr	Dec												
PG WRSA Rock Drain Progression	May	2021												
HLF Phase 1B	Jan	Sep												
HLF Phase 1B – Layout and Survey	Jan	Sep												
HLF Phase 1B – Decommissioning Wells		Jan												
HLF Phase 1B – Clear, Grub & Topsoil Removal	Jan	Apr												
HLF Phase 1B – Unsuitable Removal & Grading	Mar	May												
HLF Phase 1B – Surface Prep for Liner	Mar	Aug												
HLF Phase 1B – Liner Placement	May	Sep												
ROM Road	July	2021												

Activity	Start	Finish	2020											
			J	F	M	A	M	J	J	A	S	O	N	D
Ditch B - Shaping, line and rip rap install	Sep	2021												
Ditch A – Operability Improvements	Sept	Oct												

2.1.1.1 Ditch A Improvements

During 2020, the operational limitations with the previously constructed Ditch A configuration (i.e., a large HDPE pipeline installed within a geotextile and rip rap lined ditch) were corrected. The originally installed design did not fully meet the requirements for collecting contact water and sediment laden water during freshet and summer rain events due to sediment build-up at the sump, while at the same time specific maintenance activities (e.g., sediment clean out) in the ditch were impractical due the presence of the 28-inch pipe. During construction of the ditch in February and March 2018, a large icing developed at the designed location for the PG sump due to the intersection of groundwater. Large icings formed in the sump and along the upper portion of Ditch A which made it not feasible to build the sump at the design location. The sump location was moved about 200 m downgradient from the original design location, although Ditch A still extended to the design toe of the PG WRSA.

To correct the operational issues with Ditch A, the EOR established for the work and the VGC Technical Services department determined that the best solution was to remove the pipe entirely and reline the ditch with an impermeable liner and replace the rip rap. The impermeable liner installed in the ditch was sourced from unused liner available from the ongoing heap leach pad construction program. The liner is 2 mm Linear Low-Density Polyethylene (LLDPE) black textured geomembrane. Most of the rip rap used to complete the ditch upgrades was sourced from the ditch itself and reused with supplemental rip rap sourced from metasediment/granodiorite waste rock from the open pit and leftover rip rap from other Mine construction areas sourced from the Dublin Gulch valley.

All additional rip rap used for the Ditch A works was tested for compliance with the construction grade waste rock requirements of the Quartz Mining License QML-0011 and Water Use Licence QZ14-041-1 and were deemed suitable. Pictures of various stages of the construction work are shown below in Photo 2.1-1 to Photo 2.1-4 and the construction report is provided as Appendix A1.



Photo 2.1-1: Ditch A Removal and Reshaping – September 18, 2020



Photo 2.1-2: Ditch A HDPE Liner Installation (~0+300) – September 18, 2020



Photo 2.1-3: PG Sump Deconstruction (~0+000) – September 20, 2020



Photo 2.1-4: Ditch A Rip Rap Placement on Liner (~0+900) – October 21, 2020

2.1.1.2 **Ditch B**

During the reporting period the remaining length of Ditch B (from Suttles Gulch to future EP WRSA rock drain sump) was shaped in preparation for liner and rip rap installations. By the end of 2020, liner and rip rap was placed from the LDSP forebay to approximately 100m east. Further construction activities for the completion of the ditch were pending until suitable rip rap could be sourced and will be completed in 2021.



Photo 2.1-5: Ditch B Alignment Shaping – October 10, 2020



Photo 2.1-6: Ditch B Liner Installations – November 29, 2020

2.1.1.3 Lower Dublin South Pond

As a condition of QZ14-041-1, a hydrogeological assessment was required to determine if the forebay of the Lower Dublin South Pond (LDSP or Control Pond) should be lined with low permeability liner. QZ14-041-1 mandated that if the hydrogeological assessment recommended that the forebay required a low permeability liner, then one must be installed by September 30, 2020.

VGC made the decision to simply install a liner system (rather than rely on the findings of a hydrogeological assessment) to proactively demonstrate the forebay base has low permeability. This minor modification was completed during Q4 2020 by removing the sediment accumulated in the forebay and installing the liner. The delay in constructing the liner was to allow for the adequate dewatering of the forebay area and provide sufficient time for sediment to stiffen (freeze) to allow excavation.

No changes to the alignment, berms, or functionality of the forebay was made and whilst the liner installation is complete the construction is not considered fully finalized as ballast (sand bags) placement on the liner remains outstanding and will be completed in 2021.



Photo 2.1-7: LDSP Forebay Cleanout and Shaping – November 7, 2020



Photo 2.1-8: LDSP Forebay Liner Installation – December, 2020

2.1.1.4 PG WRSA Rock Drain

Construction of the PG WRSA Rock drain was ongoing throughout the reporting period. Specific sections of the rock drain were placed in advance of waste rock dumping as access was developed from open pit ramp outs in accordance with the mine plan. Approximately 225 m of PG WRSA Rock Drain was built in 2020 requiring the placement of about 25,000 m^3 of waste rock material deemed appropriate for the use based on the design criteria and material testing.

Progression on the PG WRSA rock drain is part of weekly mine planning and, as sections are constructed, approval for use and waste rock dumping commencement is sought from the EOR.

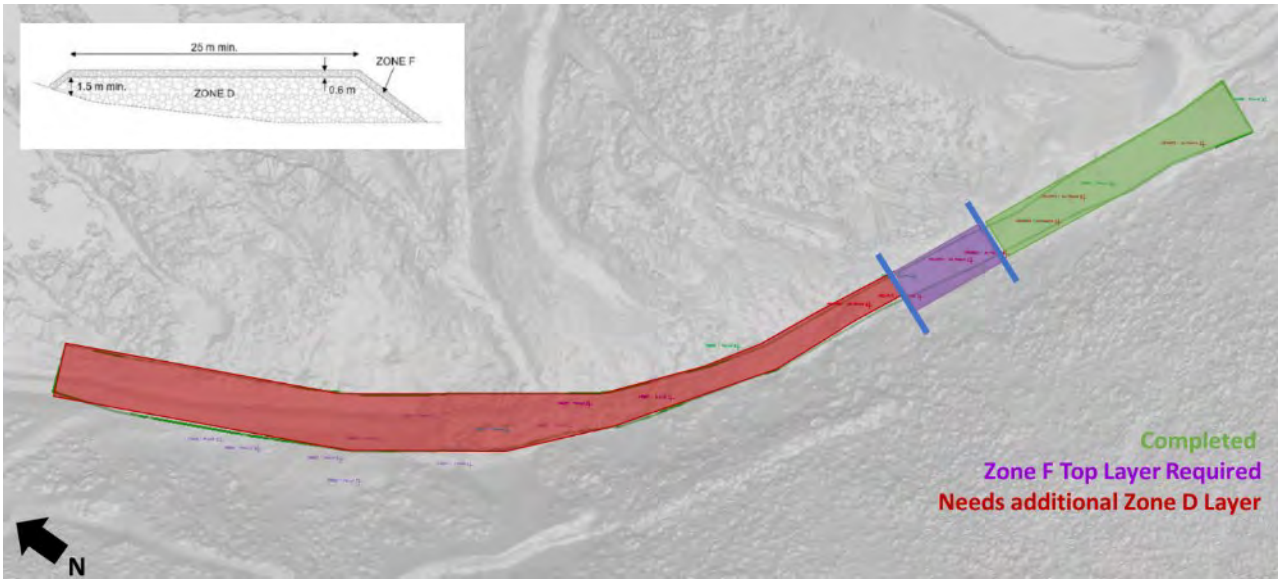


Photo 2.1-9: PG WRSA Rock Drain Weekly Mine Planning Status - December 22, 2020



Photo 2.1-10: PG WRSA Rock Drain Material Placement – June 7, 2020



Photo 2.1-11: PG WRSA Rock Drain Construction Progression – September 22, 2020



Photo 2.1-12: PG WRSA Rock Drain Surveying – September 26, 2020

2.1.1.5 Run of Mine Road

Construction and use of the Run of Mine (ROM) Road from the open pit to the HLF commenced in 2020 to support stacking and ore placement operations on the HLF. Construction commenced in July 2020 with connection completion to the 995 masl elevation of the HLF in December. At year-end 2020, temporary snow fill/ice bridge crossings were being utilized on Dublin Gulch and Stewart Gulch until culvert installations are completed in 2021.

The activities undertaken in 2020 include cut and fill development of the ROM Road in the footprint of the future EP WRSA for temporary use. Over the life of mine, the ROM road alignment on the south of Dublin Gulch will be configured based on waste rock stacking schedules as a true final alignment will not be realized until the lowest lifts of the EP WRSA are completed. The road alignment from Stewart Gulch to the HLF and the culvert crossings will provide sustained access during the life of the HLF.



Photo 2.1-13: ROM Road Cut and Fill – November 19, 2020

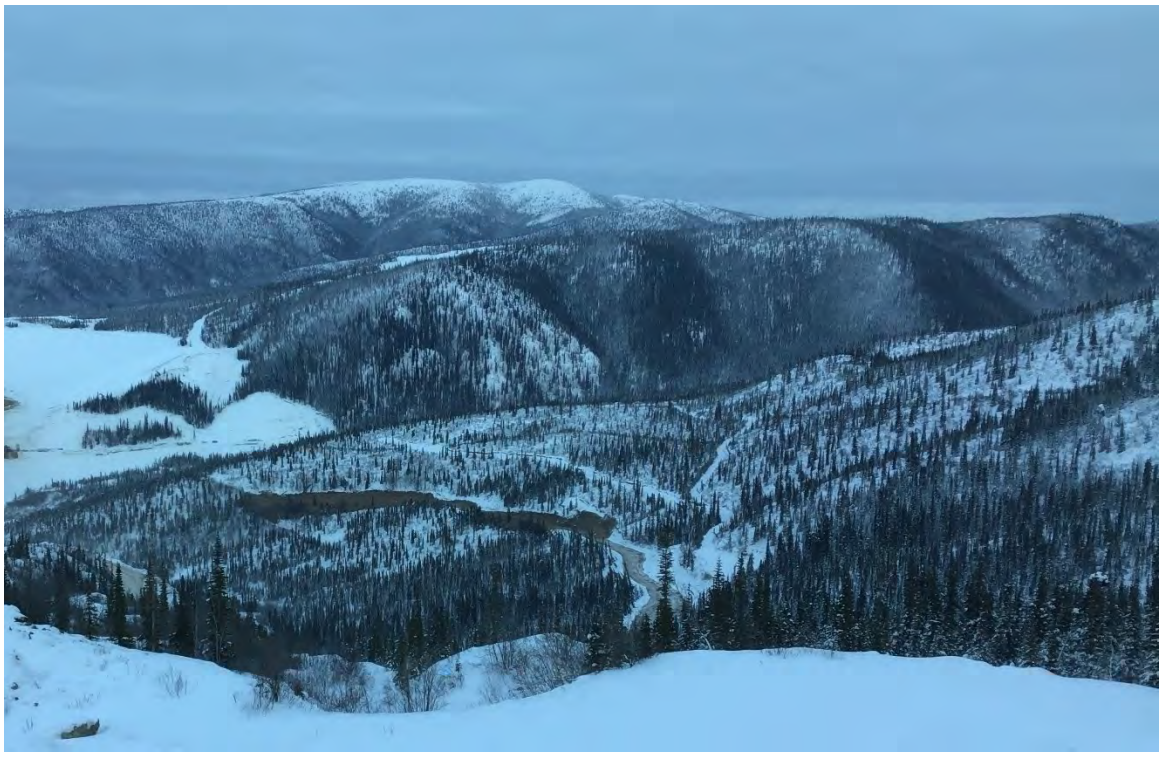


Photo 2.1-14: ROM Road Progression from Open Pit to HLF – November 30, 2020

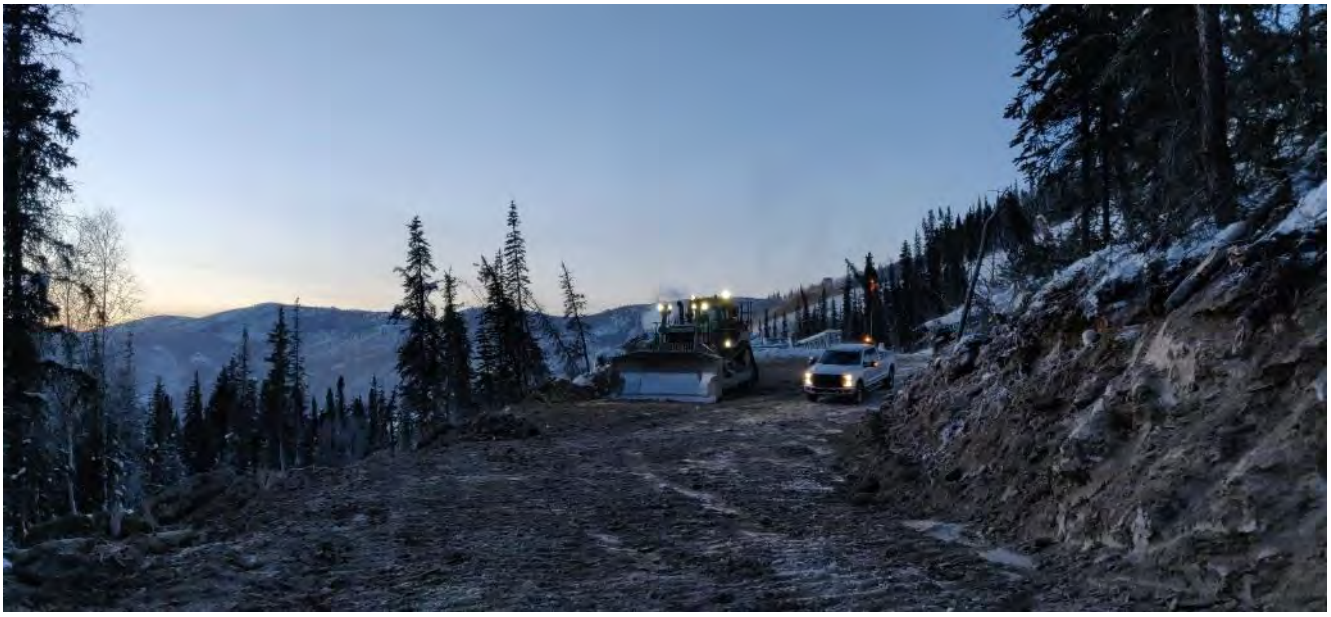


Photo 2.1-15: ROM Road Tie in to HLF – December 25, 2020

2.1.1.6 **Power Supply**

In 2019, a wildfire along the South McQuesten Road caused minor damage to sections of the transmission line that required repair. A small number of the poles were charred but not compromised; however, sections of the

fiber optic cable and 69 kV overhead line were impacted and it was determined that their immediate function was not a concern but the longer term integrity of the cable and line were at risk particularly under snow and ice loads. In 2020, repair work was undertaken on the following sections:

- Overhead section of fiber cable between structures 5/6 to 6/3 was replaced; and,
- 69 kV overhead cable between structures 5/11 to 5/12 was spliced.

To support the maintenance and repair activities, the design engineer for the transmission line was engaged to complete an overhead line inspection. Due to access limitation at the time of the inspection, the full ~45 km transmission line was not able to be inspected. Some minor deficiencies were identified and they will be rectified when the remaining sections of the transmission line are inspected in 2021.

2.1.1.7 **Heap Leach Facility**

In the reporting period, construction of the HLF Phase 1B area was completed and deemed acceptable by the EOR for receiving crushed ore as contemplated in the design. The Phase 1B Heap Pad consists of the lined area of the HLF between elevations 990 masl and 1050 masl and includes the perimeter berms along the eastern and western edges of the Phase 1B Heap Pad.

Design criteria adhered to during construction included:

- As with the Phase 1A Pad, the Phase 1B Pad subgrade foundation was excavated down to Type 3 bedrock and included removal of all organic, ice rich, and soft or yielding soils. Areas were delineated for removal and backfilled with Compacted Rockfill. Subgrade was inspected and approved by Tetra Tech and Layfield prior to liner installation.
- Compacted Rockfill fill was used in select areas as needed to achieve design grade.
- Select Fill was used in select areas as needed as liner bedding.
- Perimeter berms were required on the west and east side of the Phase 1B Heap Pad area. These structures were constructed with Rockfill.

The following Phase 1B Heap Pad components were completed:

- Preparation of the subgrade for liner placement. This included excavation of finger drains, where needed, excavation to approved grade and shape, and placement of Select Fill (bedding sand) where needed.
- Placement of the liner system along the Phase 1B Heap Pad.

The single liner system is installed directly on the prepared subgrade and consists of the following layers (starting from the top to the bottom):

- An 80-millimetre (80-mil), textured double-sided low-density polyethylene (LLDPE) geomembrane liner; and,
- A geosynthetic clay liner (GCL), which is reinforced with a layer of sodium bentonite.

The 80-mil LLDPE double-sided, textured geomembrane was placed directly on the GCL throughout all areas of Phase 1B. The GCL was placed directly on the prepared and inspected subgrade, which was smooth and free of all protruding rocks, stones, sticks, roots, sharp objects, or debris of any kind. GCL liner was covered the same day, if possible, to limit exposure to moisture.

Once the liner had been deployed, fused, repaired, and tested, a final walk-off was performed by Tetra Tech and Layfield to inspect for deficiencies such as holes, missing repairs, and missing testing. The walk-off consisted of inspecting the entire liner area, including seams, the tie-in to Phase 1A, and the anchor trench. If any deficiency was noted, the deficiency was remedied immediately. Once all deficiencies had been remedied, Layfield drafted a Certificate of Final Inspection and Acceptance to be signed by the CQA Monitor and Layfield's Supervisor or QC representative. Upon sign off, Tetra Tech provided the Certificate of Final Inspection and Acceptance to Victoria and Forte (the EOR).

The as-built report for Phase 1B of the HLF is provided as Appendix A2.



Photo 2.1-16: HLF Phase 1B Clear and Grub – January 2, 2020



Photo 2.1-17: HLF Phase 1B Clear, Grub and Grading – February 8, 2020



Photo 2.1-18: HLF Phase 1B Rough Grading – February 26, 2020



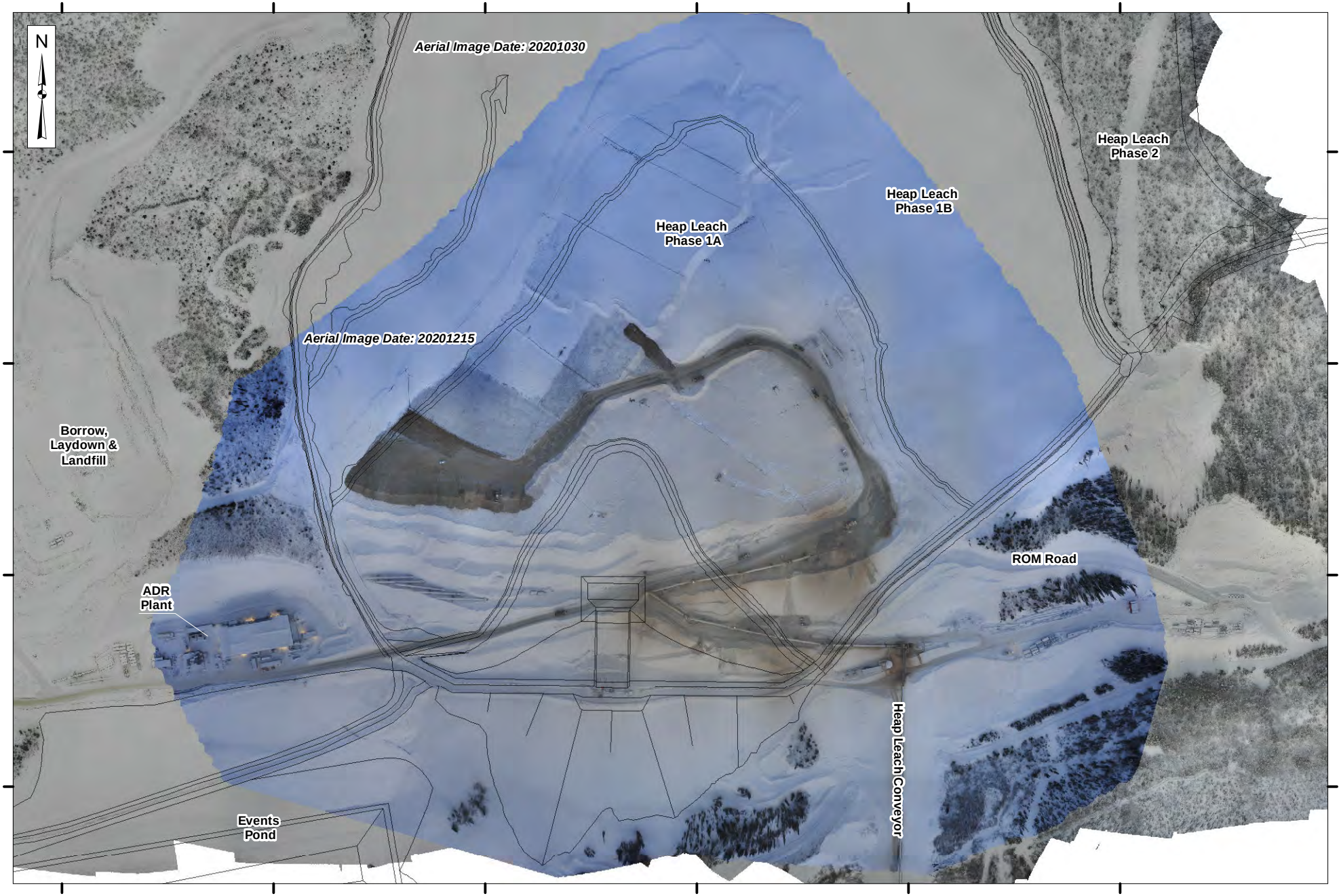
Photo 2.1-19: HLF Phase 1A ODF Placement and Phase 1B Grading – May 15, 2020



Photo 2.1-20: HLF Phase 1B Construction Overview – June 7, 2020



Photo 2.1-21: HLF Phase 1B GCL and Geosynthetic Liner Placement – August 30, 2020



Legend:

Heap Leach Facility and Events Pond

VICTORIA GOLD CORP

0 37.5 75 150
Metres

Projection:	Drawn By:	EAGLE GOLD MINE YUKON TERRITORY
NAD 83 UTM Zone 8N	HC	
Date:	Figure:	Heap Leach Facility Area 2020 Status
2021/04/03	2.1-1	

2.2 Overview of Mining

2.2.1 Ore, Waste and Gold Production

Commercial production for the Eagle Gold Mine was officially declared in the second quarter of 2020. The declaration was based on VGC examining the following key factors for the Mine:

- All major capital expenditures to bring the mine to the condition necessary for it to be capable of operating in the manner intended by management had been completed;
- The completion of a reasonable period of testing of the mine properties;
- The mine reached the pre-determined production threshold; and,
- The ability to sustain ongoing production rates.

Upon achieving commercial production, for the purposes of ongoing financial reporting, costs were transferred from assets under construction into the appropriate asset classifications (such as inventory, mineral properties, property, plant and equipment). Gold sales are now recognized as revenue and production costs as a component of cost of goods sold.

For 2020, the total amount of ore and waste mined in the reporting period was 20 Mt, of which 7.5 Mt was ore and 12.5 Mt was classified as waste (representing a strip ratio of 1.64:1 waste to ore). Of the mined ore, approximately 7.3 Mt was stacked on the HLF with an average gold grade of 0.84 g/t. 116,644 ounces of gold was produced and 102,551 ounces were sold. Based on analysis of the mined ore and the HLF metallurgical model, there was an estimated 62,959 recoverable ounces within the mineral inventory (i.e., in solution/stacked ore on the heap, or in broken inventory).

The production rates realized in 2020 were below the planned rates provided in the 2019 annual reports for QML-0011 and QZ14-041-1 due to a number of factors. A requirement for material handling improvements within the process circuit were identified during the reporting period. A comprehensive Operations Reliability Enhancement Phase, to improve equipment mechanical availability and maintenance practices, was completed. The primary goal of the Operations Reliability Enhancement Phase was to increase plant uptime and thereby achieve throughput design capacity. Key areas for improvement included: feeder and feed chute design; wear liner selection and design; control logic improvements in the process system and addressing under designed capacity of the mobile grasshopper conveyor stacking system on the heap leach pad.

The majority of mined material was removed from the Phase 1 pit area however pre-striping of Phase 2 of the pit was also initiated during the reporting period. Ore removed from the pit was delivered to the primary crusher and waste rock was sent to the 8 different lifts in the PG WRSA ranging from 1100 lift up to the 1370 lift. Waste rock material deposited into the PG WRSA was classified by the following six different lithologies:

- Oxidized granodiorite: Pervasive oxidation, relatively continuous throughout the whole rock. Granodiorite may also be altered by sericite/clay but is within the oxide zone. Rock may be friable.
- Altered granodiorite: Dominantly sericite/clay altered granodiorite. Original texture may be obliterated. May see zones of sheared or faulted granodiorite with intense sericitization and few remnant granodiorite particles.

- Unaltered fresh granodiorite: Oxidation weak and restricted to fractures or weakly in vein selvages. Rock is competent and not wholly altered.
- Oxidized metasediments: Hornfels Hyland Group metasediments with whole rock oxidation.
- Fresh metasediments: Hornfels Hyland Group metasediments with no oxidation, may be altered (likely silicified).
- Overburden: Generally colluvium.

The mass and volume of waste rock by lithology delivered to the PG WRSA in 2020 is depicted in Figures 2.2-1 and 2.2-2. The configuration of the Eagle pit and the PG WRSA at the end of 2020 is shown in Figure 2.2-3 and Figure 2.2-4, respectively.

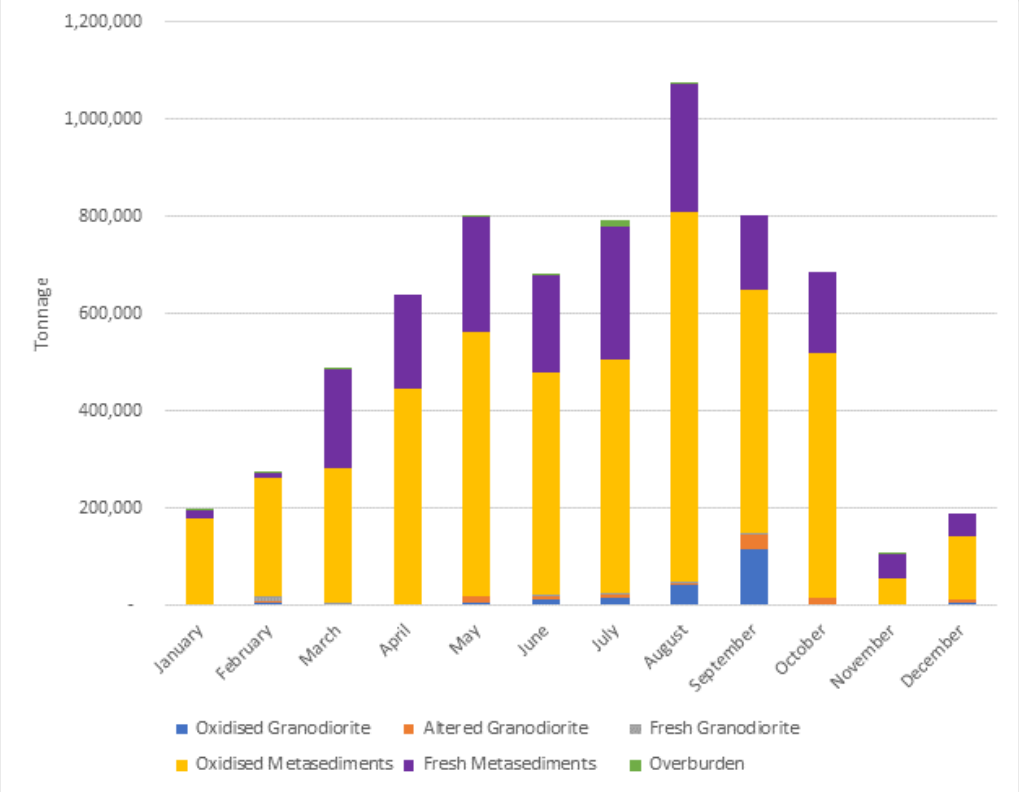


Figure 2.2-1: Mass of Waste Rock Deposited in the PG WRSA by Lithology in 2020

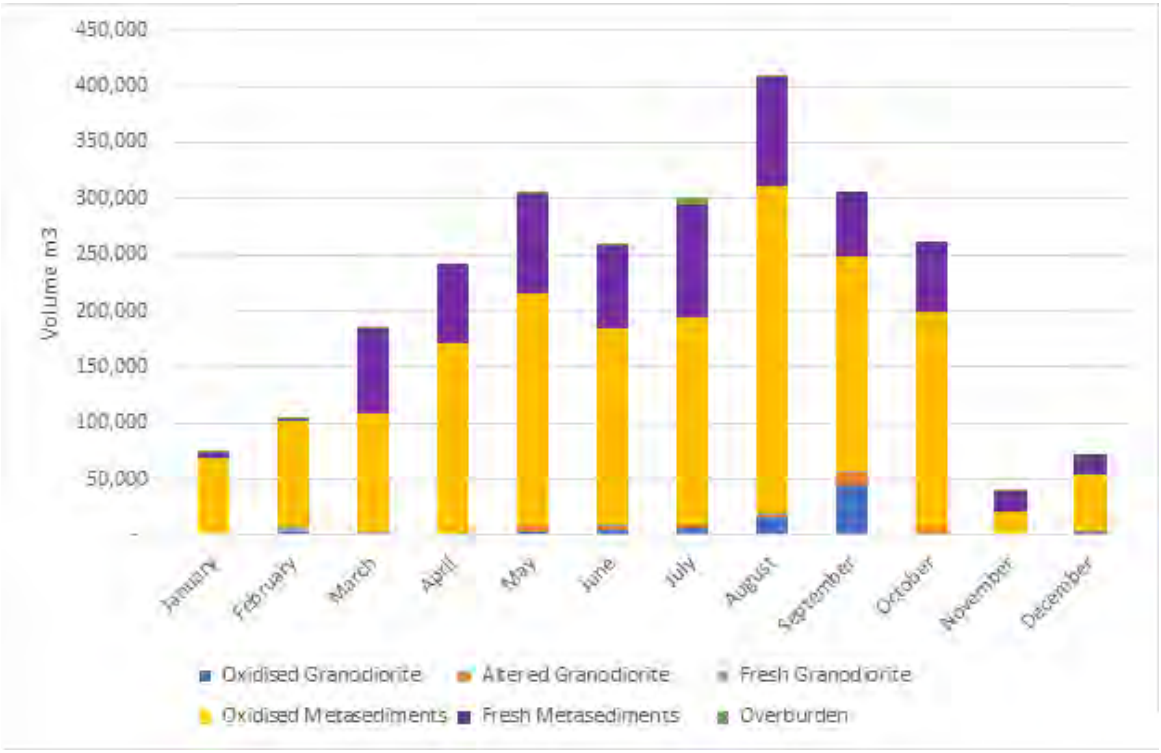


Figure 2.2-2: Volume of Waste Rock Deposited in the PG WRSA by Lithology in 2020

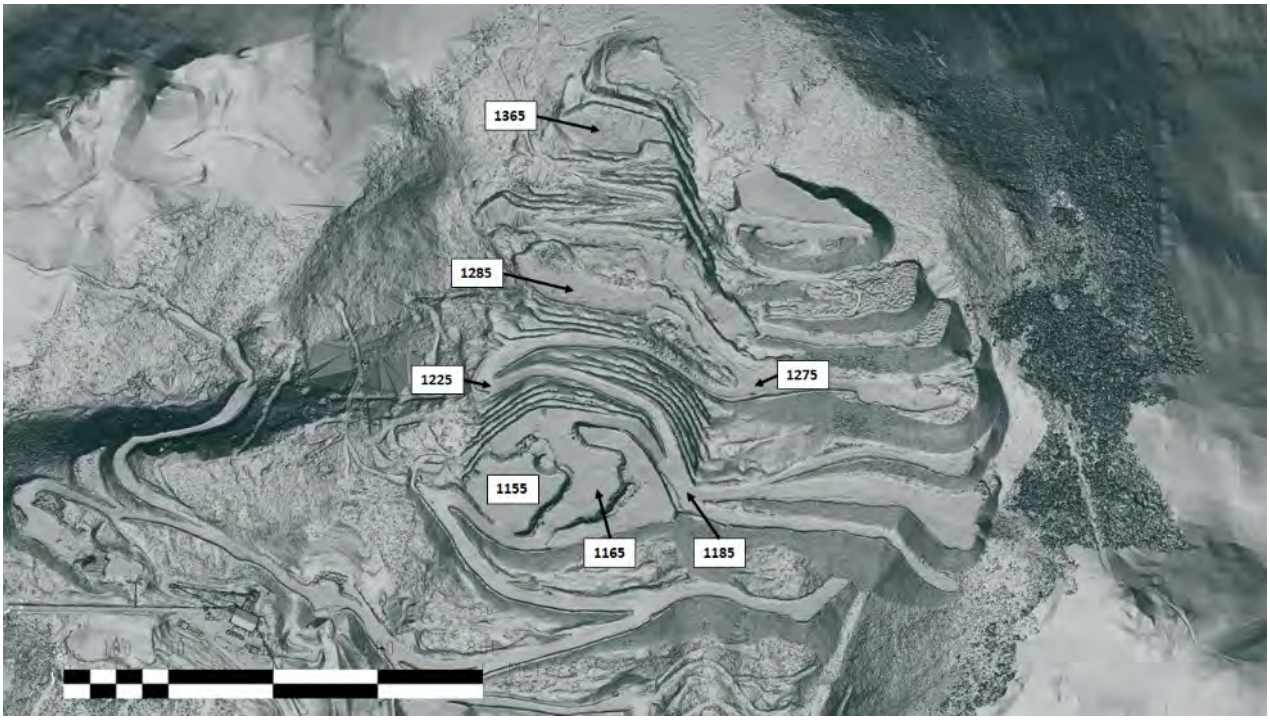


Figure 2.2-3: Eagle Pit Configuration at end of 2020

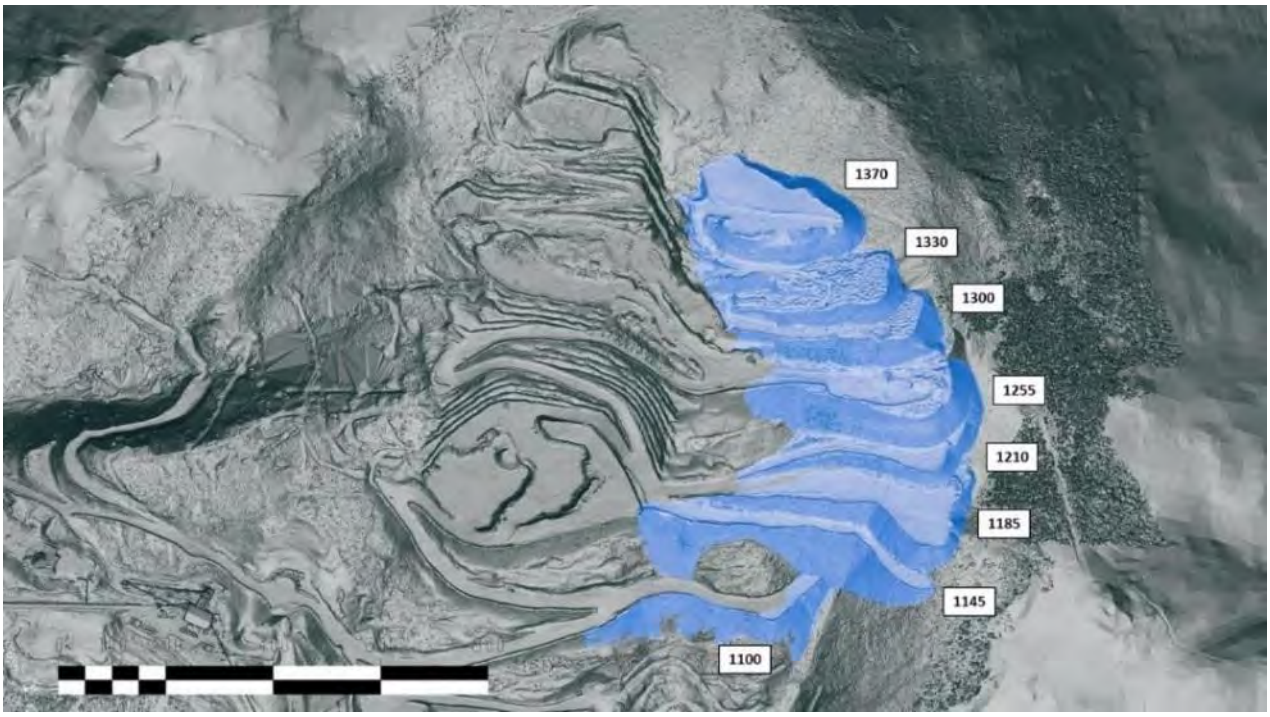


Figure 2.2-4: PG WRSA Configuration at end of 2020

Ore stacking during the reporting period was primarily within phase 1A of the HLF; however, towards the end of the year the Phase 1B area became available to receive ore and material was placed up to the 1,000 elevation. At year end, there was approximately 150,000 m^2 under active leach. Weekly planning meetings continued through the year in which weekly stacking and leaching plans are defined to guide efficient placement of ore and barren solution distribution systems. Examples of site planning data compiled each week is shown below in Figure 2.2-5.

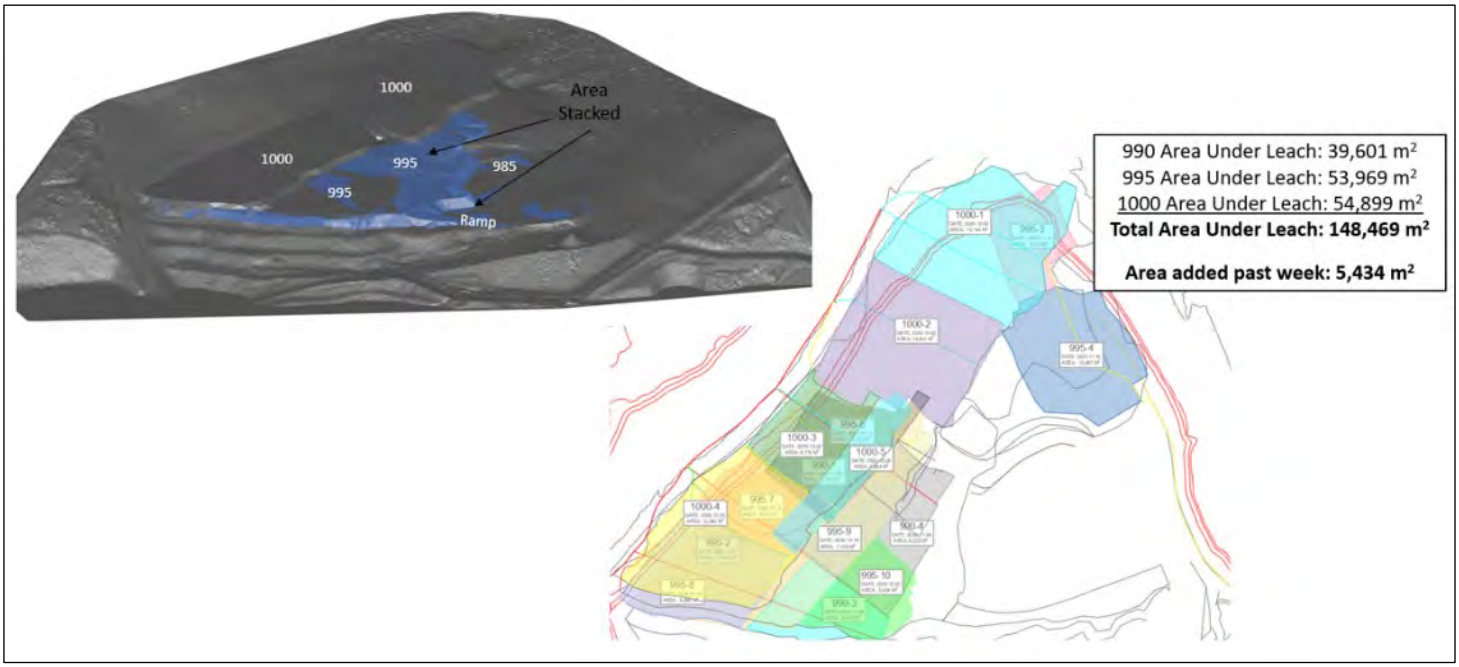


Figure 2.2-5: Example of Weekly Ore Stacking and Leaching Plan (December 2020)

Recovery from the ore stacked within the HLF trended up steadily throughout the year as the HLF and area available for leaching increased in size. The recovery model which utilizes ore characteristics (particle size, ore grade from block model, leach kinetics, etc.) showed good agreement with realized recoveries and as such the HLF leaching process is progressing as expected.

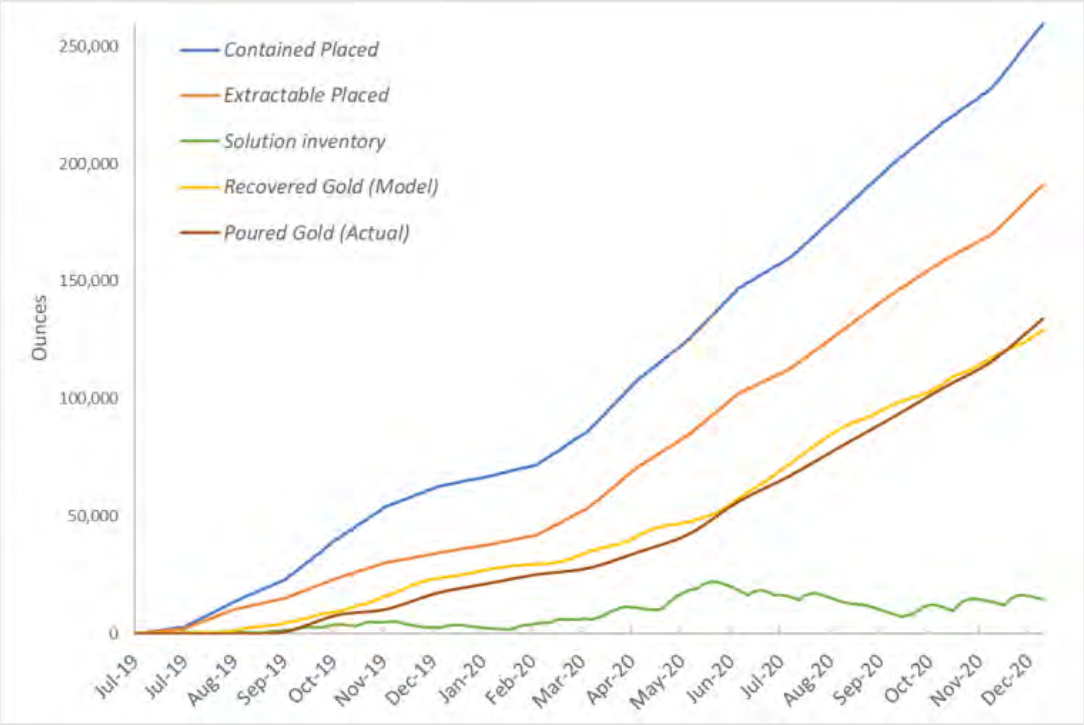


Figure 2.2-6: Gold Recovery Reconciliation 2020

Over the life of the Eagle pit, based on the current mine plan and regulatory approvals, 86 Mt of ore will be processed and 116 Mt of waste (which includes a current estimate of ~16Mt of ROM material) will be placed in waste rock storage areas. Table 2.2-1 provides annual tonnages for ore and waste rock scheduled to be removed from the open pit by year.

Table 2.2-1: Life of Mine Production Schedule

	2019	2020	2021	2022	2023	2024	2025	2026	2027	Total
Total Waste Mined (kt)	**2,442**	**12,370**	**14,720**	**15,236**	**14,812**	**13,132**	**8,939**	**9,430**	**8,611**	**99,692**
Platinum Gulch Waste (kt)	2,442	12,370	8,328	0	0	0	0	0	0	23,140
Eagle Pup Waste (kt)	0	0	6,392	15,236	14,812	13,132	8,939	9,430	8,611	76,552
Total ROM Mined (kt)	**0**	**903**	**2,974**	**2,112**	**2,948**	**2,718**	**3,232**	**3,084**	**2,174**	**20,145**
ROM placed in EP WRSA (kt)	0	0	1,499	1,723	2,626	2,329	2,910	2,695	2,174	15,955
ROM placed on 90 day (kt)	0	723	885	390	322	390	322	390	0	3,421
ROM removed from 90 day or direct haul to HLF (kt)	0	803	1,475	212	212	212	212	212	500	3,836
Ore Crushed to HLF (kt)	2,482	6,469	8,715	10,556	10,556	10,556	10,556	10,556	11,719	82,165
Total to Heap (kt)	**2,482**	**7,272**	**10,190**	**10,768**	**10,768**	**10,768**	**10,768**	**10,768**	**12,219**	**86,000**
Total Material Mined (kt)	**4,924**	**20,545**	**26,409**	**27,726**	**28,206**	**26,228**	**22,617**	**22,892**	**23,004**	**202,550**

NOTE:
Destination and production rate for run of mine material is based on current mine planning assumptions (e.g., equipment availability, gold price, etc.) and may vary during each production year.

2.2.2 Reserve and Mine Life Update

An updated mineral resource and reserve estimate for the Eagle Gold Mine was prepared in 2019 by JDS Energy & Mining Inc. (JDS) on behalf of VGC. The "Technical Report for the Eagle Gold Mine, Yukon Territory, Canada" prepared by JDS was discussed in the 2019 annual report presented for QML-0011 and QZ14-041-1. At the time of preparing this annual report for QML-0011 and QZ14-041-1, there has been no official update to the mineral resource and reserve estimate for the Project and thus remains unchanged.

2.3 Quality Assurance and Quality Control Program for Mine Operations

Samples are collected from each blast hole associated with all blast patterns at the open pit. The blast holes are spaced according to the Engineer design and range from 6 to 7 meter spacing on average.

Each blast pattern is comprised of approximately 100 blast holes for which there is one sample per blast hole collected from blast hole cuttings. Samples are collected, described, matched and geo-referenced to a blast hole pattern map and subsequently entered into a database which is updated and reviewed on a daily basis to inform material placement decisions.

For the purposes of mine operations, the Eagle Gold Quality Assurance/ Quality Control (QA/QC) protocol includes Blanks (3 per 100 samples), Certified Standard material (3 per 100 samples), Field Duplicates (2 per 100 samples) and pulp/prep duplicates (2 per 100 samples) prepared by the onsite assay laboratory. In total, QA/QC samples represent approximately 10% of the total blast hole sample program.

2.3.1 QA/QC Failure Investigation and Correction Program

QA/QC failures are associated with standards and blanks reporting values outside of the parameters expected for each sample, and in this case, values above or below three standard deviations. These are investigated on a case by case basis. In general, when a standard or blank fail, the whole batch is analyzed and the leg before and after (5-10 samples) the failed QC sample is then analyzed. If necessary, the laboratory is requested to re-analyze the whole sample batch and report assay results again. QC failures as well as actions taken for correction are logged into a datasheet for recording assay certificate number, sample number and a brief description of problem and actions.

2.3.2 External QA/QC Program

Currently, 10% of sample pulps are resubmitted from the onsite laboratory to an external laboratory (Bureau Veritas), where pulps are analyzed for gold with fire assay and ICP-MS analysis for 37 elements. These results are compared with onsite laboratory results to determine linear correlations, variance and the coefficient of determination.

2.4 Proposed Development & Production in 2021

2.4.1 Field Supervisor

In 2021, the field supervisor for the Mine is Victoria's Vice President of Operations and General Manager Mr. David Rouleau (phone: 867-456-7700 extension 6328).

2.4.2 Additional Construction Activities

The major construction activities planned for 2021 and the planned schedule is provided in Table 2.4-1. Additional details regarding the scope for each activity is provided below.

Table 2.4-1: 2021 Planned Construction Schedule

Activity	Start	Finish	2021											
			J	F	M	A	M	J	J	A	S	O	N	D
PG Rock Drain	Jan	Apr												
ROM Road – Widen and culvert install	Jan	Apr												
Ditch B	Jan	Apr												
Explosives Plant	Jan	June												
Fixed HLF Conveyors – Phased works	Jan	Nov												
Truck Shop – Design and Construct	Jan	Oct												
Mine Water Treatment Plant – Design and Construct	Jan	2022												
EP Rock Drain	Apr	2022												
ERT Building Upgrades	May	May												
Events Pond Fencing	May	Jun												
Process/Maintenance Office	May	Jun												
HLF Phase 2 - Bulk Earthworks and Underdrain	May	Nov												

2.4.2.1 **Ditch B**

The final liner and rip rap placement in Ditch B is scheduled for completion in April or May. This work is being sequenced with the weekly mine plan to ensure that the ditch is completed to current design specifications in advance of active waste rock placement in the Eagle Pup WRSA. The schedule is being updated as necessary to ensure that mine contact water is captured and conveyed to the LDSP as is considered in the Water Management Plan.

2.4.2.2 **PG WRSA Rock Drain Completion**

As discussed in section 2.1, the development of the PG WRSA rock drain is being completed on an as required basis that is dictated by waste rock deposition, pit development and equipment availability. Specific sections of the rock drain are completed in advance of active waste rock dumping and, once approval to proceed is received from the EOR, waste rock placement begins. It is currently anticipated that the full length of the PG WRSA rock drain will be completed in April 2021 as the base lifts of the WRSA will have been started. Once the full length of the rock drain is complete a construction report will be finalized and submitted in accordance with the regulatory approvals.

2.4.2.3 **EP WRSA Rock Drain Progressive Development**

The EP WRSA will be developed in a sequential manner as has been undertaken with the PG WRSA. With active dumping in the EP WRSA scheduled to commence in Q2 2021, surveying, clearing and grubbing and staking will commence in April/May with rock drain material placement beginning shortly thereafter and be progressive as base lifts on the EP WRSA are developed.

2.4.2.4 **Fixed HLF Conveyors**

To support crushed ore delivery from the crushing circuit to higher elevations on the HLF, a permanent high angle conveyor system will be installed on the eastern perimeter of the heap leach pad. The system will be developed in phases as stacking progresses up slope. The conveyors system will then be used to supply the grasshopper conveyors on the ore pile for efficient delivery of the crushed ore to the active lift.

2.4.2.5 **ROM Road**

ROM Road construction will continue in 2021 with final widening and culvert replacement expected to be completed in April. The section of the ROM Road in the Eagle Pup drainage will continue to be modified over the next 2 to 3 years as the lower lifts of the EP WRSA are developed which will necessitate reconfiguration of the road alignment within that drainage basin.

2.4.2.6 **HLF Phase 2 Bulk Earthworks**

Analysis of the performance of Phase 1 of the HLF is currently ongoing to inform Issued for Construction design of Phase 2 of the HLF. Once analysis is complete, and designs are ready for construction in accordance with the regulatory approvals for the project, clearing, grubbing and bulk earthworks for Phase 2 of the HLF will commence. Underdrain header pipe installation will also take place in 2021 with GCL and geosynthetic liner placement currently planned for 2022.

2.4.2.7 **Mine Water Treatment Plant**

Bench scale testing, final detailed design, pad preparation and long lead item procurement for the Mine Water Treatment Plant (MWTP) are all proposed for execution in 2021. Final complete construction and commissioning of the MWTP is scheduled for 2022.

2.4.2.8 **Events Pond fencing**

The permanent wildlife exclusion fencing surrounding the Events Pond will be installed in the summer of 2021.

2.4.2.9 **Additional Facilities**

In 2021, various additional supporting buildings and facilities will be constructed including:

- Emulsion plant to support ongoing pit advancement;
- Permanent truck shop to allow for more efficient winter maintenance activities;
- Concrete floor installations for the Emergency Response Team building; and,
- Process and maintenance department offices.

2.4.3 Production Activities

Production activities planned by VGC in January for 2021 are consistent with the Mine Plan presented previously and it is anticipated that approximately 10.2 Mt of ore will be placed on the HLF during 2021 by year end. To achieve this production target, at total of approximately 26.4 Mt of material will be mined for an overall strip ratio in 2021 of 1.59:1 waste to ore.

Waste rock will be trucked to the PG WRSA throughout the year and by year end the available capacity of the PG WRSA is expected to be depleted. Waste rock dumping within the EP WRSA is expected to commence in late Q2/early Q3 and will continue for the life of mine. Table 2.4-2 provides the production schedule for 2021 as it stood in January 2021. Figure 2.4-1 to Figure 2.4-9 provides the planned quarter end configurations for the pit, WRSAs and HLF in 2021

Table 2.4-2: 2021 Production Schedule

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	2021 Total
ORE													
Ore Mined Directly to Crushing Plant	-	-	650,000	750,000	850,000	930,000	960,000	960,000	930,000	932,000	900,000	822,000	**8,684,000**
Grade of Ore direct to Crushing Plant	-	-	0.92	0.81	1.00	1.00	0.85	1.11	0.95	0.89	0.81	0.78	**0.92**
ROM													
ROM Mined Directly to Crushing Plant	-	-	-	-	-	-	-	-	-	29,000	-	-	**29,000**
Grade of ROM Mined directly to Crushing	-	-	-	-	-	-	-	-	-	0.70	-	-	**0.70**
ROM To HLP/Overliner Drainage Fill	-	-	-	-	-	50,000	90,000	90,000	90,000	90,000	90,000	90,000	**590,000**
Grade of ROM To HLP/ODF	-	-	-	-	-	0.22	0.23	0.22	0.23	0.22	0.22	0.22	**0.22**
STOCKPILE													
Ore tonnes mined to Secondary Stockpile	465,000	420,000	-	-	-	-	-	-	-	-	-	-	**885,000**
Ore tonnes Drawn from Stockpile	-	-	-	-	240,000	90,000	93,000	93,000	93,000	93,000	120,000	102,000	**924,000**
Total Ore Mined	465,000	420,000	650,000	750,000	850,000	980,000	1,050,000	1,050,000	1,020,000	1,051,000	990,000	912,000	**10,188,000**
Total Ore Processed	-	-	650,000	750,000	1,090,000	1,070,000	1,143,000	1,143,000	1,113,000	1,144,000	1,110,000	1,014,000	**10,227,000**
WASTE													
Waste Mined (includes ROM sent to Waste)	1,963,000	1,818,000	1,828,000	1,648,000	1,627,000	1,417,000	1,276,000	846,000	877,000	975,000	957,000	987,000	**16,219,000**
Total Mined	2,428,000	2,238,000	2,478,000	2,398,000	2,477,000	2,397,000	2,326,000	1,896,000	1,897,000	2,026,000	1,947,000	1,899,000	**26,407,000**
Daily Mining Rate	78,323	79,929	79,935	79,933	79,903	79,900	75,032	61,161	63,233	65,355	64,900	61,258	**72,348**

NOTES:
All values are in tonnes.

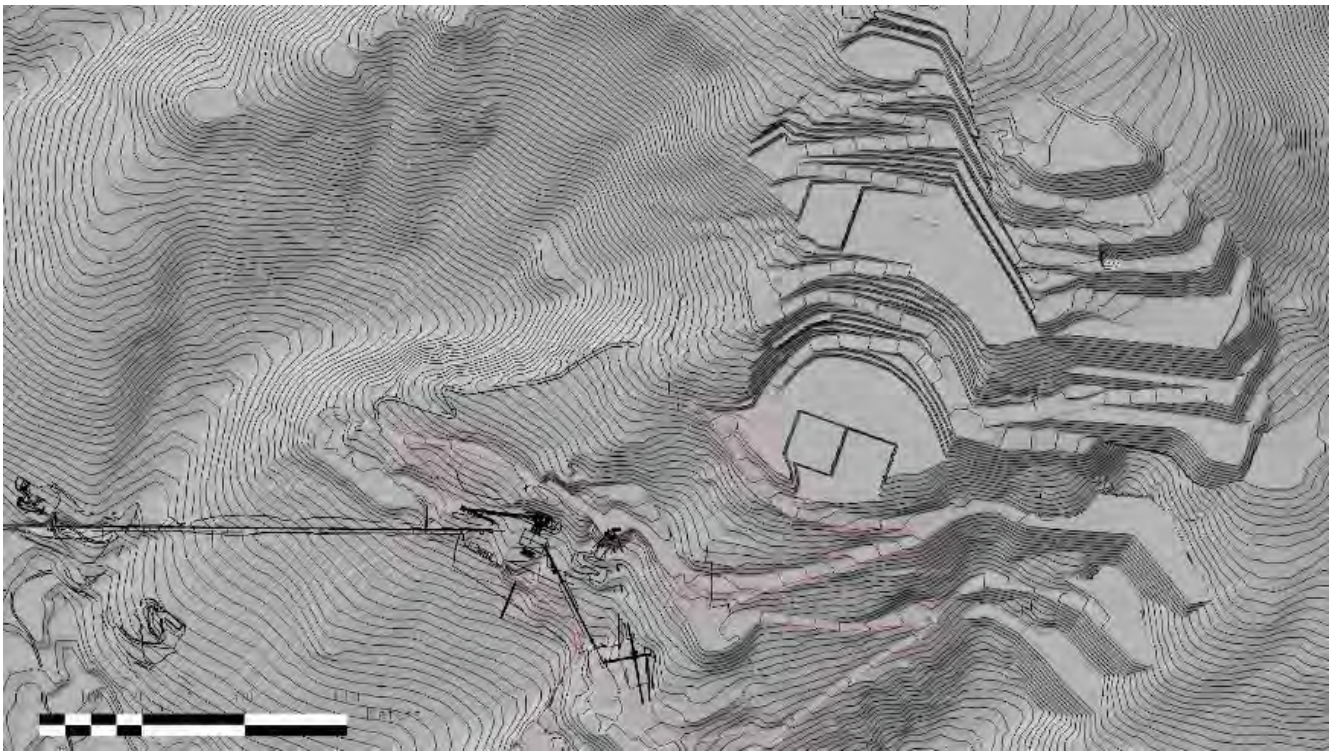


Figure 2.4-1: End Q1 2021 Planned Eagle Pit and PG WRSA Development

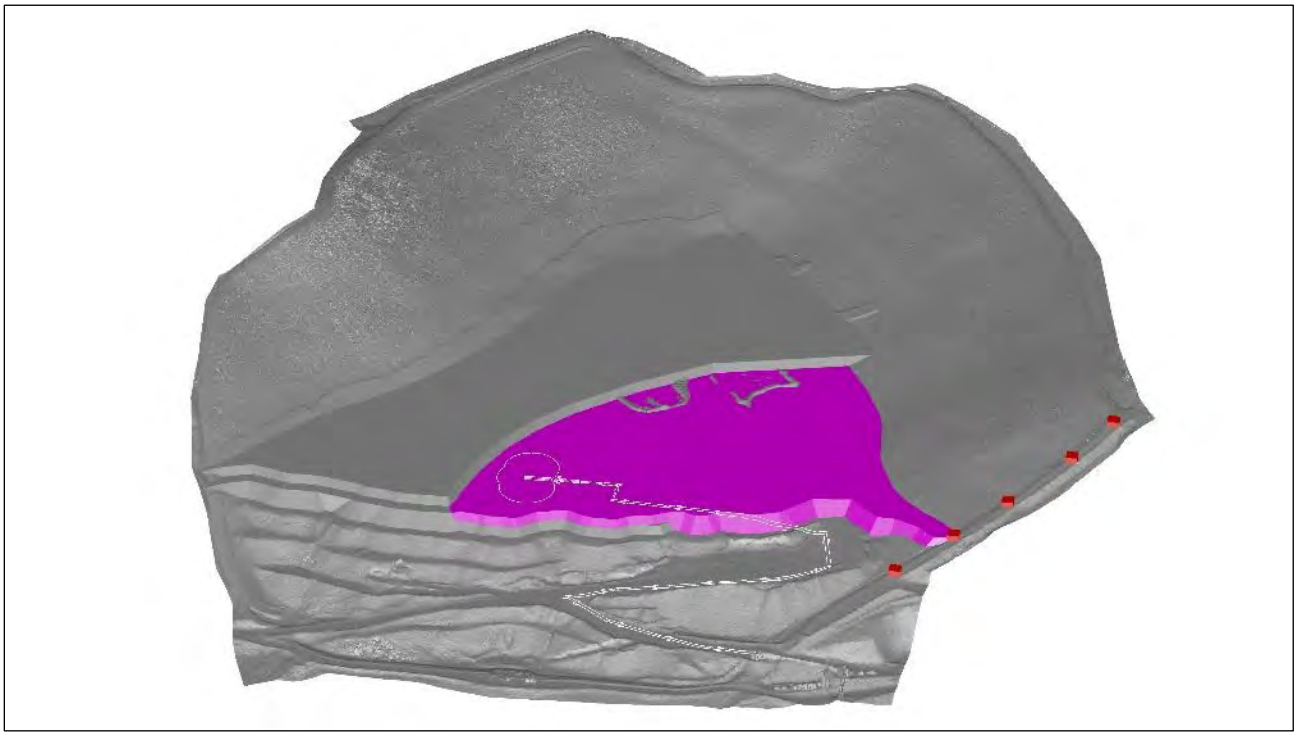


Figure 2.4-2: End Q1 2021 Planned HLF Development

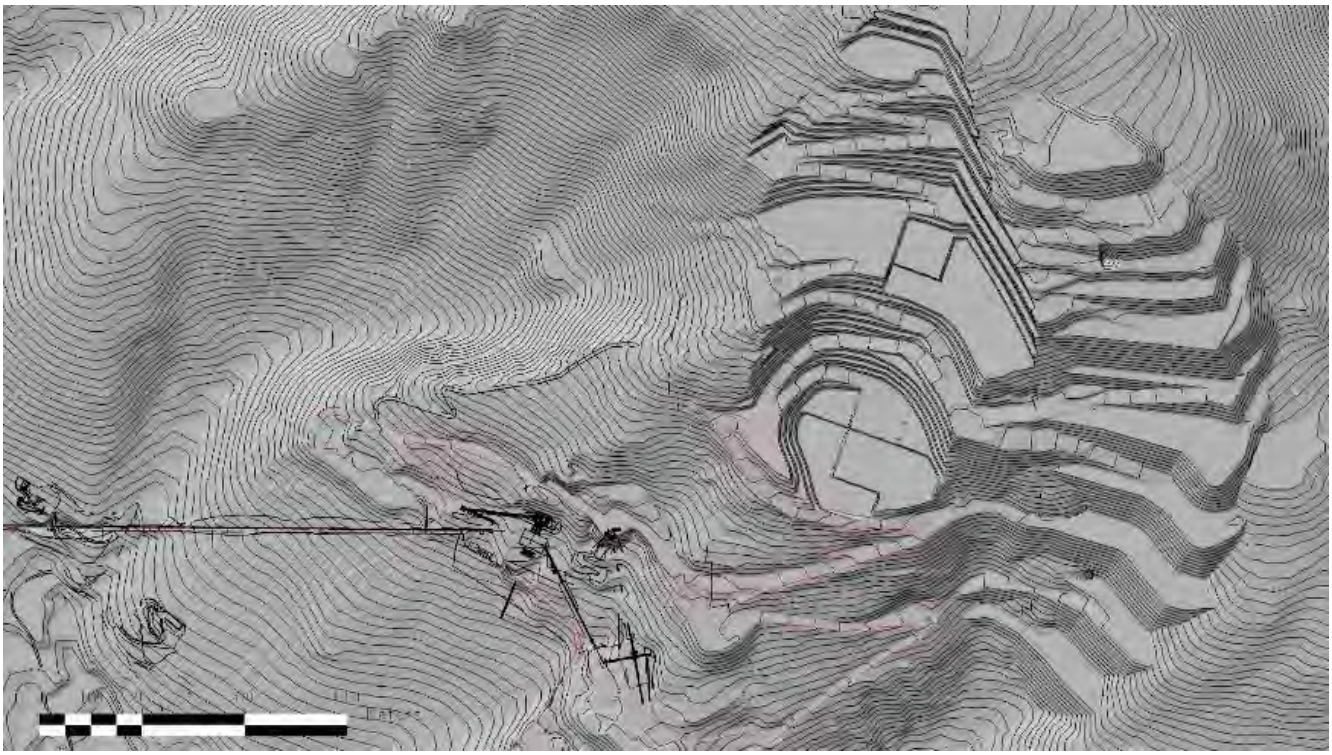


Figure 2.4-3: End Q2 2021 Planned Eagle Pit and PG WRSA Development

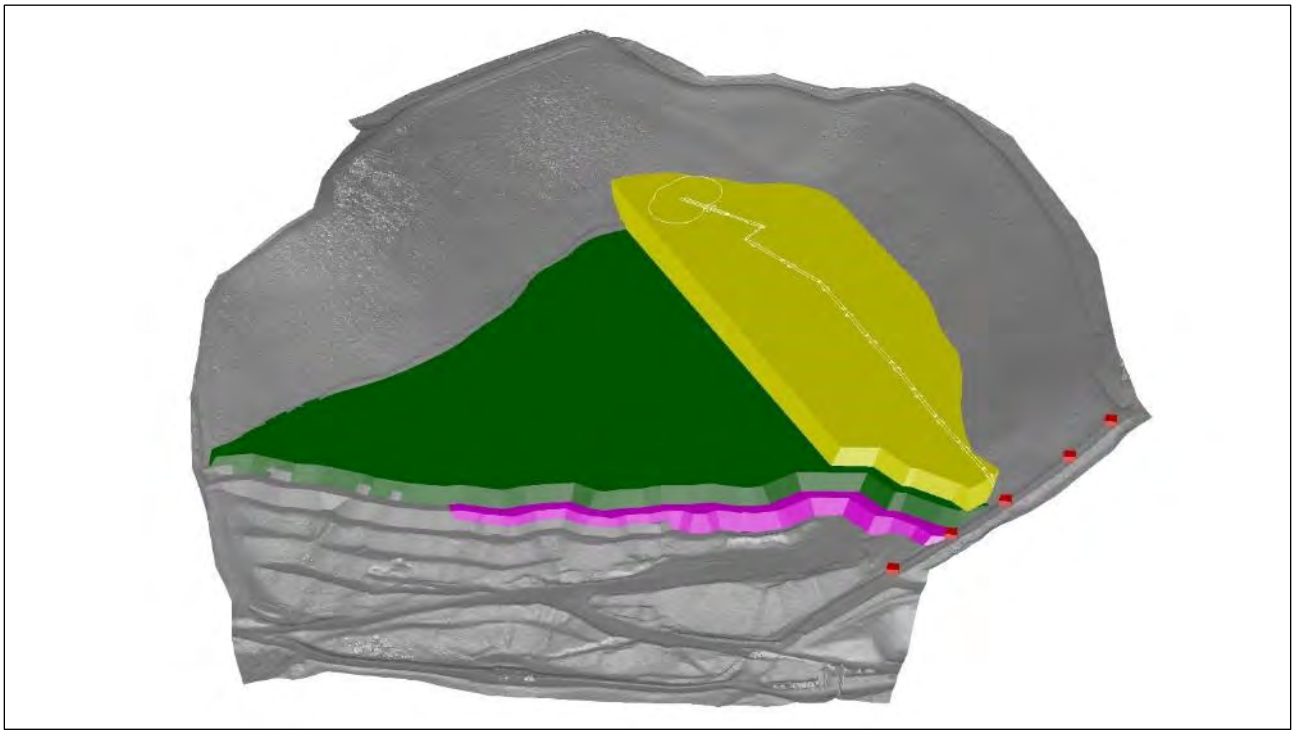


Figure 2.4-4: End Q2 2021 Planned HLF Development

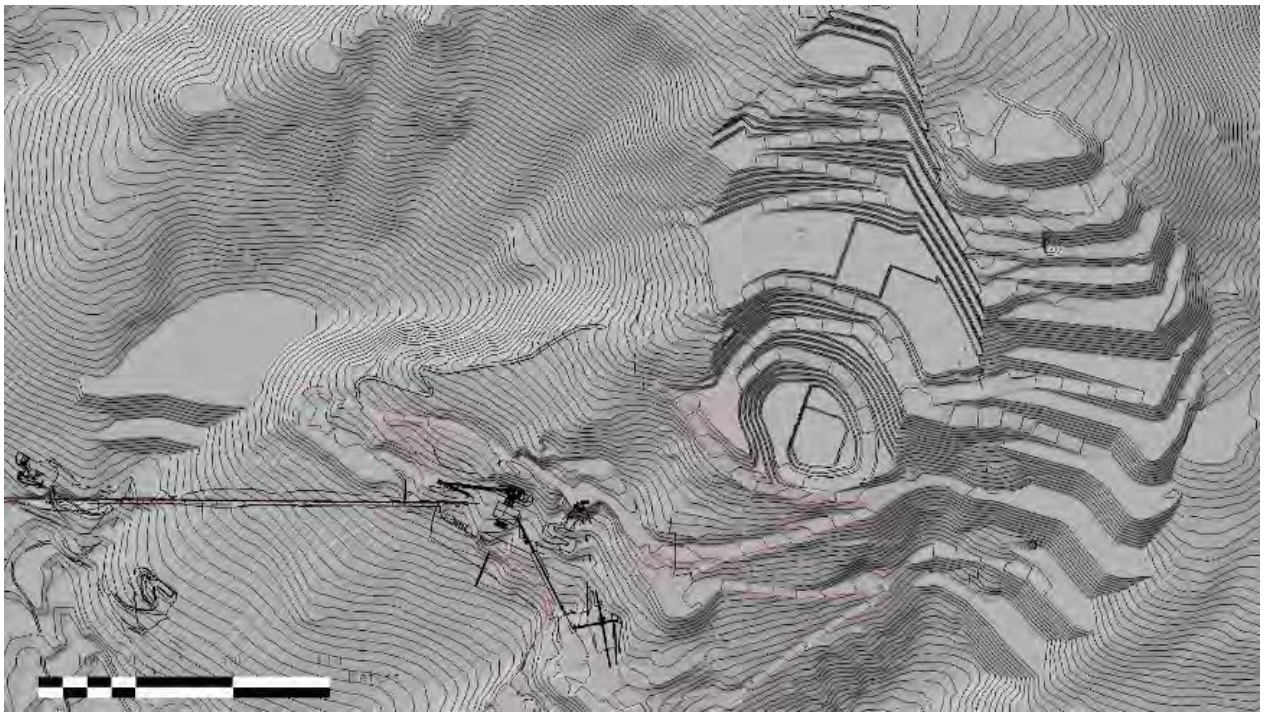


Figure 2.4-5: End Q3 2021 Planned Eagle Pit, PG and EP WRSA Development

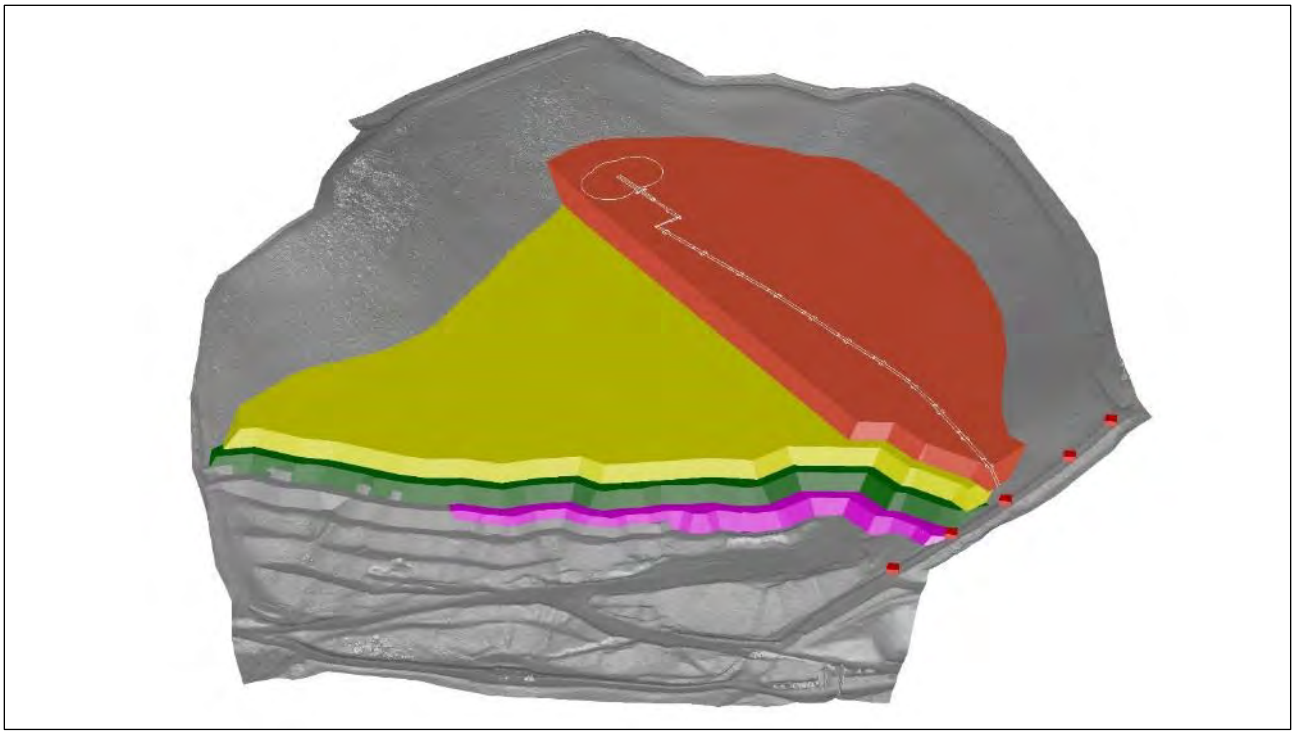


Figure 2.4-6: End Q3 2021 Planned HLF Development

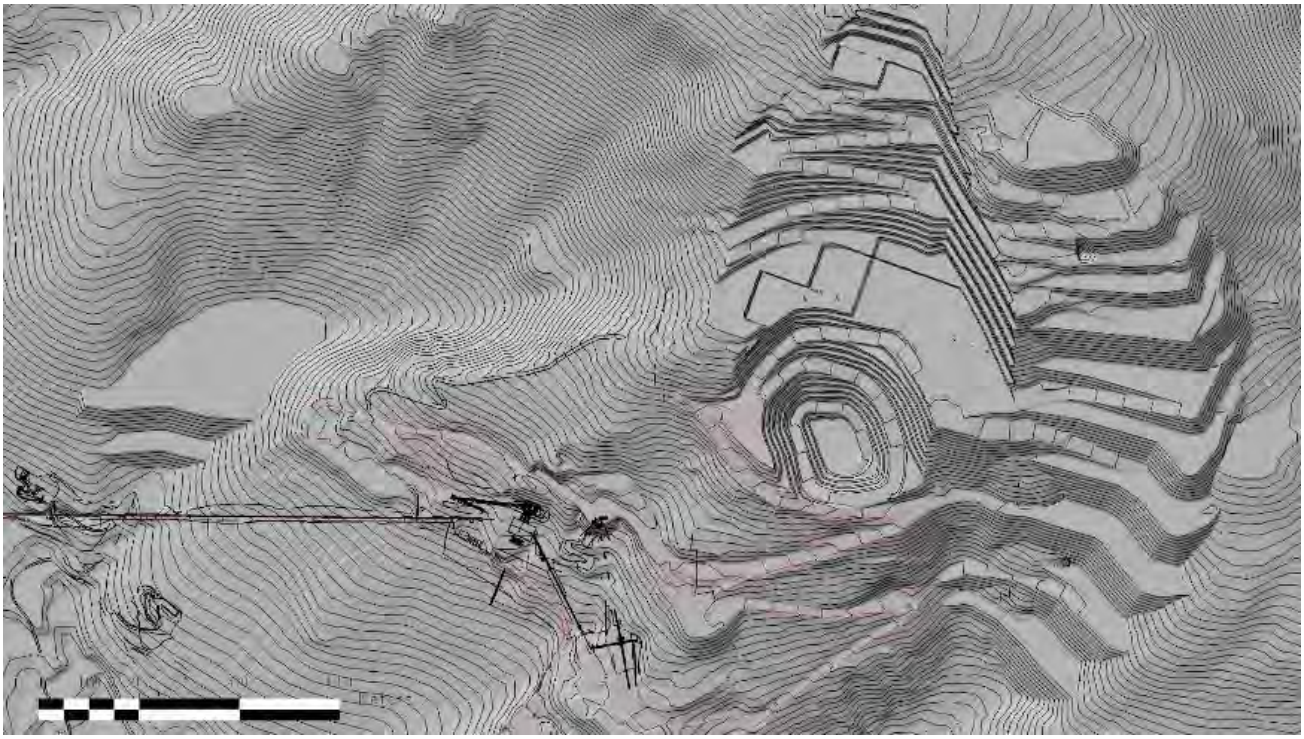


Figure 2.4-7: End Q4 2021 Planned Eagle Pit, PG and EP WRSA Development

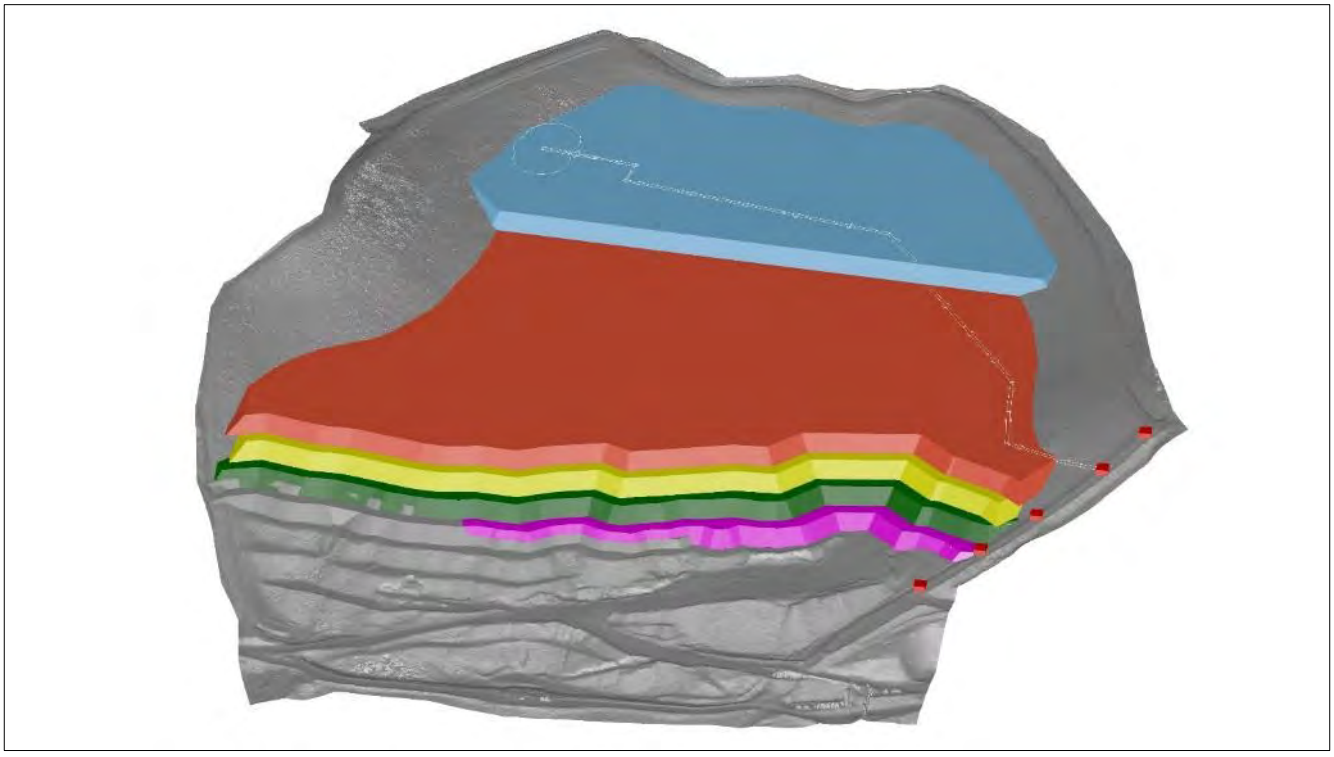


Figure 2.4-8: End Q4 2021 Planned HLF Development

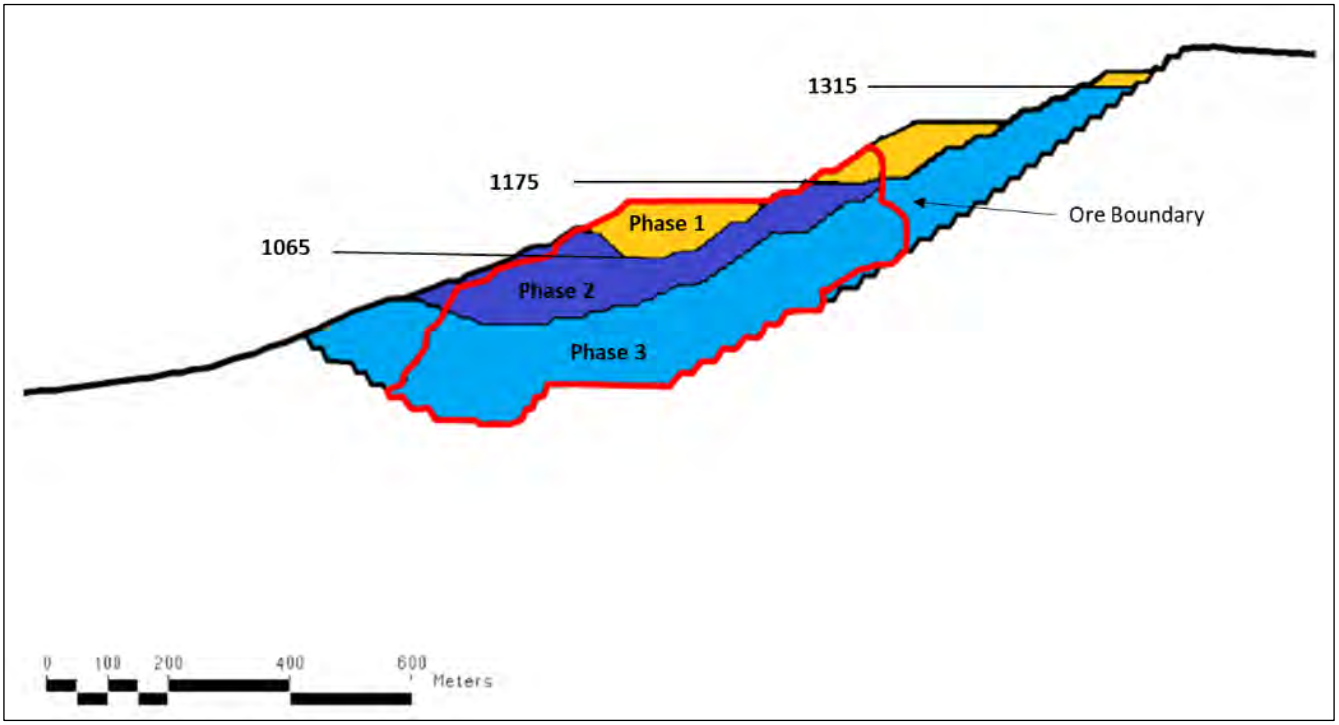


Figure 2.4-9: 2021 Planned Eagle Pit Development

2.5 Description of Water Use and Deposit of Waste

2.5.1 Description of Water Use

2.5.1.1 Water Use

Water supply for the camp facility is sourced from the groundwater well MW10-DG07 located to the north of the main camp. Daily usage remained below the authorized daily limit of 157 m^3/day, averaging approximately 50 m^3/day throughout the year.

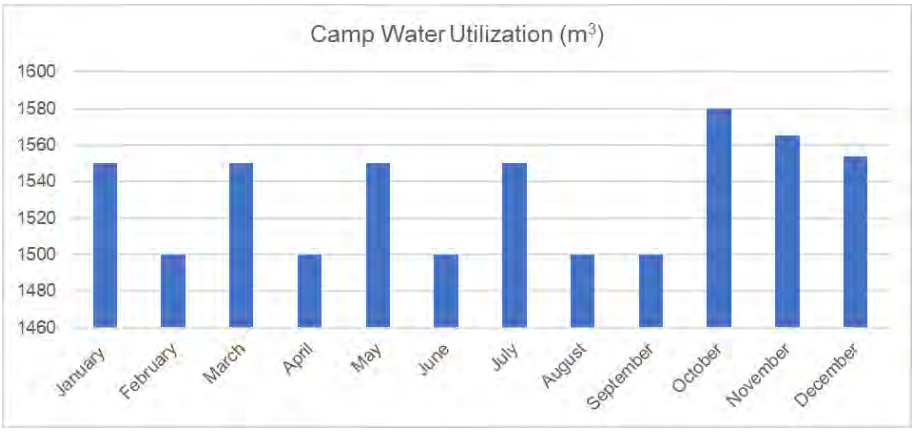


Figure 2.5-1: Camp Water Usage (m^3/month) 2020

During the reporting period, approximately 11,400 m^3 of groundwater was used for dust suppression (Figure 2.5-2) which was within the daily usage limit of 908 m^3/day provided by QZ14-041-1. Total annual water use for gold processing is discussed in section 2.6 as part of the HLF Solution Inventory Monitoring Program; however, the annual daily average of water used for irrigating and rinsing ore on the heap pad was ~802m^3/day which was within the QZ14-041-1 limit of 3,387 m^3/day.

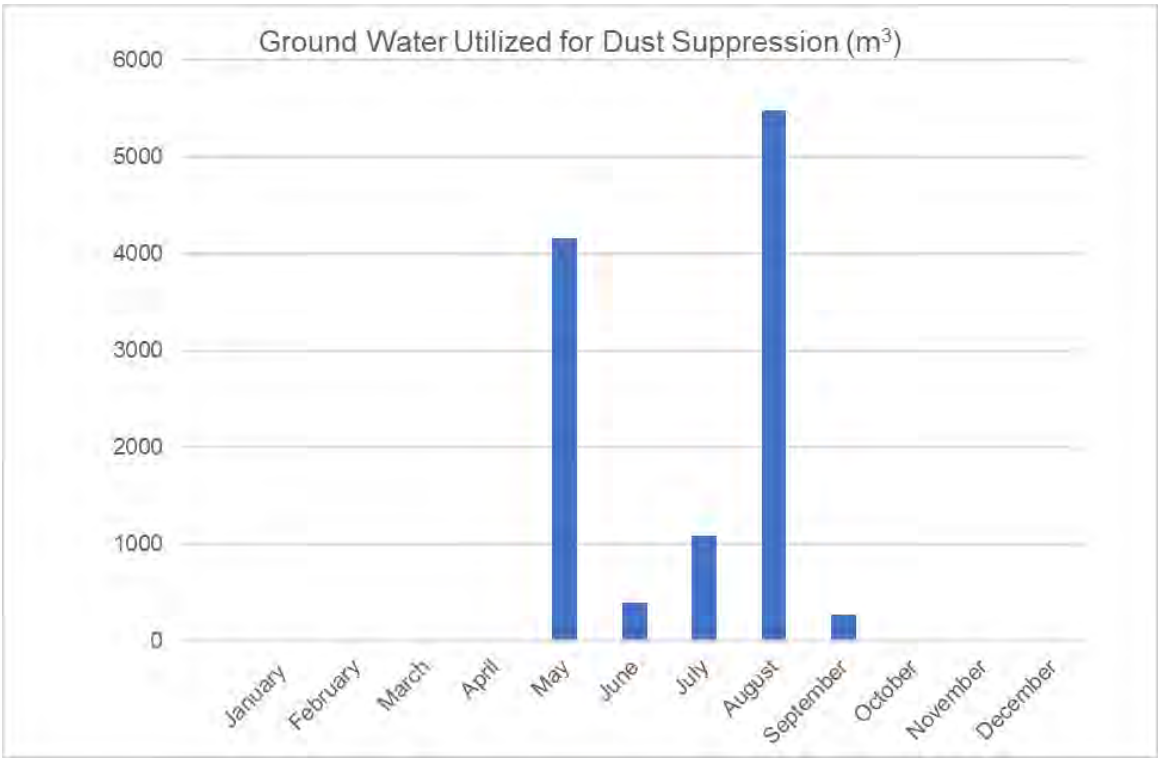


Figure 2.5-2: Dust Suppresssion Water Usage (m^3/month) 2020

2.5.1.2 **Water Storage**

The amount of water stored within the Events Pond and LDSP are calculated based on regular surveys of fluid elevations in each pond. The In-Heap Pond is determined based on measurement of the fluid elevations levels within the HLF.

Figure 2.5-3 provides the total available storage in the HLF system (i.e., the In-Heap Pond and Events Pond). As discussed in section 3 of this report, 2020 experienced significant rainfall and the 2019/2020 snowpack was the largest recorded at the Project site. The combination of a large snow water equivalent from the winter snowpack and high rainfall (at the camp station, months with successful data capture where all precipitation was as rainfall were the highest in the period of record) led to exceedance of the QZ14-041-1 desired available storage (DAS) at various points through the year.

A combination of controlled discharges of water compliant with the effluent quality standards of QZ14-041-1 in July, August and September (Table 3.1-12) and water use recycling to the HLF in November and December (Table 2.6-1) returned water storage volumes to well within the Phase 1 WUL DAS.

Additional information responding to questions on the VGC Freshet Water Management Plan (which had been required under the direction of the Inspector) was submitted to the Inspector on November 22, 2020. In the response, VGC identified a current operations DAS. The current operations DAS was a value derived using identical parameters for the WUL DAS except for the utilization of the actual solution application rate rather than the maximum application rate possible with the pumping system. The use of the actual solution application rate informs the 72-hour draindown that would be experienced in the event of the loss of pumping ability within the In-Heap Pond. This information was developed purely to provide context to the Inspector on the current status of operations and is not intended to alter the DAS required by the WUL. Table 2.5-1 provides the tow DAS volumes. The current operations DAS was not encroached upon at any point in 2020.

Table 2.5-1: Phase 1 Desired Available Storage Considerations

	WUL Condition for Phase 1	Current Operations
Application Rate (m^3/hr)	2,070	770
72-hour Draindown (m^3)	149,040	55,440
24-hour 100-year event (m^3)	29,700	29,700
0.5 m EP freeboard (m^3)	19,600	19,600
Desired Available Storage	**198,340**	**104,740**

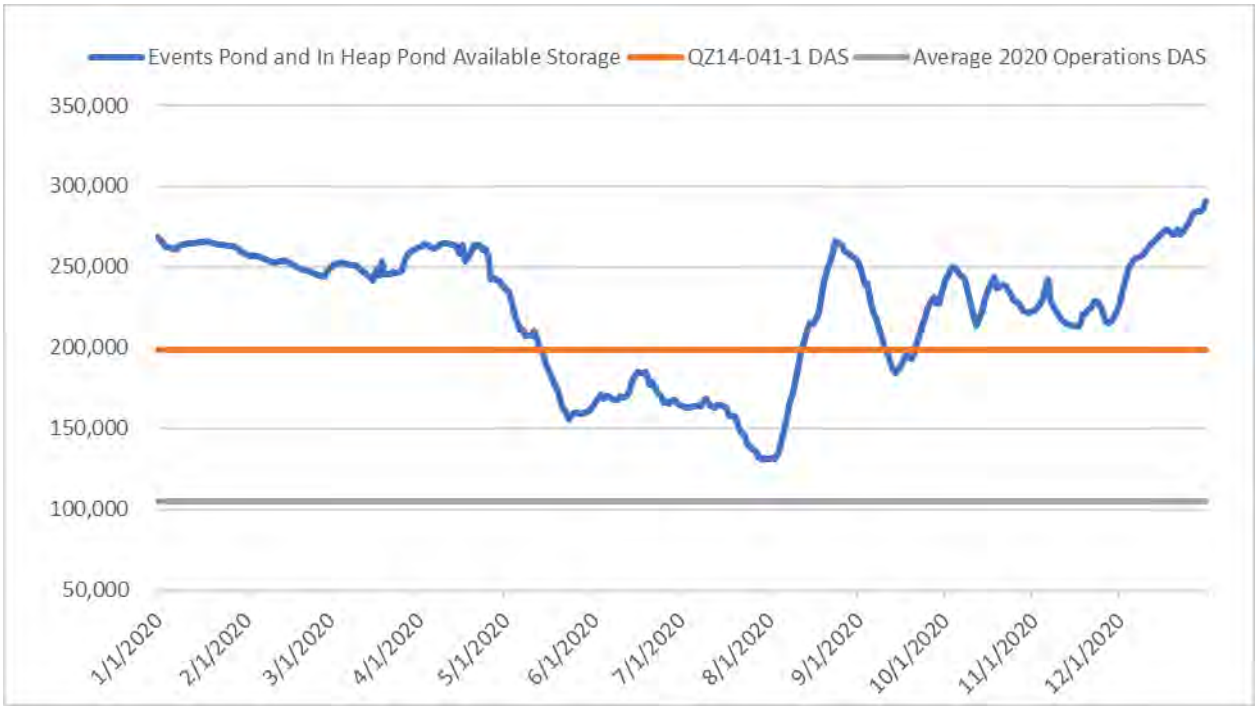


Figure 2.5-3: Avaialble Storage Volume and Desired Available Storage 2020 (m^3/day)

The LDSP held a maximum volume of ~62,163 m^3 in 2020 on April 20 resulting in an available storage of 6,357 m^3 within the pond. This occurred during Project record Freshet flows entering the LDSP. The volume of water within the LDSP was reduced by transferring water to the Events Pond (Table 2.5-2) and exfiltration discharge to a sump in the Dublin Gulch valley (FDP#5). By April month end, water levels within the LDSP had returned to values able to accommodate the runoff from a 1 in 5-year rainfall event which is an internal management trigger

for the pond. LDSP water transfers to the Events Pond continued throughout the ice-free months in 2020 as required for settling capabilities and eventual Project compliant discharge or use as make up water in the process circuit.

The maximum month end water volume recorded within the In-Heap Pond in 2020 was 46,346 m^3 on July 28th. In-Heap pond water was recirculated continuously to the ADR plant for gold recovery and subsequent reuse as barren solution for the heap leaching process. The Red Alert level for In-Heap Pond fluid levels as provided in the HLF OMS was never experienced in 2020.

Table 2.5-2: Water Storage Volumes 2020

End of Month	Month End Volume of Water Stored in Events Pond (m^3)	Month End Volume of Water Stored in Lower Dublin South Pond (m^3)	Month End Volume of Water Stored in the In-Heap Pond (m^3)
January	85,791	29,567	14,440
February	89,172	27,661	21,250
March	91,828	28,138	5,000
April	121,293	29,567	2,589
May	165,252	15,826	33,183
June	161,249	27,899	33,555
July	179,661	45,023	43,827
August	96,775	40,511	28,460
September	71,782	33,691	35,494
October	112,260	21,945	27,106
November	96,104	23,374	24,819
December	37,022	25,041	25,733

2.5.1.3 **Water Transfers**

Section 2.6 provides specific details on the volumes and rates of water and solution management for the HLF as required under the Solution Inventory Monitoring Program specified in QZ14-041-1. Additional water transfer required for the Project are provided below in **Error! Reference source not found.**..

Table 2.5-3: Water Transfers 2020 (excluding SIMP related transfers)

End of Month	Total Volume from HLF Underdrain to Events Pond (m^3)	Total Volume from LDSP to Events Pond (m^3)	Total Volume of Water Transferred from Production Well to HLF/ADR (m^3)	Total Volume of Water Transferred from Control Pond to HLF/ADR (m^3)
January	0	0	10,686	0
February	0	0	14,049	0
March	0	0	37,857	0
April	2,065	12388	23700	0
May	3,570	28489	0	0
June	7828	0	13,658	0
July	13763	8,990	13,226	0
August	16,410	18,000	12000	0

End of Month	Total Volume from HLF Underdrain to Events Pond (m^3)	Total Volume from LDSP to Events Pond (m^3)	Total Volume of Water Transferred from Production Well to HLF/ADR (m^3)	Total Volume of Water Transferred from Control Pond to HLF/ADR (m^3)
September	13,100	33,800	14,200	0
October	12,050	24,300	15,320	0
November	9,650	0	39,500	0
December	7,640	0	2,400	0

2.5.2 Deposit of Waste

A controlled discharge to ground from the LDSP to an exfiltration sump FDP#5 was undertaken during the period of April 20-28, 2020. Approximately 40,130 m^3 of water was discharged in total; no direct discharge to receiving surface water bodies occurred.

The exfiltration sump is located approximately 300 meters upgradient of the LDSP in the lower Dublin Gulch Valley. The sump area is occupied by a thick (over 20 m) sequence of placer deposits and alluvium that overlies bedrock. The sump was previously used successfully in 2018 during construction activities, and at that time was deemed to be an acceptable measure for addressing an excess of runoff water collected from construction activities. Thus, in this case, exfiltrating the water to ground was ascertained to have the lowest potential for an adverse response in the receiving environment as it allows for natural mitigation of total suspended solids (TSS), the main parameter of concern, through natural filtration, as opposed to direct discharge to receiving waters (e.g., Haggart Creek).

On April 20, 2020, prior to any discharge, notification was provided to regulators and the FNNND regarding the planned discharge of water from the LDSP to the exfiltration sump. The following were notified:

- Yukon Energy Mines and Resources (EMR) Compliance Inspector,
- Environment and Climate Change Canada (ECCC) Compliance Inspector, and
- FNNND Lands and Resources Manager.

On April 30, 2020, and within 24 hours of receiving the analytical laboratory results, notification was provided to the Yukon Spill Reporting hotline for water quality exceeding WUL effluent licence criteria (TSS and total arsenic) from the discharge water pumped to the exfiltration sump. Subsequent to the notification provided to the Yukon Spill Reporting hotline, additional laboratory results were received and an exceedance of licence criteria for total iron was also identified.

Final reports pursuant to the WUL and Metal and Diamond Mining Effluent Regulations (MDMER) effluent parameters are provided in Appendix C1 and C2, respectively.

Additional discharges of water compliant with the effluent quality standards of QZ14-041-1 were undertaken in July, August and September as discussed in detail in section 3.2.3.

2.6 HLF Solution Monitoring Program

Stacking of ore on the Heap Leach Pad continued through 2020, with the exception of planned maintenance down times scheduled throughout the year

2.6.1 HLF Solution Inventory Monitoring program

The WUL condition #117 requires eleven specific data requirements be recorded as part of the HLF Solution Inventory Monitoring Program (SIMP). Conditions 117a) and 117j) require daily reporting while the remaining conditions require monthly reporting. The following summarizes the data for each sub-condition of WUL #117:

117a) The daily average available storage volume in the In-Heap Pond is provided in Appendix D. The data record begins on January 1, 2020 and was recorded daily.

117b) The month-end volumes of water stored in the HLF are provided in Table 2.6-1. These volumes include the month end volumes of water stored in the Events Pond and the In-Heap Pond plus the month-end volume of draindown water stored in ore above the residual moisture content. The steady increase in moisture stored reflect ramp up in operations as well as the increasing tonnage of stacked ore.

117c) The total monthly volumes and the average pumping rates of barren solution pumped to the heap leach pad for leaching are provided in Table 2.6-1.

117d) The total monthly volumes and the average pumping rates of pregnant solution pumped from the In-heap Pond to the ADR are provided in Table 2.6-1.

117e) The total monthly volumes of water flowing or pumped from the In-Heap Pond to the Events Pond is provided in Table 2.6-1. There were no water transfers from the In-Heap Pond to the Events Pond during the 2020 reporting period.

117f) The total monthly volumes of water pumped from the Events Pond to the ADR and the In-Heap Pond are provided in Table 2.6-1.

117g) The total monthly volumes of precipitation falling on the HLF and the Events Pond catchments are provided in Table 2.6-1. These values reflect the catchments below diversions.

117h) The total monthly volumes of Water Transfers into the ADR/HLF are provided in Table 2.6-1. The values reflect groundwater input from the main production well.

117i) The total monthly volumes and average treatment rates of any solution treated in the MWTP and released to the environment are provided in Table 2.6-1. No HLF solution water was treated and released to the environment and the MWTP has not yet been constructed.

117j) The daily average moisture volumes of ore delivered to the HLF is provided in Appendix D.

117k) The monthly volumes of water added to the HLF as ore moisture content are provided in Table 2.6-1. These values are based on the daily moisture volumes in Appendix D.

Table 2.6-1: Heap Leach Solution Inventory Monitoring Program – Monthly Volumes and Flow Rates

End of Month	117b) Month-end Volume of Water Stored in the HLF (m^3)[a]	117c) Total Volume of Barren Solution Pumped to HLF (m^3)	117c) Average Barren Flow Rate (m^3/hr)	117d) Total Pregnant Volume Pumped to ADR (m^3)	117d) Average Pregnant Return Flow Rate (m^3/hr)	117e) Total Volume from In-Heap Pond to Events Pond (m^3)	117f) Total Volume from Events Pond to ADR (m^3)	117f) Total Volume from Events Pond to HLF (m^3)	117g) Total Precipitation Falling on HLF and Event Pond Catchments (m^3)[b]	117h) Total Volume of Water Transfers Pumped into HLF/ADR (m^3)	117i) Total Volume of HLF Solution Treated and Released (m^3)	117k) Total Volume of Water Added to HLF as Ore Moisture (m^3)
January	168,614	480,014	645	480,014	645	0	0	0	24,596	10,686	0	2,935
February	177,635	463,304	666	461,534	663	0	0	0	21,242	14,049	0	3,758
March	160,931	515,209	692	510,785	687	0	0	0	12,578	37,857	0	12,378
April	200,978	389,064	540	393,094	546	0	0	0	8,106	23,700	0	18,978
May	295,376	297,789	400	296,883	399	0	0	0	8,385	0	0	17,276
June	306,314	435,324	605	449,971	625	0	0	0	56,459	13,658	0	20,134
July	372,641	513,637	690	542,885	730	0	0	0	74,347	13,226	0	14,269
August	283,838	663,126	891	697,206	937	0	0	0	54,223	12,000	0	23,827
September	254,303	583,271	810	620,516	862	0	0	0	43,043	14,200	0	19,592
October	340,888	554,285	745	586,684	789	0	0	0	36,894	15,320	0	20,376
November	403,636	644,972	896	646,105	897	0	28,500	0	27,950	68,000	0	13,767
December	345,143	819,373	1,101	808,553	1,087	0	67,740	0	17,329	70,140	0	25,605

NOTES:

a) Defined as total water stored in In-Heap Pond minus field capacity, plus the draindown volume stored above the In-Heap Pond at optimum moisture minus residual by volume, plus water stored in the Events Pond.

b) Values developed for precipitation data at 1000m elevation based on Camp and PH station climate records in 2020 and applied to the catchment of the HLF1b pad and Events Pond.

2.6.2 HLF Foundation Drainage System Monitoring

The WUL condition #134a requires that the annual report include a description of the water use and also a description of any deposit of waste carried out during the year associated with leakage into the Leak Detection and Recovery System (LDRS) of the HLF. There was no deposit of waste associated with the LDRS. All leakage was recovered in the LDRS and pumped back into the process solution circuit. The following describes the operation of the LDRS during 2020.

The LDRS within the In-Heap Pond has a sump that is located at the bottom of the In-Heap Pond. The sump sits between the closure sump and the PLS sump, with a bottom elevation of 908.5 m sealed with an 80-mil (2.0 mm) LLDPE primary liner. The top of the sump lies at 911.5 m and is sealed with a 60-mil (1.5 mm) LLDPE secondary liner. The leak detection layer of the liner system (i.e., geonet material located between the two geomembranes) under the In-Heap Pond drains into the LDRS sump. The LDRS pump casings consist of steel 600-mm pipes which ends in a perforated hammer head configuration at the bottom of the sump. A grid of corrugated, perforated 250-mm N-12 pipes collect and direct seepage towards the LDRS pump casings and LDRS pump. The pump is sized to sufficiently remove fluids to minimize head on the bottom liner. The LDRS sump is filled with crushed overliner drain fill material. The LDRS sump is also equipped with an instrument casing that houses a vibrating wire piezometer (VWP), which is used to monitor fluid levels in the LDRS sump.

The HLF LDRS has established alert levels for the design and operation of the In-Heap Pond and Events Pond. Alert levels vary with the pond level since the hydraulic head dictates the rate of leakage. Alert Level 1 (AL1) provides a benchmark for liner performance in a double-lined pond under typical operating conditions based on industry standard rates for expected leakage from “normal” defects in the liner. AL1, as measured by the amount of fluid pumped by the pond’s LDRS, is a low-level trigger that may indicate the presence of a small hole or defect in the top geomembrane and is intended to represent the leakage rate expected from geomembranes installed with strict construction quality assurance. Alert Level (AL2) provides a high-level trigger that indicates serious malfunction of the liner system. The expected leakage rates are based on design criteria and the as-built conditions. As detailed in the HLF Operation, Maintenance and Surveillance Manual, there are four response levels considered for the operations of the HLF to ensure that response actions can be taken at periods when leakage levels may be approaching the design Alert Levels.

Figure 2.6-1 shows the measured leakage rates compared to the AL1 leakage rate which confirms that the HLF liner system is functioning as designed. These rates were reviewed by the Engineer of Record for the HLF and verified to represent proper functioning of the liner system.

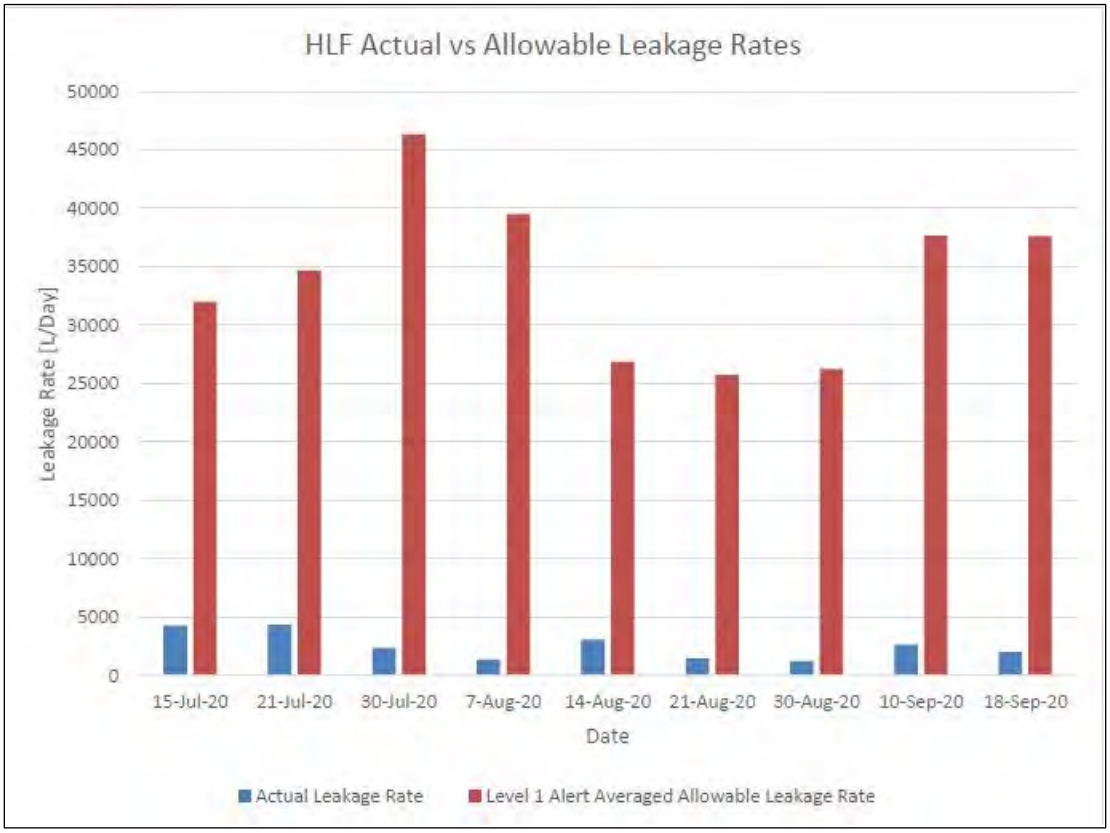


Figure 2.6-1: LDRS Actual Leakage Rates Versus AL1 Leakage Rates July to September 2020

3 ENVIRONMENTAL MONITORING

3.1 Surface Water Hydrology

The 2020 Streamflow Monitoring Report included as Appendix E presents summaries of all streamflow data (i.e., baseline, construction and operational data) collected for the Project since August 2007, including hydrometric information summarized in previous reports a summary (Jacques Whitford 2008; Stantec 2010; Stantec 2011a; Stantec 2012a; Knight Piésold 2013, Lorax 2017, Lorax 2018, Lorax 2019 and Lorax 2020) and data collected in 2020. Figure 3.1-1 shows the locations of Project hydrometric stations monitored and Table 3.1-1 presents station monitoring records and drainage information.

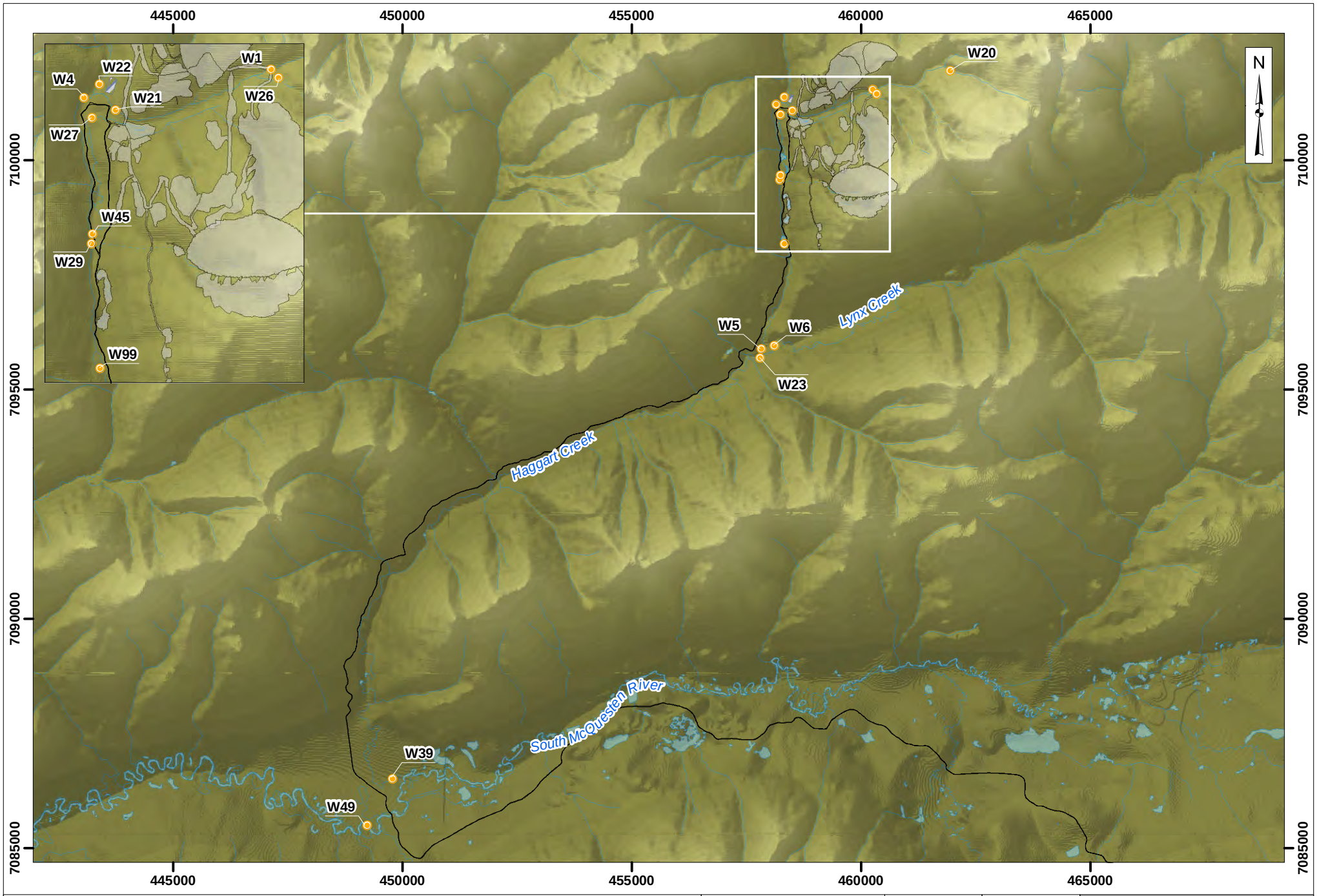
Table 3.1-1: Project Hydrology Stations

Station	Station Name	Record Period	Northing	Easting	Drainage Area (km^2)	Median Basin Elevation (m)	Notes
W1	Dublin Gulch above Stewart Gulch	2007 - 2020	7101545	460249	6.8	1,303	Continuous discharge time-series
W4	Haggart Creek below Dublin Gulch	2007 – 2020	7101223	458144	76.9	1,125	Continuous discharge time-series
W5	Haggart Creek above Lynx Creek	2007 – 2020	7095888	457814	97.5	1,091	Continuous discharge time-series
W6	Lynx Creek above Haggart Creek	2007 – 2020	7095964	458099	100.9	1,049	Continuous discharge time-series
W23	Haggart Creek below Lynx Creek	2007 – 2020	7095682	457790	97.6	1,066	Manual Measurements
W21	Dublin Gulch below Event Ponds	2018 – 2020	7101261	458359	10.1	1,216	Continuous discharge time-series
W22	Haggart Creek above Dublin Gulch	2007 – 2020	7101378	458319	66.8	1,113	Continuous discharge time-series
W26	Stewart Gulch	2007 – 2020	7101443	460331	1.3	1,183	Continuous discharge time-series, manual data only for 2007-2009, 2011
W27	Eagle Creek near Camp	2007 – 2020	7100997	458235	2.7	1,037	Continuous discharge time-series, manual data only for 2007 and 2018
W29[1]	Haggart Creek below Eagle Creek	2010 - 2015	7099583	458225	86.1	1,112	Manual measurements for 2010, 2016-2019, 2020. Continuous data from 2011 to 2015
W45	Eagle Creek at Mouth	2018 – 2020	7099684	458243	86.1	1,112	Continuous discharge time-series
W99	Haggart Creek above 15 Pup	2019-2020	7098180	458322	90.1	1,116	Continuous discharge time-series
W20	Bawn Boy Gulch	2016-2020	7101961	461945	2.4	1,364	Manual Measurements
W39	Haggart Creek above South McQuesten River	2017-2020	7086504	449780	*	*	Manual Measurements
W49	South McQuesten River below Haggart Creek	2017-2020	7085495	449221	*	*	Manual Measurements

NOTES:

1. No continuous water level data are available for this station for 2016-2020, however manual measurements continue (see Lorax, 2020)

* Values unavailable at the time of this report.



Legend:

- Hydrology Station
- Facility Footprint
- Watercourse - Perennial
- Watercourse - Ephemeral
- Watercourse - Intermittent

VICTORIA GOLD CORP

0 750 1,500 3,000
Metres

Projection: NAD 83 UTM Zone 8N	Drawn By: HC	**EAGLE GOLD MINE YUKON TERRITORY**	
Date: 2021/04/11	Figure: 3.1-1	**Project Hydrology Stations - 2020**	

3.1.1 Surface Water Hydrology Monitoring

Streamflow data for the automated stations listed in Table 3.1-1 are provided in Appendix E in the following formats:

- Monthly tables showing average, maximum and minimum 15-minute discharge values (m^3/s);
- Monthly tables showing average discharge (m^3/s), average unit yields ($L/s/km^2$) and total runoff (mm);
- Time-series plots of continuous average daily discharge (m^3/s) and spot flow measurements (m^3/s), and;
- Time series plots of average daily unit yields ($L/s/km^2$), by year.

Issues were encountered with the stage records for 2020 at the following stations:

- W21 - Water level logger experienced a malfunction in early summer and continuous water level data collected was sporadic for 2020. Sufficient manual measurement now exist to develop a preliminary rating curve
- W22 - Technical issues with the datalogger resulted in a data gap from August 11 to September 7, 2020.
- W26 - manual measurements are available for 2020. Bank instability and low flow conditions at W26 have prevented datalogger installation since 2011.
- W29 - The stilling well and datalogger at W29 were decommissioned due to channel instability in the area in 2019. W99 is utilized as a surrogate station. The station was re-commissioned in July 2020 as a backup for the W99 record and to maintain the site in accordance with licence terms. Manual measurements continue to be reported for this station.
- W45 - No clear rating curve has yet been developed for this station. Fourteen paired staff gauge: discharge measurements are available, however there is not sufficient range in flow and stage data to develop a rating curve. Further refinement of the stage discharge relationship is required to develop a robust rating curve from which to derive a continuous discharge time series.
- W20 - Manual flow and stage measurements are conducted when access allows which can be challenging in freshet or winter conditions. Data is not sufficient to develop a rating curve.

Tables 3.1-2 to 3.1-10 below compare the complied streamflow summary statistics (average, minimum and maximum flows) for 2020 to the same statistics compiled over the full period of baseline record. All values are in m3/s using 15-minute continuous discharge records.

Table 3.1-2: W1 Comparison of 2020 Summary Statistics to Baseline Record

Year	Variable	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
2020	Average	--	--	--	--	0.415	0.242	0.159	0.189	0.168	0.196	--	--
	Maximum	--	--	--	--	1.147	0.707	0.346	0.503	0.378	0.328	--	--
	Minimum	--	--	--	--	0.049	0.086	0.050	0.113	0.048	0.086	--	--
All Years	Average	--	--	--	0.024	0.260	0.113	0.093	0.094	0.094	0.097	0.069	--
	Maximum	--	--	--	0.104	1.923	0.707	0.346	0.503	0.557	0.719	0.091	--

Year	Variable	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
	Minimum	--	--	--	0.002	0.000	0.000	0.000	0.000	0.000	0.000	0.053	--

Table 3.1-3: W4 Comparison of 2020 Summary Statistics to Baseline Record

Year	Variable	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
2020	Average	--	--	--	--	4.136	3.206	1.954	1.710	1.522	1.340	--	--
	Maximum	--	--	--	--	8.079	9.600	3.664	3.049	2.650	1.871	--	--
	Minimum	--	--	--	--	1.531	1.812	1.430	1.041	0.901	0.839	--	--
All Years	Average	--	--	--	0.237	2.106	1.187	0.872	0.889	0.907	0.802	0.847	--
	Maximum	--	--	--	0.592	8.079	9.600	4.834	6.649	2.905	5.001	1.145	--
	Minimum	--	--	--	0.150	0.060	0.304	0.090	0.159	0.021	0.021	0.565	--

Table 3.1-4: W5 Comparison of 2020 Summary Statistics to Baseline Record

Year	Variable	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
2020	Average	--	--	--	--	3.048	3.227	2.253	1.963	1.772	1.737	--	--
	Maximum	--	--	--	--	5.699	7.265	3.659	3.110	2.920	2.568	--	--
	Minimum	--	--	--	--	1.523	2.110	1.719	1.281	1.231	1.136	--	--
All Years	Average	--	--	--	--	3.077	1.535	1.081	1.044	1.051	1.064	--	--
	Maximum	--	--	--	--	17.273	7.265	6.883	6.815	4.196	4.904	--	--
	Minimum	--	--	--	--	0.819	0.264	0.153	0.132	0.124	0.081	--	--

Table 3.1-5: W6 Comparison of 2020 Summary Statistics to Baseline Record

Year	Variable	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
2020	Average	--	--	--	--	3.701	2.621	1.597	2.183	2.364	2.382	--	--
	Maximum	--	--	--	--	10.881	8.308	3.721	6.007	4.427	3.357	--	--
	Minimum	--	--	--	--	0.496	1.239	0.938	1.370	1.703	0.848	--	--
All Years	Average	--	--	--	--	3.112	1.285	0.971	1.143	1.221	1.052	0.903	--
	Maximum	--	--	--	--	17.947	8.308	7.120	6.007	4.427	5.172	1.788	--
	Minimum	--	--	--	--	0.280	0.136	0.038	0.166	0.162	0.112	0.385	--

Table 3.1-6: W22 Comparison of 2020 Summary Statistics to Baseline Record

Year	Variable	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
2020	Average	--	--	--	--	1.473	0.687	0.368	0.319	0.560	0.433	--	--
	Maximum	--	--	--	--	2.680	3.371	0.524	0.398	2.951	1.129	--	--
	Minimum	--	--	--	--	0.015	0.289	0.275	0.254	0.248	0.169	--	--
All Years	Average	--	--	--	0.613	1.847	0.864	0.655	0.761	0.766	0.693	0.937	--
	Maximum	--	--	--	1.455	20.630	5.287	3.198	3.928	2.951	3.330	1.342	--
	Minimum	--	--	--	0.125	0.015	0.105	0.002	0.186	0.106	0.060	0.558	--

Table 3.1-7: W26 Comparison of 2020 Summary Statistics to Baseline Record

Year	Variable	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
2020	Average	--	--	--	--	0.041	0.043	0.025	0.028	0.013	0.014	--	--
	Maximum	--	--	--	--	0.182	0.176	0.052	0.065	0.059	0.039	--	--
	Minimum	--	--	--	--	0.001	0.013	0.008	0.018	0.000	0.002	--	--
All Years	Average	--	--	--	--	0.035	0.021	0.015	0.015	0.012	0.010	--	--
	Maximum	--	--	--	--	0.182	0.176	0.143	0.065	0.063	0.058	--	--
	Minimum	--	--	--	--	0.001	0.000	0.001	0.000	0.000	0.001	--	--

Table 3.1-8: W27 Comparison of 2020 Summary Statistics to Baseline Record

Year	Variable	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
2020	Average	--	--	--	0.007	0.003	0.007	0.003	0.006	0.005	0.003	--	--
	Maximum	--	--	--	0.017	0.012	0.016	0.007	0.017	0.018	0.004	--	--
	Minimum	--	--	--	0.002	0.001	0.002	0.001	0.001	0.001	0.002	--	--
All Years	Average	--	--	--	0.007	0.060	0.029	0.024	0.022	0.020	0.026	--	--
	Maximum	--	--	--	0.017	0.335	0.144	0.315	0.138	0.123	0.105	--	--
	Minimum	--	--	--	0.002	0.001	0.000	0.000	0.000	0.000	0.001	--	--

Table 3.1-9: W29 Comparison of 2020 Summary Statistics to Baseline Record

Year	Variable	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
2020	Average	--	--	--	--	--	--	--	1.561	1.663	1.550	--	--
	Maximum	--	--	--	--	--	--	--	2.403	2.395	2.069	--	--
	Minimum	--	--	--	--	--	--	--	1.086	1.244	0.023	--	--
All Years	Average	--	--	--	--	2.352	1.209	1.213	1.145	1.201	0.957	--	--
	Maximum	--	--	--	--	13.604	3.766	4.497	4.955	2.818	2.069	--	--
	Minimum	--	--	--	--	0.653	0.229	0.441	0.007	0.328	0.023	--	--

Table 3.1-10: W99 Comparison of 2020 Summary Statistics to Baseline Record

Year	Variable	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
2020	Average	--	--	--	1.499	2.657	2.558	1.695	1.580	1.486	1.889	--	--
	Maximum	--	--	--	2.753	6.503	7.986	2.726	2.537	2.765	2.357	--	--
	Minimum	--	--	--	0.728	0.641	1.594	1.290	1.098	1.050	1.386	--	--
All Years	Average	--	--	--	1.499	2.657	1.312	1.008	0.925	0.978	1.064	--	--
	Maximum	--	--	--	2.753	6.503	7.986	2.726	2.537	2.765	2.357	--	--
	Minimum	--	--	--	0.728	0.641	0.314	0.230	0.208	0.201	0.070	--	--

NOTE:
W99 station was installed in 2019.

3.1.2 Site QA/QC Programs

3.1.2.1 Stage Measurements and Corrections

All automated stations were instrumented with metric staff gauges, mounted to vertical angle iron in the stream channel, and regularly surveyed to nearby benchmarks. Continuously recording pressure transducers were installed in stilling wells and set to record water level every 15 minutes. These readings were corrected for fluctuations in barometric pressure in a post-processing step. During each site visit, unless in winter ice conditions, water level was noted on the staff gauge. These readings form the basis for the continuous water level records, which were adjusted to match the manual stage readings. Level surveys determined the staff gauge zero datum and water level, and were used to correct the station records for changes due to shifts in the channel bed (i.e., aggradation or scour), frost-jacking or station relocation following a high-magnitude flood event.

3.1.2.2 Rating Curve Error

The overall quality of the discharge record was assessed by reviewing the average and standard errors calculated from the differences between the measured discharges, and those estimated from the rating equation. A positive rating curve error is defined where the discharge calculated from the rating curve overestimates the value when compared to the measured discharge, and vice-versa for a negative error.

A summary of the error metrics for all stations and rating curve control percentages are presented in Table 3.1-11. Rating curve control values indicate the percent of time that a continuously recorded observation (15-minute intervals) falls between the highest and lowest manually recorded measurements for each monitoring station.

Overall, the rating curves provided reasonable estimates of discharge across a wide range of flows at most of the Project stations. The rating curve errors presented in Table 3.1-11 indicate that the average errors were relatively low, ranging from -10% (W29) to 4% (W5). The standard error, or the degree of variability about the average error values varied more between stations, from a high of 32% for station W21, to a low of 7% for station W99. Note that continuous discharge data are not currently generated for W21 due to a lack of water level data, and that W29 data, due to bank and stream section instabilities, are considered only as a potential backup in regards to adaptive management evaluations in the event that data from W99 are not available.

Rating curves for the site hydrometric stations are presented in Appendix E. For the 2020 update, the rating equations were compared to those previously developed for each station to ensure that the coefficients and exponents were consistent through time. No further updates to the rating curves developed in 2017 were necessary, and the same curves were applied to the 2020 continuous water level data which fell within the rating relations per monitoring station. Note that because stations W26 and W27 are instrumented with Parshall flumes, rating curves were not developed for these stations. The rating curve plot and error table for the relatively new hydrometric station W99, based off of measurements collected in 2019 and 2020, are provided in Appendix E.

Table 3.1-11: Rating Curve Error Summary for Project Hydrometric Stations

Station	Measurements (n)	Average Error (%)	Standard Error (%)	Rating Curve Control
W1	52	-4%	22%	97%
W4	55	0%	14%	100%
W5	45	4%	17%	96%
W6	36	-1%	9%	94%

Station	Measurements (n)	Average Error (%)	Standard Error (%)	Rating Curve Control
W21	15	4%	32%	79%
W22	46	0%	14%	100%
W26	37	--	--	100%
W27	77	--	--	100%
W29	26	-10%	21%	95%
W99	11	-1%	7%	96%
Average	43	-1%	17%	96%

NOTES:
Stations W26 and W27 currently have Parshall flumes installed, and therefore rating curves were not developed for these sites as part of the 202 Streamflow Monitoring Report

3.1.3 Effluent Discharge

Water management infrastructure for the Project is designed to convey site contact water via Ditch C to Haggart Creek above the W4 station. Flows in Ditch C are monitored continuously when discharging, with a V-notch weir, staff gauge and pressure transducer. In 2020 regular LDSP and Events Pond elevation surveys were conducted to compare to weir measurements during active periods of discharge. Table 3.1-12 details the total volumes of effluent discharged via Ditch C in 2020. A discharge to ground of approximately 43,130 m^3 from the LDSP through the FDP#5 exfiltration sump was also conducted in April 2020. Contributions to potential receiving environment stream flow discharges are assumed to be negligible.

Table 3.1-12: Monthly Discharge Totals via Ditch C - 2020

Month	Survey (m^3)	Weir (m^3)	RPD %
July	7,689	7,693	0.1
August	118,368	107,903	9.3
September	73,038	71,209	2.5
Total	199,095	186,805	6.4

NOTES:
RPD Relative Percent Difference

3.1.4 Adaptive Management

The EMSAMP outlines adaptive management protocols for the Project. A three-tiered threshold system has been developed for the adaptive management of surface water flow. The thresholds provided in Table 2.4-1 of the EMSAMP are different for the ice-free and ice-affected seasons, and are based on the median baseflows established for hydrometric stations W4 and W29 over the baseline period that encompassed the period August 2007 to August 2017. Note that adaptive management evaluations for the W29 station (due to bank and stream section instabilities) have been replaced by the W99 station, which has a 3% larger drainage area (Table 3.1-1). To account for this difference, the W29 baseline values have been adjusted upward by a factor of 1.03 to represent baseline conditions at W99.

Flow values presented in Table 3.1-13 for the months of May through September inclusive are median values, derived from continuous time-series discharge data, while the flow values reported for the months of November through April are based on one to two manual measurements (when possible) that are impacted by ice and snow

formation within the channel. Therefore, winter reported values have potential for higher uncertainty and deviation between baseline values and reported values. Threshold 3 was surpassed at W99 in February and March 2020, but not at W4, indicating that the data values were potentially an artefact of the limited monitoring frequency and challenging flow gauging conditions, rather than from mine water management practices. Baseflows were lower than average at the end of 2019, as a result of reduced snowmelt and precipitation during the year. The noted reductions in streamflow in Haggart Creek relative to the baseline condition in early 2020 were concluded to be a result of regional hydro-meteorological conditions rather than mine water management. The remainder of 2020 was characterized by stream discharges well above EMSAMP thresholds, which was attributed to a significant 2020 winter snow pack and record summer precipitation values on the Project.

Table 3.1-13: Median Monthly Streamflows for the Baseline (2007-2017) Period and for 2020 for W4 and W99

Month	Baseline (2007-2017)		2020		Percent Difference[1]	
	W4	W99	W4	W99	W4	W99
Jan	0.187	N/A	0.143	0.130	-24%	N/A
Feb	0.193	0.361	0.174	0.172	-10%	-52%
Mar	0.133	0.206	0.236	0.132	77%	-36%
Apr	0.159	0.202	0.254	1.319	60%	553%
May	1.826	1.817	1.544	2.456	-15%	35%
Jun	0.922	0.995	2.933	2.425	218%	144%
Jul	0.756	1.126	1.842	1.646	144%	46%
Aug	0.739	0.938	1.771	1.611	140%	72%
Sep	0.812	1.050	1.454	1.412	79%	34%
Oct	0.729	0.866	1.328	1.835	82%	112%
Nov	0.333	0.330	N/A[2]	N/A[2]	N/A[2]	N/A[2]
Dec	0.248	0.283	0.381	0.521	54%	84%

NOTES:
Shaded areas in Table indicate ice covered season, when flow measurements are limited to monthly manual data
1 Percent difference calculated as (2020 – Baseline)/Baseline. Positive values indicate that flows were higher than baseline in 2020, and *vice versa*.
2 Manual flow measurements were not made in November 2020 due to unsafe ice conditions.

3.2 Surface Water Quality

3.2.1 Surface Water Quality Monitoring

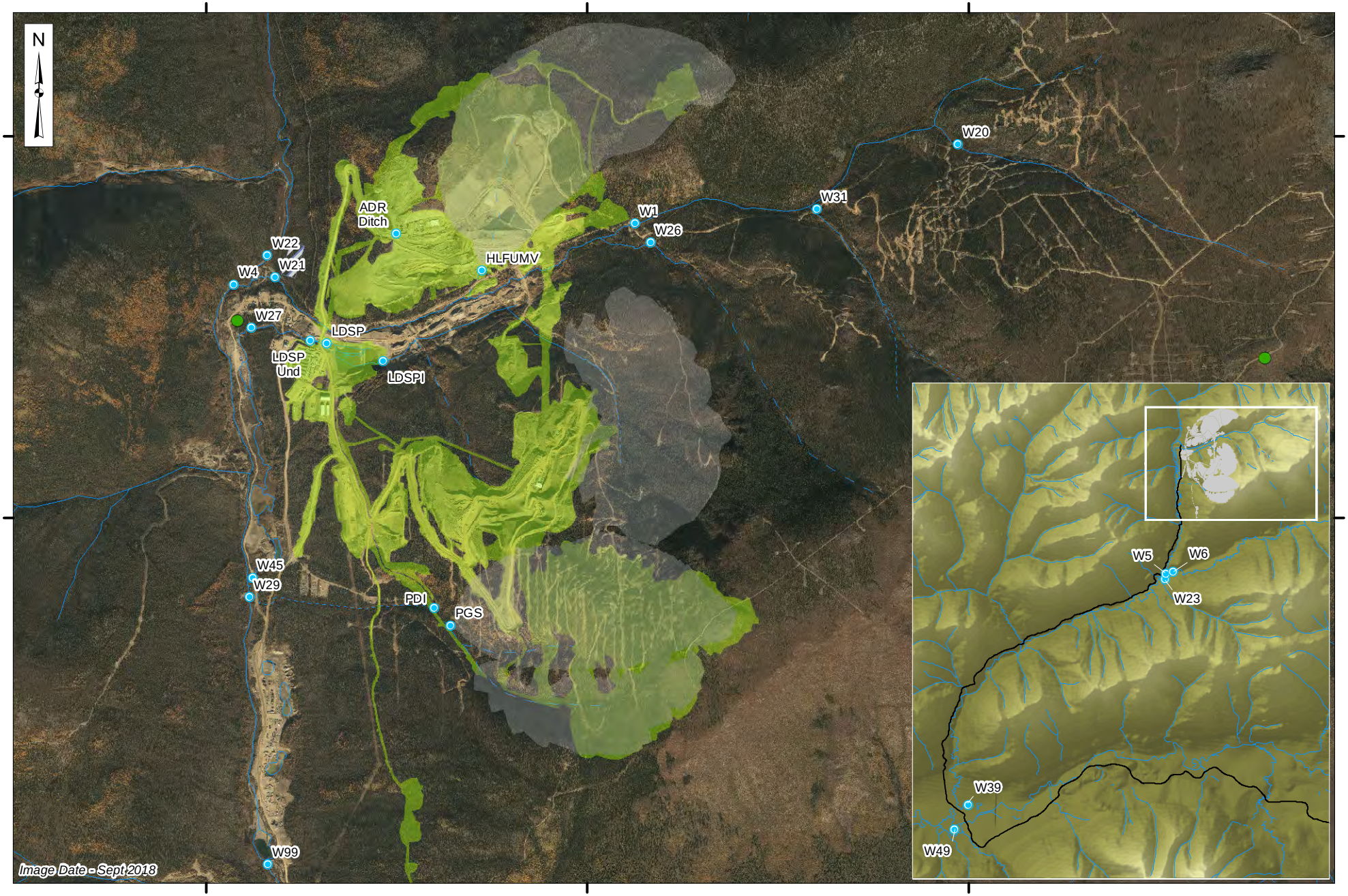
The surface water quality monitoring program for the Eagle Gold Mine (Project) includes monitoring of water quality of watercourses within the Project area at strategic mine site locations and at water management facilities that have the potential to discharge to the environment (Figure 3.2-1). The water quality monitoring plan has been designed to meet the following objectives:

- Collect water quality data in the receiving environment at stations upstream and downstream of Project influences.

- Collect water quality data to verify compliance with the Effluent Quality Standards (EQSs) and monitor receiving environment Water Quality Objectives (WQOs) specified in QZ14-041-1 for Haggart Creek at W4, W29, W99 and W23.
- Provide a continuous water quality database to support adaptive management strategies to meet water quality objectives in Haggart Creek in order to protect aquatic life.

Surface water quality monitoring programs are outlined in the Environmental Monitoring, Surveillance and Adaptive Management Plan (EMSAMP). Surface water quality monitoring in 2020 consisted of monitoring those sites as identified for the operations phase monitoring in the EMSAMP (Table 3.2-1) which were active and includes all receiving environment locations specified in QZ14-041-1 (Schedule 1A) for the Project.

Following this introduction, Section 3.2.2 outlines the Quality Assurance and Quality Control (QA/QC) program and provides a summary of results for 2020. Section 3.2.3 presents the surface water quality results for monitoring conducted in 2020 and, where relevant, compares these results to monitoring data from 2019. Section 3.2.3.1 presents water quality results for mine site compliance monitoring stations. Receiving water quality data at key locations in Haggart Creek and Dublin Gulch are presented in Section 3.2.3.2.



Legend:

- Surface Water Monitoring Station
- Climate Station
- EOM Layout
- Current Construction and Mining Impacted Areas
- Reserved Area
- Watercourse (Perennial)
- Watercourse (Ephemeral)
- Watercourse (Intermittent)

VICTORIA GOLD CORP

0 400 800
Meters

Projection: NAD 83 UTM Zone 8N	Drawn By: HC	**EAGLE GOLD MINE YUKON TERRITORY**
Date: 2021/01/30	Figure: 3.2-1	**Surface Water Monitoring Stations**

Table 3.2-1: Active Surface Water Quality Monitoring Locations and Frequency - 2020

Station Category	Monitoring Station	Location Description	Coordinates (Zone 8)		Sampling Frequency		
					Field Measurements	Laboratory Analysis	
			North	East	pH, Temp. DO Conductivity	Analytical Suite	48-Hour and 96-Hour LT50
Surface Water	W1	Dublin Gulch above Stewart	7101545	460249	M	M	-
	W21	Dublin Gulch below Event Ponds	7101261	458359	M	M	-
	W4	Haggart Creek below Dublin	7101223	458144	D, M	D[1], M[1]	-
	W22	Haggart Creek above Project Influence	7101378	458319	M	M[2]	-
	W5	Haggart Creek above Lynx Creek	7095888	457814	M	M[2]	-
	W6	Lynx Creek above Haggart Creek	7095964	458099	M	M[2]	-
	W20	Bawn Boy Gulch	7101961	461945	M	M	-
	W23	Haggart Creek below Lynx Creek	7095682	457790	M	M[2]	-
	W27	Eagle Creek near Camp below LDSP	7100997	458235	M	M	-
	W26	Stewart Gulch	7101443	460331	M	M	-
	W29	Haggart Creek below Eagle Creek & Platinum Gulch	7099583	458225	D, M	D[1], M[2]	-
	W39[5]	Haggart Creek above South McQuesten River	7086504	449780	Q	Q[2]	-
	W45	Eagle Creek above Haggart Creek	7099684	458243	M	M	-
	W49	South McQuesten River below Haggart Creek	7085495	449221	Q	Q[2]	-
	W99	Haggart Creek above 15 Pup	7098180	458322	M	M[2]	-
Internal Water Transfer	PDI	Platinum Gulch Ditch into Lower Dublin South Pond	7099523	459184	M	M	-
	PGS	Platinum Gulch WRSA Seepage	7099436	459281	M	M	-
	LDSPI	Lower Dublin South Pond Inflow	7100824	458926	D, M	D[2], M	M
Compliance	LDSP	Lower Dublin South Pond Outflow	7100857	458672	D, W	D[2], W[2,3]	Md
	LDSP-UND	LDSP Underdrain Outflow	7100937	458570	M	M[3]	-
	HLFUMV	Heap Leach Facility Underdrain Monitoring Vault	7101298	459445	C, D, W	D[4], M[2,3]	M

NOTES:
1 – Laboratory analysis includes WAD, Total CN, Thiocyanate and Cyanate.
2 – Laboratory analysis includes WAD and Total CN.
3 – Calculation of un-ionized ammonia
4 - Laboratory analysis only includes WAD and Total CN - no other parameters required.
5 – An alternate monitoring location for W39 that provides more reliable year-round access has been established. Location listed in Table 3.2-1 is from QZ14-041-1 and remains a monitoring location while the monitoring data from the alternate location is assessed to ensure that it is an appropriate alternative.
C – Continuous monitoring for specific conductance; D – Daily when discharging; W – Weekly when discharging; M – Monthly; Md – Monthly when discharging; Q – Quarterly

3.2.2 Quality Assurance and Quality Control Program

VGC has a well-established quality assurance/quality control (QA/QC) program in place to ensure the surface water quality program for the Eagle Gold Project is reliable, representative of the water quality conditions throughout the project area and of the highest quality. This program is intended to validate the monitoring data,

and to identify any potential methodological and/or analytical errors in the data set that might require modifications to the sample collection program and/or elemental analyses. The following sections provide a summary of the QA/QC program with respect to field sample quality, analytical data processing and internal laboratory procedures for the 2020 collection year.

Field ("SampleID"02), travel blanks ("SampleID" 03) and laboratory duplicates ("SampleID"01) were also included in the elemental analysis. Laboratory results were reviewed upon arrival to evaluate compliance with laboratory data quality objectives (DQO). Overall, reported data is considered to be of good quality and met laboratory DQO. All generated tables, summary statistics and graphs were checked for unit conversions, formulas and transcription errors with original data files.

The QA/QC results described in the following sections provides a reasonable level of confidence in the water quality data set. More importantly, the minor issues noted during the QA/QC assessment do not alter the interpretation of the reported data. Based on the results of field duplicates, field blanks, travel blanks, and dissolved vs total metal concentrations, the reported analytical data are considered reproducible, of good quality and representative of current water quality in the Project area. A description of QA/QC methods and results is provided in the sections below.

3.2.2.1 QA/QC Methodology - Field Sampling Program

Water quality samples were collected in accordance with methods described in the EMSAMP (2020). Specifically, water samples were collected following the methods outlined in the 2013 British Columbia Field Sampling Manual, Ambient Freshwater and Effluent Sampling, Part E – Water and Wastewater Sampling. The associated QA/QC protocols are designed to provide reliable data by preventing sampling error and cross contamination of the collected samples. Samples were collected from downstream to upstream to avoid substrate disturbance and sample contamination. The QA/QC samples comprised 9% of the total collected samples (28 QA/QC samples/321 of total collected samples) just slightly below the required 10% by applicable protocols (e.g., (BC MOE [2016]). Haggart Creek and Dublin Gulch monitoring locations within the immediate vicinity of the Project were sampled on the same date, when possible, to support data analysis and adaptive management considerations. Pre-cleaned and pre-labelled bottles, nitrile gloves and filtering equipment (if required) were used for sample collection to prevent sample integrity.

Field Blanks

Field blank samples are analyte-free reagent water samples used to assess the purity of chemical preservatives and potential contamination sources at the sampling location due to the collection method, handling, preservation, and exposure to the environment. Blank samples are generated by pouring distilled de-ionized (DI) water into clean sample bottles and then exposing the sample bottles to the same environment in which actual samples are collected. The Field blanks are analyzed for the same parameters as is routinely performed in the actual collected samples.

The widely used acceptability criterion of 2×Reported Detection Limit (RDL) was used to evaluate the integrity of the collected field blanks. Detected values in blanks higher than the proposed criterion were flagged as samples that required further investigation.

Travel Blanks

Travel blanks are provided by the analytical laboratory and are used during field surveys to identify potential contamination during storage and transport. These blanks are kept sealed and transported with water collected samples. Concentrations in these blanks are generally below detection limits, however if any measured parameter is detected above detection limit this may suggest a potential contamination during sample handling and transport.

Field Duplicates

The British Columbia Field Sampling Manual (Clark 2013) specifies that a relative percent difference (RPD) greater than 20 percent indicates a possible sample contamination. An RPD greater than 50 percent indicates a definite sample integrity problem; however, it is not unusual to find high variability for field duplicates, especially if the water is turbid with elevated total suspended solids. Field duplicate samples are generally collected at the same location and time as a site sample to assess the natural variability of the site. For the purpose of this analysis, originals and duplicates are considered paired replicates collected from the same location sequentially in time and were used to calculate the RPD.

3.2.2.2 QA/QC Methodology - Laboratory Analytical

All analytical analyses were performed by ALS laboratories (Burnaby, BC) a member of the Canadian Association for Laboratory Accreditation Inc. (CALA). The laboratory QA/QC program included analysis of certified reference materials, laboratory control samples, laboratory duplicates, method blanks and matrix spikes to determine accuracy and precision of instrumentation and methods. Laboratory results were reviewed upon arrival to evaluate compliance with DQO. The majority of reported data met the laboratory DQO. However, in some instances, method recovery was not accurately calculated due to matrix interferences; thus, detection limits were adjusted to prevent any influence on analytical results. All generated tables, summary statistics and graphs were checked for unit conversions, formulas and transcription errors with original data files.

Overall, reported data were of good quality and met the laboratory QA/QC objectives. Complete analytical datasets for the reporting period have been provided as part of monthly reporting responsibilities and are not included here.

Dissolved Metal versus Total Metals Concentrations

A dissolved metal concentration that was higher than the corresponding total metal concentration was considered an indicator of potential sample contamination and/or analytical error. Samples for total and dissolved metals are collected in separate bottles and are handled differently. Samples for dissolved metal analysis are filtered through a 45 µm filter either in the field, if conditions allow, or as soon as possible after collection in a clean room to minimize the potential for contamination; nonetheless, the filtration process has the potential to introduce contamination.

Dissolved metal concentrations were flagged as a potential QA/QC issue if the concentration was >20% higher than the corresponding total metal value in the same sample. Variability of less than 20% is excluded because it generally falls within the analytical margin of uncertainty (or error). Dissolved and total metal pairs are included in this analysis if the dissolved value is greater than five-times its RDL (Clark 2013).

3.2.2.3 **Results and Discussion**

Field Blanks

Field blanks were collected and analyzed to assess purity of chemical preservatives and potential contamination sources at the sampling location. Results of field blank analyses for all parameters are presented in Appendix F1; Table 3.2-2 provides a summary of field blank results for key parameters. A few parameters exceeded the detection limit (DL) for a blank for samples collected in 2020. Parameters above detection limit included ammonia, manganese and titanium (Table 3.2-2). This may be related to the DI water used for field blanks over the course of multiple sampling events, potentially resulting in environmental concentration of ions and other metals entering the DI water. However, concentrations of exceeding parameters rarely occurred at the levels observed in the collected water samples at the monitoring stations with observed values only slightly above DL. This suggests that results in the field blanks may be due to matrix interferences within the blank sample and the corresponding adjustments of DLs by the analytical laboratory (e.g., Titanium) (Appendix F1 [provided electronically]).

Table 3.2-2: Summary of Field Blank Results for Selected Parameters

QA/QC Category	Station ID	Sample Date	Conductivity (µS/cm)	Hardness ($CaCO_3$) (mg/L)	pH (s.u.)	TSS (mg/L)	Alkalinity, Total (CaCO3) (mg/L)	NH_3-N (mg/L)	Cl (mg/L)	NO_3-N (mg/L)	NO_2-N (mg/L)	D-P-P (mg/L)	T-P-P (mg/L)	SO_4 (mg/L)
		MDL	**2**	**0.6**	**5**	**3**	**1**	**0.005**	**0.5**	**0.005**	**0.001**	**0.002**	**0.002**	**0.3**
Field Blank	W2202	2020-02-09	2	0.6	5.58	3	1	0.005	0.5	0.005	0.001	0.002	NA	0.3
Field Blank	HLF-UMV-02	2020-06-02	2	0.6	5.29	3	1	0.005	0.5	0.005	0.001	0.002	0.002	0.3
Field Blank	W2702	2020-07-03	2	0.6	5.41	3	1	0.0074	0.5	0.005	0.001	0.002	0.002	0.3
Field Blank	W4902	2020-08-03	2	0.6	5.35	3	1	0.005	0.5	0.005	0.001	0.002	NA	0.3
Field Blank	W2102	2020-08-03	2	0.6	5.37	3	1	0.0141	0.5	0.005	0.001	NA	0.002	0.3

QA/QC Category	Station ID	Sample Date	T-Al (mg/L)	T-Sb (mg/L)	T-As (mg/L)	T-Cd (mg/L)	T-Co (mg/L)	T-Cu (mg/L)	T-Fe (mg/L)	T-Pb (mg/L)	T-Mn (mg/L)	T-Hg (mg/L)	T-Mo (mg/L)	T-Ni (mg/L)	T-Se (mg/L)	T-U (mg/L)	T-Zn (mg/L)
		MDL	**0.003**	**0.0001**	**0.0001**	**0.000005**	**0.0001**	**0.0005**	**0.01**	**0.00005**	**0.0001**	**0.000005**	**0.00005**	**0.0005**	**0.00005**	**0.00001**	**0.003**
Field Blank	W2202	2020-02-09	0.003	0.0001	0.0001	0.000005	0.0001	0.0005	0.01	0.00005	0.0001	0.000005	0.00005	0.0005	0.00005	0.00001	0.003
Field Blank	HLF-UMV-02	2020-06-02	0.003	0.0001	0.0001	0.000005	0.0001	0.0005	0.01	0.00005	0.00014	0.000005	0.00005	0.0005	0.00005	0.00001	0.003
Field Blank	W2702	2020-07-03	0.003	0.0001	0.0001	0.000005	0.0001	0.0005	0.01	0.00005	0.0001	0.000005	0.00005	0.0005	0.00005	0.00001	0.003
Field Blank	W4902	2020-08-03	0.003	0.0001	0.0001	0.000005	0.0001	0.0005	0.01	0.00005	0.0001	0.000005	0.00005	0.0005	0.00005	0.00001	0.003
Field Blank	W2102	2020-08-03	0.003	0.0001	0.0001	0.000005	0.0001	0.0005	0.01	0.00005	0.0001	0.000005	0.00005	0.0005	0.00005	0.00001	0.003

QA/QC Category	Station ID	Sample Date	D-Al (mg/L)	D-Sb (mg/L)	D-As (mg/L)	D-Cd (mg/L)	D-Co (mg/L)	D-Cu (mg/L)	D-Fe (mg/L)	D-Pb (mg/L)	D-Mn (mg/L)	D-Hg (mg/L)	D-Mo (mg/L)	D-Ni (mg/L)	D-Se (mg/L)	D-U (mg/L)	D-Zn (mg/L)
		MDL	**0.001**	**0.0001**	**0.0001**	**0.000005**	**0.0001**	**0.0002**	**0.01**	**0.000074**	**0.0001**	**0.000005**	**0.00005**	**0.0005**	**0.00005**	**0.00001**	**0.001**
Field Blank	W2202	2020-02-09	0.001	0.0001	0.0001	0.000005	0.0001	0.0002	0.01	0.000074	0.0001	0.000005	0.00005	0.0005	0.00005	0.00001	0.001
Field Blank	HLF-UMV-02	2020-06-02	0.001	0.0001	0.0001	0.000005	0.0001	0.0002	0.01	0.00005	0.0001	0.000005	0.00005	0.0005	0.00005	0.00001	0.001
Field Blank	W2702	2020-07-03	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Field Blank	W4902	2020-08-03	0.001	0.0001	0.0001	0.000005	0.0001	0.0002	0.01	0.00005	0.0001	0.000005	0.00005	0.0005	0.00005	0.00001	0.001
Field Blank	W2102	2020-08-03	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

Notes: Highlighted cells represent detected values above analytical limits; MDL - Method detection limit; NA - Not available.

Travel Blanks

Travel blank results are summarized in Table 3.2-3 and Appendix F1. As illustrated, the majority of measured parameters were below DL. Only dissolved phosphorus, total organic carbon (TOC) and total tin were measured above the analytical DL in travel blanks. Collectively, these results indicate that good protocols of sample handling and transporting were applied in the field, given essentially all travel blank values were reported as non-detects (< DL).

Table 3.2-3: Summary of Travel Blank Results for Selected Parameters

QA/QC Category	Station ID	Sample Date	Conductivity (µS/cm)	Hardness ($CaCO_3$) (mg/L)	pH (s.u.)	TSS (mg/L)	Alkalinity, Total (CaCO3) (mg/L)	NH_3-N (mg/L)	Cl (mg/L)	NO_3-N (mg/L)	NO_2-N (mg/L)	D-P-P (mg/L)	T-P-P (mg/L)	SO_4 (mg/L)
		MDL	2	0.6	5	3	1	0.005	0.5	0.005	0.001	0.002	0.002	0.3
Travel Blank	NA	2020-02-07	2	0.6	5.62	3	1	0.005	0.5	0.005	0.001			0.3
Travel Blank	NA	2020-03-14	2	0.6	5.49	3	1	0.005	0.5	0.005	0.001	0.0028		0.3
Travel Blank	NA	2020-05-05	2	0.6	5.5	3	1		0.5	0.005	0.001			0.3
Travel Blank	LDSP-03	2020-07-29		0.6				0.005					0.002	

Station ID	Day	Sample Date	T-Al (mg/L)	T-Sb (mg/L)	T-As (mg/L)	T-Cd (mg/L)	T-Co (mg/L)	T-Cu (mg/L)	T-Fe (mg/L)	T-Pb (mg/L)	T-Mn (mg/L)	T-Hg (mg/L)	T-Mo (mg/L)	T-Ni (mg/L)	T-Se (mg/L)	T-U (mg/L)	T-Zn (mg/L)
		MDL	0.003	0.0001	0.0001	0.000005	0.0001	0.0005	0.01	0.00005	0.0001	0.000005	0.00005	0.0005	0.00005	0.00001	0.003
Travel Blank	NA	2020-02-07	0.003	0.0001	0.0001	0.000005	0.0001	0.0005	0.01	0.00005	0.0001	0.000005	0.00005	0.0005	0.00005	0.00001	0.003
Travel Blank	NA	2020-03-14	0.003	0.0001	0.0001	0.000005	0.0001	0.0005	0.01	0.00005	0.0001	0.000005	0.00005	0.0005	0.00005	0.00001	0.003
Travel Blank	NA	2020-05-05	0.003	0.0001	0.0001	0.000005	0.0001	0.0005	0.01	0.00005	0.0001	0.000005	0.00005	0.0005	0.00005	0.00001	0.003
Travel Blank	LDSP-03	2020-07-29	0.003	0.0001	0.0001	0.000005	0.0001	0.0005	0.01	0.00005	0.0001	0.000005	0.00005	0.0005	0.00005	0.00001	0.003

Station ID	Day	Sample Date	D-Al (mg/L)	D-Sb (mg/L)	D-As (mg/L)	D-Cd (mg/L)	D-Co (mg/L)	D-Cu (mg/L)	D-Fe (mg/L)	D-Pb (mg/L)	D-Mn (mg/L)	D-Hg (mg/L)	D-Mo (mg/L)	D-Ni (mg/L)	D-Se (mg/L)	D-U (mg/L)	D-Zn (mg/L)
		MDL	0.001	0.0001	0.0001	0.000005	0.0001	0.0002	0.01	0.000074	0.0001	0.000005	0.00005	0.0005	0.00005	0.00001	0.001
Travel Blank	NA	2020-02-07	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Travel Blank	NA	2020-03-14	0.001	0.0001	0.0001	0.000005	0.0001	0.0002	0.01	0.00005	0.0001	0.000005	0.00005	0.0005	0.00005	0.00001	0.001
Travel Blank	NA	2020-05-05	0.001	0.0001	0.0001	0.000005	0.0001	0.0002	0.01	0.00005	0.0001	0.000005	0.00005	0.0005	0.00005	0.00001	0.001
Travel Blank	LDSP-03	2020-07-29	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

Notes: Highlighted cells represent detected values above analytical limits; MDL - Method detection limit; NA - Not available.

Field Duplicates

A total of 21 field duplicates were collected as part of the surface water quality sampling program during 2020. Appendix F1 (provided electronically) shows the number of duplicates that had parameters with RPDs greater than the acceptability criteria of 20% and 50% and a summary of the results for key parameters are provided in Table 3.2-4 to Table 3.2-6 for physical/nutrient parameters, total metals and dissolved metals, respectively. Water quality results were generally similar between field duplicates. Most duplicates had at least one parameter with an RPD between 20 and 50%, but typically less than half of duplicates had one or more parameters with an RPD greater than 50%. An RPD greater than 50 percent indicates a sample integrity problem; however, it is not unusual to find high variability for the field duplicates, especially under certain conditions such as for example, high TSS, particularly occurring during freshet or after precipitation events.

Dissolved Metal versus Total Metal Concentrations

Dissolved vs total metal concentrations are presented in Appendix F1 (provided electronically). The number of analyte pairs with dissolved metal values greater than 120 and 150% of the corresponding total are uncommon (generally < 4 occurrences of the total collected samples per station). Parameters such as cadmium, selenium, titanium and zinc showed > 150% exceedances for the majority of the stations. For stations W22, W23, and W26, tin showed exceedances to the 150% threshold. Other parameters with percentages above 150% sporadically occurred for the remaining stations (e.g., aluminum, and lead in station W26; arsenic and potassium in station W22). It should be noted however, that the number of recorded incidents in dissolved metal concentrations above 120% or 150% of the total metal value, with the exception of cadmium, selenium, titanium and zinc, occurred only in a low number of the analyzed samples. Accordingly, these results provide a high degree of confidence in the water quality sampling and analytical program for 2020 at Eagle Mine.

Table 3.2-4: Summary of Field Duplicate Results for Selected Physical and Nutrient Parameters

Sample Type	Station ID	Sample Date	Conductivity (µS/cm)	Hardness (CaCO3) (mg/L)	pH (s.u.)	TSS (mg/L)	Turbidity (NTU)	Alkalinity, Total (CaCO3) (mg/L)	NH_3-N (mg/L)	Cl (mg/L)	NO_3-N (mg/L)	NO_2-N (mg/L)	D-P-P (mg/L)	SO_4 (mg/L)	TOC (mg/L)
-		***MDL***	***2***	***0.6***	***5***	***3***	***0.1***	***1***	***0.005***	***0.5***	***0.005***	***0.001***	***0.002***	***0.3***	***0.5***
FD	W22	2020-01-07	306	104	7.99	8.7	1.85	80	0.0055	0.5	0.113	0.001	0.002	58	1.47
M	W22	2020-01-07	384	212	8.12	3	0.2	113	0.0071	0.5	0.111	0.001	0.002	57.4	1.22
		RPD	23%	68%	2%	97%	161%	34%	25%	0%	2%	0%	0%	1%	19%
FD	W45	2020-02-06	530	318	8.33	3	0.58	202	0.0076	0.73	0.0488	0.001	0.002	93.3	1.2
M	W45	2020-02-06	528	309	8.35	3	0.63	205	0.0078	0.73	0.052	0.001	0.002	93.9	1.14
		RPD	0%	3%	0%	0%	8%	1%	3%	0%	6%	0%	0%	1%	5%
FD	W45	2020-02-06	530	318	8.33	3	0.58	202	0.0076	0.73	0.0488	0.001	0.002	93.3	1.63
M	W45	2020-02-06	528	309	8.35	3	0.63	205	0.0078	0.73	0.052	0.001	0.002	93.9	1.59
		RPD	0%	3%	0%	0%	8%	1%	3%	0%	6%	0%	0%	1%	2%
FD	W1	2020-03-14	152	66.6	7.63	3	0.74	50.2	0.014	0.56	0.151	0.001	0.0074	20.2	1.57
M	W1	2020-03-14	151	67.2	7.64	4.7	1.02	50.3	0.0131	0.53	0.155	0.001	0.0067	20.3	1.38
		RPD	1%	1%	0%	44%	32%	0%	7%	6%	3%	0%	10%	0%	13%
FD	W29	2020-04-12	413	232	7.84	3	2.77	131	0.0108	1.85	0.176	0.0011	0.002	97.2	1.37
M	W29	2020-04-12	410	231	7.87	3	3.7	129	0.0108	1.88	0.176	0.001	0.002	96.7	1.61
		RPD	1%	0%	0%	0%	29%	2%	0%	2%	0%	10%	0%	1%	16%
FD	W22	2020-04-26	369	184	8.21	3	0.95	106	0.005	0.58	0.124	0.001	0.0027	80.4	6.73
M	W22	2020-04-26	364	183	8.22	3	0.9	106	0.005	0.58	0.125	0.001	0.0032	80.6	7.02
		RPD	1%	1%	0%	0%	5%	0%	0%	0%	1%	0%	17%	0%	4%
FD	W1	2020-05-08	53.3	28.5	7.17	30.7	10.5	16.6	0.005	0.5	0.0299	0.001	0.0166	5.35	23.1
M	W1	2020-05-08	50.8	31.3	7.11	107	93.6	16.8	0.0088	0.5	0.0406	0.001	0.0205	5.2	23.5
		RPD	5%	9%	1%	111%	160%	1%	55%	0%	30%	0%	21%	3%	2%
FD	LDSP-UND	2020-06-01	346	180	7.44	3	0.97	122	0.005	2.3	0.277	0.001	0.002	57.2	2.15
M	LDSP-UND	2020-06-01	350	176	7.45	3	1.02	123	0.005	2.29	0.277	0.001	0.002	56.9	2.11
		RPD	1%	2%	0%	0%	5%	1%	0%	0%	0%	0%	0%	1%	2%
FD	W4	2020-07-04	231	111	7.91	3	0.68	67.9	0.005	0.5	0.0833	0.001	0.002	47.6	2.97
M	W4	2020-07-04	232	110	7.89	3	0.68	68.4	0.0304	0.5	0.0821	0.001	0.002	47.4	2.92
		RPD	0%	1%	0%	0%	0%	1%	144%	0%	1%	0%	0%	0%	2%
FD	W5	2020-08-06	285	139	8.08	3.7	0.8	83.1	0.005	0.5	0.0627	0.001	0.002	59.1	3.38
M	W5	2020-08-06	285	138	8.1	4.9	0.94	83.2	0.005	0.5	0.0618	0.001	0.0022	59.1	3.16
		RPD	0%	1%	0%	28%	16%	0%	0%	0%	1%	0%	10%	0%	7%
FD	LDSP	2020-08-10	309	142	8.06	3	3.32	82.7	0.0055	3.89	0.0815	0.0034	0.003	65.2	5.99
M	LDSP	2020-08-10	312	144	8.03	3	3.51	81.2	0.0258	3.86	0.081	0.0028	0.002	65.2	5.28
		RPD	1%	1%	0%	0%	6%	2%	130%	1%	1%	19%	40%	0%	13%
FD	W4	2020-08-15	260	133	8.06	3.3	2.22	75.3	0.0056	0.5	0.0676	0.001	0.0022	52.9	3.82
M	W4	2020-08-15	260	127	8.08	3	1.79	75.3	0.005	0.5	0.0673	0.001	0.002	52.9	4.08
		RPD	0%	5%	0%	10%	21%	0%	11%	0%	0%	0%	10%	0%	7%
FD	LDSP	2020-08-17	307	143	8.11	3	7.22	83.6	0.0187	3.97	0.126	0.0038	0.0028	62.5	5.79
M	LDSP	2020-08-17	306	146	8.12	3	7.96	83.7	0.0186	3.99	0.125	0.0037	0.0034	62.4	5.59
		RPD	0%	2%	0%	0%	10%	0%	1%	1%	1%	3%	19%	0%	4%
FD	LDSP	2020-08-18	304	149	8.09	8.5	10.3	81.1	0.0234	3.98	0.129	0.003	0.0046	62.5	5.78
M	LDSP	2020-08-18	308	149	8.12	9.4	11.5	87.3	0.0235	3.98	0.129	0.0042	0.0036	62.2	5.88
		RPD	1%	0%	0%	10%	11%	7%	0%	0%	0%	33%	24%	0%	2%
FD	W26	2020-10-06	266	132	8.03	3	0.1	108	0.005	0.5	0.0935	0.001	0.002	36.7	3.46
M	W26	2020-10-06	262	130	8.17	3	0.1	114	0.005	0.5	0.0967	0.001	0.0054	31.9	3.58
		RPD	2%	2%	2%	0%	0%	5%	0%	0%	3%	0%	92%	14%	3%
FD	W20	2020-10-20	69.8	30.1	7.56	3	0.96	25.1	0.005	0.5	0.0642	0.001	0.0071	7.6	1.23
M	W20	2020-10-20	69.2	29.5	7.53	3.8	0.7	25.5	0.005	0.5	0.0652	0.001	0.0086	7.59	1.14
		RPD	1%	2%	0%	24%	31%	2%	0%	0%	2%	0%	19%	0%	8%
FD	W4	2020-11-03	318	155	7.93	3	0.25	91.2	0.005	0.5	0.14	0.001	0.0034	68.7	1.69
M	W4	2020-11-03	318	155	7.9	3	0.36	91.2	0.012	0.5	0.141	0.001	0.0025	68.7	1.58
		RPD	0%	0%	0%	0%	36%	0%	82%	0%	1%	0%	31%	0%	7%
FD	HLF-UMV	2020-12-02	300	152	7.82	3	0.43	61	0.0092	0.5	0.0481	0.001	0.0039	99.1	0.76
M	HLF-UMV	2020-12-02	296	156	7.81	3	0.43	61.5	0.005	0.5	0.049	0.001	0.0047	99.1	0.93
		RPD	1%	3%	0%	0%	0%	1%	59%	0%	2%	0%	19%	0%	20%
FD	W39_New	2020-12-05	378	187	8	3	0.49	119	0.005	0.5	0.192	0.001	0.002	82.8	1.78
M	W39_New	2020-12-05	382	191	8.07	3	0.7	119	0.0052	0.5	0.191	0.001	0.002	82.9	1.7
		RPD	1%	2%	1%	0%	35%	0%	4%	0%	1%	0%	0%	0%	5%
FD	W99	2020-12-07	386	194	7.92	3	0.63	113	0.0059	0.5	0.159	0.001	0.002	89.3	1.3
M	W99	2020-12-07	384	188	7.92	3	0.63	113	0.006	0.5	0.158	0.001	0.002	89.2	1.88
		RPD	1%	3%	0%	0%	0%	0%	2%	0%	1%	0%	0%	0%	36%
FD	LDSPI	2020-12-15	581	306	8.32	3	1.03	176	0.0276	2.88	0.468	0.0052	0.007	134	4.32
M	LDSPI	2020-12-15	582	311	8.27	3	0.78	172	0.0274	2.78	0.461	0.0036	0.0064	134	4.59
		RPD	0%	2%	1%	0%	28%	2%	1%	4%	2%	36%	9%	0%	6%

Notes: RPD - relative percent difference; MDL - Method detection limit; FD - Field duplicate; M -Monitoring ; NA - Not availablre; Highlighted celles represent exceedances to the 20% (pink) and 50% (yellow) thresholds

Table 3.2-5: Summary of Field Duplicate Results for Selected Total Metal Parameters

Sample Type	Station ID	Sample Date	T-Al (mg/L)	T-Sb (mg/L)	T-As (mg/L)	T-Cd (mg/L)	T-Ca (mg/L)	T-Cr (mg/L)	T-Co (mg/L)	T-Cu (mg/L)	T-Fe (mg/L)	T-Pb (mg/L)	T-Mg (mg/L)	T-Mn (mg/L)	T-Hg (mg/L)	T-Mo (mg/L)	T-Ni (mg/L)	T-Se (mg/L)	T-Na (mg/L)	T-U (mg/L)	T-V (mg/L)	T-Zn (mg/L)
-		***MDL***	***0.003***	***0.0001***	***0.0001***	***0.000005***	***0.05***	***0.0001***	***0.0001***	***0.0005***	***0.01***	***0.00005***	***0.1***	***0.0001***	***0.000005***	***0.00005***	***0.0005***	***0.00005***	***0.05***	***0.00001***	***0.0005***	***0.003***
FD	W22	2020-01-07	0.0066	0.0001	0.00034	0.0000053	25.1	0.00045	0.0001	0.0005	0.025	0.00005	10.1	0.0179	0.000005	0.000064	0.00071	0.000082	1.16	0.000729	0.0005	0.003
M	W22	2020-01-07	0.0085	0.00021	0.00077	0.000016	52.1	0.00038	0.0001	0.00074	0.033	0.00006	20	0.0346	0.000005	0.000536	0.00116	0.000166	2.63	0.00151	0.0005	0.0059
		RPD	25%	71%	77%	100%	70%	17%	0%	39%	28%	18%	66%	64%	0%	157%	48%	68%	78%	70%	0%	65%
FD	W45	2020-02-06	0.0177	0.00093	0.03	0.0000111	92	0.0001	0.00028	0.0005	0.142	0.000122	#N/A	0.385	0.000005	0.000649	0.00062	0.000878	4.47	0.00347	0.0005	0.013
M	W45	2020-02-06	0.0234	0.00093	0.0304	0.0000127	88.1	0.0001	0.00028	0.0005	0.144	0.000129	#N/A	0.385	0.000005	0.000468	0.00069	0.000808	4.64	0.00343	0.0005	0.0126
		RPD	28%	0%	1%	13%	4%	0%	0%	0%	1%	6%	-	0%	0%	32%	11%	8%	4%	1%	0%	3%
FD	W45	2020-02-06	0.0177	0.00093	0.03	0.0000111	92	0.0001	0.00028	0.0005	0.142	0.000122	21.4	0.385	0.000005	0.000649	0.00062	0.000878	4.47	0.00347	0.0005	0.013
M	W45	2020-02-06	0.0234	0.00093	0.0304	0.0000127	88.1	0.0001	0.00028	0.0005	0.144	0.000129	21.6	0.385	0.000005	0.000468	0.00069	0.000808	4.64	0.00343	0.0005	0.0126
		RPD	28%	0%	1%	13%	4%	0%	0%	0%	1%	6%	1%	0%	0%	32%	11%	8%	4%	1%	0%	3%
FD	W1	2020-03-14	0.0469	0.00108	0.0311	0.0000183	18.5	0.00027	0.0001	0.00052	0.054	0.000134	4.96	0.00238	0.000005	0.0023	0.0005	0.000229	1.97	0.000834	0.0005	0.0041
M	W1	2020-03-14	0.122	0.0011	0.032	0.0000235	18.4	0.00044	0.00011	0.00067	0.167	0.000348	5.18	0.00658	0.000005	0.00229	0.00052	0.000256	2.03	0.000818	0.0005	0.0033
		RPD	89%	2%	3%	25%	1%	48%	10%	25%	102%	89%	4%	94%	0%	0%	4%	11%	3%	2%	0%	22%
FD	W29	2020-04-12	0.0509	0.0007	0.0046	0.0000155	53.1	0.0001	0.00012	0.0005	0.084	0.000192	24	0.0556	0.000005	0.000255	0.00125	0.000205	2.8	0.00183	0.0005	0.003
M	W29	2020-04-12	0.0508	0.00069	0.00463	0.0000125	53.1	0.0001	0.00013	0.0005	0.089	0.000217	23.9	0.056	0.000005	0.000257	0.00126	0.000255	2.73	0.00186	0.0005	0.003
		RPD	0%	1%	1%	21%	0%	0%	8%	0%	6%	12%	0%	1%	0%	1%	1%	22%	3%	2%	0%	0%
FD	W22	2020-04-26	0.0312	0.00021	0.00093	0.0000171	42	0.0001	0.00021	0.00078	0.2	0.00005	19.2	0.0602	5.2E-06	0.000088	0.00202	0.000183	2.36	0.00126	0.0005	0.0034
M	W22	2020-04-26	0.0293	0.00021	0.00093	0.0000134	41.5	0.0001	0.00019	0.00075	0.199	0.00005	19.2	0.0597	5.3E-06	0.000078	0.00185	0.000153	2.32	0.00126	0.0005	0.003
		RPD	6%	0%	0%	24%	1%	0%	10%	4%	1%	0%	0%	1%	2%	12%	9%	18%	2%	0%	0%	13%
FD	W1	2020-05-08	0.588	0.00109	0.0348	0.0000564	8.09	0.00118	0.00058	0.00228	0.74	0.00138	2.02	0.0418	1.22E-05	0.000873	0.00292	0.00007	0.85	0.00081	0.00126	0.007
M	W1	2020-05-08	2.84	0.00165	0.0645	0.000101	8.23	0.00579	0.00215	0.00641	4.41	0.00434	2.62	0.105	1.84E-05	0.00121	0.00665	0.000208	0.89	0.000939	0.0077	0.0176
		RPD	131%	41%	60%	57%	2%	132%	115%	95%	143%	103%	26%	86%	41%	32%	78%	99%	5%	15%	144%	86%
FD	LDSP-UND	2020-06-01	0.0297	0.00308	0.0177	0.0000117	38.8	0.0001	0.0001	0.00133	0.038	0.000176	20.2	0.00139	0.000005	0.000866	0.0005	0.000357	3.06	0.00232	0.0005	0.003
M	LDSP-UND	2020-06-01	0.0289	0.0031	0.0174	0.0000122	37.8	0.0001	0.0001	0.00131	0.028	0.000163	19.9	0.00095	0.000005	0.000852	0.0005	0.000414	2.96	0.00234	0.0005	0.003
		RPD	3%	1%	2%	4%	3%	0%	0%	2%	30%	8%	1%	38%	0%	2%	0%	15%	3%	1%	0%	0%
FD	W4	2020-07-04	0.049	0.00046	0.0086	0.0000095	28.2	0.0001	0.0001	0.00056	0.102	0.000133	9.88	0.0131	0.000005	0.000425	0.00095	0.000197	1.54	0.000842	0.0005	0.003
M	W4	2020-07-04	0.0458	0.00043	0.00839	0.0000058	27.8	0.00011	0.0001	0.0006	0.094	0.000093	9.76	0.0129	0.000005	0.000406	0.00094	0.000178	1.54	0.000836	0.0005	0.003
		RPD	7%	7%	2%	48%	1%	10%	0%	7%	8%	35%	1%	2%	0%	5%	1%	10%	0%	1%	0%	0%
FD	W5	2020-08-06	0.0777	0.00071	0.00682	0.0000146	35.7	0.00013	0.00019	0.00081	0.153	0.000179	12.2	0.0432	0.000005	0.000338	0.00108	0.000145	1.78	0.00108	0.0005	0.003
M	W5	2020-08-06	0.0153	0.00066	0.00613	0.0000113	35	0.0001	0.00014	0.0007	0.046	0.00005	12.3	0.039	0.000005	0.000359	0.00091	0.000188	1.77	0.0011	0.0005	0.003
		RPD	134%	7%	11%	25%	2%	26%	30%	15%	108%	113%	1%	10%	0%	6%	17%	26%	1%	2%	0%	0%
FD	LDSP	2020-08-10	0.104	0.0052	0.0299	0.0000319	36.4	0.00017	0.00023	0.019	0.139	0.0009	12.4	0.00819	0.000005	0.00144	0.00559	0.000374	3.64	0.0027	0.0005	0.0061
M	LDSP	2020-08-10	0.108	0.00516	0.0298	0.0000305	37.8	0.00019	0.0002	0.00281	0.136	0.000849	12	0.00828	0.000005	0.00149	0.00171	0.000396	3.62	0.00265	0.0005	0.003
		RPD	4%	1%	0%	4%	4%	11%	14%	148%	2%	6%	3%	1%	0%	3%	106%	6%	1%	2%	0%	68%
FD	W4	2020-08-15	0.217	0.00116	0.0127	0.0000195	34.9	0.00043	0.00031	0.00125	0.448	0.00075	11.1	0.0378	0.000005	0.000525	0.00154	0.000227	1.91	0.00113	0.00052	0.003
M	W4	2020-08-15	0.195	0.00102	0.0123	0.0000204	33.1	0.00039	0.00028	0.0012	0.396	0.00074	10.9	0.0372	0.000005	0.000439	0.00155	0.000196	1.91	0.00108	0.0005	0.003
		RPD	11%	13%	3%	5%	5%	10%	10%	4%	12%	1%	2%	2%	0%	18%	1%	15%	0%	5%	4%	0%
FD	LDSP	2020-08-17	0.254	0.00498	0.0301	0.0000378	38.9	0.00033	0.00028	0.00252	0.337	0.00114	11.1	0.0146	0.000005	0.00154	0.00205	0.000348	3.4	0.00272	0.00064	0.0032
M	LDSP	2020-08-17	0.28	0.00501	0.0314	0.0000391	39.7	0.00036	0.0003	0.00268	0.35	0.00115	11.3	0.0153	0.000005	0.00155	0.00218	0.000432	3.56	0.00265	0.00076	0.003
		RPD	10%	1%	4%	3%	2%	9%	7%	6%	4%	1%	2%	5%	0%	1%	6%	22%	5%	3%	17%	6%
FD	LDSP	2020-08-18	0.383	0.00515	0.0352	0.0000414	40.4	0.00056	0.00038	0.00312	0.486	0.00164	11.8	0.0195	0.000005	0.00154	0.00236	0.000381	3.54	0.00276	0.0009	0.0036
M	LDSP	2020-08-18	0.383	0.0051	0.0356	0.0000439	40.5	0.00054	0.0004	0.00307	0.495	0.00165	11.6	0.0196	0.000005	0.00153	0.0024	0.000355	3.63	0.00276	0.00085	0.0036
		RPD	0%	1%	1%	6%	0%	4%	5%	2%	2%	1%	2%	1%	0%	1%	2%	7%	3%	0%	6%	0%
FD	W26	2020-10-06	0.0263	0.00117	0.0233	0.0000094	31	0.0001	0.0001	0.0005	0.01	0.00005	13.3	0.00018	0.000005	0.00366	0.0005	0.000458	1.62	0.00404	0.0005	0.0071
M	W26	2020-10-06	0.0092	0.00115	0.0242	0.0000101	30.2	0.0001	0.0001	0.0005	0.01	0.00005	13.4	0.0002	0.000005	0.00351	0.0005	0.000486	1.65	0.00411	0.0005	0.003
		RPD	96%	2%	4%	7%	3%	0%	0%	0%	0%	0%	1%	11%	0%	4%	0%	6%	2%	2%	0%	81%
FD	W20	2020-10-20	0.218	0.0006	0.0753	0.0000094	9.58	0.00088	0.00014	0.0005	0.256	0.000276	1.51	0.00912	0.000005	0.000863	0.0005	0.000083	1.9	0.000424	0.00076	0.003
M	W20	2020-10-20	0.142	0.0006	0.0718	0.0000082	9.38	0.00031	0.0001	0.0005	0.165	0.000213	1.49	0.00702	0.000005	0.000828	0.0005	0.000107	1.87	0.000389	0.00053	0.003
		RPD	42%	0%	5%	14%	2%	96%	33%	0%	43%	26%	1%	26%	0%	4%	0%	25%	2%	9%	36%	0%
FD	W4	2020-11-03	0.0296	0.00038	0.00492	0.0000088	38.3	0.0001	0.0002	0.0005	0.122	0.000078	14.3	0.0469	0.000005	0.000251	0.00125	0.000224	1.87	0.00121	0.0005	0.003
M	W4	2020-11-03	0.0365	0.00038	0.00521	0.0000115	38.7	0.0001	0.0002	0.0005	0.135	0.000077	14.2	0.0448	0.000005	0.000292	0.00123	0.000242	1.9	0.00122	0.0005	0.003
		RPD	21%	0%	6%	27%	1%	0%	0%	0%	10%	1%	1%	5%	0%	15%	2%	8%	2%	1%	0%	0%
FD	HLF-UMV	2020-12-02	0.0121	0.00282	0.036	0.0000412	34.9	0.0001	0.0001	0.00058	0.014	0.00005	15.8	0.00418	0.000005	0.000053	0.00411	0.000166	3.18	0.000062	0.0005	0.0156
M	HLF-UMV	2020-12-02	0.0142	0.00288	0.037	0.0000336	36.1	0.0001	0.0001	0.00059	0.032	0.000063	16.1	0.00467	0.000005	0.000056	0.00424	0.000146	3.23	0.000064	0.0005	0.0156
		RPD	16%	2%	3%	20%	3%	0%	0%	2%	78%	23%	2%	11%	0%	6%	3%	13%	2%	3%	0%	0%
FD	W39_New	2020-12-05	0.0411	0.00047	0.00323	0.0000129	48.9	0.0001	0.0001	0.0006	0.104	0.00011	15.8	0.0163	0.000005	0.000424	0.00083	0.000402	2.54	0.00164	0.0005	0.003
M	W39_New	2020-12-05	0.0392	0.00047	0.00323	0.0000144	49.9	0.0001	0.0001	0.00055	0.103	0.000111	16.1	0.0162	0.000005	0.000437	0.00082	0.000413	2.4	0.00163	0.0005	0.003
		RPD	5%	0%	0%	11%	2%	0%	0%	9%	1%	1%	2%	1%	0%	3%	1%	3%	6%	1%	0%	0%
FD	W99	2020-12-07	0.0171	0.00054	0.00429	0.0000146	46.5	0.0001	0.00017	0.0005	0.074	0.00006	18.9	0.0704	0.000005	0.000231	0.00126	0.00025	2.31	0.00177	0.0005	0.003
M	W99	2020-12-07	0.0167	0.00051	0.00422	0.0000161	45	0.0001	0.00018	0.0005	0.075	0.000057	18.4	0.0687	0.000005	0.000225	0.00121	0.000239	2.33	0.00173	0.0005	0.003
		RPD	2%	6%	2%	10%	3%	0%	6%	0%	1%	5%	3%	2%	0%	3%	4%	4%	1%	2%	0%	0%
FD	LDSPI	2020-12-15	0.0235	0.00495	0.0429	0.0000338	81.6	0.00023	0.00039	0.00162	0.036	0.000119	24.8	0.0959	0.000005	0.00232	0.00149	0.000598	4.61	0.0067	0.00082	0.003
M	LDSPI	2020-12-15	0.0277	0.00506	0.0428	0.0000294	83.1	0.00023	0.0004	0.00161	0.036	0.000123	25.1	0.0948	0.000005	0.00241	0.00141	0.000635	4.62	0.00666	0.00085	0.003
		RPD	16%	2%	0%	14%	2%	0%	3%	1%	0%	3%	1%	1%	0%	4%	6%	6%	0%	1%	4%	0%

Notes: RPD - relative percent difference; MDL - Method detection limit; FD - Field duplicate; M -Monitoring ; NA - Not availablre; Highlighted celles represent exceedances to the 20% (pink) and 50% (yellow) thresholds

Table 3.2-6: Summary of Field Duplicate Results for Selected Dissolved Metal Parameters

Sample Type	Station ID	Sample Date	D-Al (mg/L)	D-Sb (mg/L)	D-As (mg/L)	D-Cd (mg/L)	D-Ca (mg/L)	D-Cr (mg/L)	D-Co (mg/L)	D-Cu (mg/L)	D-Fe (mg/L)	D-Pb (mg/L)	D-Mg (mg/L)	D-Mn (mg/L)	D-Hg (mg/L)	D-Mo (mg/L)	D-Ni (mg/L)	D-Se (mg/L)	D-Na (mg/L)	D-U (mg/L)	D-V (mg/L)	D-Zn (mg/L)
-		*MDL*	*0.001*	*0.0001*	*0.0001*	*0.000005*	*0.05*	*0.0001*	*0.0001*	*0.0002*	*0.01*	*0.000074*	*0.1*	*0.0001*	*0.000005*	*0.00005*	*0.0005*	*0.00005*	*0.05*	*0.00001*	*0.0005*	*0.001*
FD	W22	2020-01-07	0.0012	0.0001	0.00026	0.000005	21.7	0.0001	0.0001	0.00024	0.01	0.00005	8.54	0.0144	0.000005	0.000056	0.0005	0.000066	0.995	0.000597	0.0005	0.0022
M	W22	2020-01-07	0.0016	0.00017	0.00068	0.0000093	51.4	0.00017	0.0001	0.00035	0.01	0.00005	19.6	0.0348	0.000005	0.000518	0.00106	0.000166	2.58	0.00139	0.0005	0.004
		RPD	29%	52%	89%	60%	81%	52%	0%	37%	0%	0%	79%	83%	0%	161%	72%	86%	89%	80%	0%	58%
FD	W45	2020-02-06	0.001	0.00086	0.0286	0.0000091	88.2	0.0001	0.00024	0.0002	0.095	0.00005	20.2	0.367	0.000005	0.000447	0.00065	0.000838	4.33	0.00332	0.0005	0.0127
M	W45	2020-02-06	0.001	0.00086	0.0289	0.0000067	85.2	0.0001	0.00025	0.0002	0.097	0.00005	20.4	0.378	0.000005	0.000539	0.00061	0.000884	4.45	0.00346	0.0005	0.0126
		RPD	0%	0%	1%	30%	3%	0%	4%	0%	2%	0%	1%	3%	0%	19%	6%	5%	3%	4%	0%	1%
FD	W45	2020-02-06	0.001	0.00086	0.0286	0.0000091	88.2	0.0001	0.00024	0.0002	0.095	0.00005	20.2	0.367	0.000005	0.000447	0.00065	0.000838	4.33	0.00332	0.0005	0.0127
M	W45	2020-02-06	0.001	0.00086	0.0289	0.0000067	85.2	0.0001	0.00025	0.0002	0.097	0.00005	20.4	0.378	0.000005	0.000539	0.00061	0.000884	4.45	0.00346	0.0005	0.0126
		RPD	0%	0%	1%	30%	3%	0%	4%	0%	2%	0%	1%	3%	0%	19%	6%	5%	3%	4%	0%	1%
FD	W1	2020-03-14	0.0043	0.00085	0.0292	0.0000149	18.8	0.00017	0.0001	0.00036	0.01	0.00005	5.14	0.00056	0.000005	0.00208	0.0005	0.000251	1.87	0.000739	0.0005	0.0035
M	W1	2020-03-14	0.0047	0.00089	0.0295	0.0000095	20	0.0001	0.0001	0.00038	0.01	0.00005	5.37	0.00057	0.000005	0.00215	0.0005	0.000222	1.76	0.000734	0.0005	0.0024
		RPD	9%	5%	1%	44%	6%	52%	0%	5%	0%	0%	4%	2%	0%	3%	0%	12%	6%	1%	0%	37%
FD	W29	2020-04-12	0.0022	0.00063	0.0033	0.000013	52.1	0.0001	0.0001	0.00032	0.01	0.00005	23.7	0.053	0.000005	0.000287	0.00117	0.0002	2.91	0.00185	0.0005	0.002
M	W29	2020-04-12	0.0022	0.00062	0.00321	0.0000097	51.3	0.0001	0.0001	0.00032	0.01	0.00005	23.1	0.0521	0.000005	0.000276	0.00116	0.000255	2.78	0.0019	0.0005	0.0017
		RPD	0%	2%	3%	29%	2%	0%	0%	0%	0%	0%	3%	2%	0%	4%	1%	24%	5%	3%	0%	16%
FD	W22	2020-04-26	0.0294	0.00021	0.00094	0.0000122	45.5	0.0001	0.00019	0.0008	0.087	0.00005	19	0.0517	5.4E-06	0.000054	0.00183	0.000172	2.1	0.00118	0.0005	0.0048
M	W22	2020-04-26	0.0256	0.00022	0.00193	0.0000129	44.9	0.0001	0.00018	0.00072	0.091	0.00005	18.3	0.0498	0.000005	0.00005	0.00174	0.000142	2.09	0.00112	0.0005	0.0034
		RPD	14%	5%	69%	6%	1%	0%	5%	11%	4%	0%	4%	4%	8%	8%	5%	19%	0%	5%	0%	34%
FD	W1	2020-05-08	0.242	0.00068	0.0221	0.0000254	8.08	0.00032	0.00016	0.00149	0.17	0.000111	1.95	0.0107	1.21E-05	0.000852	0.00179	0.000112	0.839	0.000487	0.0005	0.004
M	W1	2020-05-08	0.304	0.00064	0.022	0.0000363	7.67	0.0004	0.0003	0.00178	0.28	0.000147	1.89	0.0264	1.04E-05	0.000876	0.00202	0.000083	0.861	0.000484	0.0005	0.0056
		RPD	23%	6%	0%	35%	5%	22%	61%	18%	49%	28%	3%	85%	15%	3%	12%	30%	3%	1%	0%	33%
FD	LDSP-UND	2020-06-01	0.0016	0.00319	0.0167	0.0000132	39.2	0.0001	0.0001	0.00135	0.01	0.00006	20.8	0.00059	0.000005	0.00091	0.0005	0.000374	3.15	0.0026	0.0005	0.0016
M	LDSP-UND	2020-06-01	0.0024	0.00313	0.0167	0.0000098	39.7	0.0001	0.0001	0.00126	0.01	0.000055	21.5	0.00069	0.000005	0.000873	0.0005	0.000441	3.14	0.00259	0.0005	0.0016
		RPD	40%	2%	0%	30%	1%	0%	0%	7%	0%	9%	3%	16%	0%	4%	0%	16%	0%	0%	0%	0%
FD	W4	2020-07-04	0.0159	0.0004	0.00782	0.000005	28	0.0001	0.0001	0.00051	0.032	0.00005	9.29	0.0108	0.000005	0.000381	0.00079	0.000183	1.5	0.000826	0.0005	0.0013
M	W4	2020-07-04	0.0157	0.0004	0.0079	0.0000086	26.9	0.0001	0.0001	0.00047	0.031	0.00005	9.42	0.011	0.000005	0.000362	0.00084	0.000217	1.52	0.000799	0.0005	0.0012
		RPD	1%	0%	1%	53%	4%	0%	0%	8%	3%	0%	1%	2%	0%	5%	6%	17%	1%	3%	0%	8%
FD	W5	2020-08-06	0.0142	0.0007	0.00636	0.0000115	39.2	0.0001	0.00014	0.00071	0.044	0.00005	13.4	0.0414	0.000005	0.000388	0.00112	0.000214	1.81	0.00122	0.0005	0.0012
M	W5	2020-08-06	0.0452	0.00065	0.00686	0.0000139	37.6	0.0001	0.00017	0.00081	0.094	0.000128	13.3	0.0433	0.000005	0.000388	0.0012	0.000242	1.85	0.0011	0.0005	0.0022
		RPD	104%	7%	8%	19%	4%	0%	19%	13%	72%	88%	1%	4%	0%	0%	7%	12%	2%	10%	0%	59%
FD	LDSP	2020-08-10	0.0211	0.00433	0.0271	0.0000242	40.2	0.0001	0.00013	0.00184	0.031	0.00008	11.9	0.0031	0.000005	0.00156	0.00158	0.000453	3.55	0.00259	0.0005	0.0015
M	LDSP	2020-08-10	0.0169	0.00451	0.0275	0.0000259	40.2	0.0001	0.00013	0.00199	0.025	0.000081	11.9	0.00286	0.000005	0.00159	0.00156	0.000386	3.52	0.00271	0.0005	0.001
		RPD	22%	4%	1%	7%	0%	0%	0%	8%	21%	1%	0%	8%	0%	2%	1%	16%	1%	5%	0%	40%
FD	W4	2020-08-15	0.0158	0.00063	0.00705	0.0000131	34.4	0.0001	0.00014	0.00064	0.056	0.00005	11.3	0.0304	0.000005	0.00039	0.00109	0.000188	1.62	0.000973	0.0005	0.0015
M	W4	2020-08-15	0.0168	0.00061	0.00688	0.0000098	33.6	0.0001	0.00014	0.00064	0.056	0.00005	11.5	0.03	0.000005	0.000393	0.00114	0.000196	1.61	0.000963	0.0005	0.0016
		RPD	6%	3%	2%	29%	2%	0%	0%	0%	0%	0%	2%	1%	0%	1%	4%	4%	1%	1%	0%	6%
FD	LDSP	2020-08-17	0.0083	0.00437	0.0223	0.0000221	39.1	0.0001	0.00014	0.00184	0.03	0.000089	11.5	0.00819	0.000005	0.00152	0.00167	0.000366	3.37	0.00241	0.0005	0.0016
M	LDSP	2020-08-17	0.0132	0.00437	0.023	0.0000244	38.3	0.0001	0.00016	0.00198	0.037	0.000116	11.7	0.00875	0.000005	0.00146	0.0017	0.000343	3.48	0.00251	0.0005	0.001
		RPD	46%	0%	3%	10%	2%	0%	13%	7%	21%	26%	2%	7%	0%	4%	2%	6%	3%	4%	0%	46%
FD	LDSP	2020-08-18	0.0109	0.0045	0.0255	0.0000293	41.9	0.0001	0.00018	0.00233	0.02	0.000084	12.8	0.0104	0.000005	0.00143	0.00176	0.000436	3.96	0.00252	0.0005	0.0012
M	LDSP	2020-08-18	0.0083	0.00434	0.0232	0.000027	37.2	0.0001	0.00016	0.00195	0.012	0.00006	11.4	0.00854	0.000005	0.00146	0.00155	0.000467	3.41	0.00242	0.0005	0.001
		RPD	27%	4%	9%	8%	12%	0%	12%	18%	50%	33%	12%	20%	0%	2%	13%	7%	15%	4%	0%	18%
FD	W26	2020-10-06	0.0065	0.00109	0.0257	0.0000074	31.6	0.0001	0.0001	0.0005	0.01	0.00005	14.6	0.00012	0.000005	0.00348	0.0005	0.000424	1.74	0.00391	0.0005	0.0019
M	W26	2020-10-06	0.0206	0.00108	0.0271	0.0000071	32.6	0.0001	0.0001	0.00048	0.01	0.00005	14.8	0.00011	0.000005	0.00348	0.0005	0.000384	1.88	0.00398	0.0005	0.0062
		RPD	104%	1%	5%	4%	3%	0%	0%	4%	0%	0%	1%	9%	0%	0%	0%	10%	8%	2%	0%	106%
FD	W20	2020-10-20	0.0087	0.00054	0.0672	0.000005	9.74	0.0001	0.0001	0.0002	0.01	0.000072	1.45	0.00075	0.000005	0.000863	0.0005	0.000073	1.9	0.000284	0.0005	0.001
M	W20	2020-10-20	0.015	0.00054	0.066	0.000005	9.55	0.0001	0.0001	0.0002	0.011	0.00005	1.44	0.00092	0.000005	0.000807	0.0005	0.000072	1.84	0.000277	0.0005	0.001
		RPD	53%	0%	2%	0%	2%	0%	0%	0%	10%	36%	1%	20%	0%	7%	0%	1%	3%	2%	0%	0%
FD	W4	2020-11-03	0.0046	0.00036	0.00514	0.0000152	42.9	0.0001	0.00016	0.00031	0.021	0.00005	15.4	0.0434	0.000005	0.000258	0.00117	0.000254	1.84	0.00118	0.0005	0.0021
M	W4	2020-11-03	0.004	0.00036	0.00499	0.0000094	44.3	0.0001	0.00015	0.00028	0.02	0.00005	14.6	0.0416	0.000005	0.000264	0.00108	0.000234	1.79	0.00118	0.0005	0.0021
		RPD	14%	0%	3%	47%	3%	0%	6%	10%	5%	0%	5%	4%	0%	2%	8%	8%	3%	0%	0%	0%
FD	HLF-UMV	2020-12-02	0.004	0.00286	0.0365	0.0000421	35.2	0.0001	0.0001	0.00056	0.01	0.00005	15.9	0.0041	0.000005	0.00005	0.00417	0.000125	3.29	0.000073	0.0005	0.0157
M	HLF-UMV	2020-12-02	0.0037	0.00286	0.0353	0.0000474	35.4	0.0001	0.0001	0.00054	0.01	0.00005	16.1	0.00601	0.000005	0.000061	0.00411	0.000122	3.3	0.000064	0.0005	0.0155
		RPD	8%	0%	3%	12%	1%	0%	0%	4%	0%	0%	1%	38%	0%	20%	1%	2%	0%	13%	0%	1%
FD	W39_New	2020-12-05	0.0028	0.00045	0.00297	0.0000116	52.7	0.0001	0.0001	0.00045	0.01	0.00005	16.6	0.0124	0.000005	0.000411	0.00072	0.000467	2.42	0.00167	0.0005	0.0012
M	W39_New	2020-12-05	0.0028	0.00046	0.00282	0.000013	52.3	0.0001	0.0001	0.00043	0.01	0.00005	16.4	0.0124	0.000005	0.000423	0.00072	0.000444	2.26	0.00163	0.0005	0.0011
		RPD	0%	2%	5%	11%	1%	0%	0%	5%	0%	0%	1%	0%	0%	3%	0%	5%	7%	2%	0%	9%
FD	W99	2020-12-07	0.0033	0.00051	0.00388	0.0000143	46	0.0001	0.00015	0.00035	0.019	0.00005	19.6	0.0672	0.000005	0.000236	0.00123	0.000329	2.25	0.00168	0.0005	0.0024
M	W99	2020-12-07	0.0032	0.00053	0.00394	0.0000134	48.6	0.0001	0.00017	0.00033	0.019	0.00005	19.3	0.0676	0.000005	0.00021	0.0012	0.000256	2.26	0.00179	0.0005	0.002
		RPD	3%	4%	2%	6%	5%	0%	13%	6%	0%	0%	2%	1%	0%	12%	2%	25%	0%	6%	0%	18%
FD	LDSPI	2020-12-15	0.0054	0.00432	0.043	0.0000329	83.9	0.00019	0.00033	0.00156	0.01	0.00005	25.6	0.0922	0.000005	0.00214	0.00137	0.000627	4.69	0.00659	0.0005	0.0016
M	LDSPI	2020-12-15	0.0078	0.00456	0.0458	0.0000303	88.4	0.0002	0.00036	0.00166	0.01	0.00005	27	0.0982	0.000005	0.00229	0.00146	0.000721	5.14	0.00712	0.0005	0.0016
		RPD	36%	5%	6%	8%	5%	5%	9%	6%	0%	0%	5%	6%	0%	7%	6%	14%	9%	8%	0%	0%

Notes: RPD - relative percent difference; MDL - Method detection limit; FD - Field duplicate; M -Monitoring ; NA - Not availablre; Highlighted celles represent exceedances to the 20% (pink) and 50% (yellow) thresholds

3.2.3 Water Quality Results

The following section focuses on surface water quality monitoring results for mine site compliance monitoring as well as receiving environment locations in Haggart Creek at W4, W29, W99 and W23; background Haggart Creek data at W22 where relevant; and Dublin Gulch at stations W1 and W21 where monitoring data adds to context of observed results in Haggart Creek.

3.2.3.1 **Mine Site Monitoring Compliance Results**

Discharge compliance points monitored in 2020, as identified in QZ14-041-1, are shown in Table 3.2-1.

Pre-Discharge Lower Dublin South Pond (LDSP) Water Quality

Sampling and monitoring of the LDSP discharge station (or LDSP outflow) happens only when a discharge is occurring to the receiving environment; however, other monitoring points within the LDSP are sampled and analyzed on a regular internal sampling schedule to inform operational water management and discharge decisions. Monitoring stations within the LDSP are illustrated in Figure 3.2-2 and include:

- LDSPs – Along shore of Lower Dublin South Pond (pre-discharge location);
- LLO – Low-level outlet in a perforated pipe (pre-discharge location);
- LDSPI – Along shore of Forebay connection to main Lower Dublin South Pond: and
- LDSP – Outflow discharge sampling location of Lower Dublin South Pond.

In addition, water management at the Project also includes intermittent pumping of Lower Dublin South Pond water to the Events Pond to increase available storage within the Lower Dublin South Pond.

Water quality within the Lower Dublin South Pond was measured periodically in 2020 at stations LDSPs, LLO and LDSPI. Table 3.2-7 summarizes the number of full analytical suite sampling events for LDSPs, LLO and LDSPI, by month, for 2020 and compares to sampling events in 2019.

In 2020, a total of 5 LDSPs, 4 LLO and 11 LDSPI full suite sampling events occurred. For 2019, a total of 20 and 16 full suite sampling events occurred at LDSPs and LLO, respectively. Sampling in 2019 for station LDSPI did not occur but rather sampling occurred at station DB4. A total of 11 full suite sampling events occurred at this station in 2019 but is not necessarily directly comparable to LDSPI.

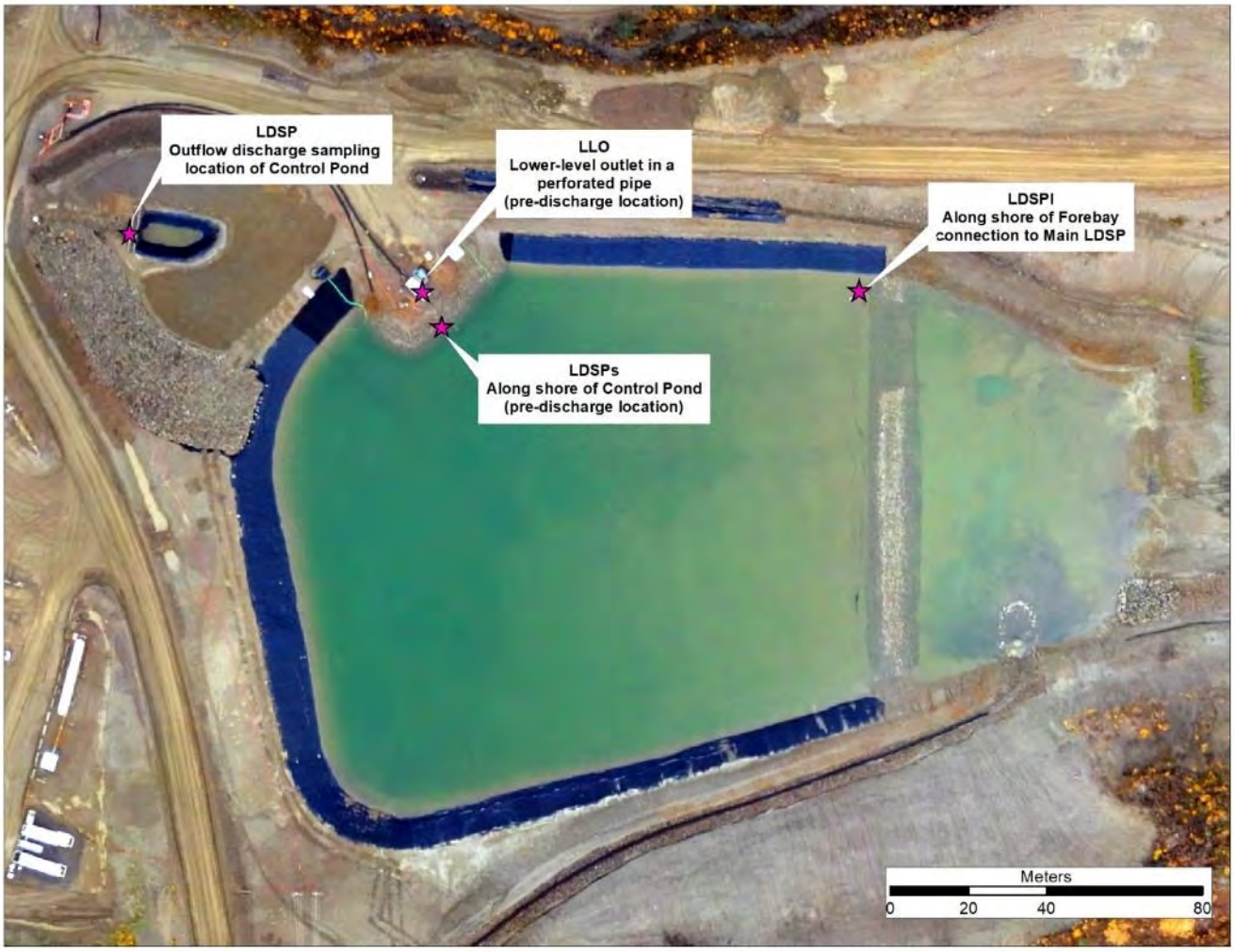


Figure 3.2-2: Lower Dulbin South Pond (LDSP) Sampling Locations

Table 3.2-7: Number of Full Suite Analytical Sampling Events for LDSPs, LLO and LDSPI by Month in 2019 and 2020 for Open Water Period (March to October)

Month	LDSPs (2019)	LLO (2019)	LDSPI_DB4 (2019)	LDSPs (2020)	LLO (2020)	LDSPI (2020)
March	0	0	0	0	1	0
April	5	2	3	2	2	4
May	5	5	5	0	0	1
June	2	2	1	0	0	1
July	3	3	1	2	0	1
August	2	2	2	0	0	1
September	2	1	1	0	0	2
October	1	1	0	1	1	1
Total	***20***	***16***	***13***	***5***	***4***	***11***

LDSPs LLO and LDSPI sampling locations characterize water chemistry in the Lower Dublin South Pond overall; however, these are pre-discharge sampling locations and direct comparison to EQS is only for the purposes of reference. In 2020, all parameters analyzed for LDSPs and LLO were present at concentrations below QZ14-041-1 EQS with the sole exceptions of TSS and total As (Figure 3.2-3; Appendix F2). For station LDSPI, only TSS, As and Fe were present at concentrations above the respective EQS (Figure 3.2-4; Appendix F2).

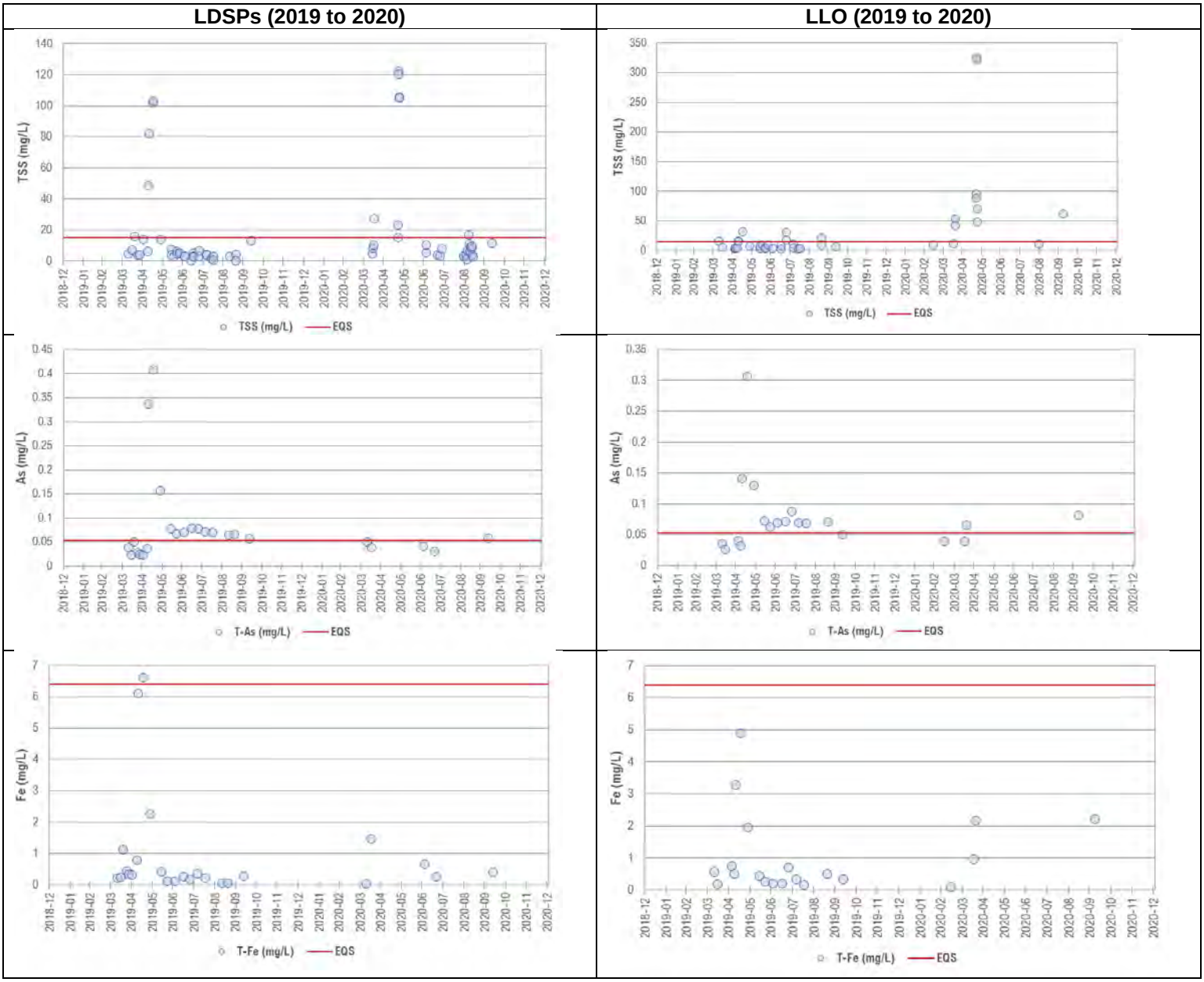


Figure 3.2-3: Concentrations of TSS, total As and total Fe at Pre-Discharge Locations LDSPs and LLO for 2019 and 2020

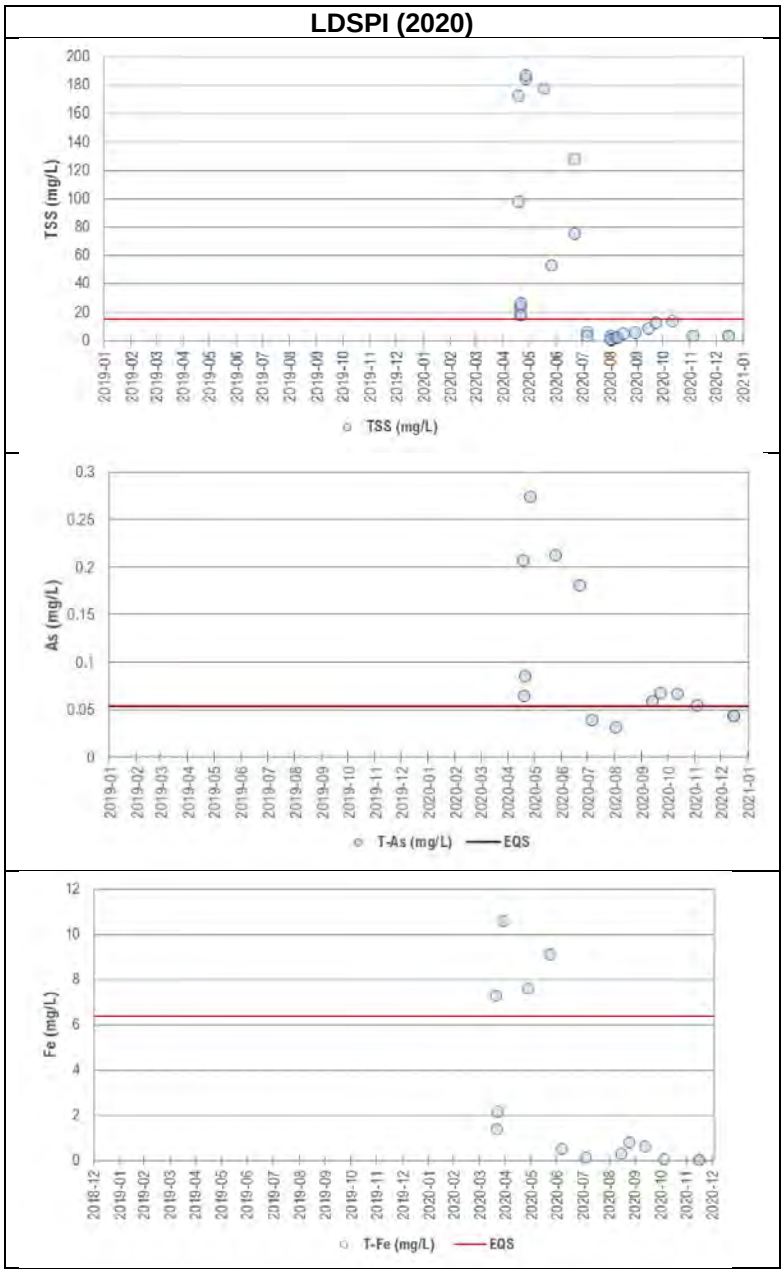


Figure 3.2-4: Concentrations of TSS, total As and total Fe at LDSPI for 2020

TSS concentrations at LDSPs were elevated above 15 mg/L primarily during the freshet period of 2020 and generally similar in magnitude as compared to observations for TSS in 2019. TSS concentrations at LDSPs for the period of July to October 2020 ranged from less than 5 mg/L to approximately 16 mg/L. Total As and total Fe concentrations measured at LDSPs were generally lower in 2020 as compared to 2019, although this may reflect the lower density of sampling during freshet (e.g., April and May) in 2020 as compared to 2019 (Figure 3.2-3; Table 3.2-7). Total As values at LDSPs for 2020 narrowly ranged between 0.031 mg/L to 0.058 mg/L; the observed 2019 total As values for LDSPs ranged from approximately 0.023 mg/L to 0.41 mg/L.

TSS values recorded at LLO in 2020 were notably higher for the freshet period (April) as compared to observations in 2019 (Figure 3.2-3).

For station LDSPI, TSS concentrations were elevated during the freshet period of late April to June and below 15 mg/L for the remainder of the open water period. Elevated total As and total Fe concentrations measured at LDSPI coincided with peak TSS levels during April. Total As concentrations were present at concentrations slightly above the EQS value of 0.058 mg/L for sampling events in September and October 2020. Total Fe values remained well below the EQS value of 6.4 mg/L once TSS values were less than 15 mg/L (Figure 3.2-4).

LDSP-UND and HLFUMV Water Quality

The LDSP-UND is a discharge compliance monitoring station and was monitored monthly during 2020 to satisfy the requirements of QZ14-04-1. The LDSP-UND continues to pass natural groundwater flow underneath the LDSP to lower Eagle Creek. Water quality monitoring of the LDSP-UND began in July 2019 and no exceedances of the effluent quality standards (EQS) were observed for the period July 2019 to December 2020.

The HLFUMV is a discharge compliance monitoring station that captures natural groundwater flow passing underneath the HLF. Currently and throughout 2020, all flow from the HLFUMV was captured and recirculated back to the Events Pond and no discharge to the receiving environment occurred. Water quality monitoring occurred monthly in 2020. Water quality of the HLFUMV throughout 2020 exhibited concentrations for all parameters well below the EQS with the exception of TSS (April and May) and total As (April) as illustrated in Figure 3.2-5 (see Appendix F2 for graphical representation of full suite data and Appendix F3 for raw data output).

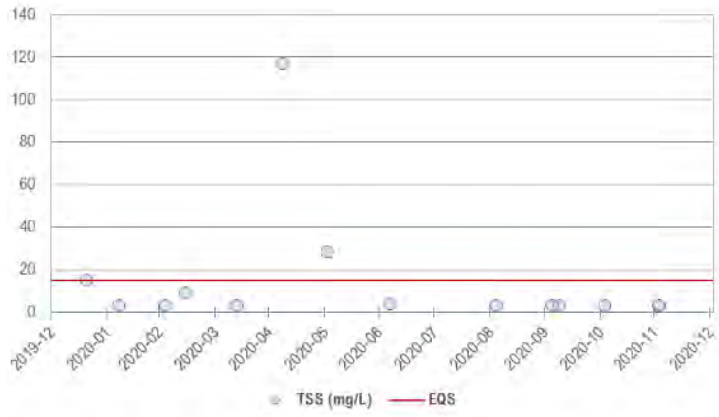
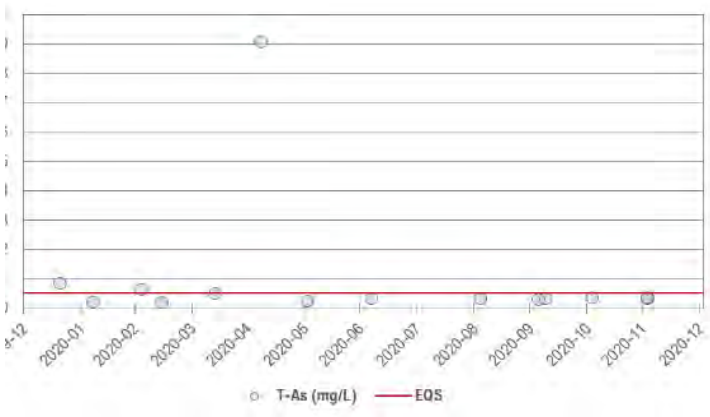
HLFUMV TSS (2020)	HLFUMV T-As (2020)
	

Figure 3.2-5: Concentrations of TSS and total As at HLFUMV for 2020

LDSP Discharge Water Quality

All discharges from the Eagle Mine to the receiving environment are required to meet EQS stipulated in QZ14-041-1. In 2020, four (4) discharge events occurred as indicated in Table 3.2-8; the April event did not discharge directly to the receiving environment but rather to the exfiltration sump FDP#5 used successfully during construction activities in 2018 (and registered with Environment and Climate Change Canada as an approved discharge location for the purposes of the *Metals and Diamond Mining Effluent Regulations* [MDMER]).

Table 3.2-8: Discharge Events in 2020 and Discharge Duration and Location

Month	Duration and Location of Discharge	
	FDP#5	Ditch C to Haggart Creek
April	April 20 to April 28	
July/August		July 29 to August 18
September		September 14 to September 20
		September 23 to September 27

April 2020 Discharge Water Quality

Discharge to FDP#5 occurred from April 20 to April 28, 2020 in order to maintain storage capacity in the LDSP. High snowfall during 2019 and 2020 prompted VGC to develop an adaptive water management strategy in advance of the 2020 freshet period at the Eagle Gold Mine. The plan included execution of two key water management strategies to ensure adequate water storage availability in the LDSP to accommodate potentially higher than normal freshet flows:

Early controlled release of water from the LDSP to Haggart Creek in accordance with the terms of QZ14-041-1 to increase surge storage capacity of the LDSP; and

Transfer an additional portion of water in the LDSP to the Events Pond to increase surge storage capacity in the LDSP and to allow for passive settling treatment in the Events Pond prior to potential discharge.

Peak freshet in the project area typically occurs in early May; however unseasonably warm temperatures occurred at the Eagle Mine in mid-April 2020 which resulted in rapid melting of the snowpack, high runoff flow rates with commensurate high total suspended solids (TSS) loadings within site ditches draining to the LDSP. This influx of high TSS water degraded water quality in the LDSP to the point where direct discharge to Haggart Creek would not be compliant with effluent quality standards (EQS) permitted in the WUL. In addition to the influx of high TSS water via the ditch inlets to the LDSP, an overflow into the South West corner of the LDSP occurred due to the breach of a portion of Ditch A resulting in the forebay being bypassed and the residence time to allow for settling of solids not being achieved. While transfer of LDSP water to the Events Pond occurred, the rate of water accumulation in the LDSP, and a portion of the inflows not receiving the designed settling period, demanded that other water management strategies, such as discharge to an exfiltration sump be undertaken. Exfiltration was successfully used in 2018 during early construction to remove TSS, and avoid a direct discharge from the LDSP to Haggart Creek. The exfiltration sump (FDP#5) is located approximately 300 meters upgradient of the LDSP in the lower Dublin Gulch valley (Figure 3.2-6) and over 1 km upgradient of Haggart Creek. FDP#5 is underlain by a thick (over 20 m) sequence of placer deposits and alluvium overlying bedrock. Exfiltration through the excavated sands and gravels to filter the water for TSS and associated metals was ascertained to have the lowest potential for adverse impacts on the receiving environment and was selected over a direct discharge to Haggart Creek.



Figure 3.2-6: Location of Exfiltration Sump (FDP#5) in Relation to Haggart Creek and Dublin Gulch

Pumping to the exfiltration sump commenced on the afternoon of April 20 and continued to the morning of April 28, 2020. Samples from FDP#5 were collected for required analyses on April 20, 21 and 27; salient results are presented in Table 3.2-9. For the samples collected during the discharge period, TSS and total As were present at concentrations in excess of their respective WUL EQS for all samples, whereas total Fe exceeded the WUL EQS only on the April 27 sample. Conversely and importantly, dissolved As and dissolved Fe concentrations were present at much lower concentrations, indicating that total As and Fe values were largely associated with the suspended solids. Hence the adaptive water management strategy of releasing LDSP water to the exfiltration sump to allow for settling and filtering of the solids along the flow path would likely have served to progressively reduce total As concentrations with increasing distance away from FDP#5. The exfiltration would not likely have reduced dissolved As concentrations to a similar extent as total metals along the discharge subsurface water flow path through the placer/colluvial sediments. However, the dissolved As concentrations in the LDSP water discharged to FDP#5 were lower than background dissolved As concentrations in Dublin Gulch (see Section 3.2.3.2 and discussions of water quality at W1 and W21) which are consistently present at concentrations ranging from 0.03 mg/L to 0.04 mg/L throughout the year and therefore would not have resulted in increased dissolved As concentrations in the receiving environments of Dublin Gulch and Haggart Creek.

Table 3.2-9: Summary of Water Quality Results for Water Discharged to Exfiltration Sump FDP#5 During April 2020 and Compared to EQS for QZ14-041-1

Parameter	FDP#5 Discharge Concentration			*QZ14-041-1 EQS*
	20-Apr	21-Apr	27-Apr	
pH	8	7.91	7.79	***6.5 - 8***
TSS	61.9	52.9	52.8	***15***
SO_4	86.2	74.7	51.1	***1850***
Cl	18.4	16.6	8.16	***250***
NO_3-N	0.586	0.555	0.318	***19.5***
NO_2-N	0.0304	0.0307	0.0127	***0.12***
NH_3-N	0.0783	0.109	0.0187	***7.5***
CN_{Total}	N/A	N/A	N/A	***1***
CN_{WAD}	N/A	N/A	N/A	***0.03***
Diss- Al	0.0076	0.0308	0.0656	***0.4***
T-Sb	0.0119	0.012	0.0124	***0.13***
T-As	0.142	0.167	0.226	***0.053***
Diss-As	*0.021*	*0.02*	*0.0255*	
T-Cd	0.000222	0.000249	0.00032	***0.00125***
T-Co	0.00315	0.00333	0.00385	***0.026***
T-Cu	0.011	0.0127	0.0176	***0.026***
T-Fe	4.36	5.08	6.95	***6.4***
Diss-Fe	*0.012*	*0.055*	*0.127*	
T-Pb	0.0174	0.0189	0.0285	***0.05***
T-Mn	0.176	0.202	0.194	***7.7***
T-Hg	0.0000192	0.0000203	0.0000298	***0.00008***
T-Mo	0.00432	0.00416	0.00271	***0.45***
T-Ni	0.00719	0.0077	0.01	***0.5***
T-Se	0.000739	0.000782	0.000525	***0.025***
T-Ag	0.000115	0.000135	0.000207	***0.01***
T-U	0.00614	0.00567	0.00332	***0.09***
T-Zn	0.0314	0.0306	0.0458	***0.23***

All units as mg/L except pH
shaded values greater than EQS

TSS exceeded MDMER Schedule 4 Authorized Limits however all other parameters were compliant with the MDMER authorized limits.

July 29 to August 18 Discharge Water Quality

A planned discharge was initiated on July 29 and continued to the morning of August 18, 2020 from the Events Pond through the LDSP weir outlet to reduce water volumes in the Events Pond to within HLF Phase 1 Desired Available Storage (DAS) volumes. Weekly samples were collected at the discharge outlet as required by the QZ14-041-1 and the MDMER on July 29, August 3, August 10 and August 17. All parameters were well below the WUL EQS and MDMER limits throughout the discharge (Table 3.2-10).

Table 3.2-10: Summary of Water Quality Results for Water Discharged to Ditch C and Haggart Creek During July 29 to August 18 and Compared to EQS for QZ14-041-1

Parameter	LDSP Concentration				*QZ14-041-1 EQS*
	29-Jul	03-Aug	10-Aug	17-Aug	
pH	8.12	8.19	7.78	7.78	***6.5 - 8***
TSS	<3.0	<3.0	<3.0	<3.0	***15***
SO_4	67.2	66.8	65.2	62.4	***1850***
Cl	4.09	4.02	3.86	3.99	***250***
NO_3-N	0.0825	0.074	0.081	0.125	***19.5***
NO_2-N	0.0038	0.003	0.0028	0.0037	***0.12***
NH_3-N	0.017	0.0081	0.0258	0.0186	***7.5***
CN_{Total}	#N/A	<0.005	<0.005	<0.005	***1***
CN_{WAD}	#N/A	<0.005	<0.005	<0.005	***0.03***
Diss- Al	0.019	0.016	0.0169	0.132	***0.4***
T-Sb	0.00488	0.0049	0.00516	0.0005	***0.13***
T-As	0.0291	0.0276	0.0298	0.0314	***0.053***
T-Cd	0.0000303	0.000026	0.0000305	0.000039	***0.00125***
T-Co	0.00023	0.00018	0.0002	0.0003	***0.026***
T-Cu	0.00344	0.0024	0.00281	0.0027	***0.026***
T-Fe	0.16	0.114	0.136	0.35	***6.4***
T-Pb	0.00253	0.00054	0.00085	0.00115	***0.05***
T-Mn	0.0199	0.0152	0.0083	0.0153	***7.7***
T-Hg	<0.000005	<0.000005	<0.000005	<0.000005	***0.00008***
T-Mo	0.00165	0.0016	0.00149	0.00155	***0.45***
T-Ni	0.00164	0.0015	0.00171	0.0022	***0.5***
T-Se	0.000338	0.00036	0.00039	0.00043	***0.025***
T-Ag	0.000013	0.000015	<0.00001	0.000028	***0.01***
T-U	0.00272	0.0029	0.0026	0.0026	***0.09***
T-Zn	0.0037	<0.003	<0.003	0.003	***0.23***

All units as mg/L except pH

September 14 to September 20 and September 23 to September 27 Discharge Water Quality

Discharges to Haggart Creek via Ditch C occurred over two periods (September 14 to September 20 and again on September 23 to September 27) to reduce water volumes in the Events Pond to within HLF Phase 1 DAS volumes. Weekly samples were collected at the discharge outlet as required by the QZ14-041-1 and the MDMER on September 14 and September 23. All parameters were well below the WUL EQS and MDMER limits throughout the discharge (Table 3.2-11).

Table 3.2-11: Summary of Water Quality Results for Water Discharged to Ditch C and Haggart Creek During September 14 to September 27 and Compared to EQS for QZ14-041

Parameter	LDSP Concentration		*QZ14-041-1 EQS*
	14-Sep	23-Sep	
pH	8.09	8.1	***6.5 - 8***
TSS	4.6	<3.0	***15***
SO_4	76	74.2	***1850***
Cl	3.63	3.49	***250***
NO_3-N	0.13	0.134	***19.5***
NO_2-N	0.0034	0.0031	***0.12***
NH_3-N	0.0251	0.0363	***7.5***
CN_{Total}	N/A	N/A	***1***
CN_{WAD}	N/A	N/A	***0.03***
Diss- Al	0.0102	0.0093	***0.4***
T-Sb	0.00503	0.00523	***0.13***
T-As	0.0332	0.0327	***0.053***
T-Cd	0.0000427	0.000038	***0.00125***
T-Co	0.00025	0.00022	***0.026***
T-Cu	0.00272	0.002	***0.026***
T-Fe	0.164	0.138	***6.4***
T-Pb	0.000676	0.000469	***0.05***
T-Mn	0.0244	0.0309	***7.7***
T-Hg	<0.000005	<0.000005	***0.00008***
T-Mo	0.00183	0.00185	***0.45***
T-Ni	0.00187	0.00164	***0.5***
T-Se	0.000484	0.000484	***0.025***
T-Ag	0.000012	0.000011	***0.01***
T-U	0.00367	0.00311	***0.09***
T-Zn	0.0031	<0.003	***0.23***

All units as mg/L except pH

3.2.3.2 **Receiving Environment Surface Water Quality Monitoring Program**

The 2020 surface water quality monitoring program included continuing the surveillance of watercourses monitored as part of the EMSAMP with particular focus on those stations within Haggart Creek with adaptive management plan (AMP) water quality tiers including W4, W29, W99 and W23 (see Figure 3.2-1 for station locations).

Based on water quality monitoring, TSS, total As, total Cu and total Fe were measured, on at least one occasion at concentrations greater than the Tier 3 water quality objective (WQO) for all stations (e.g., W4, W29, W99 and W23). Dissolved Al was observed at concentrations greater than the WQO at stations W4, W29 and W99. Total Cd and total Pb were measured at values greater than the WQO at stations W4 and W29 (Table 3.2-12).

Table 3.2-12: Number of Sampling Occasions where Measured Values were Greater than Tier 3 WQOs at EMSAMP Monitoring Locations in Haggart Creek (2020)

Parameter List		Tier 3 WQOs W4, W29, W99, W23	W4	W29	W99	W23
TSS and Dissolved Parameters	TSS	15	**13**	**6**	**4**	**2**
	SO_4	309	0	0	0	0
	Cl	150	0	0	0	0
	Nitrate-N	3	0	0	0	0
	Nitrite-N	0.02	0	0	0	0
	NH_3-N	1.13	0	0	0	0
	CN_{WAD}	0.005	0	0	0	0
	Al	0.1	**1**	**2**	**2**	0
Total Metalloids and Metals	Sb	0.02	0	0	0	0
	As	0.0085	**44**	**10**	**3**	**2**
	Cd	0.000197	**1**	**2**	0	0
	Cu	0.005	**5**	**3**	**1**	**1**
	Co	0.004	**2**	0	0	0
	Fe	1.0	**11**	**5**	**3**	**1**
	Pb	0.0077	**4**	**2**	0	0
	Hg	0.00002	0	0	0	0
	Mn	1.17	0	0	0	0
	Mo	0.073	0	0	0	0
	Ni	0.116	0	0	0	0
	Se	0.002	0	0	0	0
	Ag	0.0015	0	0	0	0
	U	0.015	0	0	0	0
	Zn	0.038	1	2	0	0

As illustrated, all other parameters were measured at concentrations below their respective WQO at all locations and at all sampling periods in Haggart Creek (Table 3.2-12; Appendix F3 and Appendix F4). A more detailed discussion of the 2020 monitoring results for W4, W29, W99 and W23, including AMP trend analysis, is provided below. Specifically, monthly water quality data collected for the Eagle Gold project is compared to each stations baseline water quality condition. For stations W4 and W23, the baseline water quality is represented by monitoring results for the period 2007 to 2018. For station W29, the baseline period spans 2009 to 2018 and for station W99, there does not exist a true baseline as water quality sampling was initiated at this station in April 2019 during early operations. In the case of W99, monthly data for 2020 is compared only to 2019. Haggart Creek exhibits strong flow-based variability and therefore data was compared among months between years as the most appropriate approach rather than assessing water quality changes observed over consecutive months.

Determination as to whether parameters measured in 2020 are exhibiting an increasing trend has been based on consideration of the natural variability in the baseline. Specifically, monthly mean 2020 observations for AMP key parameters are compared to baseline monthly mean +1 and +2 standard deviations (e.g., 68th and 95th percentile). Monthly mean 2020 values within +1 standard deviation of baseline values are considered to be unchanged;

values measured within +2 standard deviations are considered to be within the natural observed variability. Monthly mean 2020 values measured above +2 standard deviations of the baseline and above the Tier 3 WQO are considered to be an increase over the baseline condition. In some instances, and for some parameters, monthly mean 2020 values were measured above the Tier 3 WQO but below +2 standard deviations of baseline conditions. In these instances, no specific action is required due to high background conditions.

As will be illustrated below, most parameters that measured +2 standard deviations above monthly baseline variability and/or Tier 3 WQOs were a result of natural Dublin Gulch inflows to Haggart Creek. Therefore, where relevant, discussion is also provided for station W21 in lower Dublin Gulch owing to the importance of the Dublin Gulch tributary to observed water quality in Haggart Creek downstream of its confluence and Project potential impact.

W4

Station W4 is located downstream of the confluence of both Dublin Gulch (Figure 3.2-1) and downstream of where the discharge via Ditch C enters Haggart Creek. Discharge via Ditch C to Haggart Creek only occurred during the period of July 29 to August 18, September 14 to 20 and September 23 to 27 (Table 3.2-8). Discharge from the LDSP in April was pumped to the exfiltration sump FDP#5 and filtered down through placer and alluvium deposits, entering the shallow groundwater system and did not reach Haggart Creek directly. Trend analysis summary of W4 baseline water quality, for the period 2007 to 2018, compared to monthly mean 2020 water quality data for the open water period of April to October is presented in Table 3.2-13. Full graphical results for all parameters in 2020 are also presented in Appendix F4.

As illustrated, most parameters measured at W4 during 2020 were at concentrations very similar to baseline values (e.g., ≤ +2 std. dev. (95th percentile limits); only TSS, total As and total Fe were measured at concentrations greater than the baseline variability and greater than the respective Tier 3 WQO (Table 3.2-8). In April, TSS, total As and total Fe were measured at elevated concentrations at W4. These elevated levels were a result of Dublin Gulch inflows containing elevated concentrations of these parameters. During the latter part of April corresponding with the onset of initial snowpack melt, an increase in TSS and total As concentrations is observed between station W1 and W21 on Dublin Gulch (Figure 3.2-7). For most of the 2020 monitoring year, station W1 and W21 exhibit very similar concentrations of TSS and total As; however, the onset of freshet in mid to late April 2020 was characterised by increased levels of these parameters. As described previously in Section 3.2.3.1, high snowmelt conditions occurred during this period, leading to the water management decision to discharge excess contact water to ground via FDP#5. While natural TSS levels increased in upstream monitoring station W1, station W21 experienced a much greater increase in concentrations of TSS and consequently, total As and total Fe as well (Figure 3.2-7). These data reflect the difficulty in managing snowmelt generated sediment-laden runoff coming from the historically constructed Dublin Gulch road, which has been documented in previous years to contribute to high TSS in Dublin Gulch during freshet. Water management and sediment mitigation strategies, such as upgradient water diversion structures, check dams, silt fences, jute and hay bales have been employed to reduce sediment laden water entering Dublin Gulch and ultimately Haggart Creek.

Table 3.2-13: Summary Comparison of Key Water Quality Parameters at W4 for Baseline Period (2007 – 2018) to 2020 monthly Mean Values Relative to AMP Threshold Values

Parameter	T1	T2	T3	W4 - Haggart Creek																				
				April			May			June			July			August			September			October		
				Baseline 1 stdev	Baseline 2 stdev	2020 mean	Baseline 1 stdev	Baseline 2 stdev	2020 mean	Baseline 1 stdev	Baseline 2 stdev	2020 mean	Baseline 1 stdev	Baseline 2 stdev	2020 mean	Baseline 1 stdev	Baseline 2 stdev	2020 mean	Baseline 1 stdev	Baseline 2 stdev	2020 mean	Baseline 1 stdev	Baseline 2 stdev	2020 mean
TSS			***15***	6	7	453	70	102	30	31	48	18	4	5	23	9	13	8	4	4	8	4	4	3
SO_4	***231.8***	***262.7***	***309***	100	107	67	28	38	27	50	56	28	68	77	45	64	72	54	70	92	61	70	76	55
Cl	***112.5***	***127.5***	***150***	0.5	0.5	2.6	2.3	3.3	0.5	0.5	0.5	0.5	0.5	0.5	0.7	0.5	0.5	1.4	0.6	0.7	1.4	0.6	0.8	0.5
NO_3-N	***2.3***	***2.6***	***3***	0.144	0.156	0.183	0.046	0.065	0.041	0.794	1.253	0.059	0.058	0.067	0.067	0.061	0.071	0.074	0.102	0.126	0.110	0.169	0.204	0.097
NO_2-N	***0.015***	***0.017***	***0.02***	0.001	0.001	0.0014	0.0047	0.0067	0.0010	0.0010	0.0010	0.0010	0.0010	0.0010	0.0010	0.0010	0.0010	0.0013	0.0010	0.0010	0.0018	0.0099	0.0164	0.0010
NH_3-N	***0.848***	***0.961***	***1.13***	0.005	0.005	0.013	0.009	0.012	0.008	0.008	0.010	0.005	0.005	0.005	0.012	0.015	0.022	0.008	0.005	0.005	0.013	0.005	0.005	0.006
CN_{WAD}	***0.005***	***0.005***	***0.005***	0.005	0.005	-	0.005	0.005	-	0.005	0.005	-	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005	-	0.005	0.005	-
Diss- Al	***0.075***	***0.085***	***0.1***	0.007	0.010	0.037	0.221	0.286	0.126	0.050	0.070	0.070	0.013	0.017	0.029	0.023	0.033	0.016	0.015	0.019	0.012	0.008	0.010	0.017
T-Sb	***0.015***	***0.017***	***0.02***	0.0006	0.0008	0.0023	0.0007	0.0009	0.0007	0.0009	0.0011	0.0006	0.0005	0.0005	0.0010	0.0005	0.0005	0.0019	0.0005	0.0005	0.0025	0.0005	0.0006	0.0013
T-As	***0.0064***	***0.0072***	***0.0085***	0.0093	0.0141	0.056	0.0255	0.0377	0.0138	0.0151	0.0228	0.0083	0.0059	0.0079	0.0156	0.0057	0.0070	0.0168	0.0072	0.0092	0.0203	0.0067	0.0084	0.0265
T-Cd	***0.00015***	***0.00017***	***0.0002***	0.00003	0.00004	0.00014	0.00010	0.00014	0.00007	0.0000	0.0000	0.00002	0.00002	0.00002	0.00003	0.00003	0.00004	0.00002	0.00003	0.00005	0.00002	0.00001	0.00002	0.00003
T-Co	***0.003***	***0.0034***	***0.004***	0.00047	0.00065	0.00302	0.00192	0.00275	0.00096	0.00064	0.00097	0.00035	0.00012	0.00013	0.00054	0.00022	0.00030	0.00028	0.00016	0.00018	0.00028	0.00015	0.00017	0.00084
T-Cu	***0.00375***	***0.00425***	***0.005***	0.00074	0.00096	0.00739	0.00511	0.00678	0.00359	0.00258	0.00378	0.00190	0.00065	0.00074	0.00198	0.00104	0.00140	0.00141	0.00073	0.00084	0.00140	0.00098	0.00131	0.00243
T-Fe	***0.75***	***0.85***	***1***	0.47	0.69	3.54	3.09	4.50	1.68	1.42	2.25	0.63	0.11	0.14	0.98	0.31	0.48	0.35	0.11	0.14	0.31	0.10	0.12	1.72
T-Pb	***0.00578***	***0.00655***	***0.0077***	0.00065	0.00099	0.00943	0.00275	0.00407	0.00185	0.00178	0.00286	0.00070	0.00006	0.00006	0.00168	0.00017	0.00025	0.00070	0.00010	0.00013	0.00061	0.00007	0.00008	0.00275
T-Mn	***0.878***	***0.995***	***1.17***	0.104	0.140	0.196	0.208	0.302	0.105	0.046	0.063	0.029	0.030	0.037	0.036	0.033	0.039	0.031	0.034	0.038	0.034	0.033	0.037	0.070
T-Hg	***0.000015***	***0.000017***	***0.00002***	0.000011	0.000013	0.000027	0.000032	0.000047	0.000008	0.000037	0.000055	0.000007	0.000011	0.000013	0.000007	0.000011	0.000013	0.000005	0.000011	0.000013	0.000005	0.000010	0.000013	0.000005
T-Mo	***0.0548***	***0.0621***	***0.073***	0.00018	0.00023	0.00038	0.00042	0.00062	0.00019	0.00080	0.00109	0.00028	0.00032	0.00041	0.00047	0.00031	0.00038	0.00077	0.00066	0.00092	0.00100	0.00061	0.00086	0.00049
T-Ni	***0.087***	***0.099***	***0.116***	0.0024	0.0030	0.0063	0.0057	0.0075	0.0038	0.0025	0.0035	0.0018	0.0010	0.0012	0.0021	0.0012	0.0015	0.0016	0.0010	0.0011	0.0016	0.0010	0.0011	0.0032
T-Se	***0.0015***	***0.0017***	***0.002***	0.00026	0.00031	0.00023	0.00021	0.00025	0.00011	0.00022	0.00025	0.00013	0.00020	0.00024	0.00019	0.00021	0.00025	0.00024	0.00021	0.00025	0.00030	0.00019	0.00022	0.00017
T-Ag	***0.00113***	***0.00128***	***0.0015***	0.000010	0.000010	0.000057	0.000033	0.000046	0.000021	0.000021	0.000028	0.000011	0.000010	0.000010	0.000020	0.000010	0.000010	0.000013	0.000010	0.000010	0.000012	0.000011	0.000012	0.000019
T-U	***0.0113***	***0.0128***	***0.015***	0.0016	0.0017	0.0016	0.0005	0.0006	0.0005	0.0007	0.0008	0.0005	0.0010	0.0011	0.0009	0.0009	0.0011	0.0015	0.0010	0.0011	0.0021	0.0012	0.0014	0.0012
T-Zn	***0.0285***	***0.0323***	***0.038***	0.0058	0.0072	0.0193	0.0148	0.0201	0.0103	0.0069	0.0098	0.0037	0.0034	0.0041	0.0053	0.0033	0.0041	0.0033	0.0034	0.0044	0.0032	0.0032	0.0033	0.0085

All units as mg/L
Baseline period for W4 2007 - 2018

Colour Coding Legend for Trend Assessment	
Monthly 2020 mean is ≤ any Tier and ≤ Baseline 2 stdev	no action
Monthly 2020 mean is ≥ any Tier but ≤ Baseline 2 stdev	no action
Monthly 2020 mean is ≥ Tier 2 < Tier 3 ≥ Baseline 2 stdev	monitor
Monthly 2020 mean is ≥ Tier 3 > Baseline 2 stdev	Upward trend
Monthly 2020 mean is ≥ Tier 3 < Baseline 2 stdev	high background

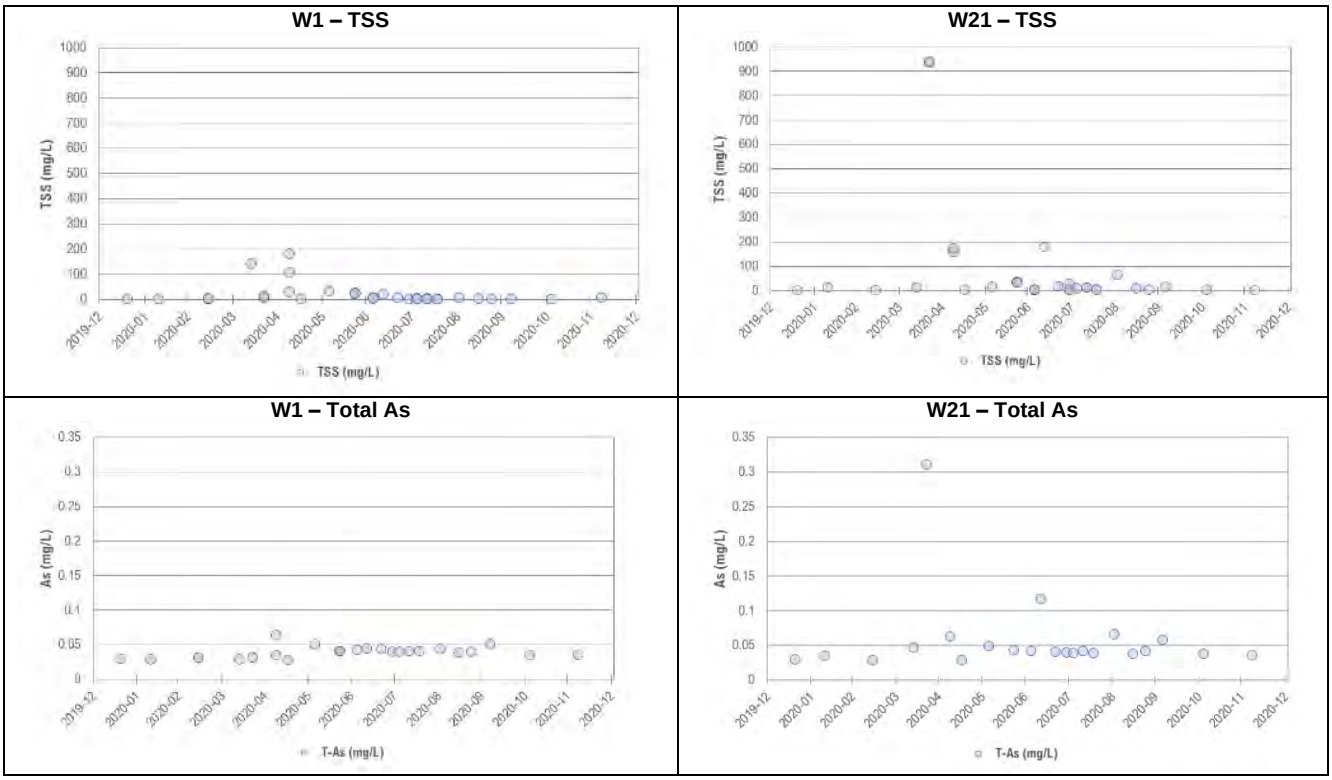


Figure 3.2-7: TSS and Total As Concentrations at W1 and W21 in Dublin Gulch (2020)

Elevated total As concentrations above the AMP T3 WQO of 0.0085 mg/L were observed at station W4 during the July 29 to August 18 and the September 14 to September 27 discharge events. These results are not considered to be attributed to the Project given that all LDSP discharges during these events were compliant with all QZ14-041-1 EQS (see Section 3.2.3.1). Total As concentrations during the July/August and September discharges ranged between 0.027 mg/L and 0.033 mg/L, well below the EQS of 0.053 mg/L. The results prompted further investigation as per EMSAMP requirements and it was postulated that complete mixing of Dublin Gulch and Ditch C discharges with Haggart Creek may not occur by the time water reaches station W4. Exploratory transect sampling from the east bank to west bank at W4 and a visual dye test in Haggart Creek in September 2020 confirmed that Dublin Gulch and Ditch C discharges are poorly mixed at W4. Water quality sampling at W4 were erroneously biased upward owing to the incomplete mixing occurring at the W4 Haggart Creek monitoring station. (QZ14-041-1 August Monthly Report 2020 provides a more detailed discussion on the mixing evaluation and assessment at W4).

As such, all “elevated” total As concentrations, total Fe and TSS values measured at W4 must be viewed with caution and are not likely representative of fully mixed conditions and therefore biased upwards due to the sampling location. Potential impacts from the Project may also be more appropriately assessed based on consideration of Haggart Creek sites W29, W99 and W23. Future sampling of Haggart Creek below Ditch C is evaluating appropriate revised locations for station W4 that is further downstream and reflective of fully mixed conditions.

W29

Water quality parameters at W29 in 2020 were present at concentrations very similar to the observed baseline values (e.g. ≤ +2 std. dev.) during the baseline period of 2009 to 2018 (Table 3.2-14). Minor exceptions to these observations occurred in June 2020, where elevated TSS, dissolved Al and total Fe were present in concentrations greater than AMP T3 and baseline values for the same period. No discharge was occurring from the Project in June and there were no identified Project influence point sources for the elevated water quality concentrations. In April, May and June 2020, mean monthly total As concentrations were higher than the AMP T3 WQO of 0.0085 mg/L; however, the monthly mean values were lower than the observed baseline values and therefore cannot be viewed as an upward trend at this time. Indeed, for most months, the mean monthly total As concentrations measured in 2020 were typically at or below the observed baseline +1 std. dev. value (Table 3.2-14).

W99

Station W99 was added in 2019 and therefore does not have a true “baseline” record of measurements to which trend analysis is applicable. In 2020, April, June and September observed mean monthly total As concentrations were greater than the AMP T3 threshold of 0.0085 mg/L (Table 3.2-15 and Figure 3.2-8). The elevated As concentrations measured in the aforementioned months appear to be associated with elevated TSS at W99 on those sampling occasions. Without historical baseline data it is not possible to determine whether these concentrations would have fallen within observed baseline values (e.g. ≤ +2 std. dev.). Elevated concentrations of total Cu and Fe were also observed in May 2020 (Table 3.2-15). Dissolved As concentrations at W99 in the open water period of 2020 (e.g., April to October) narrowly ranged between 0.004 mg/L and 0.006 mg/L, much lower than Total As concentrations. The low dissolved As concentrations contrast the corresponding total As measurements. Similarly, to W4 this supports the hypothesis that the majority of arsenic concentrations within the waters at W99 are associated with suspended sediment within the water column. Dublin Gulch is believed to be the primary source for the elevated concentrations of total As observed. The monitoring station W45 on Eagle Creek situated nearby central Project infrastructure and laydowns, which discharges into Haggart Creek just above W29, did not exhibit the similar elevated metal signatures when compared to W99.

Table 3.2-14: Summary Comparison of Key Water Quality Parameters at W29 for Baseline Period (2009 – 2018) to 2020 monthly Mean Values Relative to AMP Threshold Values

Parameter	T1	T2	T3	W29 - Haggart Creek																				
				April			May			June			July			August			September			October		
				Baseline 1 stdev	Baseline 2 stdev	2020 mean	Baseline 1 stdev	Baseline 2 stdev	2020 mean	Baseline 1 stdev	Baseline 2 stdev	2020 mean	Baseline 1 stdev	Baseline 2 stdev	2020 mean	Baseline 1 stdev	Baseline 2 stdev	2020 mean	Baseline 1 stdev	Baseline 2 stdev	2020 mean	Baseline 1 stdev	Baseline 2 stdev	2020 mean
TSS			*15*	96	157	225	135	192	100	11	15	22	3	3	16	12	19	6	4	5	3	5	7	3
SO_4	*231.8*	*262.7*	*309*	99	105	78	31	41	29	52	60	30	70	79	48	72	82	55	66	68	92	72	78	82
Cl	*112.5*	*127.5*	*150*	1.1	1.5	4.2	2.3	3.3	0.6	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.6	0.7	0.5	0.6	0.7	0.5
NO_3-N	*2.3*	*2.6*	*3*	0.135	0.144	0.176	0.039	0.052	0.040	0.079	0.089	0.061	0.061	0.071	0.065	0.068	0.085	0.072	0.098	0.115	0.060	0.122	0.133	0.118
NO_2-N	*0.015*	*0.017*	*0.02*	0.0012	0.0013	0.0023	0.0047	0.0067	0.0010	0.0010	0.0010	0.0010	0.0010	0.0010	0.0010	0.0012	0.0013	0.0010	0.0010	0.0010	0.0010	0.0010	0.0010	0.0010
NH_3-N	*0.848*	*0.961*	*1.13*	0.0154	0.0224	0.0126	0.0117	0.0155	0.0089	0.0087	0.0108	0.0061	0.0050	0.0050	0.0334	0.0112	0.0155	0.0077	0.0131	0.0187	0.0201	0.0144	0.0205	0.0050
CN_{WAD}	*0.005*	*0.005*	*0.005*	0.005	0.005	0.005	0.005	0.005	-	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005
Diss- Al	*0.075*	*0.085*	*0.1*	0.006	0.009	0.022	0.420	0.627	0.123	0.057	0.082	0.102	0.012	0.015	0.033	0.023	0.035	0.016	0.009	0.011	0.004	0.007	0.009	0.006
T-Sb	*0.015*	*0.017*	*0.02*	0.0049	0.0078	0.0039	0.0018	0.0024	0.0012	0.0008	0.0009	0.0008	0.0007	0.0008	0.0006	0.0010	0.0013	0.0007	0.0007	0.0007	0.0006	0.0007	0.0008	0.0005
T-As	*0.0064*	*0.0072*	*0.0085*	0.123	0.2020	0.0839	0.0426	0.0615	0.0200	0.0109	0.0147	0.0111	0.0070	0.0087	0.0082	0.0081	0.0102	0.0078	0.0073	0.0086	0.0030	0.0071	0.0089	0.0029
T-Cd	*0.00015*	*0.00017*	*0.0002*	0.00017	0.00027	0.00014	0.00014	0.00019	0.00009	0.00003	0.00004	0.00006	0.00001	0.00002	0.00002	0.00002	0.00003	0.00002	0.00002	0.00002	0.00001	0.00004	0.00005	0.00001
T-Co	*0.003*	*0.0034*	*0.004*	0.00428	0.00700	0.00266	0.00254	0.00346	0.00109	0.00036	0.00051	0.00079	0.00011	0.00012	0.00037	0.00025	0.00035	0.00022	0.00012	0.00013	0.00011	0.00026	0.00038	0.00010
T-Cu	*0.00375*	*0.00425*	*0.005*	0.02130	0.03501	0.00880	0.00808	0.01037	0.00460	0.00216	0.00299	0.00314	0.00074	0.00087	0.00160	0.00125	0.00174	0.00092	0.00100	0.00121	0.00058	0.00087	0.00109	0.00063
T-Fe	*0.75*	*0.85*	*1*	9.42	15.51	4.32	4.78	6.56	1.77	0.71	1.07	1.31	0.12	0.15	0.62	0.44	0.69	0.21	0.10	0.12	0.04	0.45	0.72	0.05
T-Pb	*0.00578*	*0.00655*	*0.0077*	0.0179	0.0295	0.0123	0.0074	0.0106	0.0030	0.0013	0.0019	0.0024	0.0001	0.0002	0.0008	0.0006	0.0009	0.0003	0.0002	0.0003	0.0001	0.0005	0.0007	0.0001
T-Mn	*0.878*	*0.995*	*1.17*	0.268	0.412	0.155	0.219	0.302	0.106	0.035	0.046	0.066	0.038	0.047	0.035	0.037	0.043	0.039	0.039	0.043	0.067	0.050	0.061	0.056
T-Hg	*0.000015*	*0.000017*	*0.00002*	0.000032	0.000046	0.000017	0.000032	0.000047	0.000012	0.000042	0.000061	0.000011	0.000010	0.000013	0.000006	0.000011	0.000013	0.000005	0.000011	0.000013	0.000005	0.000011	0.000013	0.000005
T-Mo	*0.0548*	*0.0621*	*0.073*	0.00072	0.00107	0.00050	0.00026	0.00032	0.00020	0.00026	0.00027	0.00024	0.00036	0.00044	0.00033	0.00036	0.00042	0.00042	0.00051	0.00064	0.00029	0.00034	0.00041	0.00021
T-Ni	*0.087*	*0.099*	*0.116*	0.0109	0.0170	0.0063	0.0071	0.0090	0.0041	0.0020	0.0027	0.0029	0.0010	0.0012	0.0018	0.0014	0.0017	0.0015	0.0011	0.0011	0.0010	0.0012	0.0014	0.0010
T-Se	*0.0015*	*0.0017*	*0.002*	0.00041	0.00054	0.00027	0.00023	0.00029	0.00014	0.00025	0.00030	0.00013	0.00021	0.00024	0.00018	0.00024	0.00028	0.00022	0.00024	0.00027	0.00012	0.00024	0.00027	0.00020
T-Ag	*0.00113*	*0.00128*	*0.0015*	0.000124	0.000200	0.000087	0.000081	0.000114	0.000030	0.000012	0.000013	0.000020	0.000010	0.000010	0.000016	0.000010	0.000011	0.000010	0.000010	0.000010	0.000010	0.000010	0.000011	0.000010
T-U	*0.0113*	*0.0128*	*0.015*	0.0023	0.0026	0.0019	0.0007	0.0008	0.0006	0.0008	0.0009	0.0005	0.0012	0.0013	0.0008	0.0013	0.0016	0.0011	0.0013	0.0014	0.0017	0.0014	0.0015	0.0014
T-Zn	*0.0285*	*0.0323*	*0.038*	0.036	0.057	0.023	0.020	0.027	0.012	0.005	0.007	0.008	0.004	0.006	0.005	0.004	0.005	0.003	0.003	0.004	0.003	0.004	0.003	0.003

All units as mg/L
Baseline period for W29 2009 - 2018

Colour Coding Legend for Trend Assessment	
Monthly 2020 mean is ≤ any Tier and ≤ Baseline 2 stdev	no action
Monthly 2020 mean is ≥ any Tier but ≤ Baseline 2 stdev	no action
Monthly 2020 mean is ≥ Tier 2 < Tier 3 ≥ Baseline 2 stdev	monitor
Monthly 2020 mean is ≥ Tier 3 > Baseline 2 stdev	Upward trend
Monthly 2020 mean is ≥ Tier 3 < Baseline 2 stdev	high background

Table 3.2-15: Summary Comparison of Key Water Quality Parameters at W99 for 2019 to 2020 monthly Mean Values Relative to AMP Threshold Values

Parameter	T1	T2	T3	W99 - Haggart Creek																		
				April			May			June			July			August			September			October		
				Baseline 1 stdev	Baseline 2 stdev	2020 mean	Baseline 1 stdev	Baseline 2 stdev	2020 mean	Baseline 1 stdev	Baseline 2 stdev	2020 mean	Baseline 1 stdev	Baseline 2 stdev	2020 mean	Baseline 1 stdev	Baseline 2 stdev	2020 mean	Baseline 1 stdev	Baseline 2 stdev	2020 mean	Baseline 1 stdev	Baseline 2 stdev	2020 mean
TSS			*15*	19	25	3	45	62	47	17	26	36	3	4	5	5	6	5	3	3	48	3	3	3
SO_4	*231.8*	*262.7*	*309*	98	102	108	58	82	31	72	90	29	82	83	53	86	86	54	92	92	48	82	82	61
Cl	*112.5*	*127.5*	*150*	3.4	4.3	0.7	0.7	0.8	0.7	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
NO_3-N	*2.3*	*2.6*	*3*	0.104	0.113	0.168	0.204	0.312	0.025	0.068	0.075	0.056	0.063	0.066	0.076	0.058	0.058	0.067	0.060	0.060	0.077	0.118	0.118	0.106
NO_2-N	*0.015*	*0.017*	*0.02*	0.0011	0.0012	0.0010	0.0017	0.0021	0.0010	0.0016	0.0019	0.0010	0.0010	0.0010	0.0010	0.0010	0.0010	0.0010	0.0010	0.0010	0.0010	0.0010	0.0010	0.0010
NH_3-N	*0.848*	*0.961*	*1.13*	0.0158	0.0209	0.0121	0.0067	0.0067	0.0072	0.0056	0.0056	0.0065	0.0122	0.0158	0.0050	0.0050	0.0050	0.0120	0.0201	0.0201	0.0053	0.0050	0.0050	0.0050
CN_{WAD}	*0.005*	*0.005*	*0.005*	0.005	0.005	-	0.005	0.005	-	0.005	0.005	-	-	-	-	-	-	0.005	0.005	0.005	-	0.005	0.005	-
Diss- Al	*0.075*	*0.085*	*0.1*	0.013	0.015	0.002	0.191	0.269	0.160	0.066	0.095	0.074	0.008	0.010	0.021	0.004	0.004	0.015	0.004	0.004	0.032	0.006	0.006	0.018
T-Sb	*0.015*	*0.017*	*0.02*	0.0015	0.0018	0.0006	0.0010	0.0011	0.0017	0.0006	0.0007	0.0007	0.0007	0.0007	0.0005	0.0006	0.0006	0.0007	0.0006	0.0006	0.0015	0.0005	0.0005	0.0006
T-As	*0.0064*	*0.0072*	*0.0085*	0.0197	0.0231	0.0035	0.0178	0.0228	0.0327	0.0042	0.0045	0.0084	0.0038	0.0040	0.0067	0.0037	0.0037	0.0074	0.0030	0.0030	0.0235	0.0029	0.0029	0.0082
T-Cd	*0.00015*	*0.00017*	*0.0002*	0.00004	0.00005	0.00001	0.00006	0.00008	0.00010	0.00003	0.00004	0.00003	0.00001	0.00002	0.00001	0.00001	0.00001	0.00002	0.00001	0.00001	0.00005	0.00001	0.00001	0.00001
T-Co	*0.003*	*0.0034*	*0.004*	0.00065	0.00072	0.00015	0.00108	0.00140	0.00136	0.00038	0.00050	0.00046	0.00011	0.00012	0.00016	0.00013	0.00013	0.00019	0.00011	0.00011	0.00096	0.00010	0.00010	0.00025
T-Cu	*0.00375*	*0.00425*	*0.005*	0.00222	0.00260	0.00050	0.00373	0.00479	0.0071	0.00231	0.00310	0.00230	0.00063	0.00065	0.00089	0.00057	0.00057	0.00087	0.00058	0.00058	0.00307	0.00063	0.00063	0.00092
T-Fe	*0.75*	*0.85*	*1*	0.99	1.19	0.07	1.89	2.49	2.66	0.70	1.00	0.84	0.09	0.11	0.16	0.11	0.11	0.19	0.04	0.04	1.64	0.05	0.05	0.28
T-Pb	*0.00578*	*0.00655*	*0.0077*	0.0019	0.0024	0.0001	0.0023	0.0030	0.0040	0.0008	0.0011	0.0012	0.0001	0.0001	0.0002	0.0002	0.0002	0.0002	0.0001	0.0001	0.0034	0.0001	0.0001	0.0004
T-Mn	*0.878*	*0.995*	*1.17*	0.132	0.148	0.073	0.108	0.132	0.097	0.053	0.058	0.045	0.049	0.049	0.031	0.063	0.063	0.035	0.067	0.067	0.070	0.056	0.056	0.056
T-Hg	*0.000015*	*0.000017*	*0.00002*	0.000005	0.000005	0.000005	0.000050	0.000068	0.000019	0.000007	0.000007	0.000008	0.000005	0.000005	0.000005	0.000005	0.000005	0.000005	0.000005	0.000005	0.000006	0.000005	0.000005	0.000005
T-Mo	*0.0548*	*0.0621*	*0.073*	0.00034	0.00040	0.00017	0.00025	0.00030	0.00023	0.00019	0.00019	0.00025	0.00019	0.00019	0.00034	0.00019	0.00019	0.00044	0.00029	0.00029	0.00035	0.00021	0.00021	0.00038
T-Ni	*0.087*	*0.099*	*0.116*	0.0027	0.0029	0.0011	0.0039	0.0048	0.0058	0.0025	0.0032	0.0021	0.0010	0.0010	0.0013	0.0010	0.0010	0.0013	0.0010	0.0010	0.0030	0.0010	0.0010	0.0016
T-Se	*0.0015*	*0.0017*	*0.002*	0.00024	0.00026	0.00023	0.00018	0.00022	0.00013	0.00014	0.00015	0.00013	0.00015	0.00016	0.00018	0.00012	0.00012	0.00021	0.00012	0.00012	0.00018	0.00020	0.00020	0.00022
T-Ag	*0.00113*	*0.00128*	*0.0015*	0.000019	0.000023	0.000010	0.000033	0.000044	0.000047	0.000013	0.000015	0.000015	0.000010	0.000010	0.000010	0.000010	0.000010	0.000010	0.000010	0.000010	0.000030	0.000010	0.000010	0.000010
T-U	*0.0113*	*0.0128*	*0.015*	0.0027	0.0031	0.0021	0.0011	0.0015	0.0006	0.0011	0.0014	0.0005	0.0013	0.0014	0.0009	0.0014	0.0014	0.0011	0.0017	0.0017	0.0010	0.0014	0.0014	0.0012
T-Zn	*0.0285*	*0.0323*	*0.038*	0.006	0.007	0.003	0.010	0.013	0.017	0.004	0.004	0.007	0.003	0.003	0.003	0.003	0.003	0.003	0.003	0.003	0.010	0.003	0.003	0.003

All units as mg/L
No baseline available for W99 - sampling commenced in April 2019

Colour Coding Legend for Trend Assessment	
Monthly 2020 mean is ≤ any Tier and ≤ Baseline 2 stdev	no action
Monthly 2020 mean is ≥ any Tier but ≤ Baseline 2 stdev	no action
Monthly 2020 mean is ≥ Tier 2 < Tier 3 ≥ Baseline 2 stdev	monitor
Monthly 2020 mean is ≥ Tier 3 > Baseline 2 stdev	investigate further
Monthly 2020 mean is ≥ Tier 3 < Baseline 2 stdev	high background

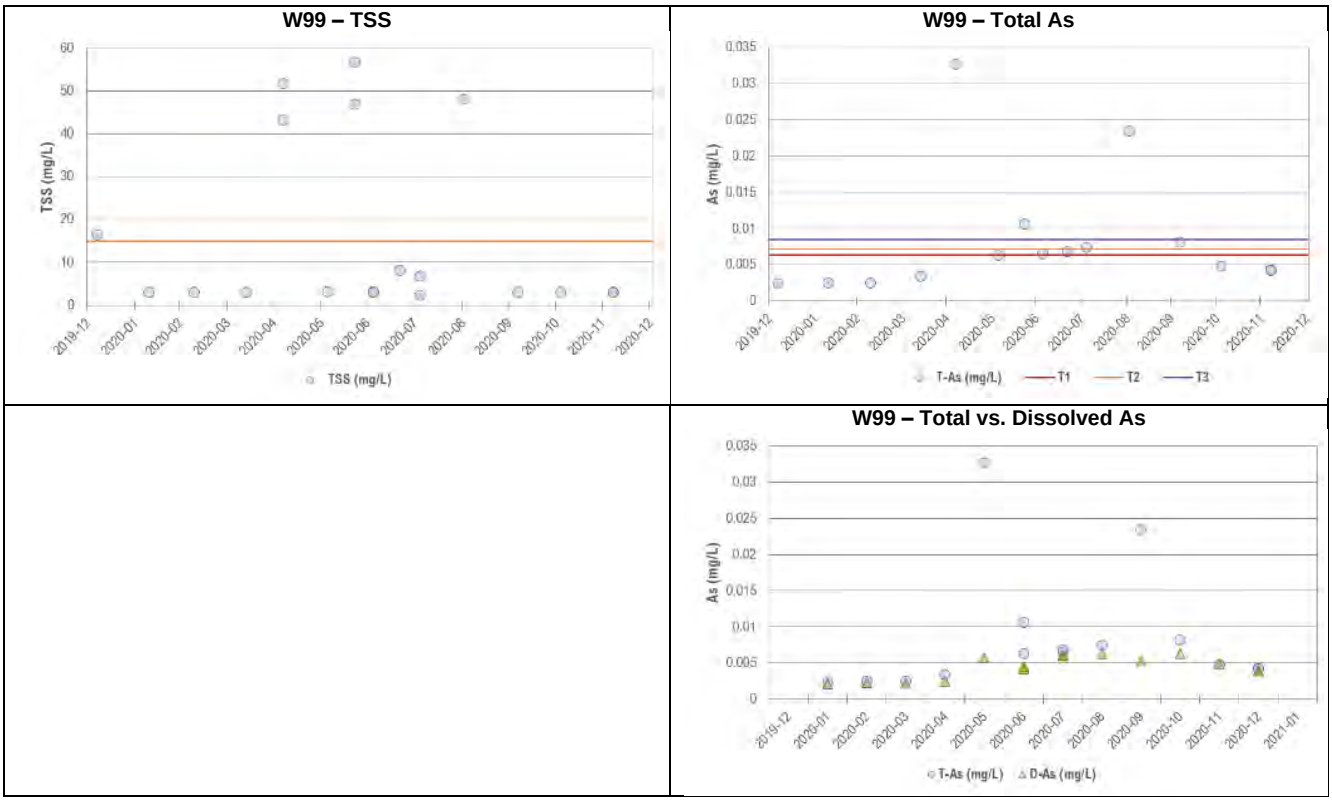


Figure 3.2-8: TSS, Total As and total vs. Dissolved As Concentrations at W99 (2020)

W23

Water quality at W23 reflects loadings from Dublin Gulch and all mine related inputs as well as additional loadings from Lynx Creek. Water quality observed in 2020 at W23 relative to the baseline period of 2007 to 2018 indicated that most parameters measured in 2020 were at concentrations very similar to those observed during baseline monitoring. Most parameters were present at a concentration within 1 standard deviation of the baseline monthly mean concentration with the exception of As during freshet in May (Table 3.2-16). Concentrations of total As on May 5, 2020 at W23 (0.032 mg/L) were similar to total As concentrations measured at W99 on the same date (0.033 mg/L) and are a consequence of elevated TSS. This is supported by dissolved As concentrations at W23 in May 2020 of 0.005 mg/L. In addition, record snow pack and resultant increased flow within Haggart Creek throughout May as compared to baseline conditions contributed to TSS being more persistent within the water column, staying suspended for longer durations. Snow management, silt fencing, water diversion structures, check dams, jute and hay bales were all employed to mitigate potential sediment laden water souring from the Project entering Haggart creek. Efforts to improve sediment controls and upgrade water management structures on the Project are a key focus of ongoing water management improvements at the Eagle Mine.

Table 3.2-16: Summary Comparison of Key Water Quality Parameters at W23 for Baseline Period (2007 – 2018) to 2020 monthly Mean Values Relative to AMP Threshold Values

Parameter	T1	T2	T3	W23 - Haggart Creek																				
				April			May			June			July			August			September			October		
				Baseline 1 stdev	Baseline 2 stdev	2020 mean	Baseline 1 stdev	Baseline 2 stdev	2020 mean	Baseline 1 stdev	Baseline 2 stdev	2020 mean	Baseline 1 stdev	Baseline 2 stdev	2020 mean	Baseline 1 stdev	Baseline 2 stdev	2020 mean	Baseline 1 stdev	Baseline 2 stdev	2020 mean	Baseline 1 stdev	Baseline 2 stdev	2020 mean
TSS			*15*	15	22	6	91	135	57	45	67	4	4	4	3	3	3	3	9	13	5	3	3	3
SO_4	*231.8*	*262.7*	*309*	89	89	98	24	30	34	53	60	36	74	82	55	72	79	60	68	75	49	74	82	60
Cl	*112.5*	*127.5*	*150*	0.5	0.5	3.4	1.5	2.2	0.8	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.6	0.7	0.5	0.6	0.7	0.5
NO_3-N	*2.3*	*2.6*	*3*	0.179	0.191	0.248	0.035	0.042	0.032	0.071	0.084	0.080	0.055	0.065	0.095	0.068	0.082	0.066	0.099	0.118	0.072	0.160	0.179	0.102
NO_2-N	*0.015*	*0.017*	*0.02*	0.0010	0.0010	0.0012	0.0030	0.0044	0.0010	0.0010	0.0010	0.0010	0.0010	0.0010	0.0010	0.0010	0.0010	0.0010	0.0010	0.0011	0.0010	0.0010	0.0010	0.0010
NH_3-N	*0.848*	*0.961*	*1.13*	0.0071	0.0083	0.0134	0.0100	0.0124	0.0094	0.0299	0.0427	0.0050	0.0050	0.0050	0.0272	0.0158	0.0225	0.0050	0.0118	0.0168	0.0148	0.0133	0.0187	0.0050
CN_{WAD}	*0.005*	*0.005*	*0.005*	0.005	0.005	0.005	0.005	0.005	-	0.005	0.005	-	0.005	0.005	-	0.005	0.005	-	0.005	0.005	-	0.005	0.005	-
Diss- Al	*0.075*	*0.085*	*0.1*	0.006	0.008	0.003	0.167	0.215	0.099	0.038	0.052	0.033	0.019	0.027	0.016	0.010	0.013	0.014	0.017	0.022	0.032	0.008	0.010	0.015
T-Sb	*0.015*	*0.017*	*0.02*	0.0015	0.0021	0.0011	0.0010	0.0012	0.0015	0.0014	0.0019	0.0005	0.0006	0.0007	0.0005	0.0006	0.0006	0.0006	0.0007	0.0008	0.0006	0.0005	0.0006	0.0005
T-As	*0.0064*	*0.0072*	*0.0085*	0.0291	0.0436	0.0150	0.0178	0.0238	0.0321	0.0271	0.0398	0.0055	0.0055	0.0061	0.0063	0.0059	0.0063	0.0065	0.0072	0.0084	0.0061	0.0056	0.0061	0.0071
T-Cd	*0.00015*	*0.00017*	*0.0002*	0.00006	0.00008	0.00002	0.00011	0.00015	0.00008	0.00016	0.00024	0.00001	0.00003	0.00004	0.00001	0.00003	0.00004	0.00002	0.00003	0.00004	0.00002	0.00003	0.00004	0.00002
T-Co	*0.003*	*0.0034*	*0.004*	0.00086	0.00130	0.00037	0.00149	0.00213	0.00142	0.00267	0.00414	0.00014	0.00010	0.00010	0.00010	0.00010	0.00010	0.00011	0.00020	0.00026	0.00020	0.00019	0.00026	0.00015
T-Cu	*0.00375*	*0.00425*	*0.005*	0.00325	0.00492	0.00135	0.00554	0.00719	0.0056	0.00612	0.00882	0.00148	0.00087	0.00097	0.00100	0.00085	0.00096	0.00085	0.00172	0.00225	0.00140	0.00097	0.00114	0.00095
T-Fe	*0.75*	*0.85*	*1*	1.77	2.78	0.63	2.63	3.79	2.47	0.75	1.04	0.23	0.07	0.10	0.11	0.09	0.12	0.10	0.14	0.19	0.21	0.09	0.13	0.14
T-Pb	*0.00578*	*0.00655*	*0.0077*	0.0032	0.0051	0.0015	0.0037	0.0055	0.0042	0.0078	0.0123	0.0002	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0005	0.0007	0.0002	0.0003	0.0004	0.0001
T-Mn	*0.878*	*0.995*	*1.17*	0.092	0.123	0.041	0.154	0.217	0.157	0.305	0.472	0.017	0.021	0.023	0.017	0.025	0.029	0.028	0.035	0.043	0.032	0.032	0.037	0.040
T-Hg	*0.000015*	*0.000017*	*0.00002*	0.000009	0.000009	0.000005	0.000042	0.000061	0.000014	0.000044	0.000061	0.000005	0.000042	0.000062	0.000005	0.000040	0.000059	0.000005	0.000038	0.000056	0.000005	0.000047	0.000068	0.000005
T-Mo	*0.0548*	*0.0621*	*0.073*	0.00050	0.00057	0.00052	0.00035	0.00041	0.00034	0.00089	0.00116	0.00046	0.00056	0.00058	0.00055	0.00060	0.00064	0.00057	0.00076	0.00093	0.00052	0.00077	0.00091	0.00070
T-Ni	*0.087*	*0.099*	*0.116*	0.0026	0.0039	0.0012	0.0047	0.0062	0.0044	0.0052	0.0076	0.0012	0.0007	0.0008	0.0012	0.0008	0.0009	0.0009	0.0011	0.0013	0.0015	0.0009	0.0011	0.0014
T-Se	*0.0015*	*0.0017*	*0.002*	0.00109	0.00138	0.00037	0.00094	0.00133	0.00022	0.00111	0.00147	0.00026	0.00100	0.00138	0.00032	0.00104	0.00141	0.00030	0.00104	0.00143	0.00033	0.00090	0.00124	0.00034
T-Ag	*0.00113*	*0.00128*	*0.0015*	0.000029	0.000039	0.000011	0.000049	0.000072	0.000041	0.000033	0.000046	0.000010	0.000010	0.000010	0.000010	0.000010	0.000010	0.000010	0.000015	0.000018	0.000010	0.000015	0.000018	0.000010
T-U	*0.0113*	*0.0128*	*0.015*	0.0017	0.0017	0.0020	0.0004	0.0005	0.0006	0.0011	0.0013	0.0005	0.0011	0.0011	0.0008	0.0010	0.0011	0.0009	0.0011	0.0012	0.0007	0.0013	0.0015	0.0011
T-Zn	*0.0285*	*0.0323*	*0.038*	0.011	0.016	0.003	0.014	0.019	0.014	0.023	0.035	0.003	0.003	0.004	0.003	0.003	0.004	0.003	0.005	0.006	0.003	0.004	0.005	0.003

All units as mg/L
Baseline period for W23 2007 - 2018

Colour Coding Legend for Trend Assessment	
Monthly 2020 mean is ≤ any Tier and ≤ Baseline 2 stdev	no action
Monthly 2020 mean is ≥ any Tier but ≤ Baseline 2 stdev	no action
Monthly 2020 mean is ≥ Tier 2 < Tier 3 ≥ Baseline 2 stdev	monitor
Monthly 2020 mean is ≥ Tier 3 > Baseline 2 stdev	Upward trend
Monthly 2020 mean is ≥ Tier 3 < Baseline 2 stdev	high background

3.3 Water Balance and Water Quality Modeling

The Eagle Gold Project water balance and water quality model (WBWQM) is a mass-conserving mixing model that predicts water quality for 38 parameters at key monitoring and compliance points in the receiving waters affected by mine activity. The model was designed on the GoldSim® platform and the water balance and water quality model uses a daily time-step for 50 years, spanning operations, closure and several years into post-closure.

The WBWQM has been updated and integrates the following:

- Description of the water management plan as described in: *Eagle Gold Project Water Management Plan*. Version 2020-01. January 2020;
- Revisions to the heap leach facility water balance modeling as prepared by Forte Dynamics;
- Baseline climate and hydrology data collected since 2007 and inclusive of data collected in 2020;
- Updated baseline surface water quality monitoring data collected from 2007 to 2017 prior to initiation of construction in August 2017;
- Surface water quality monitoring data collected in 2018 through 2020 reflective of construction and early Operations phases; and,
- Updated geochemical source term data collected from re-designed and revised field bins of waste rock and unsaturated laboratory-based kinetic leach columns.

The revisions to the operations water management plan and site-wide water balance model are reflected in the updated schematic (Figure 3.3-1). Water quality from mine discharge during operations is driven by contact water reporting to the Lower Dublin South Pond. Contact water from Platinum Gulch WRSA, the temporary (or 90-Day) ore stockpile, and any drainage from the open pit all report to the LDSP through Ditch A. Suttles Gulch drains to the LDSP via Ditch B. The Eagle Pup WRSA has not been utilized to date, such that Eagle Pup currently drains to Dublin Gulch. During 2020, excess water was primarily managed through:

- Transfer of Lower Dublin South Pond water to the Events Pond to manage water volumes within the Lower Dublin South Pond;
- Water stored in the Events Pond was used for process make-up water requirements;
- Discharge to Haggart Creek via Ditch C when water quality met discharge requirements of QZ14-041-1 for effluent quality (EQS).

The MWTP was not constructed during 2020.

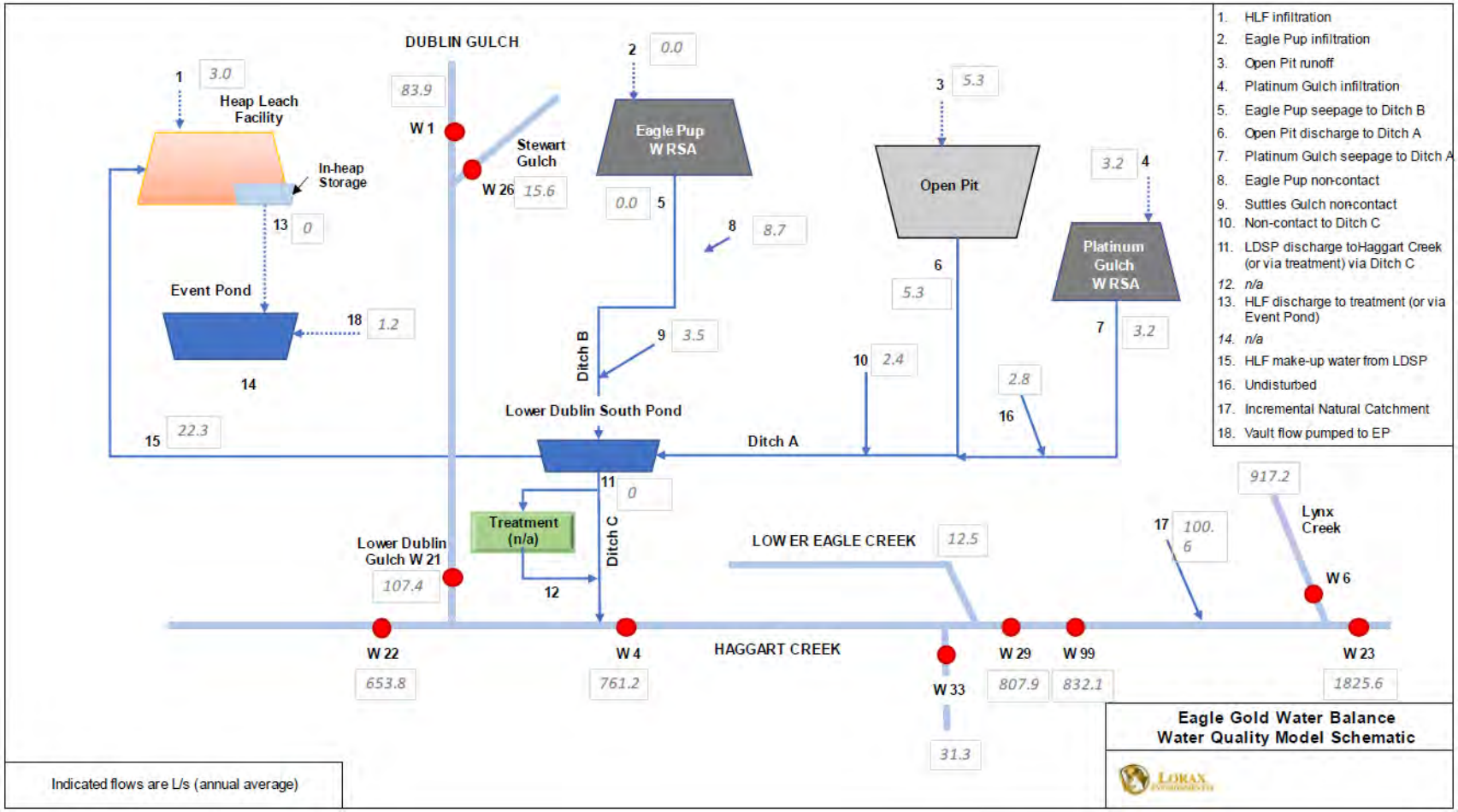


Figure 3.3-1 Water Balance Model Schematic - Overview

3.3.1 HLF Water Balance Model Integration

The Eagle Gold WBWQM is a GoldSim-based integrated water balance and water quality model that was developed in two parts. The water quality component was developed by Lorax Environmental Services Ltd. (Lorax) and integrated within the WBM to combine source concentrations of potential contaminants of concern with contact and non-contact flows allowing contaminant loading to be tracked throughout the mine site and into the receiving waters of Haggart Creek. The WBWQM integrates logic and assumptions from Forte's Heap Leach Facility Water Balance Model (HLF WBM).

The Forte HLF WBM is used for daily operations. Inputs include measured meteorological and site operational data for the period in which such data are available (e.g., assumes July 1, 2019 start date of the simulations to a March 1st, 2021 forecasting date). This distinction in measured and forecasted data, described in the report, effects the Deterministic and Stochastic model simulations in slightly different ways.

The Forte Model makes use of a large array of operational, meteorological, geotechnical, and metallurgical input data. The inputs include updated values from the previous heap water balance model developed by the Mines Group (2019) to provide site with an operational model as the mine site transitioned into production. Additional ore samples were collected, and further testing was conducted to characterize ore properties which have been used in the updated model. Additionally, as the site moved into operations, site operators required a model that could incorporate the daily data recorded at site, including climatic conditions, measured flows, and tonnage placed on the HLF. The updated HLF WBM incorporates an increasing detail surrounding the HLF while providing operations with the ability to utilize more recorded inputs and better understand solution and pond level management.

The SWBM also incorporates groundwater baseflow and recharge rates estimated by the groundwater model, as well as provides inputs to the water quality model. Figure 3.3-2 illustrates the integration of the water balance with the HLF WBM, groundwater model and water quality model.

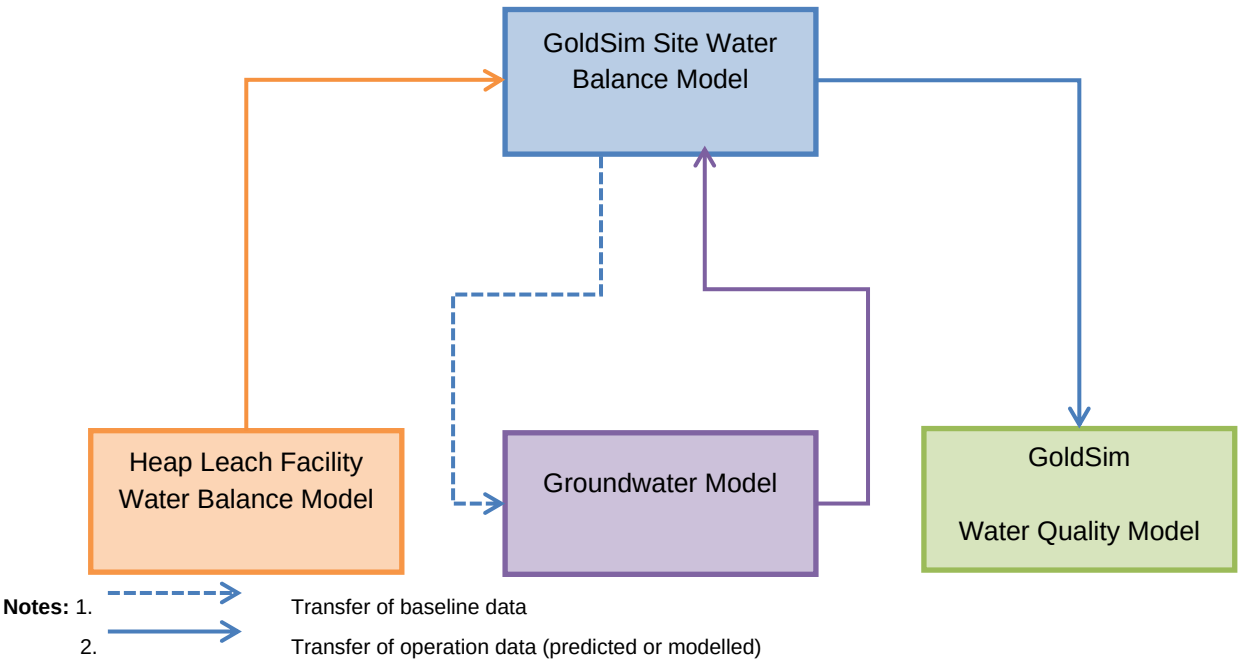


Figure 3.3-2 Water Balance Model Integration

3.3.1.1 **Results**

The results of the updated models are provided in the Eagle Gold Project 2020 Water Balance and Water Quality Model Update Report (Appendix G) and Forte Heap Leach Facility Water Balance Model Report (Appendix H). The model utilizes the active mine plan and considers the receiving environment WQOs developed for the QZ14-041-1, the effluent quality standards mandated by QZ14-041-1, and updated data collected under the Environmental Monitoring, Surveillance and Adaptive Management Plan.

3.4 Groundwater

The majority of the Mine footprint is situated within the Dublin Gulch basin, which is part of the Haggart Creek basin. The hydrogeologic zones used to characterize groundwater in the area include Eagle Pup and the Ann, Suttles, Olive, Bawn Boy, Platinum and Dublin Gulches. The groundwater monitoring program in 2020 continued the general data collection program initiated during baseline monitoring and construction that focused on specific spatial zones and where facilities were constructed and operated to help monitor potential effects on the groundwater flow system. The wells monitored during 2020 are depicted in Figure 3.4-1 and include the following zones:

- Heap Leach Facility (Ann Gulch catchment) and the Events Pond,
- Eagle Pup WRSA (Eagle Pup catchment),
- Platinum Gulch WRSA (Platinum Gulch catchment),
- Open Pit (Upper Suttles and Platinum Gulch catchments)
- Olive and Bawn Boy Gulches (Upper Dublin Gulch catchment), and
- Lower Dublin South Pond (Lower Dublin Gulch valley).

The installation of additional wells near major facilities was planned for 2020 (i.e.., the HLF, Eagle Pit, and the Platinum Gulch WRSA); however, these wells could not be completed due to site access restrictions associated with the ongoing Covid-19 pandemic. Thus, these additional monitoring wells are planned for installation at several locations in 2021. These locations will provide data near the HLF and down gradient from the Eagle Pit PG WRSA. Monitoring well installations in 2021 are also planned down gradient of the EP WRSA Groundwater wells that were decommissioned during the 2020 reporting period due to operational requirements are listed in Table 3.4-1. Wells are decommissioned using ASTM 529999 decommissioning guidelines.

Table 3.4-1: Groundwater Well Decommissioning 2020

Well ID	Date Decommissioned	Reason for Decommissioning
Heap Leach Facility and Events Pond (Ann Gulch catchment and adjacent area)		
MW09-AG2	Jan 1	Well within HLF Phase 1B construction area
MW09-AG3AB	Jan 15	Well within HLF Phase 1B construction area
Eagle Pit Area (Suttles and Platinum Gulch catchments)		
PW-BGC11-02	April 14	Well was within planned pit blast pattern
BH-BGC11-73	Feb 20	Well was within planned pit blast pattern
MW96-17AB	Feb 21	Well was within planned pit blast pattern

3.4.1 Groundwater Quantity Monitoring

The objectives of the groundwater quantity monitoring program are to provide continuous and spot level groundwater level measurements to monitor potential Project effects on the occurrence and quantity of groundwater. Groundwater level data have been collected since 2009 from the wells/piezometers installed throughout the project footprint. Continuous recording data loggers have been used at various locations on site to provide a better understanding of seasonal variability in areas of current and planned infrastructure.

Continuous data logger information collected in 2020 was compiled by BGC in hydrograph plots showing groundwater elevations from monitoring wells; data compilation and analytical methods for processing the groundwater level data are described in the BGC report provided as Appendix I1.

As outlined in the EMSAMP, quarterly monitoring (sampling and water level measurements) was conducted during 2020 at the locations listed in Table 3.4-2 and shown in Figure 3.4-1.

Table 3.4-2: Groundwater Well Monitoring 2020

Well ID	Datalogger Installed?	Water Quality Sample	2020 Observations/Comments
Heap Leach Facility and Events Pond (Ann Gulch catchment and adjacent area)			
MW19-EVP1a	No	No	Dry
MW19-EVP1b	No	No	Insufficient water
MW19-EVP2a	No	No	Dry
MW19-EVP2b	No	Yes	-
MW19-HLF1a	No	No	Dry
MW19-HLF1b	Yes	Yes	-
MW10-AG3a	No	No	Decommissioned
MW10-AG3b	No	No	Decommissioned
MW19-DG6R a	Yes	Yes	Equipment failure in Q4 - No sample
MW19-DG6R b	No	Yes	
Lower Dublin South Pond (Lower Dublin Gulch valley)			
BH-BGC11-72	Yes	Yes	-
BH-BGC11-74	No	No	Insufficient water
MW19-LDSP2a	Yes	No	Dry
MW19-LDSP2b	Yes	Yes	-
MW19-LDSP1	No	No	Dry
MW18-DG2R	Yes	Yes	-
Eagle Pup Waste Rock Storage Area (Eagle Pup catchment)			
MW96-13a	Yes	Yes	-
MW96-13b	Yes	No	Insufficient water
MW96-14b	No	No	-
MW96-15	No	Yes	-
MW19-EPW1a	Yes	Yes	-
MW19-EPW1b	Yes	Yes	-
Platinum Gulch Waste Rock Storage Area (Platinum Gulch catchment)			

Well ID	Datalogger Installed?	Water Quality Sample	2020 Observations/Comments
MW10-PG1	Yes	Yes	-
MW19-PGW1a	Yes	Yes	-
MW19-PGW1b	No	No	Well Damaged
Eagle Pit Area (Suttles and Platinum Gulch catchments)			
PW-BGC11-02	No	No	Decommissioned
BH-BGC11-73a,b,c	No	No	Decommissioned
Upper Dublin Gulch (Bawnboy catchment)			
MW96-9B	Yes	Yes	No sample Q1 and Q2 due to access issues

As described in previous reports (Stantec 2012b. BGC 2013, and BGC 2014), and for the 2018, 2019 and 2020 Annual Reports the well network hydrographs have demonstrated a large range in seasonal variability (since 2009), with some wells (e.g., in the Ann Gulch area) experiencing small changes over the period of record (i.e., 1 to 2 m), while others in the Eagle pit areas historically showed much larger ranges (over 10 meters). For almost all the wells monitored in 2020, seasonal groundwater levels (i.e., peaks associated with freshet melt) returned to more average levels compared to 2019, likely reflecting the greater precipitation experienced in 2020 compared to 2019.

The available data indicate that the groundwater table generally mimics the surface topography, with recharge along topographic highs, and discharge along creeks and gullies. Seasonal groundwater level fluctuations are generally 5 m or less and typically peak in the spring (e.g., MW96-9B). The groundwater levels recorded in 2020 generally reflect similar trends to previous years. Greater amounts of precipitation were received in 2020 than is typical for the Project area, and groundwater elevations have recovered from the lower groundwater elevations observed in 2019. In some locations (e.g., MW96-9B), peak groundwater elevations were slightly higher than the historical range, likely in response to the high precipitation values observed in 2020.

The available data do not indicate noticeable impacts from mining on groundwater levels. The installation of additional wells near major facilities in 2021 is intended to provide additional data to further assess potential effects of mining operations on groundwater levels.

3.4.2 Groundwater Quality Monitoring

The groundwater quality monitored program is undertaken in conjunction with the quantity program with water quality samples taken on a quarterly basis (Table 3.4-2).

The discussion on groundwater quality in this report has been broken into four spatial areas to align with the major facility footprints, they are; HLF & Event Pond, LDSP, Platinum Gulch Waste Rock Storage Area and the future Eagle Pup Waste Rock Storage Area. Parameters discussed herein were previously identified as parameters of concern based on prior environmental characterization work (BGC, 2013) and were also considered in the 2019 annual report, and include: pH, aluminum, arsenic, cadmium, copper, lead, iron and selenium. Detailed results are available in Appendix I2.

Groundwater quality data collected from 1995-2016 was characterized in 2017 as required by the WUL (CoreGeo, 2017). In an effort to better characterize, and respond to if necessary, potential changes to groundwater quality during the life of the mine, VGC will continue to build upon this report and work towards creating management triggers for groundwater quality.

Groundwater quality data for wells within the Ann Gulch drainage (which is the location for the HLF and Event Pond) is provided in Figure 3.4-2 and Figure 3.4-3 for the period of 2010 through 2020. The wells monitoring in Ann Gulch include MW10-AG6, MW10AG3A, MW10-DG6, MW19-DG6RB, MW19-DG6RA, and MW19-HLF1B. Due to construction activities, MW10-DG6 was decommissioned and replaced with MW19-DG6R A/B. MW10-AG3A was also decommissioned during 2020.

Parameter observations include the following:

- pH has remained neutral to slightly basic for the duration of the monitoring program.
- Aluminum generally fluctuates between 1 order of magnitude with the exception of a one sample in 2010 (MW10-DG6 1.02 mg/L), one in 2014 (MW10-AG3 – 0.121 mg/L) and one in 2017 (MW10-AG3 0.109 mg/L).
- Arsenic levels were relatively stable from 2009-2019 with the exception of one outlier at MW10-DG6 which had a result 4 orders of magnitude lower than historical samples. New wells were established in 2019 and there is minor variability observed at MW19-HLF1B.
- Cadmium shows a decreasing trend in well MW18-DG6R over 2020, MW19-DG6RB has relatively stable values throughout 2020 and overall dissolved cadmium concentrations have a variability of approximately two orders of magnitude over the monitoring period.
- Copper at all historic stations have a variability of approximately one order of magnitude over time. In 2020 MW19-DG6RA shows a decreasing trend and MW19-DG6RB is stable throughout the year.
- Lead values in wells that were drilled in 2019 (MW19-HLF1B and MW19-DG6RA&B show higher concentrations then decommissioned baseline wells. MW19-DG6RA show a variability of 2 orders of magnitude during the two years of data.
- Iron displays a large variability between stations but each station shows consistent ranges over 2009 to 2020.
- Selenium displayed results for MW19-DG6RB at detection limits in 2020. MW19-HLF1B shows a slight increase over the 2 years of monitoring but is still lower than baseline results at MW10-DG6.



Figure 3.4.2: Ann Gulch Drainage Groundwater Quality Data

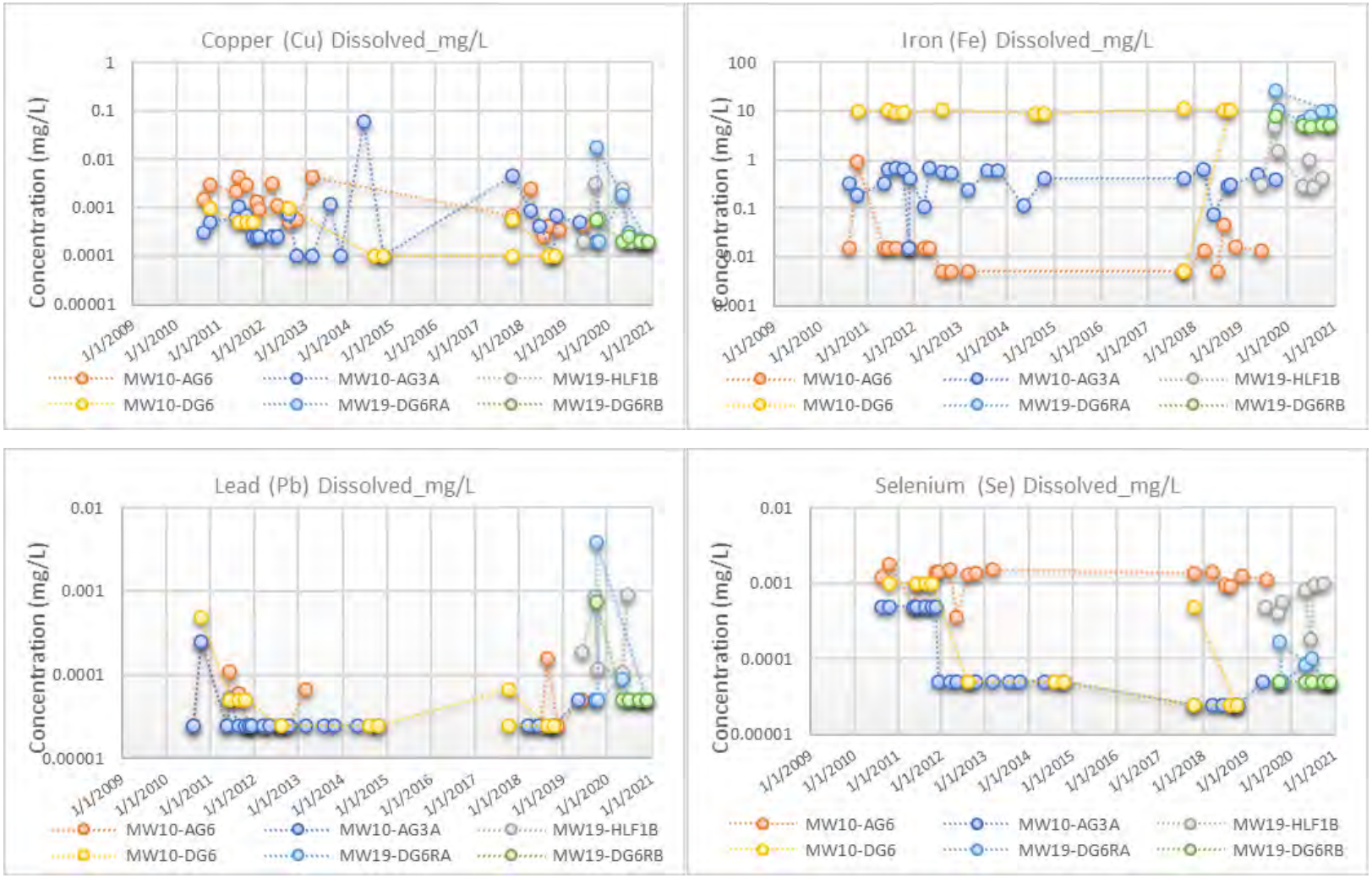


Figure 3.4.3: Ann Gulch Drainage Groundwater Quality Data

Groundwater data for the well network in the area of the LDSP is provided in Figure 3.4.4 and Figure 3.4.5. The wells considered include BH-BGC11-72, MW10-OBS1, MW19-LDSP2A, MW19-LDSP2B and MW18 DG2R. The data set for this area consists of groundwater quality data from 2017 through 2020. MW10-OBS1 was replaced with MW19-LDSP2A and is no longer monitored on a quarterly schedule.

Parameter observations include the following:

- pH is consistently neutral to slightly basic across all station and has a variability of 1 order of magnitude.
- Aluminum within the majority of groundwater samples are within 0.001 to 0.01 (one order of magnitude). In 2019, BH-BGC11-72 had aluminum concentrations 3 orders of magnitude higher than the majority of samples, but throughout 2020 concentrations have lowered and are closer to 0.001 mg/L.
- Arsenic ranges from 0.00032 mg/L to 4.48 mg/L across all stations, with the majority of values ranges from 0.001 to 0.1 mg/L or two orders of magnitude. MW18-DG2R had consistent arsenic concentrations above all other sample sites.
- Cadmium concentrations range from 0.00001 mg/L to 0.001 mg/L across all stations. MW10-OBS1 showed the largest variance, particularly the 2020 sample. Cadmium concentrations for the other four stations in the LDSP area display similar ranges to each other. Over the data collection period, there is a downward trend in cadmium concentrations across all stations.
- Copper concentrations show a downward trend in all stations with a concentration range of below 0.0002 mg/L (detection limit) to 0.00272 mg/L.
- Iron concentrations at BH-BGC11-72 displayed low variability during 2019-2020 monitoring with a range of 2.47 mg/L to 2.30 mg/L. MW19-LDSP2A displayed a decreasing trend with the 2020 Q4 sample concentration measured at method detection limits.
- Lead concentrations display a large variability over the 3 years of data (up to 4 orders of magnitude); however, the 2020 sample results are closer to detection limits and within 1 order of magnitude of one another.
- Selenium concentrations at MW10-OBS1 have remained stable over the 3 years of data collection at this monitoring station. MW19-LDSP2B has concentrations close to the laboratory detection limit. All samples are within 1 order of magnitude and have generally displayed low variability.

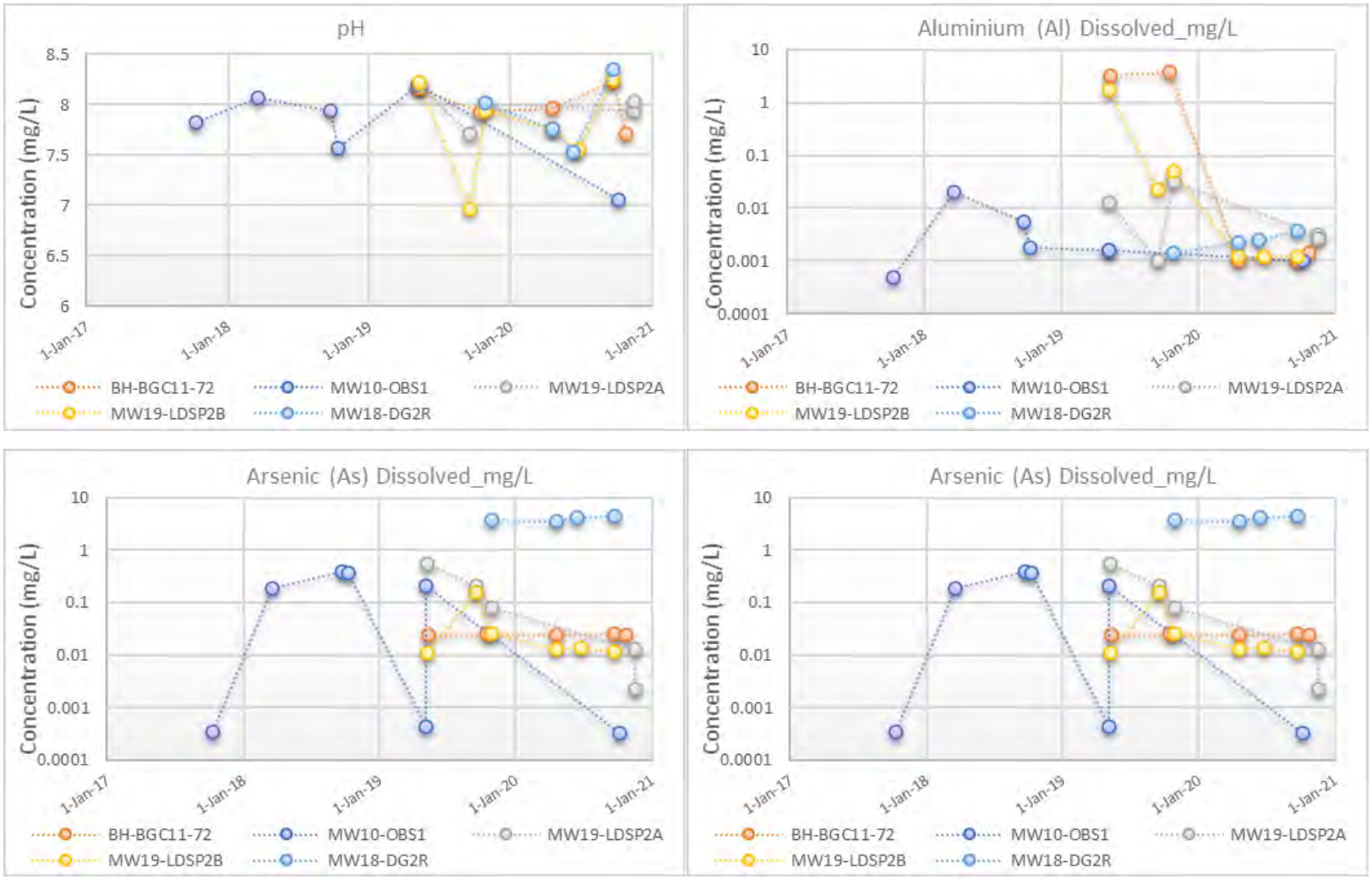


Figure 3.4.4: LDSP Area Groundwater Quality Data

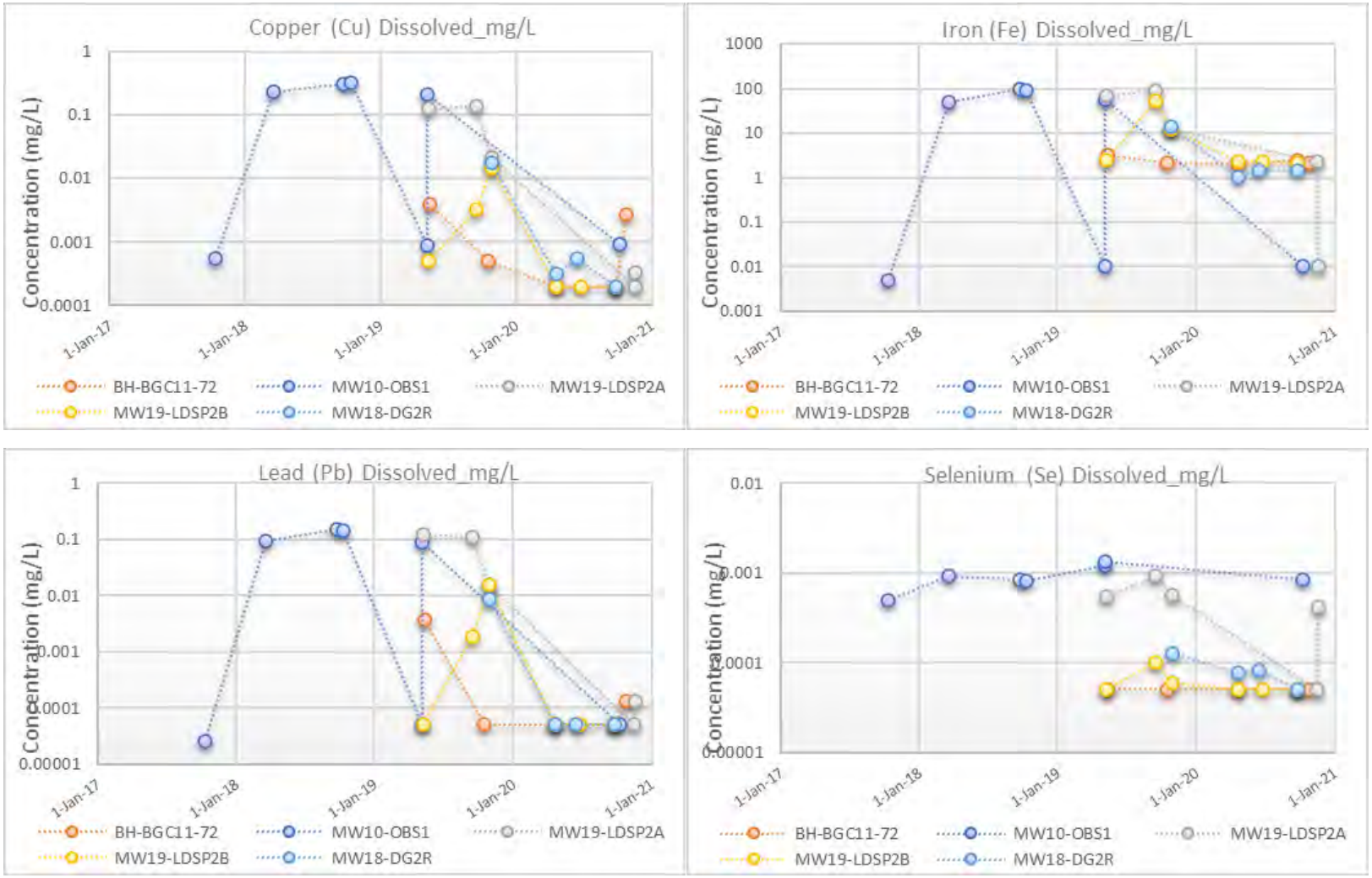


Figure 3.4.5: LDSP Area Groundwater Quality Data

There are currently two functional wells in the area of the PG WRSA that are part of the groundwater monitoring program. MW19-PG1b was damaged in 2019 and no sampling has occurred to date and the well is scheduled to be replaced in 2021. MW10-PG1 and MW19-PG1a were monitored during the reporting period (Figure 3.4.6 and Figure 3.4.7).

Parameter observations include the following:

- pH as remained neutral to slightly basic over the two years of data collected. Both stations have similar trendlines over the collection period.
- Aluminum concentrations at MW10-PG1 and MW19-PG1A have a range of one order of magnitude from 2019 to present.
- Arsenic concentrations at MW19-PG1A have displayed a downward trend since data was collected from June 2019 to present. MW10-PG1 arsenic concentration are consistently higher than MW19-PG1A with concentrations ranging from 7.78 mg/L to 9 mg/L over the 2020 sampling period.
- Cadmium concentrations at both stations show an overall downward trend over the 2 years of sample collection. MW10-PG1 displayed a downward trend over the 2020 monitoring period and MW19-PG1A displayed a slight increase throughout 2020.
- Copper concentrations at both stations showed a downward trend over the 2020 sampling period.
- Iron concentrations have displayed a downward trend over the 2 years of data collection, with concentrations varying up to three orders of magnitude.
- Lead concentrations for both MW10-PG1 and MW19-PG1A stations displayed a downward trend in 2020 closer to the laboratory detection limit of 0.00005 mg/L.
- Selenium concentrations at MW19-PG1A display a relatively flat trend and sample results are within one order of magnitude of each other.

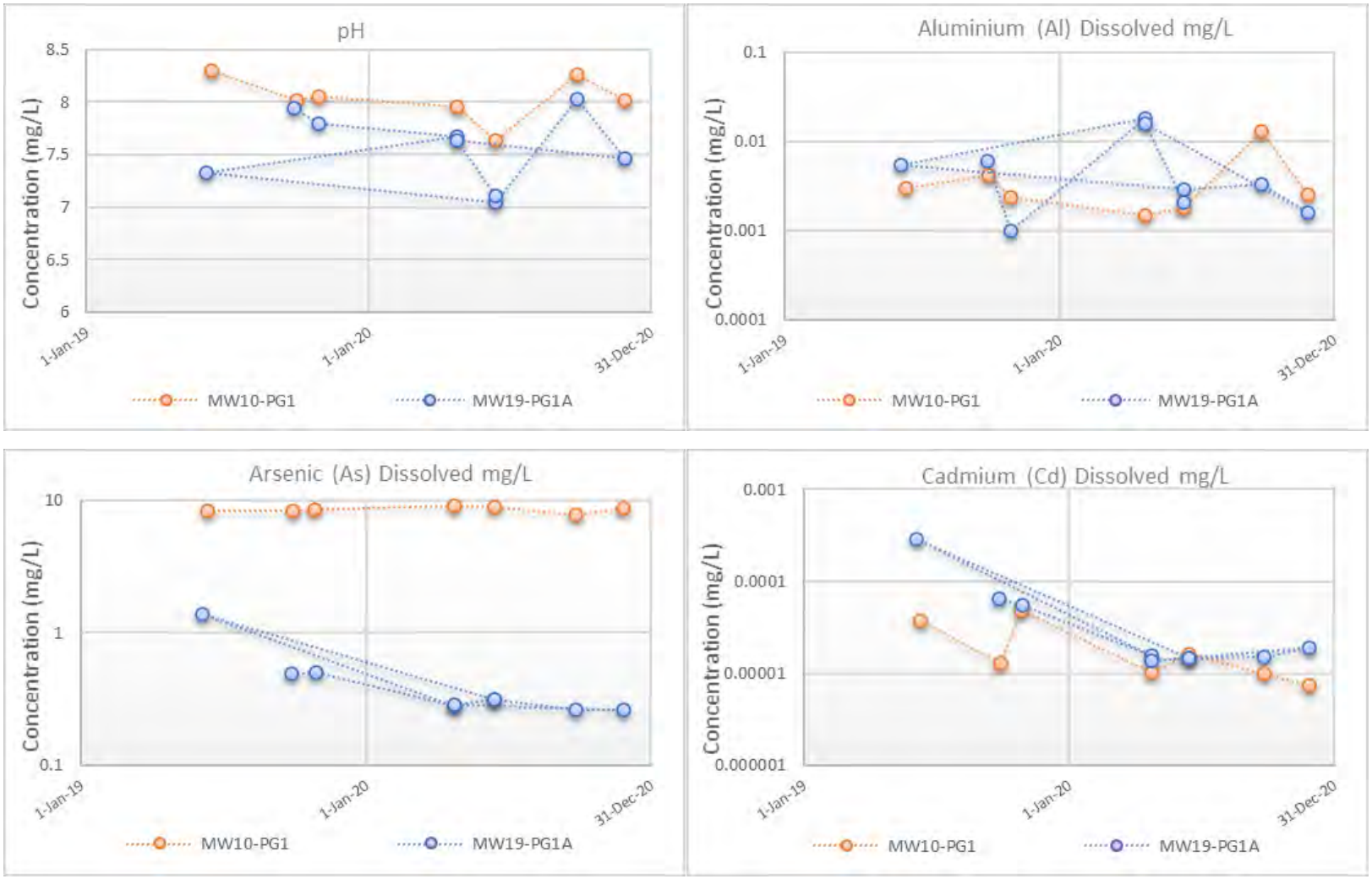


Figure 3.4.6: PG WRSA Area Groundwater Quality Data

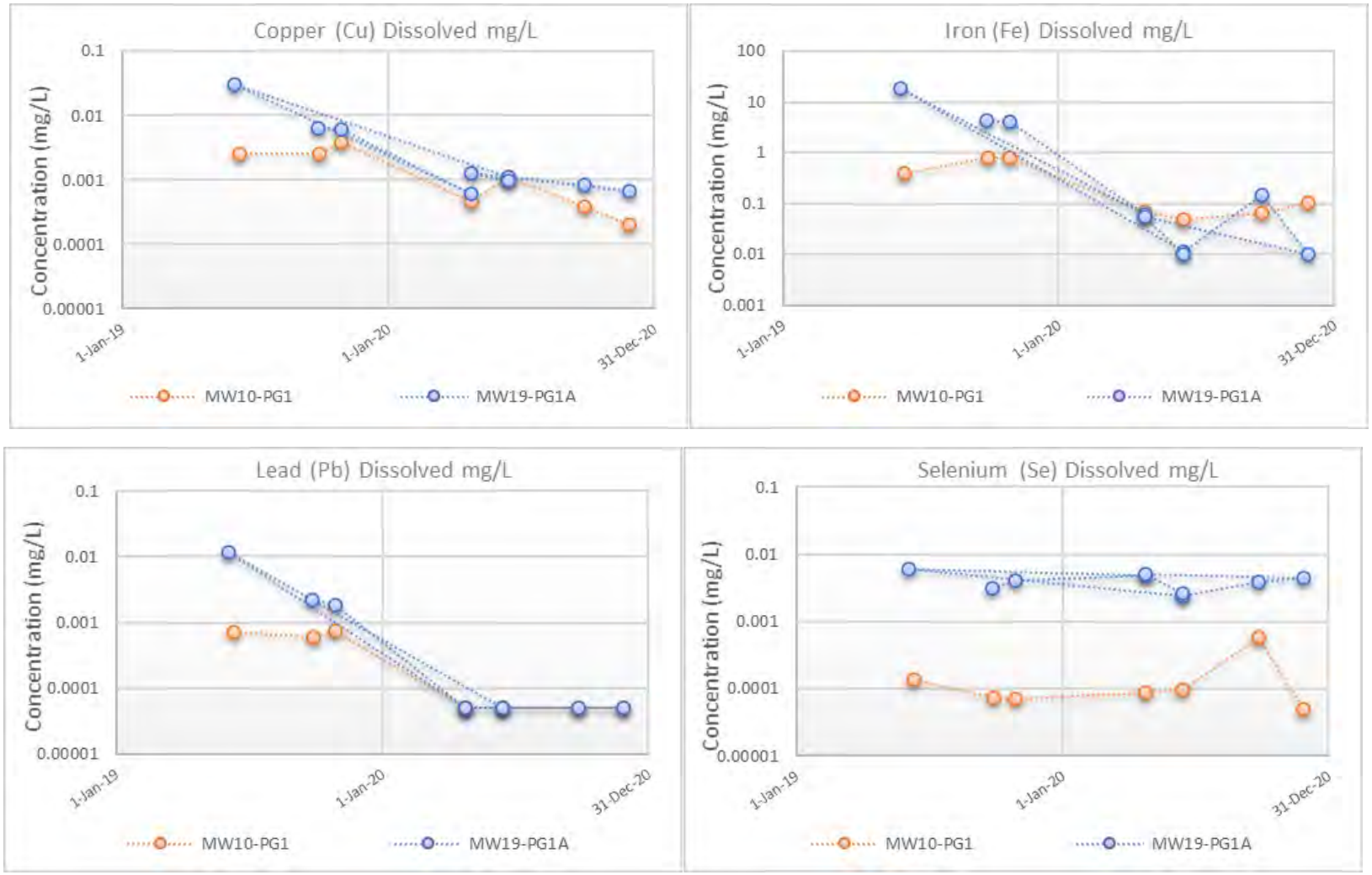


Figure 3.4.7: PG WRSA Area Groundwater Quality Data

Well information has been gathered in the Eagle Pup drainage area at two locations since 2009 (MW96-13A, MW96-15) and an additional station was installed in 2019 (MW19-EPW1A). MW96-9B is located in the Bawn Boy drainage and is considered a background site that is discussed herein with the Eagle Pup sites and has been monitored since 2019.

- pH in the Eagle Pup drainage is neutral to slightly basic, with field measurement being within one order of magnitude of each other. The only exception is MW96-9B which is a background well above the project and is part of the Bawn Boy drainage.
- Aluminum concentrations have remained relatively constant with MW96-13A showing a slight decrease in dissolved concentrations. While MW19-EPW1A shows a slight increase since the well was established in 2019.
- Arsenic concentrations at MW96-15 have displayed a stable range of 0.1 - 0.3 mg/L throughout the dataset.
- Cadmium concentrations for the majority of the samples are within one order of magnitude. MW96-15 shows a greater variability from 2017-2019, but fluctuations have reduced in 2020. MW96-13A shows a slight decrease with result values being below detection limit.
- Copper concentrations measured at MW96-15 experienced fluctuation of up two orders of magnitude from 2017-2019. 2020 sampling results show much less variability and are within one order of magnitude throughout the year. MW96-9B shows a downward trend over time, but only two sampling were collected in 2020 due to issues accessing the site.
- Iron concentrations at MW96-13A have low variability over the three-year monitoring period and MW96-15 has a variability of one order of magnitude from 2009-present.
- Lead concentrations display a historic concentration range close to detection limits for MW96-15 and MW96-13A. MW19-EPW1A and MW96-9B show a decreasing trend from 0.00785 and 0.00373 mg/L in 2019 and closer to detection limit in 2020.
- Selenium concentrations at station MW96-13A have been measured at or near to the detection limit of the time from 2009 to 2020. MW96-15 displayed selenium concentrations close to the detection limit from 2009 to 2014, and have generally remained within an order of magnitude. Concentrations remained near method detection limits for the MW96-9B station and MW19-EPW1A displays concentrations within an order of magnitude to the neighbor stations with a small range.

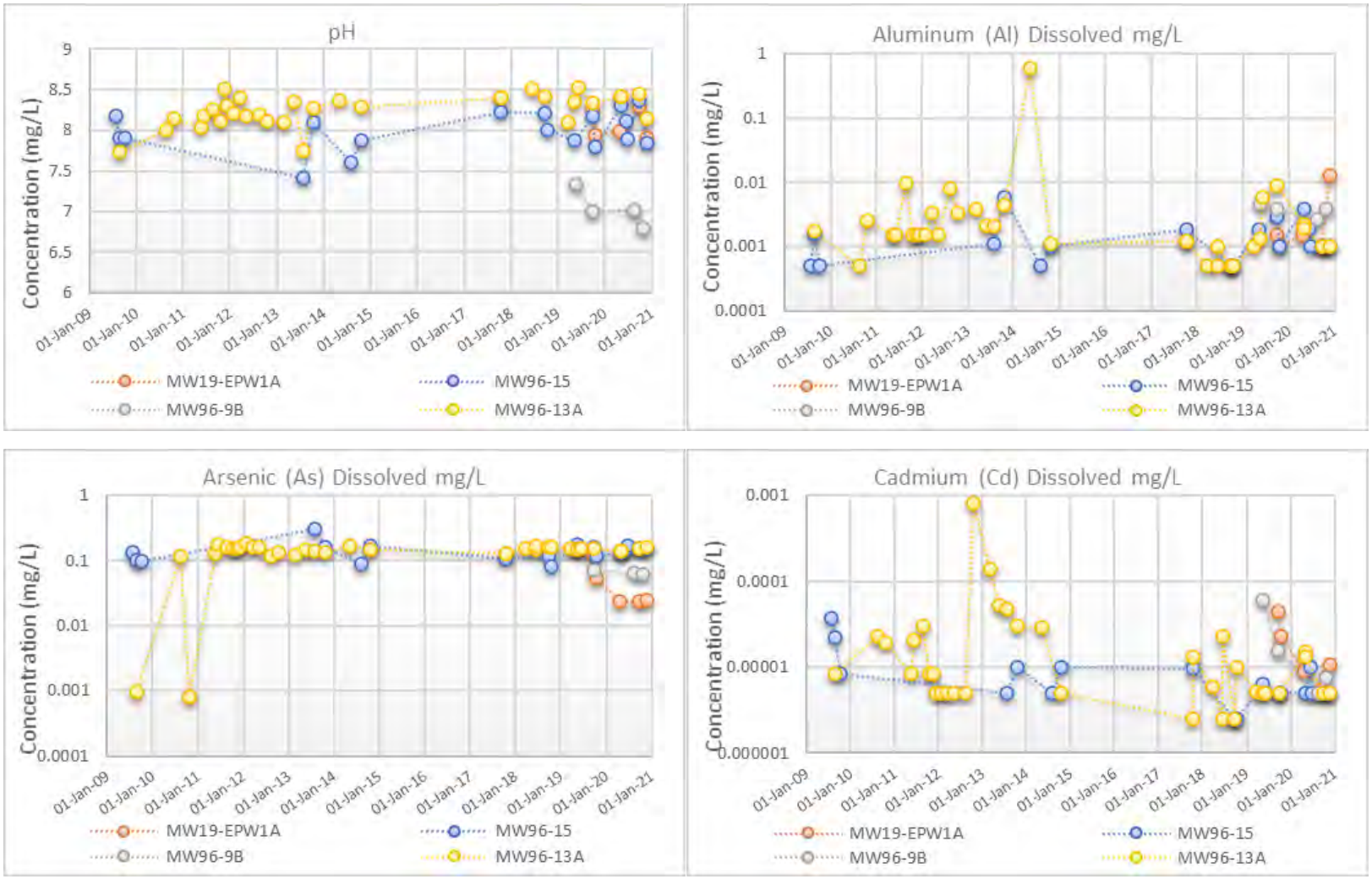


Figure 3.4.8: EP WRSA Area Groundwater Quality Data

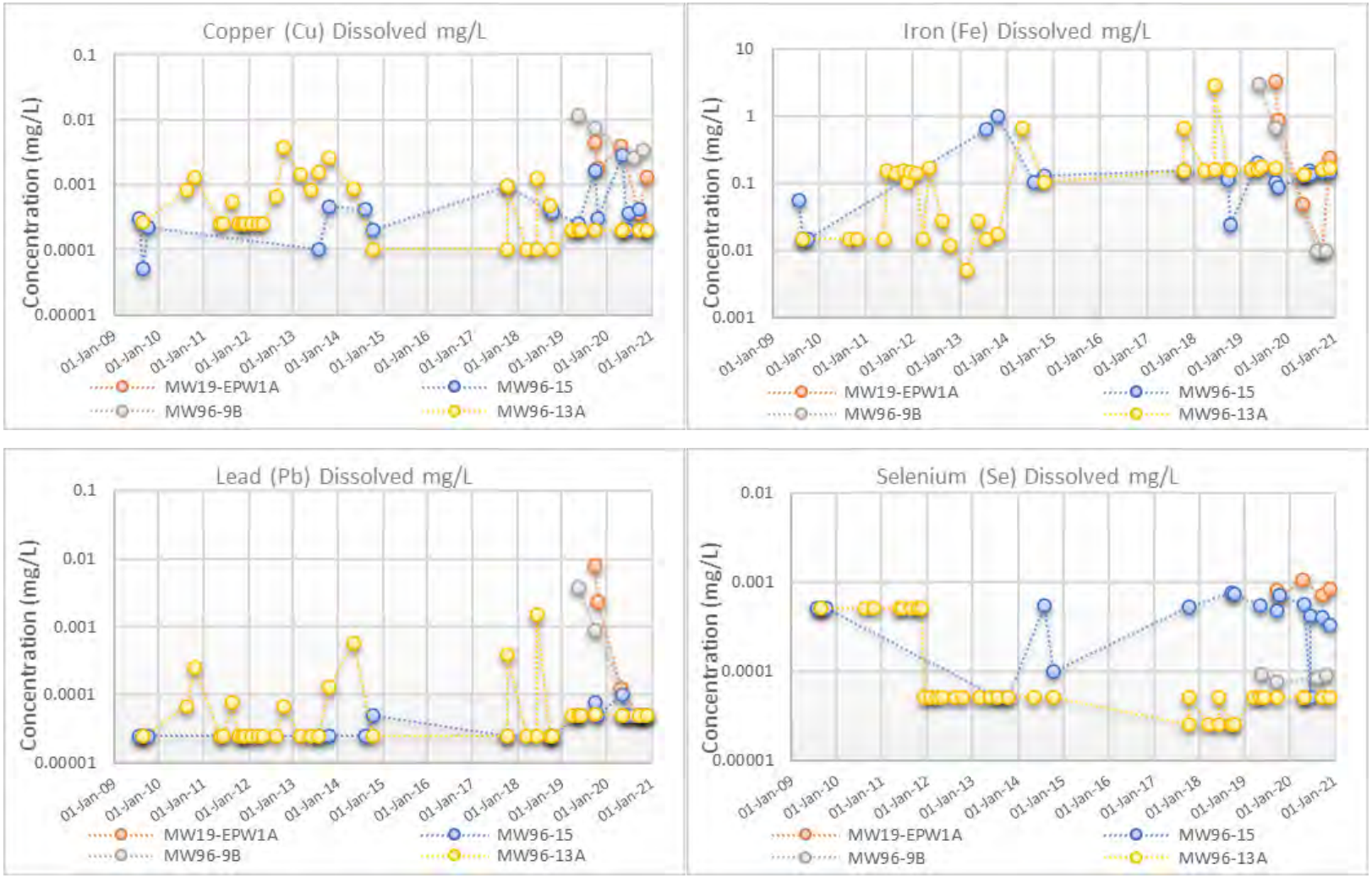


Figure 3.4.9 EP WRSA Area Groundwater Quality Data

3.4.2.1 Groundwater Quality QA/QC

As per the VGC QA/QC program, field samples were collected in addition to the groundwater quality samples and included duplicates (01), field blanks (02), and travel blanks (03) (Table 3.4-3). The British Columbia Field Sampling Manual (Clark 2013) specifies that a relative percent difference (RPD) greater than 20 percent indicates a possible sample contamination. An RPD greater than 50 percent indicates a definite sample integrity problem; however, it is not unusual to find high variability for field duplicates, especially if the water is turbid, such as those typical of groundwater samples. Some duplicates presented in Table 3.4-3 displayed RPDs greater than the criteria of 20% (red highlighted) and 50% (orange highlighted).

Blank samples did not display concentrations that exceeded detection limits.

Table 3.4-3: Groundwater Quality QA/QC 2020

Site Name	Date	Time	pH	Aluminum (Al)-D	Arsenic (As)-D	Cadmium (Cd)-D	Copper (Cu)-D	Iron (Fe)-D	Lead (Pb)-D	Mercury (Hg)-D	Selenium (Se)-D	Zinc (Zn)-D
Duplicates												
MW09-OG3-01	09-Dec-20	12:50	7.92	0.001	0.114	0.0000094	0.00023	1.1	0.00005	0.000005	0.00005	0.0011
MW09-OG3	09-Dec-20	12:40	7.95	0.001	0.0798	0.0000137	0.00033	0.549	0.00005	0.000005	0.00005	0.001
Relative % Difference (RPD)		**RPD**	0	0	35	37	36	67	0	0	0	10
MW19-DG6RB-01	28-Nov-20	00:00	7.68	0.0019	3.28	0.0000081	0.0002	5.25	0.00005	0.000005	0.00005	0.0866
MW19-DG6RB	28-Nov-20	18:00	7.64	0.0012	3.34	0.000005	0.0002	5.1	0.00005	0.000005	0.00005	0.0316
		RPD	1	45	2	47	0	3	0	0	0	93
MW19-EVP2B-01	27-Nov-20	00:00	7.05	0.0024	0.148	0.00001	0.0004	39.6	0.0001	0.000005	0.000357	0.002
MW19-EVP2B	27-Nov-20	09:25	7.15	0.0032	0.157	0.00001	0.0004	45.1	0.0001	0.000005	0.000192	0.002
		RPD	1	29	6	0	0	13	0	0	60	0
MW96-05-01	24-Oct-20	16:45	7.35	0.272	0.0865	0.0000072	0.00401	0.25	0.000226	0.000005	0.000448	0.003
MW96-05	24-Oct-20	16:45	7.32	0.0147	0.0813	0.000005	0.0002	0.157	0.00005	0.000005	0.000431	0.0012
		RPD	0	179	6	36	181	46	128	0	4	86
MW96-6ab-01	21-Aug-20	16:00	7.74	0.0021	0.0651	0.000005	0.0002	0.01	0.00005	0.000005	0.000172	0.0017
MW96-6ab	21-Aug-20	16:00	7.71	0.0019	0.0631	0.000005	0.0002	0.01	0.00005	0.000005	0.000189	0.001
		RPD	0	10	3	0	0	0	0	0	9	52
MW19-PGW1a-01	14-Jun-20	16:40	7.1	0.0021	0.316	0.0000145	0.00099	0.01	0.00005	0.000005	0.0026	0.012
MW19-PGW1a	14-Jun-20	16:40	7.05	0.0029	0.312	0.0000147	0.00112	0.011	0.00005	0.000005	0.00239	0.0151
		RPD	1	32	1	1	12	10	0	0	8	23
MW96-13a-01	03-May-20	15:51	8.41	0.0019	0.139	0.0000131	0.0002	0.136	0.00005	0.000005	0.00005	0.0016
MW96-13a	03-May-20	15:30	8.42	0.0022	0.138	0.0000153	0.0002	0.136	0.00005	0.000005	0.00005	0.0016
		RPD	0	15	1	15	0	0	0	0	0	0
MW19-PGW1A-01	24-Apr-20	13:36	7.64	0.0158	0.283	0.0000136	0.00129	0.054	0.00005	0.000005	0.0051	0.0217
MW19-PG1A	24-Apr-20	13:35	7.67	0.0181	0.28	0.0000158	0.00061	0.062	0.00005	0.000005	0.00485	0.0184
		RPD	0	14	1	15	72	14	0	0	5	16
Field Blanks												
MW19-LDSP2a-02	25-Jun-20	10:15	5.32	0.001	0.0001	0.000005	0.0002	0.01	0.00005	0.000005	0.00005	0.001
Travel Blanks												
MW18-DG6RA-03	26-Nov-20	00:00	5.39	0.001	0.0001	0.000005	0.0002	0.01	0.00005	0.000005	0.00005	0.001
MW96-10b-03	25-Oct-20	13:40	5.61	0.001	0.0001	0.000005	0.0002	0.01	0.00005	0.000005	0.00005	0.001

3.4.3 Adaptive Management

3.4.3.1 Groundwater Quantity

2020 represents the first full year of production at the Mine site. Based on the observations of groundwater levels to date, the construction and operation of the mine is likely to have had some effect on groundwater levels within the mine footprint. However, the short period of record for the operation of the mine and highly variable precipitation levels during this time does not provide an ability for strong quantification of effects.

As expected, due to construction of the lined heap leach pad, a decrease in recharge rate within the Ann Gulch catchment was observed and up to a one-meter decline from baseline levels was observed in wells associated with the HLF (i.e., MW10-AG3A, MW10-AG6, MW10-DG6/6R). Further, declines in the lower Dublin Gulch valley aquifer (BH-BGC11-74, MW10-OBS1) likely reflect the capture of groundwater by the LDSP underdrains and the usage of groundwater (from MW10-DG7) for potable water. In contrast, there was no measurable effect on wells outside the mine footprint (i.e., those in Eagle Pup, and the upper basin of Dublin Gulch valley. Further, significant declines (over 5 m) were recorded in BH-BGC-11-73, a tri-nested VWP located above the Eagle Pit. The declines began at the onset of pre-stripping and continued with the deepening of the Eagle pit throughout the year, indicating that some depressurization has occurred.

When comparing groundwater level data collected during the baseline period (up to August 2017) to the last two years since mine construction began and when the mine became operational, the observed downward trends in a few wells adjacent to certain facilities were expected and consistent with dewatering activities in the area of the HLF, Eagle Pit and the LDSP. No adaptive management mitigations were deemed necessary.

3.4.3.2 **Groundwater Quality**

When considering dissolved concentrations for all eight parameters at each station, it seems that some of the wells exhibited higher overall concentrations and higher overall ranges in concentrations than other wells. For example, MW10-PG1 and MW19-DG6RA/B (replacement for MW10-DG6) exhibits relatively high dissolved concentrations of arsenic and iron. MW96-13a and MW10-PG1 exhibit relatively higher pH than the other wells. Nevertheless, there does not appear to be any obvious or consistent spatial connection or temporal association to explain these characteristics, and, there are no discernible changes associated with the 2020 production phase of the operation. All observed increasing or decreasing trends were apparent before construction and operations began. It is expected that there will be seasonal changes to groundwater quality but in an effort to address significant changes to groundwater quality associated with mine production, VGC is in the process of creating thresholds for groundwater quality to help guide adaptive management. VGC acknowledges that adaptive management thresholds still need further development and will endeavor to complete this work for use in 2021.

3.5 Geochemical Monitoring

The geochemical monitoring program continued to provide on-going characterization of rock encountered during the operation of the Project. Whenever possible the geochemical monitoring program is tied to operational activities and the monitoring program has been designed to:

- Assess the level of weathering-driven reaction products and their potential to migrate;
- Verify geochemical predictions made during the mine planning phase;
- Assess the potential for metal leaching and acidic drainage from excavated rock to determine if it is suitable for construction material and;
- Evaluate the effectiveness of measures to prevent and control metal leaching and acidic drainage (if applicable).

3.5.1 Geochemical Barrel Testing

The assessment of water chemistry for leachate through field barrels developed from site waste rock continued throughout 2020. Natural precipitation percolates through the barrels and is captured in collection jugs that are

connected to the bottom of the barrels. Field staff collect samples several times throughout non-freezing conditions and samples are process through an accredited laboratory.

In 2020, based on consideration of previous results, Lorax Environmental provided guidance on a modification to the project design that had been operational since 2012. The modification is intended to help further the understanding of arsenic leaching behavior in a mixed-lithology waste rock facility. The original field barrels created in 2012 were disassembled in June 2020, and two new field barrels were created from their contents (Photo 3.5-1). LX-2020-FB-1 is representative of the composition within the Platinum Gulch WRSA which is mainly composed of metasediments, LX-2020-FB-2 was constructed with granodiorite blended with various other lithologies in proportions representative of the Eagle Pup WRSA (Table 3.5-1).

Table 3.5-1: Breakdown of Field Barrels Samples Re-Purposed for 2020 Kinetic Test Program

	Sample ID (SRK)	Unit	Mass (kg)	Purpose
Barrel 1			150*	Assess arsenic attenuation capacity of MSED unit
Top Layer	DG12-MET-04	Oxide GND	75	
Bottom Layer (LX-2020-FB1)	DG12-MET-01	Oxide MSED	30	
	DG12-MET-02	Fresh MSED	30	
	DG12-MET-03	Oxide/Fresh MSED	30	
Barrel 2			150*	Constrain arsenic leaching behaviour from mixed lithology sample
Composite (LX-2020-FB2)	DG12-MET-01	Oxide MSED	45	
	DG12-MET-02	Fresh MSED	50	
	DG12-MET-04	Oxide GND	25	
	DG12-MET-05	Fresh GND	25	
	DG12-MET-06	Altered GND	5	
	DG12-MET-08	Overburden	15	

Notes:
GND = Granodiorite
MSED = Metasediment
*Sample mass accounts for the removal of a subsample after compositing.



Photo 3.5-1: Cone and quartering technique used to mix materials for barrel reconstruction

3.5.1.1 Eagle Waste Rock Unsaturated Columns

In addition to field barrel tests, off site lab scale unsaturated columns tests were completed to investigate the processes controlling the leachate chemistry of the revised field barrel program in a controlled environment. Subsamples from each barrel were submitted to an external laboratory for testing. The columns were irrigated weekly with 600 ml of deionized water over a 15-week period. Since the materials have already been leached in the field for seven years prior to the column testing the experiment is considered sufficient to produce long-term leaching data.

The geochemistry of field barrel leachates collected during 2020 were used in conjunction with analytical results from previous years, lab based kinetic tests (i.e., humidity cells), scaling factors, and mass and volume of ore and waste rock to inform predictive modeling for seepage chemistry for the WRSAs, ore stockpile and pit walls.

In summary, pH and sulphate concentrations of the re-purposed field barrels showed similar results to previous field barrel tests. pH remained close to neutral and the sulphate levels stabilized around 40 to 60 mg/L for Barrel 1 and Barrel 2. Despite having variable solid-phase arsenic (As) contents, both Barrel 1 and Barrel 2 produced similar As concentrations.

As, Sb, and Se concentrations in field barrel leachates before and after the reconstruction of the SRK kinetic experiment should have comparable concentrations. Sb concentrations showed a relatively narrow range between 0.01 and 0.02 mg/L over the field season. There was an initial selenium spike of 0.0053 mg/L before the stabilizing around 0.0020 mg/L in the last 3 sampling events.

Overall, the initial results from the re-constructed field barrel experiments appear to show that mixed lithology waste rock materials generate more consistent and moderate concentrations of various metals of concern. The results from both the field geochemical barrel and off-site unsaturated columns are discussed in greater detail in the updated geochemical source term model provided as Appendix A to Appendix G.

3.5.2 Material Testing

3.5.2.1 Construction Material Sampling

During this reporting period, there were two construction projects that required borrow or fill material and thus required geochemical analysis to determine if the construction grade rock criteria of the licenses was met. The two projects were the continuation of the PG WRSA rock drain construction and the placement of rip rap material in Ditch B.

All samples analyzed to determine suitable as construction grade material are outlined in Table 3.5-2. Results from samples met the criteria required for construction or fill purposes, with a pH of at least 5.0, an NP:AP ratio of at least 3:1, and a total sulphide sulphur content of no greater than 0.3%. Samples ranged in pH from 6.88 to 7.85, with a median of 7.41, with Sulphur content ranging from 0.02% to 0.1% and a median of 0.006 (Table 3.5-2). In all cases, the NP:AP ratio was greater than 3.

Table 3.5-2: 2020 Construction Rock Characterization Summary

Sample ID	ALS ID	Date Sampled	Paste pH	Sulfur (%)	NP:AP Ratio
Construction Testing					
E00074984	VA20A6826	2020-05-20	7.05	0.07	10:0.3 (33.3)
E00074936	VA20B0775	2020-07-17	7.58	0.07	7:2.2 (3.18)
F00057971	VA20C4284	2020-12-12	7.48	0.04	10:1.3 (7.70)
F00057972	VA20C4284	2020-12-12	7.85	0.10	11:3.1 (3.55)
F00057973	VA20C4284	2020-12-12	7.64	0.06	12:1.9 (6.32)
F00057974	VA20C4284	2020-12-12	6.88	0.02	3:0.6 (5.0)

3.5.2.2 Waste Rock Characterization

Additional waste rock characterization is conducted as further confirmation of the geochemical composition of waste materials placed in the WRSAs. The program includes quarterly grab samples representing blasted waste and annual waste sampling analysis of grab samples per 1 million tonnes waste rock representing placed material in the WRSAs. Samples were taken from various benches and sample locations were mapped for future analyses. As outlined in the EMSAMP the Sobek Method for Modified Acid Base Accounting was used to analyze each grab sample from an accredited laboratory.

As a preliminary check of the material characteristics, geochemical results were compared to the construction grade use criteria (Table 3.5-3) and the majority of sample results meet the criteria required for construction or fill purposes, with a pH of at least 5.0, an NP:AP ratio of at least 3:1, and a total sulphide sulfur content of no greater than 0.3%. All sample met criteria for pH, two samples collected on August 10, 2020 had slightly higher sulfur content than the above the outlined 0.3%, and six NP:AP ratios were below the 3:1 ratio. These results confirm pre-mining assumptions that the majority of the waste rock and ore from this site has a low sulphur content (typically less than 0.5%), and is predominantly non-acid generating.

Table 3.5-3: 2020 Waste Rock Characterization Summary

Sample ID	ALS ID	Date Sampled	Paste pH	Sulfur (%)	NP:AP Ratio
Quarterly Sample					
F00057954	VA20A9008	2020-03-24	7.42	0.12	2:1 (2.0)

F00057951	VA20A9008	2020-03-24	8.41	0.03	14:0.9 (15.56)
E00074946	WR2000818	2020-08-24	8.10	0.20	23:6.3 (3.68)
F00057966	VA20C4284	2020-12-05	7.70	0.60	11:1.9 (5.8)
Annual Samples per Million Tonnes Waste					
F00057956	VA20A9008	2020-03-24	8.44	0.04	10:1.3 (7.70)
E00074985	VA20A9008	2020-05-14	7.75	0.18	8:5.6 (1.43)
E00074986	WR2000433	2020-05-24	7.77	0.05	6:1.6 (3.75)
E00074923	WR2000433	2020-06-19	6.91	0.01	3:0.3 (10.0)
E00074944	WR2000818	2020-08-10	7.93	0.35	14:10.9 (1.28)
E00074943	WR2000818	2020-08-10	8.42	0.33	29:10.3 (2.81)
E00074945	WR2000818	2020-08-20	8.03	0.10	34:3.1 (10.88)
F00057970	VA20C4284	2020-11-18	8.12	0.09	11:2.8 (3.93)
F00057966	VA20C4284	2020-12-05	7.70	0.60	11:1.9 (5.8)
F00057967	VA20C4284	2020-12-05	8.18	0.09	14:2.8 (5.0)
F00057968	VA20C4284	2020-12-05	7.79	0.17	9:5.3 (1.70)
F00057969	VA20C4284	2020-12-05	8.24	0.25	16:7.8 (2.05)

3.5.2.3 **Blast Hole Chip Sampling**

Geochemical analysis of pulp splits from blast hole chip cuttings from each pattern on every bench in the Eagle open pit is undertaken. The current program for sampling and tracking blast hole data is being refined and updates will be presented in the future reports.

Currently, blast hole sample results are geospatially referenced to the block model (See Figure 3.5-1 for example) and a statistical analysis was undertaken based on the sample results and the volume of each lithology in the blasted bench (Table 3.5-4).

Table 3.5-4: 2020 Blast Hole Sampling Results Summary

Bench	Arsenic (ppm)	Sulfur (%)	Total Inorganic Carbon (%)	Total Tonnage per bench to date (tonnes)
1195	226.95	0.03	0.51	1,633,736
1205	310.20	0.09	0.96	1,570,298
1215	333.19	0.10	0.89	1,506,213
1225	258.49	0.11	1.04	1,464,568
1235	261.57	0.07	0.67	1,315,266
1245	146.45	0.04	0.75	1,012,488
1255	80.71	0.02	0.27	822,806
1265	ND	ND	ND	667,351
1275	ND	ND	ND	596,056
1285	64.49	0.03	0.10	499,643
1295	37.42	0.06	0.14	601,419
1305	54.90	0.07	0.11	1,280,024
1315	49.18	0.05	0.06	1,044,185

Bench	Arsenic (ppm)	Sulfur (%)	Total Inorganic Carbon (%)	Total Tonnage per bench to date (tonnes)
1325	ND	ND	ND	648,973
1335	113.70	0.12	0.25	396,022
1345	64.96	0.17	0.16	310,669
1355	26.90	0.35	0.07	287,392
1365	69.51	0.12	0.23	480,952
1375	54.61	0.12	0.16	405,738
1385	55.80	0.10	0.06	256,471
1395	28.71	0.08	0.05	172,447

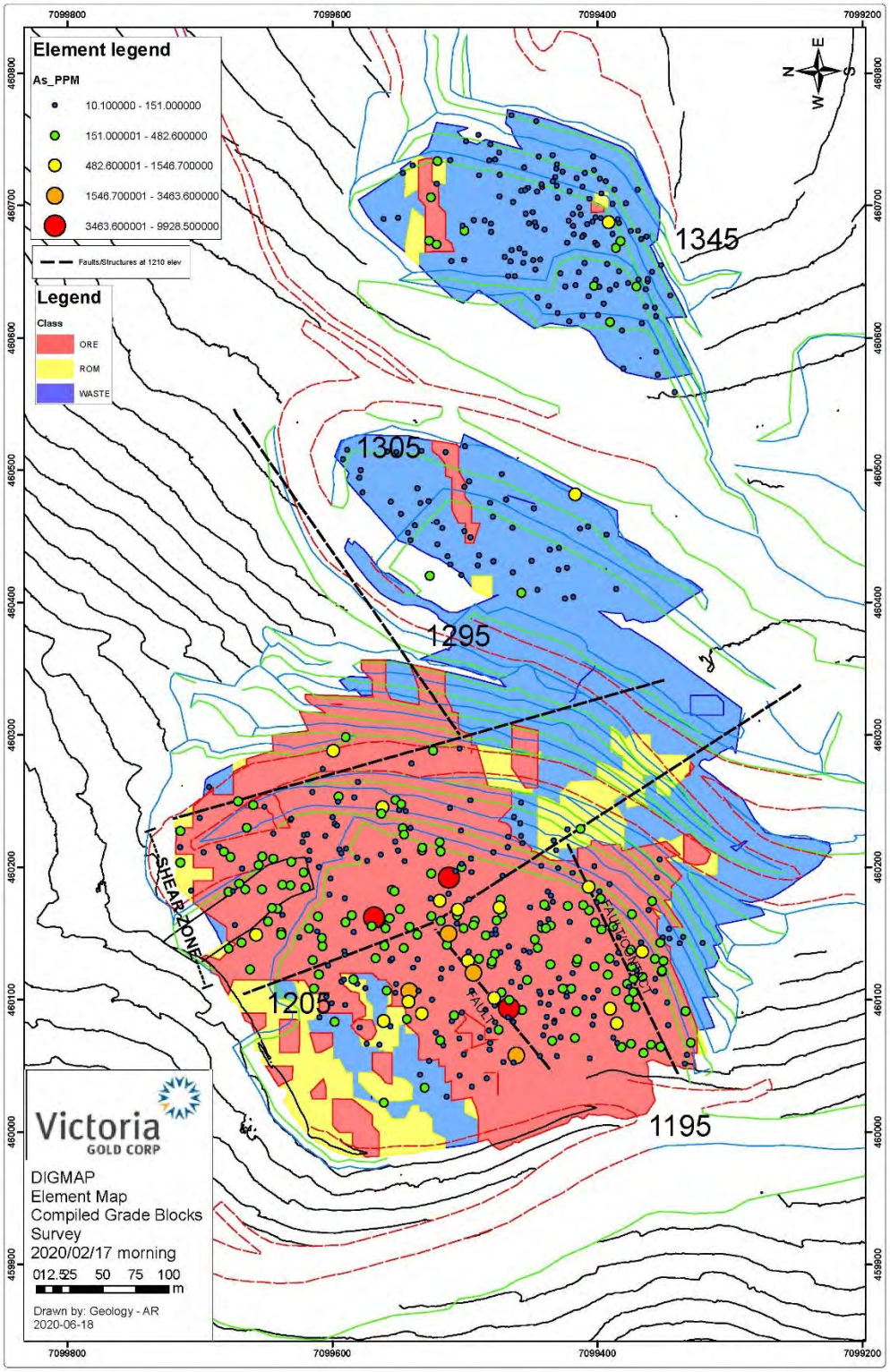


Figure 3.5-1: Element-Grade Blocks for As and Material Destination/Characterization

3.6 Aquatic Environment

Stream sediment, benthic macroinvertebrate, and water quality programs have historically been performed concurrently to support a more robust characterization of the existing conditions. The stream sediment and benthic invertebrate sampling is required on biennial basis (i.e., once every 2 years) under the WUL. The next sampling is scheduled for 2021, since previous sampling was conducted in 2019.

On April 20, 2019 the mine became subject to *Metal and Diamond Mining Effluent Regulations (*MDMER) and as a result required an Environmental Effects Monitoring (EEM) program to be developed and approved under the MDMER. An EEM Study Design was submitted to Environment and Climate Change Canada (ECCC) on April 20, 2020 which was subsequently approved by ECCC on December 11, 2020. This program requires a fisheries assessment in the second quarter (Q2) of 2021, according to the methods and timing detailed in the Study Design (Appendix J1). As stated in the EMSAMP, the aquatic environment monitoring program for the Project will now conform to the EEM study design and the scope of the program under the EMSAMP is now considered to be the same as the EEM Study. As required by QZ14-041-1, the results obtained under the EEM study will become part of the material submitted in future WUL reports as they become available.

3.7 Metal and Diamond Mining Effluent Regulations Monitoring Program

The MDMER requires monitoring and reporting of discharged effluent volume and quality to ECCC. Details of registered Final Discharge Points (FDPs) and required monitoring results are submitted on a quarterly and annual basis to ECCC through the online electronic Mine Effluent Reporting System (MERS) and the Environmental Effects Monitoring Reporter (EEMR).

The MDMER requires effluent monitoring and sampling at FDPs if discharge occurs. Deleterious substance samples are collected at least 24 hours apart and not more than 7 days apart if discharge is occurring. Effluent Characterization, and Reference and Exposure Water Quality sample are collected on a quarterly basis if discharge is occurring. Acute lethality tests are performed on a monthly basis if discharge occurs, while sublethal testing occurs on an annual basis if 30 days or less of discharge occurs.

Discharge from the VGC FDPs in 2020 met Schedule 4 deleterious substance criteria with the exception of TSS, which exceeded schedule 4 criteria for grab and monthly mean concentrations, at FDP#5 during the discharge event in April 2020. Details regarding this discharge event are provided in section 3.2.

Water from the HLFUMV FDP was captured and recirculated back to the Events Pond. No water was discharged from the Events Pond FDP Emergency spillway.

The Annual Effluent Monitoring Program results are presented in Appendix J2.

As discussed in section 3.6, an EEM Study Design was submitted to ECCC on April 20, 2020 which was subsequently approved by ECCC on December 11, 2020 (Appendix J1) A final schedule of the biological monitoring program will be provided to the ECCC Coordinator prior to commencement of field activities in the spring of 2021.

3.8 Meteorology and Air Quality Monitoring

3.8.1 Climate Monitoring

Climate monitoring continued at the Project throughout 2020 with two onsite climate stations; the Potato Hills station, a Campbell Scientific CR1000 datalogger (1,420 meters above sea level (masl)), and the Camp station,

a Campbell Scientific CR800 datalogger (782 masl) (Table 3.8-1, and Figure 3.8-1). Both stations measure temperature, rainfall, wind speed and direction, relative humidity, barometric pressure and solar radiation at 15-minute intervals.

Table 3.8-1: Project Climate Station Locations

Station	Elevation (masl)	Zone	Coordinates		Site Type
			North	East	
Potato Hills	1,420	8V	7,100,800	463,550	Automated
Camp	782	8V	7,101,000	458,200	Automated

The original Potato Hills climate station (ONSET Hobo weather station) was replaced with the Campbell Scientific unit on March 13, 2020. The Camp and Potato Hill stations received annual general maintenance and replacement of the original snowfall monitoring equipment with a Geonor all-weather precipitation monitor.

The Potato Hills station experienced repeated failures in 2020 associated with connectivity, sensor and stable power issues. Due to mine site and Yukon travel restrictions associated with the COVID-19 pandemic, the offsite specialists required for resolution to the barometric pressure sensor were unavailable and the sensor continues to provide erroneous values.

Snow course surveys as considered in the EMSAMP were completed in 2020 at Potato Hills, the Camp station and within the HLF catchment.

The data collected during 2020 was used in the preparation of an updated climate data report and is provided as Appendix K

3.8.2 Air Quality Monitoring

The ambient air quality monitoring program for the Project employees multiple monitoring methods at various locations around the site. The methods/equipment utilized are:

- Beta-Attenuation Particulate Monitors (EBAM) for the collection of continuous active total suspended particulate matter (TSP), particulate matter less than 10 µm (PM_{10}), and particulate matter less than 2.5 µm ($PM_{2.5}$);
- Dustfall samplers for the passive collection of dust for analysis of total particulates and metals;
- Passive air sampling systems (PASS) for the collection of samples for analysis of nitrogen dioxide (NO_2), sulphur dioxide (SO_2), and ammonia (NH_3); and,
- Active high-volume flow monitoring for TSP and metal concentrations.

Table 3.8-2: Project Air Quality and Dustfall Monitoring Locations

Monitoring Station	Station Status	Dustfall Canister	Coordinates (Zone 8N)		Location
			UTM N	UTM E	
AQ1	Active	D1	7,100,818	463,559	Exploration trail near Potato Hills weather station
AQ2B	Active	D2B	7,100,976	458,254	Near the Camp Climate station and water quality station W27
AQ3	Active	D3	7,099,088	460,583	Above Eagle Pit and PG WRSA
AQ4	*Inactive*	*D4*	*7,097,951*	*458,436*	*Upstream of Haggart Creek Road (HCR) crossing of Haggart Creek (KM 42)*

Monitoring Station	Station Status	Dustfall Canister	Coordinates (Zone 8N)		Location
			UTM N	UTM E	
AQ4B	Active	D4B	7,097,734	458,290	Rex Road near KM 42 HCR, west side of HCR (previously labelled AQ5/D5 up to June 30, 2020)
AQ5	*Inactive*	*D5*	*7,097,734*	*458,290*	*Rex Road near KM 42 HCR,*
AQ5B	Active	D5B	7,095,942	457,864	Confluence of Lynx Creek and Haggart Creek (near W5) (established July 1, 2020)
EBAM	Active	N/A	7,101,021	458,237	Near Camp station and south of Ditch C

In support of the ambient air quality monitoring program, a visual monitoring program is also employed to identify areas where fugitive dust emissions from roadways, crushing facilities, construction areas, and transfer and conveying infrastructure for ore were prevalent. Fugitive dust events observed during the reporting period were generally minor and were addressed through the application of water in heavy traffic areas.

3.8.2.1 TSP, $PM_{2.5}$ and PM_{10}

Three Beta-Attenuation Particulate Monitors (EBAMs) are installed east of the camp. Routine measurements are taken on 15-minute intervals for Total Suspended Particulate (TSP), Fine Particulate Matter ($PM_{2.5}$) and Coarse Particulate Matter (PM_{10}). The EBAM system includes real time data transmission that can be monitored remotely with daily summaries automatically generated by the associated software platform. Site personnel complete routine checks and monthly maintenance. Appendix L provides minimum, maximum, and mean daily values (24hr).

Daily recorded results are compared to the Yukon Ambient Air Quality Standards (YAAQS) in Table 3.8-3. Annual averages are calculated from January until December 31, 2020. All measured air quality particulates were below the annual average outlined in the current YAAQS. It should be noted that the 2019 Annual WUL/QML report and the VGC Environmental Characterization Report 2020 inadvertently referenced an out-of-date YAAQS, thus the results from 2019 are also presented below and compared against the updated standards in Table 3.8-4. In 2019, there were two occurrences of TSP exceeding the 24hr standard, which occurred in May and June. $PM_{2.5}$ results exceeded the 24hr YAAQS 16 times, between the period of May to September. PM_{10} results exceeded the 24hr YAAQS 10 times, between the period of May to September. The surrounding Project area experienced a significant fire season in summer 2019 which may have contributed to the elevated concentrations measured. In 2020, no exceedances to the YAAQS were measured on the Project.

Table 3.8-3: TSP, $PM_{2.5}$ and PM_{10} Monitoring Results – 2020 and 2019

Year	Parameter	Annual / 24hr YAAQS (µg/m³)	Results (Annual / 24hr)			No. of Exceedances[1]
			Min	Max	Mean	
2020	TSP	60 / 120	-0.6 / -0.6	17.6 / 17.6	2.1 / 1.7	0
	$PM_{2.5}$	8.8 / 27	-0.6 / -0.6	17.0 / 17.0	1.6 / 1.3	0
	PM_{10}	* / 50	-0.6 / -0.6	30.2 / 30.2	6.1 / 5.1	0
2019	TSP	60 / 120	-0.7 / -0.7	172.3 / 172.3	5.0 / 4.7	2
	$PM_{2.5}$	8.8 / 27	-0.7 / -0.7	172.3 / 172.3	5.1 / 4.6	16
	PM_{10}	* / 50	0.4 / 0.4	196.2 / 196.2	12.4 / 11.3	10

NOTES:
* No Annual Ambient Air Quality Objectives outlined in the Yukon Standard.
1 All 2019 exceedances documented above are for 24hr standards

3.8.2.2 **Dustfall**

Dustfall stations are located around the Project site adjacent to the five permanent vegetation plots described in Section 3.9.1. Dustfall container samples are collected and submitted for total particulate laboratory analysis on a monthly basis (and metals analysis on a quarterly basis for the 2021 and onwards program).

As the dustfall station monitoring (and PASS systems discussed below) have evolved, the location of the stations have been optimized to better to meet the intent of the monitoring program. The D4 station adjacent to the access road at km 42 was decommissioned and relocated to the D5 station on the Rex exploration road and renamed D4B. The D5 station was decommissioned and relocated to a new location situated adjacent to the W5 water quality sampling site at the Lynx/ Haggart creek confluence. The new station is called D5B. Relocation of sites was required to align with locations documented in the Project Air Emissions Permit #60-060 and Air Quality Monitoring Plan.

The 2020 dustfall data is provided in Table 3.8-4, which show monthly measured total values compared against the monthly standard (7.0 g/m2). Monthly means were processed into an annual g/m2 values for comparison against the Project annual standard (4.6 g/m2). All monitored dustfall stations met monthly and annual guidelines with the exception of monthly exceedances at D3 from March to May which contributed to a minor exceedance of the annual standard at the monitoring location. The D3 station is located immediately above the PG WRSA and the 1370 masl PG WRSA bench was receiving waste rock from mining operations during the periods in which the monthly exceedances were experienced. Values returned to below guidelines following the active construction of the 1370 masl bench. One exceedance at D4 also occurred in May however values readily returned to below guidelines in following months. Of note the naming of two stations changed during the 2020 reporting period as described above.

Table 3.8-4: 30-Day Total and Annual Dustfall Monitoring Results – 2020

Station	Sample Month	Total Insoluble Dustfall ($mg/dm^2.day$)	Days Deployed	$mg/dm^2.day$ (Monthly total)	g/m^2
D1	January	<0.10	32	< MDL	0.32
	February	Cracked – Sample lost			
	March	0.31	40	12.4	1.2
	April	0.32	21	6.72	0.7
	May	0.1	32	3.2	0.3
	June	0.42	26	10.92	1.1
	July	<0.10	32	< MDL	0.32
	August	<0.10	30	< MDL	0.3
	September	<0.10	31	< MDL	0.31
	October	<0.10	31	< MDL	0.31
	November	0.24	30	7.2	0.7
	December	<0.11	31	< MDL	0.31
	Annual		**365**		**0.52**
D2B	January	0.43	32	13.76	1.4
	February	0.3	29	8.7	0.9
	March	0.38	33	12.54	1.3
	April	0.85	27	22.95	2.3
	May	0.82	29	23.78	2.4
	June	1.28	31	39.68	4.0

Station	Sample Month	Total Insoluble Dustfall (mg/dm^2.day)	Days Deployed	mg/dm^2.day (Monthly total)	g/m^2
	July	0.75	32	24	2.4
	August	0.29	30	8.7	0.9
	September	1.5	31	46.5	4.7
	October	0.59	31	18.29	1.8
	November	0.53	30	15.9	1.6
	December	0.37	30	11.1	1.1
	Annual		**365**		**2.06**
D3	January	0.2	32	6.4	0.6
	February	0.77	29	22.33	2.2
	March	11.9	33	392.7	39.3
	April	15.2	27	410.4	41.0
	May	2.99	29	86.71	8.7
	June	0.94	31	29.14	2.9
	July	0.99	32	31.68	3.2
	August	0.29	30	8.7	0.9
	September	0.11	31	3.41	0.3
	October	0.56	31	17.36	1.7
	November	0.4	30	12	1.2
	December	0.25	30	7.5	0.8
	Annual		**365**		**8.78**
D4	January	0.44	32	14.08	1.4
	February	0.87	29	25.23	2.5
	March	0.75	33	24.75	2.5
	April	0.61	27	16.47	1.6
	May	3.82	29	110.78	11.1
	June	0.97	30	29.1	2.9
	Jul - Dec	Decommissioned July 1, 2020			
	Annual		**180**		**3.81**
D5/D4B Station Relabeled from D5 to D4B July 1, 2020	January	0.5	32	16	1.6
	February	0.41	29	11.89	1.2
	March	0.77	33	25.41	2.5
	April	0.5	27	13.5	1.4
	May	1.59	29	46.11	4.6
	June	0.46	30	13.8	1.4
	July	0.72	32	23.04	2.3
	August	0.2	30	6	0.6
	September	0.15	31	4.65	0.5
	October	0.68	31	21.08	2.1
	November	0.55	30	16.5	1.7
	December	1.92	31	59.52	6.0
	Annual		**365**		**2.15**
D5B	Jan - Jun	Commissioned July 1, 2020			
	July	1.36	32	43.52	4.35
	August	0.88	30	26.4	2.64
	September	<0.10	31	< MDL	0.31

Station	Sample Month	Total Insoluble Dustfall (mg/dm^2.day)	Days Deployed	mg/dm^2.day (Monthly total)	g/m^2
	October	0.59	31	18.29	1.83
	November	0.63	30	18.9	1.89
	December	0.95	31	29.45	2.95
	Annual		**185**		**2.33**

3.8.2.3 SO_2, NO_2 and NH_3

A network of five Passive Air Sampling System (PASS) stations were launched on January 1, 2020. The PASS units monitor for trace levels of SO_2, NO_2 and NH_3 in ambient air based on a 30-day average. The results for 2020 are provided below in Table 3.8-5. Results were either below instrument detection limits or well below the highest similar Yukon Ambient Air Quality Standards. While the PASS results are reported in (parts per billion [ppb]), the Yukon Standards (ug/m^3) can be converted to (parts per billion [ppb]), for comparison. The results for NO_2 and SO_2 at PASS monitoring stations were compiled across months and averaged for comparisons to annual standards in ppb. PASS station annual averages for NO_2 results fell between 0.41 and 1.68 ppb while annual averages for SO_2 results fell between 0.1 and 0.12. The annual averages for all monitored stations were well below Project air quality guidelines.

Table 3.8-5: SO_2, NO_2 and NH_3 Monitoring Results – 2020

Monitoring Period	Monitoring	AQ1	AQ2(B)[1]	AQ3	AQ4[2]	AQ4B[3]	AQ5[3]	AQ5B[4]
January	NH_3 by Passive Sampler	0.4	0.3	0.9	0.4		<0.1	
	Calculated NO_2	<0.1	4.1	<0.1	3.6		2.3	
	Calculated SO_2	<0.1	<0.1	<0.1	<0.1		<0.1	
February	NH_3 by Passive Sampler	<0.1	<0.1	<0.1	<0.1		0.2	
	Calculated NO_2	2.2	2.5	1.1	2.9		2.6	
	Calculated SO_2	<0.1	<0.1	<0.1	<0.1		<0.1	
March	NH_3 by Passive Sampler	<0.1	<0.1	<0.1	<0.1		<0.1	
	Calculated NO_2	NR	0.5	3.4	0.4		0.6	
	Calculated SO_2	0.3	<0.1	0.2	<0.1		<0.1	
April	NH_3 by Passive Sampler	0.3	0.2	0.5	0.4		0.8	
	Calculated NO_2	NR	<0.1	1.0	<0.1		<0.1	
	Calculated SO_2	<0.1	<0.1	<0.1	<0.1		<0.1	
May	NH_3 by Passive Sampler	<0.1	<0.1	<0.1	<0.1		<0.1	
	Calculated NO_2	0.1	0.3	0.9	0.3		0.3	
	Calculated SO_2	<0.1	<0.1	<0.1	<0.1		<0.1	
June	NH_3 by Passive Sampler	<0.1	<0.1	<0.1	<0.1		<0.1	
	Calculated NO_2	<0.1	<0.1	1.3	<0.1		<0.1	
	Calculated SO_2	<0.1	<0.1	<0.1	<0.1		<0.1	
July	NH_3 by Passive Sampler	<0.1	<0.1	<0.1		<0.1		<0.1
	Calculated NO_2	0.2	0.1	1.7		0.2		<0.1
	Calculated SO_2	<0.1	<0.1	<0.1		<0.1		<0.1

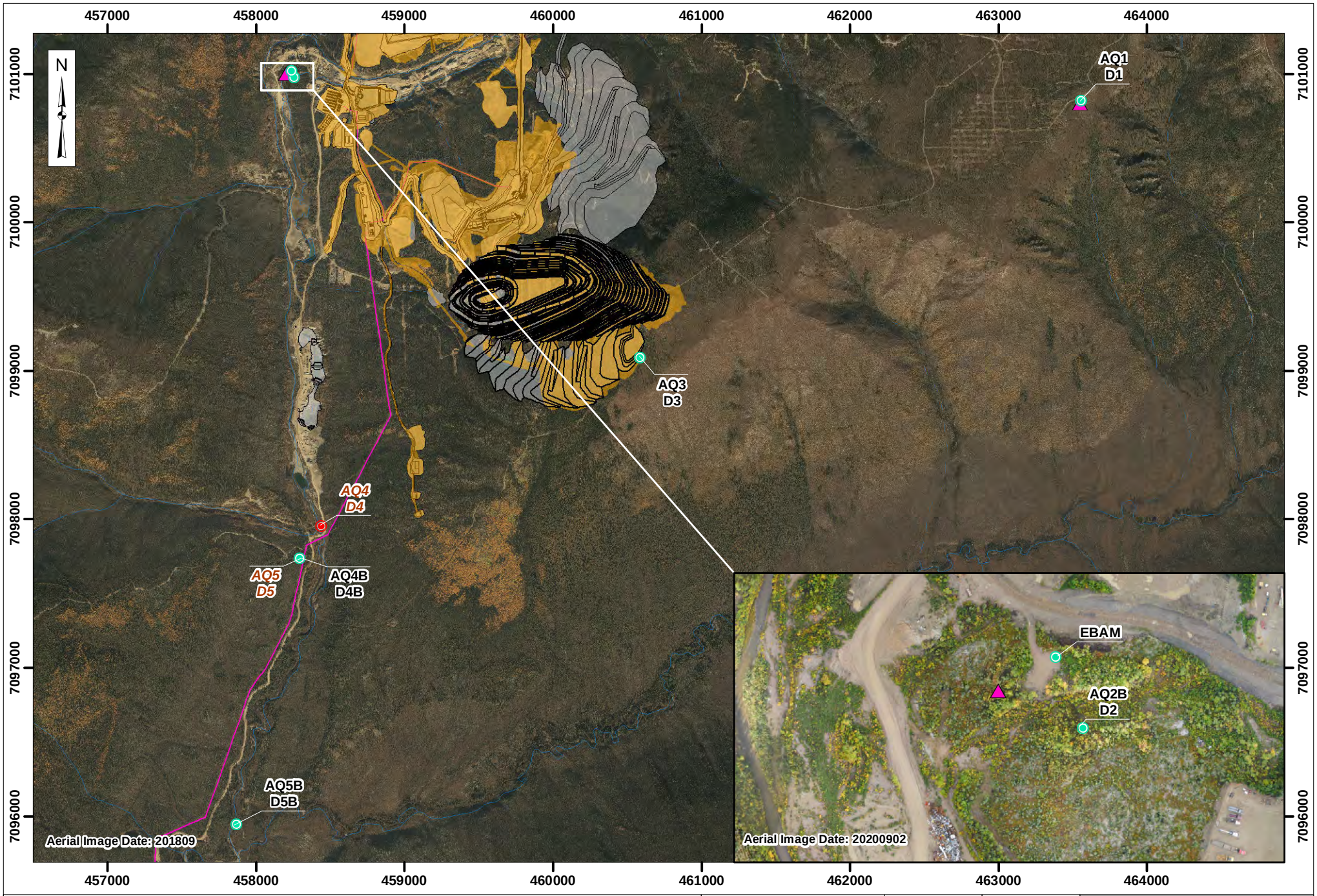
Monitoring Period	Monitoring	AQ1	AQ2(B)[1]	AQ3	AQ4[2]	AQ4B[3]	AQ5[3]	AQ5B[4]
August	NH_3 by Passive Sampler	<0.1	<0.1	<0.1		<0.1		<0.1
	Calculated NO_2	<0.1	0.2	0.8		0.2		<0.1
	Calculated SO_2	<0.1	<0.1	<0.1		<0.1		<0.1
September	NH_3 by Passive Sampler	<0.1	<0.1	<0.1		<0.1		<0.1
	Calculated NO_2	0.3	0.4	1.2		0.6		0.2
	Calculated SO_2	<0.1	<0.1	<0.1		<0.1		<0.1
October	NH_3 by Passive Sampler	<0.1	<0.1	<0.1		<0.1		<0.1
	Calculated NO_2	0.3	1.6	1.1		1.5		1.4
	Calculated SO_2	0.1	<0.1	0.2		0.1		<0.1
November	NH_3 by Passive Sampler	<0.1	<0.1	<0.1		<0.1		<0.1
	Calculated NO_2	NR	4.3	1.0		4.2		2.5
	Calculated SO_2	<0.1	<0.1	<0.1		<0.1		<0.1
December	NH_3 by Passive Sampler	12.2	<0.1	2.0		<1.0		<1.0
	Calculated NO_2	0.3	4.3	0.6		3.4		3.2
	Calculated SO_2	0.1	0.2	0.1		<0.1		<0.1

NOTES:
NR No results due to equipment breakage.
1 AQ2 station was moved slightly due to construction activities. AQ2B is still considered representative of the location AQ2.
2 AQ4 station decommissioned in June 2020 as it was inadvertently installed at the wrong location.
3 AQ4B station was identified as AQ5 from January to June 2020.
4 AQ5B station added July 2020 as background site at the confluence of Lynx and Haggart Creek.

3.8.2.4 **Metals**

An active Partisol™ 2000*i* Air Sampler was installed adjacent to the EBAM air quality monitoring location on May 21, 2020 to support quantified TSP and metals monitoring. Particulate matter sampling is conducted over a 24-hour period every six days according to the Project Air Emissions permit #60-060 (monitoring station AQ2) and the National Air Pollution Surveillance (NAPS) program schedule.

To date, the Partisol™ 2000*i* Air Sampler has only been used for TSP monitoring and the metals analysis component of this monitoring method will be utilized for the 2021 program.



Legend:

- Active AQ
- Inactive AQ
- Climate Station
- Facility Footprint
- Current Construction and Mining Impacted Areas
- Site Power
- Watercourse - Perennial
- Watercourse - Ephemeral
- Watercourse - Intermittent

VICTORIA GOLD CORP

0 250 500 1,000
Metres

Projection:	Drawn By:
NAD 83 UTM Zone 8N	HC
Date:	Figure:
2021/04/11	3.8-1

EAGLE GOLD MINE
YUKON TERRITORY

Climate and Air Quality Monitoring Locations - 2020

3.9 Terrestrial

3.9.1 Vegetation Monitoring Program

As outlined in the EMSAMP, four vegetation plots were established in 2018 to monitor changes in vegetation during the life of the Project. The vegetation monitoring plots consist of two sites in the Subalpine Zone with elevations greater than 1225 masl and two sites at lower elevation in the Forested Zone. These vegetation plots are monitored once a year during the growing season to provide data to determine if there are potential changes associated with metals in and on plant tissue due to Project activities.

In 2020, due to snow clearing activities, Site D1 was relocated approximately 40 m south of the original site, and re-established as D1B. The location and description of the vegetation monitoring sites are presented in Table 3.9-1. The coordinates of each site represent the center point of that site. Four corner points were then established in cardinal directions 10 meters from the center.

Monitoring and sampling of sites was conducted August 8 to 10, 2020.

Table 3.9-1: Location and Description of Vegetation Monitoring Sites

Sites #	NAD 83 Zone 8N		Aspect	Elevation (m)	Site Description
	Easting	Northing			
D1B	463530	7100794	Level	1437	Potato Hills near climate station, 40 m south of original site D1.
D2B	458256	7100972	West	791	Upslope of the air quality station and the camp climate station, south side of Eagle Creek within influence. Established in 2019 approximately 70 m from original site D2.
D3	460598	7099079	South west	1356	Top of Eagle Pup/Platinum Gulch drainages near the over-the-top road.
D4B	458279	7097731	East	751	On the west side of the access road south of the Haggart Creek culverts and the power line. Established in 2019 approximately 300 m south of the original site D4.
D5	457857	7095962	level	720	Near surface water quality site W5, Haggart Creek upstream of Lynx Creek.

Vegetation samples were collected for species found within the plots at each of the five sites. Table 3.9-2 lists the species and sites where the sample biomass was large enough to run analyses. Samples were analyzed for a suite of 34 metals, with a focus on metals related to potential emissions related to the gold recovery process (arsenic, cadmium, chromium, lead, and mercury). The metal concentrations were averaged per vegetation type for the number of samples collected at each site. The results of the analysis for the selected metals are presented in Table 3.9-2.

Table 3.9-2: Results of 2020 Vegetation Monitoring Metals Analysis

Plot	Tissue Type	No. of Samples	Selected Metal Concentrations (mg/kg) per Tissue Type				
			Arsenic	Cadmium	Chromium	Lead	Mercury
D1B	Dwarf Birch	4	0.206	0.277	0.095	0.091	0.0065
D2B	Dwarf Birch	1	0.730	0.125	0.136	0.220	0.0076

Plot	Tissue Type	No. of Samples	Selected Metal Concentrations (mg/kg) per Tissue Type				
			Arsenic	Cadmium	Chromium	Lead	Mercury
D3	Dwarf Birch	5	1.990	0.198	0.224	0.494	0.0069
D4B	Dwarf Birch	3	0.821	0.120	0.115	0.254	0.0062
D2B	Equisetum	2	0.430	0.737	0.098	0.067	0.0068
D4B	Equisetum	2	0.669	0.237	0.119	0.099	0.0068
D5	Equisetum	2	0.926	0.523	0.094	0.094	0.0066
D1B	Fescue	1	0.157	0.095	0.074	0.203	ND
D2B	Paper Birch leaves	1	1.290	0.636	0.133	0.364	0.0067
D2B	Paper Birch twigs	1	0.502	0.791	0.367	0.250	ND
D1B	Willow leaves	5	0.236	4.074	0.079	0.141	0.0069
D2B	Willow Leaves	4	1.004	3.228	0.574	0.300	0.0058
D3	Willow leaves	4	4.113	2.260	0.456	0.989	0.0078
D4B	Willow leaves	4	0.981	1.669	0.140	0.204	0.0063
D5	Willow leaves	3	0.674	3.012	0.090	0.139	0.0064
D2B	Willow twigs	4	0.491	2.538	0.108	0.132	ND
D3	Willow twigs	1	0.915	1.280	0.828	0.379	ND
D4B	Willow twigs	3	0.686	1.242	0.161	0.194	ND
D5	Willow twigs	3	0.382	2.330	0.081	0.105	ND
D5	Poplar Leaves	2	0.828	1.615	0.119	0.205	ND
D5	Poplar Twigs	2	0.303	1.382	0.071	0.094	ND
Toxicity thresholds for beef cattle (Puls, 1994):			>10	50 - 500	>40	>100	N/A

NOTES:

Source Laberge 2020 (Appendix M); ND=not detected, below analysis detection limits.

Although foliar tissue samples have been collected for three years at the sites (with the exception of D5), not all sites have been in consistent locations. Compared to the 2019 reporting year, D1B (D1) and D3 displayed some increases in select metals, while D2B and D4B showed metals concentrations that were generally similar or less than previous years.

There was no visible sign of stress in any of the vegetation in the plots. Full results of the 2020 Vegetation Monitoring program can be found in Appendix M.

3.9.2 Invasive Plants Management Program

The Invasive Plant Management Program is used to develop strategies that help prevent the introduction and spread of invasive species and noxious weeds on the Project site. VGC has taken measures that help reduce the likelihood of plant infestations from occurring. If any significant infestations are identified they will be actively managed, including removals within mine operations areas. This section provides a summary of monitoring and measures taken on site to control invasive plants.

The Yukon Invasive Species Council (YISC) defines invasive species as:

"…an organism (plant, animal, fungus, or bacterium) that is introduced and has effects on our economy, our environment, or our health. Not all introduced species are invasive. The term "invasive" is reserved for the

most aggressive species that reproduce rapidly and cause major changes to the areas where they become established."

The YISC has documented approximately 160 introduced plant species in the Yukon, with 18 species as highly invasive based on abundance, aggressiveness, and persistence, detailed in Table 3.9-3 (YISC 2020). This categorization is used as a guide by VGC in prioritizing its management efforts to control invasive plants. Management activities will focus on the highest ranked plant species for invasiveness; however, activities also include other species if they become established on the Project footprint.

Table 3.9-3: Highly Invasive Plant Species Documented in Yukon

Family	Genus	Species	Common Name	Abundance	Persistence
Grass	Agropyron	cristatum	Crested Wheat Grass	C	1
Grass	Bromus	inermis	Smooth Brome	C	1
Sunflower	Centaurea	stoebe	Spotted Knapweed	X	3
Sunflower	Cirsium	arvense	Creeping (Canada) Thistle	R	2
Sunflower	Crepis	tectorum	Narrow-leaved Hawksbeard	C	1
Euphorbia	Euphorbia	esula	Leafy Spurge	R	2
Sunflower	Hieracium	caespitosum	Field Hawkweed	R	2
Sunflower	Leucanthemum	vulgare	Oxeye daisy	R	1
Grass	Leymus	angustus	Narrow-leaved (Altai) Lyme Grass	R	2
Figwort	Linaria	dalmatica	Dalmatian Toadflax	X	3
Figwort	Linaria	vulgaris	Butter-and-Eggs	C	1
Pea	Medicago	falcata	Lucerne	C	1
Pea	Melilotus	alba	White Sweetclover	C	1
Pea	Melilotus	officinalis	Yellow Sweetclover	C	1
Sunflower	Sonchus	arvensis ssp. uliginosus	Field Sow-thistle	C	1
Sunflower	Tanacetum	vulgare	Common Tansy	U	2
Sunflower	Tripleurospermum	inodoratum	Scentless Chamomile	R	1
Pea	Vicia	cracca	Tufted Vetch	C	2

NOTES:
General Abundance: C – common widespread established, R – rare known from only 1 or two localities, X – possibly not persistent, U – unknown. Persistence: 1 – widespread, 2 – local, 3 – not persistent.

3.9.2.1 **Prevention**

The main objective in managing invasive plant infestations on the Project footprint is to conduct mining activities in a manner that prevents the introduction or spread of invasive plants. Prevention is the most effective means of controlling invasive species, and helps to avoid significant long-term economic, environmental, and social costs (YISC, 2020). Invasive species are opportunistic in nature, taking advantage of a lack of competition from other

species. Thus, in natural conditions with biodiversity and a dense population of native species, invasive species are less likely to establish.

VGC's ongoing prevention strategies include the following:

- Minimizing soil disturbance during construction and operations to limit availability of exposed soils to invasive plant seeding.
- Establishing a vegetation cover as soon as possible after ground disturbance, by seeding areas that will be inactive with interim reclamation indigenous seed mixtures.
- Minimizing invasive plant seed introduction to disturbed sites by:
    - Keeping equipment clean on site and ensuring contractors are bringing clean equipment into the Project site.
    - Keeping equipment laydowns and storage areas free of invasive plants.
    - Retaining vegetated areas along the site access and haul roads during maintenance where possible.

During the period considered in this report, vegetation removal and soil disturbance was minimized to the extent practicable by adhering closely to construction plans, and leaving vegetation strips where possible. When clearing was required, the humus layer and vegetation root mat was retained and stored in predetermined soil stockpile areas.

A combination of revegetation and bioengineering of exposed slopes was conducted in the fall of 2020 to control runoff, stabilize slopes, and prevent establishment of invasive species. Revegetation focused on seeding native plant species that were selected based upon the baseline vegetation survey inventory, suitability for site characteristics and commercial availability (Appendix N). Bioengineering techniques also sourced local willow (*Salix*) species from the Project site. These efforts are detailed in Section 6.

Contractors on site were expected to keep their equipment clean and in good working order, particularly prior to mobilizing to site. The majority of the contractor-maintained equipment was sourced from within the Yukon, thus reducing the risk of invasive transmission across provincial and territorial boundaries

3.9.2.2 **Control**

During the report period of 2020, no control or removal methods was required to manage invasive plants on the Project site.

3.9.2.3 **Assessment and Monitoring**

During the August 2020 vegetation monitoring program, no invasive plant species were identified at any of the vegetation plots, nor any were identified on route to the plots (Appendix M).

Disturbed lands in the Project footprint will continue to be monitored to detect the establishment of invasive plant and noxious weed species on both revegetated and unvegetated areas. The surveys were conducted in 2020 and are planned for either the late spring or early summer of 2021 so that plant control measures can be undertaken prior to seed dispersal.

In the event that invasive plant populations do become established on the mine site or associated disturbances, VGC will utilize one or a combination of the listed methods to control these infestations. VGC will undertake control efforts on species that are listed for Yukon as noxious weeds or invasive plant species that pose a threat to humans, animals or ecosystems.

3.9.3 Soils

The soils monitoring program was designed to provide data to assess whether there are changes to metal and nutrient levels in soils adjacent to the mine as a result of dust deposition occurring during Project activities. Soil sampling locations were picked in conjunction with the vegetation monitoring program (see Table 3.9-1).

The most recent Canadian Council of Ministers of the Environment (CCME) guidelines, which include new guidelines from 2018, and the Yukon Contaminated Sites Regulations for agriculture and parklands were tabulated and compared to the concentrations found in the soils.

The soil sample analysis indicates that, consistent with prior characterization programs, the soils at the Project are relatively nutrient poor. The soil samples were analyzed for pH and a suite of 36 metals (Table 3.9-4). The soils at all sites were slightly acidic, ranging from 4.59 to 6.60. Of the 36 elements analyzed, boron, sulphur and tin were not detected. Consistent with prior characterization programs, arsenic concentrations displayed higher values than the recommended guidelines at all sample sites. This is most likely due to the naturally high arsenic found in the region, documented in previous years of the monitoring program (Laberge 2018, Laberge 2019) and in previous studies (Stantec 2011a). Arsenic is often associated with gold bearing anomalies in the region and these concentrations reflect the natural mineralization of the Project area.

Table 3.9-4: Results of Soil monitoring Compared to CCME and Yukon CSR

Element	CCME (mg/kg)		Yukon CSR (mg/kg)		D1	D2B	D3	D4B	D5
	Agriculture	Parkland	Agriculture	Parkland					
pH	N/A	N/A	N/A	N/A	5.28	5.07	4.59	5.71	6.6
Antimony (Sb)	20	20	20	20	9.57	3.01	5.13	7.41	16.4
Arsenic (As)	12	12	15	15	20.4	95.7	83.5	33.4	92.7
Barium (Ba)	750	500	750	500	180	156	153	139	71.7
Beryllium (Be)	4	4	4	4	0.57	0.38	0.41	0.28	0.23
Cadmium (Cd)	1.4	10	1.5	1.5	0.185	0.214	0.33	0.34	0.302
Chromium (Cr)	64	64	50	60	32.2	19.1	52.7	121	13.5
Cobalt (Co)	40	50	40	50	8.18	8.25	9.89	10.8	10.4
Copper (Cu)	63	63	90	90	27.5	19.7	28.2	22.1	23.9
Lead (Pb)	70	140	100	100	45.2	17.6	21.5	29.5	32.9
Mercury (Hg)	6.6	6.6	0.6	15	0.0403	0.0373	0.0287	0.0663	0.0229
Molybdenum (Mo)	5	10	5	10	1.41	0.85	1.92	7.51	0.59
Nickel (Ni)	45	45	150	150	25.6	20.3	46.4	68.5	22.6
Selenium (Se)	1	1	2	1	0.45	0.23	0.24	0.31	<0.20
Silver (Ag)	20	20	20	20	0.11	0.19	0.13	0.22	0.22
Thallium (Ti)	1	1	2	-	0.203	0.141	0.18	0.088	0.094
Tin (Sn)	5	50	5	50	ND	ND	ND	ND	ND
Uranium (U)	23	23	-	-	1.34	0.966	0.877	0.955	0.926
Vanadium (V)	130	130	200	200	53.1	29.3	41.6	29.3	13.9
Zinc (Zn)	250	250	150	150	111	52.3	77.6	75	84.1

NOTES:

Source Laberge 2020 (Appendix M); ND=not detected, below analysis detection limits; N/A=Not Applicable; Exceedance of any guideline is shaded in grey.

The full results of the soil monitoring program can be found in Appendix M.

3.9.4 Wildlife

Wildlife mitigation measures are implemented through mandatory Project site orientation, traffic control policies, and training and implementation of the Project's management plans including bear awareness and the wildlife observation reporting program.

Personnel record wildlife sightings and encounters on wildlife observation cards available at a variety of locations throughout the site. The use of wildlife observation cards is a tool used to track and evaluate the frequency of animal encounters; these cards help monitor species at risk, nuisance wildlife and to notify site personnel of potentially dangerous animals around work areas. Observations of wildlife and indicators of wildlife such as tracks, scat or auditory observations are also recorded (even in the absence of visual confirmation). Wildlife observations recorded through 2020 are compiled on a quarterly basis and submitted to the Department of Energy, Mines and Resources in accordance with QML-0011.

3.9.4.1 **Nesting Songbird Surveys**

Nesting songbird bird surveys were completed for clearing activities that took place within the breeding bird window (May 1-late summer). A total of ten nesting songbird pre-clearing surveys took place from May to July 2020; any nests identified were either outside of the active work zone or deemed inactive nests through follow up monitoring procedures.

3.9.4.2 **Pre-clearing Wildlife and Wildlife Habitat Surveys**

Outside of the nesting songbird breeding window for the Project area, pre-clearing survey are completed for wildlife habitat features for potential salvage if possible (mineral licks, dens, nest trees, snags, rocky outcrops, small ponds/seepages). A total of three wildlife habitat pre-clearing surveys took place during December of 2020.

3.9.4.3 **Wildlife Incidents**

Throughout 2020 there were observations of several animals in close proximity to the camp and areas of mining activity. The Environmental Department reported several incidences of nuisance bears to the Mayo Conservation Officer in May and August. The nuisance animals were able to be deterred with on-site deterrents and no relocation or lethal actions were necessary.

The Environmental Department provides ongoing education for site personnel through site-wide bulletins, collaborations with department heads, and presentations in toolbox meetings.

3.9.4.4 **Annual Moose Survey**

A late-winter moose distribution survey was conducted to monitor Project effects on moose distribution. The survey included a 10 km radius around the Project area and Haggart Creek and South McQuesten access roads. The survey was completed by VGC Employees, Environmental Dynamics Inc., and a FNNND representative. The annual moose survey report is provided in Appendix O.

Three surveys were completed during pre-construction and are considered as a baseline (2011-2013). Surveys were conducted in 2018 and 2019, representing the construction phase. A survey was completed in 2020 and represented the operations phase. Moving forward, the frequency of subsequent aerial surveys will be reassessed in collaboration with the Yukon Government Northern Tutchone Regional Biologist.

The 2020 aerial survey was conducted from March 5 to 6, 2020. The primary objective was to document the distribution and abundance of moose during the late-winter season. Survey data is used to inform adaptive management strategies designed to mitigate any effects from the Project on moose in the region. The conditions in 2020 were ideal (consistent, winds calm to light, bright light clear skies), as detailed in (Table 3.9-5).

Table 3.9-5: Survey Conditions During Late-Winter Moose distribution Survey

Survey Conditions	2011	2012	2013	2018	2019	2020
Date	7-9 March	7-8 March	4-6 March	5-6 March	5-7 March	5-6 March
Snow Conditions	Old (>2 weeks)	Lots of fresh snow prior to survey	10 days old	Some fresh snow prior to survey and on morning of March 6	Old (>3 weeks)	Lots of fresh snow prior to survey
Cloud Cover	Clear in morning changing to overcast by late afternoon on all days	Clear to slightly overcast on 8 March	Clear	Clear on 5 March; clear in morning changing to slightly overcast by mid-afternoon on 6 March	Clear, light high-altitude have on Mar 7	Clear
Light	Bright in the morning to flat by late afternoon	Bright	Bright	Bright	Bright	Bright
Wind	Light to moderate	Calm	Calm	Calm	Calm to light	Calm to Light
Temperature	-35°C to -17°C	-30°C to -10°C	-27°C to -10°C	-20°C to -10°C	-31°C to -25°C	-35°C to -29°C
Comment	Old snow and flat afternoon light made it difficult to sight moose	Considerable snowfall in days prior to survey	Delayed both mornings due to low fog	Light snow and low ceiling delayed start of survey on second day	Very old snow made recording fresh tracks unfeasible. Could not survey the afternoon of 6 March due to observer fatigue	Deep and fresh snow improved track detection and ageing (old vs. fresh tracks)

The number of moose observations within the Project area during the 2020 survey was consistent with the 2019 survey year, which were higher than all previous years (Table 3.9-6). The majority of moose observed in 2020 were observed in the Haggart Creek and South McQuesten River valleys, with the remaining located within mid-elevation burn areas. Snow depth was substantially above average in 2020, and similar to previous high snow depth years appears to correlate with the greater use of moderate to low elevation habitats by moose. That is, during high snow depth years moose will gravitate to lower elevations and treelines, presumably where there is less snow, and in low snow depth years will migrate to open areas (e.g., burn plateaus).

Table 3.9-6: Survey Intensity and Moose Observations within the Study Area

Year	Survey Intensity (min/km^2)	Moose Observations within the Study Area (10 km buffer)
2011	0.53	26
2012	0.52	48
2013	0.50	39
2018	0.49	75
2019	0.52	82
2020	0.47	82

Overall moose distribution throughout all surveys has been variable between years, an association exists between moose distribution and the moderate elevation burns. While moose densities during 2019 construction within 1 km of the Project footprint were moderate, so were densities observed in 2018 during a cessation of construction activities; moose densities were high within 1 km of the project in 2020 during mine operations. This suggests a natural variability in distributions, as well as expected variability in survey results given the methodology. It is likely that moose distribution is more associated with annual snow depths, winter habitat distribution than Project activities.

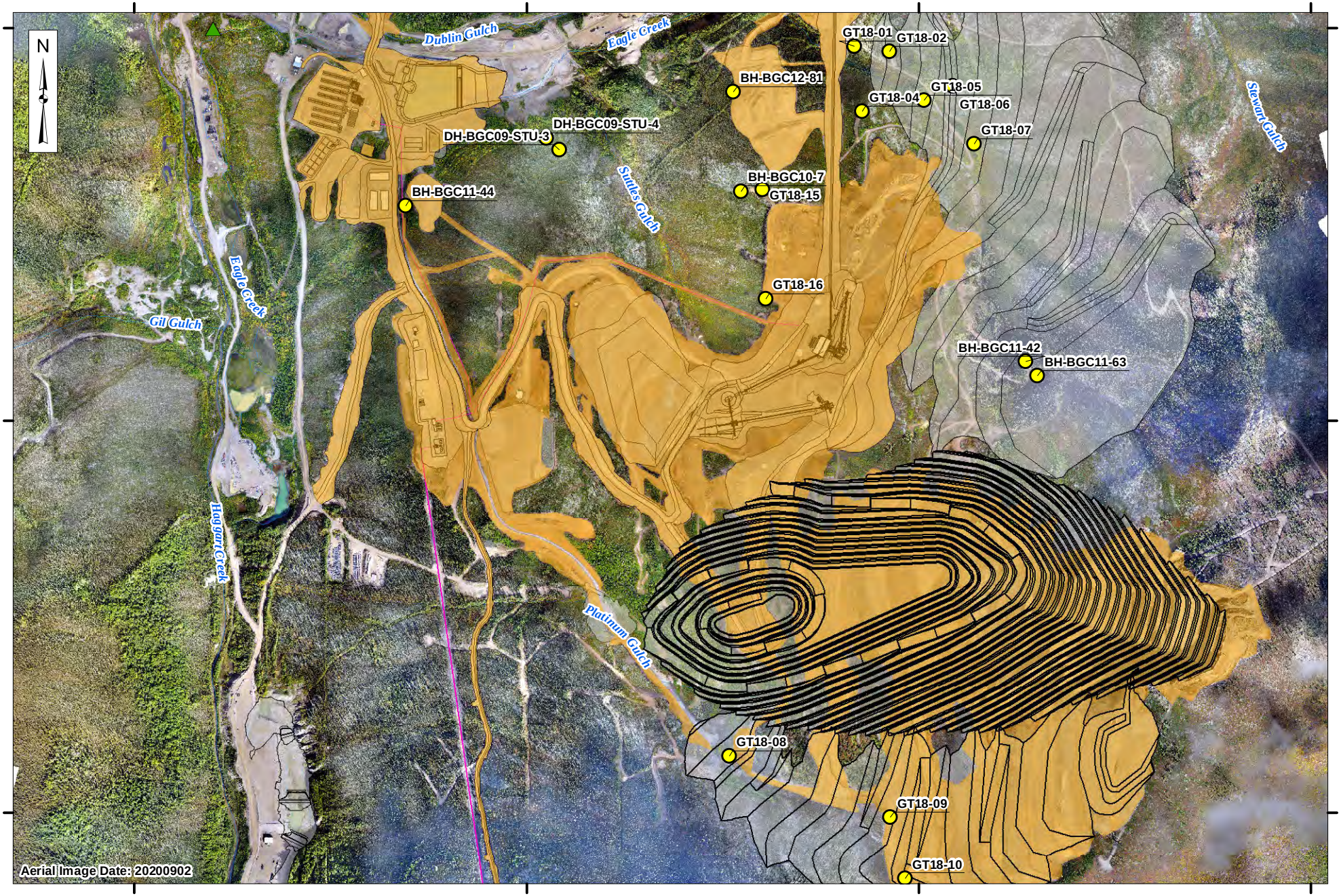
3.10 Permafrost

Permafrost monitoring at the project site in 2020 consisted of quarterly subsurface temperature monitoring via thermistors at the locations shown in Figure 3.10-1 and Table 3.10-1.

Monitoring occurred at 18 thermistor locations in Q1. In Q2, two thermistor locations, GT18-09 and GT18-10 were decommissioned due to development of the installation areas and monitoring at the remaining 16 thermistor locations occurred in Q2 and Q3. In Q4, an additional thermistor location was decommissioned (GT18-08) to allow for the continued construction of the PG WRSA rock drain and monitoring occurred at the remaining 15 thermistor locations.

Table 3.10-1: Thermistor Monitoring Locations – 2020

Thermistor	Status	Facility	Coordinates (Zone 8)	
			North	East
GT18-08	Decommissioned Q4	PG WRSA	7,099,141	459,517
GT18-09	Decommissioned Q2	PG WRSA	7,098,851	459,968
GT18-10	Decommissioned Q2	PG WRSA	7,098,964	460,080
GT18-01	Active	EP WRSA	7,100,952	459,831
GT18-02	Active	EP WRSA	7,100,945	459,925
GT18-04	Active	EP WRSA	7,100,787	459,854
GT18-05	Active	EP WRSA	7,100,814	460,006
GT18-06	Active	EP WRSA	7,100,852	460,088
GT18-07	Active	EP WRSA	7,100,709	460,088
BH-BGC11-42	Active	EP WRSA	7,100,150	460,272
BH-BGC11-63	Active	EP WRSA	7,100,114	460,303
BH-BGC10-7	Active	EP WRSA	7,100,585	459,547
BH-BGC11-44	Active	Camp Facilities	7,100,547	458,690
DH-BGC09-STU-3	Active	Above camp and LDSP	7,100,691	459,083
DH-BGC09-STU-4	Active	Above camp and LDSP	7,100,720	459,050
GT18-15	Active	Below crushing facilities	7,100,583	459,597
GT18-16	Active	Below crushing facilities	7,100,308	459,607
BH-BGC12-81	Active	Reclamation Material stockpile	7,100,838	459,527



Legend:

- Thermistor
- Climate Station
- Facility Footprint
- Current Construction and Mining Impacted Areas
- Site Power
- Watercourse - Perennial
- Watercourse - Ephemeral
- Watercourse - Intermittent

VICTORIA GOLD CORP

0 100 200 400
Metres

Projection:	Drawn By:	EAGLE GOLD MINE YUKON TERRITORY
NAD 83 UTM Zone 8N	HC	
Date:	Figure:	Volume and Location of Material Stockpiles
2021/04/09	3.10-1	

3.10.1 Data Analysis

3.10.1.1 **Eagle Pup WRSA Multi Bead Thermistors**

Seven multi bead thermistors were monitored in the area of the future Eagle Pup WRSA, as shown in Table 3.10-2. Multi bead thermistors documented subsurface temperatures up to 20 m below the surface. The majority of thermistors recorded temperatures above zero degrees with the exception of sporadic subzero readings during first and fourth quarter winter conditions; which were attributed to general seasonal temperature changes. The two thermistors that recorded consistent subzero temperatures were BH-BGC11-42 and BH-BGC11-63, which are installed in the interior of the proposed Eagle Pup WRSA. The presence of only two thermistors with consistent subzero temperatures throughout multiple bead depths supports the presence of a local discontinuous permafrost zone

Table 3.10-2: Eagle Pup WRSA Multi Bead Thermistor Temperatures - 2020

Thermistor	Date	Bead Temperature ºC															
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
GT18-01	1st Quarter	0.0	0.0	0.0	0.1	0.4	0.5	0.8	0.9	1.3	1.3	1.4	1.4	1.4	1.5	1.4	1.4
	2nd Quarter	6.75	2.20	0.15	0.42	0.52	0.59	0.79	0.93	1.30	1.30	1.36	1.39	1.39	1.44	1.35	1.36
	3rd Quarter	11.54	9.91	8.60	7.05	5.55	4.39	3.50	2.66	1.88	1.51	1.43	1.40	1.39	1.42	1.33	1.35
	4th Quarter	-1.33	1.19	2.17	2.97	3.47	3.51	3.40	3.02	2.39	1.88	1.71	1.62	1.56	1.50	1.35	1.34
GT18-05	1st Quarter	0.0	0.0	0.0	0.1	0.2	0.2	0.3	0.3	0.4	0.6	0.7	0.8	0.9	1.0	1.1	1.2
	2nd Quarter	5.92	3.33	1.27	0.35	0.18	0.17	0.24	0.32	0.44	0.56	0.67	0.75	0.82	0.94	1.04	1.15
	3rd Quarter	10.61	9.04	7.31	5.31	3.49	3.51	2.87	1.35	1.00	0.90	0.86	0.84	-0.35	-0.30	-0.21	-0.10
	4th Quarter	-0.12	0.89	1.49	1.72	1.41	1.44	1.26	1.13	1.03	1.00	0.97	0.94	0.97	0.96	1.03	1.12
GT18-07	1st Quarter	-0.2	-0.1	0.0	0.1	0.2	0.4	0.5	0.5	0.7	0.7	0.8	0.9	1.0	1.1	1.2	1.3
	2nd Quarter	3.66	2.74	2.12	1.48	1.11	0.79	0.63	0.50	0.57	0.61	0.70	0.83	0.94	1.07	1.15	1.26
	3rd Quarter	9.16	7.80	6.76	5.34	3.90	2.64	1.58	-0.39	0.60	0.60	0.65	0.74	0.86	1.03	1.13	1.26
	4th Quarter	0.70	1.71	2.34	2.89	2.99	2.72	2.28	1.69	1.09	0.92	0.91	0.92	0.94	1.02	1.11	1.23
BH-BGC11-42	1st Quarter	0.0	-0.2	0.3	0.7	0.1	0.4	-0.2	0.1								
	2nd Quarter	14.18	7.63	2.57	0.86	0.10	0.24	-0.15	0.06								
	3rd Quarter	7.91	8.26	7.33	4.76	0.13	-0.10	-0.15	-0.09								
	4th Quarter	-3.61	-1.93	-0.01	0.34	-0.04	-0.16	-0.31	-0.21								
BH-BGC11-63	1st Quarter	-0.5	-0.2	0.1	-2.9	-0.7	-0.3	0.0	0.0								
	2nd Quarter	17.18	10.50	0.49	-3.24	-0.61	-0.50	-0.08	0.11								
	3rd Quarter	8.52	7.65	5.27	-0.43	-0.16	-0.10	0.17	0.33								
	4th Quarter	2.14	-3.32	-0.20	-3.21	-0.96	-0.85	-0.15	-0.03								
BH-BGC-10-7	1st Quarter	9.1	5.3	2.4	0.6	0.3	0.0										
	2nd Quarter	9.09	5.34	2.45	0.57	0.35	0.00										
	3rd Quarter	12.60	10.60	8.83	5.64	1.44	0.04										
	4th Quarter	0.27	2.97	4.71	4.90	2.46	0.22										

3.10.1.2 **Platinum Gulch WRSA Multi Bead Thermistors**

Two multi bead thermistors installed in the area of the Platinum Gulch WRSA were operational in 2020; however, GT18-08 was decommissioned in the third quarter while GT18-09 was decommissioned in the first quarter. Temperature readings in GT18-08 were subzero through much of the total depths and indicate a relatively thick but warm permafrost zone below a cover of deposited organics and material. Conversely, first quarter readings from GT18-09 suggest an active zone overlying non-permafrost material. Further monitoring to ensure Platinum Gulch WRSA stability is described in Section 4.

Table 3.10-3: Platinum Gulch WRSA Multi Bead Thermistor Temperatures - 2020

Thermistor	Date	Bead Temperature ºC															
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
GT18-08	1st Quarter							5.4	0.0	0.0	0.2	-0.2	-0.4	-0.5	-0.5	-0.6	-0.7
	2nd Quarter							17.56	1.84	0.03	0.23	-0.25	-0.39	-0.48	-0.56	-0.62	-0.65
	3rd Quarter							10.73	8.09	0.33	0.24	-0.24	-0.38	-0.48	-0.57	-0.62	-0.65
	4th Quarter	Decommissioned															
GT18-09	1st Quarter	0.0	-0.1	-0.3	-0.2	0.0	0.0	0.1	0.2	0.2	0.3	0.3	0.3	0.3	0.4	0.4	0.5
	2nd Quarter	Decommissioned															
	3rd Quarter																
	4th Quarter																

3.10.1.3 **Overland Conveyor Multi Bead Thermistor**

GT18-15 is installed to the west of the future Eagle Pup WRSA and the overland conveyor. The thermistor documented subzero temperatures throughout all seasons with the exception of depths above 11.5 meters (bead 11). The results indicate a relatively thick but warm permafrost zone below a cover of deposited organics and material.

Table 3.10-4: Overland Conveyor Multi Bead Thermistor Temperatures - 2020

Thermistor	Date	Bead Temperature ºC															
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
GT18-15	1st Quarter	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.2	0.1	0.0	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1
	2nd Quarter	6.50	4.84	3.33	1.48	0.56	0.27	0.14	0.10	0.06	0.01	-0.04	-0.06	-0.09	-0.10	-0.10	-0.09
	3rd Quarter	11.08	9.92	8.84	7.16	5.68	4.29	3.05	1.88	0.62	0.04	-0.04	-0.06	-0.10	-0.10	-0.19	-0.85
	4th Quarter	1.05	2.04	2.76	3.55	3.77	3.61	3.11	2.33	1.00	0.10	-0.05	-0.07	-0.10	-0.10	-0.10	-0.09

3.10.1.4 **Upgradient of LDSP Facility Multi Bead Thermistor**

DH-BGC09-STU-3 and DH-BGC-STU-4 are multi bead thermistors installed upgradient of the LDSP. Both datasets documented zero or subzero temperatures below the active layer of surficial organics (bead 2-3), indicating the presence of warm permafrost at depth. Temperatures were consistent across all seasons suggesting stable permafrost

Table 3.10-5: LDSP Multi Bead Thermistor Temperatures - 2020

Thermistor	Date	Bead Temperature ºC					
		1	2	3	4	5	6
DH-BGC09-STU-3	1st Quarter	0.0	-0.1	-3.5	0.1	-1.4	-0.1
	2nd Quarter	2.39	0.34	-3.51	0.04	-1.45	-0.13
	3rd Quarter	8.55	5.99	-1.35	2.00	-1.57	-0.13
	4th Quarter	2.53	3.01	-2.25	1.89	-1.67	-0.14
DH-BGC09-STU-4	1st Quarter	0.1	0.0	0.4	-3.6	0.2	-0.1
	2nd Quarter	4.66	0.01	0.05	-3.50	0.01	-0.09
	3rd Quarter	10.73	7.33	5.10	-3.45	-0.01	-0.11
	4th Quarter	-1.95	1.68	2.31	-3.57	-0.02	-0.12

3.10.1.5 **Camp Facility Multi Bead Thermistor**

BH-BGC11-44 is a multi-bead thermistor installed near camp support facilities and just above Ditch A. The documented temperatures in Bead 8 suggest the presence of permafrost at depth, while the near-surface beads registered temperatures consistent with seasonal temperatures changes and a thick organic active zone.

Table 3.10-6: Camp Facility Multi Bead Thermistor Temperatures - 2020

Thermistor	Date	Bead Temperature ºC							
		1	2	3	4	5	6	7	8
BH-BGC11-44	1st Quarter	12.0	5.4	1.2	0.0	0.0	0.0	0.0	-0.2
	2nd Quarter	12.02	5.35	1.19	0.03	0.03	0.01	0.01	-0.24
	3rd Quarter	12.02	10.77	9.27	7.40	4.82	1.62	0.03	-0.25
	4th Quarter	-3.06	-0.50	1.11	2.14	2.96	1.82	0.07	-0.26

3.10.1.6 **Reclamation Material Stockpile Multi Bead Thermistor**

BH-BGC12-81 is a multi-bead thermistor that is installed west of the main ore conveyor to the HLF, situated near reclamation material stockpiles. The dataset showed subzero temperatures beginning at bead depth 6 supporting the presence of permafrost at depth protected by a thick surficial organic active zone. The subzero temperatures at depth were consistent across seasonal changes indicating stable permafrost.

Table 3.10-7: Reclamation Material Stockpile Multi Bead Thermistor Temperatures - 2020

Thermistor	Date	Bead Temperature ºC						
		1	2	3	4	5	6	7
BH-BGC12-81	1st Quarter		4.2	1.5	0.6	0.0	-0.2	-0.3
	2nd Quarter		4.20	1.49	0.60	0.00	-0.16	-0.30
	3rd Quarter		5.61	4.47	3.38	1.46	-0.15	-0.29
	4th Quarter		-0.10	0.29	0.32	0.25	-0.14	-0.29

3.10.1.7 **Ground Temperatures of Single Bead Thermistors**

Ground temperature data collected at the single bead thermistors installed across the Eagle Gold site are provided below Table 3.10-8. Five single bead thermistors were monitored in 2020. GT18-10, which was installed in the Platinum Gulch WRSA, documented subzero temperatures at depths between 8.5 m in the first quarter of 2020. GT18-10 was decommissioned following the first quarter of the year. GT18-02, GT18-04 and GT18-06, situated within the Eagle Pup WRSA, exhibited above zero temperatures across all seasons which indicated a lack permafrost within the installation area. GT18-16, installed below crushing facilities, documented above zero temperatures across all seasons which indicated no influence of permafrost in the critical infrastructure location.

Table 3.10-8: Single Bead Thermistor Temperatures - 2020

Thermistor	Bead Depth	Q1	Q2	Q3	Q4
GT18-02	7.9	1.4	0.59	0.59	2.08
GT18-04	8.5	1.3	1.12	1.12	1.95
GT18-06	9	0.3	0.33	0.33	0.23
GT18-10	8.5	-0.2	Decom	Decom	Decom
GT18-16	8.2	1.2	1.1	1.1	1.95

3.10.1.8 **HLF Embankment Piezometers and Temperatures**

Three standpipes with Vibrating Wire Piezometers are installed through the HLF dam crest. Piezometer P1 was installed into the dam foundation bedrock and Piezometers P2 and P3 were installed in the dam fill just above the western and eastern underdrains, respectively. The piezometer readings for P1, P2, and P3 are provided in the Forte Annual HLF Inspection Report in Appendix B3. Temperature values observed in 2020 were similar to that of 2019 showing gradual seasonal fluctuation. No concerns resultant of temperature monitoring was noted within the Forte Annual HLF inspection Report.

3.11 Noise

The objective of the noise monitoring program was to ensure that public users of the Haggart Creek/South McQuesten Road adjacent to the Project site were not at risk of exposure to high sound levels associated with blasting.

3.11.1 Sounds Levels Related to Blasting

Blasting activities related to construction and mining activities took place at the Project throughout 2020. Monitoring of noise levels associated with these blasting activities was not conducted as per the proposed methods considered in the EMSAMP. As reported in previous annual reports, noise monitoring was conducted in 2019 and 2018 and was determined to be below thresholds set out in the EMSAMP; thus, continued monitoring was not necessary as per guidelines described in the EMSAMP.

The need for further monitoring will be evaluated based on whether significant changes in mining activity occur or in the event that a noise complaint related to Project activities is received.

3.12 Spills and Accidents

3.12.1 Spill Contingency Overview

The Spill Response program was maintained throughout the reporting period and included ongoing site orientation training on spill response and reporting procedures, spill prevention education, Field Level Risk Assessments (FLRAs), pre-operation inspections, and appropriate use of spill containment and response materials.

Unauthorized releases continued to be reviewed for causality and when identified as due to human error, were followed up with supplemental education on the Spill Response Plan and Standard Operating Procedures (SOP). Spills identified through investigation to be as a result of equipment failure or regular wear and tear included a review of vehicle inspection and maintenance logs in conjunction with inter-departmental collaboration to determine if any engineering/mechanical improvements were required on the associated equipment.

As component of this annual report cycle, the VGC Spill Response Plan was updated (provided in Appendix P1). A significant update to the Spill Response Plan included reference to a specific threshold volume that triggers soil sampling requirements according to Yukon Contaminated Sites Regulation (CSR) standards.

Ongoing spill response audits continue to verify the adequacy of existing spill equipment. In addition, regular monitoring of major work areas is reviewed by VGC Environmental staff to ensure proactive measures are being implemented according to the Spill Response Plan, such as having adequate equipment available and proper management of hazardous waste. Any non-compliances identified through regular environmental site monitoring are logged in a tracking spreadsheet to ensure follow up by responsible departments.

The permitted Land Treatment Facility (LTF), constructed in 2019 for progressive treatment and remediation of hydrocarbon contaminated soils, was operational during the reporting period. Contaminated soils are stored and remediated within the LTF through regular aeration and sampled prior to relocation around the site on mine roads or as fill. Contaminated soils are tested for hydrocarbons prior to treatment and post treatment to meet CSR standards.

An additional lined, bermed temporary storage area was constructed adjacent to the current inert waste landfill site in response to a diesel spill on February 21, 2020. This temporary holding area contains the remnants of the potentially contaminated materials excavated from the diesel spill and will be tested prior to reallocation around the site or as fill. Once these materials are relocated the temporary storage area will be decommissioned.

3.12.2 Reportable Summary

During the period of this report, eighteen (18) reportable spills occurred at the Project site. Spills described in Table 3.12-1 were reported to the Yukon Spill Report Line as required by the *Spills Regulations* of the *Yukon Environment Act*, and Spill Reports for each occurrence were uploaded to the Yukon Water Board's electronic platform Waterline. Spill remediation occurred as per CSR standards and guidelines stipulated by Yukon Government Department of Environment and Department of Health and Social Services personnel. Non-reportable spills were tracked internally and remediated as above. Spill Response Forms and photos for each of the reportable spills is provided in Appendix P2.

Table 3.12-1: 2020 Reportable Spills

Date	Volume (L)	Substance	Location	Spill Details and Remediation
21-Feb-20	4,000	Diesel	HLF Phase 1B laydown	A fuel pump discharge line separated from a fuel pump releasing diesel onto the frozen ground. The pump was immediately shut off and absorbent spill pads deployed to collect and contain the material. Contaminated materials were characterized, excavated and transported to a temporary, lined, bermed storage area.
28-Feb-20	387	Coolant	Primary Crusher	A damaged hydraulic line on the rock breaker resulted in a release of coolant onto the ground. Contaminated materials were collected and taken to the LTF.
16-Mar-20	9	Coolant	1315 Bench	A heater hose in the 601-shovel engine room ruptured spilling coolant to the ground. A barrel was placed under the leak and spill pads deployed to absorb standing product. Contaminated materials were collected and taken to the LTF.
3-Apr-20	400	Hydraulic oil	1315 Bench	Bolts on the hydraulic manifold of the shovel boom failed resulting in the release of hydraulic oil to the ground. Spill trays and pads were deployed and an excavator used to remove contaminated soil. Contaminated materials were collected and taken to the LTF.
27-Apr-20	20	Coolant	Eagle Pit Road (switchback #2)	A radiator hose came loose on a haul truck resulting in product release to the ground. The truck was immediately shut down and the area cleaned up with spill pads. Contaminated materials were collected and taken to the LTF.
23-May-20	104	Coolant	Eagle Pit	A failed coolant line resulted in coolant release to the ground. A barrel was used to contain the leak and absorbent pads deployed to collect standing liquids. Coolant collected in the barrel was pumped back to the fuel and lube truck, contaminated materials were collected and taken to the LTF.
29-May-20	15	Coolant	Eagle Pit Road (Between switchback #2 and 3)	A failed coolant line resulted in product release to the ground. Spill pads were utilized to soak up pooled product and heavy equipment removed 1 m^3 of contaminated road material. Contaminated materials were collected and taken to the LTF.
1-Jun-20	350	Hydraulic oil	Eagle Pit Blast Area	A worn-out dust collection impeller caused a hydraulic fitting to fail and release hydraulic oil onto the ground. Spill booms and pads were used to contain and soak up free product. Oil gator was applied and contaminated material was collected and taken to the LTF.
4-Jun-20	140	Coolant	Eagle Pit Switchback #2	A hose clamp failed on the main coolant return line resulting in a coolant release to ground. Spill pads were deployed to contain and collect residual material and contaminated pads were brought to the hazardous waste storage for removal by KBL Environmental.
30-Jun-20	8	Coolant	HLF Phase 1B	A coolant hose for the DEF pump failed resulting in product loss to ground. Absorbent socks were used to contain the release and universal absorbent pads were used to soak up excess coolant. Contaminated material was taken to the hazardous waste facility for disposal.
10-Jul-20	15	Coolant	1050 bench lube skid station	A failed lower mount on the radiator resulted in movement which caused it to leak under pressure. Spill tray and pads were placed under unit to collect spilled product, and contaminated material was taken to the hazardous waste facility for disposal.
11-Jul-20	4,500	HLF Solution	HLF Loadout pad	A mixture of rainwater and process solution was identified seeping from the loadout pile adjacent to the Heap Transfer Tower (CV-023) pad. Investigations indicated that a combination of a damaged solution distribution pipe and the extension of the loadout pile beyond lined containment were the primary root causes of the release. The damaged solution distribution pipeline was isolated and shutoff and a berm with ditching established to contain the seep. Potentially

Date	Volume (L)	Substance	Location	Spill Details and Remediation
				contaminated soils were excavated and placed within the lined containment of the HLF.
20-Jul-20	12	Coolant	1B Access road	A failed coolant line on a rock truck resulted in coolant being released onto the road surface. The leak was contained using a spill tray and sorbent pads deployed to soak up excess coolant. Contaminated materials were collected and taken to the LTF.
26-Jul-20	1,250	Diesel	Warehouse Cold Storage yard	Approximately 1,250 liters of diesel was released from a fuel truck onto the Warehouse pad. Fuel pumps were shut off and free product contained using earthen berms, booms, and spill pads. Oil gator was spread on impacted soil and contaminated water and free product transferred into totes. Contaminated soil was excavated and disposed of in the LTF.
6-Sep-20	180	Waste Oil	1050 bench lube skid station	An accidental overflow occurred while transferring waste oil to a disposal tote. Earthen berms, spill booms, and pads were deployed to contain fugitive liquid. Soil was removed for treatment in the permitted LTF.
19-Oct-20	50	Waste Oil	1050 bench lube skid station	A hose was left un-attended while transferring used oil from lube station into a tote resulting in overflow. The drain line was turned off to prevent further spillage and spill pads deployed to absorb spilled oil. Oil absorbent was spread over the affected area and contaminated material collected and disposed of in accordance with site policies.
28-Nov-20	500	Hydraulic oil	Secondary parking lot	A punctured tote released approximately 500 L of hydraulic oil onto the ground. The tote was tipped onto its side to stop further release and berms created to contain the free product. Spill pads and synthetic booms were deployed to collect residual oil, and contaminated snow and soil were transferred into lined mega bags and taken to the LTF.
26-Dec-20	200	Septic	Warehouse	Vac truck operator failed to close the shutoff valve prior to driving away resulting in product loss onto the ground. The impacted area was contained and spill response was initiated. Contaminated material was scraped up with a bucket and spread out over the septic field and lime was spread out on the contaminated snow.

3.13 Traffic and Access, Upcoming Maintenance

3.13.1 Level of Traffic

From Mayo, access to the Project site is along approximately 85 km of existing paved and gravel roads. Roads from Mayo to the site include the Silver Trail (Highway 11) and via the existing South McQuesten Road and the Haggart Creek Road. All but the Haggart Creek Road are government-maintained roads. During the period between January 2020 and December 2020 there were approximately 1,900 one-way vehicle trips.

Vehicle traffic was significantly lower than the 2019 and 2018 reporting years. The reduction in traffic was due to the lack of construction related traffic that was experienced in prior years and site travel restrictions imposed by VGC in response to the COVID-19 pandemic limiting the number of visitors, contractors and non-essential site staff.

3.13.2 Access Control Issues

No access control issues were documented during the period of this report.

3.13.3 Incidents

To respond to incidents on site and along the access roads, the Project maintains a current Emergency Response Plan. The Plan is supported by VGC emergency response personnel who are trained and certified in advanced first aid, firefighting and mine rescue and the use of equipment required for all response types. In addition, reporting and investigation of incidents is standard practice at the site.

During the reporting period, there were no wildlife-traffic or access incidents reported. Wildlife observations, including those made along the access roads, are included in the quarterly reports submitted pursuant to QML-0011.

3.13.4 Planned Access Road Work

To ensure the continued safety of visitors, employees and contractors to the site through 2021, Victoria Gold continues to perform routine snow clearing along the South McQuesten and Haggart Creek Roads from the Silver Trail (Yukon Highway 11) to the Eagle Gold camp and routine maintenance along Haggart Creek Road (e.g., maintaining culverts and ditches, repairing pot holes, etc.). Snow clearing efforts include installing wildlife escape routes into the banks at regular intervals. Ongoing maintenance and roadway improvements will be in accordance with Victoria's current Work within a Right of Way Permit issued by the Department of Highways and Public Works (HPW) and Land Use Permit issued by the Department of Energy, Mines and Resources.

3.14 Water Management & Sediment and Erosion Control

The mine site water management objectives focus on keeping clean water clean and continuing to meet the water quality standards in the receiving environment while ensuring facilities are able to safety convey and detain the design storm events. These objectives are met through ongoing maintenance of water management infrastructure to minimize the chance of release of contact waters to receiving watersheds, ongoing erosion source control, and the diversion of non-contact water away from disturbed areas to reduce the total volume of water requiring management.

3.14.1 Major Water Management Infrastructure

A number of water management facilities including ponds and sediment basins, diversions and interceptor ditches have been developed to proactively manage sediment-laden, contact and non-contact water throughout the life of the Mine. Details regarding the development and operation of the water management facilities are found in the Water Management Plan Version 2020-01 (VGC, 2020).

3.14.1.1 **Lower Dublin South Pond**

The LDSP is managed as a retention pond that collects water from the southern portion of the Project which currently includes runoff and mine water routed from the Platinum Gulch WRSA, the crusher areas, the 90-day stockpile, and the open pit. The primary water management ditches, Ditch A and Ditch B, route the collected water to the LDSP where it is stored and either used for process makeup water needs or discharged if effluent quality standards are achieved.

As discussed in section 2.1, the LDSP underwent maintenance and improvement works in 2020 as required by QZ14-041-1. To allow for the installation of the low-permeability liner, approximately 8,050 m^3 of accumulated sediment captured by the LDSP forebay was removed during the fourth quarter of 2020. The LDSP forebay liner

installation was completed in 2020; however, the permanent ballast system for the liner currently remains outstanding.

3.14.1.2 **Ditches and Pipes**

Initial construction of Ditch A was completed in March of 2019 and included the development of a rock lined ditch, installation of a HDPE pipe and an inlet sump at the base of the Platinum Gulch WRSA. During freshet in 2020, the installed configuration for Ditch A was found to be inefficient and a risk for proper containment of sediment laden runoff and mine contact water. In particular, the design resulted in sediment build-up at the sump and sediment clean out from the ditch was impractical due to the presence of the 28-inch HDPE pipe.

To improve the functionality of the ditch, modifications were made in 2020 that included the removal of the existing pipe and accumulated sediments, relining the ditch with a low permeability liner, and replacing the rip rap. Improvements were developed by the Technical Services team under the supervision of the VGC Engineer of Record, Mr. Richard Tuohey.

Ditch B construction continued in 2020 with excavation of the alignment east of Suttles Gulch toward the future EP WRSA toes. The construction of Ditch B will follow the modified design considerations of Ditch A (i.e., utilizing a low permeability liner rather than a HDPE pipe) and will be completed in 2021.

Ditch C was constructed in March of 2019 and continues to convey any non-continuous, periodic outflow discharge from the LDSP to Haggart Creek; Ditch C flows west to a discharge location upstream of W4.

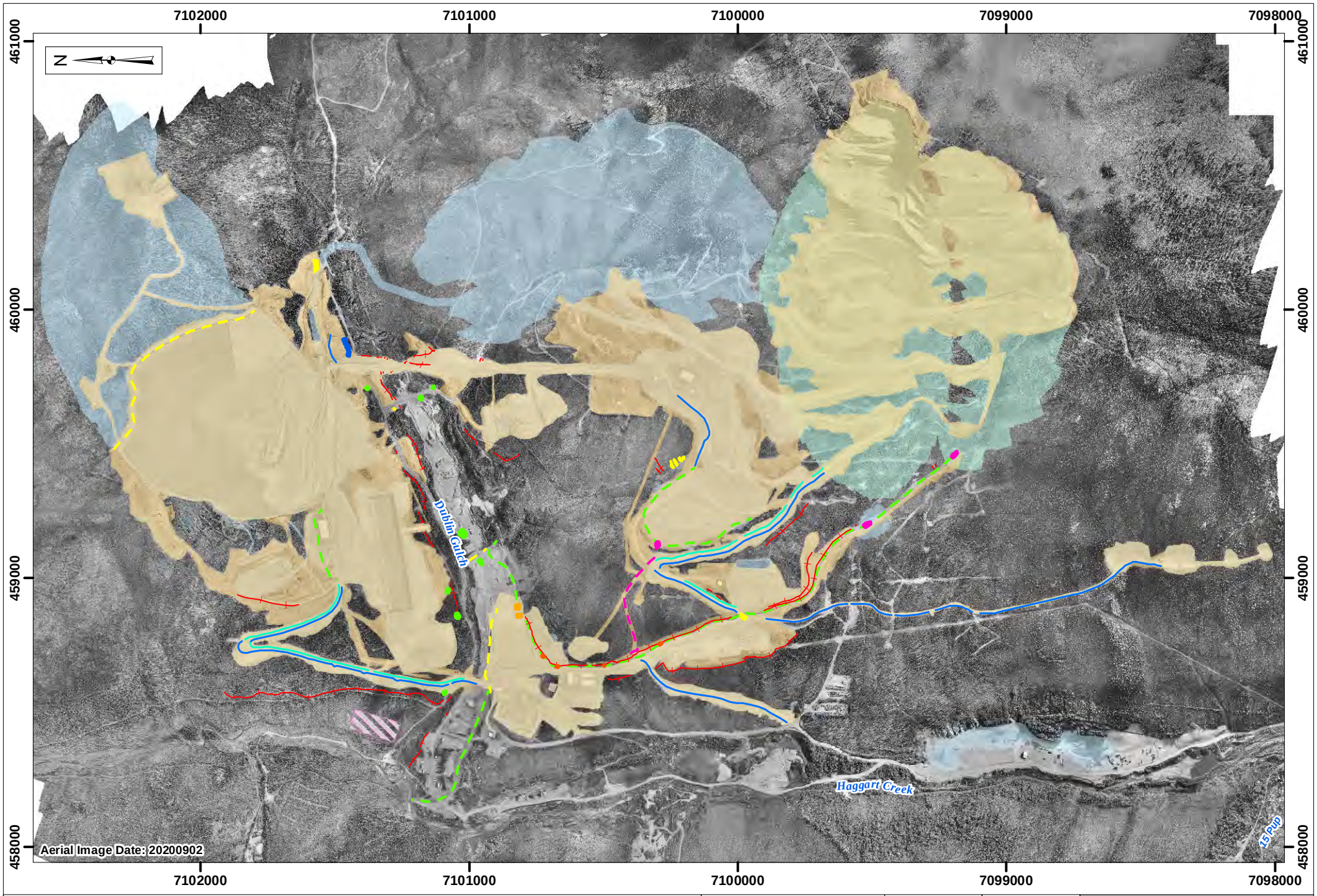
3.14.2 Erosion and Sediment Control Infrastructure

Monitoring of the effectiveness of erosion and sediment control was ongoing throughout the reporting period to support the overall water management objectives for the Project and to ensure compliance with regulatory approvals. Revegetation and reseeding work was undertaken in the areas of the LDSP, the Events Pond spillway, the laydown area east of the warehouses, and the overland conveyor adjacent to Dublin Gulch its west slope near Eagle Pup, and its east drainage ditch between Dublin Gulch and Eagle Creek (see Section 6.2).

Construction and operations activities continued to be supported by the implementation of sediment and erosion control measures, in accordance with the Water Management Plan, which included:

- Proper staging of construction activities and BMP installations to mitigate erosion and the potential entrainment of sediment.
- Installation of berms at the top of fill slopes to protect newly formed slopes from erosion.
- Application of bioengineering techniques for slope stabilization and channel protection as necessary in the sediment basins, ditches, and on any unstable and/or disturbed slopes and surfaces.
- Application of additional BMPs for slope stabilization and channel protection as necessary in the sediment basins, ditches, and on any unstable and/or disturbed slopes and surfaces.
- Installation of silt fences around the downslope perimeter of material stockpiles and disturbed surfaces to prevent sediment migration downslope.
- Monitoring, maintenance, repair, or replacement the mitigating measures listed above to ensure BMP effectiveness and efficiency.

Figure 3.14-1 shows the currently installed erosion and sediment control infrastructure.



Legend:

- Collection Ditch
- Collection Pipe & Ditch
- Diversion Ditch
- Road Berm
- Road Ditch
- Silt Fence
- Check Dam
- Energy Dissipator
- Exfiltration Basin
- Hay Bale
- Inlet Basin
- Sediment Basin
- Current Construction and Mining Impacted Areas
- Facility Footprint
- Reserved

VICTORIA GOLD CORP

0 125 250 500
Metres

Projection:	Drawn By:
NAD 83 UTM Zone 8N	HC
Date:	Figure:
2021/04/09	3.14-1

EAGLE GOLD MINE
YUKON TERRITORY

Installed Erosion and Sediment Control Measures

3.15 Independent Environmental Audit

Clause 12.0 of QML-0011 requires the undertaking of an environmental audit every two years by an independent contractor acceptable to the Director of the Mineral Resources Branch of EMR. Stantec Consulting Ltd. (Stantec) was deemed acceptable by the Director and subsequently contracted by VGC to complete this Environmental Audit. The audit was completed and considered information inclusive of monitoring and surveillance activities undertaken at the site from July 1, 2018 to June 30, 2020.

The audit evaluated:

- Reporting compliance and adequate implementation of the plans and associated monitoring programs; and,
- Confirmation that water monitoring (surface water quality and quantity, groundwater, and aquatic, habitat), terrestrial environmental monitoring, and physical stability assessments were completed to the specifications in the approved plans.

Stantec's audit indicated that implementation of VGC's environmental management system was adequate and that continual improvement had been demonstrated throughout the audit period (Stantec, 2020). Reports reviewed did not indicate any immediate concerns for water quality and quantity, aquatic habitat, air quality, soils, vegetation, wildlife and wildlife habitat, stability of physical structures and waste management.

Stantec's key findings are provided within the report (Appendix Q1) and Stantec has stated in the audit report:

"Reports and data reviewed do not indicate that indicators of environmental quality (water quality and quantity, aquatic resources (sediment, benthic invertebrates, fish and fish habitat) air quality, soils, vegetation, wildlife and wildlife habitat, stability of physical structures and waste management) are degraded or degrading."

In summary, Stantec noted that there were some common themes with regard to deficiencies across several monitoring programs. The majority of the identified deficiencies were related to reporting on activities undertaken and not the actual execution of programs. The noted and summarized deficiencies were:

- Reporting monitoring activities and results without providing all supporting data and information (e.g., validated datasets, statistical analyses, results compared against relevant standards or guidelines),
- Inconsistent implementation and/or documentation of QA/QC monitoring programs,
- Equipment malfunction resulting in gaps in datasets (i.e., climate, hydrology),
- Missing rationale in reports for gaps in implementation of the monitoring schedule,
- For monitoring programs with threshold standards or objectives, statistical analyses were not performed to determine statistically significant changes occurred to the receiving environment (i.e., air quality, hydrology, surface water quality, groundwater, soils, vegetation)
- Lack of adaptive management responses or rationale for not implementing adaptive management measures.

VGC's response to recommendations was provided separately with the environmental audit to EMR, and specifically addressed each recommendation or perceived gap. The response document is provided in Appendix Q2.

4 PHYSICAL MONITORING

4.1 Eagle Pit

Mining in the Eagle Pit has been ongoing since initial development in 2019. Mining in 2020 focused on Phase 1 single benching and the development of Phase 2 with single and double benches. During 2020 pit development, visual monitoring of the pit walls was actively conducted during regular pit inspections. A majority of the pit consists of single benches with 10 m bench heights and 6 m wide berms, and one wall in Phase 2 is double benched with 20 m bench heights and 10 m wide berms. The lithologies exposed in Phase 1 display equal portions of metasedimentary and granodiorite. Phase 2 is predominantly metasedimentary rock. Most rock within the pit was oxidized, weathered, and blocky.

A full inspection of the pit walls and dumps are completed on a weekly basis using a combination of visual observations and UAV drone photography (Figure 4.1-1) to support geotechnical stability monitoring.



Figure 4.1-1: Example of UAV Photography Used to Support Geotechnical Inspections

Bi-weekly surveys of the open pit and dump are completed using UAV drone photogrammetry to produce georeferenced surfaces. These surfaces are utilized to track dump progression and aid in pit wall analysis (Figure 4.1-2).

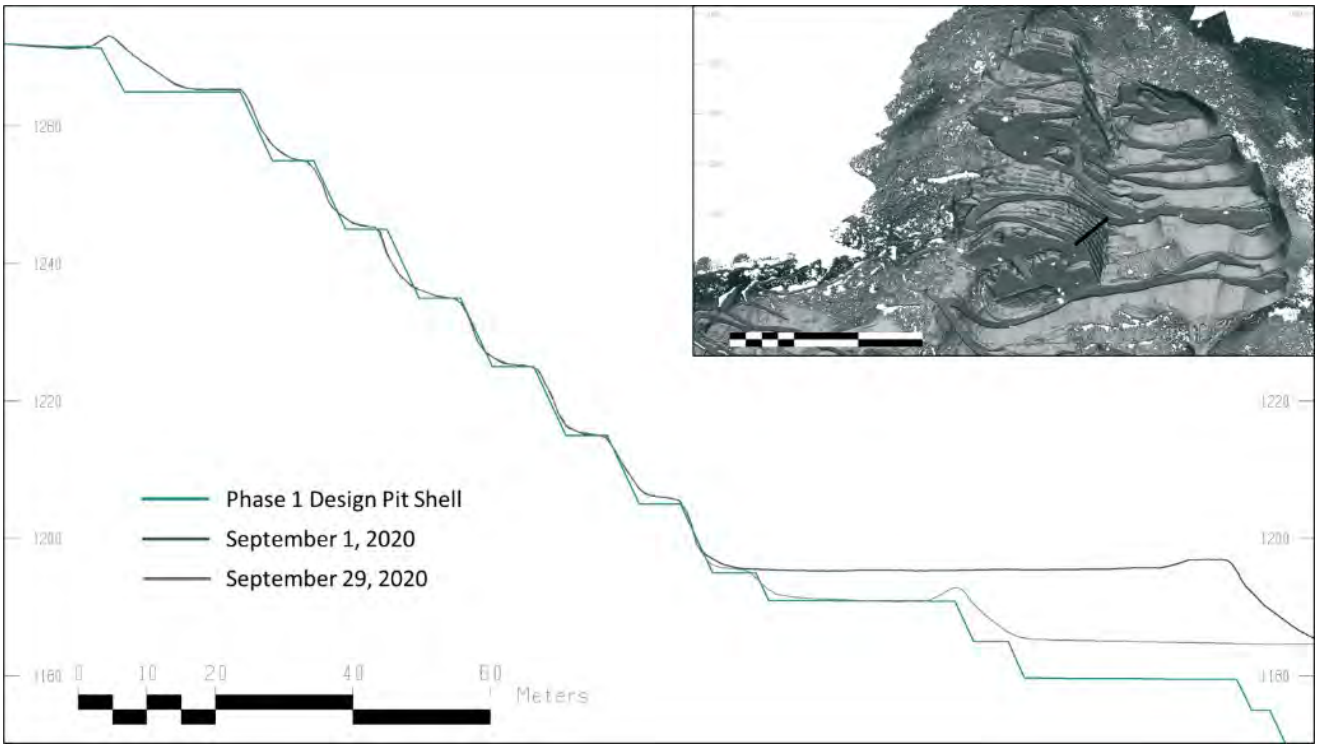


Figure 4.1-2: Example of Surfaces Produced by Drone Photogrammetry

4.1.1 Stability Incidents

A majority of the rock exposed on the pit walls is weathered rock mass. Figure 4.1-3 is an example surface from September 29, 2020 that illustrates a Phase 1 wall exposed along weathered metasediment and granodiorite. Figure 4.1-4 is an example surface from September 29, 2020 that illustrates a Phase 2 wall exposed along weathered metasediment and overburden.

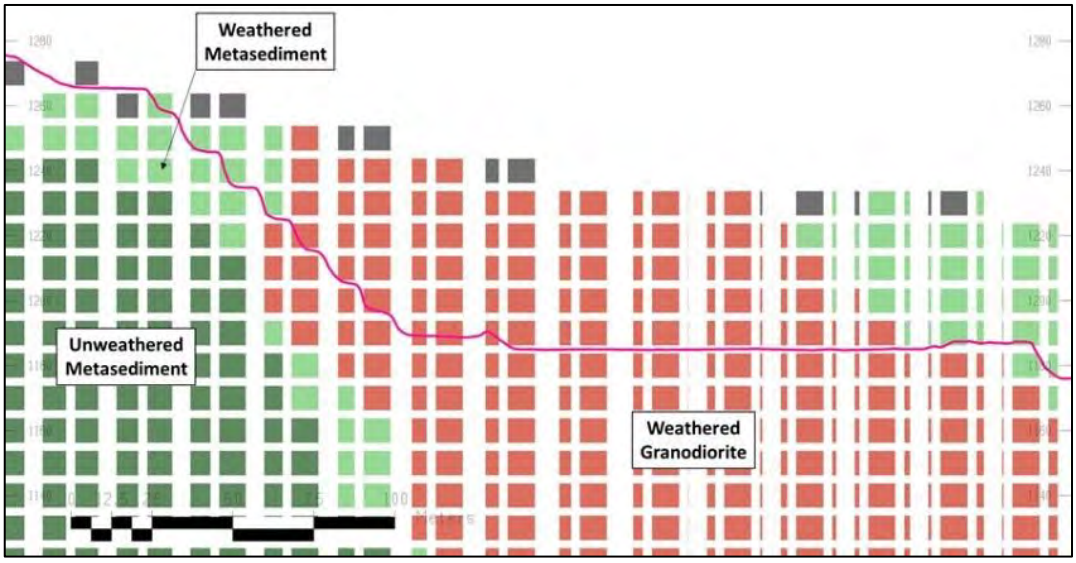


Figure 4.1-3: Eagle Pit Phase 1 – NW-SE Vertical Section from September 29, 2020 Surface

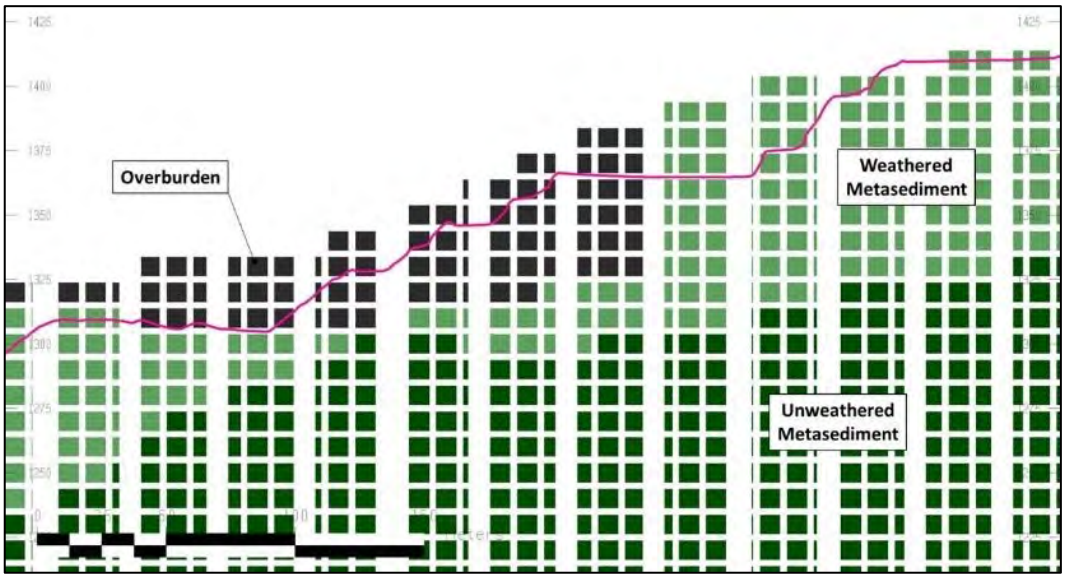


Figure 4.1-4: Eagle Pit Phase 2 – NW-SE Vertical Section from September 29, 2020 Surface

A fairly dominant NE-SW trending fault zone in Phase 2, in combination with the exposed weathered metasedimentary rock, caused a localized instability along one of the Phase 2 haul ramps in September 2020 (Photo 4.1-1). The area was bermed off and monitored using extensometers. Movement rates were measured to be consistently low. Access to the haul road was not required at the time of the instability, so the area is set to be remediated once heavy traffic access is required in 2021. Figure 4.1-5 and Figure 4.1-6 show the extensometer data collected on the instability.



Photo 4.1-1: Phase 2 East Wall Instability El. 1,333 masl (September 29, 2020)

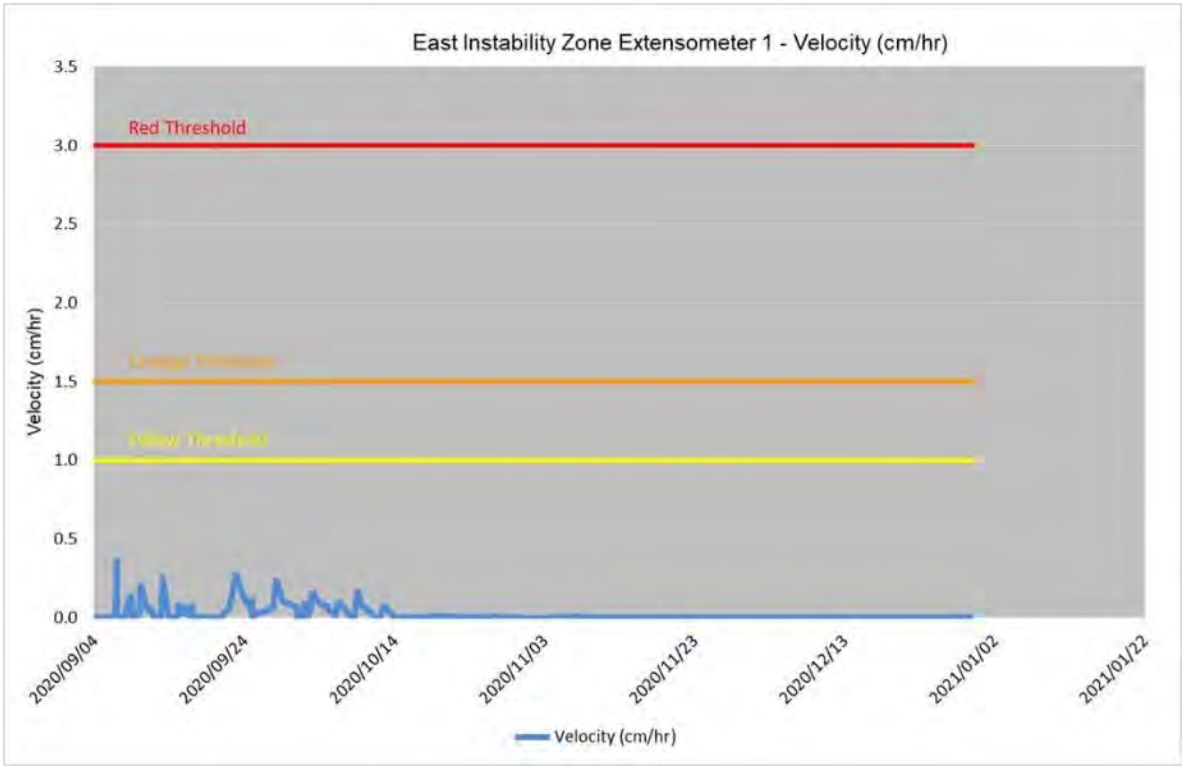


Figure 4.1-5: Extensometer Velocity Readings for Extensometer 1 on the East Wall Instability

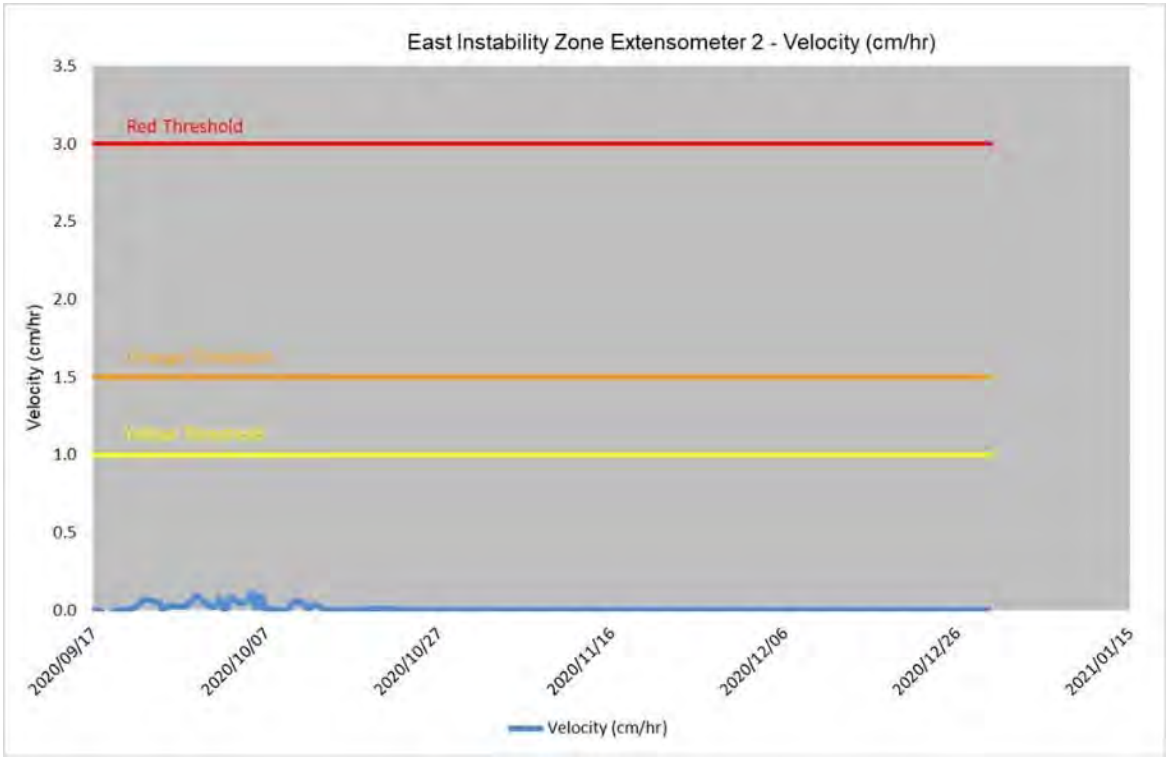


Figure 4.1-6: Extensometer Velocity Readings for Extensometer 2 on the East Wall Instability

4.2 Waste Rock Storage Areas

4.2.1 2020 WRSA Development

During 2020 waste rock was placed in the Platinum Gulch (PG) WRSA. The PG WRSA was built in lifts using the end-dumped method for the majority of construction and occasionally using the free-dump method. Figure 4.2-1 shows the total material moved during 2020 highlighted in blue, with the dump elevations labelled. A cross section of waste rock placement during 2020 can be seen in Figure 4.2-2.

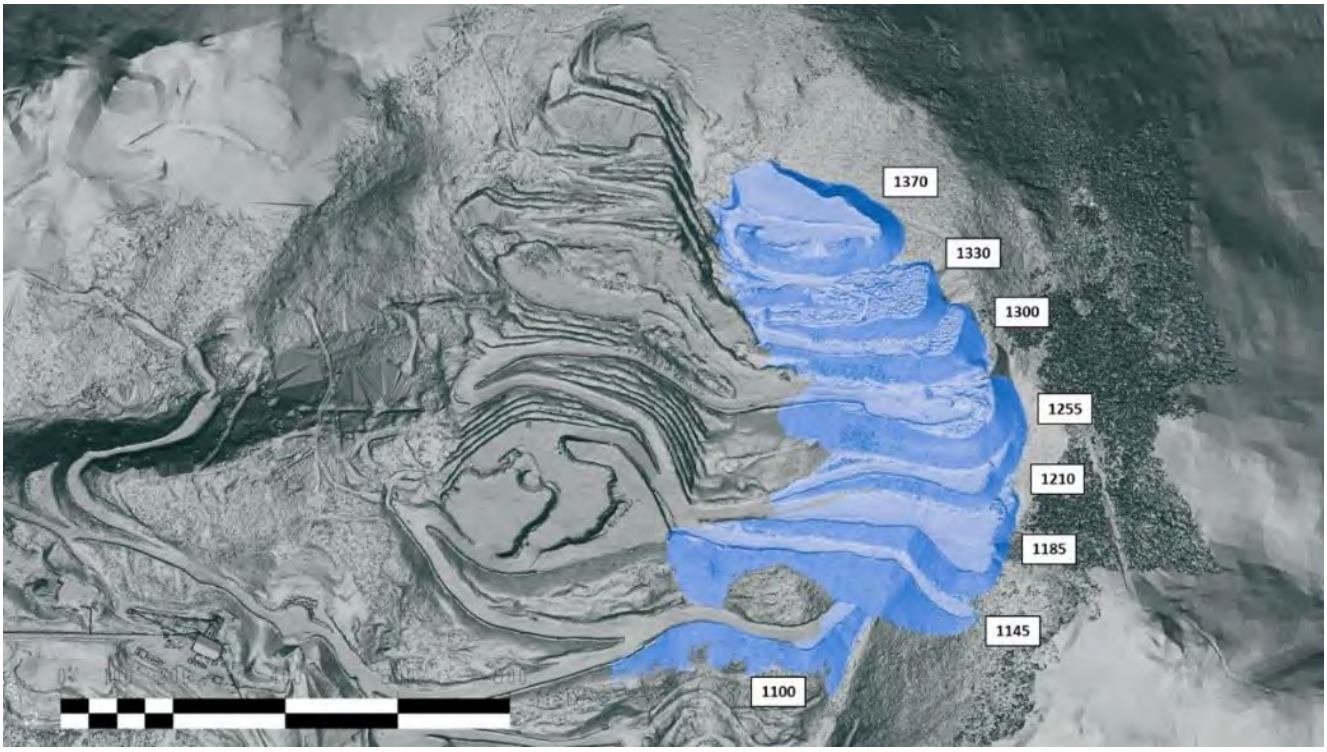


Figure 4.2-1: Waste Material Place in the PG WRSA in 2020 (Surface from December 15, 2020)

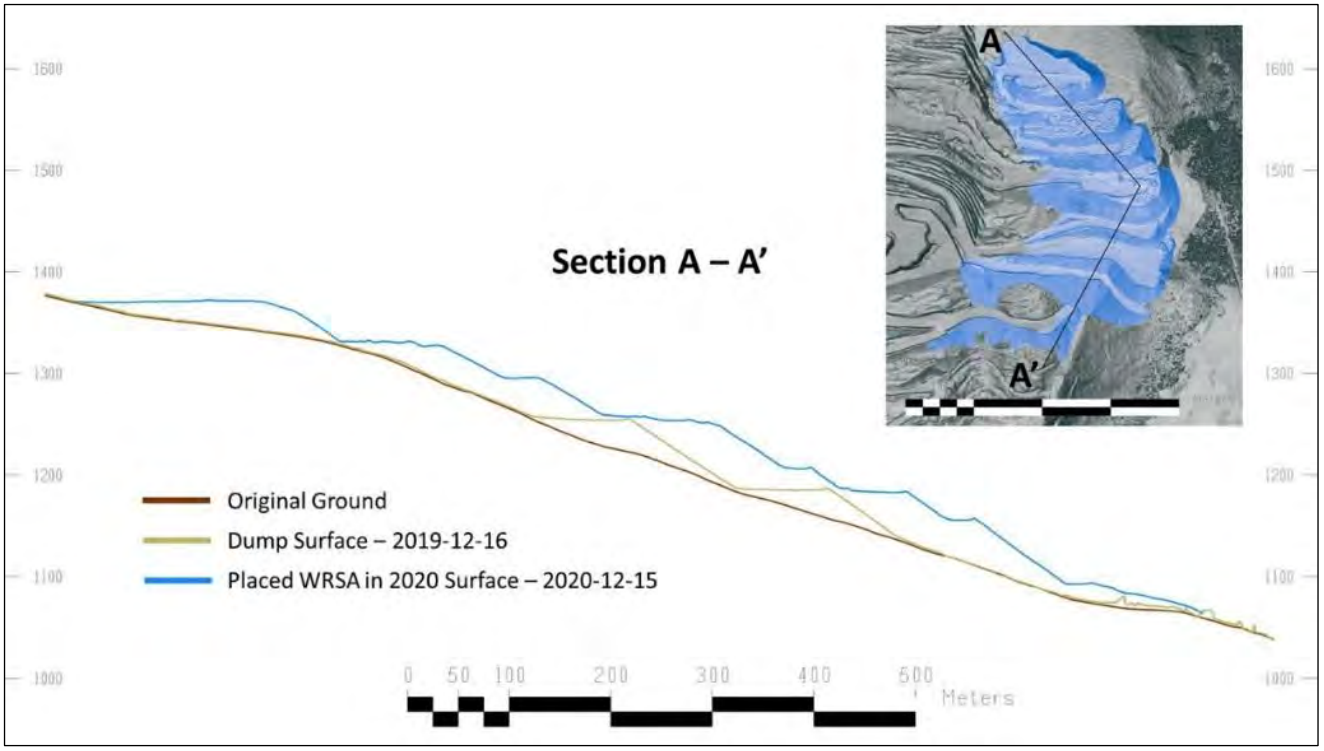


Figure 4.2-2: Cross Section of Material Placed in 2020

4.2.2 WRSA Monitoring

Active and non-active lifts of the PG WRSA were monitored for movement using extensometers. Readings were taken on a regular basis to determine the rate the structure was moving. Photo 4.2-1 shows an example of one of the site extensometers.

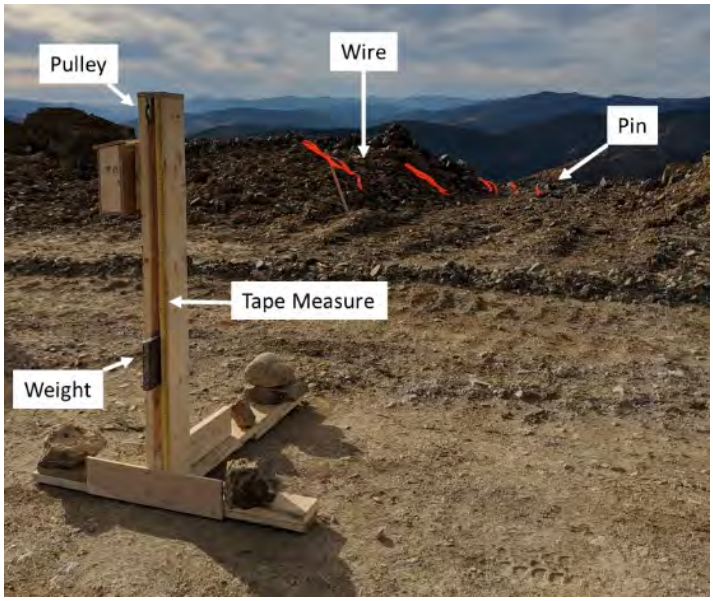


Photo 4.2-1: Extensometer Deployed on an Active WRSA Lift

Table 4.2-1 provides the movement rate thresholds for guiding the monitoring activities. Figures 4.3-2 through 4.3-5 show extensometer readings on the PG WRSA for 2020. All extensometers deployed in the PG WRSA showed movement rates below the monitoring thresholds. The PG WRSA is performing as per design.

Table 4.2-1: Movement Rate Threshold for Extensometer Monitoring

Alert	Green	Yellow	Orange	Red
Platform Condition	No new tension cracks; no recent movement on old tension cracks.	Existing cracks opening and new tension cracks developing close to the crest.	Cracking extends well behind the crest; obvious differential settlement and/or development of steps or grabens on the platform.	**Rapidly** coalescing, cracks that extend well behind the crest; deep, open tension cracks and/or grabens; platform not trafficable.
Crest, face and toe condition	Normal toe, face and crest geometry; no toe spreading or heaving, face bulging, crest over-steepening or excessive raveling.	Minor changes in dump geometry (minor toe spreading/heaving, face bulging, crest over-steepening); minor face and crest raveling.	Pronounced toe spreading/heaving, and/or face bulging; substantial over-steeping of the crest; small sliver failures; active face and crest raveling/break back.	Extensive toe spreading/heaving and/or face bulging; active face and crest slumping/raveling; frequent sliver failures; active instability.
Deformation rate	Rate of movement <1cm/hr, extensometer monitoring frequency every 4 hours.	Rate of movement >1cm/hr and <1.5cm/hr, rate increasing; extensometer reading every 2 hours.	Rate of movement >1.5cm/hr and <3cm/hr, rate increasing; extensometer reading every 2 hours.	Rate of movement >3cm/hr. Cease readings on extensometer due to potential safety issues.

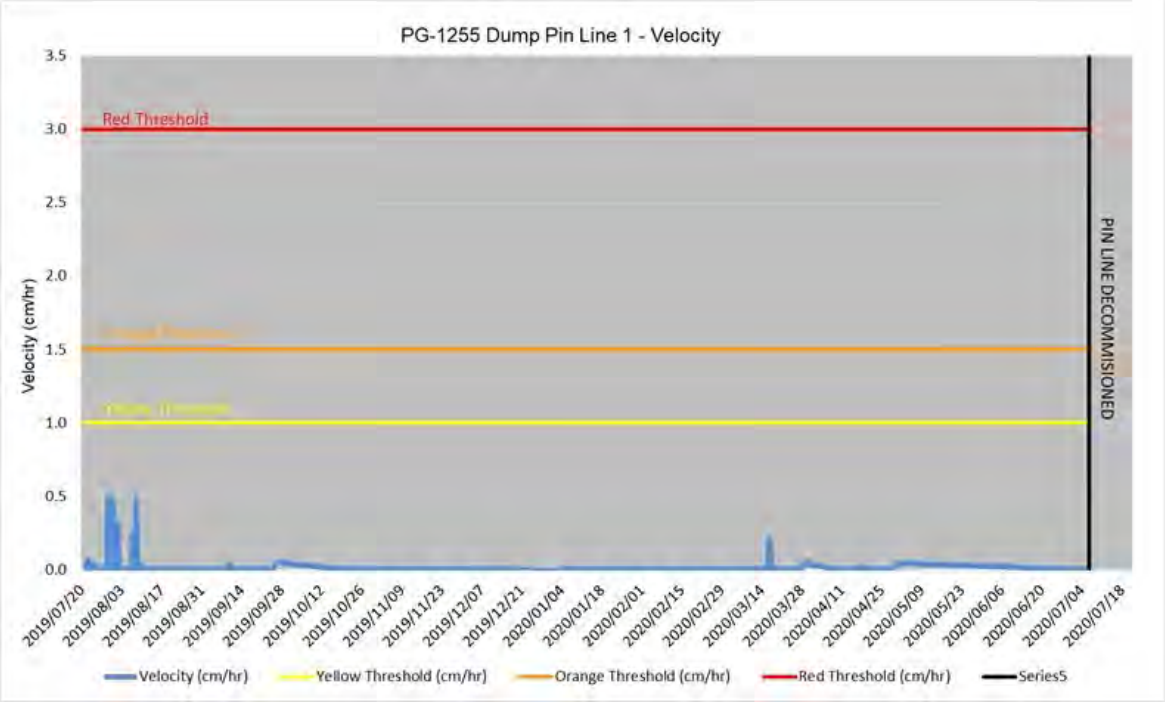


Figure 4.2-3: Total Discplacement for the 1255 WRSA Bench Pin Line 1 from July 2019 to July 2020

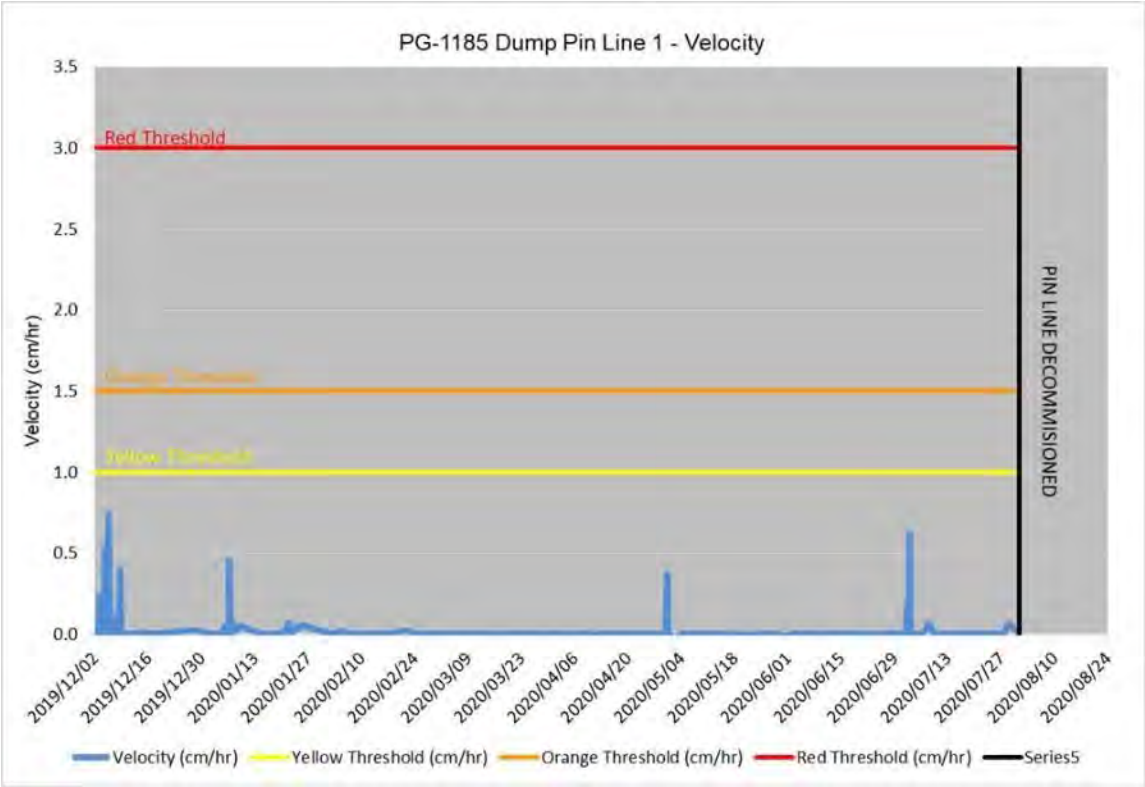


Figure 4.2-4: Total Discplacement for the 1185 WRSA Bench Pin Line 1 from Dec 2019 to July 2020

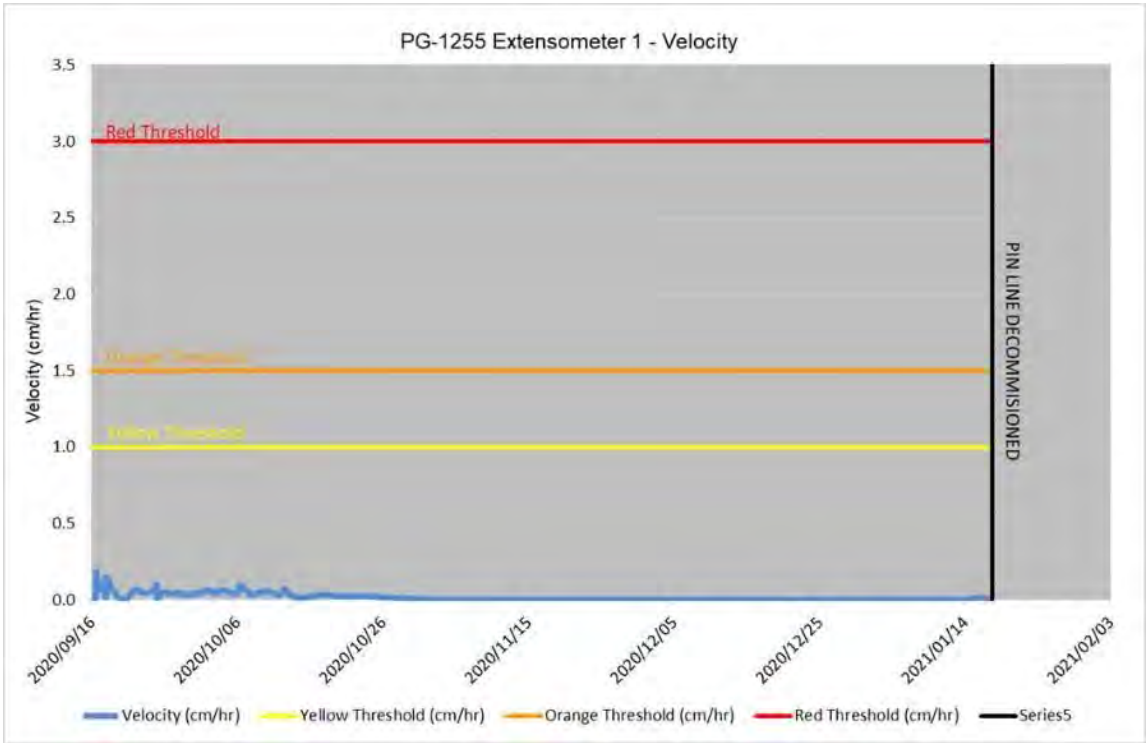


Figure 4.2-5: Total Discplacement for the 1255 WRSA Bench Extensometer 1 from Sep 2020 to Jan 2021

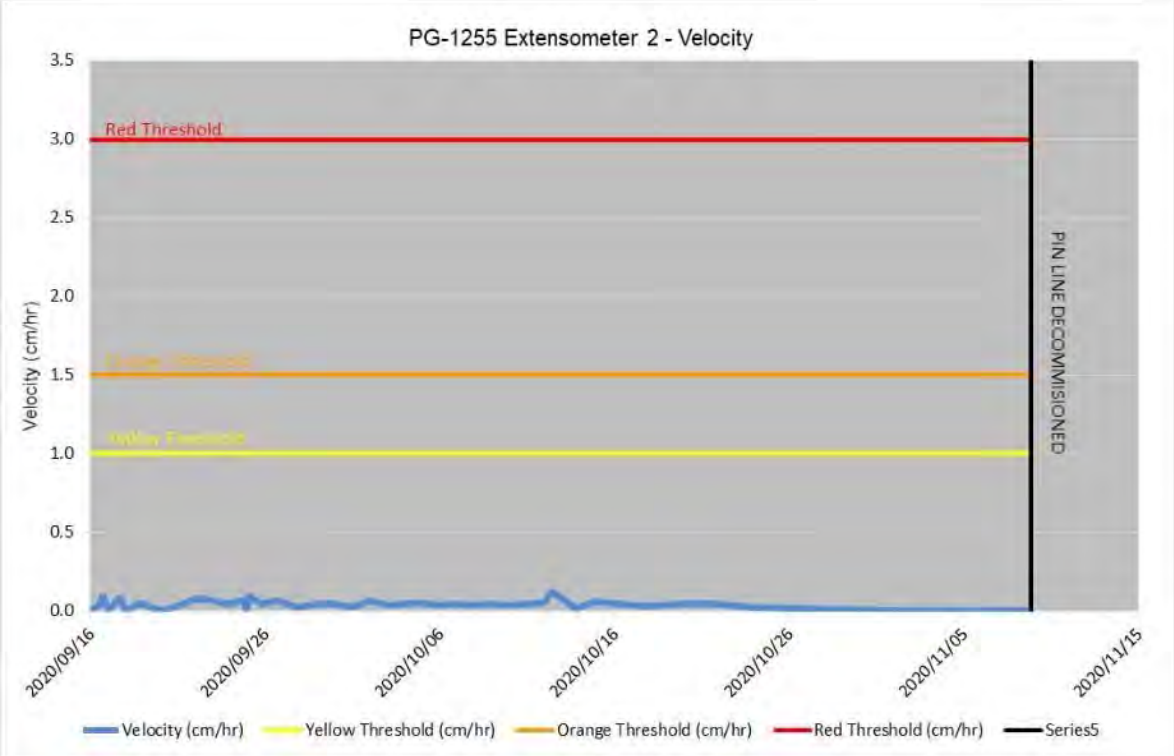


Figure 4.2-6: Total Discplacement for the 1255 WRSA Bench Extensometer 2 from Sep 2020 to Nov 2020

4.3 Heap Leach Facility and Process Facilities

Clearing and grubbing for Phase 1B of the HLF (from the Phase 1A boundary at 990 masl elevation to the Phase 1 interceptor ditch at an approximate elevation of 1050 masl) commenced in Q1 2020. Grading, underdrain excavation and a test pitting program was then completed. The test pitting program was used to identify and delineate the areas of the subgrade with ice rich or frost-susceptible soils as required in the Foundation Improvement Plan (StrataGold, 2017). Ice rich and frost susceptible soils identified were then removed from within the Phase 1B Heap Pad area. Upon completion of the foundation preparation works, the underdrain headers and lateral drains were installed, final grading undertaken, GCL and textured LLDPE liner installed, and PLS collection piping and ODF material placed. The HLF Phase 1B Record of Construction completed by Forte Dynamics Inc. is provided as Appendix A1 to this report.

On October 14, 2020, an annual inspection was completed by Mr. Clint Green P.E. of Forte Dynamics. Figure 4.3-1 presents a composited drone shot that is representative of the site during the Engineer of Record's site inspection (see Section 4.3.1).

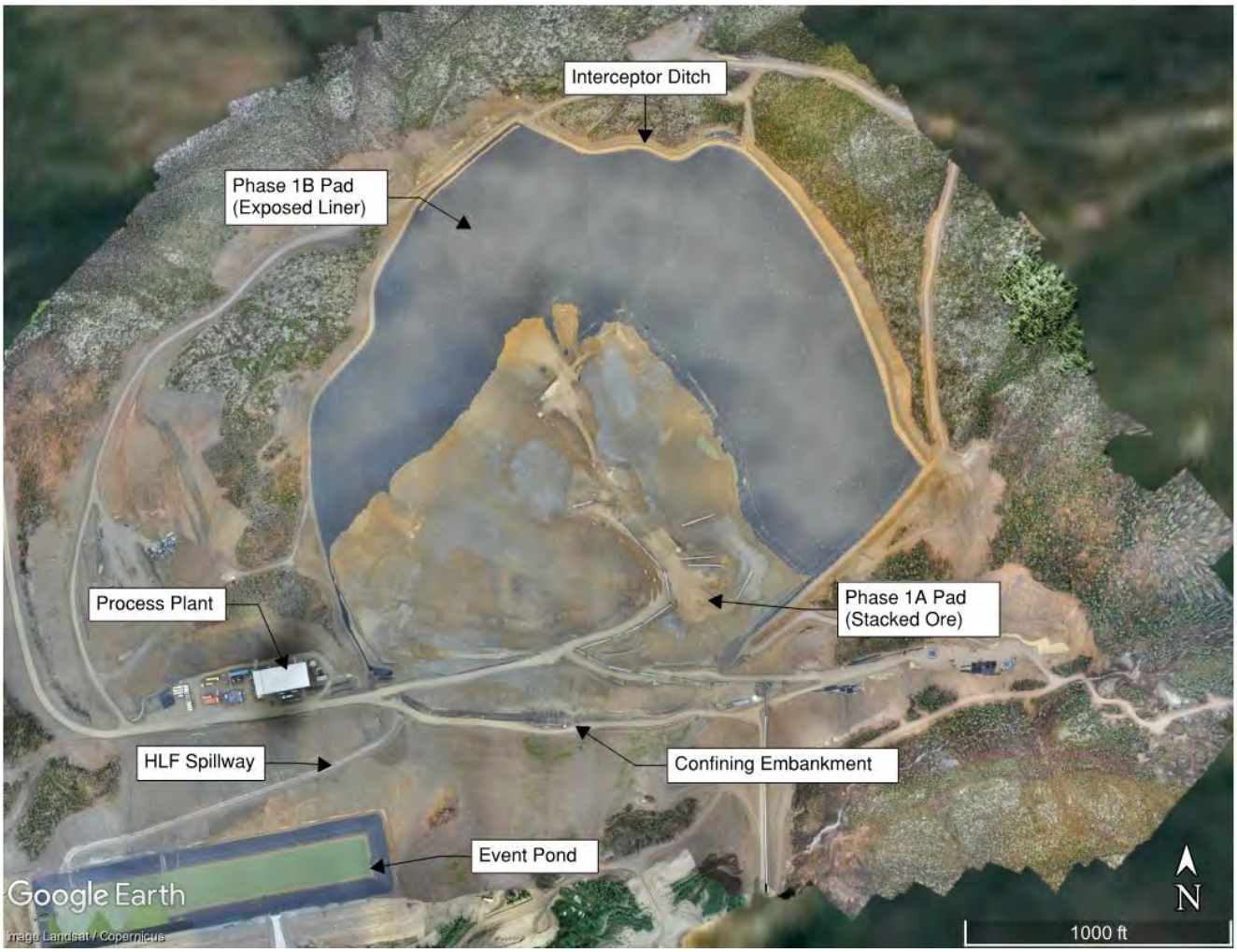


Figure 4.3-1: Drone Photo Map of HLF and Process Facilities September 2020

Three standpipes with vibrating wire piezometers are installed through the HLF. Piezometer P1 was installed into the dam foundation bedrock and Piezometers P2 and P3 were installed in the dam fill just above the western and eastern underdrains, respectively. The P1 level data appears to have remained unchanged from previous readings taken during the 2019 annual inspection. The P2 and P3 sensors still appear to be dry and small fluctuations are likely attributed to the changes in barometric pressure. The water levels are presented in Figure 4.3-2, Figure 4.3-3 and Figure 4.3-4.

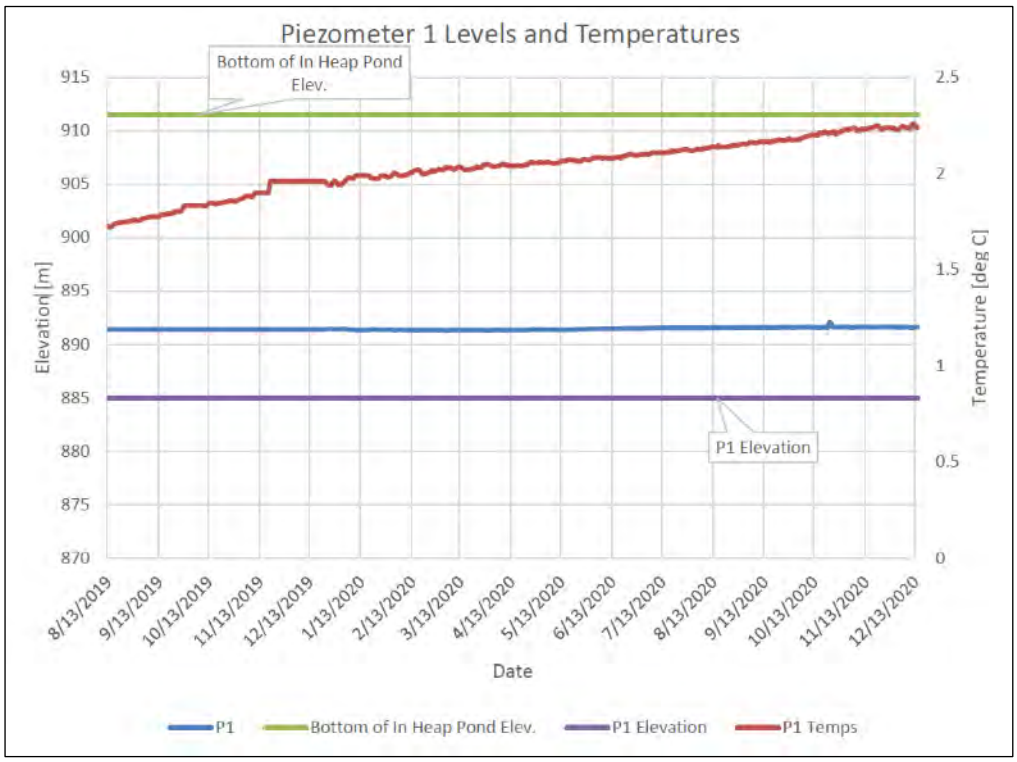


Figure 4.3-2: Piezometer P1 Readings

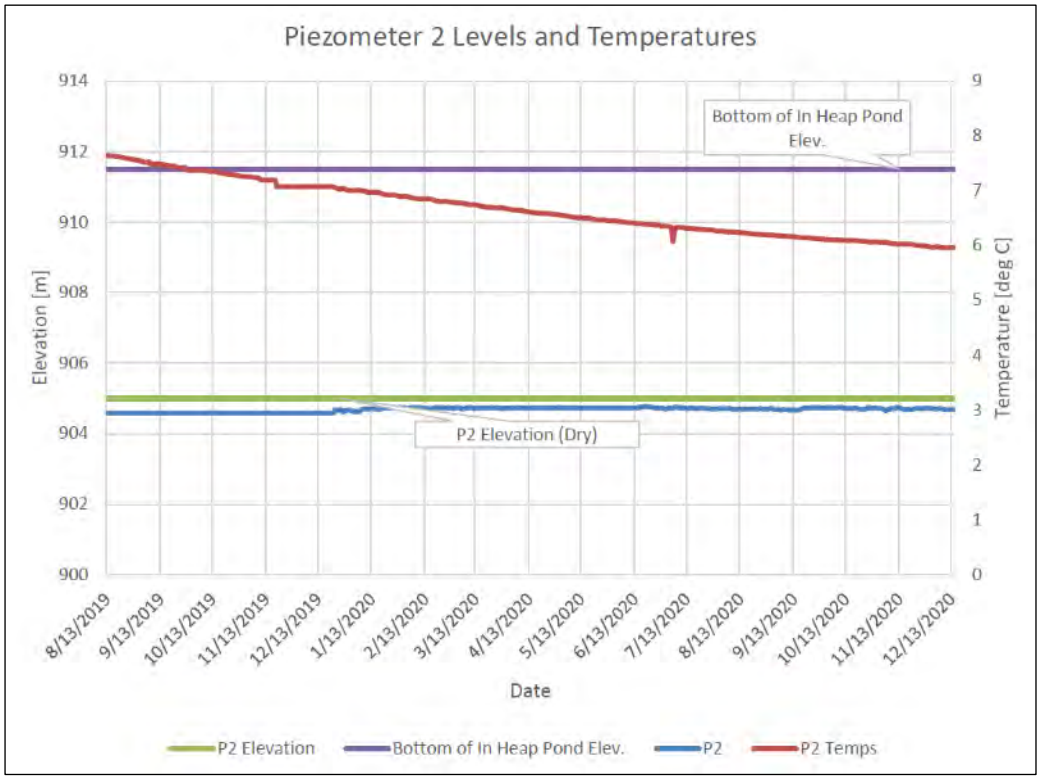


Figure 4.3-3: Piezometer P2 Readings

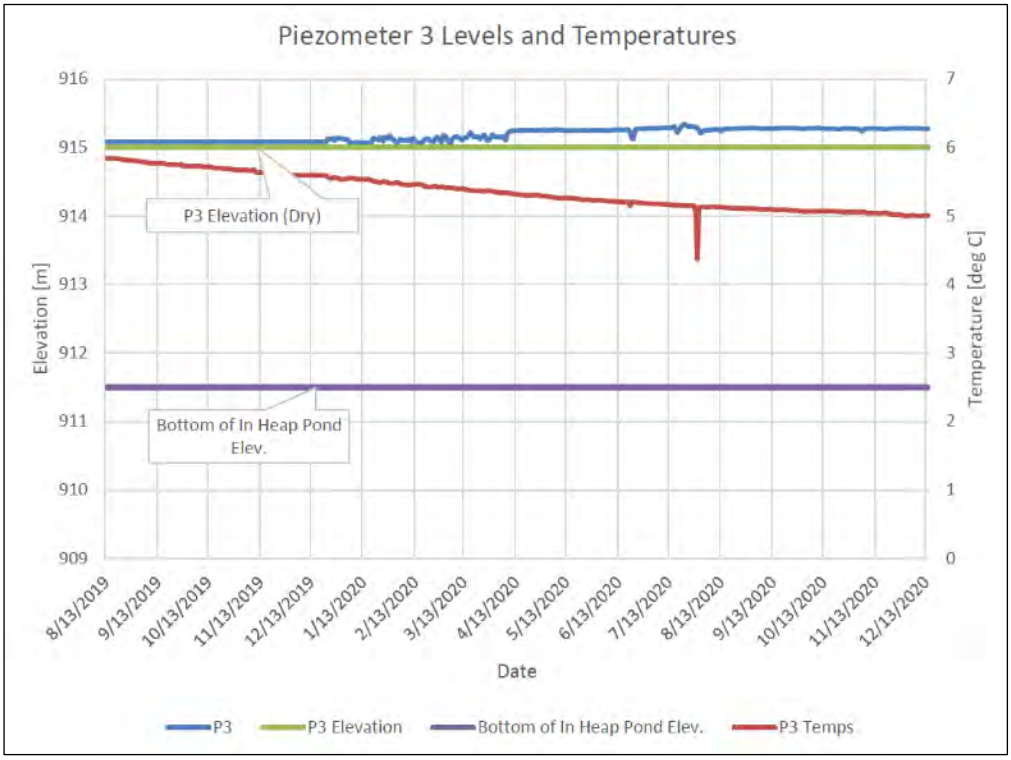


Figure 4.3-4: Piezometer P3 Readings

An inclinometer casing was also installed through the HLF dam crest and installation details are presented in BGC (2018). Results from an RST MEMS Digital inclinometer System show negligible movement or deformation of the embankment as shown in Appendix B3.

There were no stability incidents anywhere on the HLF, including the embankment, events pond embankment, or stacked ore or in any of the adjoining areas and access roads.

4.3.1 Stability Inspection

4.3.1.1 Engineer of Record Physical Stability Inspection

Heap Leach Facility

The 2020 inspection was completed by Mr. Clint Green, P.E. of Forte Dynamics on October 14, 2020. The 2020 EOR Annual Inspection Report was prepared under the direct supervision of Mr. Barry Carlson, P.Eng as the HLF Engineer of Record with the assistance of Mr. Green and Mr. Will Reinhardt, P.E. of Forte Dynamics. The full inspection report is provided as Appendix B3 and the general site layout of the HLF facility is shown in Figure 4.3-1.

At the time of the inspection, the PLS pipework had been completed through Phase 1A and the ODF had been advanced to 995 masl along the east perimeter and 1005 masl into Phase 1B footprint along the west.

The inspection took place on site and was in general conformance with the VGC HLF Operations, Maintenance, and Surveillance (OMS) Manual. The scope of this annual dam inspection work was limited to:

- Visual inspection of the HLF and dam by the EOR, including taking appropriate photographs of the observed conditions;
- Review of routine inspection records prepared by operating personnel in the past year;
- Review whether or not recommendations from previous year's inspection had been addressed, and any incidents or actions arising from those previous recommendations;
- Review of instrumentation and monitoring data;
- Review of the previous year's operations including reports of any incidents (and remedial measures) that may have occurred;
- Evaluation of the structural performance of the embankment and related components and identify any potential safety deficiencies or recommended items that need to be addressed in the coming year;
- Review of construction records, quality assurance and quality control (QA/QC) data and as-built information on facility construction; and
- Evaluation of the OMS Manual to assess the need for updating.

Based on the findings of the annual inspection, the EOR provided a summary of recommended maintenance and monitoring action items for the HLF. Each action item was assigned a priority ranking level from 1 to 3 with 1 indicating the highest priority and 3 indicating the lowest. A ranking of 3 was generally assigned to items that would be considered routine inspection or monitoring. A summary of recommended maintenance and monitoring action items and VGC's response and schedule to complete are presented in Table 4.3-1.

Table 4.3-1: Recommended Maintenance and Monitoring Action Items from 2019 EOR Inspection and Site Response

Name of Structures	Maintenance/Monitoring Actions Required					VGC Response
	Routine Monitoring/ Maintenance	Increased Monitoring/ Maintenance	Remediation and Engineering Review Necessary	Priority Level[1]	Recommendations	
Heap Leach Facility (HLF)	Yes	-	Yes	3	Continue the routine inspection and monitoring of the dam, abutments, emergency spillway, discharge outlet areas, LDRS sump, PLSsump, pad liner, PLS and barren pipes, monitoring wells (P-1, P-2, P-3), and pond level as per the current OMS manual.	Will continue routine inspection and monitoring of HLF as per OMS.
				2	Document using routine inspection forms all unusual/adverse conditions observed, as well as maintenance work undertaken.	Will develop standard inspection forms for HLF observations /maintenance works before end of Q2, 2021. Routine inspections will continue.
				1	Install pad cell piezometers in Phase 1B footprint per drawing 109005-51100-03-CV-F005 Rev 2 (August 2020).	Will be completed during summer 2021 during ODF placement.
				1	Continue collecting inclinometer readings in casing INC-1 quarterly per OMS.	Schedule being maintained and data collection occurring quarterly.
				2	Instrument setup for continuous data download.	Instrument received on site, mounting and installation to be completed by end of April 2021.
				1	Automate the evacuation of the LDRS sump based on water level readings (no greater than 0.5m above bottom end of LDRS pipe should be allowed).	Work order placed in Project resource planning system. Component sourcing ongoing.
				1	Place additional coarse fill on the dam crest to limit ponding and construct a small swale (see Appendix E of the EOR Inspection Report) along the crest of the underdrain containment area to direct surface water flows to the west edge of the monitoring vault area.	Scheduled to be complete post freshet 2021.
				2	Install signage to clearly mark the HLF east underdrain outlet. Not primary outlet for underdrain seepage as water is pumped back to process, however the underdrain outlet still requires marking.	Signage prepared and will be installed post freshet 2021.
				1	Review of the underdrain monitoring vaults pumps' design. Procure spare pump for underdrain monitoring vault and store on site.	Backup pump available on site for rapid deployment as necessary.
				1	Install survey monuments along embankment crest and take initial readings.	Survey monuments will be installed post freshet 2021.

Name of Structures	Maintenance/Monitoring Actions Required					VGC Response
	Routine Monitoring/ Maintenance	Increased Monitoring/ Maintenance	Remediation and Engineering Review Necessary	Priority Level[1]	Recommendations	
				1	Place additional coarse fill along the berm on the south side of the Process Plant to divert runoff and re-grade the spillway access road to drain into the HLF Spillway.	Work scope considered part of freshet management planning. Will be complete in 2021 when conditions allow.
Events Pond (EP)	Yes	-	-	3	Continue the routine inspection and monitoring of the embankment, abutments, pond liner, LDRS sump, and pond level as per the current OMS manual.	Will continue routine inspection and monitoring of Events Pond as per OMS.
				2	Instrument setup for continuous data download.	Instrument received on site, mounting and installation to be completed by end of April 2021.
				2	Document using routine inspection forms all unusual/adverse conditions observed, as well as maintenance work undertaken.	Will develop standard inspection forms for Events Pond observations /maintenance works before end of Q2, 2021. Routine inspections will continue.
				1	Automate the evacuation of the LDRS sump based on water level readings (no greater than 0.5m above bottom end of LDRS pipe should be allowed).	Work order placed in Project resource planning system. Component sourcing ongoing.
				2	Install signage to clearly mark the Event Pond underdrain outlet.	Signage prepared and will be installed post freshet 2021.
HLF Spillway	Yes	-	Yes	3	Continue the routine inspection and monitoring of the spillway armoring, adjacent access road, seepage collection pipe outlet as per the current OMS manual.	Will continue routine inspection and monitoring of HLF Spillway as per OMS.
				2	Document using routine inspection forms all unusual/adverse conditions observed, as well as maintenance work undertaken.	Will develop standard inspection forms for HLF Spillway observations /maintenance works before end of Q2, 2021. Routine inspections will continue.
				1	Remediation of the significant surface erosion along the downstream face of the HLF spillway access road.	Scheduled to be complete during summer of 2021.
				1	Placement of riprap along the groin between HLF spillway access road and HLF embankment to mitigate further rill or gullies from forming	Scheduled to be complete during summer of 2021.
Emergency Spillway	Yes	-	-	3	Continue the routine inspection and monitoring of the spillway armoring, adjacent access road, seepage collection pipe outlet as per the current OMS manual.	Will continue routine inspection and monitoring of Emergency Spillway, adjacent road, seepage

Name of Structures	Maintenance/Monitoring Actions Required					VGC Response
	Routine Monitoring/ Maintenance	Increased Monitoring/ Maintenance	Remediation and Engineering Review Necessary	Priority Level[1]	Recommendations	
						collection pipe outlet as per OMS.
				2	Document using routine inspection forms all unusual/adverse conditions observed, as well as maintenance work undertaken.	Will develop standard inspection forms for observations /maintenance works before end of Q2, 2021. Routine inspections will continue.

Notes:

1 Priority Levels are assigned from 1 to 3. 1 indicating highest priority and 3 indicating lowest priority. A ranking of 3 was generally assigned to items that would be considered routine inspection or monitoring.

4.3.2 Status Report on Backup Equipment and Supplies for Emergency Management

A range of backup equipment and supplies are maintained at site to ensure that solution within the HLF can be managed effectively in the event of an emergency. At the time of this report, equipment necessary for the emergency management of the HLF was available and operational.

The key backup equipment for management of solution for the HLF are all related to the pumping system (i.e., the pump components and equipment to power the pump components).

4.3.2.1 **PLS Pumps**

The HLF includes five inclined steel casings that terminate in the In-Heap Pond Pregnant Leach Solution (PLS) Sump. The casings house the PLS pumps for transferring gold bearing solution to the ADR Plant (Photo 4.3-1). There are currently five SAER Elettropompe 6S-302 pumps installed within the casings which includes an installed spare as only 4 pumps are operated at once (to provide installed n+1 redundancy).



Photo 4.3-1: PLS Casings and Pump Configuration – June 15, 2020

Manufacturer recommenced maintenance activities and schedules are programmed into the Project resource planning software to alert maintenance personnel when routine maintenance is required. Additionally, any observations of performance issues by process and maintenance personnel are logged in the resources planning system to allow for the tracking of work order requests from entry through to completion. Planned preventative

and routine maintenance was completed by the maintenance personnel and the installed pumps are all operating as intended. To date, the installed spared pump has not been required. An unused spare pump is also available on the site as a specific replacement for any of the installed pumps.



Photo 4.3-2: PLS Pump Receiving Routine Maintenance – May 7, 2020

4.3.2.2 **Barren Solution Pumps**

PLS is pumped from the In-Heap Pond to the ADR Plant for gold recovery and amendment of cyanide and then recycled to the HLF as barren solution by the barren solution pumps. Under an emergency scenario, solution pumped from the In-Heap Pond would only need to be recirculated back to the HLF thus the barren solution pumps represent a critical component for emergency management. The ADR Plant includes five barren solution pumps that are operated in an n+1 configuration.

As with all fixed and mobile equipment, maintenance of the barren solution pumps is tracked through the Enterprise Resource Planning (ERP) software platform. The ERP allows for the management of maintenance work orders and work flows, planning, scheduling through completion, close-out and record keeping. Records of any routine or follow-up maintenance activities for the barren solution pumps are kept by the ERP software on the Project site.



Photo 4.3-3: Barren Solution Pump Maintenance – December 7, 2020

4.3.2.3 **Power Supply**

Primary power for operations on the site is provided by the Yukon Energy Corporation electrical grid. There are also three diesel generators on the site, each rated for 1650 KW output (Photo 4.3-4). Each generator has weekly work orders inputted in the ERP software that details the daily checks to be conducted to complete the weekly work order. The daily checks, conducted by qualified maintenance staff, include logging engine hours, checking oil, coolant and other fluid levels, and general observations (including inspection for leaks). In addition to the daily checks required to complete the weekly work orders, routine service is conducted in accordance with manufacturer's instructions and the maintenance department standards. At the end of 2020, 851, 518, and 943 operating hours had been logged on generators 101, 102 and 103, respectively. The ERP software shows the completion of weekly checks and 500 hours preventative maintenance, service and inspection for each generator.

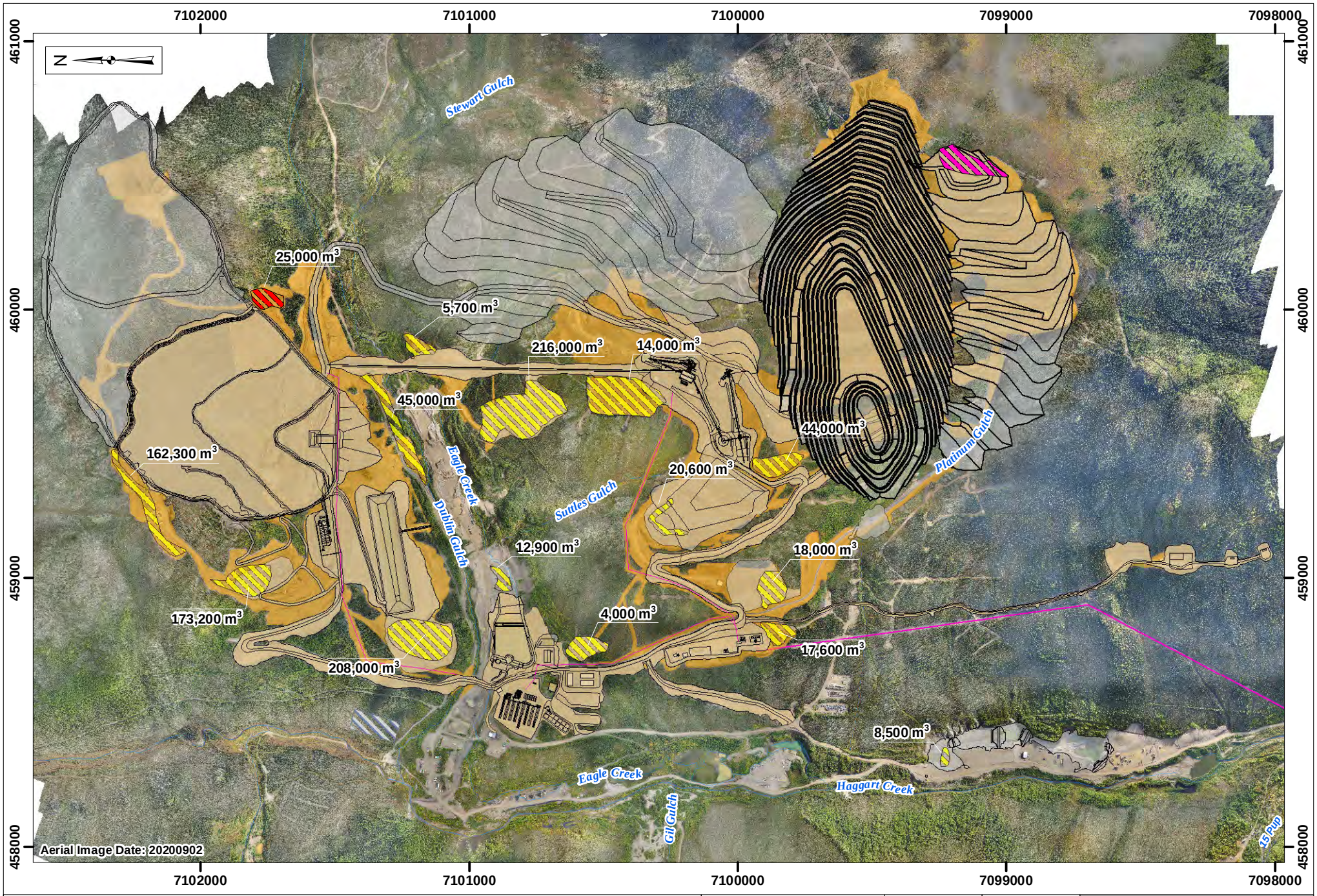


Photo 4.3-4: Project Substation and Back-Up Generators - 2019

4.4 Material Storage and Stockpile Management Areas

During construction and operational activities to date, various material types have been encountered that have not met construction specifications but would likely prove suitable for cover materials for facility closure. These materials have been either relocated to dedicated topsoil and overburden storage areas or have been stored locally to support future reclamation activities. The location and volumes of these materials are depicted in Figure 4.4-1.

Monitoring equipment to determine the stability of these stockpiles have not been employed to date due to their relatively small sizes and minimal consequence of failure. VGC will continue to work with the independent third-party geotechnical reviewers (discussed in section 4.5) to ensure that if evidence of movement is observed the stability of the stockpiles are addressed appropriately.



Legend:

- Facility Footprint
- Current Construction and Mining Impacted
- Reserved Area
- Material Stockpile - 2020
- Material Stockpile - 2019 Placed as Cover
- Material Stockpile - 2019
- Watercourse - Perennial
- Watercourse - Ephemeral
- Watercourse - Intermittent

0 125 250 500
Metres

Projection: NAD 83 UTM Zone 8N	Drawn By: HC
Date: 2021/04/09	Figure: 4.4-1

EAGLE GOLD MINE
YUKON TERRITORY

Volume and Location of Material Stockpiles

4.5 Engineer's Physical Stability Annual Inspection

As required by Section 13.2 of QML-0011, a physical stability assessment of all engineered structures, works and installations at the Project was undertaken by an independent engineer between September 23rd and 24th, 2020. The findings of the assessment are provided in Appendix R.

The assessment undertaken in 2020 included the following facilities and structures:

- Open Pit;
- Platinum Gulch Dump;
- Lower Dublin South (Control) Pond and Area;
- Primary Crusher;
- Secondary/Tertiary Crusher;
- Secondary Stockpile;
- Absorption, Desorption and Recovery Plant Area;
- Heap Leach Facility, Embankment and Area;
- Event Pond;
- Ditches A, B, and C;
- Former Nuway Crusher Pad;
- Orica Laydown;
- Various Un-named Stockpiles.

The Engineer's report included sixteen recommendations for the thirteen specific areas that were observed, and in the opinion of the independent engineer required further consideration. Table 4.5-1 provides the recommendations per area, VGC's response and the schedule to complete the response.

Table 4.5-1: Recommendations from Independent Engineer and Site Response

AllNorth Report - Observations	AllNorth Recommendations	VGC Response	Schedule to Complete
General Report Comment	**18.1 - General** **1.** VGC should assign a qualified, on site, individual to be responsible for monitoring and documentation of any mass earth structures that have significant risks in the case of a failure. The individual should develop a standard operating procedure for the monitoring and risk management of these structures. This individual should be responsible for coordination with a qualified professional to review monitoring data for concerns and trends, if they are not qualified themselves.	Monitoring of structures is completed by the Technical Services Department under the direction of the Technical Services Superintendent working closely with the EOR for the areas while following standard operating procedures. The Technical Services Superintendent is the EOR for a number of the Engineered Structures on the Mine site.	Ongoing
	18.1 - General **2.** VGC should continue to assign individuals to document and be responsible for the monitoring and construction of any structures to determine if the structures are constructed in accordance with design. Any variations between design documents and final construction should be included in final record drawings.	Monitoring of structures including construction review to meet design specifications is done by the Technical Services department under the direction of the Technical Services Superintendent working closely with the EOR for the areas. Construction reports and as-built drawings document variations or minor modification from IFC designs.	On-going
	18.1 - General **3.** Any finalized construction of mass earth structures should include a final construction report that includes any operational and maintenance requirements (if any) to ensure stability of the structure.	As per both the Quartz Mining License and Water Use Licence, the EOR provides final construction reports of Engineered Structures, which includes requirements for maintenance as needed, once the structures are complete.	On-going
	18.1 - General **4.** VGC should consider a monitoring program to assist in early warning and detection of any movements in mass earth structures. Such a program might use permanent survey points, slope inclinometers, piezometers, or other tools to measure internal/external movements and pore water pressures. Such a monitoring program should be developed with the assistance of and be implemented with the oversight of a qualified professional.	Monitoring programs have been developed, are in use, and undergoing further refinement by the Technical Services department with the oversight of a qualified professional. In addition to routine visual inspection, monitoring for physical stability include the following: • Pit wall and dump bi weekly survey using unmanned aerial vehicle or drone; • Extensometer installation on active lifts of the dump with regular movement calculations conducted; • Vibrating wire piezometer water level readings in the HLF dam foundation bedrock and dam fill just above the western and eastern underdrains to determine pore water pressures; and,	On-going

		• Slope inclinometer readings in the HLF dam crest.	
	18.1 - General **5.** For any stockpiles, cut slopes, and/or fill slopes with over-steepened slopes that do not require immediate rectification (due to proximity to structures, roadways, active work areas, etc) VGC should still cordon off the area above and/or below the over-steepened slope depending on what would be accessible to site staff.	VGC will conduct an internal assessment of areas that may pose a risk to site staff and cordon off those areas post freshet 2021	Q2 2021
3 **Lower Dublin South (Control) Pond**	**18.2 - LDSP (Control Pond)** **1.** Address erosion occurring on the southwest slope of the pond. This is likely due to water infiltration from Ditch A or the adjacent culvert outlet. This section of ditch may require further armoring or installation of a liner to properly direct water away from the Control Pond slope.	Upgrade work to comply with a directive given by a Yukon Government Department of Energy, Mines and Resources (EMR) Inspector which included the installation of an impermeable liner in Ditch A was completed after the field visit by the Auditor. It is assumed that this work will resolve any seepage concerns associated with this location. In 2019 and 2020, reseeding of the area to stabilize the slope was completed. The effectiveness of the reseeding will be inspected in 2021.	Complete Ongoing
4 **Secondary Stockpile**	**18.3 - Secondary Stockpile** **1.** Tie the perimeter ditch into the collection sump.	The secondary stockpile ditch will be cleaned out and tied into Ditch A in 2021.	Q1/Q2 2021
5 **Heap Leach Facility**	**18.4 - HLF** **1.** Continue to monitor the cut slopes around the perimeter of the HLF for erosion. Maintain the upper bench and remove sloughing material as required.	This area will be monitored and repaired with the continued construction and eventual stacking of ore into the Phase 1B expansion area. The Engineer of Record for the HLF has subsequently provided the Phase 1B as built report and the annual HLF inspection report which assessed HLF conditions in greater detail. The deficiencies identified by the EOR will addressed as necessary 2021 as described in section 4.3.	Q4 2020, 2021
	2. Monitor the toe slope below the HLF for rill erosion and revegetate and stabilize the slopes as needed.	As shown in Figure 19 of the report, the embankment face has been reseeded and is showing good vegetation growth. The area will continue to be monitored and will be addressed as necessary based on the recommendations of the Engineer of Record.	Ongoing
	3. Consider re-grading temporary access road (slope towards interception ditch) above HLF to prevent pooling water forming. **4.** Monitor soft/deflecting areas of temporary access road above HLF, particularly above HLF liner anchor trench.	The temporary access road area will be monitored in the spring of 2021 to establish if re-grading is necessary. This section of the HLF will ultimately be reworked to allow for the construction of Phase 2 of the HLF H2 2021. The Engineer of Record for the HLF is currently preparing the Phase 1B as built report which will include commentary and	Q1/Q2 2021

		recommendations on areas of the current configuration of the HLF which may require additional maintenance or upgrade. Any deficiencies identified by the EOR will addressed as necessary in H1 2021.	
	5. Check Phase 1B Interception Ditch design and complete construction if needed for sections that are lined but not armored. Check design for sloping requirements to outfall and confirm whether installed ditch meets design and monitor ditch for potential of pooling water.	The Engineer of Record for the HLF is currently preparing the Phase 1B as built report which will include commentary and recommendations on areas of the current configuration of the HLF which may require additional maintenance or upgrade. Any deficiencies identified by the EOR will addressed as necessary in H1 2021.	Q1/Q2 2021
8 Primary Crusher	**18.7 - Primary Crusher and MSE Wall** **1.** A monitoring program should be established using regular survey of the MSE walls, to detect any potential movement. 3D scanning equipment would provide an adequate monitoring program, with scan frequency to be determined between site and an experienced professional.	The development of monitoring program for the MSE walls is currently scheduled for Q1 2021 for execution in Q2 2021.	Q2 2021
9 Secondary/ Tertiary Crusher	**18.8 - Secondary/Tertiary Crusher and MSE Wall** **1.** A monitoring program should be established using regular survey of the MSE walls, to detect any potential movement. 3D scanning equipment would provide an adequate monitoring program, with scan frequency to be determined between site and an experienced professional.	The development of monitoring program for the MSE walls is currently scheduled for Q1 2021 for execution in Q2 2021.	Q2 2021
10 Adsorption, Desorption, and Recovery Plant (ADR)	**18.9 - ADR** **1.** Review engineering requirements for the North Toe Ditch to confirm ditch size, and need for rock armoring. Toe ditch is currently tied into the roadside ditch, which should also be reviewed for engineering requirements. Recommend reviewing hydraulic design of both ditches to determine what is necessary.	Review of design will be completed if surface runoff is observed to be above the carrying capacity of the ditch. To date, no observations of uncontrolled surface runoff has been observed in this ditch.	As necessary
11 Event Pond	**18.10 - Event Pond** **1.** Monitor minor erosion of cut slopes and maintain as required.	Revegetation work was undertaken in 2020 to stabilize this area. The performance of revegetation measures will be monitored during 2021 and maintained/improved as necessary.	Ongoing
	2. Monitor pooling water above the North side of the Event Pond and regrade area to prevent pool formation or install a water handling system (sump pumps, etc.).	The area will be monitored on an ongoing basis to determine if the installation of a water handling system or additional grading to improve drainage is warranted.	As necessary
	3. Monitor material deposits on HLF spillway and Event Pond to ensure the spillway and pond designs are not compromised through either blockage of flow or reduced pond capacity.	The area will be monitored on an ongoing basis to ensure that flow capacity in the spillway and storage volume in the Events Pond are sufficient to meet the design specifications.	Ongoing

		In accordance with the conditions of the Type A WUL for the Mine, by March 31 of each year, all ditches and culverts will be cleared of ice, snow and debris that would affect their operational capacity and be maintained free of such obstruction until at least October 31. VGC considers this requirement to also be applicable to all spillways.	
12 Ditch A	**18.11 - Ditch A** **1.** Un-block the feeder ditch/culvert which will carry flow from the Secondary Stockpile perimeter ditch to Ditch A.	The secondary stockpile ditch will be cleaned out and tied into Ditch A in 2021.	Q1, Q2 2021
13 Ditch B	**18.12 - Ditch B** **1.** Continue to manage sediment entering the ditch from the cut slopes on the downstream end. Silt fencing is currently in place to address this. **2.** Monitor erosion above South side of Ditch B and consider re-sloping area as needed.	The areas identified were included in the 2019 revegetation program to promote stability of the area. Reseeding and willow staking were completed and the performance of this work will be monitored during 2021 and maintained/improved as necessary. Silt fencing will be inspected after freshet 2021 and repaired or added to as may be necessary	Ongoing Q2 2021
14 Ditch C	**18.13 - Ditch C** **1.** Monitor pooling water above LDSP outlet to Ditch C. Consider tieing in pooled water discharge ditch with Ditch C to prevent erosion and scouring on North side of Ditch C.	The temporary water pooling in response to rainfall events will be monitored to ensure that it does not result in erosion and scouring. The area identified was included in the 2019 revegetation program to reduce erosion and scouring potential and the performance of this work will be monitored during 2021 and maintained/improved as necessary.	Ongoing
15 Former Nuway Crusher Pad	**18.14 - Former Nuway Crusher Pad** **1.** Pull back over-steepened slopes prior to utilizing this area. Flag over-steepened slopes in the meantime to protect site staff.	The area will be inspected post freshet with areas flagged as necessary to ensure staff safety. This area will ultimately be within Phase 3 of the HLF and as such will be regarded in preparation for liner installation and ore stacking.	Ongoing.
16 Orica Laydown	**18.15 - Orica Laydown** 1. Monitor perimeter sump for flow interruptions/blockages and consider re-trenching if pooled water observed.	This area will be inspected prior to freshet to ensure that there are no blockages and that the sump is performing as expected. If maintenance work is warranted, it will be undertaken as necessary.	Q1/Q2 2021
17 Un-Named Stockpile Area	**18.16 - Un-Named Stockpile Area** 1. Consider additional ditching and water management in the area to prevent scouring of the road surfaces and erosion around the stockpiles. Ditch water away from the laydown areas to prevent ponding.	This area will be inspected prior to freshet 2021 and additional ditching installed as necessary. This area will also be considered for the 2021 revegetation program.	Q1/Q2 2021

	2. Flag over-steepened slopes in area to protect site staff.	The area will be inspected post freshet with areas flagged as necessary to ensure staff safety.	

5 CYANIDE MANAGEMENT

Operations at the Eagle Gold Project follows practices and procedures described in the VGC Cyanide Management Plan (CMP) version 2019-02 and the associated Standard Operating Procedures (SOPs) which govern the procurement, delivery, storage handling, and use of sodium cyanide for mineral extraction purposes. The practices comply with the *International Cyanide Management Code* (ICMC), a globally accepted set of practices applied at international gold mining projects involving cyanide-based mineral extraction (ICMI 2016 and 2018).

In accordance with the requirements of QML-0011, QZ14-041-1, VGC engaged an independent third-party to complete an audit of the CMP and its execution consistent with the International Cyanide Management Code. As discussed in section 5.4 and Appendix S, minor items were identified by the third-party auditor which will be addressed through updates to the CMP and SOPs and alterations/improvements to certain site practices. The majority of the revisions recommended by the auditor are due to the preparation of the CMP in advance of the final as-built configuration of the Project and consideration of actual site operations. These updates are planned as part of the 2021 CMP audit cycle.

5.1 Transportation and Storage Controls

5.1.1 Transport

VGC continues to sole source cyanide for use on the Project site through a long-term cyanide supply contract with Cyanco Canada Inc. (Cyanco), an experienced ICMC-certified North American supplier. Cyanide supplied to the Project is manufactured at Cyanco's ICMC certified plant at Alvin, Texas. VGC established contractual conditions under which Cyanco assumes responsibility for management of the entire supply chain pursuant to ICMC requirements. For incidents in proximity to the mine, VGC will, on request from the transporter, assist with responding to a transportation related incident. Transportation to the Project by Cyanco is supported by Cyanco's Global Transportation Emergency Response Plan (GTERP), which includes the Emergency Response Assistance Plan for Canada. The emergency response capability and preparedness of the transporter is clearly set out in the ICMI Cyanide Transportation Verification Protocol (ICMI, 2016).

Cyanco, as part of the western supply chain re-certification process under the ICMC, included the transportation route to the Project as part of their audit. The process included auditing the operations and planning processes for Alaska Marine Lines, Alaska Marine Trucking and Canadian Lynden. The recertification process was officially completed on April 22, 2020 and the transportation route to the Eagle Gold Mine is now fully certified under the ICMC. During the reporting period there were no spills of cyanide documented during transportation.

5.1.2 Receipt, Handling, and Storage

Cyanide is delivered to the Project site in solid briquette form, in one tonne nylon "supersacks", overpacked in polyethylene-lined plywood pallet crates (known as Intermediate Bulk Containers or IBCs) within standard 20-foot steel intermodal containers.

VGC is responsible for unloading intermodal containers of cyanide upon receipt, and takes formal ownership of the product at that point. The product is received at a designated unloading and storage area adjacent to the ADR

plant building. The intermodal containers are configured so that the lockable doors are facing one another such that access to the door is restricted without movement of the entire container. When product is required for barren solution amendment, a single steel intermodal container is moved to the concrete unloading area immediately outside of the ADR Plant. The delivery area is marked with warning signs and spotters are utilized to prevent unauthorised passage of personnel and equipment while the cyanide intermodal containers are being offloaded.

The internal cyanide storage area is located inside the concrete lined plant area. The internal storage area provides warning signage at all entry doors, an audible and visual hydrogen cyanide (HCN) alarm and monitoring systems, combination safety shower and eyewash station, and dry powder fire extinguishers for use in an emergency.

5.2 Operational Controls

5.2.1 Facilities Monitoring and Inspections

The HLF infrastructure is monitored regularly according to SGC-CMP-SOP-007, "*Cyanide Facility Inspections"* and the VGC *HLF Operation, Maintenance and Surveillance Manual* (HLF OMS). Physical stability and integrity inspections of the Heap Pad and associated infrastructure are completed and recorded through supervisor and operator checklists, records are then filed on site by VGC Process department staff. Specific focus areas for inspections of cyanide related facilities are listed in Table 5.2-1.

Table 5.2-1: Cyanide Related Infrastructure Routine Inspection Areas

Facilities	Inspection Focus Area
Cyanide unloading and storage area	• Maintenance of general housekeeping practices, presence of water or debris • Proper segregated storage of incompatible materials • Integrity and proper positioning and stacking of stored intermodal containers and IBCs; according to or exceeding that specified by manufacturer specifications and best management practices. • Presence of properly rated fire extinguishers (non-carbon monoxide detectors) • Functionality of fixed HCN alarms • Legibility of hazard warning signage • Availability of Material Safety Data Sheets (MSDSs) for cyanide briquettes • Personnel spotters deployed during container unloading operations, to ensure restriction of access by unauthorized personnel • Use of appropriate operator PPE during unloading operations • Functionality of eyewashes/emergency showers and water supply line pressure • Condition of emergency response equipment and first aid storage cabinets
Cyanide bag cutter arrangement, mixing and storage tanks, and secondary containments	• Structural integrity, signs of corrosion, buildup of cyanide salts, or leakage (tanks, valves, pumps, and other piping system components) • Structural integrity, cracks, spalling, or deterioration of concrete impoundments • Functionality of fixed HCN alarms • Functionality of tank level indicators • Condition of chain hoist and bag lifting bridle • Functionality of eyewashes/emergency showers and water supply line pressure • Temperature, cleanliness, and condition of first aid storage cabinets • Condition of emergency response equipment and PPE • Use of appropriate operator PPE during mixing operations

Facilities	Inspection Focus Area
	• Legibility of hazard warning and direction flow signage • Integrity of lockout/tag-out mechanisms on major solution or containment drain valves • Maintenance of physical separation from chemically incompatible materials • Maintenance of general housekeeping practices, presence of spilled solution or debris
Incineration of cyanide packaging materials	• Legibility of hazard warning signage • Adequacy and integrity of security fencing, gate, and lock • Completeness of combustion of packaging residues • Control of windblown debris outside of fenced area • Evidence of animal intrusion
ADR plant and secondary containments	• Structural integrity, signs of corrosion, buildup of cyanide salts, or leakage involving process solution storage tanks, valves, pumps, and other piping system components • Structural integrity, cracks, spalling, or deterioration of concrete impoundments • Management of fluids in impoundments • Functionality of fixed HCN alarms • Functionality of tank level indicators • Functionality of eyewashes/emergency showers and water supply line pressure • Condition of emergency response equipment and PPE • Legibility of hazard warning and direction flow signage • Integrity of lockout/tag-out mechanisms on major solution or containment drain valves • Maintenance of physical separation from chemically incompatible materials • Maintenance of good general housekeeping practices, including routine cleanup of spilled or leaked solution or debris
Pregnant and barren solution pipelines and pumping stations/ containments	• Structural integrity, signs of corrosion, buildup of cyanide salts, or leakage (pipelines, valves, pumps, and other components) • Structural integrity, cracks, spalling, or deterioration of concrete impoundments • Functionality of eyewashes/emergency showers • Condition of emergency response equipment and PPE • Legibility of hazard warning and direction flow signage • Integrity of lockout/tag-out mechanisms on major solution or containment drain valves
HLF earthworks, risers, distribution lines, emitters, internal pond(s), and leak detection system	• Signs of erosion, slumps, or cracks in earthworks or the ore pile • Signs of pipeline/flange leakage, and associated ponding • Signs of ponding on HLF surface; if present, adequacy of screening or other appropriate avian exclusion devices • Signs of animal trails or intrusion • Management of fluids in impoundments • Functionality of leak detection system and maintenance of associated detection logs • Legibility of hazard warning and direction flow signage
External Events Pond and leak detection systems	• Adequacy of available freeboard • Tears or holes in liner material or signs of erosion or slumps in underlying earthworks • Signs of pipeline/flange leakage, and associated ponding • Adequacy of wildlife monitoring, fencing and/or avian exclusion devices • Signs of animal trails or intrusion • Functionality of leak detection system and maintenance of associated detection logs

Facilities	Inspection Focus Area
	• Legibility of hazard warning and direction flow signage
Surface water interceptor ditches	• Tears or holes in liner material (if lined) or signs of erosion, slumps, or cracks in earthworks • Signs of animal trails or intrusion • Signs of blockage or other surface runoff impediments

5.2.2 Wildlife Monitoring

The documentation and monitoring of wildlife related to cyanide management is conducted according to HLF area and Events Pond monitoring programs detailed in VGC's *Wildlife Protection Plan* and SOP SGC-CMP-SOP-011 "*Wildlife Mortality Reporting/Investigation"*. The objective of the monitoring is to confirm that wildlife access to process solution is restricted. This was ensured through the Wildlife Records Program that requires that all VGC employees report wildlife observations throughout the Project site and regular inspections completed by VGC Process and Environmental staff of the HLF area and Events Pond. Wildlife observations and incidents are documented and reported quarterly through the Environmental department as per QML-0011.

As an additional mitigation measure, VGC has deployed electronic propane sound cannons in the area of Events Pond throughout the summer and fall to deter wildlife, particularly migratory birds and water fowl from the pond.

As outlined in the CMP, a wildlife exclusion fence is to be installed around the perimeter of the Events Pond to prevent access by larger terrestrial wildlife. This fencing is planned for installation during 2021. The Events Pond has not received any direct overflow from the In-Heap Pond (via the spillway) and there has been no detection of cyanide in any laboratory sample for groundwater flow circulated to the Events Pond from the HLF underdrain monitoring vault.

There were no wildlife incidents associated with the Events Pond during the 2020 reporting period. In July 2020, there was one documented incident of a bird mortality on the HLF. The non-SARA listed species was found adjacent to temporary standing water that contained diluted concentrations of process solution. The mortality was reported to the local Conservation Officer as per the Wildlife Protection Plan. Monitoring in that particular area of the HLF was prioritized until the pooling was mitigated and no other incidents were recorded.

5.2.3 Surface and Groundwater Monitoring

The mine operations do not have direct discharges to surface water from cyanide facilities, and the HLF and ADR are engineered and constructed with measures to protect groundwater from seepage of process solution. In addition to facility monitoring, surface water and groundwater monitoring in the vicinity of the HLF, Events Pond and ADR plant is routinely undertaken to determine if process solution has escaped from these facilities.

The sites monitored, and the frequency of water quality monitoring, to determine if process solution has reached the receiving environment are provided in Table 5.2-2.

Table 5.2-2: Surface Water and Groundwater Monitoring Locations for the Presence of Cyanide

Site	Frequency	Coordinates (Zone 8)		Site Type
		North	East	
LDSP	D & W	7100857	458672	Surface Water - Compliance
ADR Pad Ditch	D & M	7101471	459043	Surface Water - Compliance
HLF-UMV	M	7101298	459445	Groundwater - Compliance

Site	Frequency	Coordinates (Zone 8)		Site Type
		North	East	
W4	D & M	7101223	458144	Surface Water - Receiving Environment
W5	M	7095888	457814	Surface Water - Receiving Environment
W6	M	7095964	458099	Surface Water - Receiving Environment
W22	M	7101378	458319	Surface Water - Receiving Environment
W23	M	7095682	457790	Surface Water - Receiving Environment
W29	D & M	7099583	458225	Surface Water - Receiving Environment
W39	Q	7086504	449780	Surface Water - Receiving Environment
W49	Q	7085495	449221	Surface Water - Receiving Environment
W99	M	7098180	458322	Surface Water - Receiving Environment
MW19-DG6R	Q	7101121	459225	Groundwater - Receiving Environment
MW19-EVP1a/b	Q	7101188	459264	Groundwater - Receiving Environment
MW19-EVP2a/b	Q	7101091	459073	Groundwater - Receiving Environment
MW19-HLF1a/b	Q	7101316	459542	Groundwater - Receiving Environment

NOTES:
D – Daily when discharging; W – Weekly when discharging; M – Monthly; Q – Quarterly

There was one documented release of process solution from the lined footprint of the HLF to soils documented in 2020. This incident was investigated, reported and mitigated as documented in the VGC *Spill Report Process Solution Spill to Ground – July 11, 2020* (Appendix P2). While a low-level detection of cyanide was detected for one soil sample downgradient of the release area (below all soil quality guidelines for free cyanide provided in the Canadian Soil Quality Guidelines for the Protection of Environmental and Human Health (Canadian Council of Ministers of the Environment, 1999)), no detection of total or WAD cyanide was detected in monitored surface water or groundwater downgradient of the HLF.

Other than the above-described incident, cyanide solution was not detected at any of the monitoring locations in the receiving environment.

5.2.4 Worker Safety

VGC has developed multiple operating procedures for managing its facilities to limit worker exposure to Hydrogen Cyanide (HCN) gas and sodium cyanide salts. Operational monitoring of cyanide facility worker health and safety is based on managing pH throughout the facilities to mitigate the risk of HCN gas production, use of ambient/personal monitoring devices when working directly with cyanide-related tasks, and ensuring timely investigation and evaluation of exposure incidents.

Fixed HCN monitors are installed in all areas of the ADR plant deemed to have a higher risk of HCN exposure. These areas include the carbon column upper trash screen, carbon column, acid wash, caustic system, strip system, carbon regent, and barren solution sump. Additional monitors were installed during the second quarter of 2020 in the gold room and cyanide mixing tank area. Monitors are tested and calibrated on a monthly basis by the on-site electrical and instrumentation team, according to scheduled work orders.

Workers are required to carry portable HCN monitors when performing tasks directly related to cyanide use (e.g., maintenance procedures requiring decontamination of cyanide equipment, mixing, and unloading). VGC continually conducts calibrations and bump tests of the portable monitors with a docking station with plumbed in calibration gases, tracked by an online software platform.

All alarms are set to alarm visually with a strobe at 4.7 parts per million (ppm), and to alarm both visually and audibly at 10 ppm. These thresholds are well below the internationally recognized LD50 for gaseous hydrogen cyanide (HCN) of 100-300 ppm (ICMC, 2018), as is consistent with ICMC guidance for fixed and portable HCN monitors.

All site employees, visitors and contractors must receive site hazard training, which includes basic information regarding cyanide safety training (as detailed in Section 5.3). Site employees are required to complete the basic cyanide safety training on an annual basis. Additional detailed cyanide training is provided to employees with a high potential for exposure to cyanide through work-related activities, such as all Process department personnel, ERT members, and Environmental sampling staff.

During the period of this report there were no first aid, medical aid, or lost time incidents related to an exposure to HCN gas or sodium cyanide salts.

5.2.5 General Signage Requirements

As recommended in the ICMC, warning signs are placed to alert workers that cyanide is present, that smoking, open flames, eating and drinking are not allowed and that the necessary cyanide-specific personal protective equipment must be worn. Tanks and piping containing cyanide are identified by color code, signs, labels, tags, decals or other means to alert workers of their contents. The direction of cyanide flow in pipes are also labeled, marked or otherwise designated according to the American National Standards Institute (ANSI) guidelines *"Scheme for the Identification of Piping Systems"* (ANSI/ASME 2007). Special signage is also placed to identify emergency exits and the location of emergency equipment stations including emergency shower/eyewash stations, dry powder/non-acidic sodium bicarbonate fire extinguishers, cyanide antidote kits, and first aid stations. Safety Data Sheets (SDS), which include first aid procedures and additional information on cyanide safety and exposure, are found in hard copy in the ADR Plant, and available electronically to all employees via the company network. Similar information is posted directly on the cyanide mixing and storage tanks, including exposure symptoms, first aid and emergency response. All signage and SDS are printed in English, the language of the workforce.

5.2.6 Emergency Response

VGC has developed a CMP, HLF OMS, EMSAMP, HLF Contingency Water Management Plan, and Emergency Response Plan (ERP), all of which address responses to the potential release of cyanide. The ERP considers multiple potential failure scenarios involving cyanide and the site-specific environment, operation, and response.

During the reporting period no cyanide exposure occurred at the Project site or with Project-related cyanide activities, nor did cyanide exceed limits in water quality monitoring outlined in WUL QZ14-041-1. As noted in Section 5.2.3, there was a documented short-term release of Process Solution outside of lined HLF containment on July 11, 2020. The incident was investigated, reported and mitigated as documented in Appendix P2.

5.2.7 Emergency Equipment

VGC maintains emergency equipment and supplies at strategic locations to allow rapid response to emergencies involving cyanide exposure. Potable water is supplied to the safety showers and eyewash stations; as well as oxygen, a resuscitator, and a radio are readily available at the ADR Plant, near the mixing and storage area. In addition to the shower/eyewash stations and dry chemical fire extinguishers, cyanide first aid kits are maintained that include medical oxygen equipment with resuscitator, activated carbon, and antidote. The Project currently

utilizes the Cyanokit® containing hydroxocobalamin as the antidote for cyanide exposure with six (6) kits present at site at all times. Cyanokits® are located at the site medical clinic and in the site ambulance (within a heated bay) as these can only be administered by the site Primary Care Paramedic (PCP). The cyanide emergency response equipment is checked regularly by the site paramedics, while ERT members check other emergency response equipment, including the site ambulance.

All employees that work with cyanide, and are able to respond to a cyanide exposures emergency, are trained in cyanide exposure recognition, first response and basic first aid procedures; a portion of employees are trained in application of medical oxygen, and antidote, as available and as suitably qualified.

5.2.8 Medical Emergency Response

A first aid room is established at the Project site, with the equipment and staff to handle first response of all readily foreseeable types of medical emergencies. The first aid room is staffed 24 hours a day, 7 days a week and able to provide advanced emergency first aid, including first aid to respond to cyanide poisoned patients. On site medical staff include one PCP with IV endorsements and one Registered Nurse (RN) to allow administration of the Cyanokit®. There were no medical emergencies involving cyanide in 2020.

5.2.9 Emergency Response Team

The Project retains an Emergency Response Team (ERT). The VGC Emergency Response Plan provides primary contact details for the incident management team members, including the General Manager who has authority to ensure that sufficient and adequate resources are allocated to carry out the ERP. The ERP describes the roles and responsibilities for those involved in responding to an emergency. ERT members are site personnel that receive training and certification as emergency responders. All ERT responders undergo the same training, which includes fire, highwall, and hazardous materials emergency response and include members trained to Occupational First Aid (OFA) Level 3 medical first aid.

The Project maintains and updates an *Emergency Response Plan* that details the following:

- Primary and alternate emergency response coordinators who have authority to commit the resources necessary to implement the Plan;
- Current members of the ERT;
- Minimum training requirements for emergency responders;
- Mustering procedures and 24-hour contact information for emergency coordinators and ERT members;
- Duties and responsibilities of the emergency coordinators and ERT members;
- Procedures for periodic inspection of emergency response equipment to ensure its functionality and availability; and,
- Specific roles of external responders, medical facilities, or community organisations in the emergency response process.

5.2.10 Mock Emergency Drills

Mock cyanide exposure drills are to be undertaken by the ERT as part of regular training sessions. The drills are designed to test each of the potential cyanide emergencies scenarios appropriate for the site as considered in the

Heap Leach Facility Emergency Response Plan. Should the evaluation of a mock drill identify deficiencies in the methods and effectiveness of the response, the adequacy of emergency response training will be reviewed, and additional or revised training may be recommended to hone the knowledge and skills of the responders.

A mock exercise was undertaken by the ERT members on August 29, 2020 that simulated a cyanide leak within the ADR Plant. The ERT members assembled quickly and initiated cyanide release protocols and the site Emergency Response Plan. Areas identified for improvement included radio communications, area specific emergency evacuation procedures, and medical training for ERT members. These areas will be incorporated into ERT response and personnel training in future.

5.2.11 Cyanide Emergency Destruction

A supply of hydrogen peroxide is maintained on site as part of the emergency response for neutralizing and decontaminating areas impacted by potential cyanide spills. SGC-CMP-SOP-020 "*Cyanide Emergency Response Procedures*" describes the method for preparing neutralization chemicals for safe use and application to ensure that treatment chemicals and by-products of the neutralization process do not unduly impact surface waters. Additionally, cyanide destruction can be accomplished with the use of lime, soda ash, sodium hypochlorite, or high pH water for neutralization response to spills on site where the neutralization agents will not come into contact with aquatic systems.

There has been no release of cyanide on the Project site requiring emergency cyanide destruction.

5.3 Training

Training programs (as outlined in SGC-CMP-SOP-002, "*Eagle Gold Project Training Program*") are implemented to ensure that employees work in compliance with regulations, approved policies, and procedures.

All site employees are required to receive Cyanide Hazard Recognition Training (Level 1) in accordance with the guidance provided in the ICMC. Detailed cyanide training (Level 2 and 3) is further provided to employees with a higher potential for exposure to cyanide through work-related activities, such as all Process department personnel and ERT members. Cyanide specific training is currently tracked through the VGC Training department and all training records are retained on site. Annual refresher training is required and is tracked through the training department. Cyanide workplace safety meetings are ongoing through daily toolboxes to discuss risks and potential issues related to cyanide-related tasks. Additional on-site training includes the following:

- WHMIS;
- Lime Hazard Recognition Training;
- Cyanide Exposure Symptoms; and,
- First Aid.

To ensure relevant and up to date training programs, and in keeping with the VGC Occupational Health and Safety Policy and with maintaining a safe working environment, workers are encouraged to provide input on occupational health and safety issues. VGC considers this input in developing, evaluating and reviewing operating procedures and during the mock drills, formal safety meetings and informal pre-work safety toolbox sessions. Monthly JOHSC meetings and mandatory all staff monthly safety meetings allow for the review of incidents and provision of employee feedback on health and safety issues.

5.4 Annual Cyanide Management Plan Audit

An independent third-party audit of the VGC Cyanide Management Plan and on-site implementation was undertaken for the period of June 2019 to June 2020, to cover the period of time from when cyanide use was initiated on site. Adam House (of Forte Dynamics Inc.) a certified technical expert auditor for gold mining under the Code performed the audit of operational procedures following the guidelines of the International Cyanide Code. An independent Limited Assurance Report was further provided by SmartAccEss Socio-Environmental Consulting to provide assurance on the conformance of the Eagle Gold Mine CMP with the International Cyanide Management Code.

The Audit Report and Limited Assurance Report are provided as Appendix S and T, respectively.

5.4.1 Audit Review

The audit focused on the nine Principles of the Cyanide Code related to operations and safety aspects considered by the ICMC:

- Production;
- Transportation;
- Handling and Storage;
- Operations;
- Decommissioning;
- Worker Safety;
- Emergency Response;
- Training; and
- Dialogue.

The audit concluded that systems are in place to manage cyanide in a responsible manner and in compliance with the ICMC, this was reviewed and verified by SmartAccEss Socio-Environmental Consulting as shown in the Limited Assurance Report. The report highlights the following regarding VGC operations during the audit period:

- Appropriate SOPs and practices to handle and prepare cyanide solutions in a safe manner;
- Contingency and emergency response plans in place to respond to cyanide related emergencies;
- No impacts to surface water or groundwater related to cyanide;
- No wildlife mortalities related to cyanide;
- Programs to regularly inspect and maintain facilities to ensure safe management of cyanide;
- A water balance that is managed to protect against unintentional releases;
- Cyanide facilities that have been constructed following QA/QC procedures;
- A closure plan including decommissioning activities and bonding in place;
- Health and safety measures to protect workers from exposure to cyanide;

- Training programs for workers and emergency response personnel in cyanide management; and,
- Engagement programs with local communities and disclosure.

5.4.2 Audit Recommendations

At the time of the audit, the Eagle mine had less than one year of cyanide related operation and in certain cases systems are still under implementation (e.g., annual refresher training). The report identified opportunities for mostly minor improvements in some of the Code Principles, see Table 5.4-1 for recommendations. In response to the audit recommendations, the CMP will be updated prior to the completion of the next annual audit cycle in 2021.

Table 5.4-1: CMP Audit Recommendations and VGC Responses 2020

Audit Section	Section Description	Audit Recommendation	VGC Response
1	INTRODUCTION	During the next CMP update, update references throughout the document to reflect active mining operations and processing with cyanide, as well as updating the company name and logo to consistently reflect Victoria Gold Corp. across all documents associated with the plan. It is further recommended the annual internal review and update be conducted ahead of the compliance audit so that the auditor(s) are reviewing the most recent version of the document.	CMP and supporting SOPs will be updated in 2021 prior to the 2021 audit to reflect current mining operations, and updated company name and logo. The 2021 CMP and SOPs review and update is currently in progress.
3	HANDLING AND STORAGE: Protect workers and the environment during cyanide handling and storage.	The CMP indicates that the cyanide delivery area will be "cordoned off with warning signs and visual barriers to prevent unauthorized passage of personnel and equipment while the cyanide intermodal containers are being offloaded". In practice, signs and barriers are not used for the offloading process; however, spotters are utilized to keep personnel away from the area while the crane is unloading a container from the truck. The use of spotters was verified through photographs taken during the process. The CMP should be updated to reflect the actual operational practices.	The CMP will be updated to reflect actual operational practices during the 2021 CMP and SOPs review and update.
		The plan further indicates that a dedicated area for the sea containers will be provided at the ADR plant. The area was intended to be fenced off for container storage. However, fencing was not installed to allow better access to the containers and for use of the crane to unload the containers from the trucks. The CMP should be updated to reflect the actual operational practices.	CMP will be updated to reflect the actual operational practices during the 2021 CMP and SOPs review and update, and reference to fencing the securely locked intermodal containers in storage will be removed.
		A single container is to be placed on a "bermed concrete pad" at the main entry to the ADR plant to allow operations access for unloading the cyanide crates for use. The intent of the bermed pad was to permit the dry retrieval of any potential spillage of cyanide. A dedicated concrete pad was verified for this purpose. The pad is not bermed, as this would impede normal access into the ADR plant; however, the existing arrangement would still allow for the dry retrieval of any potential spillage. The CMP description should be updated to reflect the as-built condition of the pad.	CMP will be updated to reflect the as-built configuration of the pad during the 2021 CMP and SOPs review and update.
		The CMP and procedure [CMP-SOP-005 – Cyanide Mixing Process] should be updated to reflect actual operational practices.	CMP and SOP update will be completed in 2021 to consistently

Audit Section	Section Description	Audit Recommendation	VGC Response
			specify a pH of 11 to reflect actual operation practices.
4	OPERATIONS: Manage cyanide process solutions and waste streams to protect human health and the environment.	Several minor items within the CMP and SOPs were recommended to be updated to reflect the now as-built nature of the facility for consistency with the delivered project and operation.	CMP and SOPs will be updated to reflect the as-built configuration of the facilities during the 2021 CMP and SOPs review and update.
		The mechanical as-built/record of construction package is believed to be available and compiled by JDS; however, as it was not provided for this audit, the site was requested to obtain all relevant documents ahead of the next audit to demonstrate adherence to the CMP.	VGC will work with our EPCM support to obtain the relevant information prior to the next audit cycle.
6	WORKER SAFETY: Protect workers' health and safety from exposure to cyanide.	The CMP and SOP [CMP-SOP-005 – Cyanide Mixing Process] should be updated to reflect the operational practices of the site.	CMP and SOP update will be completed in 2021 to reflect actual operation practices.
		The CMP references use of an in-line cyanide analyzer; however, an analyzer was not installed and is not currently planned. Cyanide concentrations are measured and recorded every two hours, along with the pH, with adjustments to the addition rate made as necessary to control at the target concentration.	CMP will be updated in 2021 to accurately reflect the installed equipment.
		The CMP and SOP's have varying descriptions of detection level (4.5 vs. 4.7 ppm and 6.7 vs. 10 ppm), as well as strobe colors (red vs. blue) [of the HCN detectors]. The site confirmed the setpoints as 4.7 and 10 ppm, as well as the strobe colors as amber and blue. The CMP and SOPs should be updated to reflect the operation of the installed units.	CMP and SOPs will be updated to reflect the operation of the installed units during the 2021 CMP and SOPs review and update.
		Site should ensure drills with varying scenarios are conducted at least annually, consistent with the CMP.	A drill scenario was completed in 2020 and additional drills will be conducted in 2021.
		The auditor requested written confirmation that a formal agreement was in place for offsite medical facilities to assist in an emergency, as required under the Code and specified within the CMP. However, no response was provided to verify that a formal agreement is in place."	No further communication / coordination with local emergency responders at this time. Initiative will be furthered in 2021.
7	EMERGENCY RESPONSE: Protect communities and the environment through the development of emergency response strategies and capabilities	Site should confirm that offsite partners are aware of and are properly trained for their role in assisting with a cyanide related emergency.	No further communication / coordination with local emergency responders at this time. Initiative will be furthered in 2021.
		Alternate personnel are named for some roles, but not all roles have an identified alternate. The ERP does describe the roles and responsibilities for those involved in responding to an emergency.	ERP will be reviewed and alternate personnel will be identified for roles where warranted.
		Emergency response equipment, including the locations of cyanide antidote kits are provided in the CMP and SOPs. As noted, the CMP references a kit at the ADR Plant, but upon startup of operations, it was determined that the kits should remain at the site medical clinic, as they cannot be administered by personnel other than the site paramedics.	CMP and SOPs will be updated to reflect the actual locations of the kits during the 2021 CMP and SOPs review and update.
		Emergency response planning requirements have not been confirmed with external resources who may be required in an emergency. Outside entities should be engaged regularly and included in mock drills, as appropriate.	No further communication / coordination with local emergency responders at this time. Initiative will be furthered in 2021.
		The CMP does not explicitly prohibit the use of chemicals such as sodium hypochlorite, ferrous sulfate and hydrogen peroxide to treat any cyanide that would have been	CMP will be updated to specify that addition of these chemicals to surface water is prohibited.

Audit Section	Section Description	Audit Recommendation	VGC Response
		released into surface water. The plan references the safe use and application of the peroxide detox system to ensure that the process does not unduly impact surface waters. The plan should be updated to specify that addition of these chemicals to surface water is prohibited.	
8	TRAINING: Train workers and emergency response personnel to manage cyanide in a safe and environmentally protective manner.	The tracker did not provide the date that training was complete. The date of initial training and all subsequent refresher training should be recorded in the tracker.	Training tracker will be updated as suggested to track the additional information going forward.
		An ERT specific certification tracking sheet was provided, but the sheet did not indicate specific training that was completed, such as firefighting, occupational first aid, HAZMAT, etc. Specific and detailed training records should be kept for the ERT for both initial certifications and ongoing refresher training.	ERT certification tracking sheet will be updated as suggested to track additional information going forward.
		As noted above, training records were provided, but the tracking sheet only indicated the individual, department, and level of training. The training record should also indicate the date training was completed, the name of the trainer, and the written test results.	Training tracker will be updated as suggested to track the additional information going forward.
		Records of ERT and employee involvement, as well as any offsite support, in any future mock drills should be recorded and the lessons learned incorporated into the ERP.	Mock drills records will include suggested information going forward.

6 RECLAMATION & CLOSURE

VGC submitted an updated Reclamation and Closure Plan (RCP 2020-01) on October 23, 2020 for review and approval as required by QML-0011 and QZ14-041-1. Subsequent to the submission of RCP 2020-01, a meeting was held between VGC, EMR and the YWBS in which VGC agreed to the review of RCP 2020-01 being conducted as a pilot project for a coordinated costing review by the YWB and YG. To date, the YWB and EMR remain engaged in their review process of the RCP and no questions or comments have been provided to VGC.

On January 14, 2020, in response to the YG review and approval of RCP Version 2018-03, VGC provided updated Bond #962-019824 in the amount of $27,406,539.00 to EMR.

On August 12, 2020, the YWB issued Order No.:1 pursuant to section 15 of the *Waters Act* and section 11 of the *Waters Regulations* ordering VGC to furnish and maintain security with the Minister in the amount of $30,780,939, inclusive of any security required under the *Quartz Mining Act*. Effective September 2nd, 2020, Bond #962-019824 was amended by VGC to increase the amount to $30,780,939 as required by the YWB Order.

VGC considers the currently held security amount to be more than adequate to reclaim the Project in accordance with the RCP as the assumed current actual liability for closure is less than the security held.

6.1 Reclamation Research

The RCP considers the undertaking of various reclamation research programs to support the progressive and final reclamation and closure of the Mine. There are six main research programs (each with sub-tasks):

- Revegetation – To support the selection of suitable candidate species based on site specific considerations (e.g., growing season/climate, soil fertility, etc.).
- Engineered covers – Phased program to support final HLF and WRSA soil cover design including:
    - Updates to conceptual cover model;
    - Characterization of materials to be used for the cover systems;
    - Characterization of materials placed in the HLF and WRSAs;
    - Enhanced meteorological monitoring;
    - Field trials for performance monitoring; and,
    - Assessment of effects of placement of MWTP high pH solid residuals in the cover system.
- Vegetation rooting depth – To inform cover designs and revegetation programs as to the most suitable candidate species based on rooting depth and distribution of key functional types of mature plants, and the characterization of growth materials associated with plant roots at the most active rooting depths.
- Passive water treatment – To support the design and operation of the PTS for water treatment purposes during closure.
- HLF biological detoxification – To further refine the possible biological treatment of heap fluids at closure for cyanide destruction and some metals removal (as an alternative to active treatment processes).
- Groundwater arsenic attenuation – To further evaluate the direction that seepage from the WRSAs may migrate and potential effects.

To date, specific programs have commenced to advance the revegetation, engineered covers and passive water treatment research programs. Components of ongoing operations will also provide information to support final closure measures (e.g., heap leaching performance supporting understanding of potential lateral variability and flow paths providing relevant information for biological detoxification); however, this information is not collected specifically for the purposes of reclamation research and thus is not part of this report.

6.1.1 Revegetation Program

The objective of the revegetation program is to design and implement erosion control measures using revegetation and bioengineering techniques to act as interim methods to control potential erosion and inform final reclamation decisions with respect to appropriate seed mixes and revegetation methods.

Inspection of the areas that were part of the 2019 program were undertaken to evaluate the success of previous efforts and to further inform the 2020 program (Photo 6.1-1 and Photo 6.1-2). The areas previously completed showed that there was an outstanding success rate of close to 100% survival of willow staking, while seeded areas all had good growth and coverage of grass. Revegetation in 2020 included further seeding, willow staking, and bioengineering techniques completed throughout additional areas at the Mine site, as detailed in Table 6.1-1 and shown in Figure 6.1-1. The program was completed in September by VGC with expertise provided by Laberge Environmental Services.

The revegetation program in 2021 will continue the assessment and monitoring of previously treated areas to inform appropriate species and method selection. Additional seeding and planting are also contemplated in 2021 to address locations that were not conducive to completion in prior campaigns.



Seeding a steep slope near the LDSP, Sept 2019 Good grass growth on same slope, August 2020

Photo 6.1-1: South Slope Bordering the LDSP in 2019 and 2020



Installed willow staking, Sept 2019



Willows sprouting, August 2020

Photo 6.1-2: Willow Staking Adjacent to the LDSP in 2019 and 2020

Table 6.1-1: Revegetation and Bioengineering Treated Areas 2020

Location	Method / Installation	Notes
LDSP slopes	Hand seeding	Application of commercially available fowl bluegrass, Rocky Mountain fescue, tufted hairgrass and wheatgrass
	Willow staking	South eastern shore of the LDSP
	Pole drains	Four pole drains installed in erosion channels
	Live Silt Fences	Installed upslope of other bioengineering works within erosion channel
Slope north of Event Pond spillway	Hand seeding	Application of commercially available fowl bluegrass, Rocky Mountain fescue, tufted hairgrass and wheatgrass
Exposed laydown area east of warehouses	Hand seeding	Application of commercially available fowl bluegrass, Rocky Mountain fescue, tufted hairgrass and wheatgrass
Overland conveyor adjacent to Dublin Gulch	Hand seeding	Application of commercially available fowl bluegrass, Rocky Mountain fescue, tufted hairgrass and wheatgrass
Overland conveyor west slope near Eagle Pup	Hand seeding	Application of commercially available fowl bluegrass, Rocky Mountain fescue, tufted hairgrass and wheatgrass
Overland conveyor east drainage ditch between Dublin Gulch and Eagle Creek	Willow staking	Planted willows stakes harvested from donor site.

6.1.1.1 Locally Harvested Seed Trials

The 2020 program included seed trials to evaluate the success of three native species (Appendix U1). Two trial plot locations were selected for south and north facing aspects. In each location, trial plots were constructed for three species, with duplicates for each, for a total of six 1 m^2 plots per trial location. The species selected for the trial are Elymus sp. (wheatgrass), Festuca altai (Altai fescue), and Achillea millefolium (yarrow). The seeds were purchased from a local supplier and First Nation of Na-Cho Nyak Dun joint venture (Yukon Seed & Restoration Inc.) and are harvested within the local area. Prior to seeding, each plot was scarified to a depth of approximately 15 cm and any existing vegetation and large rocks were removed. Once the plots were prepared, the seeds were

scattered evenly throughout the square meter. The seeds were then gently tamped down to ensure good seed/soil contact. A buffer was left between each seeded plot. Commencing in the summer of 2021, annual monitoring of the trials will be conducted. The assessments will measure the progress and allow for refinement of the prescriptions and techniques for application to similar areas requiring erosion control at the Mine.

6.1.2 Engineered Cover Trials

To support the advancement of the current base case cover system design for major facilities, a pilot scale trial of the design was constructed in September 2020. The trial included the placement of approximately 0.5m of overburden material on one plateau and one inter-bench slope of the PG WRSA. The program completed in 2020 included material sampling before and during the cover system placement (to characterize the physical and hydraulic properties of the overburden material) and the installation of monitoring instrumentation.

The first phase automated performance monitoring system was installed in the cover system in October 2020. Monitoring performance of the cover system trial includes: 1) net radiometers, 2) snow surveys, and 3) a rainfall gauge. Additional meteorological parameters for use in performance monitoring will utilize data collected at the Camp and Potato Hills Stations. As the cover trial advances, stations will be installed to capture data on a plateau location and on different slope locations (upper, mid, and lower slope) to determine spatial variability. The number and location of the automated stations will be determined as part of the final design of the cover system monitoring trials informed by the updated conceptual model, the material characterization program, and the expanded site-specific meteorological dataset.

Analyses of the monitoring and other climate data will be an important element in confirming the base case cover system. Cover system performance monitoring will focus on partial elements of atmospheric water and energy balance inputs, along with soil water balance parameters. Measurements taken within the cover system provide insight into the partitioning of water at the cover system-atmosphere interface and the cover system-waste material interface. Additionally, measured in-situ soil parameters will include volumetric soil water content, soil temperature, and soil matric potential.

The cover trial will incorporate automated soil monitoring stations that consist of volumetric water content and matric suction sensors to quantify key surface water and energy balance fluxes. Data will be collected by a datalogger powered by battery and solar panel set up. Sensors will be installed in pairs through the cover system profile to capture data to calculate water and energy fluxes at the interfaces of different material types including between the cover system layers and between the cover system and waste.

Details regarding the construction and instrumentation of the trial, and the ways in which data collected at the trial will be used to advance subsequent areas of research is provided in Appendix U2 and U3. Monitoring of the performance of the pilot scale trial will continue throughout 2021.



Photo 6.1-3: PG WRSA Cover Trial on 1370 masl Bench – September 20, 2020

6.1.3 Passive Water Treatment

Sampling and management of the pilot bioreactor program established on the Project site in 2019 continued throughout 2020. The program, being conducted with guidance from the Yukon Industrial Research Chair - Northern Mine Remediation at the Yukon College Research Centre, expands upon earlier lab scale trials on the removal rates for arsenic, selenium, antimony and other metals under site conditions. The pilot program includes trial components exposed to ambient freeze-thaw stresses to evaluate the effect of the site climate regime on removal rates. More specifically, the primary objective of the research program is to study freeze-thaw cycles on sulfate reducing bacteria and to assess their efficiency to remove heavy metals (particularly arsenic, selenium and antimony) from mine influenced water (MIW), and in this case MIW originating from Platinum Gulch catchment and the PG WRSA.



Photo 6.1-4: MIW Holding Tank for On-Site Bioreactor Program 2020



Photo 6.1-5: On-Site Bioreactor Inlet and Outlet Drums 2020

The passive water treatment program will be expanded in 2021 to support the planned design and construction of the field scale constructed wetland treatment system proposed in the area of the PG WRSA and open pit in 2022. The 2021 program will include:

- Further desktop studies of: recent water balance and water quality models; range in constituent concentrations paired with flow rates; worst-case scenarios for constituent ranges and flow rates; vegetation in the proposed area that is amendable to CWTS construction; survey data and aerial photos; geotechnical and hydrotechnical characteristics of the proposed CWTS area; location, volume and geotechnical characteristics of available materials at any borrow sources; and, constructability including access to the proposed CWTS area.
- Field investigation for borrow sources of plants (and collection of same for use in off-site trials) and substrate (and collection of same for use in off-stie trials).
- Off-site bench scale trials over a period of approximately 5 months to evaluate the suitability of selected substrates and plants identified during the desktop studies and field investigation using synthetic water mimicking predicted water chemistries to further refined potential treatment rates and percent removal.

458500 459000 459500 460000

7101500 7101000 7100500 7100000 7099500 7099000 7098500

N

A B C D E F G H I J K L

Aerial Image
Date: 20200902

Area (m2)	Identifier
6,433	90 Day Pipe
29,120	A
11,315	B
6,276	C
1,284	D
13,118	E
6,413	F
11,351	G
10,691	H
42,480	I
8,674	J
12,862	K
33,999	L

Legend:

2020 Revegetation
- 2020 Already Seeded - Fall
- 2020 Priority
- 2021 Potential

2019 Revegetation
- Seeded
- Willow Staking

VICTORIA GOLD CORP

0 125 250
Meters

Projection: NAD 83 UTM Zone 8N

Drawn By: HC

Date: 2020/09/09

Figure:

EAGLE GOLD PROJECT YUKON TERRITORY

2020 Revegetation Program Areas

7 SOCIO-ECONOMIC MONITORING

The focus of socio-economic work in 2020 continued to be primarily on ensuring that contracts for the operation of the Project were right scaled to allow for the involvement of Yukon and First Nations businesses to the greatest extent practicable.

VGC is committed to procuring goods and services from registered FNNND and Yukon based companies whenever possible.

To date, contracts with a total value of approximately $240,000,000 have been with Yukon companies. VGC is now the largest private sector employer in Yukon with a workforce of over 350 people, 50% of whom are Yukoners.

In 2020, under the Victoria Gold NND CBA Scholarship Program, 15 students were awarded funds to continue their education. Since the establishment of this program, 120 scholarships have been awarded to FNNND students for a total disbursement totaling over $115,000.

The company also continued its community involvement where possible under COVID-19 protocols and was a proud supporter of the following local organizations and events in 2020:

- AMEBC Round Up - Old Timers Luncheon;
- YFN Hockey Assoc - YFNHA Tournament Sponsor;
- Yukon T1Diabetes Support Network - Boulevard of Hope;
- Food Bank Society of Whitehorse - Yukon Communities Food Banks;
- Mayo Sewing - Dorothy Profeit - Sew 300 masks;
- Village of Mayo - Halloween Event;
- Mayo Volunteer Fire Dept - MVFD Fireman's Ball - gifts for kids;
- Yukon Imagination Library - Whitehorse Winterval Santa Claus Parade;
- FNNND - Christmas Food Hampers;
- Yukon Hospital Foundation - Winter Wonderland at Meadow Lakes; and,
- VGYSES - ESED Gala.

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APPENDIX A1

As-Built Drawings and Construction QA/QC Reports – Ditch A Improvements

VICTORIA GOLD CORP

Project No. 109005
Eagle Gold HLF Phase 1B Record of Construction
Document No. 109005-51100-03-ROC-F002



Prepared by:

FORTE DYNAMICS, INC
120 Commerce Drive
Units 3 & 4
Fort Collins, CO 80524
(720) 642-9328

Revision	Date	Status	Prepared By	Checked By	Approved By
REV A	19 MAR 21	Issued for Review	W. Reinhardt	C. Green	B. Carlson

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1. INTRODUCTION

This report provides the record of construction (ROC) for Phase 1B expansion of the Primary Heap Leach Facility (PHLF) at the Eagle Gold Mine, located in Yukon Territory, Canada, owned and operated by Victoria Gold Corporation (VGC). The PHLF is located approximately 1.2 km north of the Eagle Zone orebody. The PHLF is located in the Ann Gulch catchment, a small ephemeral tributary to Dublin Gulch. The base of the PHLF confining embankment is located just upstream of the confluence of Ann Gulch and Dublin Gulch at an elevation of 880 masl. At full height in Phase 3, the PHLF extends up Ann Gulch to an elevation of approximately 1225 masl (at the top of the planned ore stack) and will accommodate approximately 86 Mt of ore. The Phase 1B expansion project consisted of a newly lined pad extension approximately 250,000m^2 in surface area between elevation 990m and the Interceptor Ditch (approximate elevation 1050m).

Construction items for Phase 1B included:

- Phase 1B Heap Leach Facility Pad
- Layout and Survey Control
- Staging Area (Liner)
- Decommissioning Water Monitoring Wells in Phase 1B Pad limits
- Clearing, Grubbing, and Topsoil Removal
- Removal of Unsuitable Material and Surface Grading
- Excavation and Installation of the HLF Underdrain System in Phase 1B Pad limits
- Prep Surface for Liner Placement
- Liner Placement

The Phase 1B expansion was constructed between February 24, 2020 and September 15, 2020. Construction activities were completed under the supervision of JDS Energy and Mining (JDS). Earthworks were completed by Ewing Construction (Ewing) and geosynthetics were supplied and installed by Layfield Group Ltd. (Layfield). Construction Quality Assurance (CQA) of the earthworks and liner system was performed by Tetra Tech. Surveying services were provided by Underhill Geomatics Ltd (Underhill). This scope did not include construction and CQA oversight of the PLS pipework and overliner drain fill (ODF) placement on the Phase 1B pad as this responsibility was with VGC personnel.

The Phase 1B expansion design and technical specifications are presented in the Detail Design Report for Eagle HLF Phase 1B issued by Forte Dynamics and dated January 6, 2020 (Doc. No. 109005-47310-03-DES-0001).

2. SCOPE OF WORK

In November 2019, Troy Meyers, P. Eng of BGC, transitioned out of the Engineer of Record (EOR) role, which was thereafter filled by Barry Carlson, P. Eng. of Forte Dynamics. Engineering design and construction support was provided by Forte Dynamics for the Phase 1B expansion project. The execution scope of work included:

- On-site inspections at the commencement and completion of construction activities
- Off-site engineering support throughout the duration of construction
- Attending weekly construction meetings with contractors and the JDS construction management team, as well as other meetings requested by VGC or JDS.
- Overseeing the CQA monitoring program which included monitoring of QC processes to ensure that any deficiencies were identified and addressed.
- Review of QA and QC test data and daily reports from the CQA team (Tetra Tech)
- Providing input to responses for Request for Information (RFI) and other contractor submittals
- Assisting with design of additional related engineering work as required
- Communicating with JDS and CQA personnel in accordance with the provisions of the Technical Specifications
- Reviewing and approving changes to the Technical Specifications

- Proactively recommending construction or design improvements to enhance the design constructability and performance.

3. GENERAL PROJECT DESCRIPTION

3.1 Main Project Features

The PHLF is comprised of a number of elements: a confining embankment to provide stability to the base of the HLF, a lined storage area for the ore to be leached, pumping wells for the extraction of solution, a lined event pond to contain excess solution in extreme events, upstream surface water interceptor ditches, and leak detection, recovery and monitoring systems to ensure the containment of solution.

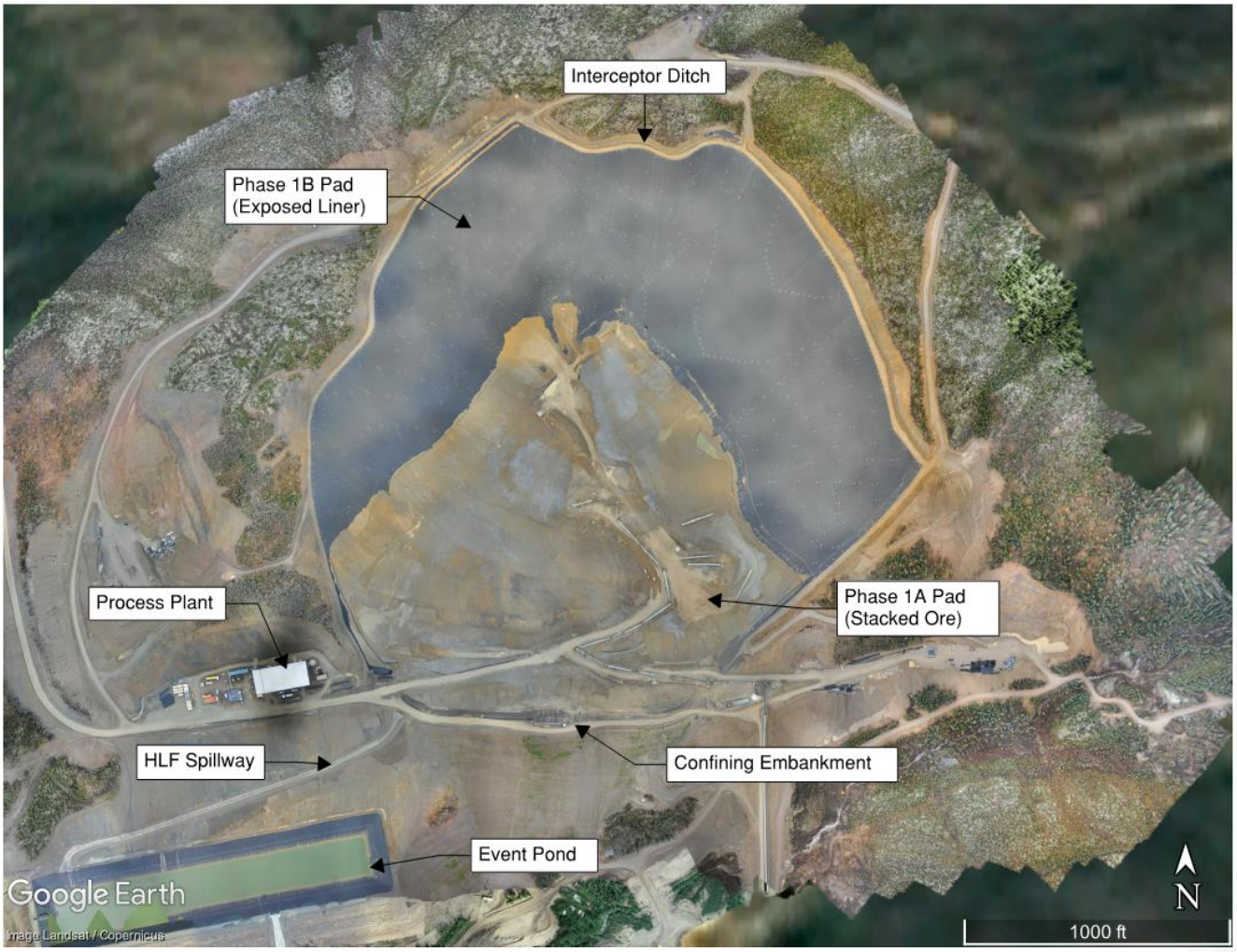


Figure 3-1 HLF Construction Areas

3.1.1 Underdrain System

The HLF underdrain system provides for the collection and conveyance of subsurface water flows beneath the lined HLF Pad and Confining Embankment to limit upward pressure on the liner system and prevent the buildup of phreatic levels in the embankment fills. The HLF underdrain system consists of a network of lateral drains below the Phase 1 Pad area, finger drains below the In-Heap Pond and Confining Embankment, and an underdrain header pipe trench that extends from the toe of the Confining Embankment to the upper limit of the

Phase 1B Pad. Flows in the underdrain system are conveyed to collector pipes that discharge to a monitoring vault at the downstream toe of the Confining Embankment. The vault is configured to allow for sampling of seepage flows for water quantity and is equipped with a system that can either pump return flows to the HLF for use as make up water or allow seepage to flow to the environment if discharge criteria are met.

3.1.2 Phase 1B Pad

The Phase 1B Pad area was constructed for ore storage and leaching between elevations 990m and 1050m. The design includes a composite liner system comprised of a geomembrane over geosynthetic clay liner (GCL), ODF and PLS recovery piping. The overall HLF design allows for future expansion of the Pad up the Ann Gulch drainage basin. The next planned expansion (Phase 2) would be constructed between the upper limit of Phase 1B at elevation 1050m and approximate elevation of 1105m.

3.1.3 HLF Liner System

The HLF liner system was designed to contain PLS for recovery and to prevent the release of process solutions to the environment. The HLF single composite liner system within the Phase 1B footprint (above Elevation 990m) was constructed with GCL overlain by textured LLDPE liner consistent with the design of the Phase 1A liner system.

4. SITE CONDITIONS

4.1 Topography

The HLF site topography is described as moderate to high relief, with ground elevation varying from approximately 880 to 1400 masl. The HLF is situated in the Ann Gulch drainage which is a first-order tributary to Dublin Gulch.

4.2 Climate and Weather

The property lies within the Mayo Lake–Ross River Eco-region in central Yukon. The area is characterized by a “continental” type climate, with moderate annual precipitation and a large temperature range. Summers are short and can be hot, while winters are long and cold with moderate snowfall. Rainstorms can occur frequently during the summer and may contribute 30% to 40% of the annual precipitation. Higher elevations are generally snow-free by mid-June. Freezing temperatures may occur at any time during the year, including summer or fall.

The mean annual temperature for the area is approximately -3°C, with an annual range of 63.5°C for the period of record. The estimated mean annual precipitation at the Eagle Gold site ranges from 350 mm to over 600 mm, depending on elevation. This climate description has been summarized from Stantec (2012b), Knight Piesold (2013) and Lorax (2017).

The hydrology of the region is generally characterized by large snowmelt runoff during the spring freshet, which quickly tapers off to low summer stream flows interspersed with periodic increases in flow associated with intense rainfall events (Stantec 2012).

4.3 Geology

Geologic conditions in the Dublin Gulch area have been strongly influenced by the geotectonic forces that produced the Eagle Zone deposit. The folding, faulting and plutonic activities have resulted in relatively weak rock mass with relatively poor mechanical properties. Further, with frost fracturing and permafrost common at the latitude of the project site, shallow subsurface processes and rock/soil characteristics are more complex (BGC 2019).

Overburden soils encountered on the sloping ground at the HLF site typically consist of a veneer of organic soils overlying a blanket of colluvium, which overlies weathered bedrock. Placer tailings (fill remainders of previous

dredge mining operations) cover most of the valley bottom of Dublin Gulch, which is outside the footprint of the HLF (BGC 2019).

The bedrock encountered in the area is generally classified as metamorphosed sedimentary rock, with a variably deep weathering profile (BGC 2018). The intact rock strength of the encountered rock types is highly variable, ranging between R0 class (i.e., corresponding to < 1 MPa Unconfined Compressive Strength, UCS) and R4 (50-100 MPa UCS). The average intact strength is estimated to be approximately R2 (5-25 MPa UCS) in the metasedimentary rock, depending upon the degree of weathering, but with significant variability across the site (BGC 2019).

5. CONSTRUCTION MANAGEMENT

JDS Energy and Mining (JDS) was retained to provide construction management services for Phase 1B. Layfield Environmental Containment (Layfield) of Edmonton, Alberta was retained to provide the geosynthetics for the liner system, as well as install the geosynthetics and provide QC inspection of deployed liner. Ewing Construction Ltd (Ewing) was retained as the earthworks construction contractor for Phase 1B. Their activities included installing the lateral and header drains, preparing the subgrade for geosynthetics placement, and assisting with liner deployment activities. Tetra Tech was retained to provide inspection services for header and lateral drain installation and to provide CQA monitoring for the entire geosynthetics portion of the project. An organization chart is included as **Figure *5-1***.

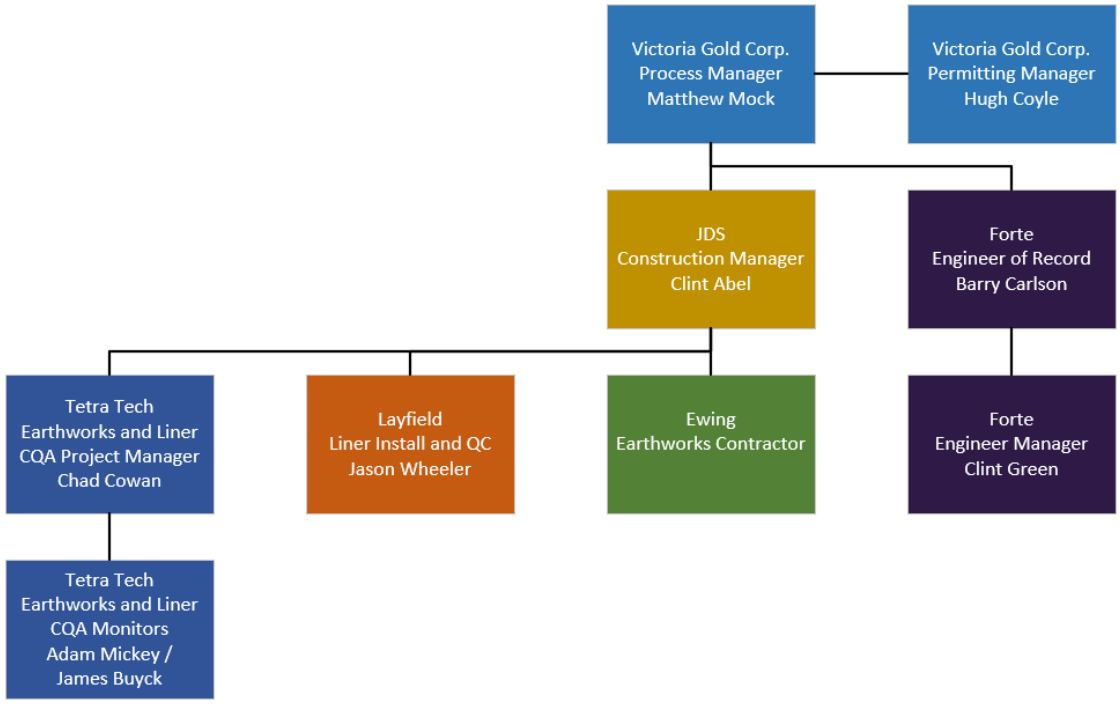


Figure 5-1: Organization Chart

6. CONSTRUCTION OBSERVATIONS, DESIGN MODIFICATIONS, QA/QC RESULTS

The Phase 1B HLF expansion was generally completed in conformance with the Technical Specifications provided in the Detail Design Report for Eagle HLF Phase 1B issued by Forte Dynamics and dated January 6, 2020 (Doc. No. 109005-47310-03-DES-0001). During Phase 1A construction, the EoR (BGC) produced Technical Field Memorandums for various material test fills. As the same Construction Manager and CQA Team was used for Phase 1B, Forte Dynamics reviewed and approved the use of the Technical Field Memorandums for use on Phase 1B construction. Construction observations and instances where designs were modified to accommodate field conditions or construction limitations are discussed in this section.

6.1 Material Production and Borrow Areas

6.1.1 Borrow Area

A borrow area was developed north of the Phase 1B construction area within the future Phase 3 footprint of the PHLF. A rock outcrop was blasted to produced Rock Fill material that was used as Site Grading Fill. Additionally, material from the borrow was transported to Nuway's mobile crushing & screening plant to produce Select Drain Fill and Select Fill materials.

6.1.2 Material Production

The following materials were produced for construction of the Phase 1B pad.

6.1.2.1 Site Grading Fill

Site Grading Fill consists of any material which, when compacted, is suitable for use in areas where the material is not required to be of uniform character and engineering properties. Unsuitable material or material containing organic material was removed and Site Grading Fill from within the HLF limits or from borrow areas was placed. A sizeable stockpile of unsuitable material from Phase 1A construction activities remained within the Phase 1B footprint but was removed prior to commencement of Phase 1B pad construction. The borrow material used as Site Grading Fill was primarily Compacted Rock Fill that was blasted, excavated and hauled directly from the borrow source. No further processing was performed.

6.1.2.2 Select Fill

Select Fill was used as bedding for the HLF liner system in Phase 1B. Select Fill was produced as a byproduct (fines reject) of the crushing/screening production of the Select Drain Fill. The term used for this material on-site was “reject sand” as the material consisted of well-graded sand. Additionally, some remaining placer tailings deposits in the Haggart Creek valley consisting of sand was utilized as Select Fill.

The gradation allowed for Select Fill per the Technical Specifications was 35 to 100% passing the #200 mesh, 60 to 100% passing the No. 4 sieve, and a maximum size of 75mm. Figure 6-1 provided below is a gradation of the actual Select Fill material produced by Nuway. The material was approved because it met the design intent of providing a densely compacted material that is free of oversize material (which could pose a risk of puncturing the liner system). As a continuation from Phase 1A, a compaction method was used to replace the QC testing requirements for the Select Fill. Field Memorandum CTFM-01 documents the test fill that was performed and the results.

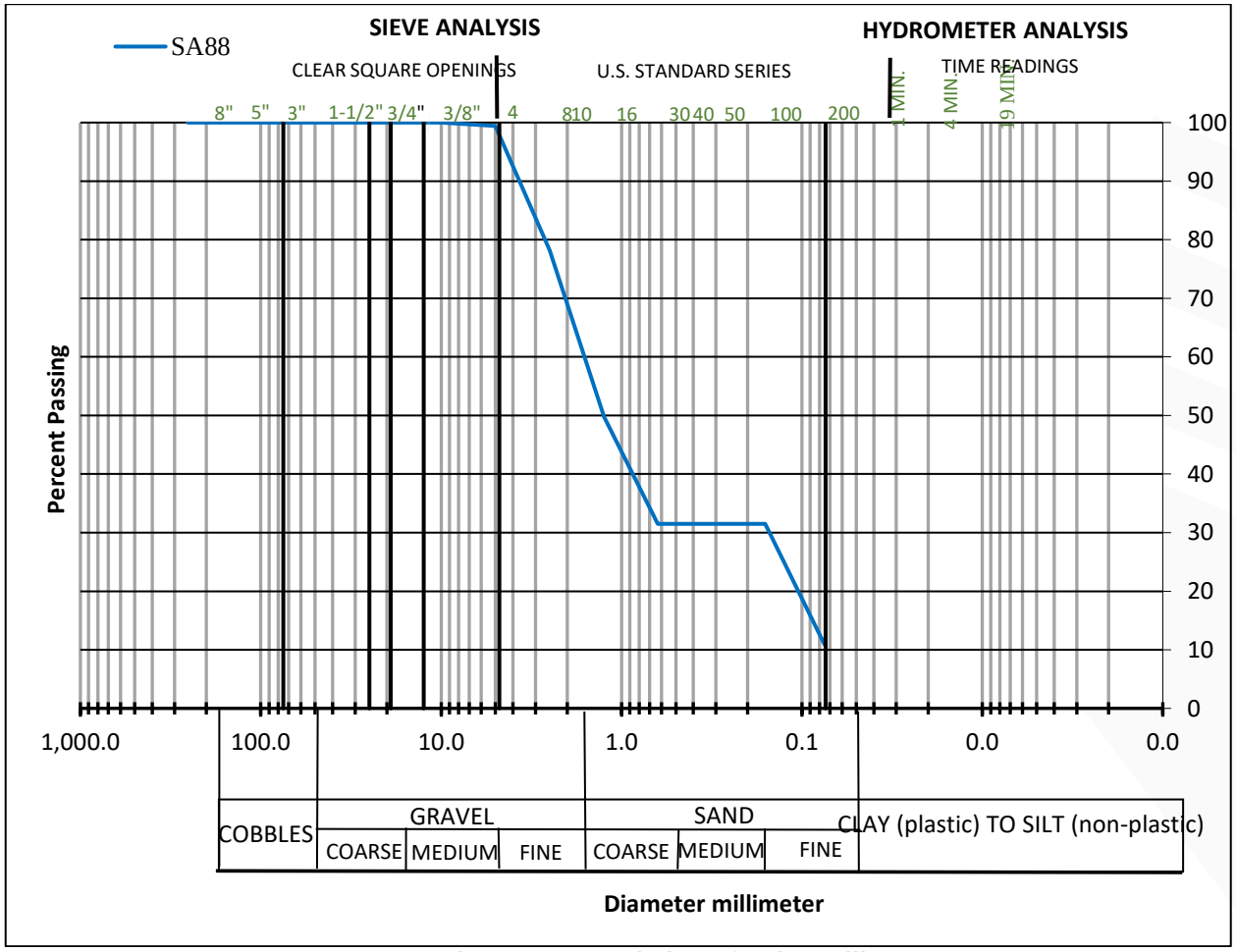


Figure 6-1: Gradation of Select Fill

6.1.2.3 Select Drain Fill

Select Drain Fill was placed in the underdrain collection trenches as a medium for flow. Select Drain Fill was produced by Nuway's mobile crushing and screening plant. The Select Drain Fill was required to have an operational permeability of $1x10^{-2}$ cm/s or higher. The gradation specification for Select Drain Fill called for a 25mm maximum particle size and a maximum of 7% passing the #200 mesh. Gradation tests performed on the Select Drain Fill produced by Nuway are provided in Figure 6-2 below.

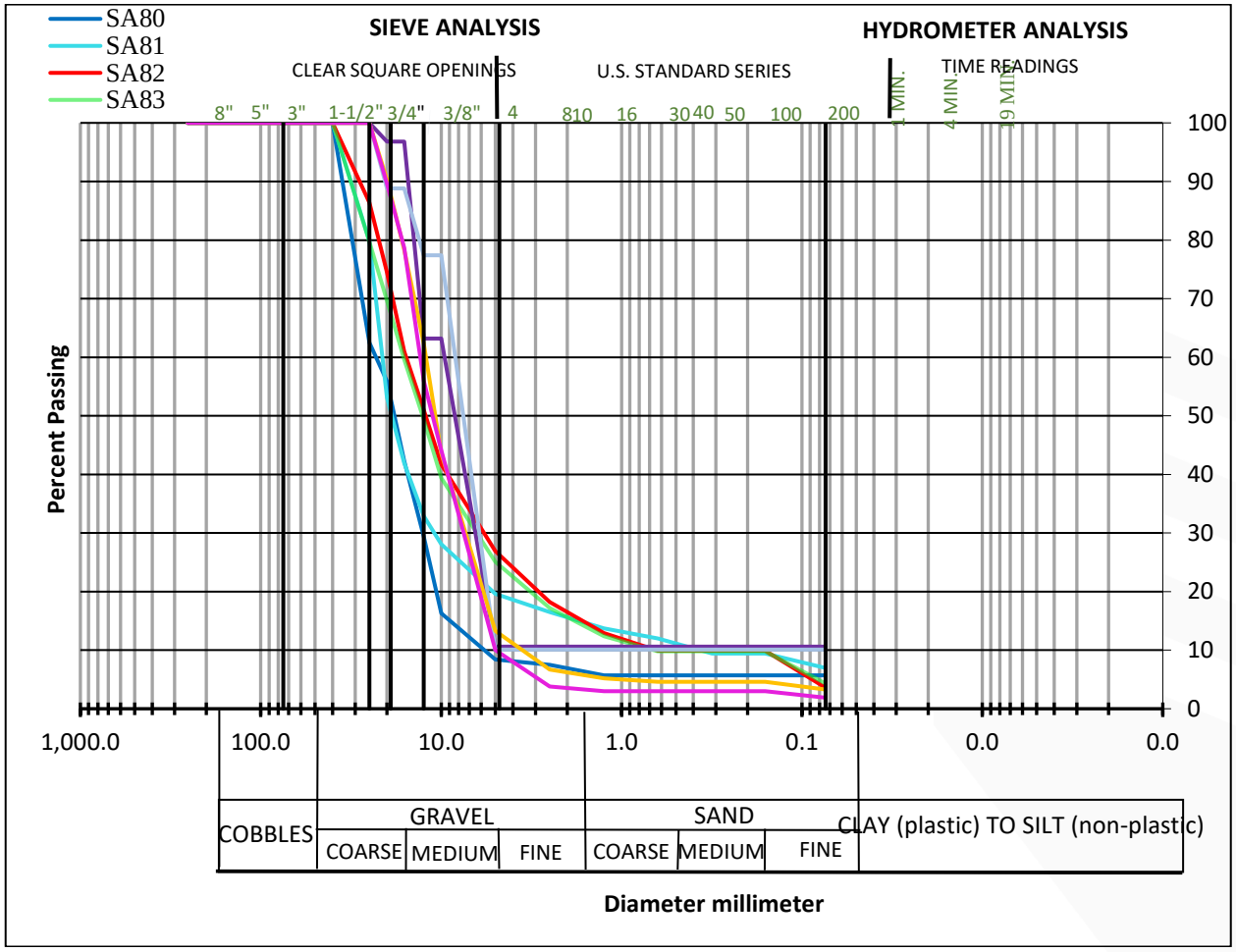


Figure 6-2: Gradation Tests

6.1.2.4 Compacted Rock Fill

Rockfill was used in the construction of the subgrade of the Phase 1B pad. As previously mentioned, Compacted Rock Fill was blasted, excavated and hauled directly from the borrow source. No further processing was performed. The maximum particle size required for Compacted Rock Fill was no greater than 2/3 the fill loose lift thickness and no more than 30% larger than 19mm. Visual inspections of the placed material were performed daily by Ewing and Tetra Tech. Lab gradation tests were not required due to the material's maximum particle size. QA/QC observations reported that the material generally conformed with requirements in the Technical Specifications. Compaction control during construction was achieved based on method specifications developed by the test fills (Field Memorandum CTFM-02).

6.2 Underdrain System

6.2.1 Construction Criteria

Typical underdrain construction consisted of the following components:

- Perforated, corrugated, N-12 polyurethane (PE) piping with bell style joints secured with wire ties. Lateral drains and any finger drains installed to collect and convey groundwater seepage during construction were designed and installed with these drainpipes.
- Select Drain Fill was used as granular drain rock medium. No compaction was required for placement.
- Select Fill was used as cover over the underdrain Select Drain Fill and geotextile to provide a separation between upper fills or a cushion below the liner system.
- 12 oz non-woven geotextile was used between the Select Drain Fill and the natural ground and/or backfill material.
- Solid walled HDPE SDR 11 pipe was used from Station 8+30 to 10+70 m. Solid walled pipe was joined using a butt fusing or electrofusion method.

6.2.2 QA/QC Requirements and Observations

JDS and Tetra Tech provided visual inspection and approval for the majority of the underdrain construction. This included verification that the specified geotextile, drainpipes, and aggregate were used, and that the drainage network was properly spaced to capture visible seeps and to meet the requirements of the design.

6.2.2.1 Fill Materials

Select Fill and Select Drain Fill were used in the construction of the underdrains. No compaction was required for the placement of Select Drain Fill.

During Phase 1A construction a test fill was performed on June 30, 2018, to determine the best compaction method and to replace the QC testing requirements for Select Fill. The results from the test fill are discussed in CTFM-01 located in Appendix 10. A Standard Proctor test was also performed on the Select Fill to determine the optimum moisture and density. Additionally, in-situ field moisture and density measurements were taken during the test fill using a nuclear density gauge. The results of the test fill indicated that >9% maximum dry Proctor density was achieved at >6% moisture and a minimum of 3 passes with 6,000 kg vibratory compactor. This method was used and tracked for placement of Select Fill throughout the construction of the HLF and replaced the field density testing requirements.

Four field density readings were also collected in the central underdrain pipe trench as verification of method developed to compact Select Fill. Results from the testing all reported >99% compaction, therefore the same methods were used for Phase 1B construction.

6.2.2.2 Solid Walled HDPE Pipe Installation QC Testing

All solid-walled HDPE pipe used in the underdrain header pipe trench was joined by butt-fusing per ASTM F2620 or electro-welding per ASTM F1055.

All underdrain header pipes will have gravity flow conditions and are not designed for pressure flow. All welding QC was performed and documented by Ewing. This included destruction of some welds to perform visual inspection.

6.2.3 Construction Completed

Underdrain construction began in March 2020 and advanced to August 2020. Underdrain construction was typically completed after subgrade or foundation preparation for any given area of the HLF. As construction progressed the underdrain system was expanded to include additional fingers in response to observed seepage. Construction was performed by Ewing. As-built drawings for the Underdrain system constructed at the HLF are included in Appendix 4.

6.2.3.1 HLF Underdrain Header Pipe Trench and Finger Drains

The HLF Underdrain Header Pipe Trench was constructed below the Interceptor Ditch starting at elevation 990 m and ending at the 1040m elev.

6.2.3.2 Lateral Drain Construction

Four lateral drains labeled East and West extend from the HLF Underdrain Header Pipe Trench above Elevation 990 m and extend throughout the remaining footprint of the HLF Phase 1B Pad. Piping from the underdrains is connected to the HLF underdrain header pipes. Small amounts of water had been flowing from the interceptor ditch down the header drain. A spur trench running from lateral drain 4E to the source of water in the interceptor ditch was constructed to prevent water from continuing to run down the header drain. This section of ditch was constructed following the same procedures as all other lateral drains. Refer to RFI-002 located in Appendix 7 for documentation on this corrective action.

6.2.4 Approved Minor Modifications, Rationale and Clarifications to the Design

The following minor modifications approved by the Engineer of Record were made to the design during construction activities.

- Approved use of either external snap coupler or split coupler for connection of two ADS N-12 plain end pipes as long as manufacturer's recommendations are followed. Split couplers must be bound by 2" wide polyethylene tape.
- Approved corrective action to collect small amounts of water into lateral drain 4E to prevent water flowing down the header drain.

These minor modifications can be found in RFIs 001 and 002 located in Appendix 7.

6.3 Phase 1B Pad

6.3.1 Construction Criteria

The Phase 1B Heap Pad consisted of the lined area of the HLF between elevations 990 m and 1050 m. It included perimeter berms along the eastern and western edges of the Phase 1B Heap Pad. Construction criteria included:

- As with the Phase 1A Pad, the Phase 1B Pad subgrade foundation was excavated down to Type 3 bedrock and included removal of all organic, ice rich, and soft or yielding soils. Areas were delineated for removal and backfilled with Compacted Rockfill. Subgrade was inspected and approved by Tetra Tech and Layfield prior to liner installation. Subgrade approvals are included in Layfield's QA/QC Package in Appendix 6.
- Compacted Rockfill fill was used in select areas as needed to achieve design grade.
- Select Fill was used in select areas as needed as liner bedding.
- Perimeter berms were required on the west and east side of the Phase 1B Heap Pad area. These structures were constructed with Rockfill.

6.3.2 QA/QC Requirements

- JDS performed daily inspections of the subgrade for general conformance with the requirements of the technical specifications. Subgrade suitability was assessed by observing deflection during subgrade compaction with either a six-ton or nine-ton vibratory compactor. Subgrade approvals are included in Appendix 6.
- In areas where Compacted Rockfill was used to achieve design grade and where Select Fill was used as bedding, placement and compaction was monitored by and documented by Ewing and/or Tetra Tech as required in Field Memorandums CTFM01 through CTFM-05. These inspections were documented in Tetra Tech's daily reports.
- CQA of liner placement was performed by Tetra Tech reporting to Forte. Tetra Tech performed CQA testing per the project technical specifications and reviewed all QC testing performed by Layfield. A Tetra Tech technician was present during all liner work. Tetra Tech provided daily reports that included test results, observations, and recommendations. Tetra Tech's Liner QA daily reports are included in Appendix 6. Any issues reported by Tetra Tech were addressed by Layfield. This included instances where weld tests failed, or areas needed rewelding or patching.

6.3.3 Construction Completed

The following Phase 1B Heap Pad components were completed:

- Preparation of the subgrade for liner placement. This included excavation of finger drains, where needed, excavation to approved grade and shape, and placement of Select Fill (bedding sand) where needed.
- Placement of the liner system along the Phase 1B Heap Pad.

6.3.4 Minor Modifications and Clarifications to the Design

The following minor modifications were made to the design during the construction activities:

- Removal of the 55m setback previously shown in the Heap Section view of Phase 1A Drawings. Additional slope stability modeling and direct shear test work is included in Appendix 2.

6.4 Investigations Completed

Test pits were excavated to identify and delineate the areas of the subgrade with ice rich or frost-susceptible soils as required in the Foundation Improvement Plan (StrataGold, 2017). Any ice rich and frost susceptible soils were identified and removed from within the Phase 1B Heap Pad area. These areas were confined to the central Ann Gulch drainage. The areas identified as having ice rich or frost susceptible soils were delineated by Underhill's survey crew and excavated by Ewing. The test pit logs and photographs taken of the test pits can be found in Appendix 11. Locations of the test pits are identified on the Record Drawings in Appendix 4.

6.5 HLF Liner System

6.5.1 Liner Profile

The HLF at the Eagle Gold Mine is constructed in phases as ore is stacked and leached in the facility, exhausting the installed liner systems' available space. The Eagle Gold Mine will utilize three HLF construction phases to bring the HLF to its final size. Prior to Phase 1B, Phase 1A and the In-heap Pond had been constructed and lined with geosynthetics. The In-heap Pond is a double liner system, while all subsequent phases are a single liner system. The single liner system is installed directly on the prepared subgrade and consists of the following layers (starting from the top to the bottom):

- An 80-millimetre (80-mil), textured double-sided low-density polyethylene (LLDPE) geomembrane liner; and

- A geosynthetic clay liner (GCL), which is reinforced with a layer of sodium bentonite.

The 80-mil LLDPE double-sided, textured geomembrane was placed directly on the GCL throughout all areas of Phase 1B.

The GCL was placed directly on the prepared and inspected subgrade, which was smooth and free of all protruding rocks, stones, sticks, roots, sharp objects, or debris of any kind. GCL liner was covered the same day, if possible, to limit exposure to moisture.

6.5.2 Manufacturer's Quality Control Certification

Layfield and SOLMAX, a geosynthetics manufacturer, provided Manufacturing Quality Control certificates for the GCL and 80-mil LLDPE geomembrane produced and delivered to site. These certificates show the average and minimum values for each roll of material delivered to site.

A summary of the manufacturer's certifications for the GCL, geomembrane, and geocomposite materials used for this project are included in in Tetra Tech's CQA package included in Appendix 6.

Forte reviewed the test data contained within the Manufacturer's Certificates for comparison to the product specifications. This comparison demonstrated that the material supplied met or exceeded all the typical project specific requirements.

6.5.3 Installation of GCL

The GCL for the project was provided by SOLMAX and was installed directly on all prepared subgrade extending into the anchor trench. The GCL was overlapped at least 0.5 m at all horizontal seams and 0.15 m at all vertical seams. Along every seam, loose sodium bentonite powder was placed to act as a seam sealant. All horizontal seams were fused using a propane torch, and vertical seams were only torched, as necessary.

6.5.4 Installation of 80-mil Linear Low-Density Polyethylene Geomembrane

The 80-mil geomembrane used for Phase 1B was 80-mil LLDPE Layfield Enviroliner manufactured by Layfield. The geomembrane was installed directly on the GCL and extended into the anchor trench to ensure that the liner system would be retained on the slope once the anchor trench was backfilled. The liner was deployed immediately after the placement of the GCL to limit the exposure of the GCL to rain. In instances where GCL was left exposed overnight, or longer, it was thoroughly inspected to ensure it was clear of debris, and no swelling had occurred prior to any placement of 80-mil geomembrane.

During placement, each geomembrane panel was inspected for signs of manufacturing defects or damage that may have been caused by the shipping, handling, or storage of the material. Any damage identified as part of the inspection was marked and removed from the roll prior to installation or repaired once deployed on the slope.

6.5.5 Final Inspection and Acceptance

Once the liner had been deployed, fused, repaired, and tested, a final walk-off was performed by Tetra Tech and Layfield to inspect for deficiencies such as holes, missing repairs, and missing testing. The walk-off consisted of inspecting the entire liner area, including seams, the tie-in to Phase 1A, and the anchor trench. If any deficiency was noted, the deficiency would be remedied immediately. Once all deficiencies had been remedied, Layfield drafted a Certificate of Final Inspection and Acceptance to be signed by the CQA Monitor and Layfield's Supervisor or QC representative. Upon sign off, Tetra Tech provided the Certificate of Final Inspection and Acceptance to Victoria Gold and Forte. The Certificates of Final Inspection and Acceptance can be found in Tetra Tech's CQA package included in Appendix 6.

7. RECORD DRAWINGS

Record drawings can be found in Appendix 4 and are based on as-built survey data provided by Underhill. Electronic files of the record drawings are available upon request from Forte and files of raw survey data are available through JDS.

8. REQUESTS FOR INFORMATION AND RESPONSES

A list of Requests for Information responded to by Forte and created by JDS during the construction is included below. RFIs can be found in Appendix 7.

RFI	From	Date Closed	Subject
VITGOLD-RFI-001	JDS/Ewing	4/24/2020	Lateral ADS N-12 (plain end to plain end)
VITGOLD-RFI-002	JDS/Ewing	5/29/2020	Spur Lateral Drain off 4E
VITGOLD-RFI-003	JDS/Ewing	6/11/2020	Horizontal seams on slopes greater than 2.5:1

9. CONSTRUCTION WORK PLANS

The following construction work plan was developed by Victoria Gold Corporation and reviewed by Forte and JDS. Construction work plans can be found in Appendix 1.

- CWP-HLF Phase 1B: Work plan detailing the construction of Phase 1B pad and liner installation.

10. DAILY REPORTS

Daily reports from Tetra Tech for earthworks and liner CQA services and JDS's daily reports are included in Appendix 3.

11. WELL DECOMMISSIONING REPORTS

Most monitoring wells and piezometers on the Eagle Gold property are used for water quality sampling and/or water level observations. Decommissioning monitoring wells is necessary to prevent migration of contaminants into an aquifer or between aquifers. The well decommissioning reports are included in Appendix 8.

12. TECHNICAL SPECIFICATIONS AND MEMOS

Technical field memorandums adopted for Phase 1B construction are included in Appendix 9. These field memos include construction and execution of the following test fills:

- Select Fill Test Fills 01 & 02
- Compacted Rockfill Test Fills 01 & 02
- Structural Fill Test Fills 01, 02, & 03

Technical Specifications are included in Appendix 5.

13. CLOSURE

Forte Dynamics Inc. (Forte) prepared this document for the account of Victoria Gold Corporation. The material in it reflects the judgment of Forte staff in light of the information available to Forte at the time of document preparation. Any use which a third party makes of this document or any reliance on decisions to be based on it is the responsibility of such third parties. Forte accepts no responsibility for damages, if any, suffered by any third party as a result of decisions made or actions based on this document.

As a mutual protection to our client, the public, and ourselves, all documents and drawings are submitted for the confidential information of our client for a specific project. Authorization for any use and/or publication of this document or any data, statements, conclusions or abstracts from or regarding our documents and drawings, through any form of print or electronic media, including without limitation, posting or reproduction of same on any website, is reserved pending Forte's written approval. A record copy of this document is on file at Forte. That copy takes precedence over any other copy or reproduction of this document.

Note the conclusions provided herein will change as the recommended maintenance measures are undertaken.

We trust the above satisfies your requirements at this time. Should you have any questions or comments, please do not hesitate to contact us.

Yours sincerely,

Forte Dynamics Inc.
per:



Barry Carlson, P.Eng.

Principal Engineer

Reviewed by:



Clint Green, P.E.
Principal Engineer

PERMIT TO PRACTICE
FORTE DYNAMICS, INC.
SIGNATURE
Date 3 | 22 | 21
PERMIT NUMBER PP626
Association of Professional Engineers of Yukon

14. REFERENCES

Lorax, (2017), Eagle Gold Hydrometeorology Report, 13 March 2017.

BGC, (2019), Eagle Gold Project Heap Leach Facility Construction Summary Report for Phase 1A, September 24, 2019

Tetra Tech, (2020), Construction Quality Assurance Report Heap Leach Facility Phase 1B, October 19, 2020

Stantec (2012a), Eagle Gold Project, Environmental Baseline Report: Climate, prepared for Victoria Gold Corp., March 2012.

Stantec (2012b), Eagle Gold Project, Environmental Baseline Data Report: Hydrology 2011 Update, prepared for Victoria Gold Corp., June 2012

Forte Dynamics, (2020), Detail Design Report for Eagle HLF Phase 1B, January 6, 2020

Strata Gold Corporation (2017), Eagle Gold Project Heap Leach Facility Foundation Improvement Plan, June 2017

APPENDIX 1
Construction Work Plans

OBJECTIVE

The objective of the CWP is to coordinate the construction of Phase 1B and liner installation.

SUMMARY

1. Lay out and Survey Control
2. Staging Area (Liner)
3. Decommissioning 3 Water Monitoring Wells
4. Clearing, Grubbing and Topsoil removal (82,300m^3)
5. Removal of Unsuitable Material and Surface Grading
6. Excavation and Installation of the Underdrain System
7. Prep surface for Liner Placement
8. Liner Placement

SIGNATURES:

Stakeholder	Signature	Date
Dave Rouleau VP Operations & General Manager Victoria Gold Corp.		
David Crottey Safety Manager Victoria Gold Corp.		
Phil Emerson Environmental Manager Victoria Gold Corp.		
Clint Abel Construction Manager JDS Energy and Mining Inc.		

SAFETY

Potential Hazard	Precautions and Actions
Clearing & Grubbing	• Minimize backing equipment up in fallen timber • Be aware of stored energy when clearing and grubbing • Watch for falling tree tops when knocking timber over
Steep Slopes	• Dozers and Excavators working on slope will require corks • Avoid working sideways on steep slopes
Winter Driving Conditions	• Road will to be maintained and sanded when required • Haul trucks will stop hauling if road conditions are unmanageable due to poor weather – haulage will resume when road conditions are addressed
One Way Haul Road	• Road way will be radio controlled • Pullouts will be constructed for haul truck

ENVIRONMENT

Critical Items	Precautions and Actions
Potential Spills (oil, fuel, coolant)	• All equipment is to be equipped with a spill kit • Spills will be cleaned up and placed in designated containment cell

SCOPE OF WORK

Description	Responsible
1. <u>Layout and Survey Control</u> • Layout clearing limits – clearing limits will have to be pushed back enough to ensure there is room for the perimeter access road (6 meters wide), key trench excavation, and liner deployment • Grade control required when finishing surface to ensure a 2H:1V slope is never exceeded – west slope may require some engineer design once the topsoil is removed • Underdrain and laterals drain layout, grade control, and as-built pick up • Liner as-built during placement of liner • Final overall as-built	Underhill
2. <u>Staging Area (Liner)</u> • Staging area will be developed in the southwest corner of Phase 2 – Crossing required at the west end of the 1045 ditch (18" ADS available near burn pit) – Construct crossing outside the liner key trench so it can stay for future phases • Crossing may have to be pulled during freshet due to the undersized culverts	Ewing
3. <u>Decommissioning 5 Water Monitoring Wells</u> • Decommissioning completed MW09-AG2, MW10-AG3, MW10-AG3B, TP-BGC10-26 • Decommissioning remaining BH-BGC11-29 • Environmental collected water samples and removed instrumentation	Environmental Ewing

Description	Responsible
• Excavator will be utilized to excavate a minimum of 2 meters below finished grade around the well monument • Cut PVC off at the bottom of the excavation and fill PVC pipe with bentonite chips • Backfill excavation with blast rock and pack in maximum 0.9m loose lifts with minimum of 3 passes • Have survey check wells depths from surface once final grade is established	
4. <u>Clearing, Grubbing and Topsoil Removal</u> • The excavator and wiggle waggons will be required to complete the construction of Phase 1B • 3 dump locations – South of inert waste dump, east side of the 1045 ditch, and along Phase 1B access • Trees will be removed with grubbing and topsoil – timber will be knocked down and mixed in with the topsoil • The topsoil is to be push down from the top of Phase 1B to suitable loading locations, generally closer to the bottom • The topsoil piles will be required in areas to gain access to steeper portions of Phase 1B – Utilizing topsoil for access roads will reduce cutting into finished surface grade and backfilling requirements • The topsoil access road will be retreat excavated when construction is completed above them	Ewing
5. <u>Removal of Unsuitable Material and Surface Grading</u> • Establish Phase 1B perimeter access road / liner deployment bench 6 m wide • Slopes are not to exceed 2H:1V for liner placement • 1030 deployment bench has been removed • Any unsuitable material or excess material requiring removal to maintain finished grade can be pushed into areas suitable for loading (Do not mix with topsoil) • Some unsuitable material excavations will require backfill to maintain necessary grading, this must be backfilled with blast rock in 0.9m loose lifts – 3 passes minimum with a 9000KG packer • The ditch at approximately EL1000 will have to be cleaned out and backfilled – This can be addressed once the topsoil has been pushed below EL1000 • Compactor will be required for compacting finished surfaces, backfilling, and sand placement for liner deployment	Ewing
6. <u>Excavation and Installation of the Underdrain System</u> • Reference Drawing CV-F003, DTL-F003 and 109005 – underdrain profile • 20mm Underdrain material will have to be produced by other (Nuway) • Underdrain excavation can commence once surface grading is completed in work area, all necessary materials have arrived, and 20mm drain rock is available • Survey will layout underdrain alignment and cuts to ensure correct depth and grade is maintained between STA 0+800 to STA 1+087 – minimum excavation depth is 750mm and 5 meters wide across the bottom • During construction of Phase 1 small V-ditch's had to be excavated on both side of the excavation to manage ground water • The (4) 6" DR11 HDPE underdrain pipes will have to be exposed just above	Ewing

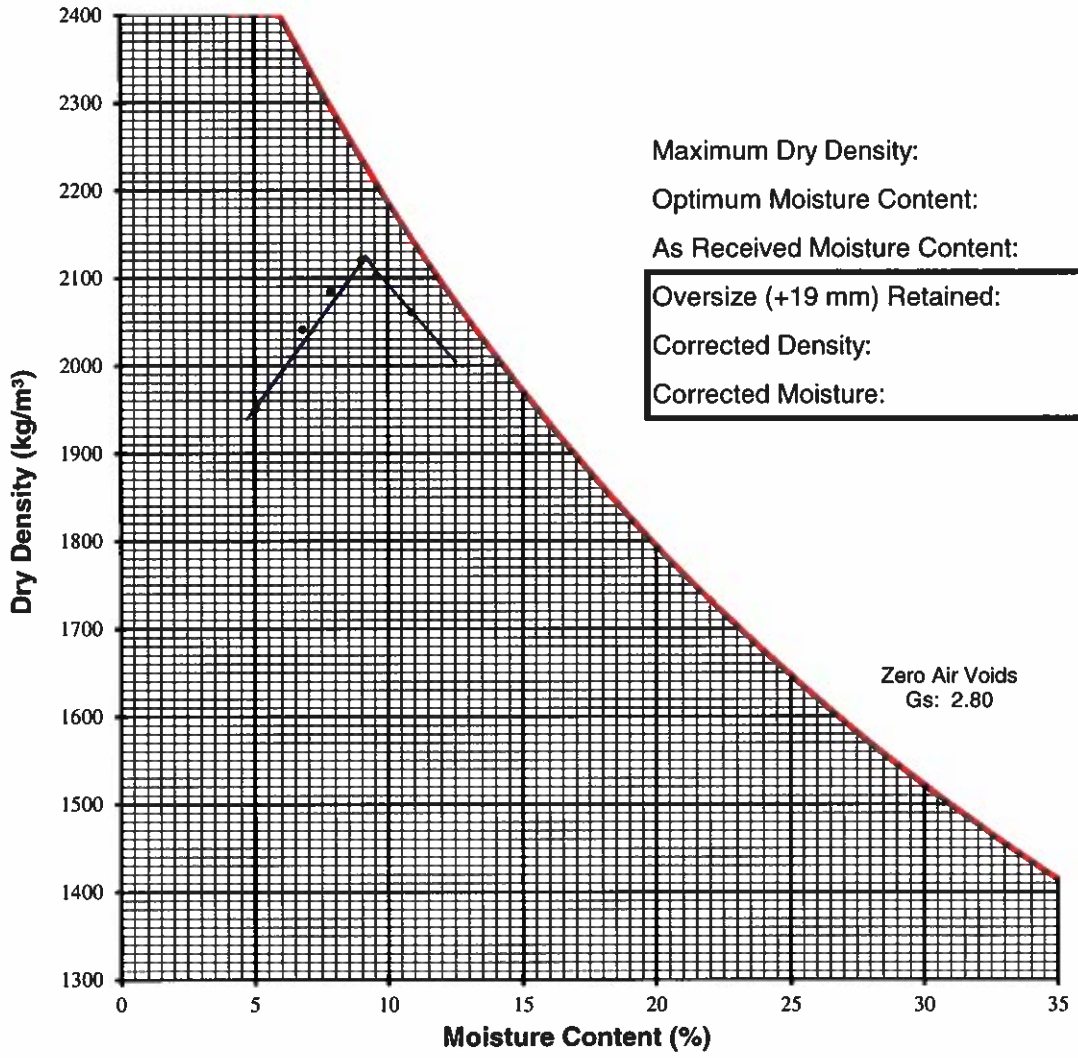
Description	Responsible
the 990 bench – top end of the underdrain was covered to stop fines from silting up the drainage system • When excavating the main underdrain there will be 4 lateral drains spaced approximately 75 meters apart (0+825, 0+900, 0+975,1+050) • Lateral drains are graded at plus or minus 3% - minimum excavation is 700mm deep by 1 meter wide • All underdrain excavations to be as-built by survey • Install geotextile as shown in drawing DTL-F003 • Place 100mm of drain rock onto the geotextile • Install (4) 6" DR11 HDPE pipe evenly spaced 1 meter apart – Line will have to be fused with the 412 fusing machine – 6" Wyes will have to be fused in at lateral drain locations – First portion of the lateral drain will have to be excavated and installed at the same time for backfill purposes • Place drain rock 300mm above the pipe and finish wrapping the drain rock with 12 oz. non-woven geotextile – geotextile must be overlapped 500mm • Place 300mm of SDF material over the geotextile and compact (backfill of any portion of the trench shall not be frozen) • Lateral drains are to be constructed the same way except you'll be install 100mm ADS N-12 corrugated pipe – The 100mm N-12 ADS is already fused to the 150mm header wye pipes • Plate tamper will be required to pack lateral drains correctly • Additional drains (or small extensions) may be required if seepage is identified and not being captured by the designed underdrain system	
7. <u>Prep surface for Liner Placement</u> • Snow removal • Access roads will be constructed out of sand on the western side to make placement of sand safer. Start placement and compaction from upper access road working your way down in section. • Dozer and grader can be utilized for grading surface to be compacted • Sand (Potential sand requirement 266,680m^2 X 0.05m = 13,334 m^3) placement will be required over any rocky or ruff surfaces • Excavate key trench ahead of liner placement (excavate 0.4 m in from the crest of slope 0.75 m D X 0.75 m W) • These steps will have to advanced ahead of the liner crew	Ewing
8. <u>Liner Placement</u> • Support equipment – excavator for deploying liner, loader or telehandler for loading and moving rolls, • Labour crew to support liner crew – Ewing supplied labour crew for Phase 1A • Ewing Labour crew will have to make a few hundred sand bags • Approximately 7500 sq. m of liner will be placed each day – GCL will be covered with 2mm (80-mil) liner as soon as possible	Layfield / Ewing

APPENDIX 2
Laboratory Results

MOISTURE-DENSITY RELATIONSHIP (Proctor) REPORT

ASTM D698 Standard

Project:	Heap Leach Facility Phase 1B - CQA Foundation P	Sample No.:	SA01
Client:	Victoria Gold Corp	Sampled By:	Client
Attention:	Clint Abel	Sample Date:	May 8, 2020
Project No.:	ENG.WARC03235-09	Test Date:	May 11, 2020
Description:	GRAVEL - sandy, some silt, some cobbles	Preparation:	Moist
Source:	-	Compaction:	Manual



Maximum Dry Density:	**2120**	kg/m³
Optimum Moisture Content:	**9.0**	%
As Received Moisture Content:	**9.5**	%
Oversize (+19 mm) Retained:	**30**	%
Corrected Density:	**2255**	%
Corrected Moisture:	**6.6**	%

Remarks:

Reviewed By: _____ P.Eng.

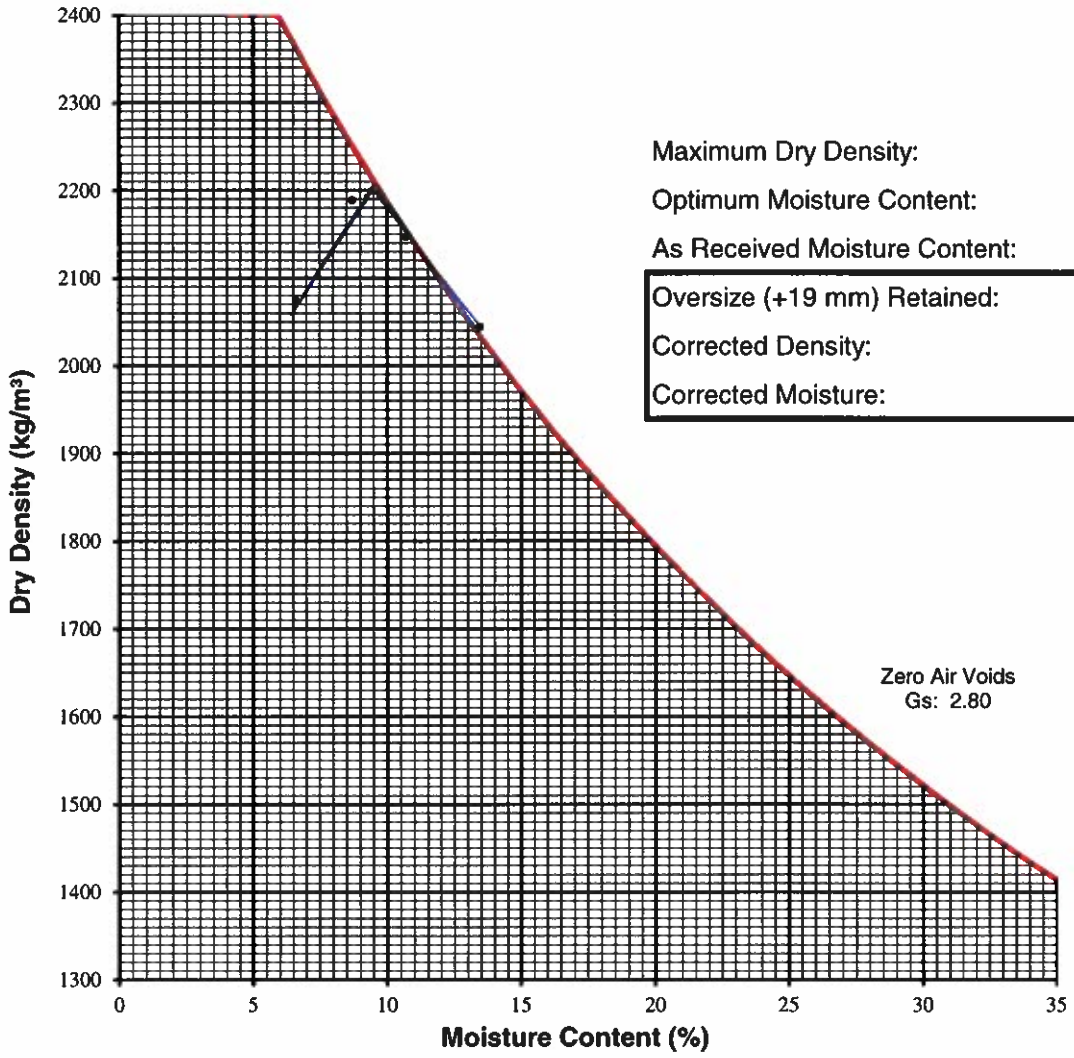
Data presented hereon is for the sole use of the stipulated client. Tetra Tech is not responsible, nor can be held liable, for use made of this report by any other party, with or without the knowledge of Tetra Tech. The testing services reported herein have been performed to recognized industry standards, unless noted. No other warranty is made. These data do not include or represent any interpretation or opinion of specification compliance or material suitability. Should engineering interpretation be required, Tetra Tech will provide it upon written request.

TETRA TECH

MOISTURE-DENSITY RELATIONSHIP (Proctor) REPORT

ASTM D698 Standard

Project:	Heap Leach Facility Phase 1B - CQA Foundation P	Sample No.:	SA02
Client:	Victoria Gold Corp	Sampled By:	Client
Attention:	Clint Abel	Sample Date:	May 8, 2020
Project No.:	ENG.WARC03235-09	Test Date:	May 11, 2020
Description:	GRAVEL - sandy, some silt, some cobbles	Preparation:	Moist
Source:	-	Compaction:	Manual



Maximum Dry Density:	**2200**	kg/m³
Optimum Moisture Content:	**9.5**	%
As Received Moisture Content:	**9.5**	%
Oversize (+19 mm) Retained:	**30**	%
Corrected Density:	**2318**	%
Corrected Moisture:	**7.0**	%

Remarks:

Reviewed By: _____ P.Eng.

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TETRA TECH

BGC ENGINEERING INC.
AN APPLIED EARTH SCIENCES COMPANY
330 Alison Blvd
Fredericton, NB Canada E3C 0A9
Telephone (506) 460-8660
Fax (506) 460-8679

March 25, 2020
Project No.: 2140001

Clint Green
Principal Engineer
Forte Dynamics Inc.
3003 E. Harmoney Road
Suite 320, Fort Collins, Co 80528

Dear Mr. Green,

Re: Forte Dynamics Lab Testing

1.0 INTRODUCTION

BGC Engineering Inc. (BGC) was retained by Forte Dynamics Inc. to conduct a series of liner interface shear tests for the expansion phases of the Victoria Gold Corp Project "Eagle Gold Mine". The results of these tests are attached herein.

2.0 BACKGROUND

On January 20th, 2020, BGC received a shipment of geosynthetic clay liners (GCL) and geomembranes from Layfield Group LTD. The product name associated with the GCL and the geomembrane was GSE BentoLiner NWL-60 and Layfield Enviro Liner 4280 CT, respectively. Product data sheets are included in Appendix A.

During the first three tests, BGC observed lower than expected shear strengths between the GCL and the geomembrane. When comparing the 2020 GCL with the GCL tested by BGC in 2018 and 2019 (also GSE BentoLiner NWL-60), the results were incongruent. BGC observed that the 2020 GCL swelled approximately twice as much when compared to the GCL tested in 2018 and 2019 GCL. The lower internal shear strength of the 2020 GCL was attributed to the higher water content of the bentonite.

BGC notified Forte Dynamics Inc. of the apparent discrepancy in GCL types, and Forte Dymamics said they would reach out to Layfield and arrange to have new GCL sent to the BGC laboratory for testing.

On March 4th, 2020, BGC received the new shipment of GCL with product name GSE BentoLiner NWL-60. A second round of liner interface testing was completed using this GCL. The new GCL swelled to a similar water content and hydrated thickness as the GSE BentoLiner NWL-60 tested in 2018 and 2019.

In addition to completing the liner interface shear tests, BGC also completed Standard Proctor and particle size distribution tests on subgrade and overliner materials.

Individual laboratory reports for the completed tests are included in Appendix B. This work was conducted in general accordance with the scope of work provided in an email sent by Clint Green of Forte Dynamics Inc. to David Oldford of BGC on January 13, 2020 entitled "VGC-Eagle-Interface Shear", and according to the terms and conditions provided in Appendix C.

3.0 STANDARDS FOLLOWED

The index tests and the liner interface samples were tested in accordance with the latest editions of applicable American Society for Testing and Materials (ASTM) standards and recognized good practice. The following ASTM Standards were utilized:

- ASTM D5321 - Standard Test Method for Determining the Shear Strength of Soil-Geosynthetic and Geosynthetic-Geosynthetic Interfaces by Direct Shear.
- ASTM D6913 - Standard Test Methods for Particle-Size Distribution (Gradation) of Soils Using Sieve Analysis.
- ASTM D698 - Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Standard Effort (12,400 ft-lbf/ft^3 (600 kN-m/m^3).

4.0 EQUIPMENT

The liner interface tests were completed using BGC's large direct shear box apparatus. The shear box has horizontal dimensions of 40 cm x 40 cm and a height of 51 cm, and allows testing to be completed at vertical stresses of up to 5.5 MPa. The vertical stress is applied to a top plate by means of two 50 ton jacks. A horizontal force is applied by means of a single 50 ton jack. Vertical and horizontal displacements are measured and logged continuously throughout the test by means of Liner Variable Displacement Transducers (LVDT). The use of two vertical jacks and LVDT's allows adjustment of the top plate throughout the test. This ensures that the top plate remains parallel while maintaining a constant vertical stress. The horizontal force is continuously measured and logged by means of a load cell. A photograph of the equipment is provided in Figure 4-1.



Figure 4-1. BGC's Large Direct Shear Apparatus

5.0 METHODOLOGY

The liner interface tests were conducted by placing a subgrade material into the bottom half of the shear box. The subgrade was compacted to a minimum of 92% of the maximum Standard Proctor dry density as requested by Forte Dynamics. Next, a pre-soaked GCL was placed on top of the subgrade, followed by a geomembrane. The top half of the shear box was placed over the geomembrane and was filled with the overliner material. Finally, a top plate was placed above the overliner material. For each GCL type tested, two rounds of testing were completed at vertical stresses 400, 800 and 1200 kPa. The vertical stresses were applied to the system until the vertical deformation had stabilized. After consolidation, the liner systems were sheared at an average displacement rate of approximately 0.28 cm/min while maintaining a constant vertical stress.

6.0 CLOSURE

BGC Engineering Inc. (BGC) prepared this document for the account of Forte Dynamics Inc. The material in it reflects the judgment of BGC staff in light of the information available to BGC at the time of document preparation. Any use which a third party makes of this document or any reliance on decisions to be based on it is the responsibility of such third parties. BGC accepts no responsibility for damages, if any, suffered by any third party as a result of decisions made or actions based on this document.

As a mutual protection to our client, the public, and ourselves, all documents are submitted for the confidential information of our client for a specific project. Authorization for any use and/or publication of this document or any data, statements, conclusions or abstracts from or regarding our documents, through any form of print or electronic media, including without limitation, posting or reproduction of same on any website, is reserved pending BGC's written approval. A record copy of this document is on file at BGC. That copy takes precedence over any other copy or reproduction of this document.

Yours sincerely,

BGC ENGINEERING INC.
per:



David Oldford, P.Eng.
Geotechnical Engineer

Reviewed by:

Simon Dickinson, Ph.D., P.Eng.
Principal Geotechnical Engineer, CTO

DO/SD/dk/md

Attachment: Appendix A Product Data Sheets
Appendix B Laboratory Testing Reports
Appendix C BGC's Standard Terms and Conditions

APPENDIX A
PRODUCT DATA SHEETS

PRODUCT DATA SHEET

GSE BentoLiner NWL-60 Geosynthetic Clay Liner

GSE BentoLiner "NWL-60" is a heavily needlepunched reinforced composite geosynthetic clay liner (GCL) comprised of a uniform layer of granular sodium bentonite encapsulated between a nonwoven and a scrim-nonwoven geotextile for dimensional stability. The product is intended for steep slopes and high load applications where increased internal shear strength is required.

AT THE CORE:

This composite clay liner is intended for steep slopes and high load applications where increased internal shear strength is required.

Product Specifications

Tested Property	Test Method	Frequency	VALUE
Geotextile Property			
Cap Nonwoven, Mass/Unit Area	ASTM D 5261	1/200,000 ft^2	6.0 oz/yd^2 MARV(1)
Carrier Scrim Nonwoven, Mass/Unit Area	ASTM D 5261	1/200,000 ft^2	6.0 oz/yd^2 MARV
Bentonite Property			
Swell Index	ASTM D 5890	1/100,000 lb	24 ml/2 g min
Moisture Content	ASTM D 4643	1/100,000 lb	12% max
Fluid Loss	ASTM D 5891	1/100,000 lb	18 ml max
Finished GCL Property			
Bentonite, Mass/Unit Area(2)	ASTM D 5993	1/40,000 ft^2	0.75 lb/ft^2 MARV
Tensile Strength(3)	ASTM D 6768	1/40,000 ft^2	50 lb/in MARV
Peel Strength	ASTM D 6496 ASTM D 4632(4)	1/40,000 ft^2	12 lb/in MARV 60 lb MARV
Hydraulic Conductivity(5)	ASTM D 5887	1/Week	5 x 10^{-9} cm/sec max
Index Flux(5)	ASTM D 5887	1/Week	1 x 10^{-8} m^3/m^2/sec max
Internal Shear Strength(6)	ASTM D 6243	Periodically	500 psf Typical
TYPICAL ROLL DIMENSIONS			
Width x Length(7)	Typical	Every Roll	15.5 ft x 150 ft
Area per Roll	Typical	Every Roll	2,325 ft^2
Packaged Weight	Typical	Every Roll	2,600 lb

NOTES:

- (1)Minimum Average Roll Value.
- (2)At 0% moisture content.
- (3)Tested in machine direction.
- (4)Modified ASTM D 4632 to use a 4 in wide grip. The maximum peak of five specimens averaged in machine direction.
- (5)Deaired, deionized water @ 5 psi maximum effective confining stress and 2 psi head pressure.
- (6)Typical peak value for specimen hydrated for 24 hours and sheared under a 200 psf normal stress.
- (7)Roll widths and lengths have a tolerance of ±1%.

GSE is a leading manufacturer and marketer of geosynthetic lining products and services. We've built a reputation of reliability through our dedication to providing consistency of product, price and protection to our global customers.

Our commitment to innovation, our focus on quality and our industry expertise allow us the flexibility to collaborate with our clients to develop a custom, purpose-fit solution.

GSE ENVIRONMENTAL™

DURABILITY RUNS DEEP

For more information on this product and others, please visit us at GSEworld.com, call 800.435.2008 or contact your local sales office.

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LAYFIELD

Geomembrane [EL4280, 2-sided Coarse Textured]

Our Enviro Liner 4000 coarse textured series Geomembranes have better interface friction capabilities compared to our standard textured geomembranes. Texturing can be accomplished either on one side or on both sides. Enviro Liner 4000 coarse textured product can be manufactured to custom asperity heights and is available by special order. Layfield is capable of supplying the friction and strength properties you require for your design build project. Enviro Liner 4280 Coarse Textured Geomembrane meets or exceeds the requirements of Table 2(B) GRI GM 17 specification for textured Linear Low-Density Polyethylene Geomembranes.



Property	ASTM	EL4280[1] 2-sided Coarse Textured	Frequency
Thickness nominal	D5994	2.00 mm	
- min.ave -lowest individual for 8 out of 10 values -lowest individual for any of the 10 values	D5994	1.90 mm 1.80 mm 1.70 mm	Every Roll
Sheet Density	D792	≤0.939 g/cc	Every 10 rolls
Dimensional Stability	D1204	±2%	Once per formulation
Tensile Properties (min. avg) Strength @ Break Elongation @ Break	D6693, Type IV Die	 31 kN/m 380%	Every 2 rolls
Asperity Height (min.ave)	D7466	0.50 mm	Every roll
Tear Resistance (min. avg)	D1004	200 N	Every 5 rolls
Puncture Resistance (min. avg)	D4833	500 N	Every 5 rolls
Multi-axial Elongation (typical)	D5617	30%	Once per formulation
Carbon Black Content	D4280	2.0-3.0%	Every 2 rolls
Carbon Black Dispersion	D5596	9 in Cat 1/ Cat 2 1 in Cat 3	Every 10 rolls
Oxidative Induction Time (OIT) High Pressure Oxidative Induction Time (HPOIT)	D5885	100 mins 400 mins	Per resin batch
Oven aging, 85 deg C, HOPIT % retained after 90 days	D5721 D5885	60%	Once per formulation
UV Resistance, HPOIT retained after 1600 hrs	D7238 D5885	35%	Once per formulation
Low Temperature Brittleness	D746	-70°C	Once per formulation
Roll Width	-	6.85 mtrs	
Roll Length	-	128 mtrs	

[1]*This product is made in Richmond, B.C, Canada.*

Disclaimer: Layfield disclaims any and all express, implied, or statutory standards, warranties or guarantees, including without limitation any implied warranty as to merchantability or fitness for a particular purpose or arising from a course of dealing or usage of trade as to any equipment, materials, or information furnished herewith. This document should not be construed as engineering advice.

Rev-12/19

APPENDIX B
LABORATORY TESTING REPORTS

PROJECT INFORMATION		LINER SYSTEM	
Number	2140-001	Subgrade	Gravel, sandy, trace fines
Name	Forte Dynamics Liner Testing	GCL	GSE BentoLiner NWL-60 GCL
Location	Yukon Territory	Geomembrane	Layfield Enviro Liner 4280 CT
Client	Forte Dynamics Inc.	Overliner	Poorly graded gravel with sand (GP)

INDEX PROPERTIES OF SUBGRADE	Initial
Length and Width (cm)	40.5 x 40.5
Thickness (cm)	14.6
Bulk Density ρ_b (g/cm^3)	2.30
Dry Density ρ_d (g/cm^3)	2.14
Void Ratio e	0.26
Water Content (%)	7.3
Specific Gravity G_s (Assumed)	2.70

INDEX PROPERTIES OF OVERLINER	Initial
Length and Width (cm)	40.5 x 40.5
Thickness (cm)	10.4
Bulk Density ρ_b (g/cm^3)	2.25
Dry Density ρ_d (g/cm^3)	2.12
Void Ratio e	0.23
Water Content (%)	6.3
Specific Gravity G_s (Assumed)	2.60

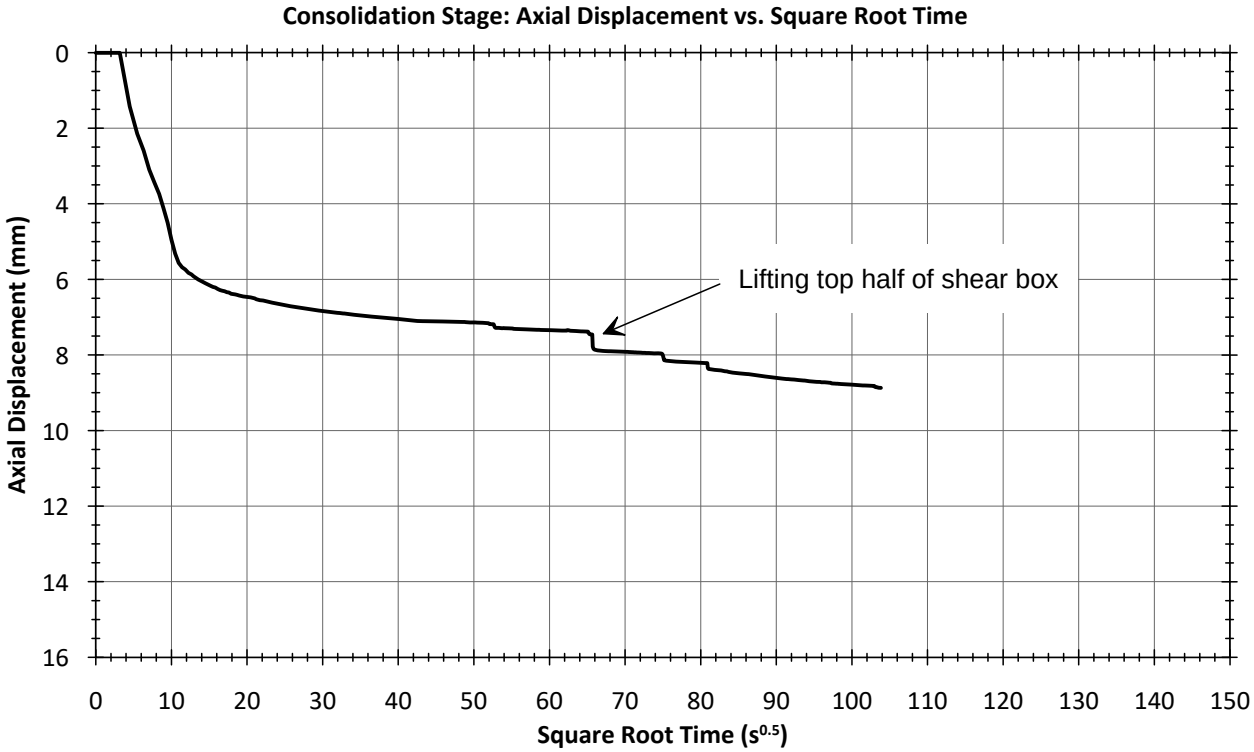
INDEX PROPERTIES OF GCL	
Initial Average Hydrated Thickness (cm)	1.16
Initial Water Content (%)	205.1
Final Water Content (%)	162.8

SHEARING PARAMETERS	
Vertical Stress σ'_v (kPa)	400
Displacement Rate (cm/min)	0.21

RESULTS	
τ_{max} (kPa)	144
τ_{res} (kPa)	22

Note: Internal failure was observed in the geosynethetic clay liner (GCL). Displacement between the subgrade and the GCL was observed, along with displacement between the geomembrane and GCL.

330 Alison Boulevard
Fredericton, NB Canada E3C 0A9
T 506.460.8660 | F 506.460.8679



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Tested by DO (2020-02-21)
Reviewed by KS (2020-02-25)
Approved by SD (2020-03-17)
Date Format (YYYY-MM-DD)

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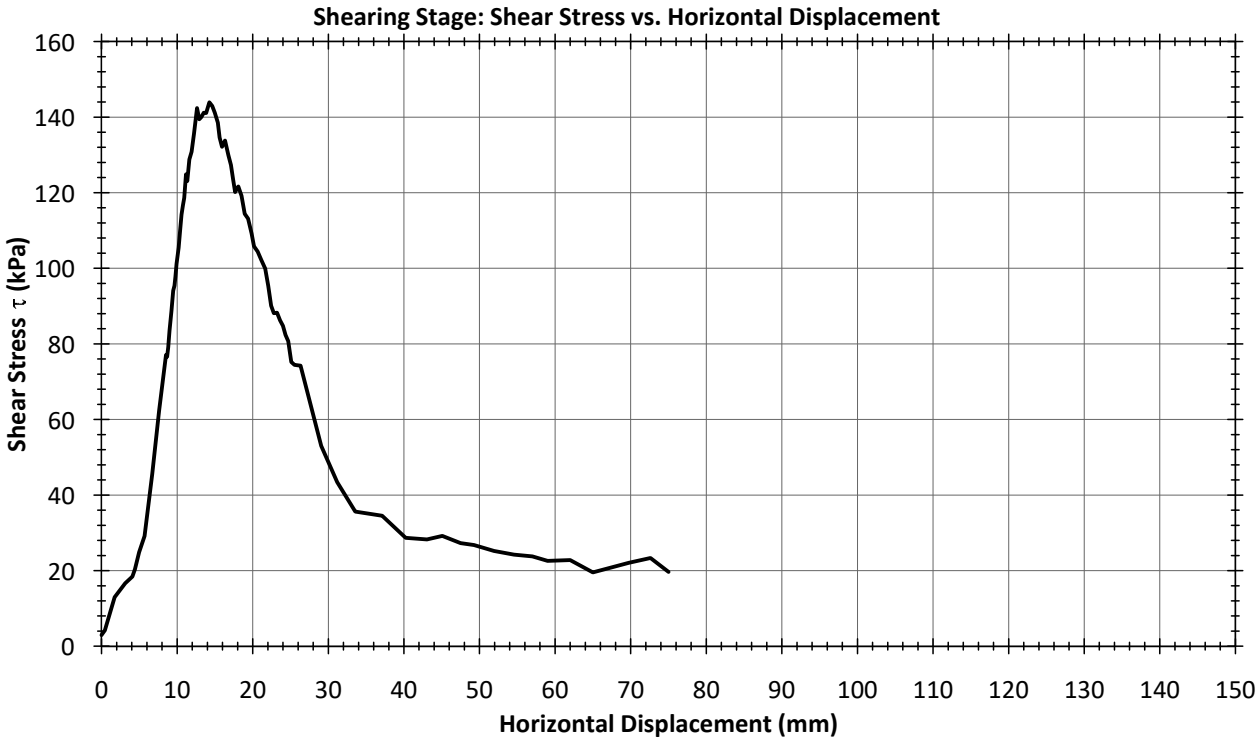

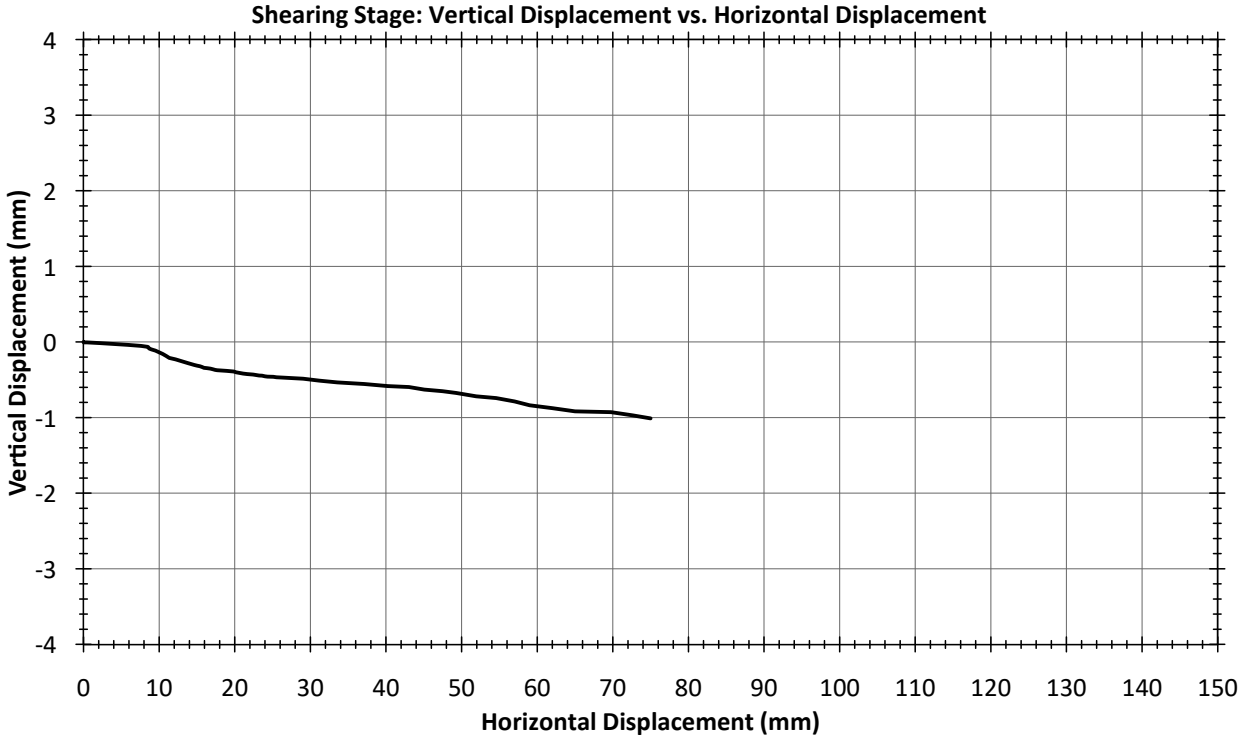

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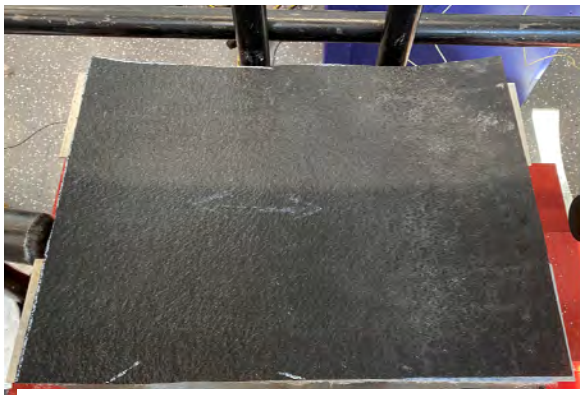
Subgrade



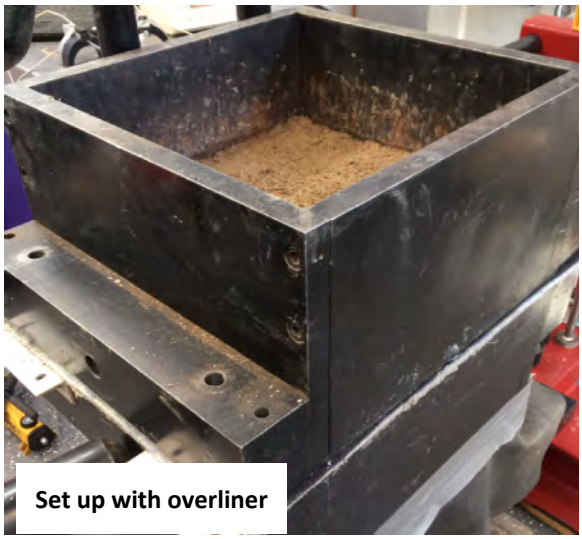
GCL over subgrade



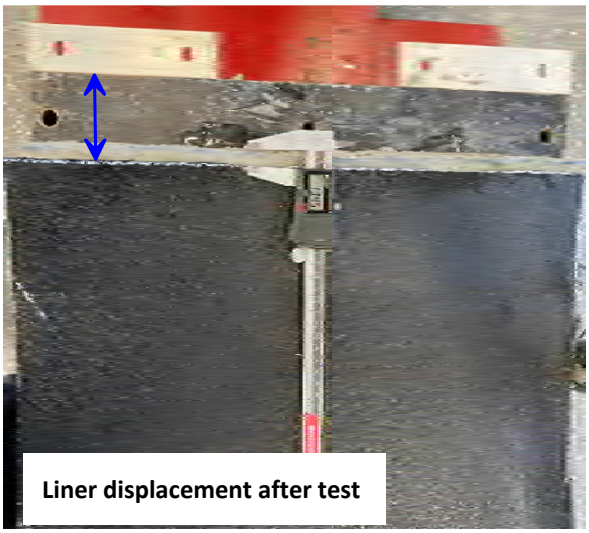
Alignment of GCL and geomembrane before test



Loading direction



Set up with overliner



Liner displacement after test

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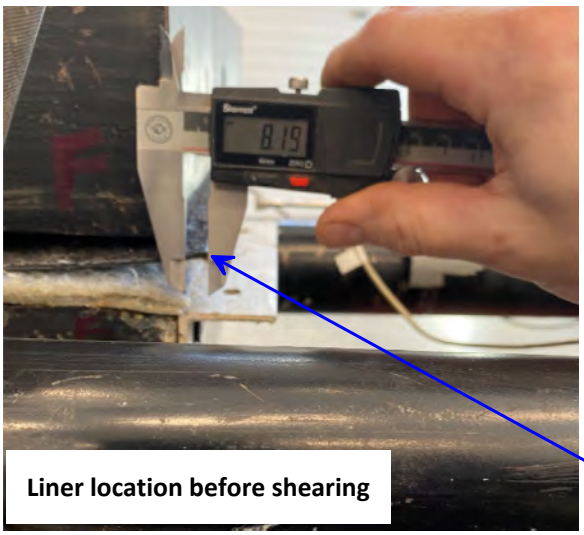

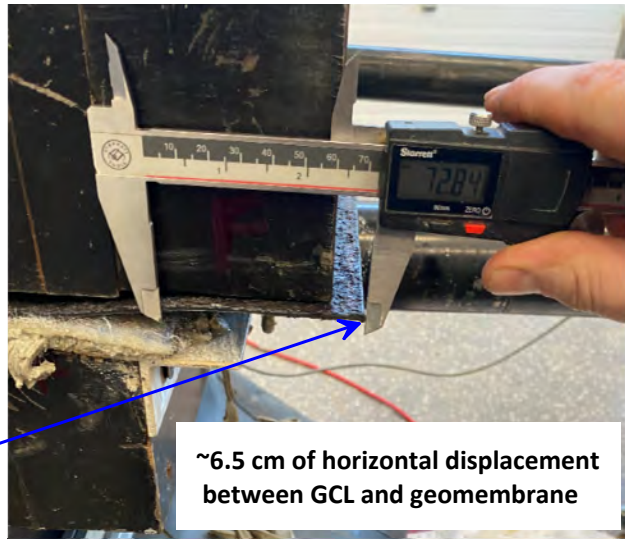






Subgrade after test



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PROJECT INFORMATION		LINER SYSTEM	
Number	2140-001	Subgrade	Gravel, sandy, trace fines
Name	Forte Dynamics Liner Testing	GCL	GSE BentoLiner NWL-60 GCL
Location	Yukon Territory	Geomembrane	Layfield Enviro Liner 4280 CT
Client	Forte Dynamics Inc.	Overliner	Poorly graded gravel with sand (GP)

INDEX PROPERTIES OF SUBGRADE	Initial
Length and Width (cm)	40.5 x 40.5
Thickness (cm)	14.8
Bulk Density ρ_b (g/cm^3)	2.29
Dry Density ρ_d (g/cm^3)	2.13
Void Ratio e	0.27
Water Content (%)	7.3
Specific Gravity G_s (Assumed)	2.70

INDEX PROPERTIES OF OVERLINER	Initial
Length and Width (cm)	40.5 x 40.5
Thickness (cm)	11.0
Bulk Density ρ_b (g/cm^3)	2.25
Dry Density ρ_d (g/cm^3)	2.12
Void Ratio e	0.23
Water Content (%)	6.3
Specific Gravity G_s (Assumed)	2.60

INDEX PROPERTIES OF GCL	
Initial Average Hydrated Thickness (cm)	1.09
Initial Water Content (%)	186.4
Final Water Content (%)	140.5

SHEARING PARAMETERS	
Vertical Stress σ'_v (kPa)	800
Displacement Rate (cm/min)	0.15

RESULTS	
τ_{max} (kPa)	195
τ_{res} (kPa)	32

Note: Internal failure was observed in the geosynethetic clay liner (GCL). Displacement between the subgrade and the GCL was observed, along with displacement between the geomembrane and GCL.

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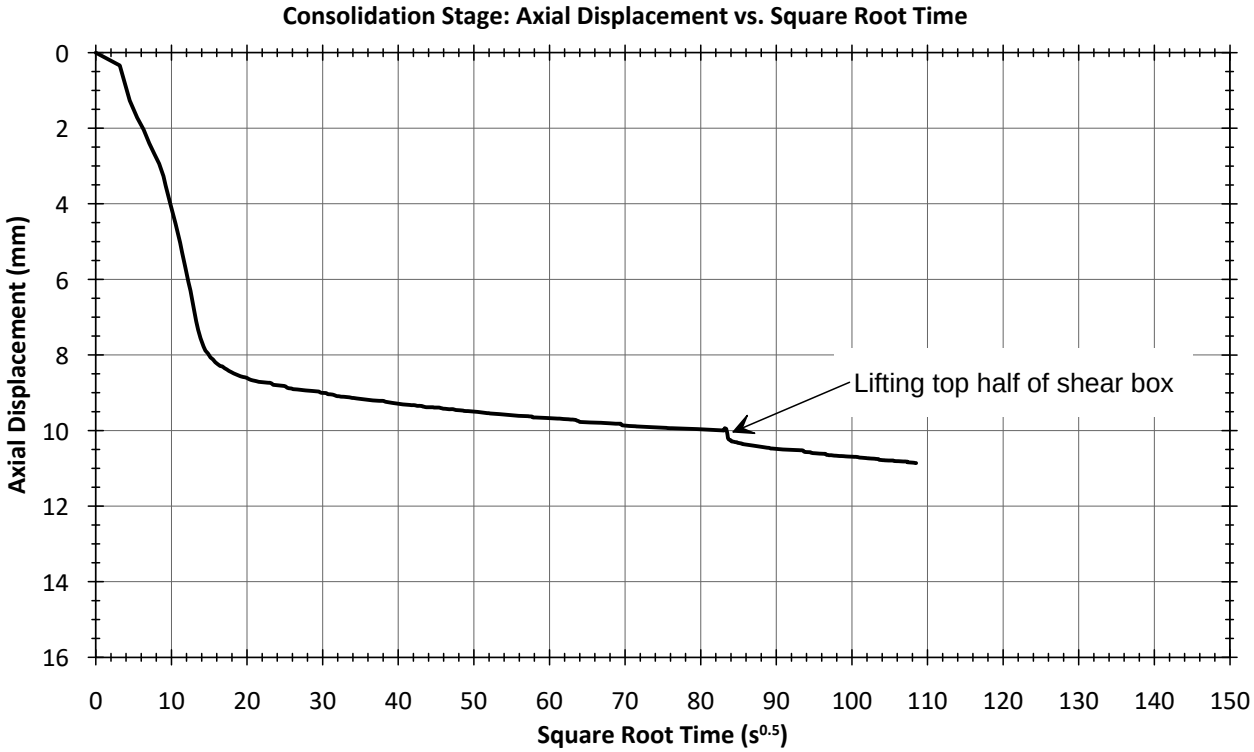

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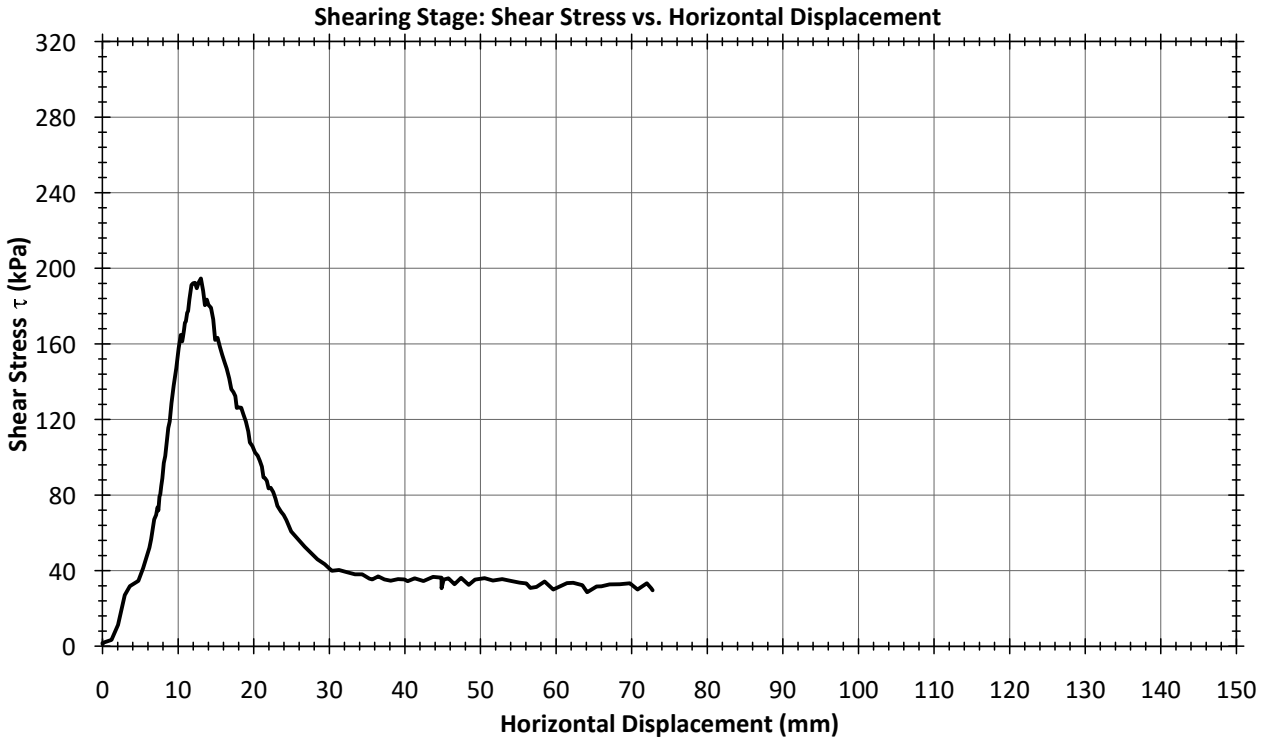

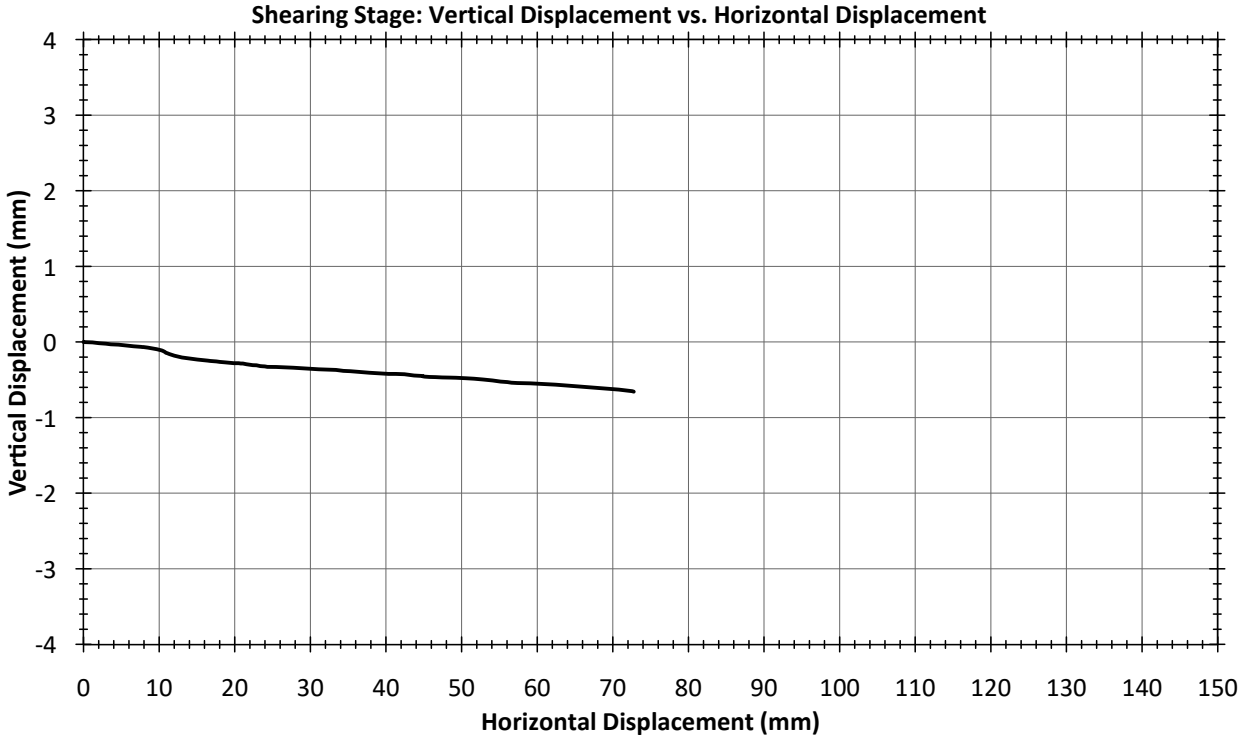

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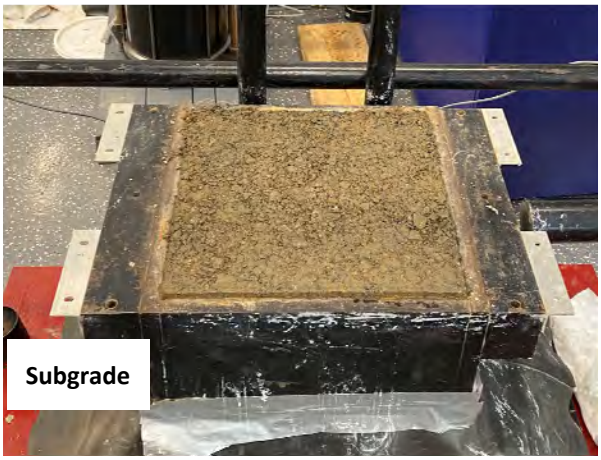
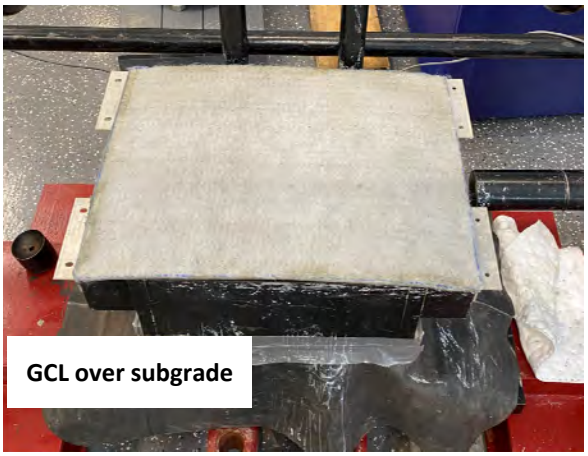


Subgrade



GCL over subgrade



Alignment of GCL and geomembrane before test



Loading direction on GCL



Overliner



Shear box after test

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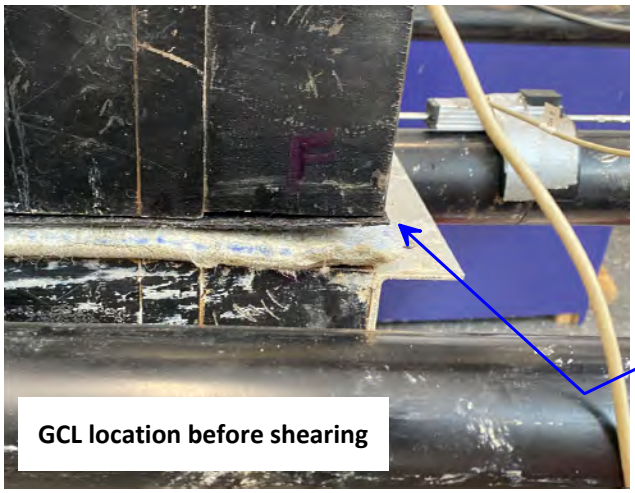
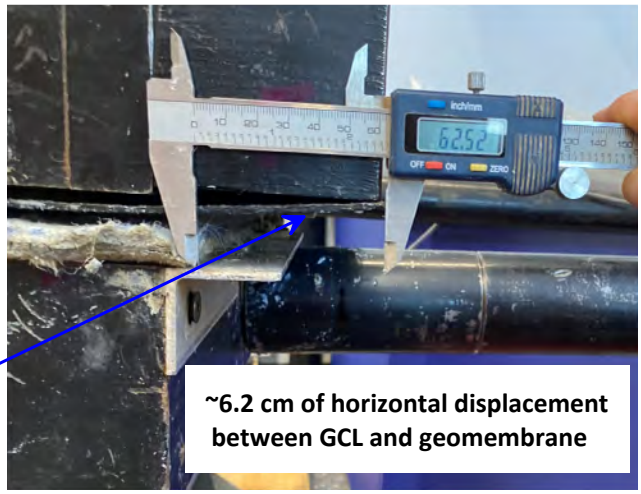


GCL location before shearing



~6.2 cm of horizontal displacement between GCL and geomembrane



~2.8 cm wrinkle in front of GCL



~2.9 cm wrinkle in back the GCL



Subgrade after test



Geomembrane after test

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PROJECT INFORMATION		LINER SYSTEM	
Number	2140-001	Subgrade	Gravel, sandy, trace fines
Name	Forte Dynamics Liner Testing	GCL	GSE BentoLiner NWL-60 GCL
Location	Yukon Territory	Geomembrane	Layfield Enviro Liner 4280 CT
Client	Forte Dynamics Inc.	Overliner	Poorly graded gravel with sand (GP)

INDEX PROPERTIES OF SUBGRADE	Initial
Length and Width (cm)	40.5 x 40.5
Thickness (cm)	15.0
Bulk Density ρ_b (g/cm^3)	2.29
Dry Density ρ_d (g/cm^3)	2.13
Void Ratio e	0.27
Water Content (%)	7.3
Specific Gravity G_s (Assumed)	2.70

INDEX PROPERTIES OF OVERLINER	Initial
Length and Width (cm)	40.5 x 40.5
Thickness (cm)	9.3
Bulk Density ρ_b (g/cm^3)	2.22
Dry Density ρ_d (g/cm^3)	2.10
Void Ratio e	0.24
Water Content (%)	5.8
Specific Gravity G_s (Assumed)	2.60

INDEX PROPERTIES OF GCL	
Initial Average Hydrated Thickness (cm)	1.02
Initial Water Content (%)	190.1
Final Water Content (%)	135.5

SHEARING PARAMETERS	
Vertical Stress σ'_v (kPa)	1200
Displacement Rate (cm/min)	0.17

RESULTS	
τ_{max} (kPa)	285
τ_{res} (kPa)	80

Note: Internal failure was observed in the geosynethetic clay liner (GCL). Displacement between the subgrade and the GCL was observed, along with displacement between the geomembrane and GCL.

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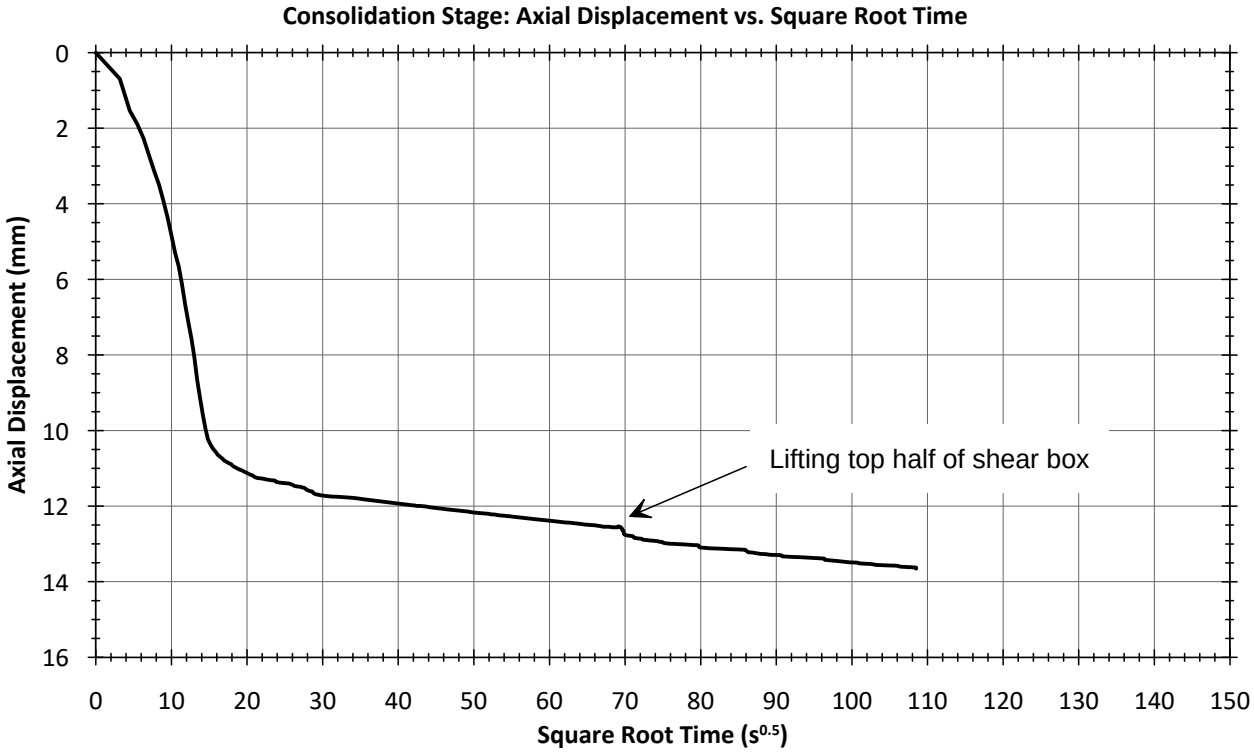

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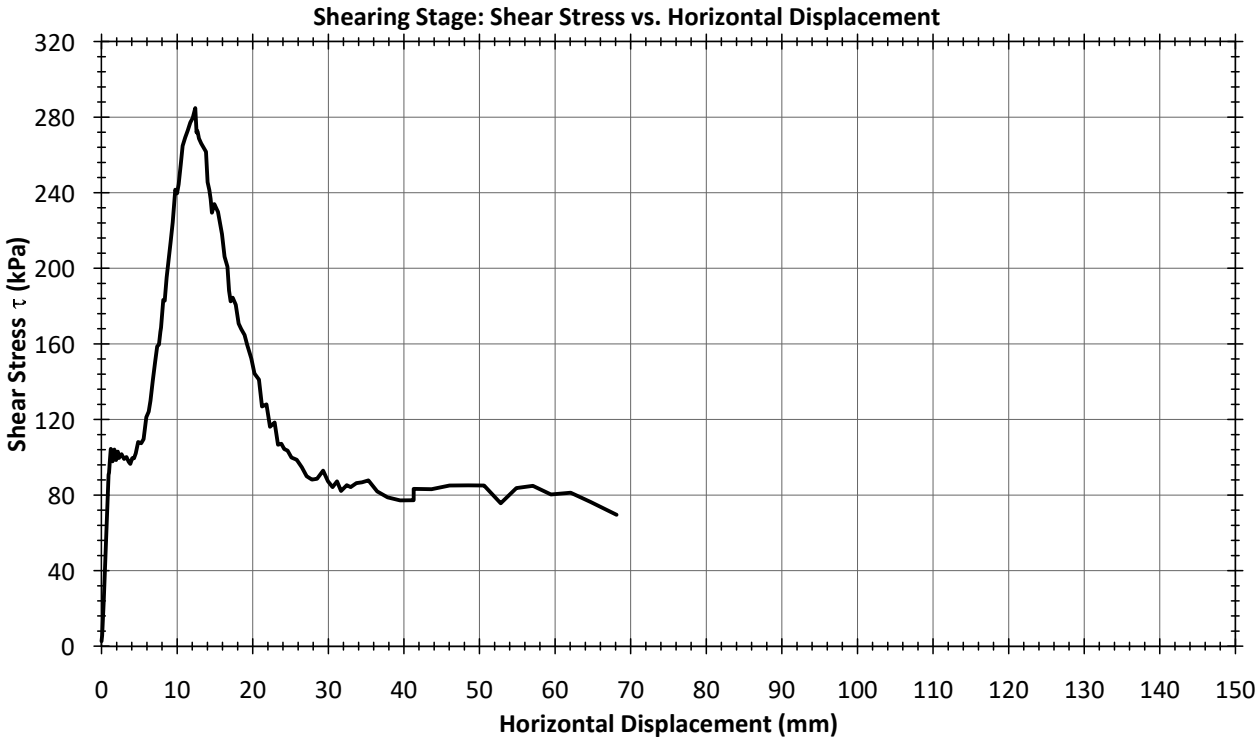

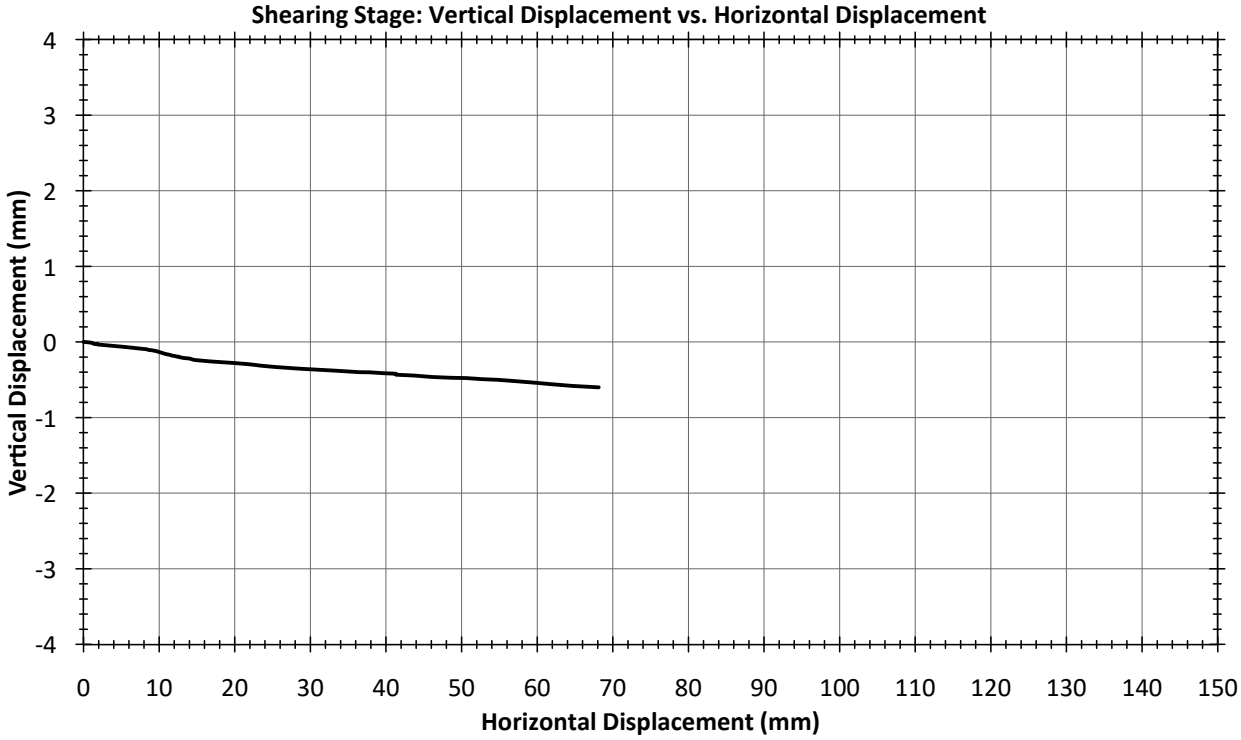

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Date Format (YYYY-MM-DD)



Subgrade



GCL over subgrade



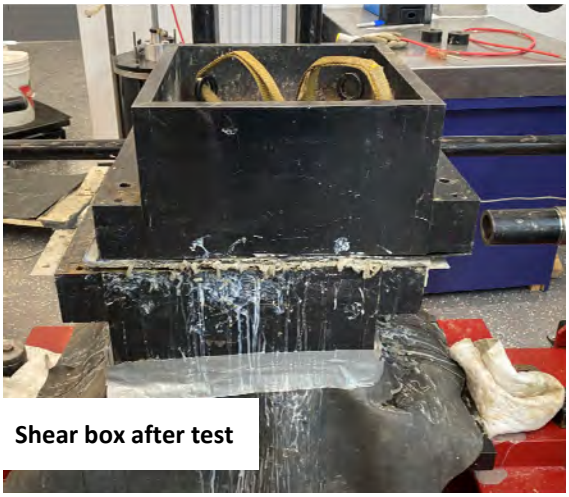
Alignment of GCL and geomembrane before test



Loading direction on GCL



Overliner



Shear box after test

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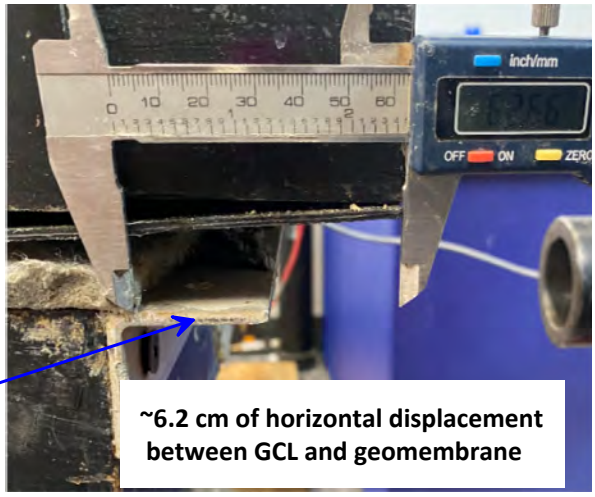
GCL location before shearing



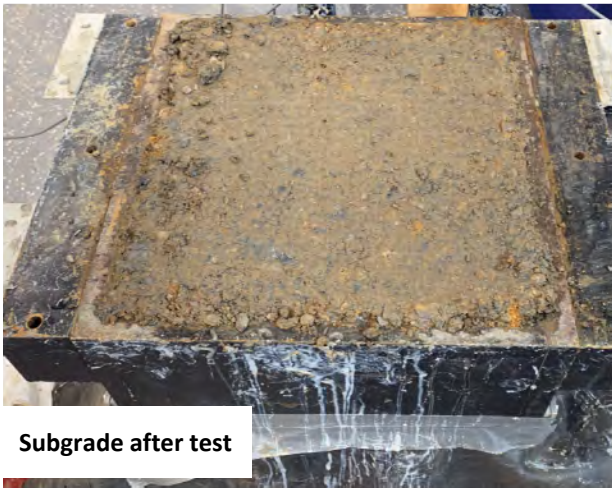
~6.2 cm of horizontal displacement between GCL and geomembrane



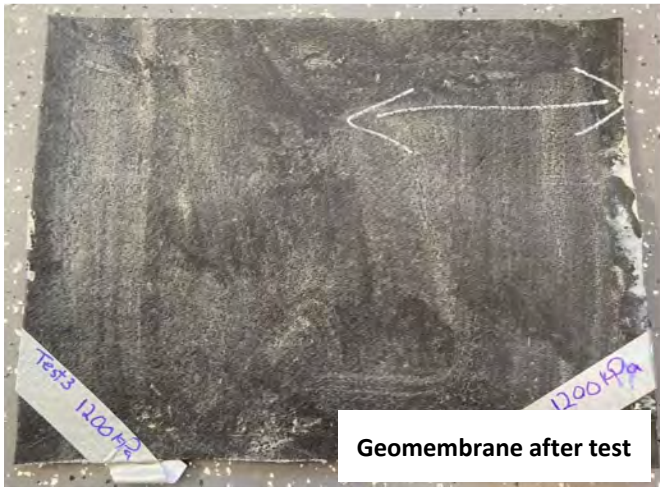
~2.5 cm wrinkle in front of GCL



~3.05 cm wrinkle in back the GCL



Subgrade after test



Geomembrane after test

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Name	Forte Dynamics Liner Testing	GCL	GSE BentoLiner NWL-60 GCL
Location	Yukon Territory	Geomembrane	Layfield Enviro Liner 4280 CT
Client	Forte Dynamics Inc.	Overliner	Poorly graded gravel with sand (GP)

INDEX PROPERTIES OF SUBGRADE	Initial
Length and Width (cm)	40.5 x 40.5
Thickness (cm)	15.5
Bulk Density ρ_b (g/cm^3)	2.32
Dry Density ρ_d (g/cm^3)	2.17
Void Ratio e	0.25
Water Content (%)	7.3
Specific Gravity G_s (Assumed)	2.70

INDEX PROPERTIES OF OVERLINER	Initial
Length and Width (cm)	40.5 x 40.5
Thickness (cm)	15.8
Bulk Density ρ_b (g/cm^3)	2.21
Dry Density ρ_d (g/cm^3)	2.11
Void Ratio e	0.23
Water Content (%)	4.6
Specific Gravity G_s (Assumed)	2.60

INDEX PROPERTIES OF GCL	
Initial Average Hydrated Thickness (cm)	0.72
Initial Water Content (%)	108.9
Final Water Content (%)	86.7

SHEARING PARAMETERS	
Vertical Stress σ'_v (kPa)	800
Displacement Rate (cm/min)	0.48

RESULTS	
τ_{max} (kPa)	302
τ_{res} (kPa)	95

Note: The liner system failed between the geosynethetic clay liner (GCL) and Geomembrane. No failure was observed in the GCL. There was no evidence that any shearing occurred in either the subgrade or overliner.

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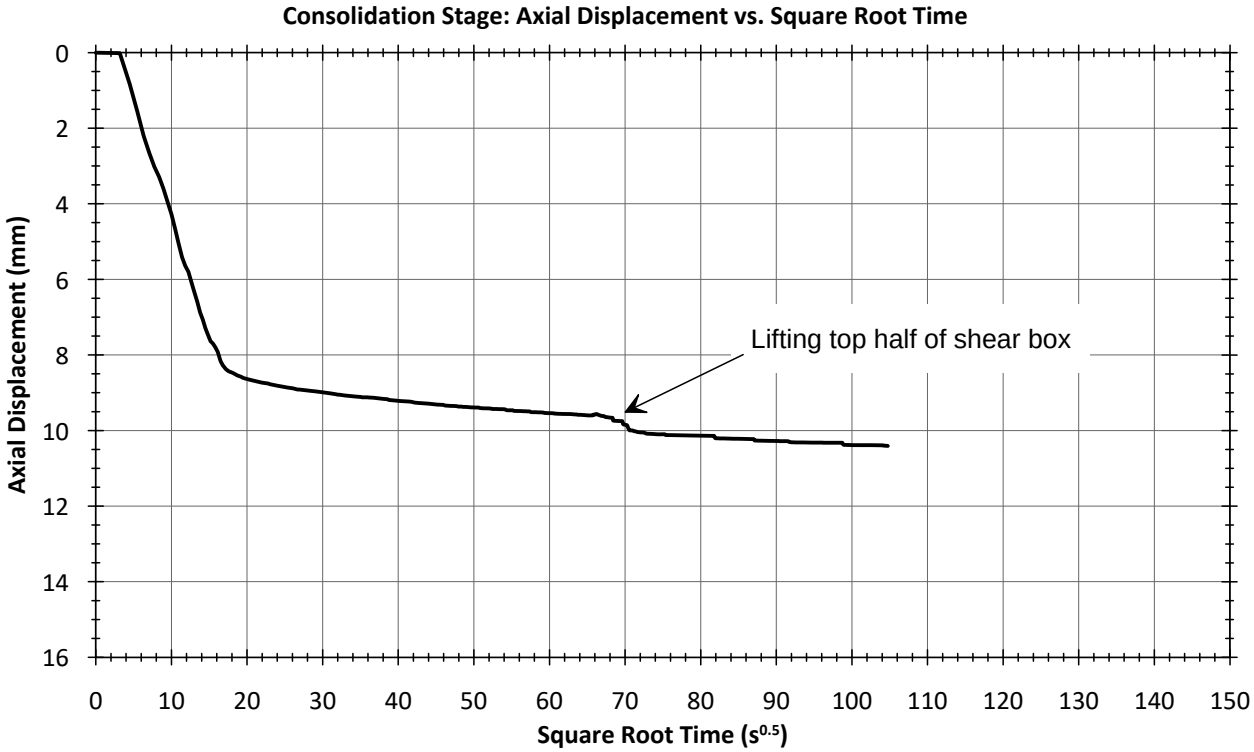
Date Format (YYYY-MM-DD)



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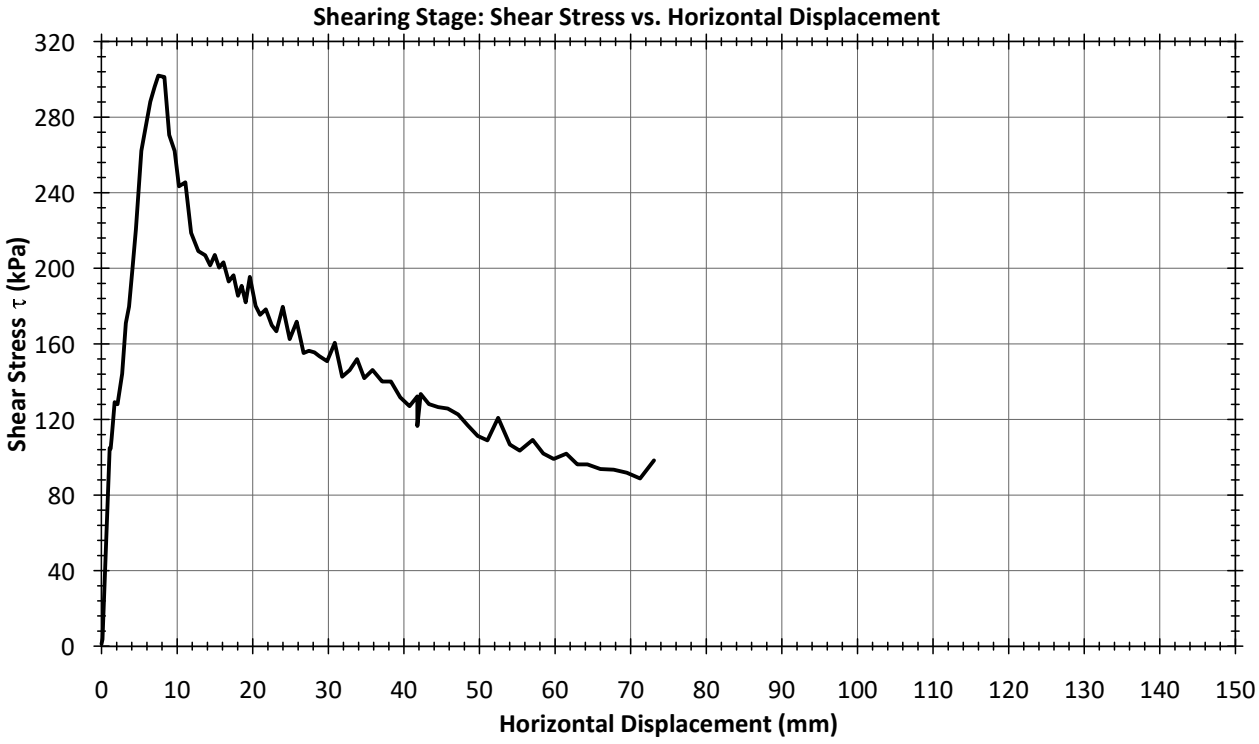

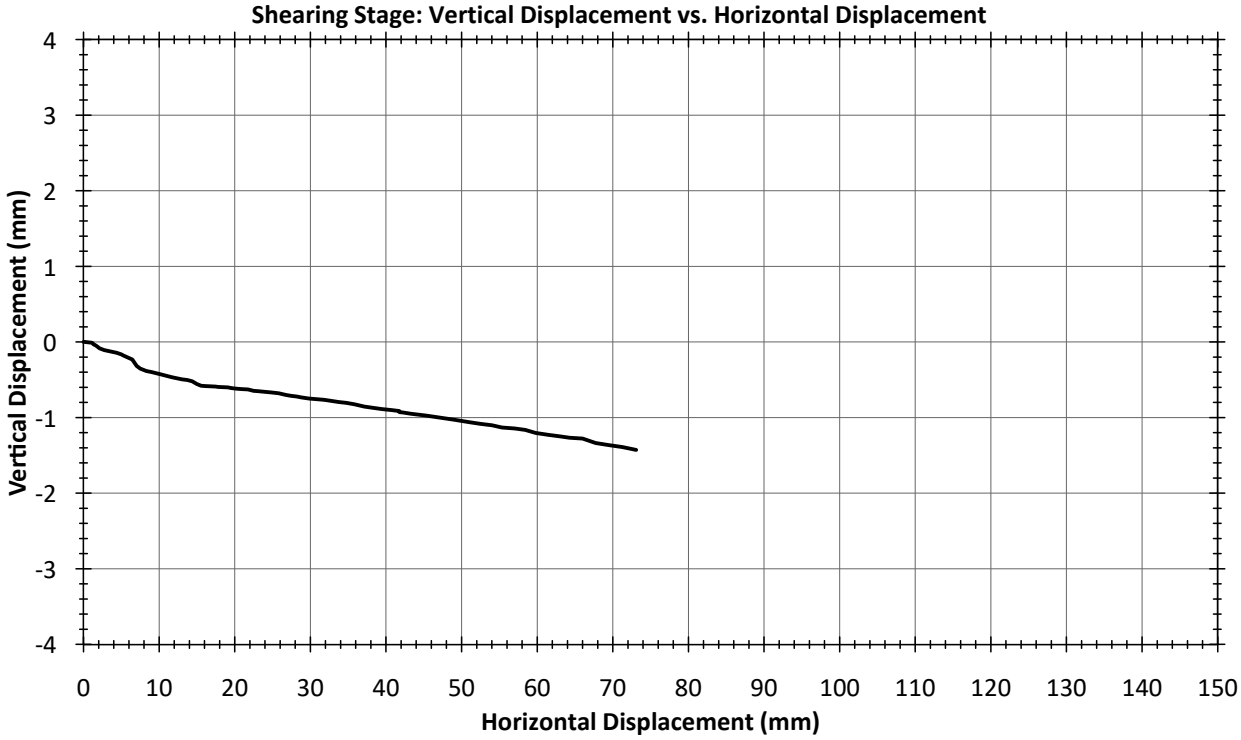

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Subgrade



GCL over subgrade

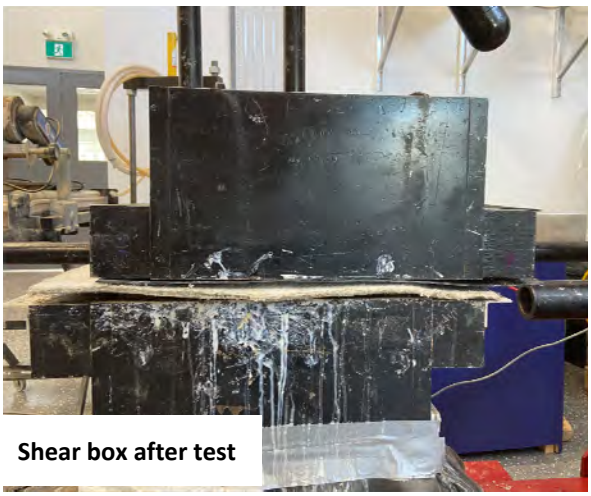


Alignment of GCL and geomembrane before test





Overliner



Shear box after test

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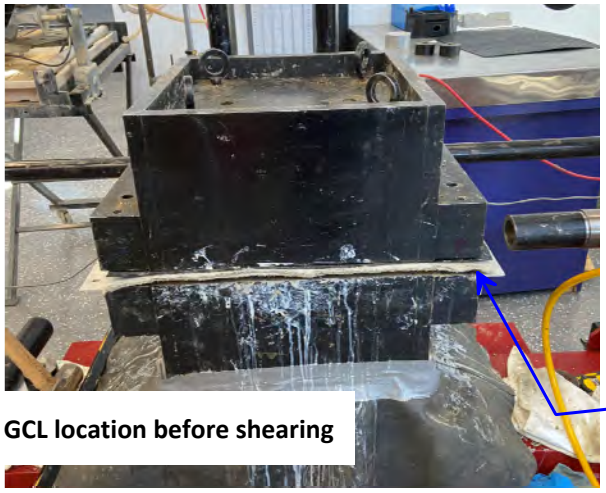
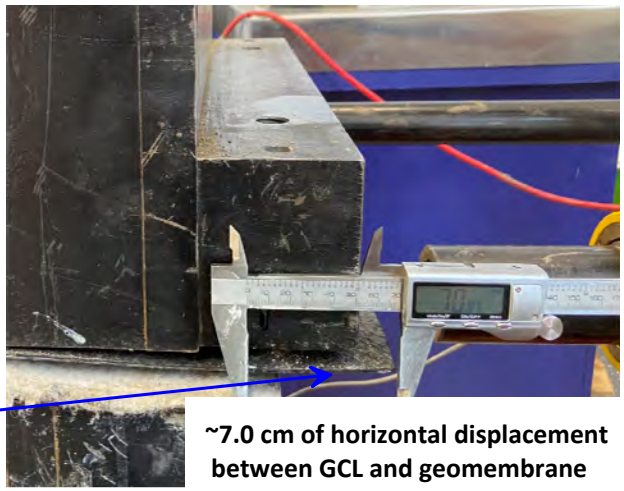
Tested by KS (2020-03-06)
Reviewed by DO (2020-03-09)
Approved by SD (2020-03-17)
Date Format (YYYY-MM-DD)



GCL location before shearing



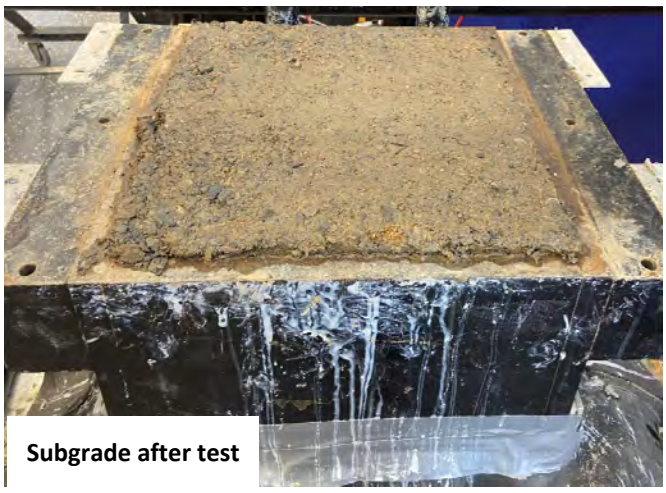
~7.0 cm of horizontal displacement between GCL and geomembrane



No GCL wrinkle on top



No GCL wrinkle on bottom



Subgrade after test



Geomembrane after test

330 Alison Boulevard
Fredericton, NB Canada E3C 0A9
T 506.460.8660 | F 506.460.8679

Tested by KS (2020-03-06)
Reviewed by DO (2020-03-09)
Approved by SD (2020-03-17)
Date Format (YYYY-MM-DD)

PROJECT INFORMATION		LINER SYSTEM	
Number	2140-001	Subgrade	Gravel, sandy, trace fines
Name	Forte Dynamics Liner Testing	GCL	GSE BentoLiner NWL-60 GCL
Location	Yukon Territory	Geomembrane	Layfield Enviro Liner 4280 CT
Client	Forte Dynamics Inc.	Overliner	Poorly graded gravel with sand (GP)

INDEX PROPERTIES OF SUBGRADE	Initial
Length and Width (cm)	40.5 x 40.5
Thickness (cm)	15.1
Bulk Density ρ_b (g/cm^3)	2.30
Dry Density ρ_d (g/cm^3)	2.17
Void Ratio e	0.25
Water Content (%)	6.1
Specific Gravity G_s (Assumed)	2.70

INDEX PROPERTIES OF OVERLINER	Initial
Length and Width (cm)	40.5 x 40.5
Thickness (cm)	12.0
Bulk Density ρ_b (g/cm^3)	2.16
Dry Density ρ_d (g/cm^3)	2.03
Void Ratio e	0.28
Water Content (%)	6.5
Specific Gravity G_s (Assumed)	2.60

INDEX PROPERTIES OF GCL	
Initial Average Hydrated Thickness (cm)	0.71
Initial Water Content (%)	95.5
Final Water Content (%)	82.0

SHEARING PARAMETERS	
Vertical Stress σ'_v (kPa)	1200
Displacement Rate (cm/min)	0.35

RESULTS	
τ_{max} (kPa)	462
τ_{res} (kPa)	130

Note: The liner system failed between the geosynethetic clay liner (GCL) and Geomembrane. No failure was observed in the GCL. There was no evidence that any shearing occurred in either the subgrade or overliner.

330 Alison Boulevard
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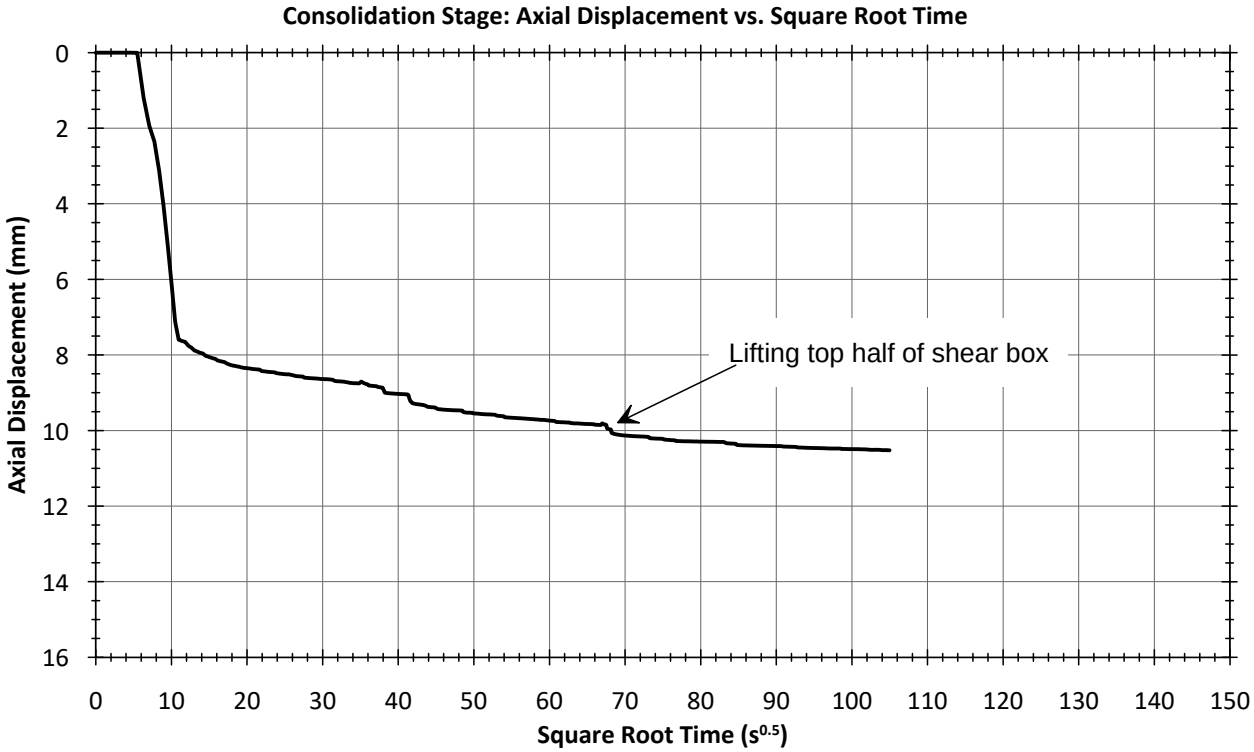
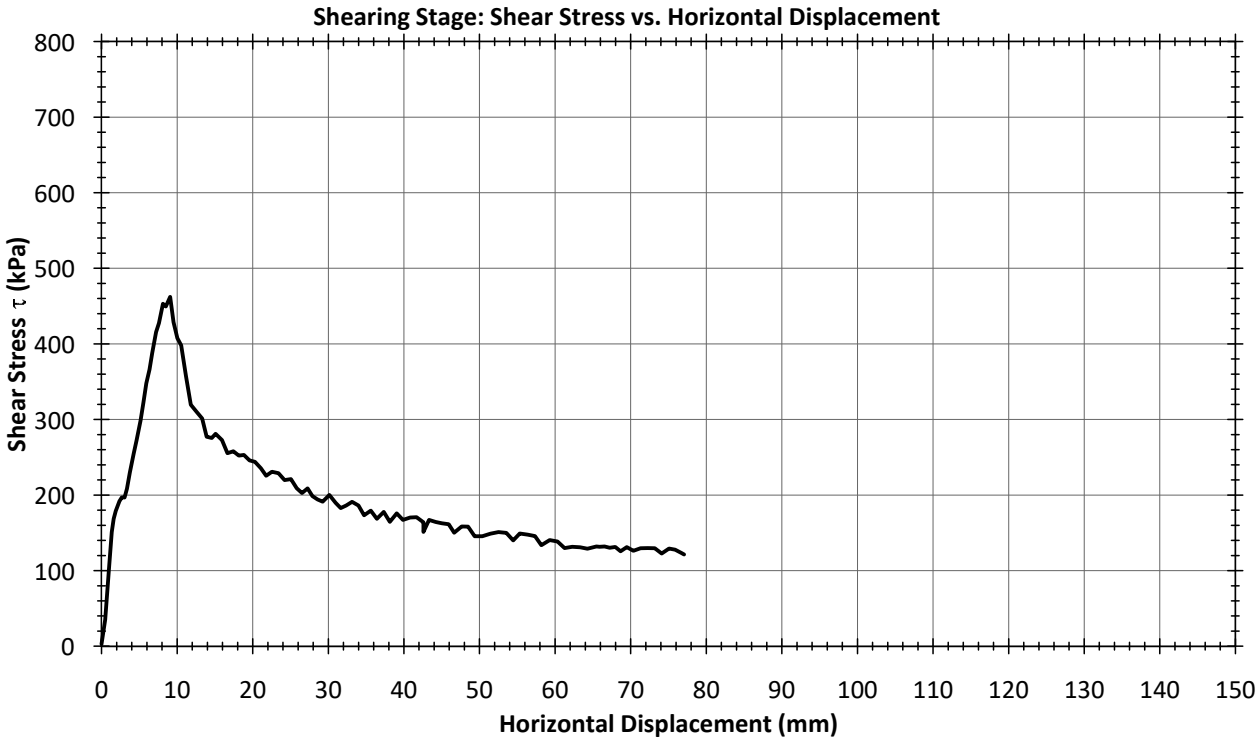
Tested by KS (2020-03-11)
Reviewed by DO (2020-03-13)
Approved by SD (2020-03-17)
Date Format (YYYY-MM-DD)

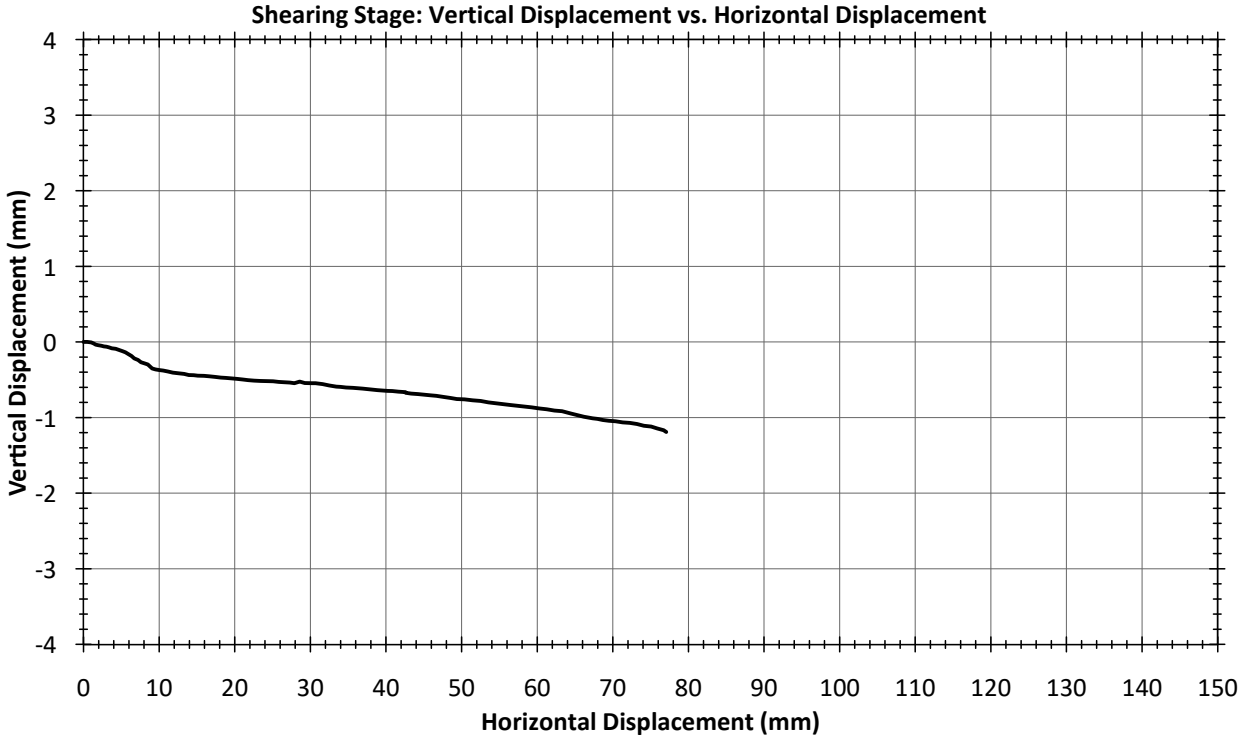


330 Alison Boulevard
Fredericton, NB Canada E3C 0A9
T 506.460.8660 | F 506.460.8679

Tested by KS (2020-03-11)
Reviewed by DO (2020-03-13)
Approved by SD (2020-03-17)
Date Format (YYYY-MM-DD)

BGC ENGINEERING INC.
AN APPLIED EARTH SCIENCES COMPANY





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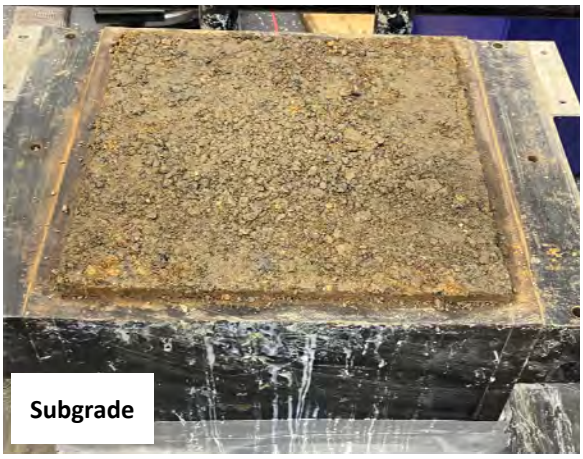


Subgrade



GCL over subgrade



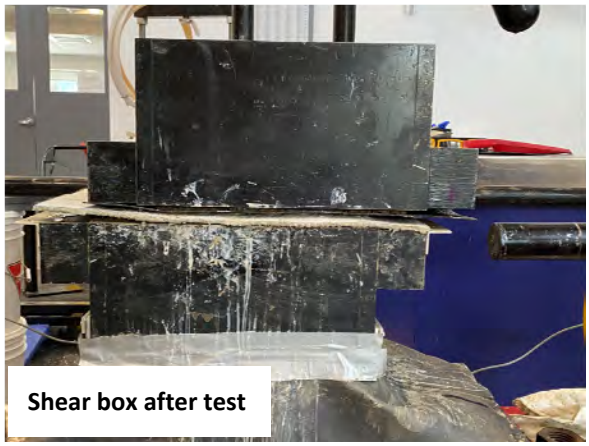
Alignment of GCL and geomembrane before test



Loading direction on GCL



Overliner



Shear box after test

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Fredericton, NB Canada E3C 0A9
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Tested by KS (2020-03-11)
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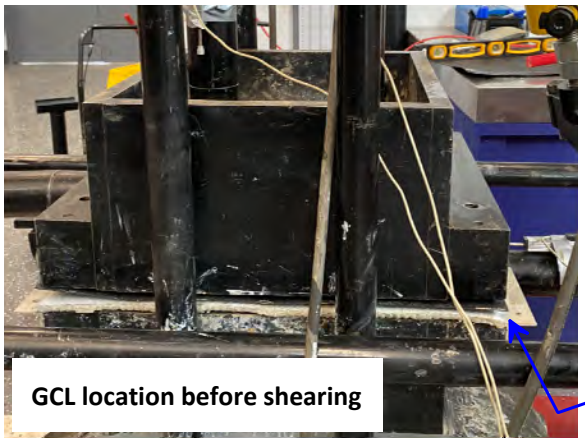
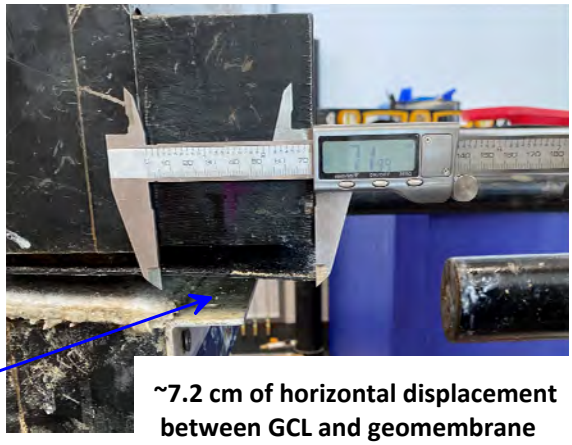
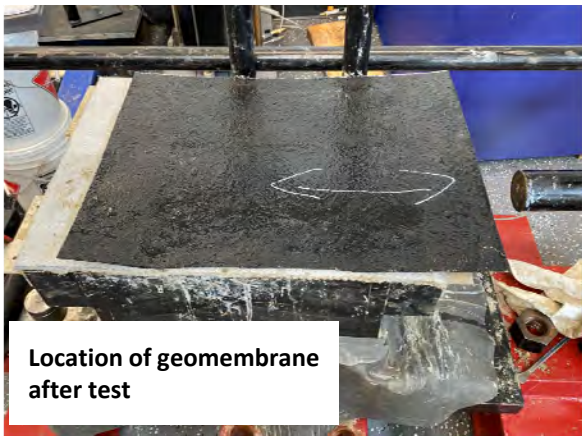


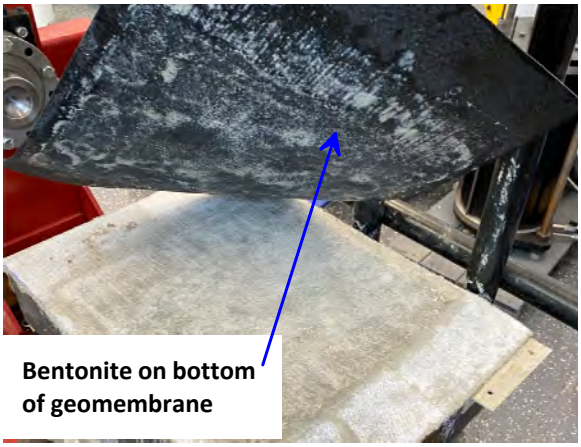
GCL location before shearing



~7.2 cm of horizontal displacement between GCL and geomembrane



Location of geomembrane after test



Bentonite on bottom of geomembrane



Subgrade after test



No wrinkles in GCL

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PROJECT INFORMATION		LINER SYSTEM	
Number	2140-001	Subgrade	Gravel, sandy, trace fines
Name	Forte Dynamics Liner Testing	GCL	GSE BentoLiner NWL-60 GCL
Location	Yukon Territory	Geomembrane	Layfield Enviro Liner 4280 CT
Client	Forte Dynamics Inc.	Overliner	Poorly graded gravel with sand (GP)

INDEX PROPERTIES OF SUBGRADE	Initial
Length and Width (cm)	40.5 x 40.5
Thickness (cm)	15.1
Bulk Density ρ_b (g/cm^3)	2.30
Dry Density ρ_d (g/cm^3)	2.17
Void Ratio e	0.24
Water Content (%)	6.1
Specific Gravity G_s (Assumed)	2.70

INDEX PROPERTIES OF OVERLINER	Initial
Length and Width (cm)	40.5 x 40.5
Thickness (cm)	10.6
Bulk Density ρ_b (g/cm^3)	2.22
Dry Density ρ_d (g/cm^3)	2.08
Void Ratio e	0.25
Water Content (%)	6.5
Specific Gravity G_s (Assumed)	2.60

INDEX PROPERTIES OF GCL	
Initial Average Hydrated Thickness (cm)	0.75
Initial Water Content (%)	106.7
Final Water Content (%)	95.8

SHEARING PARAMETERS	
Vertical Stress σ'_v (kPa)	400
Displacement Rate (cm/min)	0.30

RESULTS	
τ_{max} (kPa)	172
τ_{res} (kPa)	75

Note: The liner system failed between the geosynethetic clay liner (GCL) and Geomembrane. No failure was observed in the GCL. There was no evidence that any shearing occurred in either the subgrade or overliner.

330 Alison Boulevard
Fredericton, NB Canada E3C 0A9
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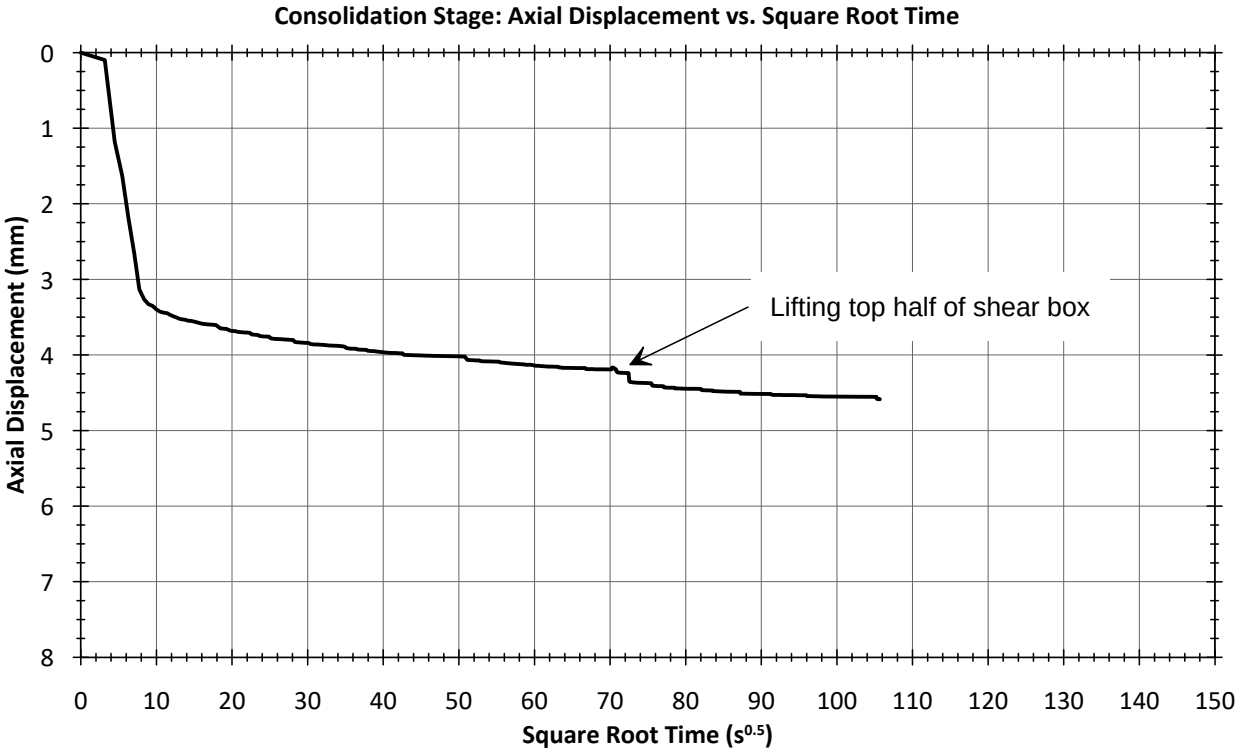
Tested by DO (2020-03-13)
Reviewed by KS (2020-03-16)
Approved by SD (2020-03-17)
Date Format (YYYY-MM-DD)



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Approved by SD (2020-03-17)
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BGC ENGINEERING INC.
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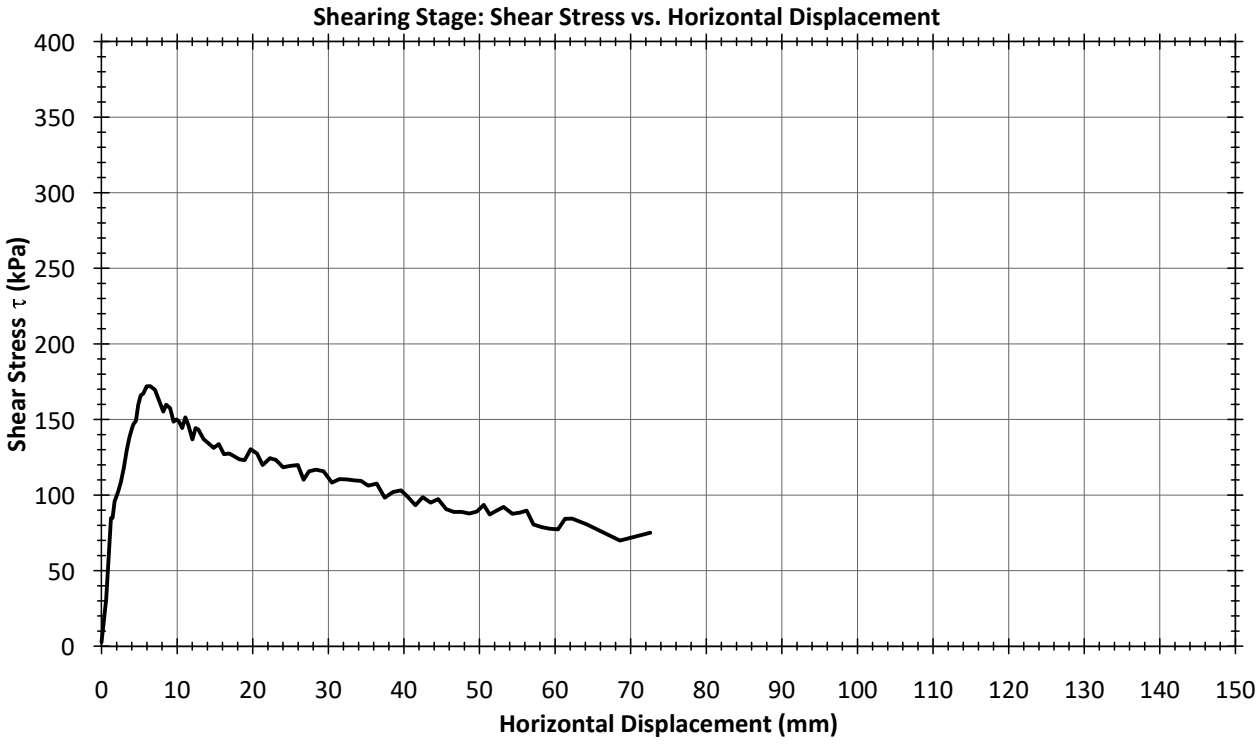

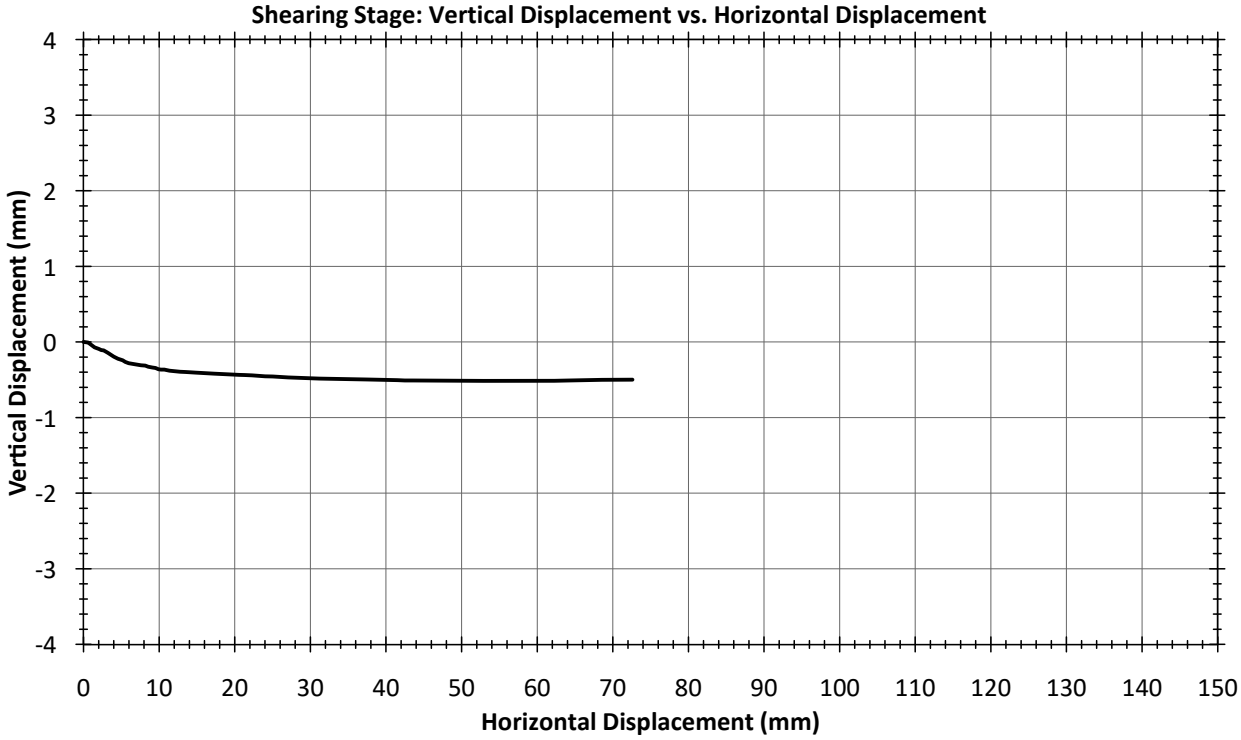

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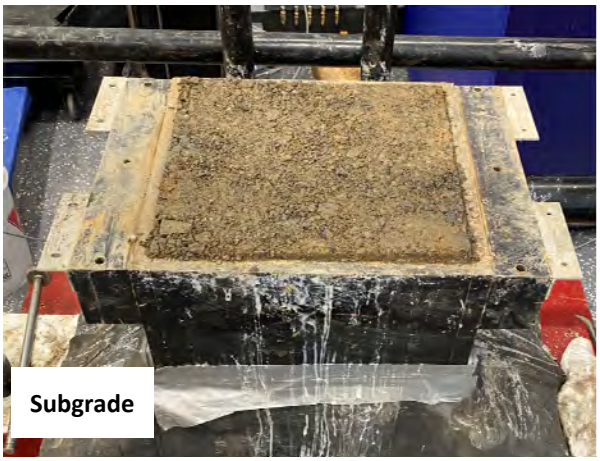


Subgrade



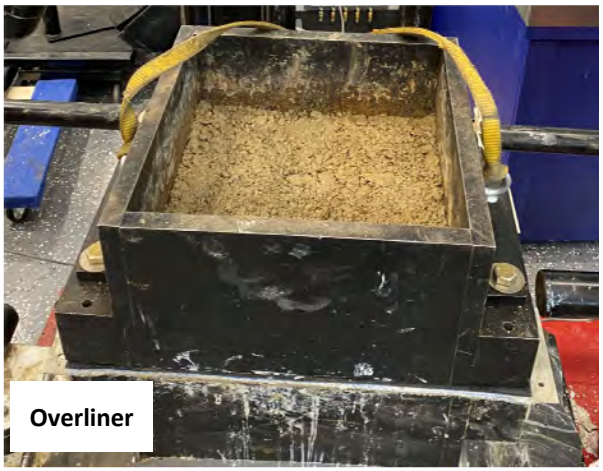
GCL over subgrade



Alignment of GCL and geomembrane before test



Loading direction on GCL



Overliner



Shear box after test

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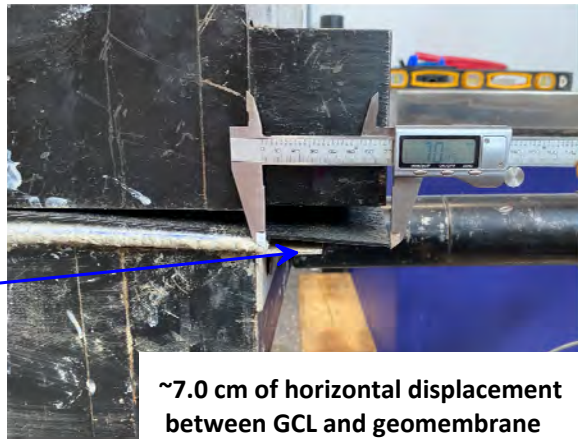
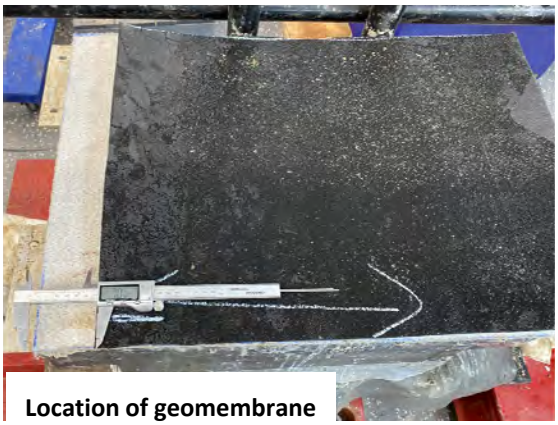
Approved by SD (2020-03-17)
Date Format (YYYY-MM-DD)



GCL location before shearing



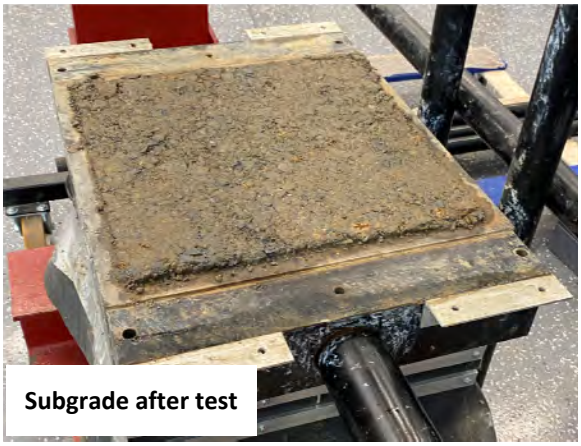
~7.0 cm of horizontal displacement between GCL and geomembrane



Location of geomembrane after test



Bentonite on bottom of geomembrane



Subgrade after test



No wrinkles in GCL

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BGC ENGINEERING INC.
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PARTICLE-SIZE DISTRIBUTION (GRADATION) OF SOILS
ASTM D6913
ASTM D7928

PROJECT INFORMATION

Project No.	2140-001
Project Name	Forte Dynamics Liner Testing
Project Location	Yukon Territory
Client	Forte Dynamics Inc.

SAMPLE INFORMATION

Borehole / Test Pit	-
Sample ID	Overliner
Sample Depth	0.00 m
Sample Type	Grab

GRADATION SUMMARY

Coarser than Gravel (%)	0
Gravel (%)	81
Sand (%)	15
Fines (%)	4
D_{60} (mm)	14.700
D_{30} (mm)	8.360
D_{10} (mm)	1.300
C_c	3.6
C_u	11

RESULTS

Size (mm)	Passing (%)	Size (mm)	Passing (%)
75	100.0		
50	100.0		
37.5	100.0		
25.0	95.5		
19.0	76.0		
9.5	32.5		
4.75	18.9		
2.00	11.8		
0.850	8.2		
0.425	6.3		
0.250	5.3		
0.150	4.5		
0.106	4.0		
0.075	3.5		

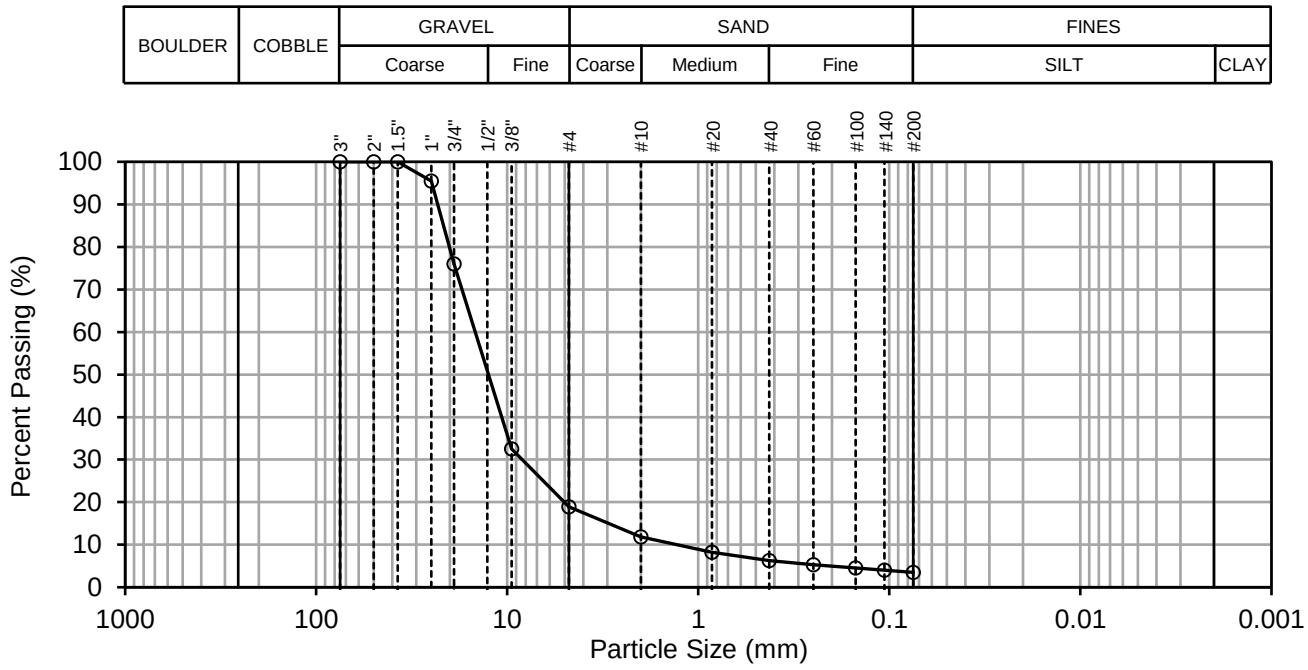
LABORATORY COMMENTS

PREPARATION METHOD

Oven dried

USCS DESCRIPTION (ASTM D2487)

Poorly graded gravel with sand (GP)



330 Alison Boulevard
Fredericton, NB Canada E3C 0A9
T 506.460.8660 | F 506.460.8679

Tested by D.Oldford (2020-02-14)
Reviewed by M.Billings (2020-03-13)
Approved by S.Dickinson (2020-03-17)
Date Format (YYYY-MM-DD)

BGC ENGINEERING INC.
AN APPLIED EARTH SCIENCES COMPANY

PARTICLE-SIZE DISTRIBUTION (GRADATION) OF SOILS
ASTM D6913
ASTM D7928

PROJECT INFORMATION

Project No.	2140-001
Project Name	Forte Dynamics Liner Testing
Project Location	Yukon Territory
Client	Forte Dynamics Inc.

SAMPLE INFORMATION

Borehole / Test Pit	-
Sample ID	Subgrade
Sample Depth	0.00 m
Sample Type	Grab

GRADATION SUMMARY

Coarser than Gravel (%)	0
Gravel (%)	58
Sand (%)	32
Fines (%)	10
D_{60} (mm)	10.300
D_{30} (mm)	2.210
D_{10} (mm)	0.079
C_c	6
C_u	130

RESULTS

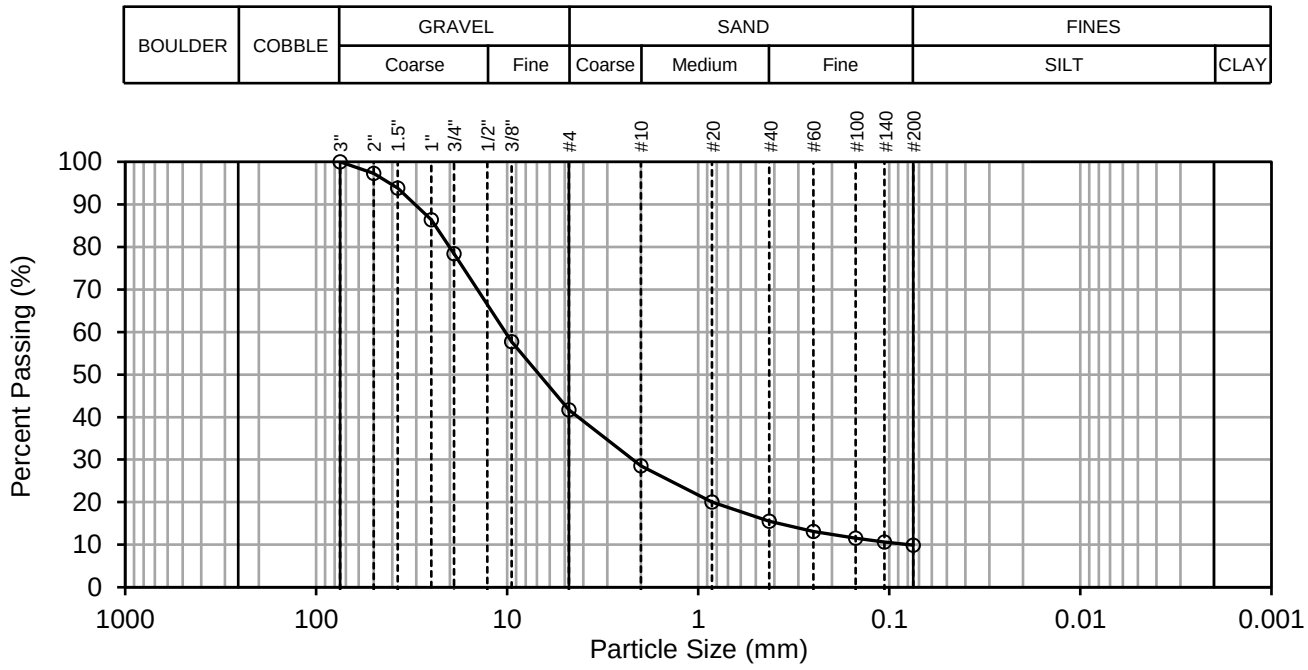
Size (mm)	Passing (%)	Size (mm)	Passing (%)
75	100.0		
50	97.3		
37.5	93.8		
25.0	86.4		
19.0	78.4		
9.5	57.7		
4.75	41.7		
2.00	28.5		
0.850	20.0		
0.425	15.5		
0.250	13.1		
0.150	11.5		
0.106	10.6		
0.075	9.9		

LABORATORY COMMENTS

PREPARATION METHOD

Oven dried

USCS DESCRIPTION (ASTM D2487)



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BGC ENGINEERING INC.
AN APPLIED EARTH SCIENCES COMPANY

LABORATORY COMPACTION CHARACTERISTICS OF SOIL USING STANDARD EFFORT
ASTM D698

PROJECT INFORMATION	
Project No.	2140-001
Project Name	Forte Dynamics Liner Testing
Project Location	Yukon Territory
Client	Forte Dynamics Inc.

SAMPLE INFORMATION	
Borehole / Test Pit	-
Sample ID	Subgrade
Sample Depth	0.00 m
Sample Type	Grab

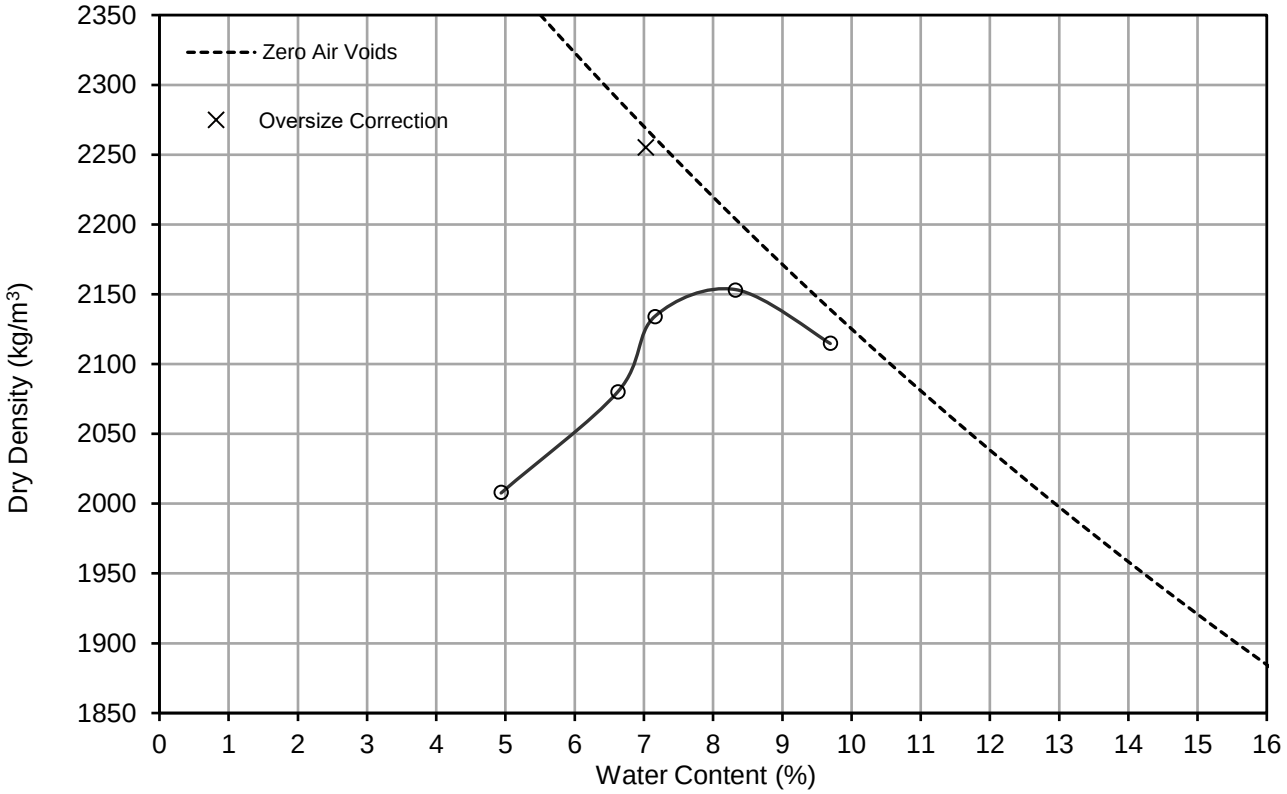
TEST INFORMATION	
Method Used	C
Preparation Method	Dry
Type of Rammer	Manual

SAMPLE PROPERTIES	
Percent Retained on 19 mm Sieve (%)	22
Percent Passing 19 mm Sieve (%)	78
As Received Water Content (%)	4.7
Specific Gravity (Assumed)	2.70

TRIAL RESULTS

Trial Number	1	2	3	4	5	6
Dry Density (kg/m^3)	2008	2080	2134	2153	2115	-
Water Content (%)	4.9	6.6	7.2	8.3	9.7	-

PROCTOR TEST RESULTS	AS TESTED	OVERSIZE CORRECTION
Maximum Dry Density (kg/m^3)	2153	2255
Optimum Water Content (%)	8.3	7.0



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Tested by D.Oldford (2020-02-19)
Reviewed by M.Billings (2020-03-13)
Approved by S.Dickinson (2020-03-17)
Date Format (YYYY-MM-DD)

APPENDIX C
BGC's STANDARD TERMS AND CONDITIONS

AGREEMENT FOR LABORATORY TESTING SERVICES

Dated as of this 21 day of February, 2020, is made by and between:

Client: Forte Dynamics ("the **Client**"),

Address: 3003 E. Harmony Road, Suite 320
Fort Collins, Co 80528

AND:

BGC ENGINEERING INC. ("**BGC**")
Suite 500 – 980 Howe Street
Vancouver BC, V6Z 0C8
Canada

The Client and BGC agree as follows:

1. THE LABORATORY SERVICES

1.1 BGC will provide Client certain Laboratory Services (as defined below) for the following project:

(Insert brief description of the project (the "Project").

1.2 The Laboratory Services BGC will provide Client for the Project are either described below, or are described in the following document: SEE ATTACHED SCOPE OF WORK FOR LINER INTERFACE SHEAR

(Either add a description of the lab testing work BGC will perform, or insert the date and description/title of a document that contains the scope of work. Note whether the document is attached to this Agreement – e.g., see attached Proposal for Laboratory Services dated September 24, 2019) (the "Scope of Services Document")

2. AGREEMENT DOCUMENTS

2.1 The following documents form part of and are incorporated into this Agreement:

- This *Agreement For Laboratory Testing Services*
- Definitions
- General Conditions
- Scope of Services Document

If there is any conflict or inconsistency between or among the documents listed above, then the provision in the document listed closer to the top of the list will prevail.

[Rest of page intentionally blank. Signature page follows.]

3. SUCCESSION

3.1 This Agreement will inure to the benefit of and be binding upon the Parties, and their respective administrators, successors, and permitted assigns.

IN WITNESS THEREOF, the Parties hereto have executed this Agreement as of the day and year indicated on page one of this Agreement.

CLIENT: Forte Dynamics

ACCEPTED FOR **CLIENT** by:

(signature)

Name: Clint Green
(print)

Title: Principal Engineer

Date: Feb. 21, 2020

BGC ENGINEERING INC.

ACCEPTED FOR **BGC ENGINEERING INC.** by:

(signature)

Name: SIMON DICKINSON
(print)

Title: CTO

Date: Feb 22, 2020.

DEFINITIONS

In addition to any other terms defined elsewhere in this Agreement, the following terms have the meanings set forth below when capitalized and used in this Agreement:

"**Affiliate**" means any Person which directly or indirectly controls, is controlled by, or is under common control with, a Party to this Agreement. For purposes of the preceding sentence, "**control**" means the power to direct or manage affairs through ownership of voting securities, contract, voting trust, or any other means.

"**BGC**" means BGC Engineering Inc., a British Columbia, Canada corporation.

"**BGC Group**" refers collectively to BGC, BGC's Affiliates, BGC's sub-contractors, BGC's sub-consultants, and each of their respective Personnel.

"**Claim**" means any claim, action, legal proceeding, lawsuit, claim through arbitration, or other cause of action of any kind, including third party claims for contribution or indemnity.

"**Client**" means the Person identified as the "Client" in the *Agreement For Laboratory Testing Services*.

"**Client Group**" refers collectively to Client and Client's Affiliates.

"**Damages**" means any of the following: damages, losses, liabilities, costs, expenses, arbitration awards, penalties, fines, or assessments.

"Laboratory Services" means the laboratory testing and analysis that BGC performs for Client on one or more Samples, as well as the preparation of any Work Product related to such testing and analysis.

"Party" refers to either of BGC or Client, and **"Parties"** refers to both of BGC and Client.

"Person" means, as applicable, a natural person or an entity, including a partnership, corporation, company, limited liability company, joint venture, trust, government agency, unincorporated organization or other form of entity.

"Personnel" means current, former and future directors, officers, employees, shareholders, agents, and representatives.

"Sample" means any specimen of soil, rock, material, or other substance that BGC evaluates or tests for Client pursuant to the terms of this Agreement.

"Third Party" means any Person other than a member of BGC Group or a member of Client Group.

"Work Product" means any report or deliverable that BGC generates in connection with the Laboratory Services.

GENERAL CONDITIONS

1. STANDARD OF CARE

BGC will perform the Laboratory Services in accordance with the prevailing standard of care, skill, and diligence ordinarily exercised by a consulting engineering firm when performing similar services under comparable circumstances at the same or a similar location. BGC provides no other warranty, guarantee, representation, or covenant with respect to the Laboratory Services, either express or implied.

2. COMPENSATION

2.1 BGC will charge Client for the Laboratory Services in accordance with *BGC's Schedule of Fees and Disbursements,* as updated from time to time. Unless otherwise agreed, all charges are payable in Canadian Dollars (CAD). or US Dollars,

2.2 BGC may charge Client for any applicable sales taxes, value-added taxes, import duty, and any other transactional taxes arising, accruing, or collectable with respect to the Laboratory Services. The Client bears all costs and risks of carrying out customs formalities related to the Samples, including but not limited to payment of duties, taxes, and import fees before the Samples are delivered to BGC's laboratory.

2.3 Invoices are due and payable by the Client within thirty (30) days of the invoice date.

3. RIGHT OF ENTRY AND PROJECT INFORMATION

3.1 On a timely basis, the Client shall permit, or arrange for permission, for the BGC Group to enter onto and pass over all properties to which access is necessary for the Laboratory Services. However, BGC will only visit the Project site if both Parties agree that it is necessary for BGC to do so.

3.2 The Client shall promptly provide BGC all available documents, data, and other information relevant to either the Samples or the Laboratory Services. BGC may assume that all documents, information, and data provided to BGC by the Client, the Client's Personnel or the Client's other consultants are accurate and complete. The Client will immediately notify BGC if any such document, data, or information changes or is discovered to be incomplete or unreliable.

4. SCOPE OF WORK

4.1 The Scope of Services Document will specify the scope and nature of Laboratory Services (including the applicable testing standards) that BGC will perform on a Sample. BGC is only required to prepare a report as part of the Laboratory Services if the Scope of Services Document states that BGC will prepare a report. Otherwise, BGC may only provide the raw data resulting from any tests performed during the Laboratory Services.

4.2 If BGC and the Client do not confirm in writing the scope and nature of Laboratory Services that BGC is required to perform on a Sample, then BGC may perform such tests and analyses as BGC deems appropriate, based on information the Client previously provided BGC.

4.3 Unless BGC expressly agrees otherwise in writing, BGC is not required to evaluate the Samples for pollution, radioactivity, volatile organic compounds, or toxicity. Client must notify BGC immediately if Client determines or suspects that any Sample may contain unsafe levels of pollution, radioactivity, volatile organic compounds, or toxicity.

4.4 BGC is committed to the safety of its Personnel. BGC complies with occupational safety and environmental protection codes. To safely conduct the Laboratory Services, BGC requires compliance with the conditions listed below. Failure to comply with those conditions will cause delay or refusal of a Sample delivery:

4.4.1 A Safety Data Sheet (SDS) must accompany all Samples. At a minimum, the SDS must provide the following information for all Samples:

a. Responsible Person and phone number
b. Chemical name (for mixtures list percentage composition)
c. Specific gravity, appearance, color and odor
d. Explosion hazards or reactivity
e. Health hazards
f. Personal protective equipment and any special procedures required for safe handling.

4.4.2 If any material in a Sample is known or suspected to be carcinogenic, radioactive, pathogenic, infectious, or extremely hazardous, then Client must email the SDS for the Sample to BGC at least five (5) business days before Client intends to ship the Sample to BGC. BGC may decline to accept or test any such Sample.

4.4.3 All samples must be transported in suitable containers not larger than ten (10) gallons unless BGC approves another sample size and appropriate container.

4.5 Unless BGC expressly agrees otherwise in writing, BGC is not responsible for either: (a) collecting or gathering any Samples; (b) shipping or handling for any Samples while in transit to BGC's laboratory testing facility; or (c) any loss, damage, or deterioration of any Samples while in transit to BGC's laboratory testing facility.

4.6 Client is solely responsible, at the Client's expense, for: (a) properly collecting the Samples, (b) appropriately labelling the Samples, and (c) carefully shipping the Samples to BGC's laboratory facility.

4.7 **Client acknowledges that Samples may not be fully representative of the Project's actual site conditions. Project site conditions may vary from place to place. BGC does not represent, warrant or guarantee that the results of the Laboratory Services will provide a full, complete, or representative summary of actual Project site conditions.**

4.8 Unless the Parties agree otherwise in writing, BGC may destroy or permanently dispose of any Sample one hundred eighty (180) days after BGC first receives the Sample. Until BGC is permitted to dispose of a Sample, BGC will make reasonable efforts to follow accepted industry practice for storing the Sample. If BGC agrees to return a Sample to Client, then Client will reimburse BGC for all costs incurred to do so. A disposal fee will apply if BGC is required to dispose of a Sample.

5. INTELLECTUAL PROPERTY

5.1 BGC retains sole and exclusive ownership of all right, title, and interest for, in, and to all inventions, software, programs, processes, innovations, and other intellectual property in any form that BGC creates, invents, conceives of, or acquires while performing the Laboratory Services or as a result of the Laboratory Services.

6. WORK PRODUCT

6.1 Only qualified geotechnical experts should review and interpret the Work Product. BGC will not be responsible or liable for any Claims or Damages arising from any misinterpretation of the Work Product.

6.2 BGC is entitled to retain a file copy of any Work Product and all documents the Client provides BGC.

6.3 The Client agrees to use the Work Product solely for the specific purpose(s) for which BGC prepared or disclosed such Work Product. Any alteration or other use of Work Product not authorized by BGC shall be at the Client's sole risk.

7. INSURANCE

BGC shall carry the following insurance:

a. Such coverage as may be required pursuant to applicable Worker's Compensation legislation, or satisfactory employer's liability insurance;

b. Commercial general liability insurance for bodily injury and property damages in the amount of Two Million Canadian Dollars ($2,000,000.00 CAD) per occurrence and in the aggregate; and

c. Professional liability insurance, which insures BGC against liability arising from negligent acts, errors, and omissions in BGC's professional services, in the amount of Five Hundred Thousand Canadian Dollars ($500,000.00 CAD) per claim and in the aggregate.

8. ABSOLUTE LIMIT OF LIABILITY

8.1 Claims by Client Group

8.1.1 The absolute maximum aggregate liability of the BGC Group, or any of them, to the Client Group for Claims or Damages arising out of the Laboratory Services or related in any way to the Project shall not exceed **TWO HUNDRED FIFTY THOUSAND CANADIAN DOLLARS ($250,000.00 CAD)**. For greater certainty, this liability limitation applies whether all or any of the Client Group bring one or more Claims against all or any of BGC Group in any way related to this Agreement, the Project, or the Laboratory Services. This limit of liability shall apply to all Claims and Damages including, but not limited to, those arising due to breach of contract, tort, negligence, negligent misrepresentation, errors, omissions, breach of warranty, strict liability, breach of any statutory or regulatory requirement, or under any other theory of recovery or liability at law or in equity.

8.1.2 The Client, for itself and as agent for and on behalf of the other entities of the Client Group, hereby releases the BGC Group, and each of them, from any and all past, present and future liability for Claims or Damages arising from the Laboratory Services or the Project in excess of $250,000.00 CAD.

8.1.3 The Client confirms and expressly acknowledges that it has authority to act as agent for the other entities in the Client Group for the purposes of providing the liability limitation and release noted above.

8.1.4 The Client waives and releases any right to assert any Claims against the individual Personnel of either BGC, BGC's Affiliates, or BGC's subcontractors, even if Claims or Damages arise due to the negligence, errors, omissions, or other fault of such individuals.

8.2 Claims by Third Parties

8.2.1 The Client agrees to limit the total aggregate liability of the BGC Group, or any of them, to Third Parties for Claims or Damages arising out of the Laboratory Services to **TWO HUNDRED FIFTY THOUSAND CANADIAN DOLLARS ($250,000.00 CAD)** (the "Third Party Liability Limit"). If the total aggregate liability of all or any of the BGC Group for Third Parties' Claims or Damages exceeds the Third Party Liability Limit, then the Client will indemnify the BGC Group, and each of them, for all liability above the Third Party Liability Limit.

8.2.2 The indemnity in section 8.2.1 shall apply to all Claims or Damages including, but not limited to, those arising due to breach of contract, tort, negligence, negligent misrepresentation, errors, omissions, breach of warranty, strict liability, breach of any statutory or regulatory requirement, or under any other theory of recovery or liability at law or in equity.

9. EXCLUSIONS OF LIABILITY, AGREEMENTS TO DEFEND, AND INDEMNITIES

9.1 The Client agrees to defend, indemnify and hold harmless the BGC Group, and each of them, against any Claim asserted, brought, or prosecuted by a Third Party against the BGC Group, or any of them, that relates, in whole or in part, to any of the following:

9.1.1 the negligence, breach of contract, breach of duty, or any other fault of the Client, the Client's Affiliates, the Client's other contractors, the Client's other consultants, or any of their respective Personnel;

9.1.2 defects in data or Samples supplied to BGC by the Client or the Client's contractors or other consultants; or

9.1.3 use of any Work Product by the Client, its Affiliates, or their respective Personnel for any purpose other than the specific purpose or Project for which BGC prepared such Work Product.

9.2 All the Client's obligations to defend, release, and indemnify BGC Group in this Agreement shall survive any termination or expiry of this Agreement.

10. MUTUAL WAIVER OF PUNITIVE, EXEMPLARY, INDIRECT, INCIDENTAL, AND CONSEQUENTIAL DAMAGES

10.1 Each Party, for itself and as agent on behalf of its Affiliates, hereby releases the other Party, such other Party's Affiliates, and their respective Personnel from all liability for any punitive, exemplary, aggravated, indirect, incidental, and consequential damages that may arise in connection with the performance, purported performance, or non-performance of this Agreement or the Laboratory Services, howsoever caused, and whether arising due to breach of contract, tort (including negligence), strict liability, or under any other theory of liability at law or in equity. This waiver and release applies even if the possibility of

such losses or damages was known or foreseeable. Examples of such waived damages include, but are not limited to, lost profits, lost revenue, loss of contracts, loss of production, loss of business opportunity, costs of capital, business interruptions, loss of goodwill, loss of work, and loss of Project use. Each Party confirms and acknowledges that it has authority to act as agent for its Affiliates for the purposes of providing this waiver and release.

11. TERMS FAIRLY NEGOTIATED IN CONSIDERATION OF RELATIVE RISKS AND BENEFITS

11.1 The Parties acknowledge and agree that the exclusions of liability, limitations of liability, agreements to defend, indemnities, and waivers in this Agreement were fairly negotiated between them in consideration of the relative risks and benefits of the Laboratory Services to the Parties.

12. EARLY TERMINATION

12.1 Either Party may terminate this Agreement for any reason upon thirty (30) days written notice to the other Party.

12.2 Either Party may terminate this Agreement upon ten (10) days written notice to the other Party if the other Party is in default of its obligations under this Agreement and has failed within five (5) business days after receiving a default notice to cure such default, or to take reasonable steps towards curing such default.

12.3 Either Party may immediately terminate this Agreement if the other Party becomes insolvent, takes the benefit of any insolvency or bankruptcy law without providing prompt assurance that it will perform the balance of its obligations under this Agreement, makes a general assignment for the benefit of its creditors, or enters into a plan or arrangement for the benefit of its creditors.

12.4 If this Agreement is terminated for any reason, the Client shall forthwith pay BGC all amounts the Client owes BGC for satisfactorily performed Laboratory Services.

13. ASSIGNMENT

13.1 Except as otherwise agreed in writing, no Party may assign this Agreement without the other Party's written consent. The Parties' permitted successors and assigns are entitled to the benefit of, and shall be bound by, this Agreement.

14. FORCE MAJEURE

14.1 BGC shall not be in breach of this Agreement or liable for any Claims or Damages caused by delay or failure to perform, in full or in part, any of its obligations under this Agreement when such delay or failure to perform is due to any circumstance beyond BGC's reasonable control, including, without limitation: any strikes, walk-outs, riots, unavoidable incidents, floods, fires, earthquakes, natural disasters, inclement weather, acts of God or a public enemy, or a lawful order issued by a governmental authority.

15. NOTICES

15.1 Required written notices between the Parties shall be considered to have been received by the addressee on the date of delivery if personally delivered by hand during normal business hours to the addressee, or to a member of the addressee's firm, or to an officer of the corporation for whom the notice is intended. If sent by regular post, such written notice shall be deemed to have been delivered five (5) business days from the date of mailing. Notices sent by email or facsimile shall be deemed delivered upon completed transmission if properly directed and sent before 4:30pm Atlantic Time on a normal workday that is not a federal Canadian holiday, provided that the sending Party has an electronic acknowledgement that the facsimile or e-mail was received by the other Party.

15.2 Each Party shall designate a representative who is authorized to act on behalf of that Party and to receive notices under this Agreement. In the absence of such designation of an authorized representative, a Party's signatory to this Agreement is deemed to be that Party's representative. If this Agreement has not been signed, then the notice shall be provided by delivering written notice in accordance with section 15.1 to a Party's place of business.

16. SURVIVAL

16.1 All rights and obligations between the Parties under Sections 5 (Intellectual Property), 6 (Work Product), 8 (Absolute Limit of Liability), 9 (Exclusions of Liability, Agreements to Defend and Indemnities), 10 (Mutual Waiver of Punitive, Exemplary, Indirect, Incidental and Consequential Damages) shall survive and remain binding on the Parties after completion of the Laboratory Services or the expiry or any termination of this Agreement.

17. GENERAL PROVISIONS

17.1 This Agreement is governed by the law of British Columbia, Canada, without regard to any conflicts of law principles or any international treaty that may direct the application of the substantive law of another jurisdiction.

17.2 A Party's waiver of any breach of the other Party's obligations under this Agreement shall not be binding unless the waiver is in writing and signed by an authorized representative of the waiving Party.

17.3 If a court of competent jurisdiction determines that any part or provision of this Agreement is illegal, invalid, or unenforceable, then any such part or provision shall be limited or modified to the minimum extent necessary to make it and the remainder of this Agreement enforceable, and the provisions of this Agreement as so amended shall remain in full force and effect.

17.4 In this Agreement, the singular includes the plural and vice versa. All headings in this Agreement are for convenience only, and shall not be used to interpret this Agreement. This Agreement may be executed in separate counterparts, including electronically or by facsimile, and all such counterparts taken together shall be deemed the same original instrument.

SCOPE OF WORK FOR LINER INTERFACE SHEAR

Approved Project Number	Current Short Description	Synthetic Liner Genral Description	Synthetic Liner Short Description	Testing Required(y/n)[1]	Estimated Cost ($CAD)	LLDPE Sample Required (m2)-0.5x0.7	ODF Sample Required (# 20L buckets)	Subgrade Sample Required	Notes
1	Current Approved System	GCL LLDPE	GSE-NWL60 SOLMAX 80 MIL-11007064	n	$ -	0	0	0	Nilex Quoted LLDPE
N/A- as of 2020-01-09	Proposed System #A (Layfield)	GCL LLDPE	GSE-NWL60 EnviroLiner 4280 80 MIL (LF)	y	$ 6,300	1.05	6	3	
N/A- as of 2020-01-09	Proposed System #B	GCL LLDPE	BENTOMATOMAT DN SOLMAX 80 MIL-11007064	y	$ 6,300	1.05	6	3	
N/A- as of 2020-01-09	Proposed System #C	GCL LLDPE	BENTOMATOMAT DN EnviroLiner 4280 80 MIL (LF)	y	$ 6,300	1.05	6	3	
TOTAL TO OBTAIN (3) ADDITIONAL SYNTHETIC SYSTEM OPTIONS					$ 18,900	5.25	18	9	

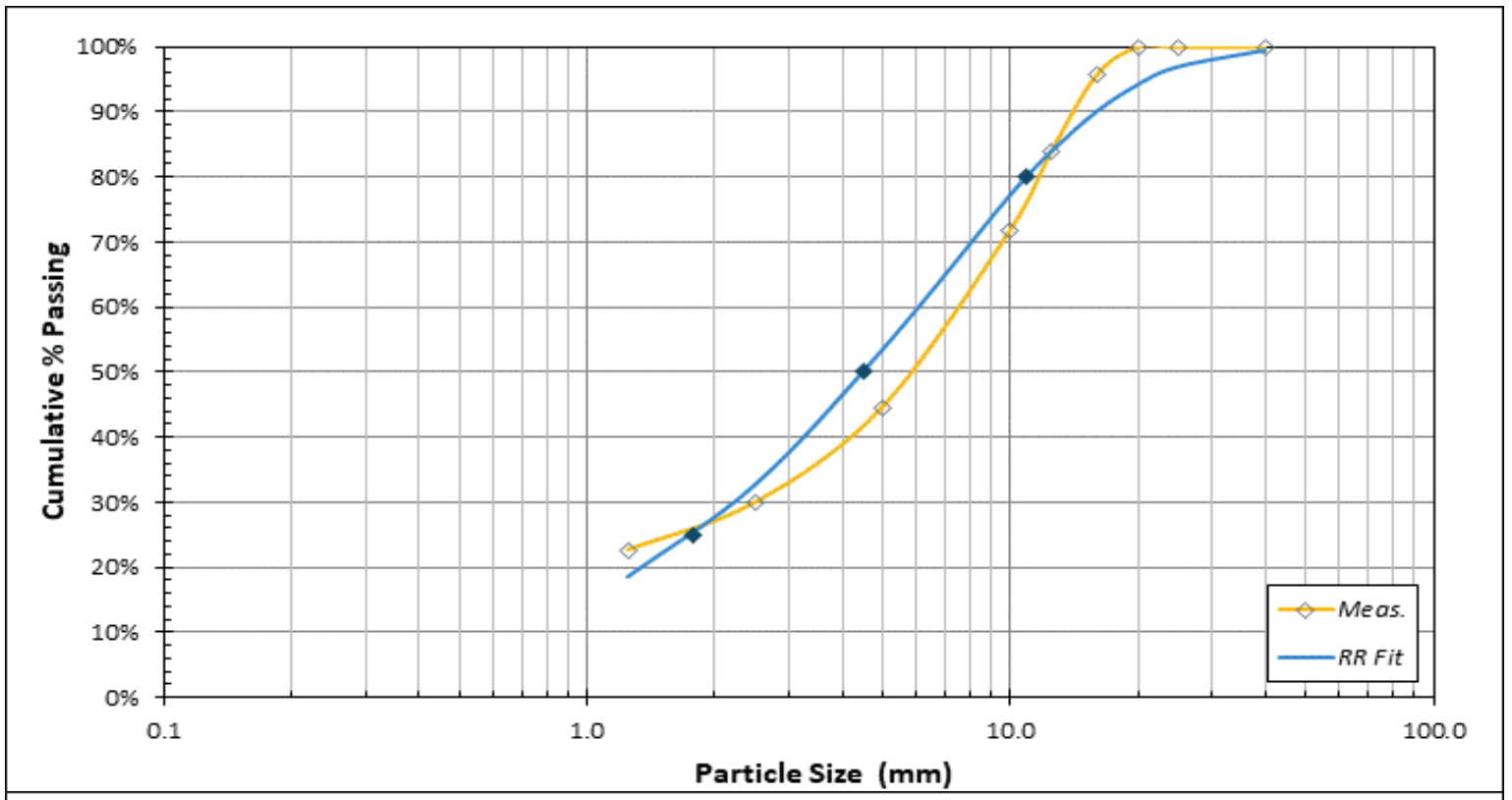
1. Linear interface shear tests ASTM D5321-17. (3) shear tests at vertical stress of 400, 800, 1600 kPa per proposed system.
Additional testing to determine soil charcteristics may also be performed in order to perform the liner interface shear Test

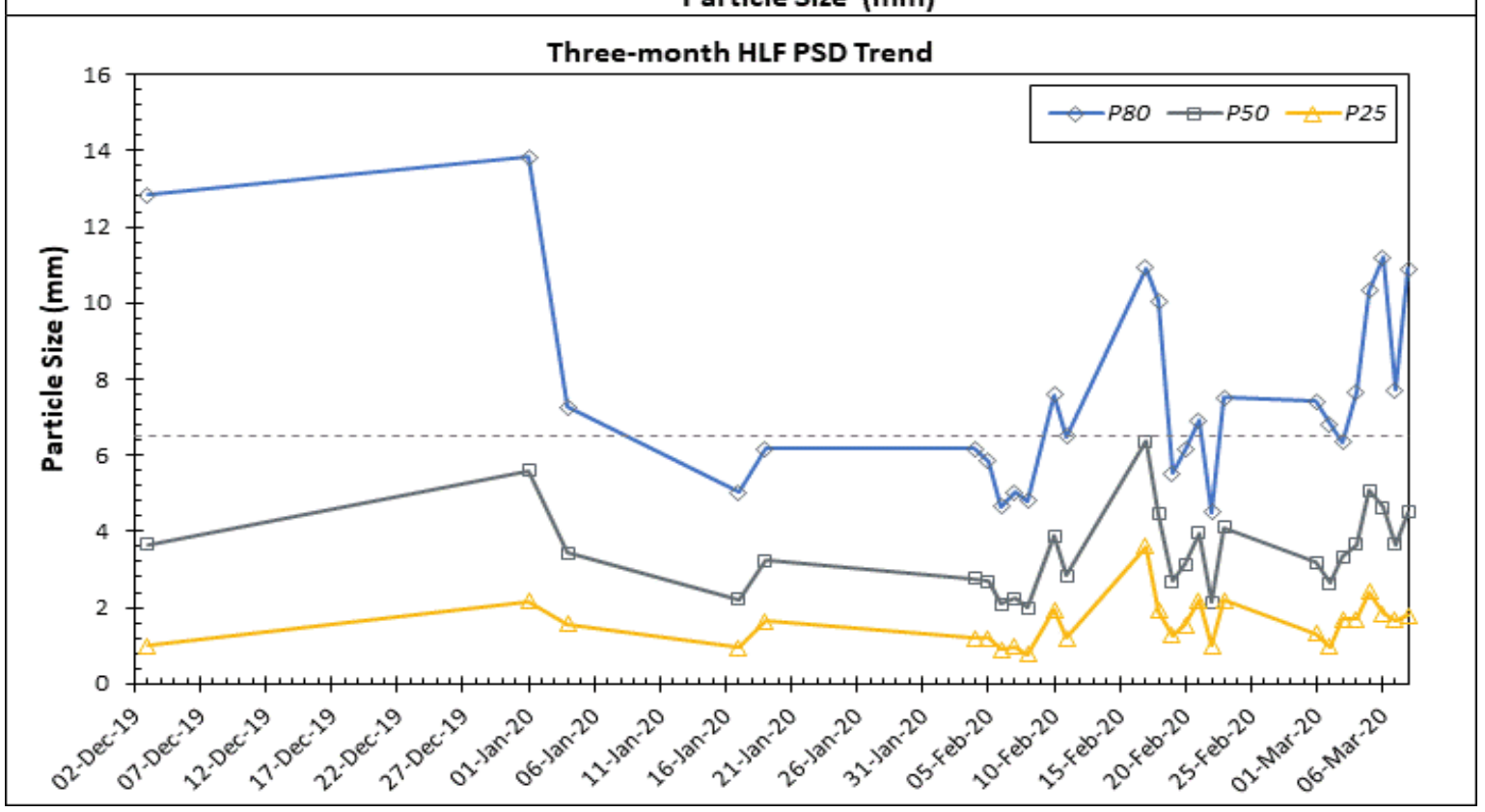
Victoria Gold Eagle Mine

HLF PSD Report

Sample Date:	8-Mar-20
Sample ID:	HLF March 8
Location:	HLF
Type:	Grab

%Passing	25%	50%	80%
Calc. Size (mm)	1.8	4.5	10.9



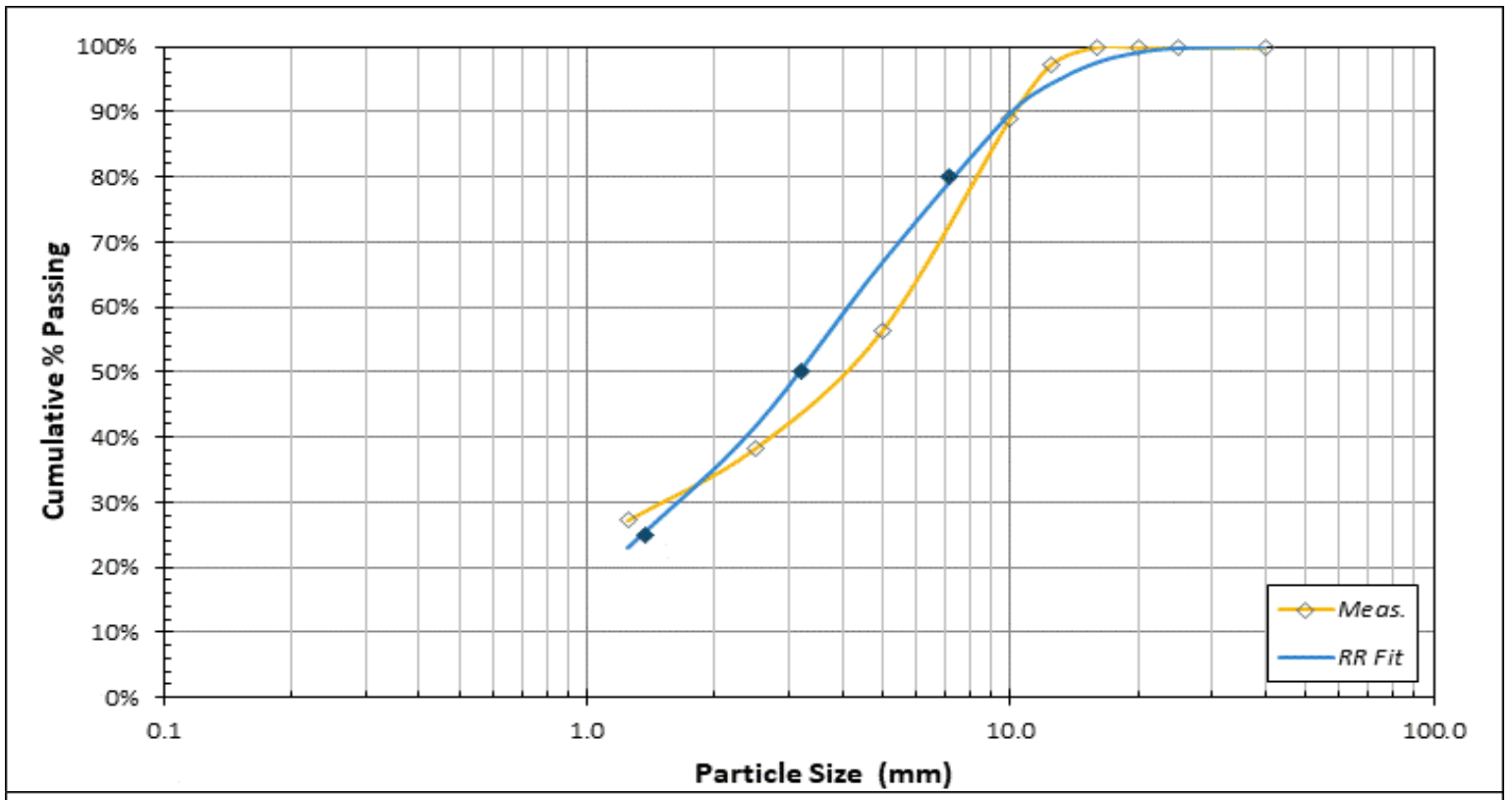


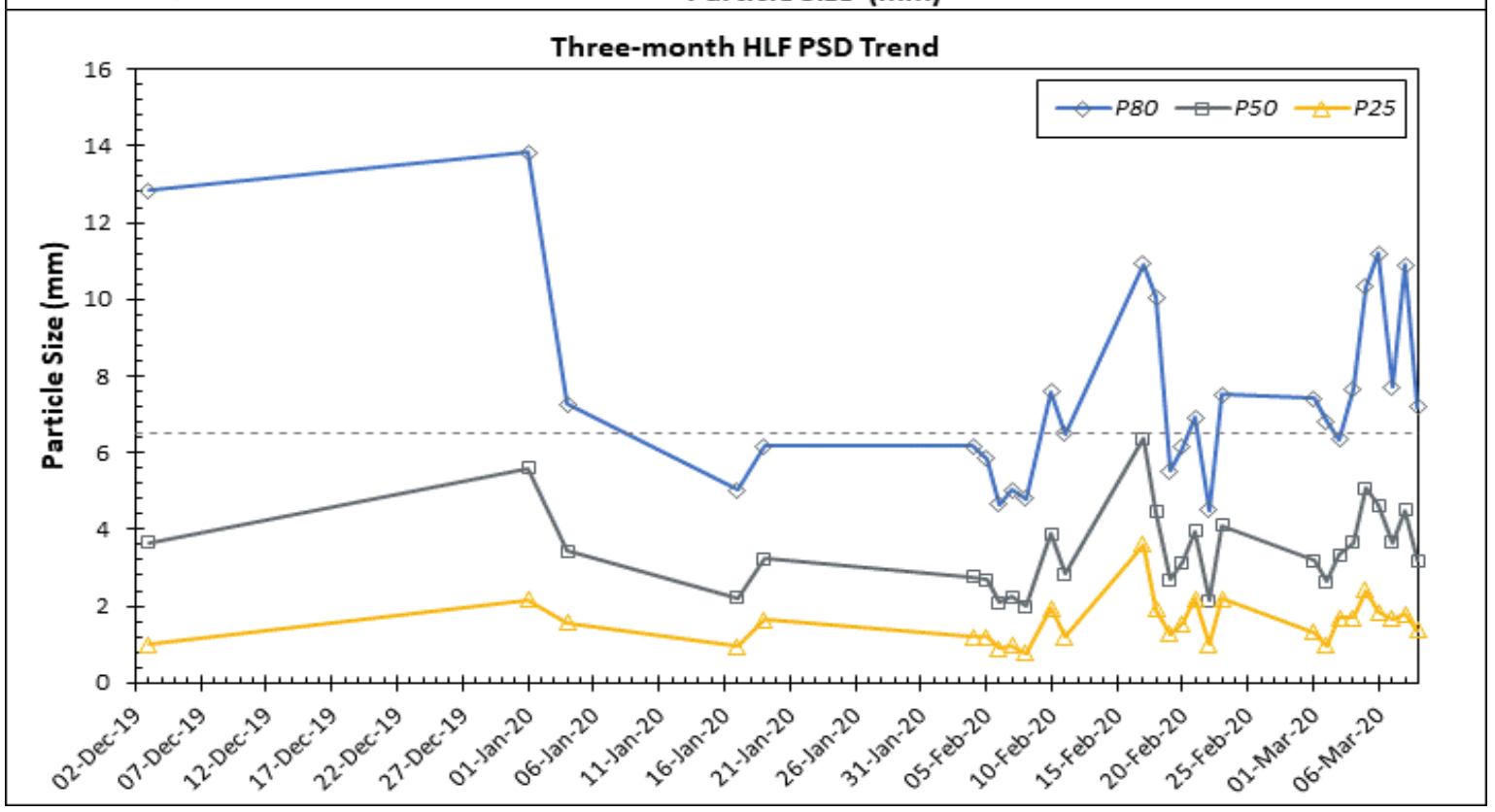
Victoria Gold Eagle Mine

HLF PSD Report

Sample Date:	*9-Mar-20*
Sample ID:	*HLF March 9*
Location:	*HLF*
Type:	*Grab*

%Passing	25%	50%	80%
Calc. Size (mm)	1.4	3.2	7.2



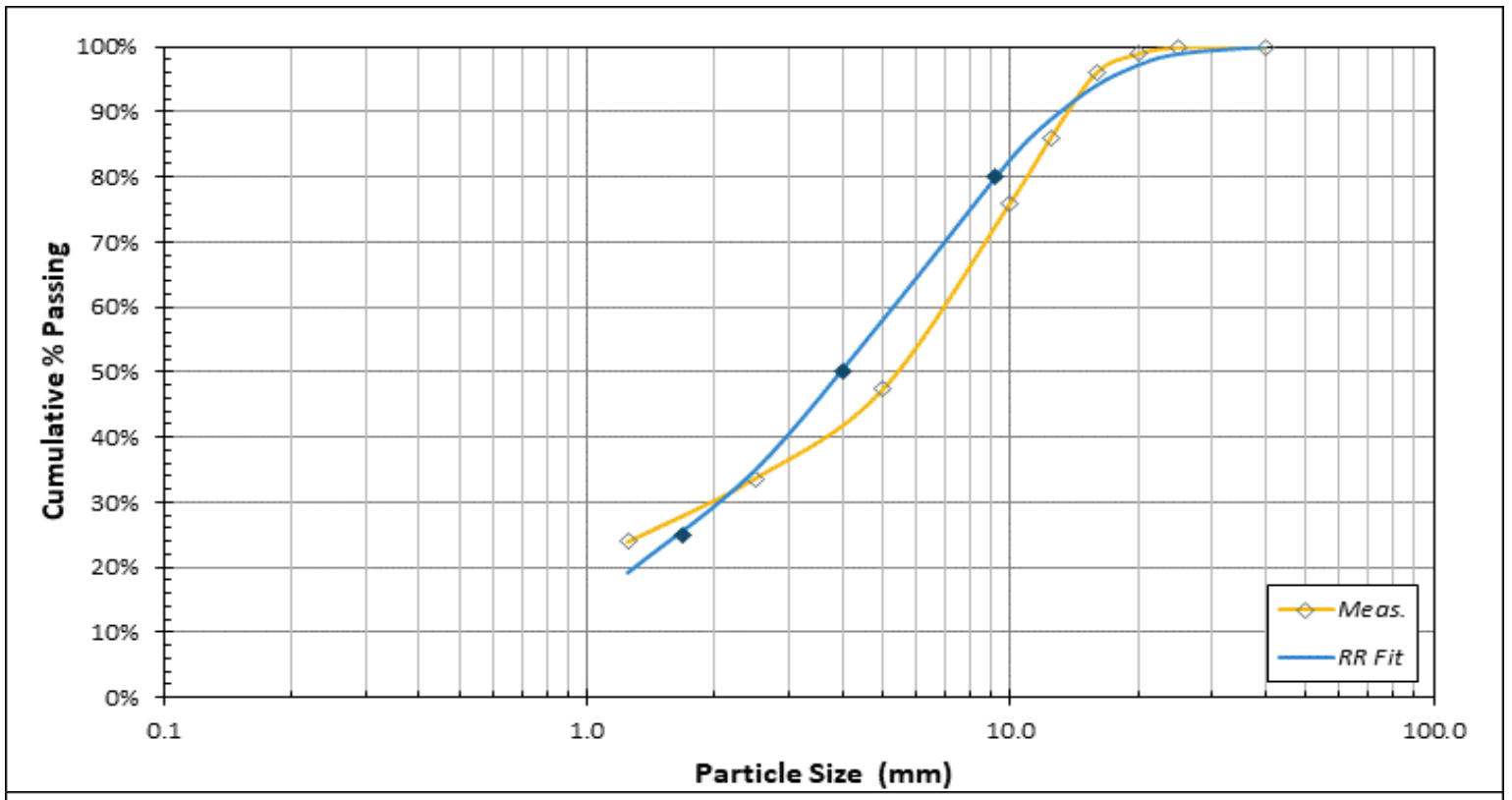


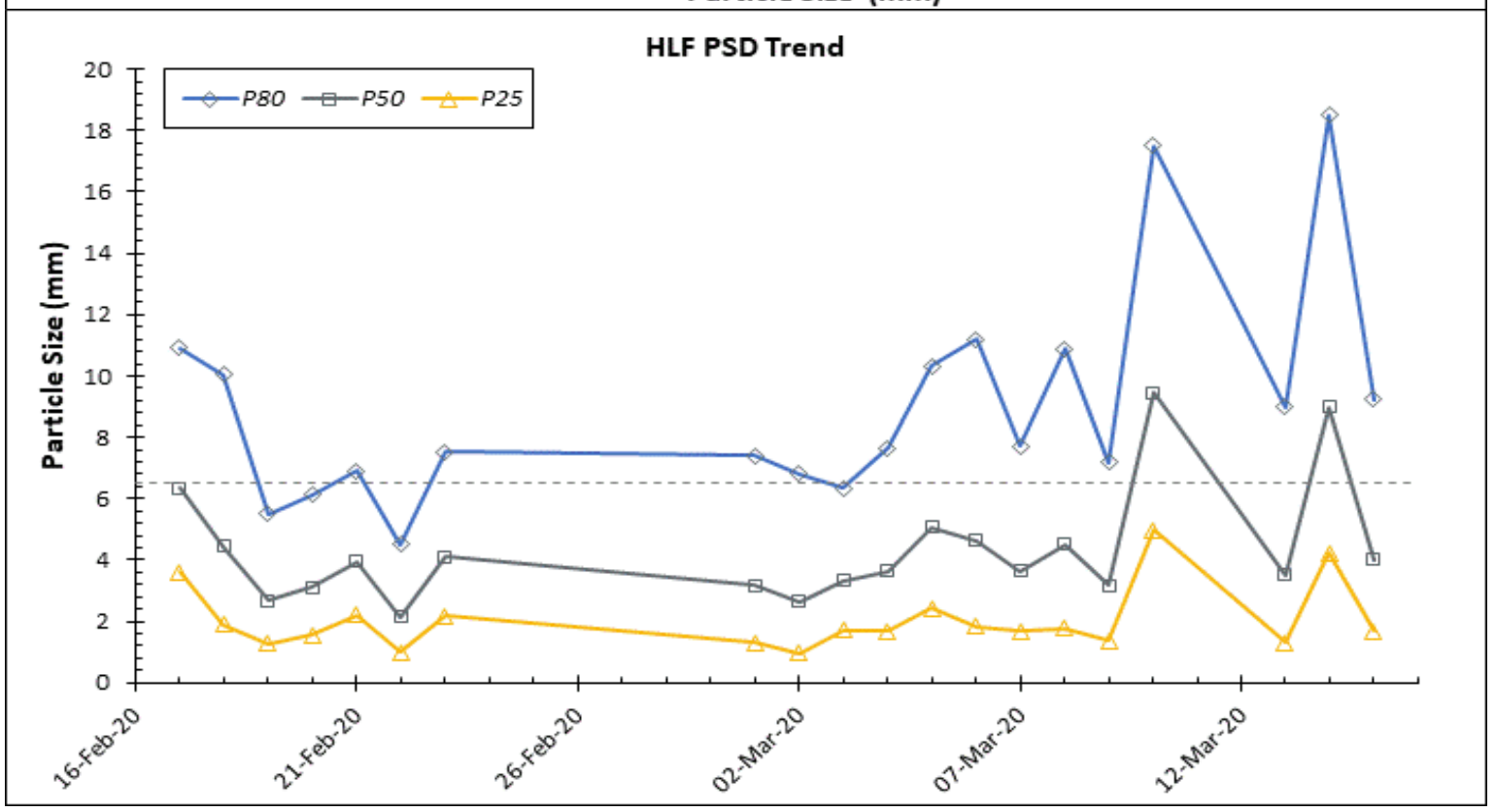
Victoria Gold Eagle Mine

HLF PSD Report

Sample Date:	*15-Mar-20*
Sample ID:	*HLF March 15*
Location:	*HLF*
Type:	*Grab*

%Passing	25%	50%	80%
Calc. Size (mm)	1.7	4.0	9.2



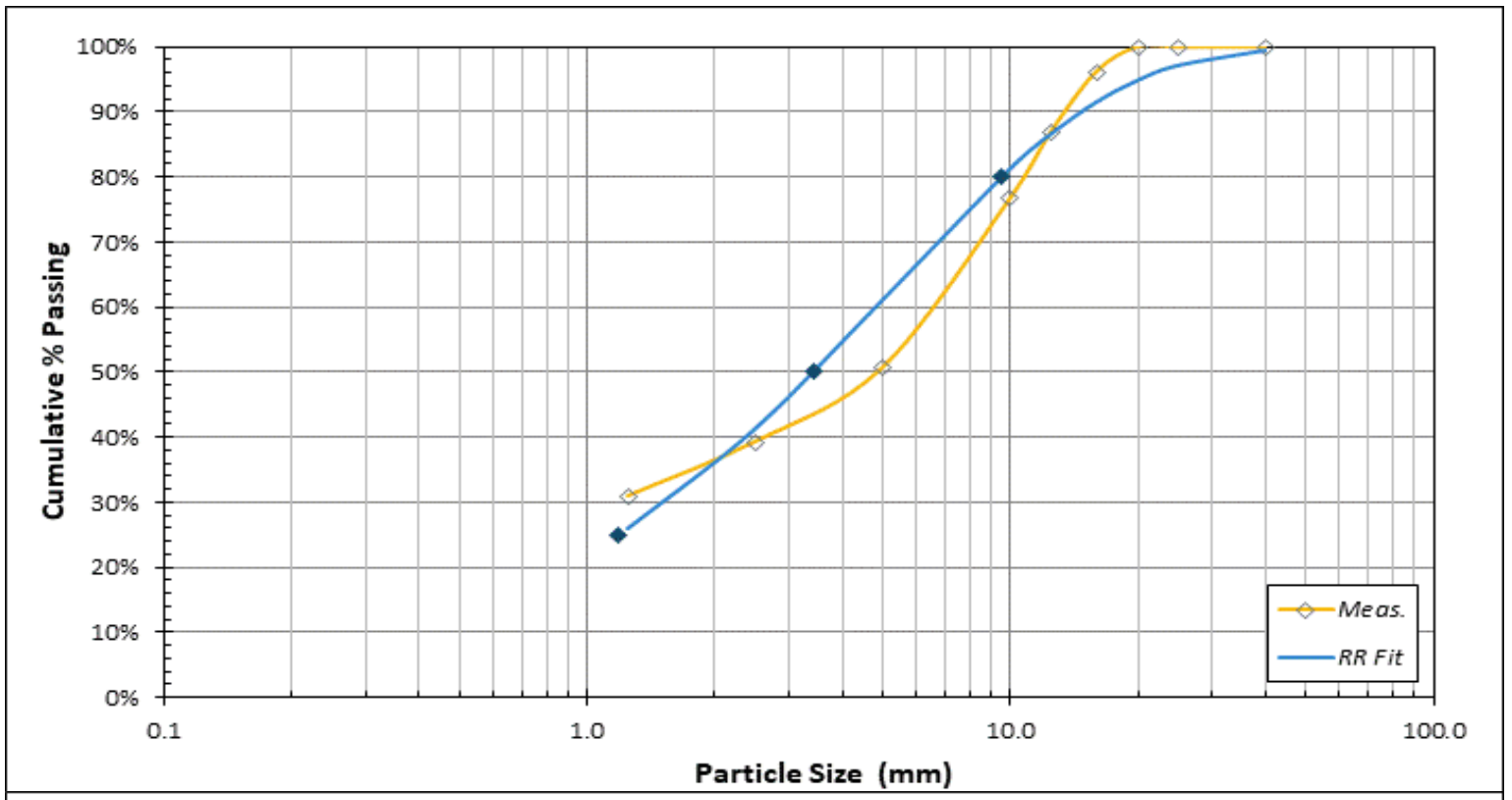


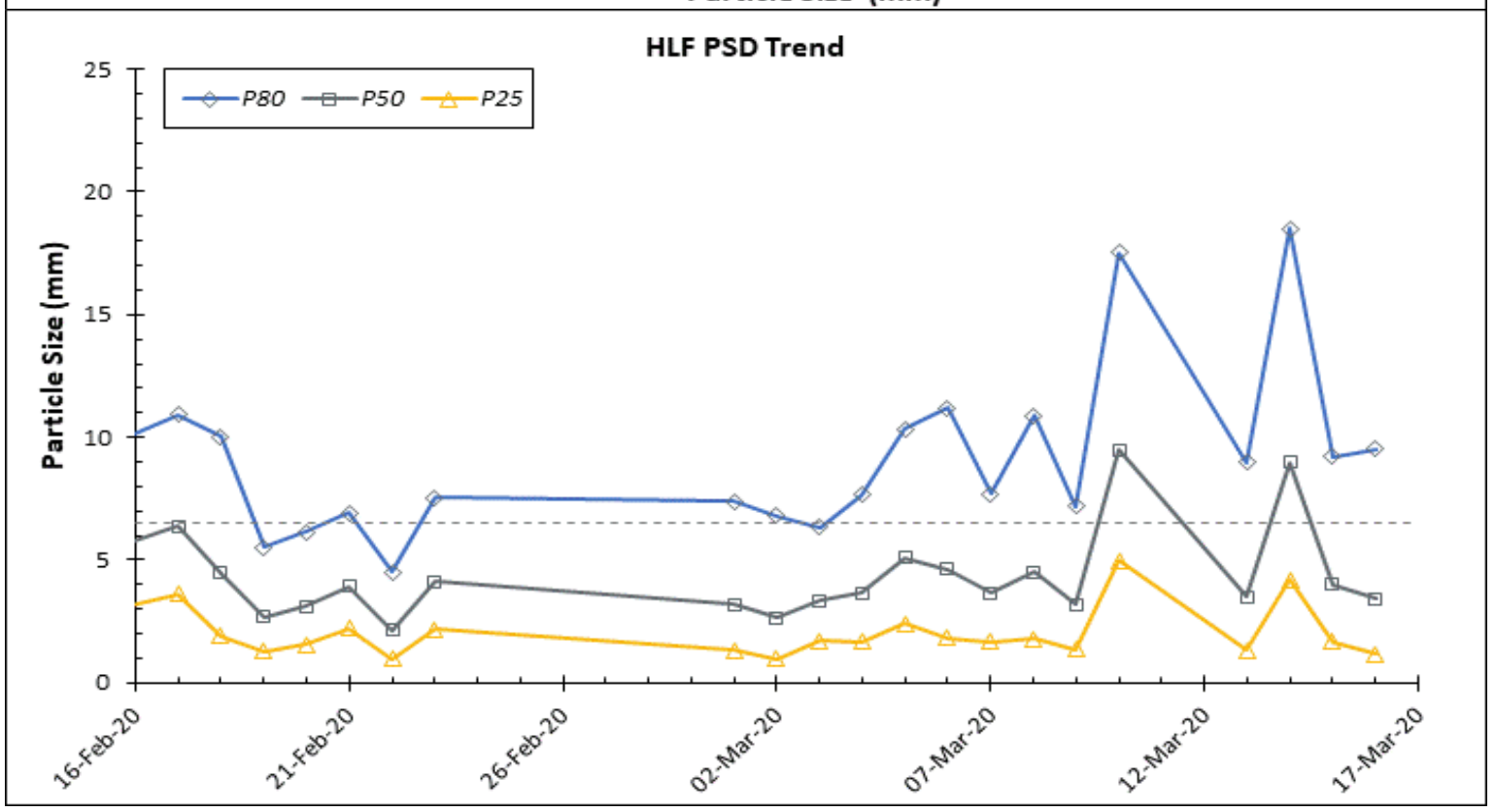
Victoria Gold Eagle Mine

HLF PSD Report

Sample Date:	*16-Mar-20*
Sample ID:	*HLF March 16*
Location:	*HLF*
Type:	*Grab*

%Passing	25%	50%	80%
Calc. Size (mm)	1.2	3.4	9.5





26 February 2020 Project No. 20139832.1

Jason Cheung
Victoria Gold Corporation
1050 W. Pender Street
Vancouver, BC V6E 4T3 Canada

LABORATORY TEST RESULTS FOR VICTORIA GOLD CORPORATION (VICTORIA)

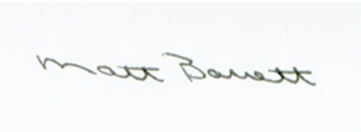
DEAR MR. CHEUNG,

Golder Associates Inc. (Golder) has prepared this summary report to present the results of geotechnical laboratory testing conducted on a sample submitted by Victoria. The sample was tested at Golder's Geotechnical Laboratory in Lakewood, Colorado. This report presents results of the Compression Permeability testing along with the index testing (USCS soil classification, Atterberg Limits, and grain size distribution) before and after the permeability tests

All pending laboratory test results will be sent when testing has been completed. Thank you for the opportunity to provide these laboratory testing services, and we look forward to assisting you on any future projects.

Should you have any questions or comments, please do not hesitate to call.

Golder Associates Inc.



Matthew Barrett
Associate, Geotechnical Lab Manager
MJB/mjb

CC: file

Attachments:
Attachment 1 Compression Permeability Results

Golder and the G logo are trademarks of Golder Associates Corporation

ATTACHMENTS

ATTACHMENT 1
(Compression Permeability Results)

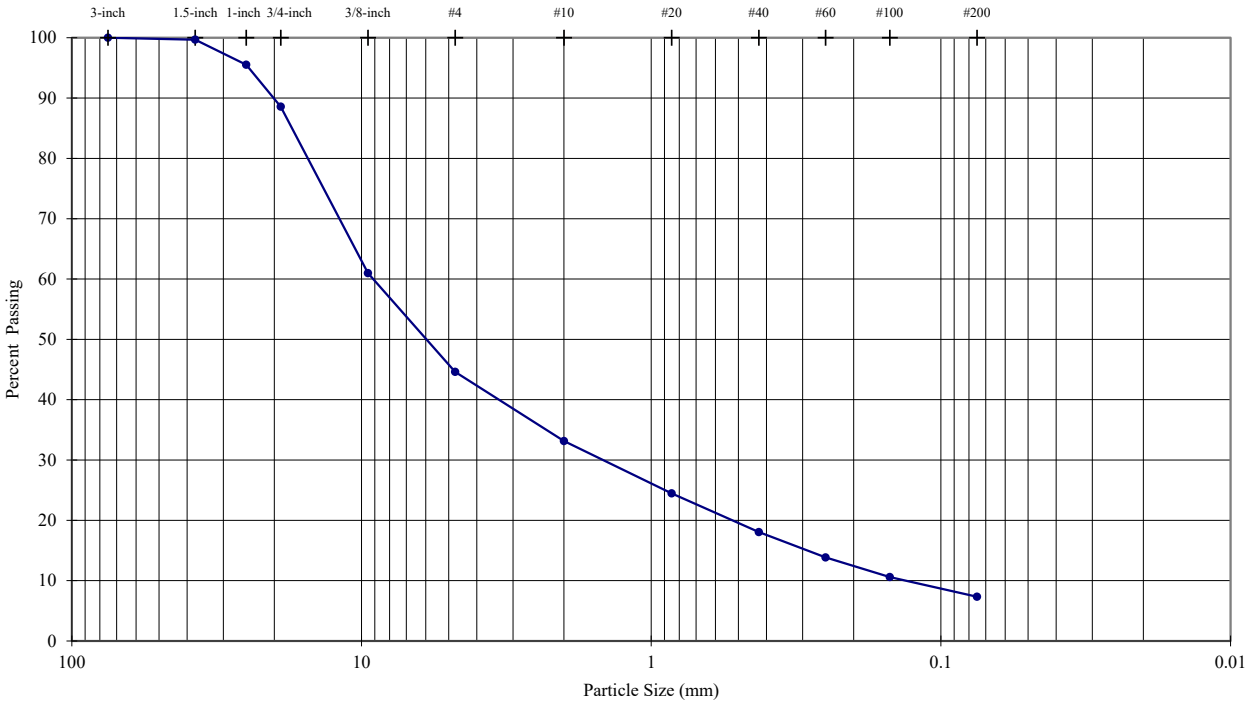
GOLDER

February-20 20139832.1

PARTICLE SIZE DISTRIBUTION & ATTERBERG LIMITS

ASTM D422 & D4318

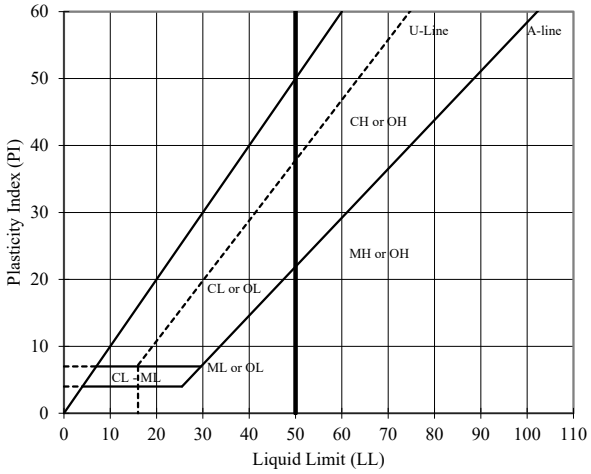
PROJECT NAME: **Victoria Gold/Geotechnical Lab Testing/Canada**
SAMPLE ID: **VGC HLF (Pre-perm)** DEPTH (m): **--**
TYPE: **Bags**



Sieve	Particle Size (mm)	% Passing
3-inch	75.0	**100.0**
1.5-inch	37.5	**99.7**
1-inch	25.0	**95.5**
3/4-inch	19.0	**88.6**
3/8-inch	9.5	**61.0**
#4	4.75	**44.6**
#10	2.00	**33.1**
#20	0.850	**24.5**
#40	0.425	**18.1**
#60	0.250	**13.8**
#100	0.150	**10.6**
#200	0.075	**7.3**

Sieve Analysis (Initial Separation on No. 4 Sieve)

Description	Percentage
Coarse Gravel	**11.43**
Fine Gravel	**43.96**
Coarse Sand	**11.47**
Medium Sand	**15.09**
Fine Sand	**10.73**
Silt or Clay Fines	**7.32**



USCS Description (ASTM D 2487):

Well-graded gravel with silt and sand, dark yellowish brown, moist

LL	PL	PI	SpG
NP	**NP**	**NP**	--

As-Received Moisture Content (%): --

USCS Group Symbol: GW-GM

Notes: 0 g of particles up to 75.0 mm maximum size were removed from particle size analysis sample prior to testing
Particle size analysis sample was not mechanically dispersed; hydrometer test was not performed
Sample prepared for Atterberg Limits testing by the dry method
Material retained on No. 40 sieve removed from Atterberg Limits sample by sieving
Plastic Limit test performed by hand rolling. Method A Liquid Limit test performed using mechanical device

TECH	MGC
DATE	12-Feb-2020
REVIEW	MB

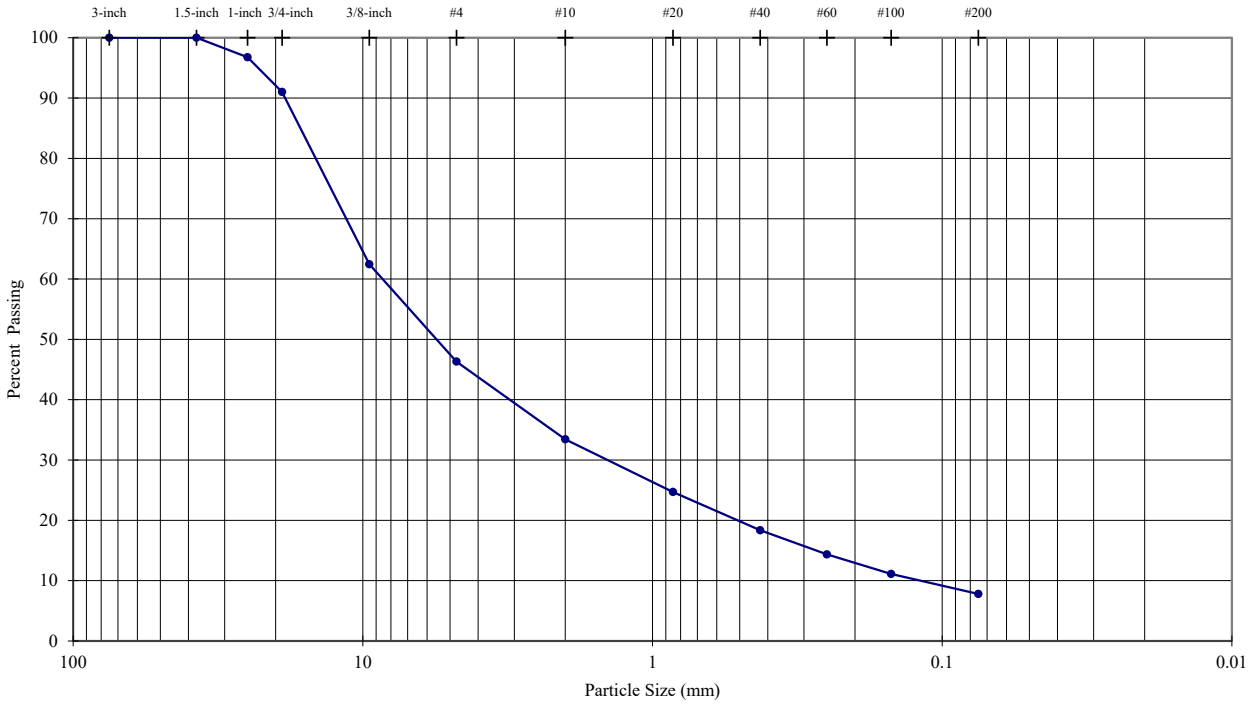
GOLDER

February-20 20139832.1

PARTICLE SIZE DISTRIBUTION & ATTERBERG LIMITS

ASTM D422 & D4318

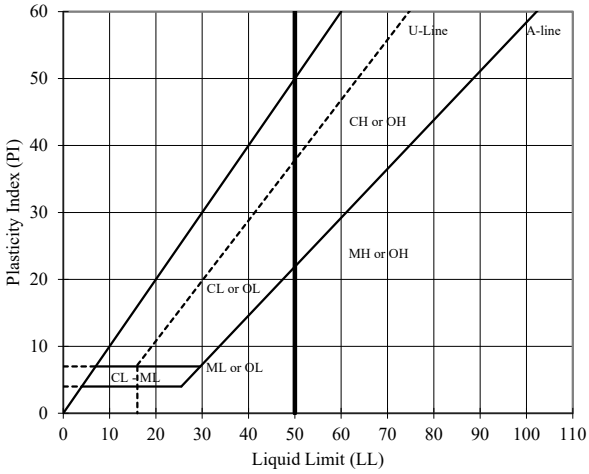
PROJECT NAME: **Victoria Gold/Geotechnical Lab Testing/Canada**
SAMPLE ID: **VGC HLF (Post Perm)** DEPTH (m): --
TYPE: **Bags**



Sieve Analysis (Initial Separation on No. 4 Sieve)

Sieve	Particle Size (mm)	% Passing
3-inch	75.0	**100.0**
1.5-inch	37.5	**100.0**
1-inch	25.0	**96.8**
3/4-inch	19.0	**91.0**
3/8-inch	9.5	**62.5**
#4	4.75	**46.3**
#10	2.00	**33.4**
#20	0.850	**24.7**
#40	0.425	**18.4**
#60	0.250	**14.3**
#100	0.150	**11.1**
#200	0.075	**7.8**

Description	Percentage
Coarse Gravel	**8.98**
Fine Gravel	**44.70**
Coarse Sand	**12.88**
Medium Sand	**15.08**
Fine Sand	**10.56**
Silt or Clay Fines	**7.80**



Visual Description (Golder Procedure):

Well-graded gravel with silt and sand, dark yellowish brown, moist

LL	PL	PI	SpG
--	--	--	--

As-Received Moisture Content (%): --

USCS Group Symbol: GW-GM

Notes: 198.0 g of particles up to 37.5 mm maximum size were removed from particle size analysis sample prior to testing
Particle size analysis sample was not mechanically dispersed; hydrometer test was not performed
Sample prepared for Atterberg Limits testing by the dry method
Material retained on No. 40 sieve removed from Atterberg Limits sample by sieving
Plastic Limit test performed by hand rolling. Method A Liquid Limit test performed using mechanical device

TECH	MB
DATE	21-Feb-2020
REVIEW	MB

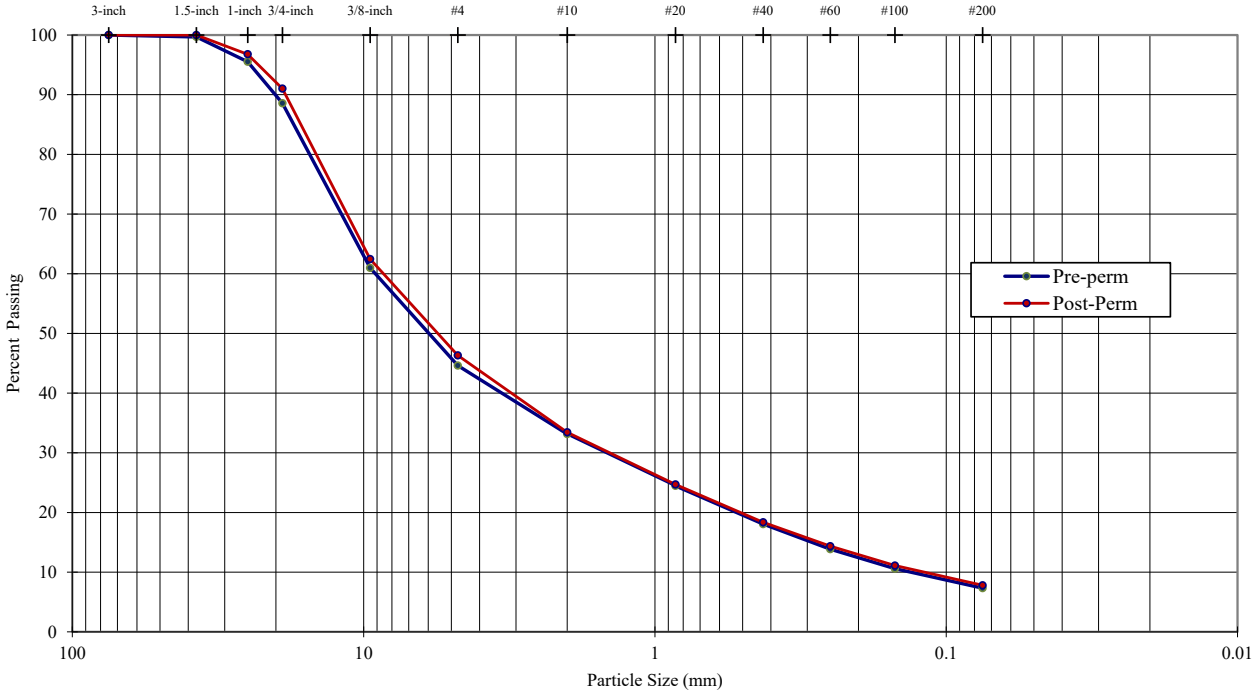
GOLDER

February-20 **20139832.1**

PARTICLE SIZE DISTRIBUTION & ATTERBERG LIMITS

ASTM D422 & D4318

PROJECT NAME: **Victoria Gold/Geotechnical Lab Testing/Canada**
SAMPLE ID: **VGC HLF** DEPTH (m): **--**
TYPE: **Bags**



Pre-Perm

Sieve Analysis (Initial Separation on No. 4 Sieve)

Sieve	Particle Size (mm)	% Passing	Description	Percentage
3-inch	75.0	**100.0**		
1.5-inch	37.5	**99.7**	Coarse Gravel	**11.43**
1-inch	25.0	**95.5**		
3/4-inch	19.0	**88.6**		
3/8-inch	9.5	**61.0**	Fine Gravel	**43.96**
#4	4.75	**44.6**		
#10	2.00	**33.1**	Coarse Sand	**11.47**
#20	0.850	**24.5**	Medium Sand	**15.09**
#40	0.425	**18.1**		
#60	0.250	**13.8**	Fine Sand	**10.73**
#100	0.150	**10.6**		
#200	0.075	**7.3**		
			Silt or Clay Fines	**7.32**

Post-Perm

Sieve Analysis (Initial Separation on No. 4 Sieve)

Sieve	Particle Size (mm)	% Passing	Description	Percentage
3-inch	75.0	**100.0**		
1.5-inch	37.5	**100.0**	Coarse Gravel	**8.98**
1-inch	25.0	**96.8**		
3/4-inch	19.0	**91.0**		
3/8-inch	9.5	**62.5**	Fine Gravel	**44.70**
#4	4.75	**46.3**		
#10	2.00	**33.4**	Coarse Sand	**12.88**
#20	0.850	**24.7**	Medium Sand	**15.08**
#40	0.425	**18.4**		
#60	0.250	**14.3**	Fine Sand	**10.56**
#100	0.150	**11.1**		
#200	0.075	**7.8**		
			Silt or Clay Fines	**7.80**

Pre-Perm

USCS Description (ASTM D 2487):

Well-graded gravel with silt and sand, dark yellowish brown, moist

LL	PL	PI	SpG
NP	**NP**	**NP**	--

As-Received Moisture Content (%): --

USCS Group Symbol: GW-GM

Notes: 0 g of particles up to 75.0 mm maximum size were removed from particle size analysis sample prior to testing
Particle size analysis sample was not mechanically dispersed; hydrometer test was not performed
Sample prepared for Atterberg Limits testing by the dry method
Material retained on No. 40 sieve removed from Atterberg Limits sample by sieving
Plastic Limit test performed by hand rolling. Method A Liquid Limit test performed using mechanical device

TECH	MGC
DATE	12-Feb-2020
REVIEW	MB

GOLDER

SAMPLE DATA

	Initial	Final
Wet Mass, g	26488.9	
Height, cm	26.89	24.04
Diameter, cm	25.40	25.40
Area, cm^2	506.71	506.71
Volume, m^3	0.01363	0.01218
Moisture Content %	1.9	7.8
Wet Unit Weight, kN/m^3	19.08	22.58
Dry Unit Weight, kN/m^3	18.72	20.94
Void Ratio	0.41	0.26

Specific gravity assumed: 2.70

USCS Description (ASTM D 2487):

Well-graded gravel with silt and sand, dark yellowish brown, moist

PERMEABILITY TEST DATA

Load (kPa)	DATE TESTED	Final Height (cm)[1]	Final Dry Density (kN/m^3)	Void Ratio[1]	Flow Rate (ml/sec)	Gradient	Permeability (cm/sec)	Porosity[1]
689.5	17-Feb-2020	25.22	19.96	0.33	10.5	0.29	7.3E-02	0.25
1723.7	18-Feb-2020	24.54	20.51	0.29	7.6	0.24	6.6E-02	0.23
3102.6	19-Feb-2020	24.04	20.94	0.26	7.2	0.32	4.6E-02	0.21

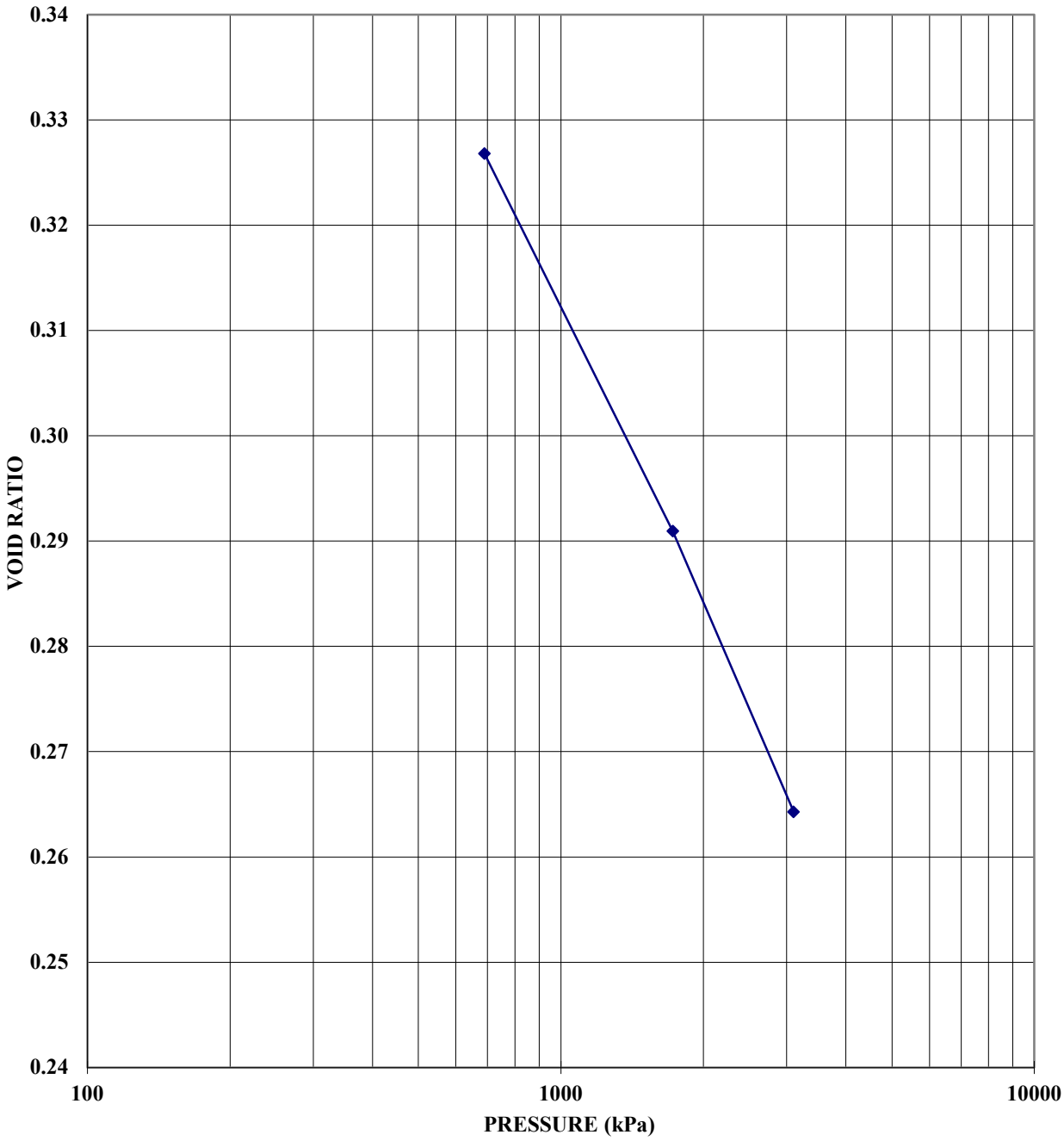
COMMENTS

1. Final specimen height measured prior to performing the permeability test
2. Dry Density, Void Ratio and Porosity calculated from final height
3. Specimen was placed with light compactive effort
4. Particles larger than 37.5 mm removed prior to testing

Project Name:		RIGID WALL COMPRESSION CONSTANT-HEAD PERMEABILITY 10-INCH DIAMETER CELL				
Victoria Gold/Geotechnical Lab Testing/Canada						
Project Number:						
20139832.1						
Sample ID:	**Depth (m)**	**Technician:**	**Checked:**	**Reviewed:**	**Date:**	**Figure:**
VGC HLF	--	MGC	MB	MK	26-Feb-2020	1

GOLDER

NORMAL LOAD vs. VOID RATIO



Project Name: Victoria Gold/Geotechnical Lab Testing/Canada		RIGID-WALL COMPRESSION PERMEABILITY Normal Load versus Void Ratio				
Project Number: 20139832.1						
Sample ID: VGC HLF	Depth (m): --	Technician: MGC	Checked: MB	Reviewed: MK	Date: 26-Feb-2020	Figure: 2

GOLDER

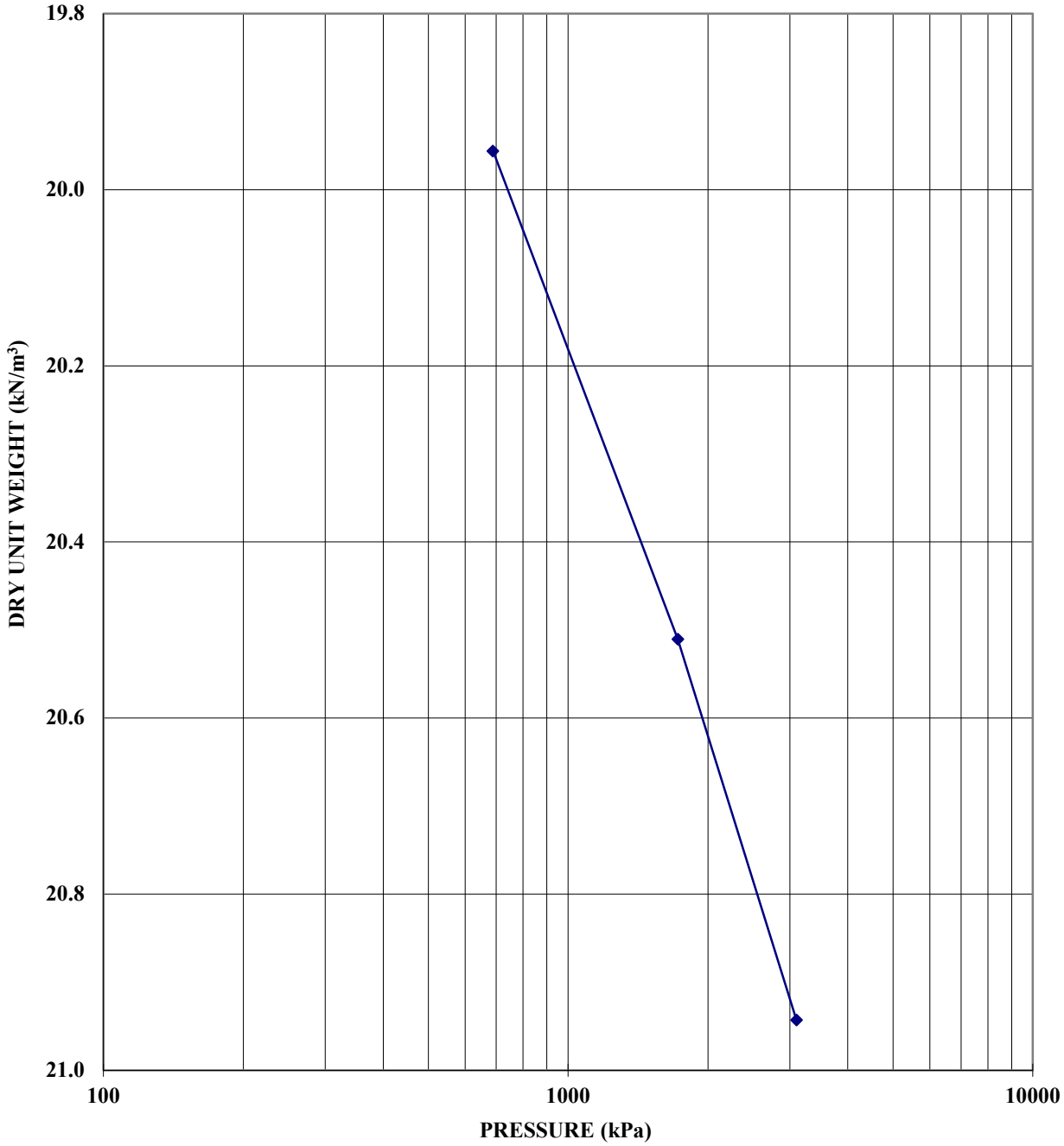
NORMAL LOAD vs. HYDRAULIC CONDUCTIVITY



Project Name: Victoria Gold/Geotechnical Lab Testing/Canada		RIGID-WALL COMPRESSION PERMEABILITY Normal Load versus Hydraulic Conductivity				
Project Number: 20139832.1						
Sample ID: VGC HLF	Depth (m): --	Technician: MGC	Checked: MB	Reviewed: MK	Date: 26-Feb-2020	Figure: 3

GOLDER

NORMAL LOAD vs. DRY DENSITY



Project Name: Victoria Gold/Geotechnical Lab Testing/Canada		RIGID-WALL COMPRESSION PERMEABILITY Normal Load versus Dry Desnity				
Project Number: 20139832.1						
Sample ID: VGC HLF	Depth (m): --	Technician: MGC	Checked: MB	Reviewed: MK	Date: 26-Feb-2020	Figure: 4

02 March 2020 Project No. 20139832.1

Jason Cheung
Victoria Gold Corporation
1050 W. Pender Street
Vancouver, BC V6E 4T3 Canada

LABORATORY TEST RESULTS FOR VICTORIA GOLD CORPORATION (VICTORIA)

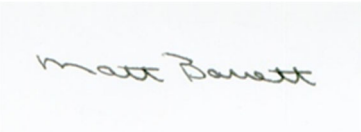
DEAR MR. CHEUNG,

Golder Associates Inc. (Golder) has prepared this summary report to present the results of geotechnical laboratory testing conducted on a sample submitted by Victoria. The sample was tested at Golder's Geotechnical Laboratory in Lakewood, Colorado. This report presents results of the Compression Permeability testing along with the index testing (USCS soil classification, Atterberg Limits, and grain size distribution) before and after the permeability tests

All assigned laboratory testing has been completed. Thank you for the opportunity to provide these laboratory testing services, and we look forward to assisting you on any future projects.

Should you have any questions or comments, please do not hesitate to call.

Golder Associates Inc.



Matthew Barrett
Associate, Geotechnical Lab Manager
MJB/mjb

CC: file

Attachments:
Attachment 1 Compression Permeability Results

Golder and the G logo are trademarks of Golder Associates Corporation

ATTACHMENTS

ATTACHMENT 1
(Compression Permeability Results)

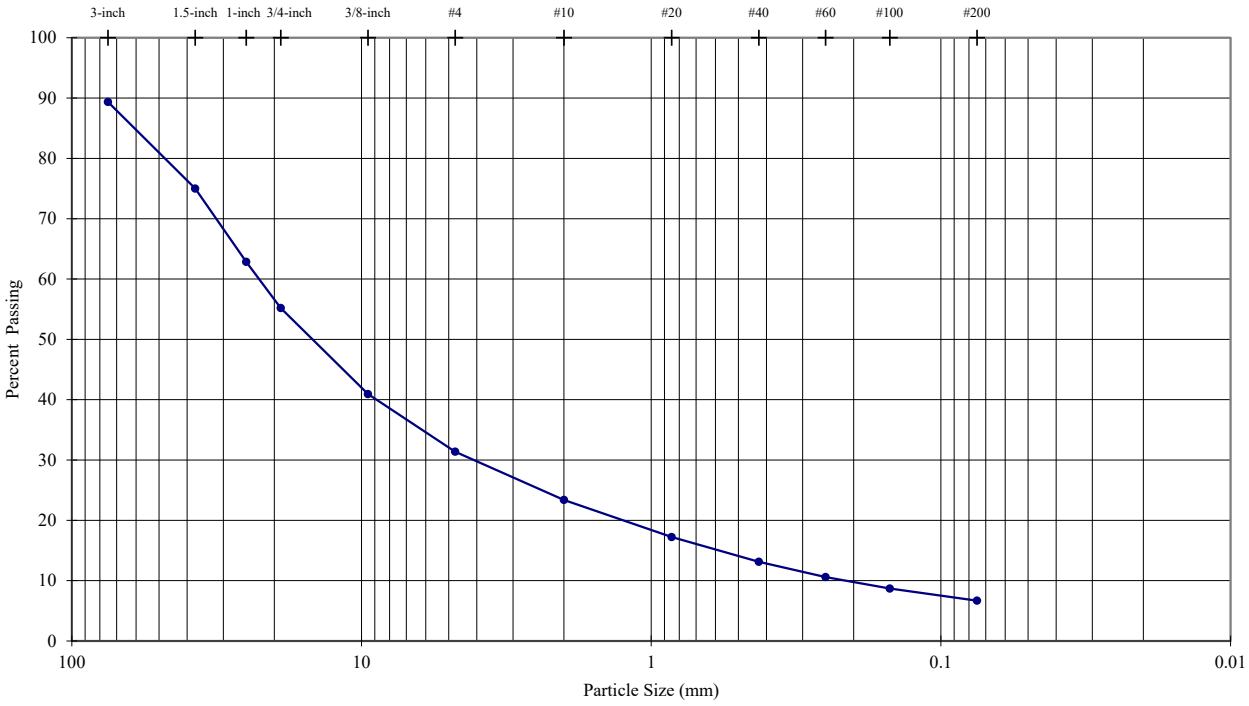
GOLDER

February-20 **20139832.1**

PARTICLE SIZE DISTRIBUTION & ATTERBERG LIMITS

ASTM D422 & D4318

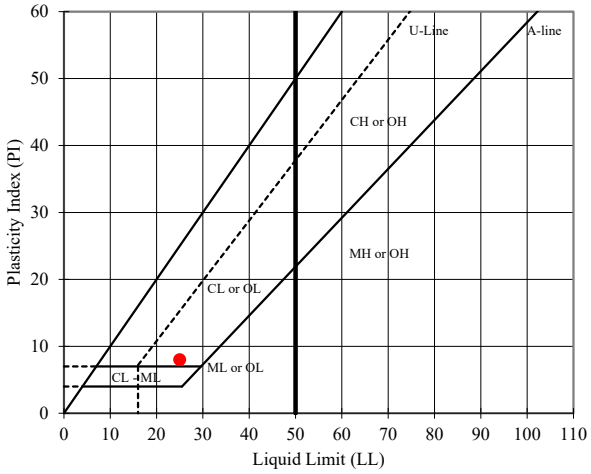
PROJECT NAME: **Victoria Gold/Geotechnical Lab Testing/Canada**
SAMPLE ID: **VGC 90 Day (Pre-perm)** DEPTH (m): **--**
TYPE: **Pail**



Sieve Analysis (Initial Separation on No. 4 Sieve)

Sieve	Particle Size (mm)	% Passing
3-inch	75.0	**89.4**
1.5-inch	37.5	**75.0**
1-inch	25.0	**62.8**
3/4-inch	19.0	**55.2**
3/8-inch	9.5	**40.9**
#4	4.75	**31.4**
#10	2.00	**23.4**
#20	0.850	**17.2**
#40	0.425	**13.1**
#60	0.250	**10.6**
#100	0.150	**8.7**
#200	0.075	**6.7**

Description	Percentage
Coarse Gravel	**34.16**
Fine Gravel	**23.82**
Coarse Sand	**8.00**
Medium Sand	**10.26**
Fine Sand	**6.43**
Silt or Clay Fines	**6.68**



USCS Description (ASTM D 2487):

Poorly graded gravel with clay and sand, yellowish brown, moist

LL	PL	PI	SpG
25	**17**	**8**	--

As-Received Moisture Content (%): --

USCS Group Symbol: GP-GC

Notes: 0 g of particles up to 75.0 mm maximum size were removed from particle size analysis sample prior to testing
Particle size analysis sample was not mechanically dispersed; hydrometer test was not performed
Sample prepared for Atterberg Limits testing by the dry method
Material retained on No. 40 sieve removed from Atterberg Limits sample by sieving
Plastic Limit test performed by hand rolling. Method A Liquid Limit test performed using mechanical device

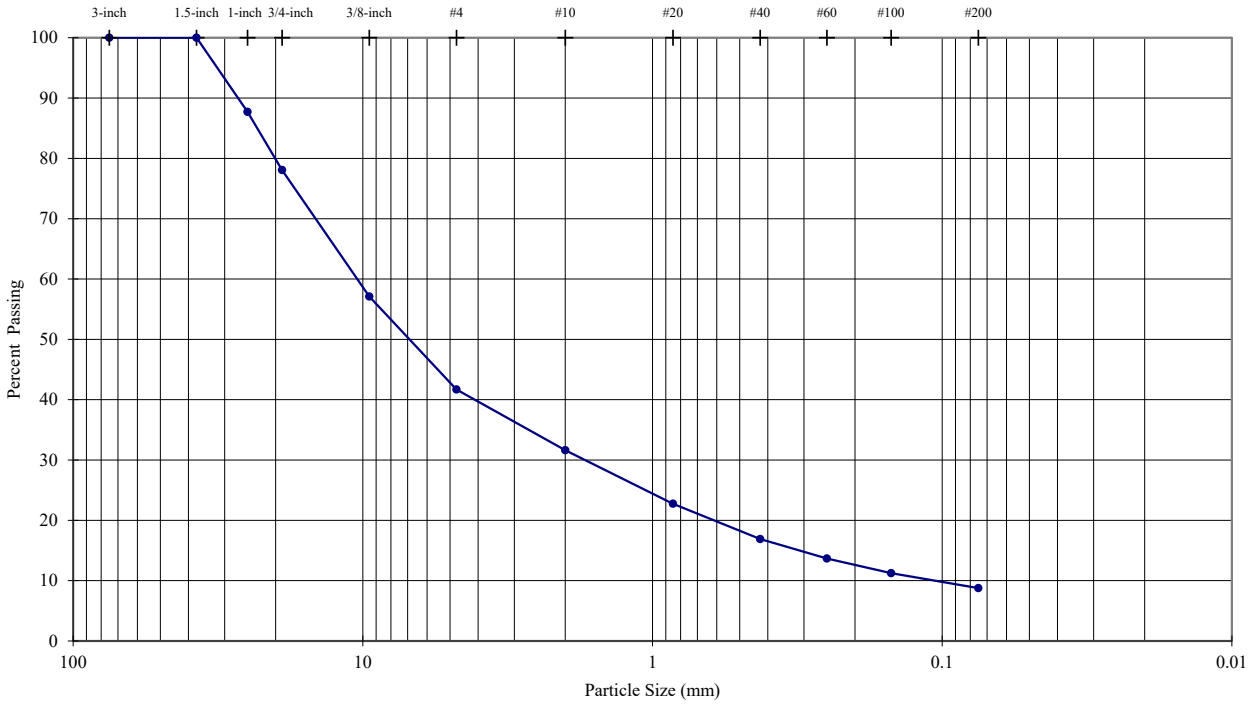
TECH	MGC
DATE	14-Feb-2020
REVIEW	MB

February-20 20139832.1

PARTICLE SIZE DISTRIBUTION & ATTERBERG LIMITS

ASTM D422 & D4318

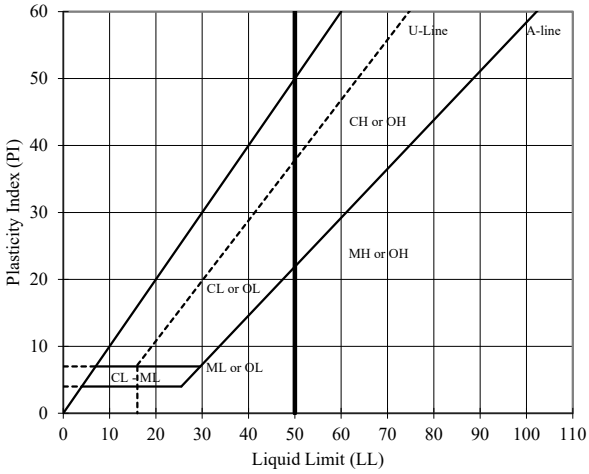
PROJECT NAME: **Victoria Gold/Geotechnical Lab Testing/Canada**
SAMPLE ID: **VGC 90 Day (Post Perm)** DEPTH (m): --
TYPE: **Pail**



Sieve Analysis (Initial Separation on No. 4 Sieve)

Sieve	Particle Size (mm)	% Passing
3-inch	75.0	**100.0**
1.5-inch	37.5	**100.0**
1-inch	25.0	**87.7**
3/4-inch	19.0	**78.1**
3/8-inch	9.5	**57.1**
#4	4.75	**41.7**
#10	2.00	**31.6**
#20	0.850	**22.8**
#40	0.425	**16.9**
#60	0.250	**13.7**
#100	0.150	**11.2**
#200	0.075	**8.8**

Description	Percentage
Coarse Gravel	**21.93**
Fine Gravel	**36.38**
Coarse Sand	**10.06**
Medium Sand	**14.73**
Fine Sand	**8.14**
Silt or Clay Fines	**8.76**



Visual Description (Golder Procedure):

Poorly graded gravel with clay and sand, yellowish brown, moist

LL	PL	PI	SpG
--	--	--	--

As-Received Moisture Content (%): --

USCS Group Symbol: GP-GC

Notes: 16,476.9 g of particles up to 37.5 mm maximum size were removed from particle size analysis sample prior to testing
Particle size analysis sample was not mechanically dispersed; hydrometer test was not performed

TECH	MGC
DATE	26-Feb-2020
REVIEW	MB

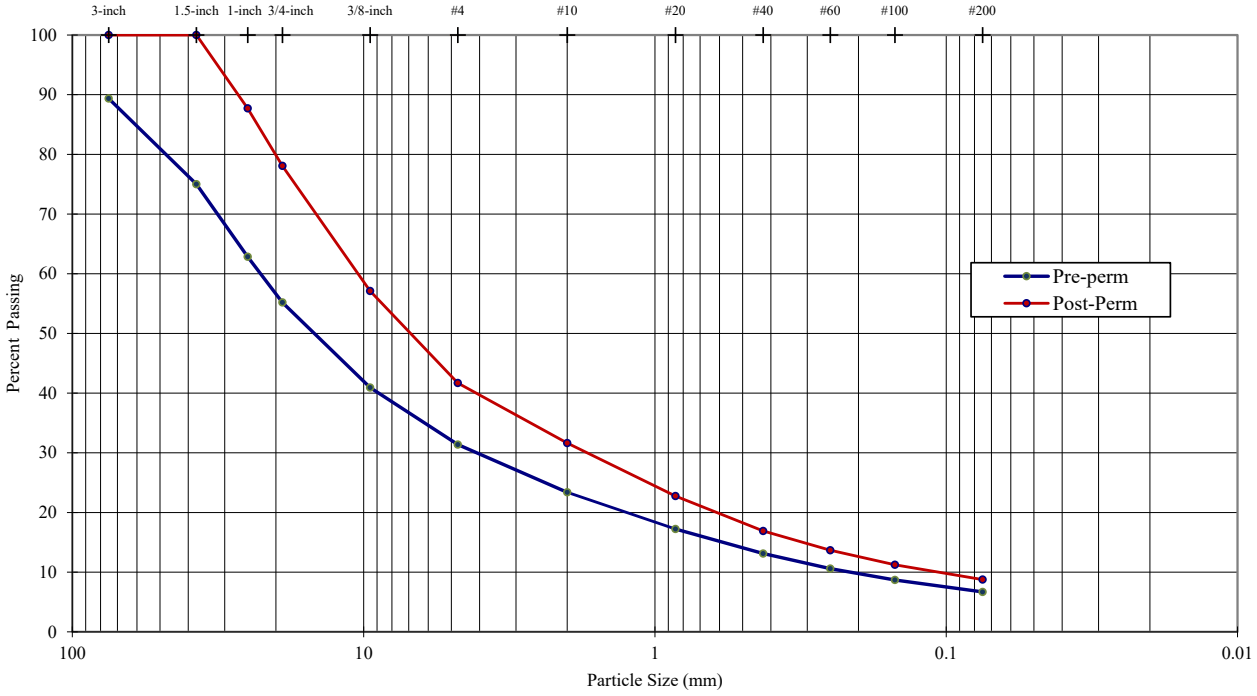
GOLDER

February-20 **20139832.1**

PARTICLE SIZE DISTRIBUTION & ATTERBERG LIMITS

ASTM D422 & D4318

PROJECT NAME: **Victoria Gold/Geotechnical Lab Testing/Canada**
SAMPLE ID: **VGC 90 Day** DEPTH (m): **--**
TYPE: **Pail**



Pre-Perm

Sieve Analysis (Initial Separation on No. 4 Sieve)

Sieve	Particle Size (mm)	% Passing	Description	Percentage
3-inch	75.0	**89.4**		
1.5-inch	37.5	**75.0**	Coarse Gravel	**34.16**
1-inch	25.0	**62.8**		
3/4-inch	19.0	**55.2**		
3/8-inch	9.5	**40.9**	Fine Gravel	**23.82**
#4	4.75	**31.4**		
#10	2.00	**23.4**	Coarse Sand	**8.00**
#20	0.850	**17.2**	Medium Sand	**10.26**
#40	0.425	**13.1**		
#60	0.250	**10.6**	Fine Sand	**6.43**
#100	0.150	**8.7**		
#200	0.075	**6.7**		
			Silt or Clay Fines	**6.68**

Post-Perm

Sieve Analysis (Initial Separation on No. 4 Sieve)

Sieve	Particle Size (mm)	% Passing	Description	Percentage
3-inch	75.0	**100.0**		
1.5-inch	37.5	**100.0**	Coarse Gravel	**21.93**
1-inch	25.0	**87.7**		
3/4-inch	19.0	**78.1**		
3/8-inch	9.5	**57.1**	Fine Gravel	**36.38**
#4	4.75	**41.7**		
#10	2.00	**31.6**	Coarse Sand	**10.06**
#20	0.850	**22.8**	Medium Sand	**14.73**
#40	0.425	**16.9**		
#60	0.250	**13.7**	Fine Sand	**8.14**
#100	0.150	**11.2**		
#200	0.075	**8.8**		
			Silt or Clay Fines	**8.76**

Pre-Perm

USCS Description (ASTM D 2487):

Poorly graded gravel with clay and sand, yellowish brown, moist

LL	PL	PI	SpG
25	**17**	**8**	--

As-Received Moisture Content (%): --

USCS Group Symbol: GP-GC

Notes: 0 g of particles up to 75.0 mm maximum size were removed from particle size analysis sample prior to testing
Particle size analysis sample was not mechanically dispersed; hydrometer test was not performed
Sample prepared for Atterberg Limits testing by the dry method
Material retained on No. 40 sieve removed from Atterberg Limits sample by sieving
Plastic Limit test performed by hand rolling. Method A Liquid Limit test performed using mechanical device

TECH	MGC
DATE	14-Feb-2020
REVIEW	MB

GOLDER

SAMPLE DATA

	Initial	Final
Wet Mass, g	25806.9	
Height, cm	26.69	23.25
Diameter, cm	25.40	25.40
Area, cm^2	506.71	506.71
Volume, m^3	0.01353	0.01178
Moisture Content %	1.4	7.2
Wet Unit Weight, kN/m^3	18.72	22.73
Dry Unit Weight, kN/m^3	18.47	21.21
Void Ratio	0.43	0.25

Specific gravity assumed: 2.70

USCS Description (ASTM D 2487):

Poorly graded gravel with clay and sand, yellowish brown, moist

PERMEABILITY TEST DATA

Load (kPa)	DATE TESTED	Final Height (cm)(1)	Final Dry Density (kN/m^3)	Void Ratio(1)	Flow Rate (ml/sec)	Gradient	Permeability (cm/sec)	Porosity(1)
689	20-Feb-2020	24.74	19.94	0.33	6.1	1.22	1.4E-02	0.25
1724	21-Feb-2020	23.92	20.62	0.28	4.8	1.78	1.3E-02	0.22
3103	25-Feb-2020	23.25	21.21	0.25	--	--	4.0E-04	0.20

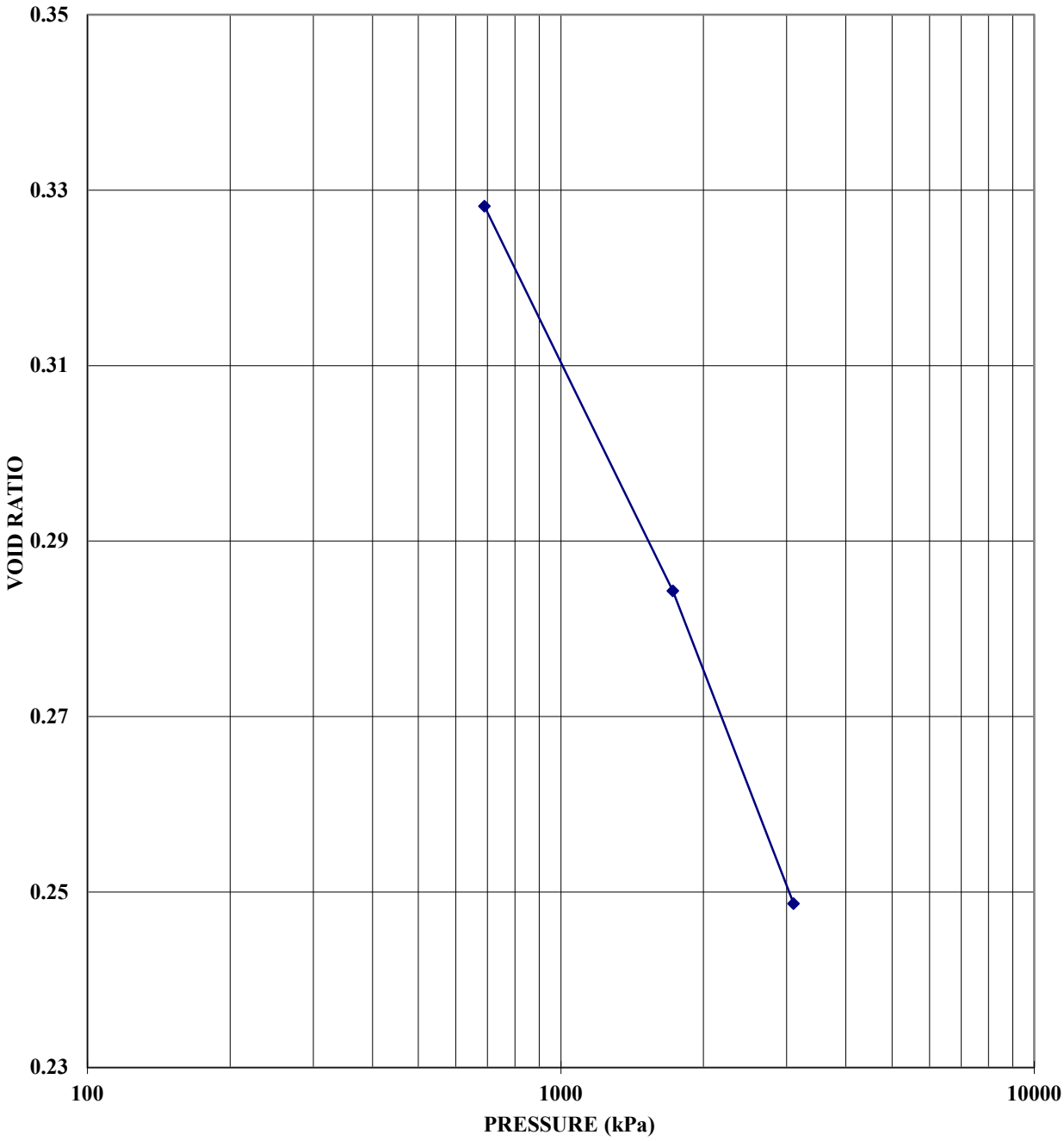
COMMENTS

1. Final specimen height measured before running the pemeability test
2. Dry Density, Void Ratio and Porosity calculated from final height
3. Specimen was placed with light compactive effort
4. Particles larger than 37.5 mm removed prior to testing

Project Name:		RIGID WALL COMPRESSION CONSTANT AND FALLING-HEAD PERMEABILITY 10-INCH DIAMETER CELL				
Victoria Gold/Geotechnical Lab Testing/Canada						
Project Number:						
20139832.1						
Sample ID:	**Depth (m)**	**Technician:**	**Checked:**	**Reviewed:**	**Date:**	**Figure:**
VGC 90 Day	--	MGC	MB	CPA	26-Feb-2020	1

GOLDER

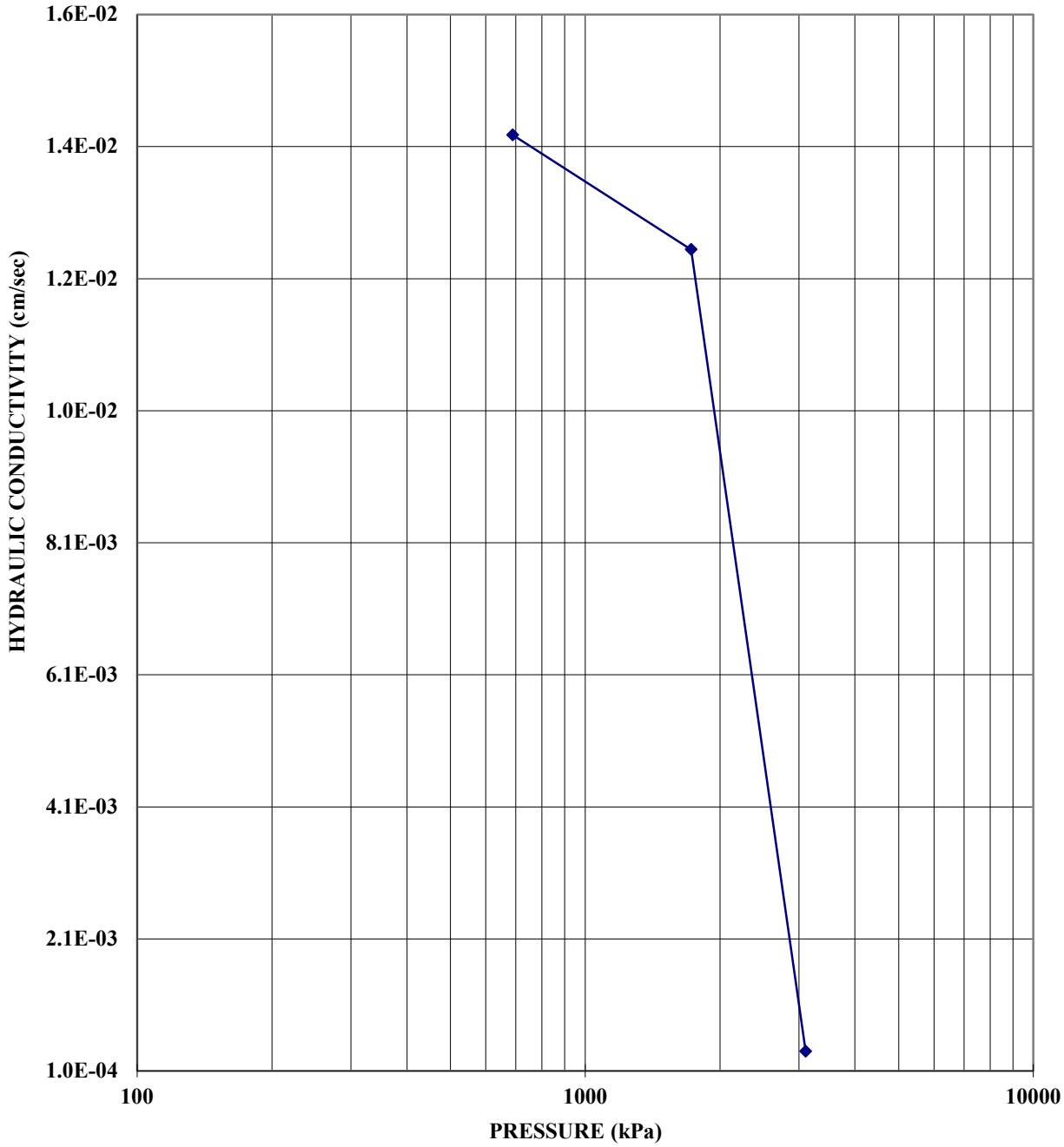
NORMAL LOAD vs. VOID RATIO



Project Name: Victoria Gold/Geotechnical Lab Testing/Canada		RIGID-WALL COMPRESSION PERMEABILITY Normal Load versus Void Ratio				
Project Number: 20139832.1						
Sample ID: VGC 90 Day	Depth (m): --	Technician: MGC	Checked: MB	Reviewed: CPA	Date: 26-Feb-2020	Figure: 2

GOLDER

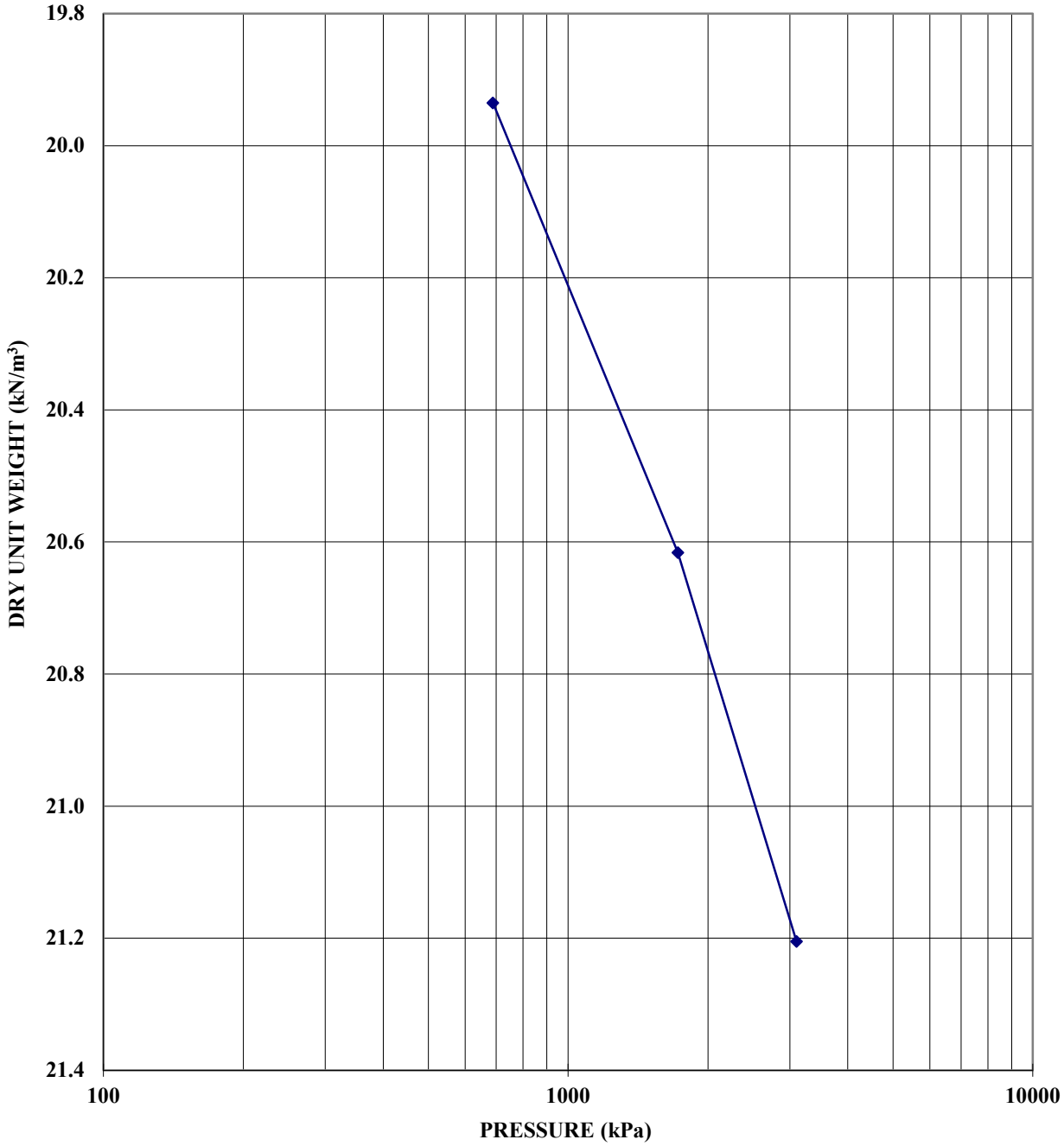
NORMAL LOAD vs. HYDRAULIC CONDUCTIVITY



Project Name: Victoria Gold/Geotechnical Lab Testing/Canada		RIGID-WALL COMPRESSION PERMEABILITY Normal Load versus Hydraulic Conductivity				
Project Number: 20139832.1						
Sample ID: VGC 90 Day	Depth (m): --	Technician: MGC	Checked: MB	Reviewed: CPA	Date: 26-Feb-2020	Figure: 3

GOLDER

NORMAL LOAD vs. DRY DENSITY



Project Name: Victoria Gold/Geotechnical Lab Testing/Canada		RIGID-WALL COMPRESSION PERMEABILITY Normal Load versus Dry Desnity				
Project Number: 20139832.1						
Sample ID: VGC 90 Day	Depth (m): --	Technician: MGC	Checked: MB	Reviewed: CPA	Date: 26-Feb-2020	Figure: 4

APPENDIX 3
Daily Reports

TETRA TECH

FIELD REPORT

ISSUED FOR USE

Project:	Heap Leach Facility Phase 1B – CQA Foundation Prep	**Date:**	March 15, 2020
Location:	Victoria Gold Mine – Eagle Gold	**Contractor:**	Ewing
Client:	Victoria Gold	**Contractor's Rep:**	Marshall Ewing
Contact:	Clint Abel	**Contractor's Email:**	
Weather:	Variable	**Tetra Tech Representative:**	Adam Mickey
File:	704-ENG.WARC03235-09	**Status:**	Issued for Use

1.0 INTRODUCTION

The following Field Report summarizes Tetra Tech's site visit from March 11, 2020, to March 16, 2020

2.0 DAILY FIELD OBSERVATIONS

2.1 March 11, 2020

Traveled around the site with Clint Abel and Clint Green for an orientation to the project.

Conducted testpit logging along the under drain trench. Submitted logs to be drafted.

Ewing dug two trenches approximately 5 m long for the lateral drains to be installed at station 8+45.6 in the Phase 1B under drain trench.

2.2 March 12, 2020

Ewing excavated ice lens located at existing under drain location along the under drain trench. Confirmed that ice lens no longer remained. (Figure 1)

Ewing laid filter cloth at the base of the under drain trench. Two sheets were used, maintaining a minimum overlap of 0.5 m, along the base of the trench with excess cloth being laid along the sides of the trench to wrap the select drain fill once drain pipes are installed.

Ewing placed select drain rock on the installed filter cloth for the length of a single HDPE under drain pipe to facilitate fusing to existing under drain piping. The rock was shot by Underhill to confirm that the thickness met specifications. (Figure 2)

2.3 March 13, 2020

Clint Abel fused new HDPE pipe to the existing under drain piping. (Figures 3 & 4)

Ewing placed select drain rock at the fused joints and laid filter cloth on top. 200 mm cover of select drain rock was maintained above the pipe, and filter cloth overlap achieved 0.5 m overlap between sheets. Noted to Ewing that a small piece of filter cloth would be required along the west side to achieve the required overlap prior to the placement of select fill sand. (Figures 5 & 6)

Tetra Tech Canada Inc.
61 Wasson Place
Whitehorse, YT Y1A 0H7 CANADA
Tel 867.668.3068 Fax 867.668.4349

2.4 March 14, 2020

No inspection work required.

2.5 March 15, 2020

No Inspection work required.

2.6 March 16, 2020

10:30 am – Ewing placed filter cloth in the under drain trench. All joints were checked and confirmed to have a minimum 0.5 m overlap. During placing of filter cloth, noted that it might be easier to place a roll down the bottom of the trench, and then a roll on each side with a 0.5 m overlap in the bottom of the trench at each side. During the day, the filter cloth was falling down on the edges, and soil from the trench walls was falling on top of the filter cloth. (Figures 7 & 8)

11:30 am – Placement of select drain rock began. Underhill was on site to survey the surface as placement proceeded. Ewing met design requirements for thickness of rock.

12:30 pm – Fusing of under drain pipe began. The fuser operator was using the app and applying the correct temperature for 2 minutes and 42 seconds. Fuser had seven joints completed by the time Clint returned. (Figure 9)

The ice lens dug out at 8+45 was not fully excavated. During the day, warm temperature caused melting to the north of the excavated area. Identified that ice was still present and requested Ewing to excavate out the area. During excavation, it was noted that the ice lens sloped downwards towards the trench. Ewing ripped the ice lens out and confirmed that it was removed in the area. Ice could still be present and suggested cleaning up the excavation to see if any ice continued to melt out of slope. (Figures 10, 11, & 12)

A soft spot was found at the base of the under drain trench, where the ice lens was dug out on March 20. Clint was made aware upon return to site.

3.0 PHOTO LOG



Figure 1: Ice Lens Removed at 8+45



Figure 2: Placed Select Drain Fill



Figure 3: Fused Pipe to Existing Under Drain Pipes



Figure 4: First Section of Phase 1B Under Drain Piping



Figure 5: Existing Filter Cloth at Under Drain Tie In



Figure 6: Filter Cloth Placed Above Drain Rock



Figure 7: Filter Cloth Installed in Under Drain Trench

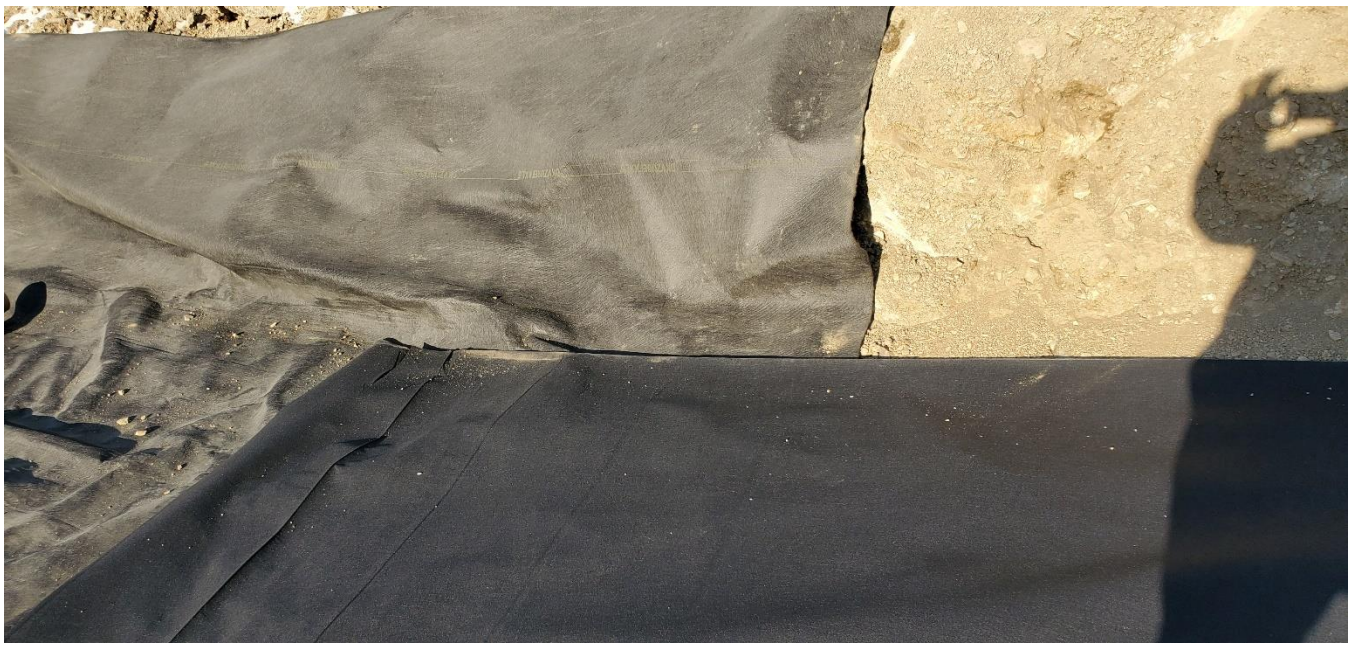


Figure 8: Minimum Overlap of 0.5 m at Joints



Figure 9: First Set of Fused Pipes After Lateral Drains as 8+45.6



Figure 10: Ice Lens Melting Out of Under Drain Trench Wall at 8+45



Figure 11: Ice in Soil at 8+45



Figure 12: Excavated Ice Lens at 8+45

StrataGold Corporation, Eagle Gold Project
Project: Victoria Gold
Weekly Report #1
March 15-21, 2020

Site Location: Phase 1B

Hours worked this period: 864
Hours total to date: 2,466

Summary:

- Construction
  - Continue construction of the header underdrain.
  - Fusing 6" HDPE DR11 Header Underdrain piping.
  - Day shift crew has been supporting the header drain material requirements
  - Night shift has been focusing on removing material the D10 dozer has been pushing down below the western end of the 1045 ditch.

Legend:
Red = Trouble
Yellow = Caution
Green = On track

Weather:

- Temperatures: Daytime average -2C to -10C
- Snow: March 18th – trace snow fall overnight

Incidents / Health & Safety:

- Incidents or accidents: None to report this week
- Weekly site safety inspection:
- Weekly safety meeting: Toolbox meeting held every morning in the Ewing office

Incidents to date:

0
0
7

Project Milestones:	Responsible:	Completion Date:
Nuway crushing gravel for underdrain construction – Sand was not completed to move crusher to Secondary – Mine will have to produce remain sand required for liner placement	Nuway	March 11th
Header Underdrain excavation and installation	Ewing	March 17th
Lateral drain excavation and installation	Ewing	April 21st
Ditching for freshet / Water management	Ewing	March 31
Removal of all grubbing and shaping material for liner placement	Ewing	April 20th
Removal of any unsuitable material	Ewing	May 4th
Surface preparation for liner placement	Ewing	July 7th
Liner placement	Layfield / Ewing	Aug 4th

Construction:
Activities This Week:

- Fusing Header Underdrain Pipes
- Header Underdrain construction supported by the day shift crew and some labour support from Process. Crews continued to placement of geotextile, 20mm drain rock, and sand.
- Unsuitable material had to be excavated from under the header drain pipes that had already been installed. The unsuitable material at the beginning of the drain looked to be an old sump Pelly Construction utilized during construction. We lost 1 ½ days addressing the unsuitable material.
- D10 dozer ripping and sloping wester end of the 1045 slope (2.5H:1V) and removing any other grubbing material remaining.
- Night shift has been has been focussed on removing the material the D10 has been pushing up during day shift.

Activities Planned for Next Week:

- Complete fusing header underdrain pipes
- Complete construction of the header underdrain
- Day shift crew to resume removal of material on the west slope

- Pad start padding access along the lower western lateral drain – this will be utilized to finish cleaning up the western slope
- Night shift to continue bulk material removal pushed down up by the D10 dozer on day shift

HSE SAFETY REPORT

	PERIOD TO	MONTH TO DATE	YEAR TO DATE	PROJECT TO DATE
Total Hours	864	2,466	2,466	2,466
Incidents (Non-injury)	0	0	0	0
First Aid Injuries	0	0	0	0
Medical Aid Injuries	0	0	0	0
Loss Time Injuries (LTI)	0	0	0	0
Recordable Incident	0	0	0	0

Progress Photos:



D10 dozer pushing material down for night shift on March 18th



First section of 20mm placement complete on March 19th

Progress Photos:



Fusing completed to second lateral drain March 19th

TETRA TECH

FIELD REPORT

ISSUED FOR USE

Project:	Heap Leach Facility Phase 1B – CQA Foundation Prep	**Date:**	March 24, 2020
Location:	Victoria Gold Mine – Eagle Gold	**Contractor:**	Ewing
Client:	Victoria Gold	**Contractor's Rep:**	Marshall Ewing
Contact:	Clint Abel	**Contractor's Email:**	
Weather:	Variable	**Tetra Tech Representative:**	Adam Mickey
File:	704-ENG.WARC03235-09	**Status:**	Issued for Use

1.0 INTRODUCTION

The following Field Report summarizes Tetra Tech's site visit from March 20, 2020, to March 23, 2020

2.0 DAILY FIELD OBSERVATIONS

2.1 March 20, 2020

Traveled to site from Whitehorse arriving at 12:00 pm.

Fusing of Under Drain (U/D) pipes continuing. (Figure 1)

Sand placed with survey control over top of U/D to approximately 8+55. Proof rolled sand with roller compactor until lines at edges of passes were to a minimum. (Figure 2)

Large gaps between sand and U/D trench walls existed. Advised Ewing to fill with rock fill and roll with roller compactor. (Figure 3)

10 cm of select drain rock placed to excavation limits of U/D trench. Placement surveyed at end of day. Some low spots to be addressed March 21 prior to fusing pipe in area.

From 8+55 to 9+12 U/D pipes spaced 1.0 m apart and placed select drain rock with survey control to 200 mm above pipes. (Figures 4 & 5)

Sloping of Phase 1B at NW edge continuing.

2.2 March 21, 2020

Work on U/D trench began at 8:00 am.

Fusing of U/D piping continuing at approximately 9+50.

Placed filter cloth on select drain rock in U/D trench from 8+55 to 9+12. Minimum 0.5 m overlap maintained at all filter cloth joints. (Figures 6, 7, & 8)

Ewing excavating U/D trench to end point. (Figures 9 & 10)

Tetra Tech Canada Inc.
61 Wasson Place
Whitehorse, YT Y1A 0H7 CANADA
Tel 867.668.3068 Fax 867.668.4349

Sand placement with survey control to 300 mm above pipe in U/D trench from 8+55 to 9+12. Sand brought level to edges of U/D trench. (Figure 11)

Sand proof rolled with roller compactor from 8+55 to 9+12.

Ewing Spaced pipes out with 1.0 m separation from 9+12 to 9+37. (Figure 12)

Place U/D pipe select drain rock over pipe with survey control from 9+12 to 9+37. Filter cloth installed over select drain rock with minimum 0.5 m overlap. Trench has widened out requiring filter cloth strips to be cut to ensure minimum overlap met. (Figures 13 & 14)

Began placing 300 mm sand cover on filter cloth from 9+12 to 9+37.

Fusing of U/D pipe made it to 3rd lateral drain at 9+87.

2.3 March 22, 2020

Snowed overnight (<2cm).

Sand cover continuing from 9+12 to 9+37.

Fusing continuing at 3rd lateral drains.

Ewing continuing to excavate U/D trench to end point and completed. (Figure 15)

Select drain rock placed over U/D pipes from 9+37 to 9+55 with survey control. Filter cloth placed over rock with minimum 0.5 m overlap then sand cover. (Figures 16, 17, & 18)

Sand proof rolled with roller compactor up to 9+37.

Ewing began placing filter cloth to end of U/D trench.

U/D pipe aligned with 1.0 m spacing to 9+90.

2.4 March 23, 2020

Ewing continuing to place filter cloth to end of U/D trench and placing 100 mm of select drain rock with survey control. (Figures 19, 20, & 21)

Select drain rock placed over U/D pipe from 9+55 to 9+90 with survey control. Filter cloth was then placed, and cover sand with survey control. Did not finish sand cover prior to leaving site. (Figures 22, 23, 24, & 25)

Fusing of U/D pipe began at approximately 11:00 am.

3.0 PHOTO LOG



Figure 1: Fusing of U/D Piping



Figure 2: Sand Cover Placed up to 8+55



Figure 3: Sand Cover plus Rock Fill from Phase 1A U/D Tie In to 8+55



Figure 4: U/D Pipes Spaced 1.0 m to 9+12



Figure 5: Select Drain Rock Placed to 9+12



Figure 6: Base Filter Cloth Wrap Folded on to Select Drain Rock up to 9+12



Figure 7: Top Filter Cloth Placed on Select Drain Rock to 9+12



Figure 8: Filter Cloth Tied in at 8+55



Figure 9: U/D Trench Excavated to its End Point



Figure 10: Final Excavation of U/D Trench to its Limits



Figure 11: Sand Cover Placed from 8+55 to 9+12



Figure 12: Spacing Pipes Out from 9+12 to 9+37



Figure 13: Select Drain Rock Placed from 9+12 to 9+37



Figure 14: Filter Cloth Placed from 9+12 to 9+37



Figure 15: Finished U/D Trench



Figure 16: Select Drain Rock Placed Over U/D Pipe from 9+37 to 9+55



Figure 17: Filter Cloth Placed on Select Drain Rock Cover from 9+37 to 9+55



Figure 18: Sand Cover over Filter Cloth from 9+37 to 9+55



Figure 19: 100 mm of Select Drain Rock Placed to End of U/D Trench



Figure 20: Lateral 4E



Figure 21: Lateral 4W



Figure 22: Select Drain Rock Cover from 9+55 to 9+90



Figure 23: Filter Cloth Placed from 9+55 to 9+90



Figure 24: Lateral Drain 3E



Figure 25: Lateral Drain 3W

StrataGold Corporation, Eagle Gold Project
Project: Victoria Gold
Weekly Report #2
March 22-28, 2020

Site Location: Phase 1B

Hours worked this period: 919
Hours total to date: 3,385

Summary:

- Construction
  - Finished construction of the header underdrain March 26th
  - Day shift crew hauling material off the west slope
  - Night shift focusing on removing ripped material produced by the D10 dozer
  - Started cleaning up the eastern toe along the 990 bench

Legend:
Red = Trouble
Yellow = Caution
Green = On track

Weather:

- Mostly clear all week with some over cast on Wednesday.
- Temperatures: Daytime average -2C° to -14C° until Friday morning -24C° to -35C°
- Snow: March 22nd – snow fall accumulation of <2 cm

Incidents / Health & Safety:

- Incidents or accidents: None to report this week
- Weekly site safety inspection: No inspections this week
- Weekly safety meeting: Toolbox meeting held every morning

Incidents to date:

0
0
7

Project Milestones:

	Responsible:	Completion Date:
Nuway crushing gravel for underdrain construction – Sand was not completed before move the crusher to Secondary – Mine will have to produce remain sand required for liner placement	Nuway	March 11th
Header Underdrain excavation and installation	Ewing	Complete
Lateral drain excavation and installation	Ewing	April 21st
Ditching for freshet / Water management	Ewing	March 31
Removal of all grubbing and shaping material for liner placement	Ewing	April 20th
Removal of any unsuitable material	Ewing	May 4th
Surface preparation for liner placement	Ewing	July 7th
Liner placement	Layfield / Ewing	Aug 4th

Construction:
Activities This Week:

- Top two laterals were moved down slightly to get some separation from the liner key trench
- Finished fusing Header Underdrain on March 25th
- Completed construction of the Header Underdrain March 26th
- Day shift crew has been focussing on removing the material remaining on the western slope. There was an old trench excavation found in the middle of the western slope. Ewing cleaned all the grubbing and snow out of the trench, but will require backfilled to maintain 2:1 slope.
- The D10 dozer completed ripping and sloping (2.5H:1V) below the 1045 ditch from the header underdrain west. The dozer started ripping some of the western access for night shift to haul.
- Borrowed Process D10 dozer on March 26th to start assisting with shaping the eastern section of the slope above the 990 bench. Both dozers will focus on this section to ensure the construction of the water management ditch is complete before freshet.
- Night shift continues to focus on removal of material the D10 dozers push up during day shift.

Activities Planned for Next Week:

- Start receiving loads of GCL and staging in the Phase 2 staging area

- Finish cleaning up and shaping along the eastern toe above the 990 bench
- Start excavating the water management ditch along the eastern side when shaping complete
- Start padding access along the lower western lateral drain – this will be utilized to finish cleaning up the western slope
- Backfill old exploration trench on the western slope
- Day shift crew to resume removal of material on the west slope whenever possible
- Night shift will continue removing material produced by the D10 dozer on day shift
- Rebuild the section of ditch at the top of the header underdrain. This section will require liner to ensure the water stays in the ditch.

HSE SAFETY REPORT

	PERIOD TO	MONTH TO DATE	YEAR TO DATE	
Total Hours	919	3,385	3,385	
Incidents (Non-injury)	0	0	0	
First Aid Injuries	0	0	0	
Medical Aid Injuries	0	0	0	
Loss Time Injuries (LTI)	0	0	0	
Recordable Incident	0	0	0	

Progress Photos:



March 23rd progress — looking up towards the 4th lateral drain



Fusing the last #4 lateral drain March 24th

Progress Photos:



Crew placing 20mm drain rock March 24th



Header Underdrain completed March 26th

Progress Photos:



March 27th an old exploration trench found in the west slope



March 28th Ripping and pushing on the east side



Shaping and #4 west lateral layout

StrataGold Corporation, Eagle Gold Project
Project: Victoria Gold
Weekly Report #4
April 5-11, 2020

Site Location: Phase 1B

Hours worked this period: 960
Hours total to date: 5,230

Summary:

- Construction
  - Focusing both crews on removing material along the eastern side above the 990 bench so temporary water management ditch can be constructed.
  - Completed energy dissipater at the end of the interceptor ditch.
  - Completed decommissioning last monitoring well in Phase 1B (BGC11-29).
  - Completed interceptor ditch repair where Header Underdrain was installed.
  - Started excavating and installing lateral drain 4W.

Legend:
Red = Trouble
Yellow = Caution
Green = On track

Weather:

- A mix of sun and overcast over the week with some light snow March 8th
- Temperatures: Morning lows of -20C° with daytime highs hitting -2C°

Incidents / Health & Safety:

- Incidents or accidents: Fender damaged on 730 wiggle wagon, potentially mud build up, but unknown.
- Weekly site safety inspection: No inspections this week
- Weekly safety meeting: Toolbox meeting held every morning in the field to ensure enough room for social spacing.

Incidents to date:

1

Project Milestones:	**Responsible:**	**Completion Date:**
Nuway crushing gravel for underdrain construction – Sand was not completed before move the crusher to Secondary – Mine will have to produce remain sand required for liner placement	Nuway	March 11th
Header Underdrain excavation and installation	Ewing	Complete
Lateral drain excavation and installation	Ewing	April 21st
Ditching for freshet / Water management	Ewing	March 31
Removal of all grubbing and shaping material for liner placement	Ewing	April 20th
Removal of any unsuitable material	Ewing	May 4th
Surface preparation for liner placement	Ewing	July 7th
Liner placement	Layfield / Ewing	Aug 4th

Construction:
Activities This Week:

- Completed constructing the ditch at the top of the header underdrain. This section was lined with 2mm LLDPE to ensure the water stays in the interceptor ditch. Rip rap was replaced to original 300mm thickness April 6th.
- Competed placement of rip rap in energy dissipater at the end of the interceptor ditch.
- Excavated and installed 70% of lateral drain 4W.
- Cut access along lateral 1W to help with cleanup on the western slope.
- Excavated and decommissioned final well in Phase 1B (BH-BPC11-29). Well was backfilled in 900mm lifts and compacted.
- First 2 loads (18 rolls each) of LLDPE liner arrived on site April 9th.
- Ewing's D10 dozers continued shaping the eastern section of the slope above the 990 bench and the eastern end of the interceptor ditch (There is much more material remaining on the eastern slope than anticipated).
- Both day and nightshift are focussed on completing material removal along the eastern side above the 990 bench so freshet ditch can be constructed.
- Dozers did some shaping and lowed access on the western side so remain material can be retreated.

Activities Planned for Next Week:

- Finish removing material above the 990 bench on the eastern side so freshet ditch construction can start
- Excavate freshet water management ditch along the eastern side when shaping is completed.
- Have both day and nightshift resume removal of material on the west slope.
- Cut perimeter access along the western slope.
- Continue excavating and installing western lateral drains whenever possible.
- Push snow into piles so the surface will dry quickly.

HSE SAFETY REPORT

	PERIOD TO	MONTH TO DATE	YEAR TO DATE	
Total Hours	960	1,483	5,230	
Incidents (Non-injury)	1	1	1	
First Aid Injuries	0	0	0	
Medical Aid Injuries	0	0	0	
Loss Time Injuries (LTI)	0	0	0	
Recordable Incident	0	0	0	

Liner Delivery:

Material	Number of Loads	Total on Site
GCL	15	356
Liner	4	89.5
Bentonite (pallets)	Arriving on liner loads	14

Production:

Material	Month Total (April 2020)	Total to Date
Shaping / Grubbing	31,724 m^3	101,094 m^3
20mm Drain rock	84 m^3	728 m^3
Sand	0 m^3	588 m^3
Blast Rock Backfill	1008 m^3	2,198 m^3
Total Material	32,816 m^3	104,608 m^3

Progress Photos:



Interceptor Ditch reconstructed at top end of Header Underdrain March 6th



Energy Dissipater sump at the end of the Interceptor Ditch

Progress Photos:



Installing 4W Lateral Drain



Backfilling Decommissioned Well BGC11-29

Progress Photos:



D10 Dozer ripping and shaping the eastern slope



Removing organics remaining above lateral 2W & clearing snow

StrataGold Corporation, Eagle Gold Project
Project: Victoria Gold
Weekly Report #5
April 12-18, 2020

Site Location: Phase 1B

Hours worked this period: 1063
Hours total to date: 6,293

Summary:

- Construction
  - Completed bulk material removal along the eastern side above the 990 bench.
  - Completed excavation of temporary water management ditch along the eastern side.
  - Dayshift focusing on removing material on the western slope.
  - Nightshift continues removing material produced by the D10 dozer
  - Started excavating lateral 3W April 17, 2020
  - Started excavating the perimeter access along the top of the western slope.

Legend:
Red = Trouble
Yellow = Caution
Green = On track

Weather:

- A mix of sun and overcast this week with much warmer temperatures. The snow is going very quickly right now.
- Temperatures: Morning lows of 2C° with daytime highs of 10C°

Incidents / Health & Safety:

- Incidents or accidents: No incidents to report this week
- Weekly site safety inspection: No inspections this week
- Weekly safety meeting: Toolbox meeting held every morning in the field to ensure enough room for social spacing.

Incidents to date:

1

Project Milestones:	**Responsible:**	**Completion Date:**
Nuway crushing gravel for underdrain construction – Sand was not completed before move the crusher to Secondary – Mine will have to produce remain sand required for liner placement	Nuway	March 11th
Header Underdrain excavation and installation	Ewing	Complete
Lateral drain excavation and installation – Behind due to the much larger amount of grubbing and shaping	Ewing	April 21st
Ditching for freshet / Water management	Ewing	Mostly Complete
Removal of all grubbing and shaping material for liner placement – Volume of material larger then estimate	Ewing	April 20th
Removal of any unsuitable material	Ewing	May 4th
Surface preparation for liner placement	Ewing	July 7th
Liner placement – Liner is now scheduled to start May 28th	Layfield / Ewing	Aug 4th

Construction:
Activities This Week:

- Excavated freshet ditch along the eastern side of Phase 1B
- Started excavating lateral drain 3W
- First 40% of LLDPE liner is on site until after road bands are lifted
- Ewing's D10 dozers continued cutting and shaping the 2.5:1 sloe along the eastern section of the interceptor ditch.
- Nightshift continued removing material produced by the D10 dozer along the eastern end of the interceptor ditch.
- Day shift crew continued material removal along the western slope and supporting lateral drain construction.

Activities Planned for Next Week:

- Double shift the western slope until grubbing and shaping is completed.
- Continue excavating and installing western lateral drains.
- Finish perimeter access along the western slope.
- Continue managing water and access roads in Phase 1B.
- The fist 50% of GCL hauling will be complete this week until after road bands are lifted.

HSE SAFETY REPORT

	PERIOD TO	MONTH TO DATE	YEAR TO DATE	
Total Hours	1063	2,546	6,293	
Incidents (Non-injury)	1	1	1	
First Aid Injuries	0	0	0	
Medical Aid Injuries	0	0	0	
Loss Time Injuries (LTI)	0	0	0	
Recordable Incident	0	0	0	

Liner Delivery:

Material	Number of Loads	Total on Site
GCL	18	430
Liner	8	145.5
Bentonite (pallets)	Arriving on liner loads	14

Production:

Material	Month Total (April 2020)	Total to Date
Shaping / Grubbing	46,648 m^3	116,018 m^3
20mm Drain rock	84 m^3	728 m^3
Sand	322 m^3	910 m^3
Blast Rock Backfill	1036 m^3	2,226 m^3
Total Material	48,090 m^3	119,882 m^3

Progress Photos:



Excavating freshet ditch along the eastern side



Excavating lateral drain 3W

Progress Photos:



D10 dozer ripping and sloping below the Interceptor ditch



Western slope material removal

StrataGold Corporation, Eagle Gold Project
Project: Victoria Gold
Weekly Report #6
April 19-25, 2020

Site Location: Phase 1B

Hours worked this period: 1,272
Hours total to date: 7,565

Summary:

- Construction
  - Repaired access road into Phase 1B due to muddy conditions.
  - Continue excavating and installing lateral drain 3W.
  - Continued working on perimeter access along the top of the western slope.
  - Dozer is shaping western slope and supporting the loading tool.
  - Both day and nightshift focusing on removing material on the western slope.
  - Installed 30 m section of liner in the interceptor ditch above the header underdrain.
  - Identified permafrost area.

Legend:
Red = Trouble
Yellow = Caution
Green = On track

Weather:

- Mostly overcast skies this week with some precipitation (first light rain April 19th fallowed up with rain April 21st). Slightly lower temperatures this week except for Friday and Saturday dropped to -18C° overnight.
- Temperatures: Morning lows of -18C° with daytime highs of 8C°

Incidents / Health & Safety:

- Incidents or accidents: No incidents to report this week
- Weekly site safety inspection: No inspections this week
- Weekly safety meeting: Toolbox meeting held every morning in the field to ensure enough room for social spacing.

Incidents to date:

1

Project Milestones:	**Responsible:**	**Completion Date:**
Nuway crushing gravel for underdrain construction – Sand was not completed before move the crusher to Secondary – Mine will have to produce remain sand required for liner placement	Nuway	March 11th
Header Underdrain excavation and installation	Ewing	Complete
Lateral drain excavation and installation – Behind due to the much larger amounts of material requiring removal	Ewing	April 21st
Ditching for freshet / Water management	Ewing	Mostly Complete
Removal of all grubbing and shaping material for liner placement – Volume of material larger then estimate	Ewing	April 20th
Removal of any unsuitable material	Ewing	May 4th
Surface preparation for liner placement	Ewing	July 7th
Liner placement – Liner is now scheduled to start May 28th	Layfield / Ewing	Aug 4th

Construction:
Activities This Week:

- Spent one day padding blast rock down Phase 1B access road to make passible for fuel truck and liner loads. Liner loads still require regular support from D7 dozer to make steeper muddy grades.
- Continued excavating and backfilling lateral drain 3W (65% Complete)
- Completed lateral drain 4W April 24th.
- Continued working on perimeter access road when possible.
- Last 5 loads on route to have the first 50% of the GCL liner on site.
- Dozer support focused on shaping the western slope and supporting the loading tool.
- The day shift crew continued removing material along the western slope and supporting lateral drain construction.
- Night shift assisted with material removal along the western slope.
- The interceptor ditch was leaking water down the header underdrain causing some damage to the sand. To address the exfiltration problem a 30 m section of rip rap was removed above the header underdrain. The ditch was graded to ensure good drainage by survey and lined with 2 mm LLDPE liner. A second piece of liner was keyed in along the uphill side and draped over the liner in the ditch. This should address the majority of water from running under the liner.
- Identified a small section of permafrost in the lower northwest corner below lateral drain 2W.

Activities Planned for Next Week:

- Continue double shifting the western slope until grubbing and shaping is completed.
- Complete lateral drain 3W and start excavating and installing lateral drain 2W.
- Finish cutting the perimeter access to grade along the western slope.
- Continue managing water and access roads into Phase 1B whenever necessary.

HSE SAFETY REPORT

	PERIOD TO	MONTH TO DATE	YEAR TO DATE	
Total Hours	1,272	3,818	7,565	
Incidents (Non-injury)	1	1	1	
First Aid Injuries	0	0	0	
Medical Aid Injuries	0	0	0	
Loss Time Injuries (LTI)	0	0	0	
Recordable Incident	0	0	0	

Liner Delivery:

Material	Number of Loads	Total on Site
GCL	23	550
Liner	8	145.5
Bentonite (pallets)	Arriving on liner loads	14

Production:

Material	Month Total (April 2020)	Total to Date
Shaping / Grubbing	62,986 m^3	132,356 m^3
Re-handle Material	784 m^3	784 m^3
20mm Drain rock	336 m^3	980 m^3
Sand	560 m^3	1,148 m^3
Blast Rock Backfill	1,386 m^3	2,576 m^3
Blast Rock to Road Repairs	672 m^3	672 m^3
Total Material	66,724 m^3	138,516 m^3

Progress Photos:



Installing lateral drain 3W



Excavating perimeter access

Progress Photos:



Completing lateral drain 4W



D7 Shaping the western slope

Progress Photos:



Removing muddy material on a cold April 25th day



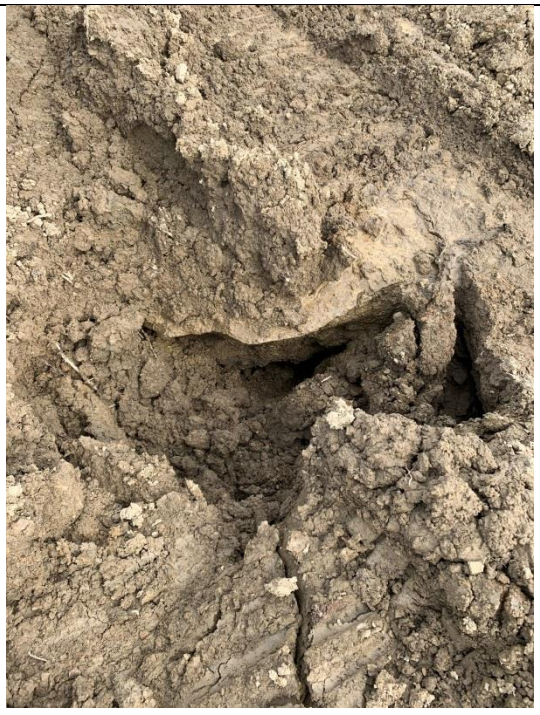
Placed liner in interceptor ditch above header drain

Progress Photos:



Permafrost area identified – Visual ice in circled areas





StrataGold Corporation, Eagle Gold Project
Project: Victoria Gold
Weekly Report #11
May 24-30, 2020

Site Location: Phase 1B

Hours worked this period: 1,145
Hours total to date: 12,732

Summary:

- Construction
  - Completed backfilling lateral drains1W & 2W along the western slope.
  - Dozer continuing final shaping along the western slope and compacting for liner placement.
  - Dozer work has started on the eastern side whenever possible.
  - Day shift continued to focus on removing material on the western slope.
  - Night shift crew continues placing ODF at the HLF.
  - Layfield crew arrived on site May 28th.

Legend:
Red = Trouble
Yellow = Caution
Green = On track

Weather:

- Mostly overcast skies with some rain.
- Temperatures: Morning lows of 6 C° with daytime highs of 12 C°

Incidents / Health & Safety:

- Incidents or accidents: No incidents this week
- Weekly site safety inspection: No inspections this week
- Weekly safety meeting: Toolbox meeting held every morning in the field to ensure enough room for social spacing.

Incidents to date:

2

Project Milestones:	**Responsible:**	**Completion Date:**
Nuway crushing gravel for underdrain construction – Sand was not completed before move the crusher to Secondary – Mine will have to produce remain sand required for liner placement	Nuway	March 11th
Header Underdrain excavation and installation	Ewing	Complete
Lateral drain excavation and installation – Behind due to the much larger amounts of material requiring removal	Ewing	April 21st
Ditching for freshet / Water management	Ewing	Mostly Complete
Removal of all grubbing and shaping material for liner placement – Volume of material much larger then estimate	Ewing	April 20th
Removal of any unsuitable material – will not affect liner placement schedule	Ewing	May 4th
Surface preparation for liner placement	Ewing	July 7th
Liner placement – Liner is now scheduled to start May 28th	Layfield / Ewing	Aug 4th

Construction:
Activities This Week:

- Finished backfilled lateral drains 1W & 2W along the western slope so final shaping can be completed for liner placement.
- Started excavating lateral drain 1E May 26th and started install the next day.
- The D7 dozer focused on final shaping along the western slope advancing from the south to the north. The packer has been packing the finished surface as the dozer advances.
- Utilizing Process D10T on the eastern side of Phase 1B whenever possible.
- The day shift crew continued removing material along the north western slope and removed unsuitable material along the north western perimeter berm. This material had to be removed so the perimeter berm can be constructed. The excavation along the perimeter was backfilled to original grade in lifts and compaction tested by Tetra Tech.
- The night shift crew placed ODF material at the HLF most of the week. The nightshift crew was utilized to haul rock backfill to Phase 1B for a couple of shifts.
- The Layfield and Ewing labour crew arrived on site May 28th later in the afternoon. The crews produced approximately 7000 sand bags over the weekend in preparation to start liner placement.

Activities Planned for Next Week:

- Start liner placement along the western side.
- Continue advancing north along the western side with final shaping and packing.
- Excavate key trench ahead of liner placement.
- Complete excavating and installing lateral drain 1E and start the first section of lateral 4E.
- Resume topsoil removal, sloping (2.5:1) below the interceptor ditch, and removing any unsuitable material on the eastern side.
- Backfill the top end of the header underdrain.

HSE SAFETY REPORT

	PERIOD TO	MONTH TO DATE	YEAR TO DATE	
Total Hours	1,145	4,084	12,732	
Incidents (Non-injury)	0	1	2	
First Aid Injuries	0	0	0	
Medical Aid Injuries	0	0	0	
Loss Time Injuries (LTI)	0	0	0	
Recordable Incident	0	0	0	

Liner Delivery:

Material	Number of Loads	Total on Site
GCL	39	903 (67%)
Liner	8	145.5 (44%)
Bentonite (pallets)	Arriving on liner loads	28

Production:

Material	Month Total (May 2020)	Total to Date
Shaping (Common)/ Grubbing	51,254 m^3	195,552 m^3
Re-handle Material	0 m^3	784 m^3
20mm Drain rock	1,190 m^3	2,254 m^3
Sand	938 m^3	2,240 m^3
Blast Rock Backfill	2,534 m^3	5,656 m^3
Blast Rock to Road Repairs	0 m^3	672 m^3
Total Material	55,916 m^3	207,158 m^3

Progress Photos:



Excavating lateral drain 1E on May 26th



Final shaping started May 26th

Progress Photos:



Excavating unsuitable material on north western berm



Backfilling unsuitable excavation

Progress Photos:



Moose crossing at 38.5 km

TETRA TECH

WEEKLY FIELD REPORT

ISSUED FOR USE

Project:	Eagle Gold Heap Leach Phase 1B	**Date:**	May 30, 2020
Location:	Eagle Gold Mine	**Contractor:**	Ewing Transport / Layfield
Client:	Victoria Gold Corp.	**Contractor's Rep:**	Marshall Ewing / Chad Messervey
Contact:	Clint Abel	**Contractor's Email:**	
Weather:	Variable (see daily entries)	**Tetra Tech Representative:**	Adam Mickey
File:	704-ENG.WARC03235-09	**Status:**	Issued for Use

1.0 INTRODUCTION

Tetra Tech Canada Inc. (Tetra Tech) was retained by Victoria Gold Corp. (Victoria Gold) to provide CQA services at the Eagle Gold mine located north of Mayo, Yukon, at Dublin Gulch for the Eagle Gold Heap Leach Phase 1B expansion (Phase 1B).

Forte Dynamics (Forte) out of Fort Collins, Colorado provided the design and specification for Phase 1B, and Forte's representative is Clint Green.

Clint Abel of JDS Energy and Mining is Victoria Gold's project manager on site at the Eagle Gold mine.

Ewing Transport (Ewing), based out of Mayo, Yukon, is the construction contractor for Phase 1B.

Layfield Environmental Containment (Layfield) has been retained to provide and install the liner for Phase 1B, and their supervisor on site is Chad Messervey.

The following Field Report outlines Tetra Tech's CQA from May 28, 2020, to May 31, 2020.

2.0 DAILY REPORTS

2.1 May 28, 2020

Tetra Tech's field representative, Adam Mickey, mobilized to site from Whitehorse.

2.2 May 29, 2020

- Weather: sunny and windy.
- Layfield began setting up for liner placement by making sandbags, taking inventory of GCL and liner rolls, and misc other duties. 4,000 sandbags were made.
- Chad brought up safety concerns over liner deployment on the west side of Phase 1B due to the slope of the top access road. Discussions with Layfield and Ewing resulted in determining that Ewing is responsible for the safety of the excavator used for deployment. If it is not deemed safe, a new plan will be made.

Tetra Tech Canada Inc.
61 Wasson Place
Whitehorse, YT Y1A 0H7 CANADA
Tel 867.668.3068 Fax 867.668.4349

- Underhill surveyed the west side of Phase 1B to confirm that no areas were steeper than 2:1 (H:V) at Layfield's request.
- Tetra Tech monitored and provided compaction testing for backfilling of an excavation where unsuitable material was found near the waste dump site.
  - Tetra Tech confirmed that the unsuitable material was excavated beyond the limits of the Phase 1B liner and perimeter road.
  - The excavated surface was uneven, as shown in Figures 1 and 2, as well as soft and wet in places.
  - Tetra Tech advised Ewing to place a 0.5 m lift in the deeper section beneath the liner area and rock along the edge where unsuitable material was left due to being outside the limits of excavation to reduce the impact of melting snow on backfill materials (Figure 3).
  - Moisture conditioning of backfill materials was not penetrating the soil. Tetra Tech advised Ewing to wet the surface of the compacted lift to allow water to be drawn into the lifts from the base. Ewing achieved compaction of 95% with this method.
- Tetra Tech had preliminary discussions with Layfield regarding QA and QC with Layfield's QC representative, Thomas Howald (Red).
- Ewing is continuing to work on E1 lateral and sloping of the west side of Phase 1B for liner placement.

2.3 May 30, 2020

- Weather: sunny and windy.
- Ewing is continuing E1 lateral drain, sloping of west side of Phase 1B, and backfilling of excavation.
- Layfield is making 4,000 more sandbags and prepping for liner placement.
- Tetra Tech discussed QA/QC plans with Layfield and examined the destructive testing apparatus' Calibration Certificate. The apparatus was last calibrated on November 11, 2019, and shows a Total Deviation Error of 0.00%. The calibration certificate is shown in Figure 4.
- Tetra Tech performed a subgrade inspection with Thomas on first 9,000 m^2 of the west slope beginning at the west limit of Phase 1B. See Figures 5 to 8.
  - Overall slope area ready for liner.
  - Ewing is placing sand at the crest of slope along perimeter road where fractured bedrock exposed and no fines to fill in voids. Figures 9 & 10.
  - Identified a yielding area approximately 2 m x 6 m where the subgrade had tension cracks and collapsed up to 300 mm when stepped on. See Figures 11 & 12.
    - After review of Forte specifications and a conversation with Chad, Tetra Tech informed Ewing that the area would have to be filled in and recompacted. Ewing placed sand with an excavator and bucket packed the sand into place. Ewing then compacted the yielding area with a roller compactor performing a minimum of two passes.
    - Ewing completed the repair, and the subsequent inspection showed that the soft spots had been eliminated. See Figure 13.

  - A Certificate of Inspection was signed off by Layfield and Tetra Tech, confirming that the subgrade is ready for liner placement. See Figure 14.

- Ewing filled in limits of excavation with rock fill and compacted it. See Figure 15.
- Layfield prepped for beginning liner placement on May 31, 2020, by digging anchor trench and staging liner materials and sandbags.

2.4 May 31, 2020

- Weather: cloudy turning to rain and windy mid-afternoon.
- Ewing is continuing to shape slopes, backfill excavation, and install E1 lateral drain.
- Layfield beginning liner placement (see Figures 16 to 22):
  - Ewing excavating anchor trench along perimeter road in deployment area. See Figure 16.
  - Tetra Tech noted damage to the approved compacted subgrade due to side by sides running up and down the slope on May 30. Where the side by sides traveled, sharp rocks between 50 to 150 mm were pulled out of slope. Tetra Tech spoke with Javier from Layfield and advised that the large rocks should be removed from slope prior to placement of GCL. Rocks are to be cast onto slope in next subgrade inspection area and Ewing will run a roller compactor along the slope again to prep the subgrade and drive the rocks into the slope.
  - Layfield inspected existing liner from west side to panel P320 where ODF has not been placed to check for damage due to rocks rolling down slope and impacting liner. Tetra Tech accompanied Layfield for the inspection. Defects and holes were found in panels P320 & 322. See Figure 17.
  - Due to slope steepness, Layfield using Ewing's CAT 325 excavator to pull GCL down slope. The excavator rips up the surface of the slope as it tracks up and down.
    - Tetra Tech requested that Layfield ensure that any rocks be removed from the slope face or soil protrusions from the slope face be smoothed out prior to placement of the GCL.
    - Layfield pulls out a roll of GCL then fuses it to the next roll and continues to pull down the slope. The GCL is pulled to the base of the slope to the edge of the key trench of the existing liner. The GCL is placed in the key trench at the top of the perimeter road.
  - After the 3:00 pm break, Layfield quit placing GCL due to rainy weather and high winds.
    - 2 panels of GCL were placed on the slope.
    - Sandbags were placed at leading edges of the GCL to prevent upheaval and movement due to wind.
  - Layfield conducted a trial seam on rough pieces of liner to simulate joint connections. The first trial seam failed due to the nature of the break during the peel test, but a subsequent trial seam passed. Trial seam numbers were not recorded due to not conducting any seaming today. A new trial seam will be conducted prior to liner fusing.
  - The following GCL roll numbers were placed on the slope:
    - 502347042;
    - 502347028;

- 502347043;
- 502346988;
- 502347041;
- 502347034;
- 502347044; and
- 502347037.

3.0 PHOTO LOG



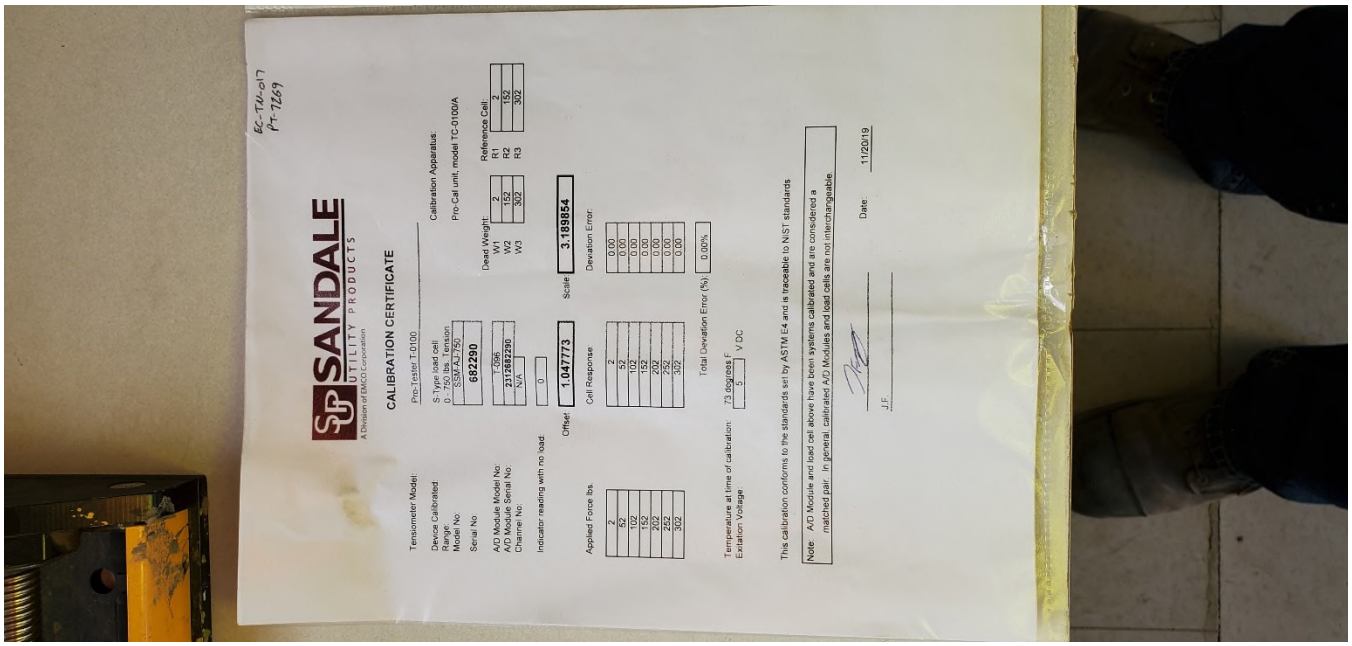
Figure 1: Completed Excavation of Unsuitable Material Facing Northward



Figure 2: Completed Excavation of Unsuitable Material Facing West



Figure 3: Compacting Rock Fill along Edge of Unsuitable Material at Limits of Excavation



SANDALE
UTILITY PRODUCTS
A Division of BMCI Corporation

EC-TW-017
PT-1269

CALIBRATION CERTIFICATE

Tensiometer Model: Pro-Tester T-0100
Device Calibrated: S Type load cell
Range: 0 - 750 lbs tension
Model No: SSM-AJ-750
Serial No: **682290**

Calibration Apparatus:
Pro-Cal unit, model TC-0100A

A/D Module Model No: T-096
A/D Module Serial No: **2171682290**
Channel No: N/A

Dead Weight: W1 2, W2 152, W3 302
Reference Cell: R1 2, R2 152, R3 302

Indicator reading with no load: 0
Offset: **1.047773** Scale: **3.189854**

Applied Force lbs.	Cell Response	Deviation Error
2	2	0.00
52	52	0.00
102	102	0.00
152	152	0.00
202	202	0.00
252	252	0.00
302	302	0.00

Total Deviation Error (%): 0.00%

Temperature at time of calibration: 73 degrees F
Excitation Voltage: 5 V DC

This calibration conforms to the standards set by ASTM E4 and is traceable to NIST standards

Note: A/D Module and load cell above have been systems calibrated and are considered a matched pair. In general, calibrated A/D Modules and load cells are not interchangeable.

Date: 11/20/19

J.F.

Figure 4: Destructive Testing Apparatus Calibration Certificate



Figure 5: May 30, 2020 CQA Subgrade Inspection, West Side Facing South



Figure 6: May 30, 2020 CQA Subgrade Inspection, West Side Facing Southeast



Figure 7: May 30, 2020 CQA Subgrade Inspection, Looking Up Slope from Base



Figure 8: May 30, 2020 CQA Subgrade Inspection, Rocky Areas on Slope



Figure 9: Sand Placement at Crest of Slope along Perimeter Road



Figure 10: Sand Placement at Crest of Slope along Rocky Areas



Figure 11: May 30, 2020 CQA Subgrade Inspection, Yielding Areas Marked for Repair

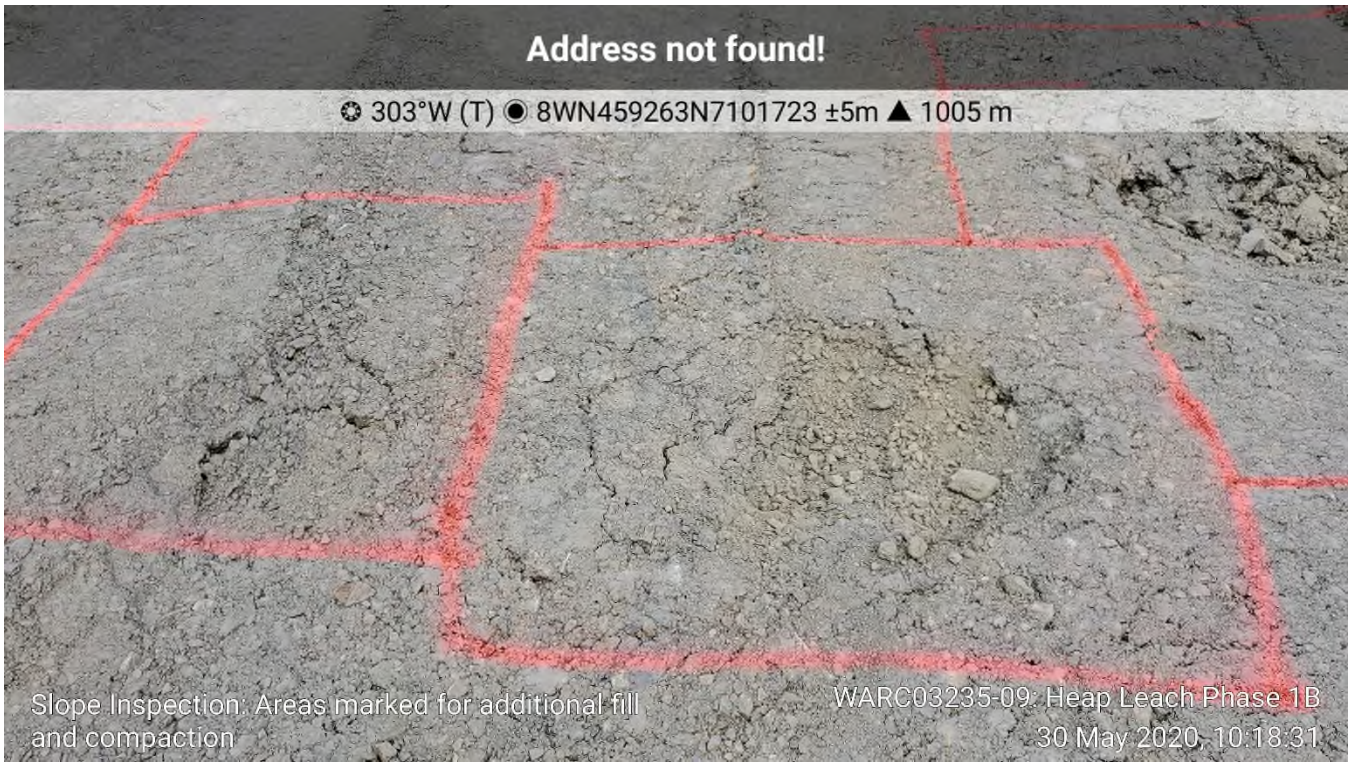
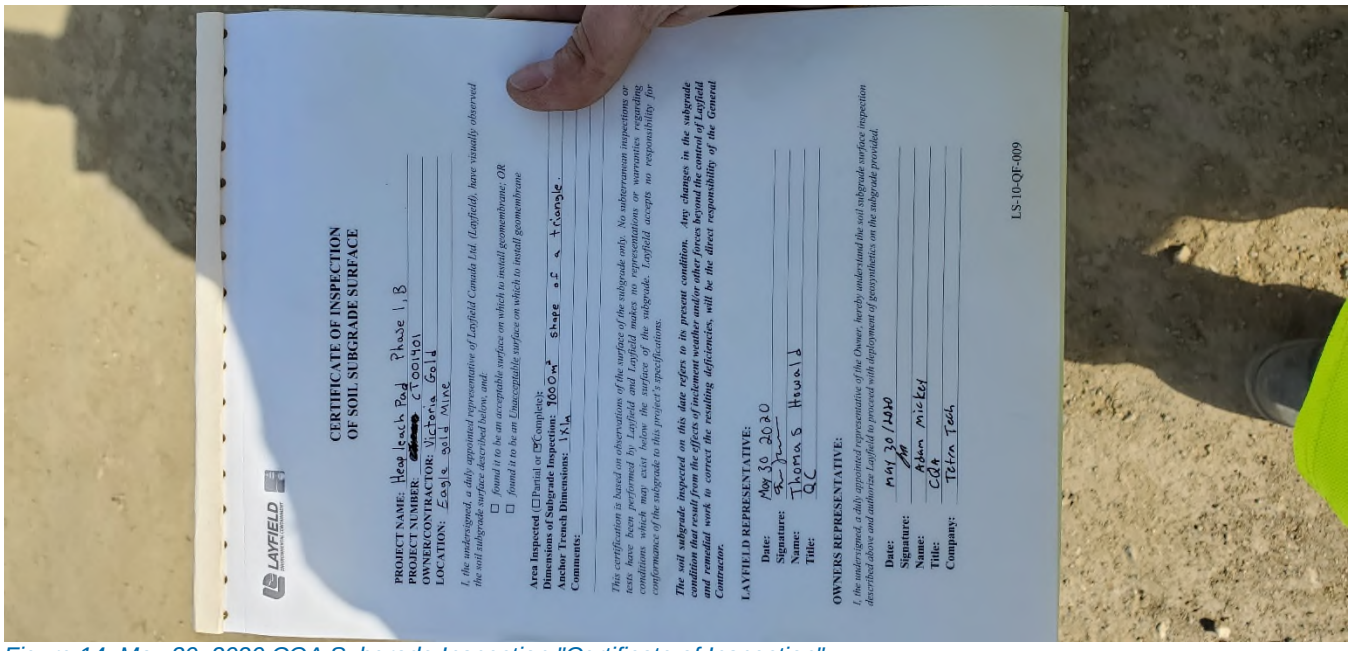


Figure 12: May 30, 2020 CQA Subgrade Inspection, Yielding Areas Marked for Repair



Figure 13: May 30, 2020 CQA Subgrade Inspection, Yielding Areas Repair



CERTIFICATE OF INSPECTION
OF SOIL SUBGRADE SURFACE

LAYFIELD

PROJECT NAME: Heap leach Pad Phase 1B
PROJECT NUMBER: CT001401
OWNER/CONTRACTOR: Victoria Gold
LOCATION: Eagle gold Mine

I, the undersigned, a duly appointed representative of Layfield Canada Ltd. (Layfield), have visually observed the soil subgrade surface described below, and:

☐ *found it to be an acceptable surface on which to install geomembrane; OR*
☐ *found it to be an Unacceptable surface on which to install geomembrane*

Area Inspected (☐Partial or ☒Complete): Shape of a rectangle.
Dimensions of Subgrade Inspection: 1600m² N/A
Anchor Trench Dimensions:
Comments:

This certification is based on observations of the surface of the subgrade only. No subterranean inspections or tests have been performed by Layfield and Layfield makes no representations or warranties regarding conditions which may exist below the surface of the subgrade. Layfield accepts no responsibility for conformance of the subgrade to this project's specifications.

The soil subgrade inspected on this date refers to its present condition. Any changes in the subgrade condition that result from the effects of inclement weather and/or other forces beyond the control of Layfield and remedial work to correct the resulting deficiencies, will be the direct responsibility of the General Contractor.

LAYFIELD REPRESENTATIVE:
Date: May 30 2020
Signature:
Name: Thomas Heuald
Title: QC

OWNERS REPRESENTATIVE:
I, the undersigned, a duly appointed representative of the Owner, hereby understand the soil subgrade surface inspection described above and authorize Layfield to proceed with deployment of geosynthetics on the subgrade provided.
Date: May 30/2020
Signature:
Name: Adam Mickel
Title: CQA
Company: Tetra Tech

LS-10-QF-009

Figure 14: May 30, 2020 CQA Subgrade Inspection "Certificate of Inspection"



Figure 15: Rock Fill Placed along Limits of Excavation



Figure 16: Anchor Trench Excavated



Figure 17: Existing Liner Defects



Figure 18: GCL Deployment



Figure 19: Hole in GCL from Handling



Figure 20: First Panel of GCL Deployed



Figure 21: GCL Panels in Anchor Trench



Figure 22: 2 GCL Panels Deployed on Slope (end of May 31, 2020)

StrataGold Corporation, Eagle Gold Project
Project: Victoria Gold
Weekly Report #12
May 31-June 6, 2020

Site Location: Phase 1B

Hours worked this period: 1,424
Hours total to date: 14,156

Summary:

- Construction
  - Completed excavating and installing lateral drain 1E.
  - Dozer continuing final shaping along the western slope and compacting for liner placement.
  - Dozer work continued on the eastern side whenever possible.
  - Day shift focused removing material pushed up on the eastern side.
  - Night shift crew continues placing ODF at the HLF.
  - Layfield crew placed liner on the south western corner of Phase 1B.

Legend:
Red = Trouble
Yellow = Caution
Green = On track

Weather:

- Couple of nice days this week. The remainder of the week was overcast skies with sunny breaks and rain showers.
- Temperatures: Morning lows of 6 C° with daytime highs of 12 C°

Incidents / Health & Safety:

- Incidents or accidents: No incidents this week
- Weekly site safety inspection: No inspections this week
- Weekly safety meeting: Toolbox meeting held every morning in the field to ensure enough room for social spacing.

Incidents to date:

2

Project Milestones:	**Responsible:**	**Completion Date:**
Nuway crushing gravel for underdrain construction – Sand was not completed before move the crusher to Secondary – Mine will have to produce remain sand required for liner placement	Nuway	March 11th
Header Underdrain excavation and installation	Ewing	Complete
Lateral drain excavation and installation – Behind due to the much larger amounts of material requiring removal	Ewing	April 21st
Ditching for freshet / Water management	Ewing	Mostly Complete
Removal of all grubbing and shaping material for liner placement – Volume of material much larger then estimate	Ewing	April 20th
Removal of any unsuitable material – will not affect liner placement schedule	Ewing	May 4th
Surface preparation for liner placement	Ewing	July 7th
Liner placement – Liner is now scheduled to start May 28th	Layfield / Ewing	Aug 4th

Construction:
Activities This Week:

- Finishing install of lateral drain 1E.
- The D7 dozer focused on final shaping along the western slope advancing from the south to the north. The packer has been packing the finished surface as the dozer advances.
- Utilizing Process D10T on the eastern side of Phase 1B whenever possible.
- The day shift crew started removing material on the eastern slope. Finished cleaning up some material along the north western perimeter berm in preparation to construct this section.
- The night shift crew placed ODF material at the HLF all week.
- The Layfield crew started placing liner on the south western portion of the slope. Deployment is slow due to the steep slope (2:1), access, and the subgrade damage from the excavator pulling liner down the slope. June 1st was a full day of standby due to rain and a third of a day on June 3rd.
- Preformed a Liner and GCL test – Rocks of various size were placed on a hard surface, liner placed overtop, and ran over 3 time with a loaded 730 wiggle wagon. Then the truck stopped and articulated on the liner and no holes were found.

Activities Planned for Next Week:

- Place sand on steep western slope (2:1) to address the subgrade issue.
- Continue liner placement along the western side.
- Continue packing the western slope to the north.
- Excavate key trench ahead of liner placement.
- Excavate and install the first section of lateral drain 4E.
- Start excavating and installing lateral drain 2E.
- Resume topsoil removal, sloping (2.5:1) below the interceptor ditch, and removing any unsuitable material on the eastern side.

HSE SAFETY REPORT

	PERIOD TO	MONTH TO DATE	YEAR TO DATE	
Total Hours	1,424	1,196	14,156	
Incidents (Non-injury)	0	1	2	
First Aid Injuries	0	0	0	
Medical Aid Injuries	0	0	0	
Loss Time Injuries (LTI)	0	0	0	
Recordable Incident	0	0	0	

Layfield hours will be added to the total next week.

Liner Delivery:

Material	Number of Loads	Total on Site
GCL	42	975 (73%)
Liner	8	145.5 (44%)
Bentonite (pallets)	Arriving on liner loads	28

Production:

Material	Month Total (June 2020)	Total to Date
Shaping (Common)/ Grubbing	6,188 m^3	203,224 m^3
Re-handle Material	0 m^3	784 m^3
20mm Drain rock	182 m^3	2,436 m^3
Sand	308 m^3	2,548 m^3
Blast Rock Backfill	168 m^3	6,006 m^3
Blast Rock to Road Repairs	0 m^3	672 m^3
Total Material	6,846 m^3	215,670 m^3

Progress Photos:



Finishing install of lateral drain 1E



Finishing the slope on the western side

Progress Photos:



D10 shaping the eastern side below lateral drain 1E



Loading on the eastern side

Progress Photos:



Liner placement on June 4th



Liner inspection after loaded 730 wiggle wagon ran over the surface on June 6th

Carly Spilker

From: Clint Green
Sent: Tuesday, June 2, 2020 8:13 PM
To: Will Reinhardt; Carly Spilker
Subject: FW: June 1 Daily

FYI
ROC Docs

From: Mickey, Adam <Adam.Mickey@tetratech.com>
Sent: Monday, June 1, 2020 8:33 PM
To: Clint Green <cgreen@fortedynamics.com>
Subject: June 1 Daily

Hey Clint,

We were rained out today and spent the day in camp. Chad checked some of the GCL and he said they will be replacing some areas that hydrated.

Cheers,

Adam Mickey, M.Eng. | EIT

TETRA TECH

WEEKLY FIELD REPORT

ISSUED FOR USE

Project:	Eagle Gold Heap Leach Phase 1B	**Date:**	June 7, 2020
Location:	Eagle Gold Mine	**Contractor:**	Ewing Transport / Layfield
Client:	Victoria Gold Corp.	**Contractor's Rep:**	Marshall Ewing / Chad Messervey
Contact:	Clint Abel	**Contractor's Email:**	
Weather:	Variable (see daily entries)	**Tetra Tech Representative:**	Adam Mickey
File:	704-ENG.WARC03235-09	**Status:**	Issued for USE

1.0 INTRODUCTION

Tetra Tech Canada Inc. (Tetra Tech) was retained by Victoria Gold Corp. (Victoria Gold) to provide CQA services at the Eagle Gold mine located north of Mayo, Yukon, at Dublin Gulch for the Eagle Gold Heap Leach Phase 1B expansion (Phase 1B). Mr. Adam Mickey, EIT, is Tetra Tech's representative on site.

Forte Dynamics (Forte) out of Fort Collins, Colorado provided the design and specification for Phase 1B, and Forte's representative is Clint Green.

Clint Abel, of JDS Energy & Mining, is Victoria Gold's project manager on site at the Eagle Gold mine.

Ewing Transport (Ewing), based out of Mayo, Yukon, is the construction contractor for Phase 1B.

Layfield Environmental Containment (Layfield) has been retained to provide and install the liner for Phase 1B, and their supervisor on site is Chad Messervey.

The following Field Report outlines Tetra Tech's CQA for the period of June 1, 2020, to June 7, 2020.

2.0 DAILY REPORTS

2.1 Highlights

- Panels P1 through P26 placed on slope. Total meters of liner placed are approximately 1,606.8 m for a total area placed of approximately 10,766 m^2.
- Hole in GCL identified on May 31 was repaired by replacing hydrated GCL on June 2.
- Rain delayed liner deployment throughout the week.
- Layfield is placing three panels of GCL for every two panels of 80 mm LLDPE liner.
- Ongoing subgrade issues with rocks being plucked from subgrade and lodged between GCL and subgrade during GCL deployment. Forte and Victoria Gold were made aware of the issues.
- Layfield has been diligent about removing rocks from subgrade pre and post GCL deployment.

Tetra Tech Canada Inc.
61 Wasson Place
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- All QA/QC testing has met specifications throughout the week, except for the subgrade disturbance during deployment.

2.2 June 1, 2020

Heavy rain overnight and into the morning. No work performed today.

2.3 June 2, 2020

- Weather: partly cloudy with patches of rain in the afternoon.
- Clint Abel back on site and monitoring earthworks.
- Layfield identified areas where the GCL placed on May 31, hydrated due to rainfall on June 1. Layfield is removing hydrated sections and replacing them with new GCL. See Figures 1 & 2.
  - Layfield placed bentonite at seams and fused them together with a propane torch.
  - Removal of GCL at base of slope eliminated hole identified by Tetra Tech on May 31, 2020.
- Layfield placed a third panel of GCL then switched to 80 mm LLDPE.
- Trial seams performed for rough seams at joints and smooth seams along panel edges. Two fails on rough trial seam before getting a passing trial seam. Smooth seam trial passed on first test.
- Panel #'s P1 and P2 deployed, and the joint seamed between the two panels. See Figures 3 to 7.
- Layfield is having to drive spikes through the liner to hold sandbags and liner on the slope.
- P1-P2 panel joint is 40.2 m from anchor trench, and panel P1 is 128 m in length from P1-P2 joint to base of the slope.
- Rain/hail began at approximately 12:30 pm, putting deployment on hold.
- Deployment of panels P3 and P4 began at 1:30 pm.
- P3-P4 panel joint is 72 m from anchor trench, and panel P3 is 88 m in length from P3-P4 joint to base of slope.
- The downslope seam between panels P1, P2, P3, & P4 was fusion welded. Non-destructive testing was not performed due to the requirement for a patch at the P3-P4 joint. The seam was finished being welded at 4:10.
- No further deployment today due to rain in the forecast for tomorrow. Chad determined that Layfield would not be able to get GCL and liner deployed by the end of the day.
- Clint Green provided a plan to identifying areas on the slope for 45-degree cross seams (joints).

2.4 June 3, 2020

- Weather: Cloudy with rain showers in the distance turning to rain showers at site.
- Layfield held off deploying GCL due to large rain cloud in valley. At 10:30 am, Chad notified the crew that GCL deployment would commence at 11:00 am. Rain cloud appears to be dispersing.
- Layfield conducted an extrusion trial seam, which passed, and is patching holes on the existing liner where ODF placement is occurring, including a hole created today from an excavator.
- GCL deployment until 1:00 pm. Two panels were deployed until a rainstorm shut down deployment. Layfield placed sandbags to protect GCL from uplift due to wind. At 2:45 pm, Chad determined that deployment was done for the day due to weather. See Figures 8 & 9.
- Clint Abel submitted an RFI to Clint Green to use horizontal seams (joints) rather than 45-degree seams. Layfield used horizontal seams on previous liner installation.

2.5 June 4, 2020

- Weather: cloudy and raining, turning to partly cloudy with scattered rain showers in the afternoon.
- Deployment delayed in the morning due to weather.
- Layfield mobilized to begin deployment at 8:00 am once rain ceased. See Figures 10 through 20.
  - Layfield checked deployed GCL for hydration. No hydration noted.
  - Layfield deployed LLDPE panel P5 then panel P6.
  - 45-degree angles were cut for the P5-P6 joint, and then Layfield fused the joint. Non-destructive testing could not be performed due to ends of seam. Will be tested once T-joints are extrusion welded.
  - Rocks noted beneath liner by Tetra Tech and were marked for further inspection.
  - Panel P7 was rolled out and had a length of 13.6 m. P7 will be at the base of the slope at tie into Phase 1A liner. Layfield requested authorization for a horizontal seam by Tetra Tech. Tetra Tech authorized a horizontal seam as the slope was less than 2.5:1 (H:V).
  - Panels P7 through P9 was placed on the slope and fused.
  - Layfield switched seam testing apparatus. Calibration sheet shows a Total Deviation Error of 0.00% performed on July 25, 2019. See Figure 17 for the calibration sheet.
  - Layfield and Tetra Tech performed a non-destructive pressure test on the P7-P8 joint. The test passed with a pressure loss of 1 psi. The P7-P8 joint seam is a good seam that will only require a T-weld to finalize.
  - The P8-P9 joint seam could not be tested as the vertical P5 through P9 vertical seam had been fusion welded prior to testing. A T-weld will have to be performed to allow for testing of the joint seam.
  - GCL placement continuing in advance of liner placement.
  - Ewing is tidying up anchor trench and extending further towards the west end of the perimeter road.

- Layfield continued to place GCL till the end of the day and has 3 panels deployed ready for liner placement tomorrow.
- Destructive testing will not occur until Layfield uses extrusion apparatus to make repairs to the liner.

2.6 June 5, 2020

- Weather: partly cloudy turning to mostly cloudy in the afternoon.
- Layfield is placing LLDPE liner overtop of GCL placed on June 4. See Figures 21 to 33 for today's photos.
  - Trial seams being conducted for smooth and textured seams. Trial seam testing passed, and Layfield is authorized to fusion weld the liner as it is placed.
  - Chad checked one of the locations identified with rock beneath the liner and removed four rocks from the location, confirming that other locations will have to be checked. Layfield is checking the slope prior to GCL placement, but dragging the GCL along the slope pulls rocks out of the subgrade.
  - Non-destructive testing of joint seams for panels P10-P11 and P12-P13 joints could not be performed. Testing will be performed once T-welds are completed during extrusion welding.
    - Destructive tests D1, D2, & D3, tested by Layfield in the presence of Tetra Tech's representative. All destructive testing passed. For panels P1 through P9, one more destructive test is required, which will be performed when Layfield begins extrusion welding of repairs. Archive samples have been retained by tetra Tech as per Forte's specifications.
  - Layfield placed panels P10 through P13 on slope. Non-destructive testing of joints will not be performed until T-welds are performed by extrusion, where joints meet vertical seams.
    - P11-P13 seam has a defect 38.8 m from anchor trench. Repair will be required during extrusion welding. Fusion welding was interrupted due to generator falling over. See Figure 29.
  - Layfield is continuing to place GCL in advance of further liner deployment.
    - Four panels of GCL placed.
    - Holes in GCL were present at the beginning of the rolls due to handling. Layfield patched the holes in the presence of Tetra Tech to specifications.
    - Tetra Tech suggested to Layfield to address rocks pulled out of subgrade at the GCL deployment stage because it is easier to repair GCL than the GCL and the liner.
      - Rocks larger than 75 mm were to be either removed from beneath the GCL by pulling it back or cutting a hole in the GCL and repairing. If the rocks could be pounded into the slope, they were not required to be removed.
      - In advance of each GCL panel deployment, Layfield removed rocks from slope. Layfield is bringing armfuls of rocks larger than 75 mm off the slope.
      - Tetra Tech attempted to contact Clint Green regarding the subgrade as discussions with Layfield highlight that angular rocks as small as 50 mm could be problematic. Clint could not be reached by phone, so an email was sent. A phone call between Clint Green and Clint Abel was set up for the morning. Tetra Tech is seeking information regarding the minimum size of rock that must be removed beneath the liner as well as determining a plan for the rest of the 2:1 (H:V) slopes where rock is present.

- After conducting trial seams, panels P14 and P15 of LLDPE liner were deployed and fused.
    - Non-destructive testing of joints will take place after extrusion welding has been completed.

2.7 June 6, 2020

- Weather: partly cloudy with a thundershower at the end of shift.
- Layfield is continuing to deploy GCL and liner. See Figures 34 to 40.
    - Deployed and fused panels P16 through P21.
    - Ewing is digging the anchor trench deeper as the liner has pulled out of the anchor trench 300 mm over time.
    - Layfield extrusion welded liner panels along the anchor trench so that they could place backfill to limit the liner pulling down the slope. Ewing did not backfill the anchor trench completely and placed material between seams as they still require pressure testing.
        - Layfield's extrusion tech exceeded the allowable time for fusing between trial seams by one hour. Tetra Tech spoke with Layfield regarding the issue and reminded them that trial seams must be performed every four hours.
    - Tommy conducted vacuum testing on all extrusion welds. Tetra Tech observed the testing on fusion welds conducted in exceedance of allowable time between trial seams. All vacuum testing passed.
    - At approximately 3:30 pm, the wind picked up a panel of liner being deployed and carried it down the slope. Tetra Tech observed them pull the liner back up the slope with the excavator. A walkover will be required to confirm that no damage occurred to the liner.
- Tetra Tech had a conference call at 9:10 am with Clint Green, Victoria Gold's Mine Manager Mark Ayranto, Clint Abel, and Layfield's Project Manager Jason Wheeler regarding the subgrade issues.
    - Layfield was going to attempt deployment by walking the roll of GCL down the slope with an excavator with a spreader bar to limit the GCL moving on the slope and plucking rocks from the subgrade.
        - This was attempted at 10 am and deemed unsafe, so deployment has to continue as it has.
    - Mark suggested fabricating wheels to the spreader bar and lowering down the slope. This method would slow down deployment and cause a shut down until it was fabricated.
    - It was agreed upon that a test strip should be performed by placing rocks of varying sizes on a competent and flat subgrade, deploying GCL and LLDPE liner overtop, then placing 1 to 2 m of material overtop and running over with a rock truck.
        - Tetra Tech suggested using a loaded 785 rock truck to simulate loading of over 40 m of heap leach material on the liner.
        - Clint Green wanted to conduct the test strip on Monday or Tuesday once Clint Abel was back on site.
        - Tetra Tech asked what should be done for further deployment regarding the subgrade and rocks until the test strip trial was conducted.
            - As there was no clear answer, it was determined that Layfield would decide if it was acceptable to them first if Layfield deemed areas unacceptable, Tetra Tech would make note, and if the test strip

showed that liner puncture was likely, the owner would take responsibility for remedial actions to bring the liner to acceptable limits including remove and replace if necessary.

- After the meeting, Tetra Tech returned to site and spoke with Chad about what was decided in the meeting. Chad said that he could not feel confident about the subgrade and suggested that the test strip should be conducted as soon as possible.
  - Tetra Tech and Chad returned to the office and had a conference call with Clint Green.

    Tetra Tech suggested that a test strip should be conducted under extreme conditions to determine if the liner will puncture. The extreme conditions included using a flat and well-compacted subgrade, having an assortment of different rock sizes in different configurations, and not placing any cover material over the liner.

    Tetra Tech requested information for requirements for patches to GCL, where rocks cut out and removed from subgrade. Clint said if cuts are vertical, they can be patched with bentonite powder beneath the GCL and on top. If cuts are horizontal, then they would require a GCL patch.

– Tetra Tech coordinated and conducted the test strip as agreed upon in the meeting with Clint Green.
  - The liner was run over three times by a loaded 30-ton rock truck as well as the worst rock having a tire on top of it and twisting the liner overtop of it by turning the rock truck back and forth.
  - No punctures in the liner were observed by Tetra Tech or Layfield.
  - Coupon samples were obtained at highly stressed areas and pulled using the seam testing apparatus by Layfield. The coupons all exhibited similar strength characteristics to new liner, and where the rock truck was used to twist the liner overtop of a rock, the coupons maintained strength above the minimum shear values required for a fusion weld.
  - Tetra Tech and Chad from Layfield called Clint Green to inform him of the results. Clint could not give a definitive answer on how to proceed with the subgrade issues without reviewing the information.
    - Tetra Tech submitted an RFI detailing the subgrade issues, the liner puncture test strip, and requested guidance for subgrade acceptance.

2.8 June 7, 2020

- Weather: partly cloudy.
- Layfield is continuing to place GCL and LLDPE liner. See Figures 41 to 49.
  – Tetra Tech has requested that Layfield does thorough walkovers of the GCL once placed to remove any rocks that cannot be pounded into the subgrade.
    - On GCL placed today and immediately before liner deployment, Layfield is walking the slope before and after GCL placement to remove rocks from the subgrade. Rocks beneath the GCL are being cut out with vertical cuts, and bentonite powder is placed beneath and above the cut in the GCL.
    - Numerous rocks are being removed both pre and post GCL placement. Post GCL placement is leading to numerous vertical cuts in the GCL.
    - The slope length is getting shorter, and liner is being deployed with less joints.

    - Layfield deployed and fused panels P22 to P26 of liner today.
    - GCL is protected by liner in advance of potential rain tomorrow.

- Tetra Tech and Layfield QC obtained six destructive testing samples from fused seams and joints on the deployed liner. Testing was performed immediately, and all destructive samples passed. Tetra Tech retained archive samples of all destructive samples. Destructive testing is now caught up for all liner placed to the end of June 6.
- Layfield has raised concerns over the number of rocks on the surface of the remainder of the 2:1 slope. Chad said that they would not place liner on the remainder of the surface without sand being placed to cover the rocks. Once the liner has been laid to the south corner of Phase 1B, Layfield expects that there is approximately 40 m of slope that is acceptable enough to place liner.
    - Even after compaction of the subgrade, there are large amounts of rocks greater than 50 mm on the subgrade surface.
    - A review of the specifications shows that all rocks greater than 50 mm are required to be removed from the slope surface prior to liner placement. The amount of rocks greater than 50 mm is too great to be removed by hand. A surface covering of sand will be the most time effective method to provide and acceptable subgrade.
        - Ewing laid a test strip of 20 mm drain rock used for the drainage trenches and compacted it to show Layfield how the surface would be if used on the slope. Layfield stated that they do not typically accept any angular rocks beneath the GCL. Using the drain rock would be a better surface than the existing subgrade soils. Layfield would require Forte to spec the drain rock as an acceptable subgrade soil for continuing placement.
        - The subgrade that Layfield has been deploying liner on is marginally acceptable based on Forte's specifications. There were small areas that could be deemed unacceptable, but most of the rock beneath the GCL is the result of the excavator used in deployment, disturbing the subgrade, excavation of the anchor trench, and the GCL plucking rocks out of the subgrade.
    - See Figures 50 to 52 for subgrade conditions.

3.0 GEOSYNTHETIC ROLL NUMBERS PLACED

Table 1 summarizes the daily geosynthetic roll numbers placed on the slope during liner installation. All panel lengths are approximate and where 45-degree joints are used; panel length is based from the center of the panel.

Table 1: Geosynthetic Roll Numbers Placed on Slope

Date	GCL Roll Number	LLDPE Liner Roll Number	Panel Number (Length)
June 1	-	-	
June 2	502346989, 502347001 502347039, 502346951	10694-012 10694-017 10694-007	P1 (40.2 m) P2 (128 m), P3 (88 m) P4 (72.1 m)
June 3	502346941, 502346953 502346947, 502347036		
June 4	502344692, 502347040 502344669, 502344694 502346957, 502346986 502344682, 502344498 502347029, 502347032	10694-007 10694-024 10694-008 10694-016	P5 (47 m) P6 (107.4 m), P7 (13.6 m) P8 (128 m) P9 (11.5 m)

Date	GCL Roll Number	LLDPE Liner Roll Number	Panel Number (Length)
	502344691		
June 5	502344498, 502344682 502344691, 502344692 502344694, 502346957 502346986, 502347029 502347032, 502344681 502344495, 502344684 502344678, 502344685 502344497, 502344494 502346987. 502346954 502344686, 502346956 502346940	10694-016 10694-019 10694-033 10694-020	P10 (93.4 m) P11 (29.4 m), P12 (87.6 m) P13 (43.4 m), P14 (69.1 m) P15 (53.7 m)
June 6	502346846, 502344566 502346950, 502346945	10694-020 10694-021 10694-004 10694-023	P16 (52.5 m) P17 (52.4 m), P18 (45.1 m) P19 (58.4 m), P20 (60.6 m) P21 (45 m)
June 7	50344567, 502344616 502344509, 502344564 502344564, 502344572 502344703, 502344585 502344585, 502344705 502344667, 502344559 502344666, 502344509	10694-023 10694-010 10694-0	P22, P24 P25, P26 P27

4.0 TRIAL SEAM

Table 2 summarizes the weekly trial seam results. For fusion, the apparatus settings are temperature and speed, and for extrusion, the apparatus settings are preheat and barrel temperature. Five tests are performed for each criterion.

Table 2: Trial Seam Results

Date	Time	Fusion or Extrusion	Tech	Apparatus #	Temp or Preheat (ºF)	Speed (%) or Barrel Temp (ºF)	$Peel_{inside}$ (100 min)	$Peel_{outside}$ (100 min for Fusion 88 min for Extrusion)	Shear (120 min)	Smooth or Textured
Jun 2	10:15	Fusion	EP	WW-054	850	55	159 160 141 165 157	141 153 155 150 159	171 179 171 169 178	Smooth
Jun 2	11:00	Fusion	DT	WW-019	850	45	154 146 155 149 156	110 156 151 157 148	180 177 185 193 182	Textured

Date	Time	Fusion or Extrusion	Tech	Apparatus #	Temp or Preheat (°F)	Speed (%) or Barrel Temp (°F)	$Peel_{inside}$ (100 min)	$Peel_{outside}$ (100 min for Fusion 88 min for Extrusion)	Shear (120 min)	Smooth or Textured
Jun 2	2:00	Fusion	EP	WW-054	850	50	165 155 147 146 154	167 154 143 155 157	175 177 177 174 171	Smooth
Jun 3	9:40	Extrusion	RP	04037	500	495	N/A	122 100 108 100 116	160 165 161 138 170	Textured
Jun 4	9:00	Fusion	DT	WW-019	850	40	148 131 173 149 113	153 172 162 163 109	185 187 196 198 200	Textured
Jun 4	8:45	Fusion	EP	WW-054	850	45	146 159 159 163 151	160 163 154 159 156	184 181 184 178 158	Smooth
Jun 4	12:50	Fusion	DT	WW-019	850	40	157 159 130 157 143	161 160 152 153 142	180 174 179 187 186	Textured
Jun 4	12:45	Fusion	EP	WW-054	850	45	162 164 157 157 160	155 159 150 158 155	169 172 173 174 171	Smooth
Jun 5	7:45	Fusion	DT	WW-019	850	45	140 149 156 141 157	155 148 158 149 155	198 187 196 179 177	Textured
Jun 5	7:50	Fusion	DT	WW-019	850	50	154 164 157 152 156	155 161 164 163 158	173 170 171 169 166	Smooth
Jun 5	7:50	Fusion	EP	WW-054	850	50	157 157 161 158 158	164 162 159 163 161	178 176 177 177 177	Smooth

Date	Time	Fusion or Extrusion	Tech	Apparatus #	Temp or Preheat (ºF)	Speed (%) or Barrel Temp (ºF)	$Peel_{inside}$ (100 min)	$Peel_{outside}$ (100 min for Fusion 88 min for Extrusion)	Shear (120 min)	Smooth or Textured
Jun 5	4:50	Fusion	EP	WW-054	850	50	146 140 144 148 144	150 153 151 153 150	171 174 179 173 172	Smooth
Jun 5	5:00	Fusion	DT	WW-019	850	45	158 155 156 157 160	157 158 157 153 157	173 171 177 177 176	Textured
Jun 5	5:30	Fusion	DT	WW-019	850	50	115 102 127 116 128	124 129 128 118 128	168 163 170 161 179	Smooth
Jun 6	8:15	Fusion	DT	WW-019	850	40	144 144 156 175 175	145 151 165 173 158	197 192 199 198 195	Textured
Jun 6	8:10	Extrusion	RP	04037	455	490	N/A	113 124 121 112 129	159 160 153 151 153	Textured
Jun 6	8:45	Fusion	EP	WW-022	850	60	120 117 130 132 128	146 145 146 151 151	153 163 168 179 173	Smooth
Jun 6	8:40	Fusion	DT	WW-019	850	50	130 123 131 131 135	141 143 143 142 137	165 166 174 170 167	Smooth
Jun 6	1:15	Fusion	DT	WW-019	850	40	147 142 158 142 139	142 149 161 145 144	182 183 178 178 199	Textured
Jun 6	1:15	Fusion	EP	WW-022	850	40	154 154 155 134 152	161 137 168 147 146	174 184 180 178 174	Textured

Date	Time	Fusion or Extrusion	Tech	Apparatus #	Temp or Preheat (°F)	Speed (%) or Barrel Temp (°F)	$Peel_{inside}$ (100 min)	$Peel_{outside}$ (100 min for Fusion 88 min for Extrusion)	Shear (120 min)	Smooth or Textured
Jun 6	1:10	Fusion	EP	WW-022	850	60	149 144 148 147 145	148 147 148 145 149	167 168 169 174 173	Smooth
Jun 6	1:20	Fusion	DT	WW-019	850	50	149 155 156 154 153	158 154 164 159 153	179 166 170 171 169	Smooth
Jun 7	8:06	Extrusion	RP	04037	500	490	N/A	98 96 96 104 102	162 165 168 168 167	Textured
Jun 7	9:20	Fusion	DT	WW-019	850	450	163 165 153 157 152	144 164 155 145 150	172 175 169 180 175	Textured
Jun 7	9:00	Fusion	EP	WW-022	850	55	149 137 138 139 146	156 149 153 155 158	170 172 173 170 174	Smooth
Jun 7	11:45	Extrusion	RP	04037	500	490	N/A	147 146 148 139 149	165 165 168 169 168	Textured
Jun 7	1:30	Fusion	DT	WW-019	850	50	141 138 142 132 138	156 145 152 154 158	162 164 160 164 170	Smooth
Jun 7	1:35	Fusion	DT	WW-019	850	40	153 161 157 146 148	153 157 143 152 136	180 181 182 177 182	Textured
Jun 7	1:37	Fusion	EP	WW-022	850	55	149 125 147 145 143	149 150 150 152 146	172 173 174 173 166	Smooth

Date	Time	Fusion or Extrusion	Tech	Apparatus #	Temp or Preheat (°F)	Speed (%) or Barrel Temp (°F)	$Peel_{inside}$ (100 min)	$Peel_{outside}$ (100 min for Fusion 88 min for Extrusion)	Shear (120 min)	Smooth or Textured
Jun 7	3:40	Extrusion	RP	04037	500	490	N/A	148 115 162 151 150	152 144 157 133 179	Textured

5.0 NON-DESTRUCTIVE TESTING

Table 3 summarizes the weekly non-destructive testing results.

Table 3: Non-Destructive Testing Results

Date Fused	Time (Fuse/Test)	Seam #	Fusion or Extrusion	Apparatus #	Tech	Pressure or Vacuum	Pass or Fail	Notes
Jun 2	11:31/11:37	P1-P2 Joint	Fusion	WW-19	DT	Pressure	Pass	0 psi pressure loss
Jun 2	2:45/3:10	P3-P4 Joint	Fusion	WW-19	DT	Pressure	Pass	0 psi pressure loss Patches will be required at each vertical liner seam due to holes
Jun 4	12:56/1:38	P7-P8 Joint	Fusion	WW-19	DT	Pressure	Pass	1 psi pressure loss No patches required

6.0 DESTRUCTIVE TESTING

Table 4 summarizes the weekly destructive testing results. Five tests are performed for each criterion.

Table 4: Destructive Testing Results

Date Fused	Time Fused	Tech	Apparatus	Location (UTM is +/- 4 m)	Sample ID	$Peel_{in}$ (100 min)	$Peel_{out}$ (100 min)	Shear (120 min)	Pass or Fail
Jun 2	14:50	EP	WW-054	P1-P3 Seam End of Seam 459,335E 7,101,754N	D1	160 152 159 160 161	157 155 155 153 154	167 158 162 159 162	Pass
Jun 4	10:22	EP	WW-054	P3-P5 Seam End of Seam 459,332E 7,101747N	D2	163 156 156 154 155	161 162 158 163 161	163 165 166 166 163	Pass

Date Fused	Time Fused	Tech	Apparatus	Location (UTM is +/- 4 m)	Sample ID	$Peel_{in}$ (100 min)	$Peel_{out}$ (100 min)	Shear (120 min)	Pass or Fail
Jun 4	13:36	EP	WW-054	P5-P7 Seam End of Seam 459,327E 7,1010,740N	D3	152 152 149 154 146	157 154 154 158 150	156 150 157 161 157	Pass
Jun 5	8:50	EP	WW-054	P8-P10 Seam m from end of seam 459,298E 7,101764N	D4	159 158 166 164 159	167 166 167 165 162	180 179 180 183 180	Pass
Jun 5	9:08	DT	WW-019	P12-P13 Joint 459,251E 7,101,784N	D5	179 165 167 168 171	155 165 163 157 155	186 182 186 198 181	Pass
Jun 5	17:55	EP	WW-054	P12-P14 Seam End of Seam 459,315E 7,101731N	D6	165 159 156 156 162	151 161 154 151 147	167 156 165 168 157	Pass
Jun 6	9:41	EP	WW-022	P14-P16 Seam End of Seam 459,313E 7,101,727N	D7	140 152 144 138 142	160 159 159 159 160	154 164 160 167 158	Pass
Jun 6	14:05	EP	WW-022	P16-P18 Seam End of Seam 459,304E 7,101,719N	D8	151 149 155 158 151	168 155 158 156 157	171 170 164 166 170	Pass
Jun 6	16:55	EP	WW-022	P18-P20 Seam End of Seam 459,300E 7,101,713N	D9	155 153 155 148 149	154 150 158 148 147	173 165 162 163 151	Pass

7.0 PHOTO LOG



Figure 1: Hydrated GCL Removed from Base of Slope at Tie In to Existing Liner



Figure 2: GCL Replaced at Base of Slope



Figure 3: LLDPE Panels P1 & P2 Deployed on Slope looking Up Slope

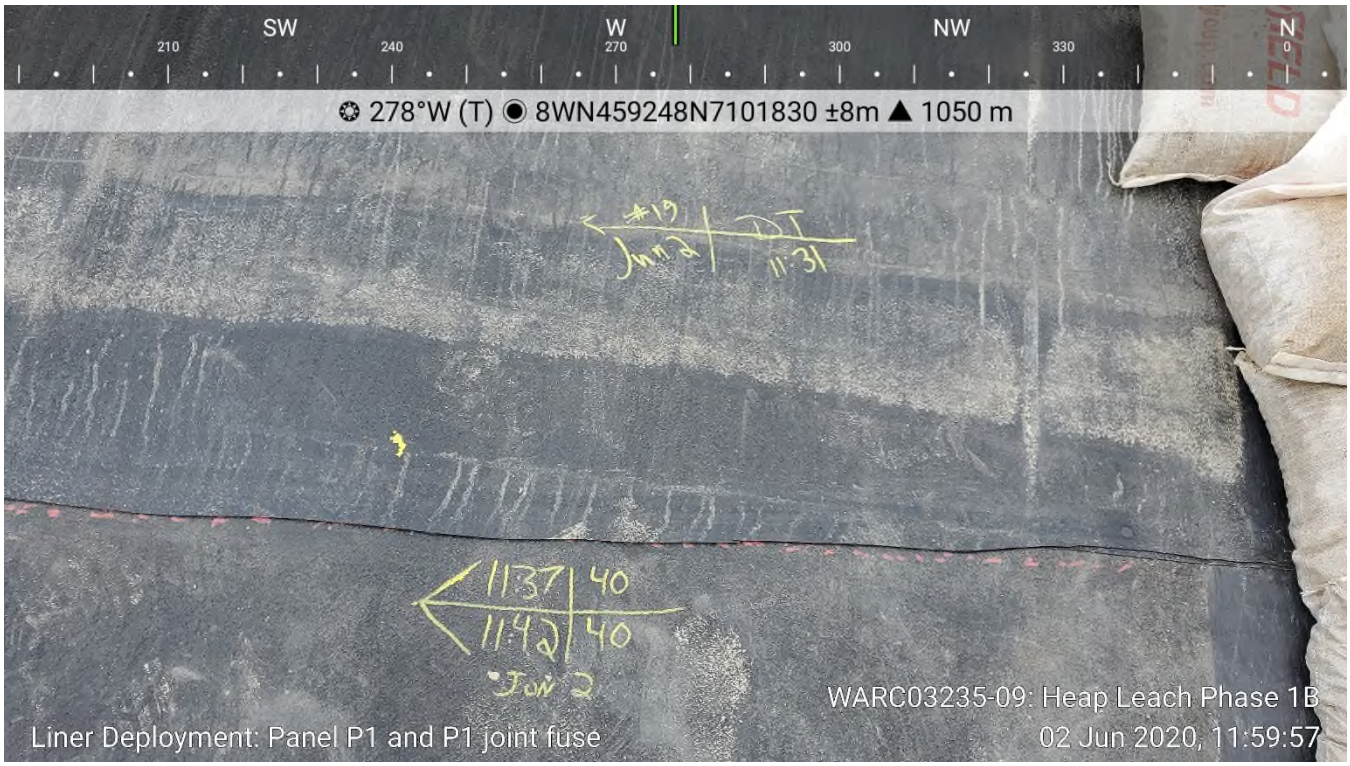


Figure 4: P1 & P2 Panel Joint Fuse



Figure 5: P1 & P2 Panels Deployed on Slope looking Down Slope from Perimeter Road



Figure 6: Panel P2 in Anchor Trench

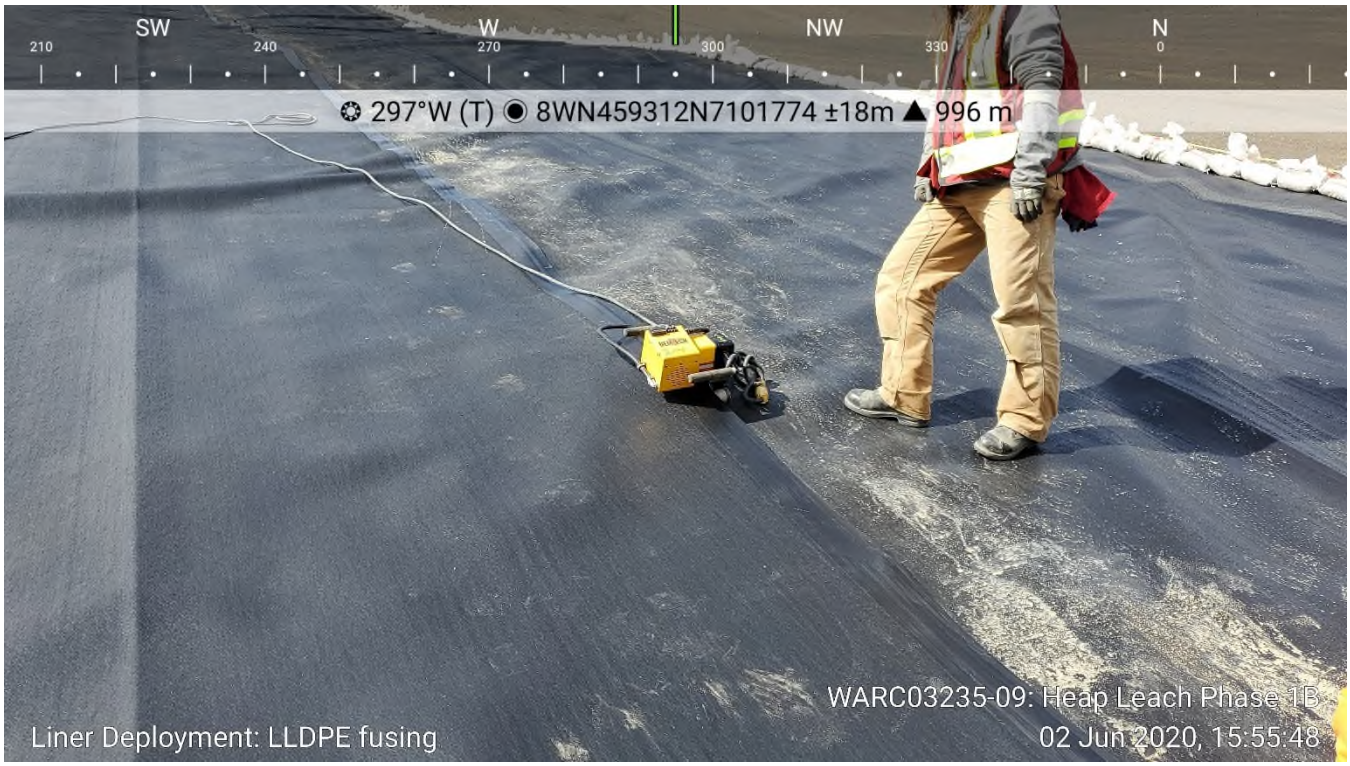


Figure 7: Fusing of LLDPE Liner Vertical Seam



Figure 8: Panels P1 through P4 Deployed on Slope and Fused



Figure 9: Panels P2 and P4 in Anchor Trench along Perimeter Road



Figure 10: GCL and Panel P5 Deployed



Figure 11: P5-P6 45 Degree Joint Seam Pre-Fusion



Figure 12: P5-P6 45 Degree Joint Seam Post-Fusion

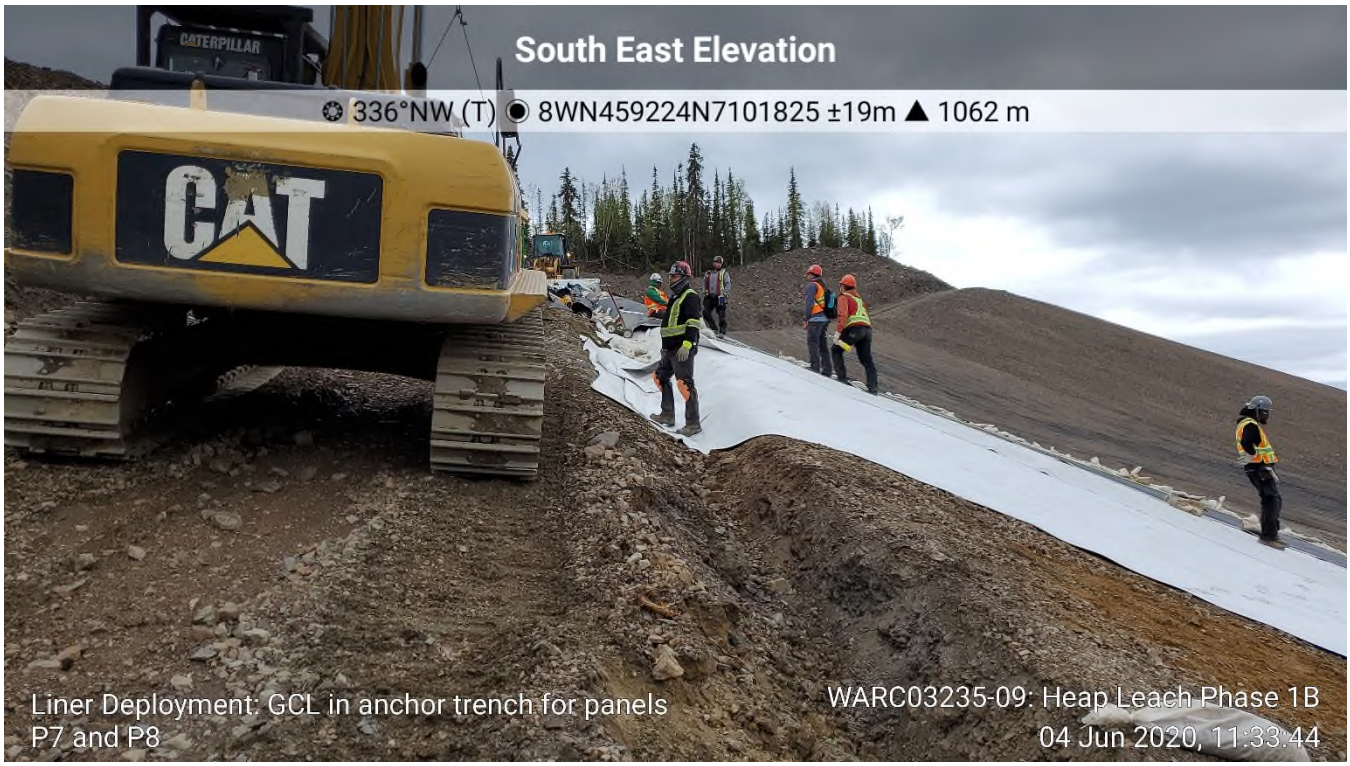


Figure 13: GCL Placed in Anchor Trench prior to Panels P7 to P9 Placement



Figure 14: Placement of Bentonite along GCL Panel Seam



Figure 15: Horizontal Seam for P7-P8 Joint

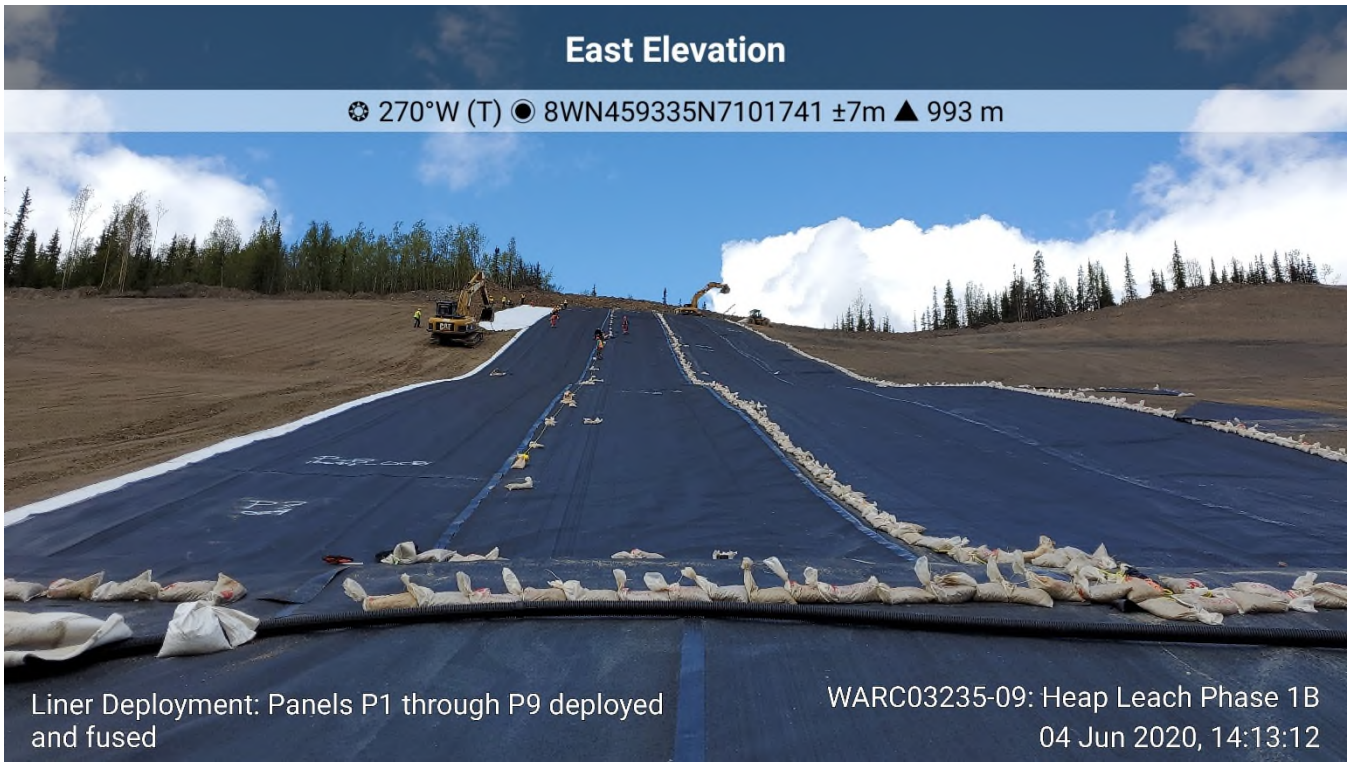


Figure 16: Panels P1 through P9 Deployed and Fused

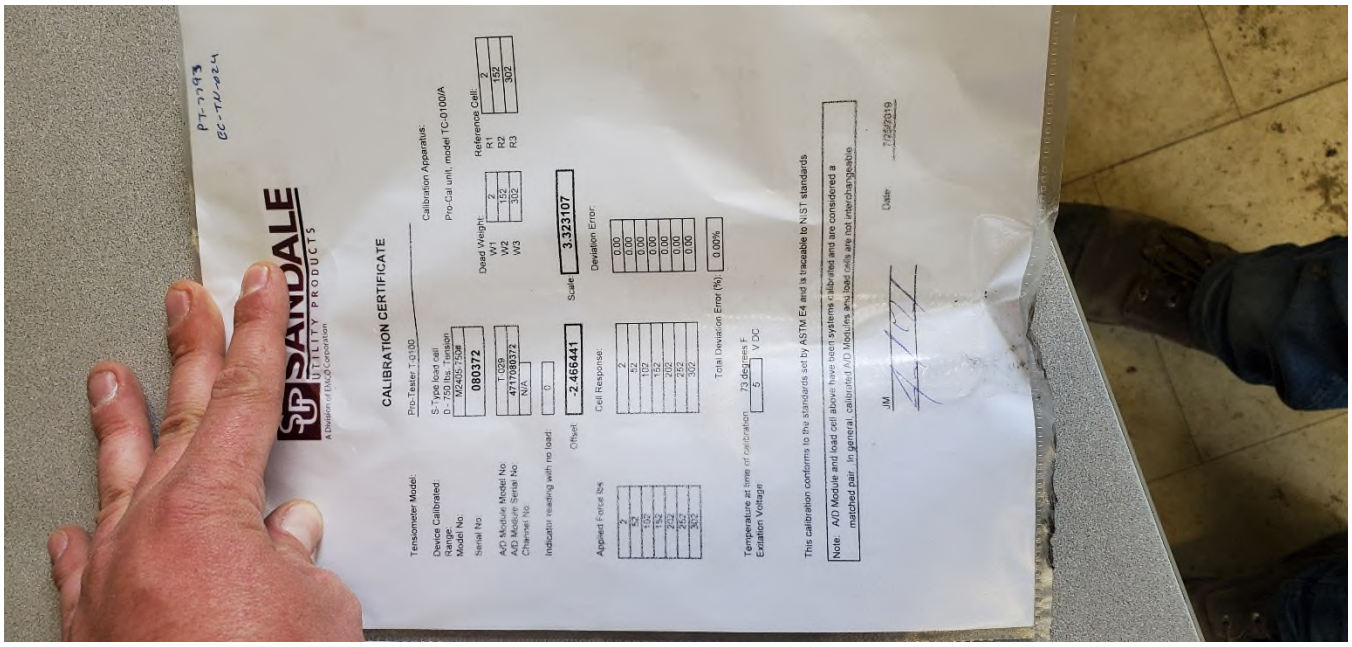


Figure 17: Calibration Certificate for Second Seam Testing Apparatus



Figure 18: Panel P4 and P6 Seam Requiring Extrusion Welding in Anchor Trench



Figure 19: Ongoing GCL Placement



Figure 20: GCL Placed by the End of June 4 in Advance of LLDPE Liner Placement



Figure 21: D1 Destructive Testing Shear Samples



Figure 22: D2 Destructive Testing Peel Samples



Figure 23: Panels P10 through P13 Deployed on Slope



Figure 24: Anchor Trench Excavated in Advance of GCL Deployment



Figure 25: Hole in Liner Cut by Layfield to Remove Rock from Subgrade



Figure 26: Hole Shown in Figure 25 Patched



Figure 27: holes in GCL due to Handling



Figure 28: Holes shown in Figure 27 Patched



Figure 29: P10 to P13 Seam Requiring Extrusion Repair



Figure 30: GCL Deployed on Slope in Advance of LLDPE Liner

:



Figure 31: GCL in Anchor Trench



Figure 32: Panels P12 to P15 Deployed on Slope



Figure 33: 3 Panels of GCL Deployed Ahead of Panel P15 at the End of June 5

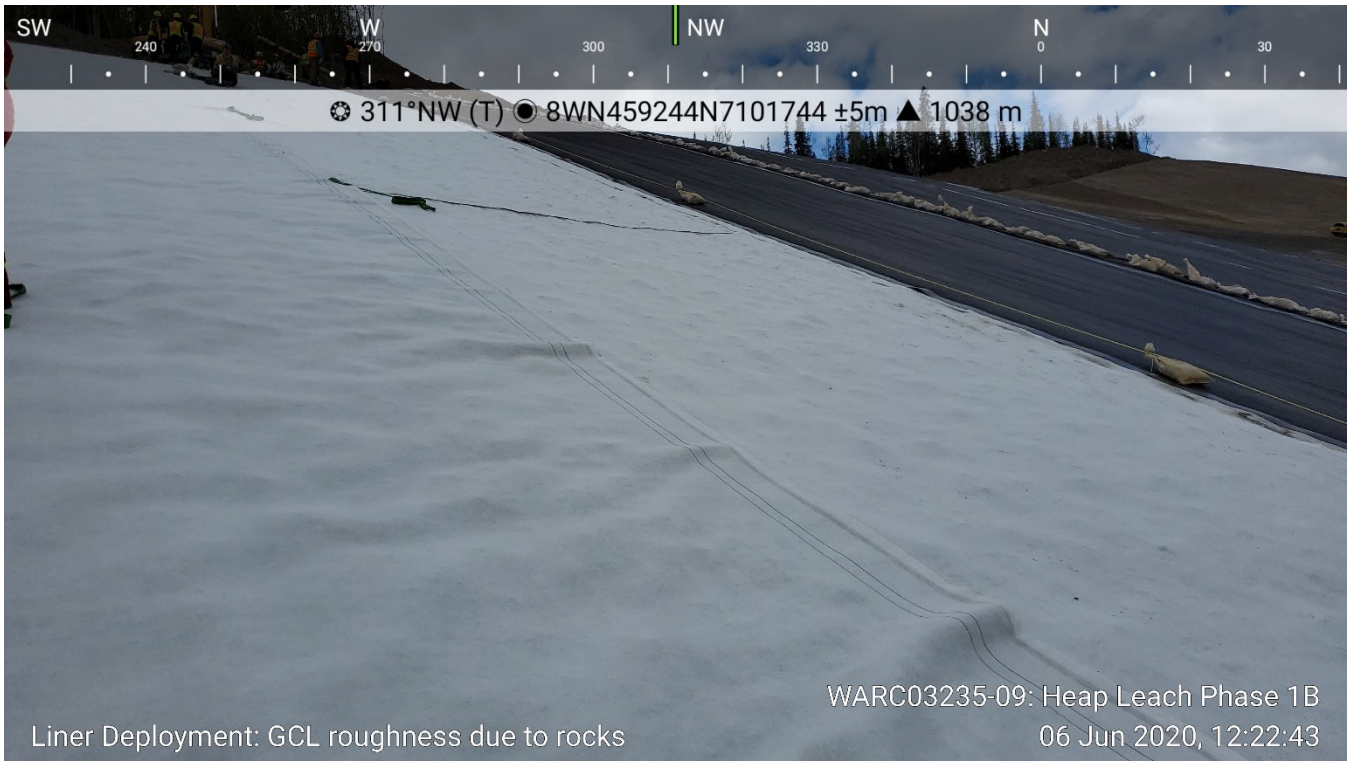


Figure 34: Roughness of Subgrade with GCL Deployed



Figure 35: Roughness of Subgrade with GCL Placed



Figure 36: Liner Displaced Down Slope due to Wind



Figure 37: Pulling Displaced Liner Back Up Slope



Figure 38: Extrusion Weld Patch of Anchor Hole



Figure 39: Extrusion Weld Patch of Vertical Seam in Anchor Trench



Figure 40: Panels P17 to P21 Deployed and Fused on Slope



Figure 41: GCL Deployed and Rock Picked

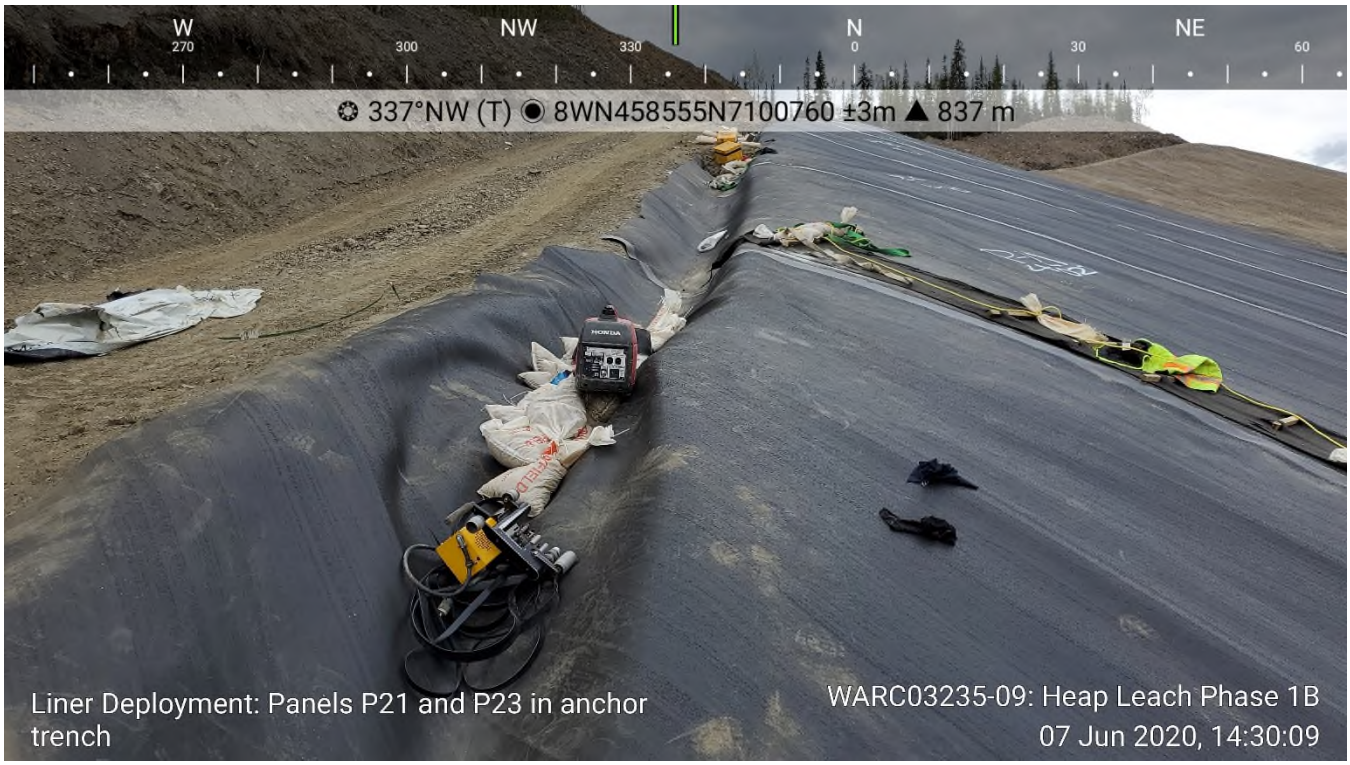


Figure 42: Panels P21 and P23 in the Anchor Trench



Figure 43: Panels P22 to P25 Deployed



Figure 44: GCL Deployed in Advance of Panel P26



Figure 45: Panels P28 to P28 Deployed



Figure 46: Anchor Trench Being Dug to South Corner



Figure 47: Typical Subgrade Conditions Beneath GCL



Figure 48: Rocks Pulled out from Beneath the GCL



Figure 49: Cuts in GCL Required to Remove Rocks



Figure 50: Uncompacted Unacceptable Subgrade



Figure 51: Unacceptable Subgrade after Compaction



Figure 52: Rocks Requiring Removal along Existing Liner Anchor Trench

StrataGold Corporation, Eagle Gold Project
Project: Victoria Gold
Weekly Report #13
June 7-13, 2020

Site Location: Phase 1B

Hours worked this period: 2,619
Hours total to date: 18,245

Summary:

- Construction
  - Main focus this week was hauling and placing sand on the western slope.
  - Dozer continuing final shaping along the western slope for liner placement.
  - Dozer (D10) continued working on the eastern side whenever possible.
  - Layfield crew placing liner on western slope.

Legend:
Red = Trouble
Yellow = Caution
Green = On track

Weather:

- Mixed weather this week, sun, overcast, and rain
- Temperatures: Morning lows of 6 C° with daytime highs of 20 C°

Incidents / Health & Safety:

- Incidents or accidents: No incidents this week
- Weekly site safety inspection: No inspections this week
- Weekly safety meeting: Toolbox meeting held every morning in the field to ensure enough room for social distancing.

Incidents to date:

2

Project Milestones:	**Responsible:**	**Completion Date:**
Nuway crushing gravel for underdrain construction – Sand was not completed before move the crusher to Secondary – Sand will now be recovered from wasted material during production of the ODF on Dublin. Nuway will screen the oversize material out of the sand.	Nuway	March 11th
Header Underdrain excavation and installation	Ewing	Complete
Lateral drain excavation and installation – Behind due to the much larger amounts of material requiring removal	Ewing	April 21st
Ditching for freshet / Water management	Ewing	Mostly Complete
Removal of all grubbing and shaping material for liner placement – Volume of material much larger then estimate	Ewing	April 20th
Removal of any unsuitable material – will not affect liner placement schedule	Ewing	May 4th
Surface preparation for liner placement	Ewing	July 7th
Liner placement – Liner is now scheduled to start May 28th	Layfield / Ewing	Aug 4th

Construction:
Activities This Week:

- Day and night shift have been hauling sand to the western slope. Sand supply in Phase 3 was depleted June 9th and continued hauling sand from Dublin. Excavator has been sorting rocks out of the sand until Nuway's screening plant arrives on site.
- The D7 dozer focused on sand placement on the western slope and final shaping when waiting for sand.
- Excavated and installed a spur drain from lateral drain 4E to the interceptor ditch. This was installed to address a small amount of water that wasn't captured by the liner above the header underdrain. The water was causing damage to the sand in the header drain.
- Ewing's D10R has been working on the eastern side of Phase 1B whenever possible. The dozer mainly focused on completing the remaining topsoil and organics along lateral drain 2E.
- The Layfield crew continued placing liner on the south western portion of the slope. No liner placement Friday or Saturday for safety reasons (rolling rocks from sand placement).

Activities Planned for Next Week:

- Continue placing sand on the steep western slope to address the subgrade issue.

- Finish constructing the north western section of the perimeter berm. This section requires material placement and compaction.
- Continue liner placement along the western side.
- Continue packing the western slope to the north.
- Excavate key trench ahead of liner placement.
- Start excavating and installing lateral drain 2E
- Continue topsoil removal, sloping (2.5:1) below the interceptor ditch, and removing any unsuitable material on the eastern side.

HSE SAFETY REPORT

	PERIOD TO	MONTH TO DATE	YEAR TO DATE	
Total Hours	2,619	4,925	18,245	
Incidents (Non-injury)	0	1	2	
First Aid Injuries	0	0	0	
Medical Aid Injuries	0	0	0	
Loss Time Injuries (LTI)	0	0	0	
Recordable Incident	0	0	0	

Liner Delivery:

Material	Number of Loads	Total on Site
GCL	49	1,143 (85%)
Liner	12	216 (66%)
Bentonite (pallets)	Arriving on liner loads	28

Production:

Material	Month Total (June 2020)	Total to Date
Shaping (Common)/ Grubbing	6,188 m^3	203,224 m^3
Re-handle Material	0 m^3	784 m^3
20mm Drain rock	210 m^3	2,464 m^3
Sand	4,606 m^3	6,846 m^3
Blast Rock Backfill	252 m^3	6,090 m^3
Blast Rock to Road Repairs	0 m^3	672 m^3
Total Material	11,256 m^3	220,080 m^3

Progress Photos:



Sand placement off west perimeter road



D7 placing sand on the western slope

Progress Photos:



Sorting sand for nightshift



Sand placement

Progress Photos:



Installing spur drain



D10 working on the eastern side June 12th

Progress Photos:



Placing liner on the south western end June 10th



Placing GCL on the western slope June 13th

Progress Photos:



Visitor passing through June 12th

TETRA TECH

WEEKLY FIELD REPORT

ISSUED FOR USE

Project:	Eagle Gold Heap Leach Phase 1B	**Date:**	June 14, 2020
Location:	Eagle Gold Mine	**Contractor:**	Ewing Transport / Layfield
Client:	Victoria Gold Corp.	**Contractor's Rep:**	Marshall Ewing / Chad Messervey
Contact:	Clint Abel	**Contractor's Email:**	
Weather:	Variable (see daily entries)	**Tetra Tech Representative:**	Adam Mickey
File:	704-ENG.WARC03235-09	**Status:**	Issued for USE

1.0 INTRODUCTION

Tetra Tech Canada Inc. (Tetra Tech) was retained by Victoria Gold Corp. (Victoria Gold) to provide CQA services at the Eagle Gold mine located north of Mayo, Yukon, at Dublin Gulch for the Eagle Gold Heap Leach Phase 1B expansion (Phase 1B). Mr. Adam Mickey, EIT, is Tetra Tech's representative on site.

Forte Dynamics (Forte) out of Fort Collins, Colorado provided the design and specification for Phase 1B, and Forte's representative is Clint Green.

Clint Abel, of JDS Energy & Mining, is Victoria Gold's project manager on site at the Eagle Gold mine.

Ewing Transport (Ewing), based out of Mayo, Yukon, is the construction contractor for Phase 1B.

Layfield Environmental Containment (Layfield) has been retained to provide and install the liner for Phase 1B, and their supervisor on site is Chad Messervey.

The following Field Report outlines Tetra Tech's CQA for the period of June 8, 2020, to June 14, 2020.

2.0 DAILY REPORTS

2.1 Highlights

- Panels P27 through P42 placed on slope. Approximate total length of panels deployed was 590.9 m for a total approximate area of 4,018 m^2.
- Deployment delayed during the week due to lack of prepared subgrade.
- All destructive testing for liner deployed up to June 13 was completed, and all destructive testing passed.
- Non-destructive testing of liner seams was performed for panels P1 through P36. Most seams passed with a few requiring further testing once extrusion welding has been performed to fix air leaks.
- All vacuum box testing was completed on extrusion welding for panels P1 through P36 up to June 13.

Tetra Tech Canada Inc.
61 Wasson Place
Whitehorse, YT Y1A 0H7 CANADA
Tel 867.668.3068 Fax 867.668.4349

- Panels P3 through P36 was tied into Phase 1A by extrusion welding.
- A final walkthrough is still required for panels P1 through P36 once all non-destructive testing has been completed.

2.2 June 8, 2020

- Weather: partly cloudy, turning to rain at 12:30 pm.
- Layfield is continuing to deploy GCL and liner towards the south corner of Phase 1B on the west side. Figure 1 and Figure 2.
  - A trial seams passed. The textured trials seam initially failed, but a subsequent test passed.
  - Layfield is continuing to pick rocks off to slope prior to GCL deployment and cutting rocks out of the GCL as required.
  - Layfield has two extrusion techs patching holes and doing T-welds at all joint seams.
- On June 7, Tetra Tech had a conversation with Clint Abel regarding the subgrade conditions. It was agreed that sand should be placed on the slope in advance of GCL placement as deployment continues northward from where liner deployment started.
  - Layfield does not think compaction of the sand will be necessary.
  - Tetra Tech informed Ewing of the plan to place sand on the slopes. Tetra Tech recommended that large rocks at the base of the slope where it meets the existing liner should be removed and that the subgrade should be compacted prior to sand placement. See Figure 3.
  - Tetra Tech worked with Ewing to determine the minimum thickness of sand required such that the D7 dozer can place sand without ripping up the subgrade.
  - Tetra Tech determined that 100 mm of sand is required on the slope in advance of liner deployment.
- Work shut down at 12:30 pm due to rain for the rest of the day.
- Tetra Tech and Layfield had a phone meeting with Clint Green at 2:00 pm.
  - Discussed the requirements for sand placement on the subgrade, including the area. It was determined that the slope area greater than 2:1 (H:V) would be required to be coated with sand prior to liner deployment and possibly the other slopes depending on how the subgrade looks after compaction.

2.3 June 9, 2020

- Weather: cloudy and raining, turning to partly cloudy in the afternoon.
- Rain and wet conditions delayed deployment and extrusion until 10:00 am.
- Layfield is extrusion seaming the deployed liner to the existing liner as well as continuing with extrusion patches on the deployed liner. See Figures 4 through 8.
- Layfield is placing rest of GCL into south corner and will finish lining the south corner tomorrow. See Figures 9 through 11.
  - Rained heavily overnight. Layfield is checking deployed GCL for hydration. Last 3 m on two panels require removal and replacement. Layfield replaced hydrated GCL.

- Tetra Tech attended the weekly Phase 1B meeting with Layfield, Ewing, Clint Abel, Matt Monk, and Mark Ayranto.
  - Forte to provide an answer on 45-degree cross seams soon.
  - The primary topic discussed was sand bedding on the rocky slopes.
    - Nuway is going to mob to Nuway pit to begin crushing approximately 6000 m^3 of bedding material.
    - It was discussed if the 20 mm drain rock would be acceptable to use as a bedding material as the pit will be out of sand today, and it could be up to three days until Nuway is producing sand. It was agreed to use the 20 mm drain rock on the lower portions of the slope, and Ewing will do their best to blend it with some sand.
    - Clint Abel asked if the gradation of the bedding material could be increased in size. Forte is going to look into a maximum size for bedding material.
    - Tetra Tech raised the question to bedding material thickness to Forte. It was determined that bedding material thickness should be based on performance in the field during GCL placement. Currently 100 mm of bedding material is being placed on the slope, but it could be increased or reduced depending on what happens when GCL is deployed.
    - Ewing will work on prepping another area for liner deployment to allow time for bedding material production and placement.
      - Tetra Tech requested an area get packed to view the potential subgrade conditions that will be on other areas of Phase 1B. If the subgrade conditions are not conducive to deploying liner, sand will be required on a larger area of the slope, or the entire of Phase 1B.
- Clint Abel found a sand source that has been mixed with large rocks. There is approximately 500 m^3 of sand, and Nuway is mobbing in a power screener to screen the rest.

2.4 June 10, 2020

- Weather: partly cloudy.
- Layfield is deploying liner into the south corner on the west side of Phase 1B. See Figures 12 to 14.
  - All fusion welding completed.
  - Panel P36 is the last panel at the south corner of the west side of Phase 1B.
- Layfield is continuing to patch, and extrusion weld holes on the liner and do T-welds at all fusion seaming intersections.
- Ewing continued to haul sand for slope bedding throughout the night. See Figures 15 and 16.
- Four destruct samples were obtained. All destructive testing is up to date for liner placed to June 10, and all samples passed. Layfield is patching all destruct samples immediately.
- Ewing backfilled the anchor trench completely up to June 10's deployment and spot filled the anchor trench for today's deployment. See Figure 17.

2.5 June 11, 2020

- Weather: partly cloudy, turning to rain at 1:30 pm.

- Ewing is continuing to place bedding sand on the slopes.
- Tetra Tech and Layfield's QC conducted pressure testing of seams. Three seams require more extrusion welding due to pressure loss; all pressure testing was not completed due to weather.
- Layfield conducted vacuum box testing. Tetra Tech confirmed that vacuum box testing was being conducted according to specifications and checked any extrusion welding areas for confirmation of passes while conducting pressure testing. Three areas failed and required repair; Layfield completed the repairs immediately.
- Layfield extrusion welded the remaining tie in of Phase 1B to Phase 1A. Layfield also fixed some extrusion areas that failed vacuum box testing.
  - Further extrusion welding is required to address areas where pressure testing failed.
- A hole was identified on Panel P8. Layfield was notified to repair it.
- Due to rain, work was halted at 1:30 pm for the rest of the day.
- Forte provided a response to the RFI regarding horizontal seams authorizing them as long as certain conditions were met. Layfield has been made aware of the conditions.

2.6 June 12, 2020

- Layfield did not work today due to not having an area to deploy liner onto.
- Ewing continued to place bedding sand on slope.
- Tetra Tech and Layfield's QC finished pressure testing of the fusion welded seams.
  - Four seams require repair to complete all pressure testing.

2.7 June 13, 2020

- No work today as bedding sand subgrade is not ready for liner placement. See Figure 19.

2.8 June 14, 2020

- Weather: partly cloudy to sunny.
- Ewing is continuing to place bedding sand on the rocky slopes in advance of liner deployment.
  - Tetra Tech noted depressions along the anchor trench of Phase 1A filled with water. Tetra Tech advised Ewing to fill them in with sand prior to GCL deployment.
- Tetra Tech and Layfield's QC approved subgrade for two panels of liner deployment. See Figures 20 and 21.
  - Due to rocks in the bedding sand, Ewing must remove rocks in advance of liner deployment. For now, subgrade will be approved on a daily basis.
  - Rocks greater than 50 mm are to be removed from subgrade bedding sand in advance of liner deployment.
  - Once a screener is on site, rocks will be screened from the bedding sand.
  - Bedding sand is being placed approximately 100 mm thick and track packed by the dozer as it is placed.
- Ewing excavated anchor trench in advance of liner deployment. See Figures 22 and 23.

  - Anchor trench is being excavated deeper than specifications to mitigate liner movement down slope due to expansion and contraction.

- Survey notified Tetra Tech that patches on the liner will be picked up during survey of the seams.
- Layfield is deploying GCL and liner moving northward from where the liner installation began on May 31. See Figures 24 to 28.
  - For the first deployment of GCL, the bedding sand was checked after each roll was deployed.
    - Bedding sand is not being stripped from the slope by GCL deployment.
    - Layfield is removing any rocks picked from the edge of the anchor trench after each deployment.
    - Tetra Tech checked high spots in GCL to identify rocks.
      - Rocks identified were generally flat and were easily pushed into the bedding sand on the slope by stepping on them.
  - Bedding sand placed on slope is proving to be a suitable subgrade for liner deployment as long as rocks are removed prior to GCL deployment.
  - Layfield placed three panels of GCL and two rows of liner panels, which was fused by the end of the day.

3.0 GEOSYNTHETIC ROLL NUMBERS PLACED

Table 1 summarizes the daily geosynthetic roll numbers placed on the slope during liner installation. All panel lengths are approximate and where 45-degree joints are used; panel length is based from the center of the panel.

Table 1: Geosynthetic Roll Numbers Placed on Slope

Date	GCL Roll Number	LLDPE Liner Roll Number	Panel Number (Length)
June 8	502344539, 502344003 502344506, 502344508 502344565	10694-031 10694-018	P27 (31.6 m) P28 (38.7 m)
June 9	502344500, 502344003 502344499, 502344505		
June 10		10694-018 10694-028 10694-009	P29 (56.8 m), P34 (15.7 m), P35 (6.6 m), P36 (6.6 m) P30 (47.6 m), P31 (37.3 m), P33 (17.6 m) P32 (13.4 m)
June 11			
June 12			
June 13			
June 14	502344504, 502344489 502344718, 502344715 502344615, 502344661 502344714, 502344503 502346952, 502344697 502344008, 502344670 502344717	10694-009 10694-027 10694-000 10694-001	P37 (73.3 m), P39 (21.6 m) **Note** P39 is a wedge P38 (98.8 m), P40 (25.1 m) P41 (77.6 m) P42 (22.6 m)

4.0 TRIAL SEAM

Table 2 summarizes the weekly trial seam results. For fusion, the apparatus settings are temperature and speed, and for extrusion, the apparatus settings are preheat and barrel temperature. Five tests are performed for each criterion.

Table 2: Trial Seam Results

Date	Time	Fusion or Extrusion	Tech	Apparatus #	Temp or Preheat (ºF)	Speed (%) or Barrel Temp (ºF)	$Peel_{inside}$ (100 min)	$Peel_{outside}$ (100 min for Fusion 88 min for Extrusion)	Shear (120 min)	Smooth or Textured
Jun 8	8:00	Fusion	EP	WW-022	850	55	155 163 157 159 154	138 137 140 143 132	177 178 180 185 178	Smooth
Jun 8	8:30	Fusion	DT	WW-019	850	40	156 153 154 155 158	164 164 172 175 163	181 178 176 187 193	Textured
Jun 8	7:45	Extrusion	RP	04037	500	495	N/A	113 112 111 123 117	169 172 167 167 169	Textured
Jun 8	8:25	Extrusion	RGP	PX-11	515	500	N/A	102 101 111 113 105	167 163 169 167 179	Textured
Jun 8	11:40	Extrusion	EA	04037	500	495	N/A	140 150 149 148 146	172 165 173 166 158	Textured
Jun 8	1:15	Fusion	DT	WW-019	850	40	144 167 146 144 139	146 164 159 128 138	192 185 183 183 185	Textured
Jun 8	1:05	Fusion	EP	WW-022	850	55	160 149 146 141 148	127 145 150 149 152	179 173 177 174 176	Smooth

Date	Time	Fusion or Extrusion	Tech	Apparatus #	Temp or Preheat (ºF)	Speed (%) or Barrel Temp (ºF)	$Peel_{inside}$ (100 min)	$Peel_{outside}$ (100 min for Fusion 88 min for Extrusion)	Shear (120 min)	Smooth or Textured
Jun 8	1:00	Extrusion	RGP	PX-11	500	515	N/A	138 151 145 144 117	189 189 188 187 182	Textured
Jun 9	8:00	Extrusion	EA	04037	500	495	N/A	92 115 100 107 115	160 149 162 162 165	Textured
Jun 9	7:45	Extrusion	RGP	PX-11	500	515	N/A	124 147 144 140 145	164 162 163 159 167	Smooth
Jun 9	8:15	Fusion	DT	WW-019	850	40	146 156 156 161 153	155 153 162 161 158	191 167 180 196 192	Textured
Jun 9	8:15	Fusion	DT	WW-019	850	50	142 141 143 157 145	158 152 163 154 154	170 168 174 176 177	Smooth
Jun 9	10:30	Extrusion	EA	04037	505	495	N/A	109 104 109 109 106	166 158 158 158 153	Textured
Jun 9	10:30	Extrusion	RGP	PX-11	500	515	N/A	99 99 95 91 95	163 170 163 163 163	Textured
Jun 10	7:30	Fusion	EP	WW-022	850	55	150 160 155 155 146	141 132 144 133 155	177 170 179 174 178	Smooth
Jun 10	8:15	Fusion	DT	WW-026	850	38	144 149 146 120 166	156 152 151 152 176	182 161 176 185 188	Textured

Date	Time	Fusion or Extrusion	Tech	Apparatus #	Temp or Preheat (ºF)	Speed (%) or Barrel Temp (ºF)	$Peel_{inside}$ (100 min)	$Peel_{outside}$ (100 min for Fusion 88 min for Extrusion)	Shear (120 min)	Smooth or Textured
Jun 10	8:05	Fusion	DT	WW-026	850	50	147 146 145 148 150	150 148 150 141 151	177 171 180 177 166	Smooth
Jun 10	9:15	Extrusion	RP	04037	500	490	N/A	103 104 108 111 109	157 174 175 159 166	Textured
Jun 10	9:10	Extrusion	EA	04037	500	490	N/A	122 111 104 104 109	169 162 167 166 159	Textured
Jun 10	11:25	Fusion	EP	WW-022	850	55	151 133 141 143 141	141 140 137 137 177	157 152 160 159 158	Smooth
Jun 11	9:10	Extrusion	EA	04037	500	490	N/A	149 128 119 126 149	172 183 175 189 175	Textured
Jun 11	9:10	Extrusion	RP	04037	500	490	N/A	109 109 119 105 103	172 177 178 172 177	Textured
Jun 14	12:30	Fusion	DT	WW-026	850	50	156 147 148 149 151	151 152 152 149 150	159 156 162 161 161	Smooth
Jun 14	12:30	Fusion	DT	WW-026	850	38	158 157 149 141 149	160 147 152 164 155	190 178 187 182 194	Textured
Jun 14	12:30	Fusion	EP	WW-022	850	50	156 146 159 150 149	139 134 135 127 143	164 158 171 168 166	Smooth/ Texture

Date	Time	Fusion or Extrusion	Tech	Apparatus #	Temp or Preheat (ºF)	Speed (%) or Barrel Temp (ºF)	$Peel_{inside}$ (100 min)	$Peel_{outside}$ (100 min for Fusion 88 min for Extrusion)	Shear (120 min)	Smooth or Textured
Jun 14	12:30	Fusion	EP	WW-022	850	55	144	150	164	Smooth
							145	147	161	
							148	145	167	
							145	144	164	
							146	138	160	
Jun 14	4:00	Fusion	EP	WW-022	850	55	137	135	159	Smooth
							138	135	151	
							143	140	157	
							138	133	136	
							135	139	143	
Jun 14	4:05	Fusion	EP	WW-022	850	40	146	142	166	Textured
							142	144	172	
							145	149	177	
							140	131	167	
							137	141	173	
Jun 14	4:35	Fusion	DT	WW-026	850	38	130	152	173	Textured
							150	161	170	
							146	160	172	
							138	154	175	
							169	163	176	
Jun 14	4:39	Fusion	DT	WW-026	850	53	128	143	154	Smooth
							141	145	152	
							139	147	156	
							135	147	152	
							142	143	154	

5.0 NON-DESTRUCTIVE TESTING

Table 3 summarizes the weekly non-destructive pressure testing results.

Table 3: Non-Destructive Testing Results

Date Fused	Date Tested	Time Tested	Seam #	App #	Tech	psi Start	psi End	Pass or Fail	Notes
Jun 2	Jun 11	9:25	P2-P4 Vertical	WW-054	EP	40	30	Fail	Extrusion T-weld at joint requires more extrusion
Jun 4	Jun 11	9:38	P4-P6 Vertical	WW-054	EP	40	40	Pass	
Jun 4	Jun 11	9:41	P6-P9 Vertical	WW-054	EP	40	39	Pass	
Jun 5	Jun 11	9:29	P9-P11 Vertical	WW-054	EP	40	40	Pass	
Jun 5	Jun 11	9:30	P11-P13 Vertical	WW-019	DT	40	33	Fail	Extrusion T-weld at joint requires more extrusion
Jun 5	Jun 11	9:34	P13-P15 Vertical	WW-054	EP	40	39	Pass	
Jun 6	Jun 11	9:34	P15-P17 Vertical	WW-022	EP	40	40	Pass	
Jun 6	Jun 11	9:35	P17-P19 Vertical	WW-022	EP	40	39	Pass	
Jun 6	Jun 11	9:36	P19-P21 Vertical	WW-022	EP	40	40	Pass	

Date Fused	Date Tested	Time Tested	Seam #	App #	Tech	psi Start	psi End	Pass or Fail	Notes
Jun 7	Jun 11	9:36	P21-P23 Vertical	WW-022	EP	40	40	Pass	
Jun 6	Jun 11	10:23	P22-P23 Cross	WW-019	DT	40	40	Pass	
Jun 7	Jun 11	10:12	P21-P22 Vertical	WW-022	EP	40	40	Pass	
Jun 6	Jun 11	10:15	P20-P21 Cross	WW-019	DT	40	39	Pass	
Jun 7	Jun 11	10:15	P20-P22 Vertical	WW-022	EP	40	40	Pass	
Jun 6	Jun 11	10:19	P18-P19 Cross	WW-019	DT	40	39	Pass	
Jun 6	Jun 11	10:19	P18-P20 Vertical	WW-022	EP	40	40	Pass	
Jun 6	Jun 11	10:19	P19-P20 Vertical	WW-022	EP	40	38	Pass	
Jun 6	Jun 11	Not tested	P16-P17 Cross	WW-019	DT				Extrusion required at intersection with vertical seam
Jun 6	Jun 11	10:38	P17-P18 Vertical	WW-022	EP	40	40	Pass	
Jun 6	Jun 11	10:38	P16-P18 Vertical	WW-022	EP	40	40	Pass	
Jun 5	Jun 11	10:53	P12-P14 Vertical	WW-054	EP	40	38	Pass	Below patch on seam
Jun 5	Jun 11	11:00	P12-P14 Vertical	WW-054	EP	40	40	Pass	Above patch on seam
Jun 5	Jun 11	11:00	P12-P15 Vertical	WW-054	EP	40	40	Pass	
Jun 5	Jun 11	11:05	P12-P13 Cross	WW-019	DT	40	39	Pass	Lefthand side of patch
Jun 5	Jun 11	11:05	P12-P13 Cross	WW-019	DT	40	39	Pass	Righthand side of patch
Jun 5	Jun 11	11:05	P10-P12 Vertical	WW-019	DT	40	38	Pass	
Jun 5	Jun 11	11:25	P10-P13 Vertical	WW-019	DT	40	38	Pass	Below patch on seam
Jun 5	Jun 11	11:34	P10-P13 Vertical	WW-019	DT	40	37	Pass	Above patch on seam
Jun 5	Jun 11	11:36	P10-P11 Cross	WW-019	DT	40	38	Pass	
Jun 5	Jun 11	11:45	P8-P10 Vertical	WW-019	DT	40	40	Pass	
Jun 5	Jun 11	11:45	P8-P11 Vertical	WW-019	DT	40	40	Pass	
Jun 4	Jun 11	11:48	P8-P9 Cross	WW-019	DT	40	39	Pass	
Jun 4	Jun 11	11:48	P6-P8 Vertical	WW-054	EP	40	39	Pass	
Jun 4	Jun 12	9:00	P3-P6 Vertical	WW-054	EP	40	40	Pass	
Jun 2	Jun 12	9:00	P1-P3 Vertical	WW-054	EP	40	40	Pass	Above patch on seam
Jun 2	Jun 12	9:05	P1-P4 Vertical	WW-054	EP	40	40	Pass	Below lower patch on seam
Jun 2	Jun 12	9:05	P1-P4 Vertical	WW-054	EP	40	40	Pass	Between patches on seam
Jun 2	Jun 12	9:10	P1-P4 Vertical	WW-054	EP	40	38	Pass	Above upper patch on seam
Jun 2	Jun 12	9:29	P1-P3 Vertical	WW-054	EP	40	38	Pass	Below patch on seam Air channel was blocked midway down and requires extrusion block
Jun 4	Jun 12	9:30	P3-P5 Vertical	WW-054	EP	40	40	Pass	
Jun 4	Jun 12	9:34	P5-P6 Cross	WW-019	DT	40	40	Pass	
Jun 4	Jun 12	9:52	P5-P8 Vertical	WW-054	EP	40	40	Pass	
Jun 5	Jun 12	10:01	P14-P15 Cross	WW-019	DT	40	37	Pass	
Jun 6	Jun 12	10:01	P14-P17 Vertical	WW-022	EP	40	37	Pass	
Jun 6	Jun 12	10:03	P16-P17 Cross	WW-019	DT	40	39	Pass	
Jun 6	Jun 12	10:03	P14-P16 Vertical	WW-022	EP	40	40	Pass	Above patch on seam
Jun 7	Jun 12	10:14	P23-P24 Vertical	WW-019	DT	40	39	Pass	
Jun 7	Jun 12	10:19	P23-P25 Vertical	WW-019	DT	40	35	Fail	
Jun 7	Jun 12	10:14	P24-P25 Cross	WW-019	DT	40	40	Pass	

Date Fused	Date Tested	Time Tested	Seam #	App #	Tech	psi Start	psi End	Pass or Fail	Notes
Jun 7	Jun 12	10:30	P22-P25 Vertical	WW-019	DT	40	38	Pass	
Jun 7	Jun 12	10:38	P25-P26 Vertical	WW-022	EP	40	40	Pass	
Jun 7	Jun 12	10:40	P26-P28 Vertical	WW-022	EP	40	39	Pass	
Jun 10	Jun 12	10:42	P28-P29 Vertical	WW-022	EP	40	40	Pass	
Jun 10	Jun 12	10:43	P29-P30 Vertical	WW-022	EP	40	39	Pass	
Jun 10	Jun 12	10:45	P30-P31 Vertical	WW-026	DT	40	40	Pass	
Jun 10	Jun 12	10:46	P31-P32 Vertical	WW-026	DT	40	39	Pass	
Jun 10	Jun 12	10:54	P32-P33 Vertical	WW-026	DT	40	40	Pass	
Jun 10	Jun 12	10:56	P33-P35 Vertical	WW-026	DT	40	39	Pass	
Jun 10	Jun 12	10:58	P35-P36 Vertical	WW-022	EP	40	40	Pass	
Jun 10	Jun 12	11:07	P32-P34 Cross	WW-026	DT	40	40	Pass	
Jun 10	Jun 12	11:07	P33-P34 Vertical	WW-026	DT	40	40	Pass	
Jun 10	Jun 12	11:18	P31-P34 Vertical	WW-026	DT			Fail	Requires retest due to air channel block
Jun 10	Jun 12	11:21	P27-P28 Cross	WW-026	DT	40	40	Pass	
Jun 10	Jun 12	11:24	P27-P26 Vertical	WW-022	EP	40	25	Fail	
Jun 6	Jun 12	11:33	P14-P16 Vertical	WW-022	EP	40	39	Pass	Below patch on seam
Jun 5	Jun 12	11:36	P7-P10 Vertical	WW-019	DT	40	40	Pass	
Jun 4	Jun 12	11:38	P5-P7 Vertical	WW-019	EP	40	40	Pass	
Jun 2	Jun 12		P1-P3 Vertical	WW-019	EP				Tested below air channel block and requires extrusion to test

6.0 DESTRUCTIVE TESTING

Table 4 summarizes the weekly destructive testing results. Five tests are performed for each criterion.

Table 4: Destructive Testing Results

Date Fused	Time Fused	Tech	Apparatus	Location (UTM is +/- 4 m)	Sample ID	$Peel_{in}$ (100 min)	$Peel_{out}$ (100 min)	Shear (120 min)	Pass or Fail
Jun 10	11:04	DT	WW-026	P32-P34 Cross Seam 459,252E 7,101,688N	D10	156 155 150 156 151	164 160 154 139 144	167 172 170 173 182	Pass
Jun 10	11:11	DT	WW-026	P31-P34 Seam Bottom of Seam 459,262E 7,101,674 N	D11	156 143 151 149 142	154 150 156 159 150	165 165 169 168 164	Pass
Jun 10	9:50	EP	WW-022	P29-P30 Seam Bottom of Seam 459,273E 7,1010,685N	D12	154 155 155 150 146	160 156 158 155 154	174 173 156 163 175	Pass

Date Fused	Time Fused	Tech	Apparatus	Location (UTM is +/- 4 m)	Sample ID	$Peel_{in}$ (100 min)	$Peel_{out}$ (100 min)	Shear (120 min)	Pass or Fail
Jun 6	5:15	EP	WW-022	P26-P27 Seam	D13	146	147	162	Pass
				Bottom of Seam		142	150	160	
				459,280E		152	155	168	
				7,101,696N		149	147	168	
						146	150	163	

7.0 PHOTO LOG



Figure 1: GCL Deployed in Advance of Liner Deployment



Figure 2: GCL in Anchor Trench



Figure 3: Bedding Sand Placed in Advance of Liner Deployment



Figure 4: Trimming Liner in Advance of Tie into Existing Liner

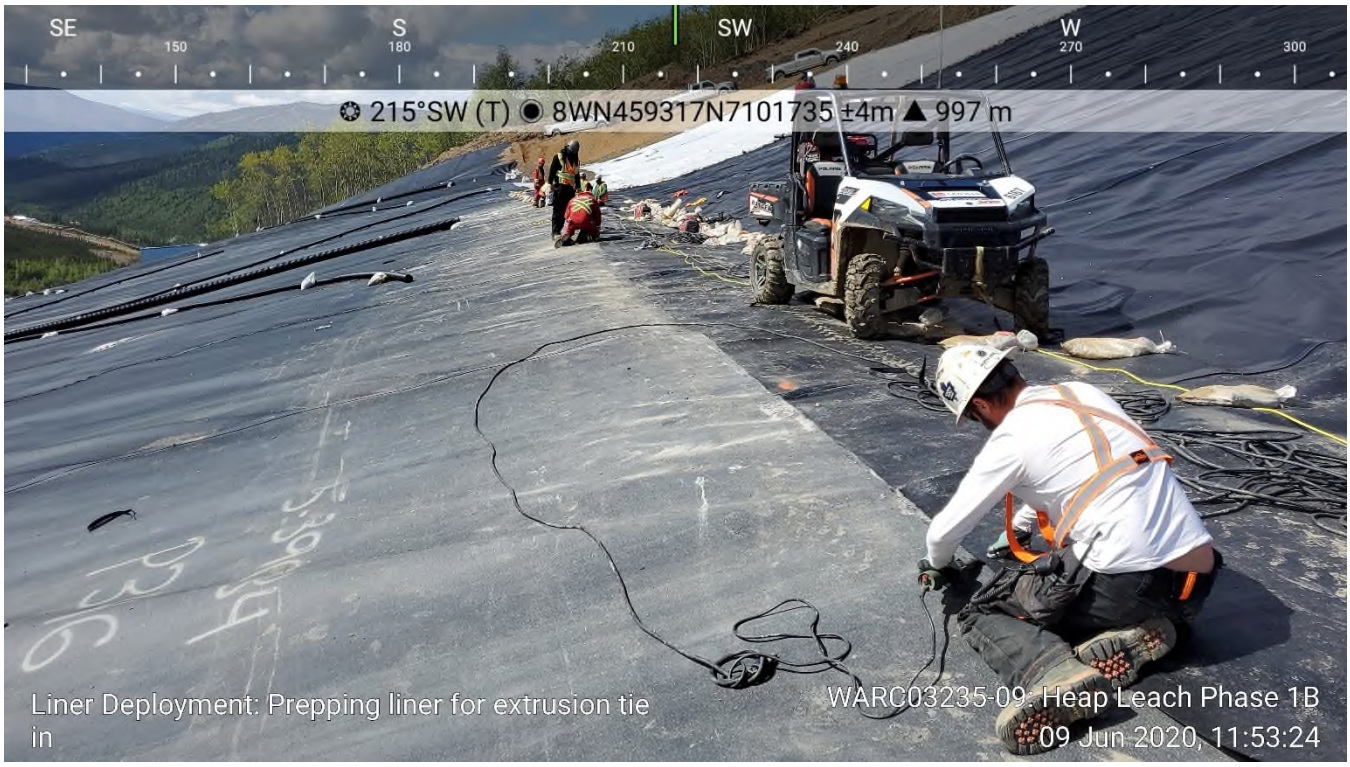


Figure 5: Prepping Liner for Extrusion Welding



Figure 6: Grinding Seams in Advance of Extrusion Welding



Figure 7: Extrusion Welding of Seams



Figure 8: Completed Tie into Existing Liner



Figure 9: Hydrated GCL to be Removed

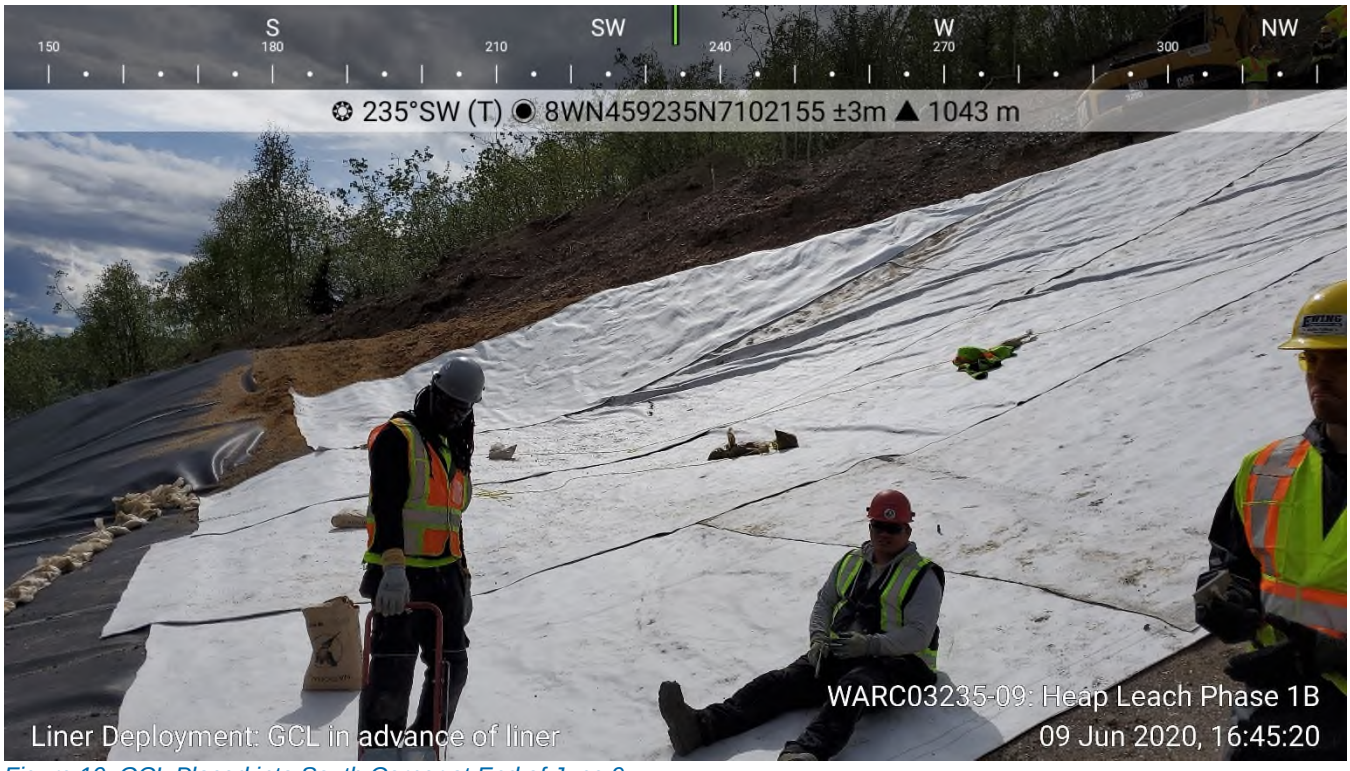


Figure 10: GCL Placed into South Corner at End of June 9



Figure 11: GCL Ready for Liner Deployment into South Corner



Figure 12: Panels P30 to P36 Deployed



Figure 13: Panels P29 to P36 in Anchor Trench



Figure 14: South Corner Anchor Trench with Liner Deployed



Figure 15: Bedding Sand Placed on Subgrade in Advance of Liner Deployment



Figure 16: Bedding Sand Placed to Bottom of Slope

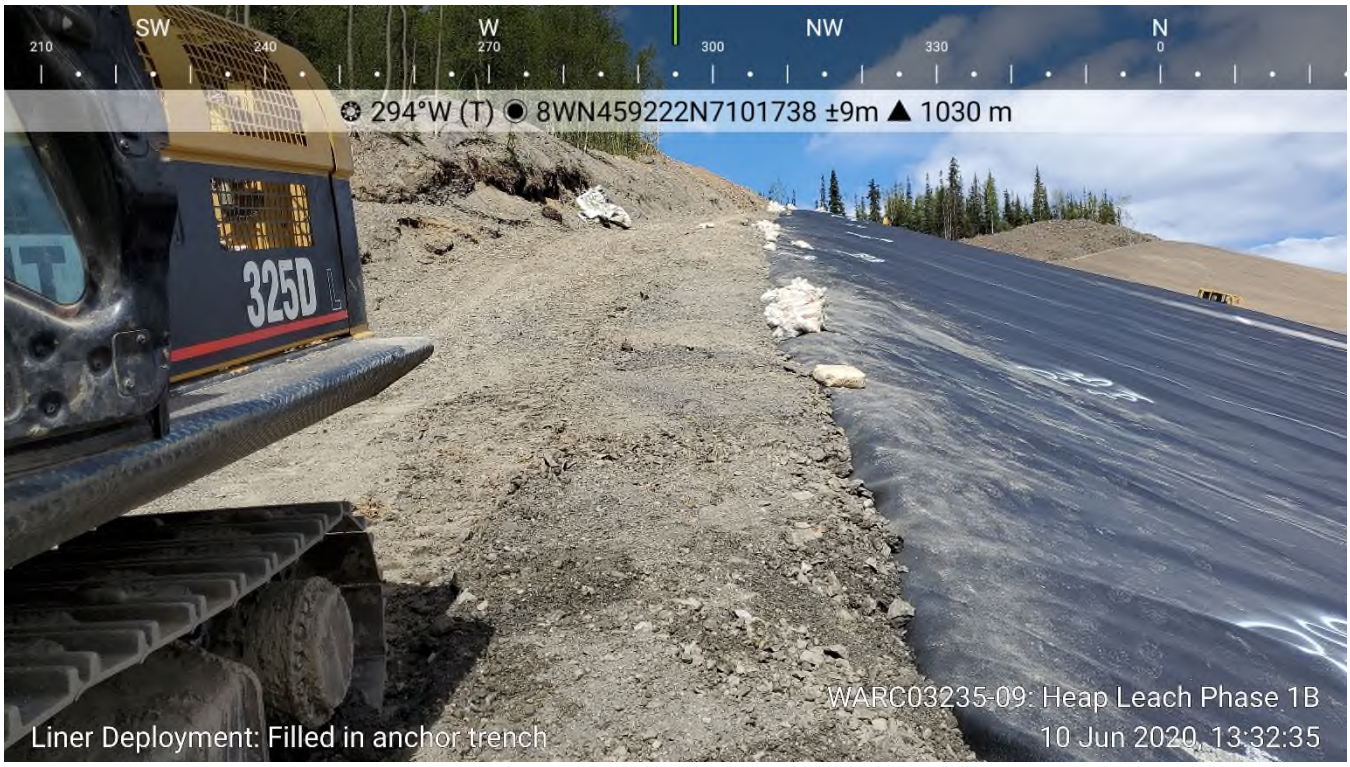


Figure 17: Anchor Trench Backfilled



Figure 18: Liner Deployed from May 31 to June 10

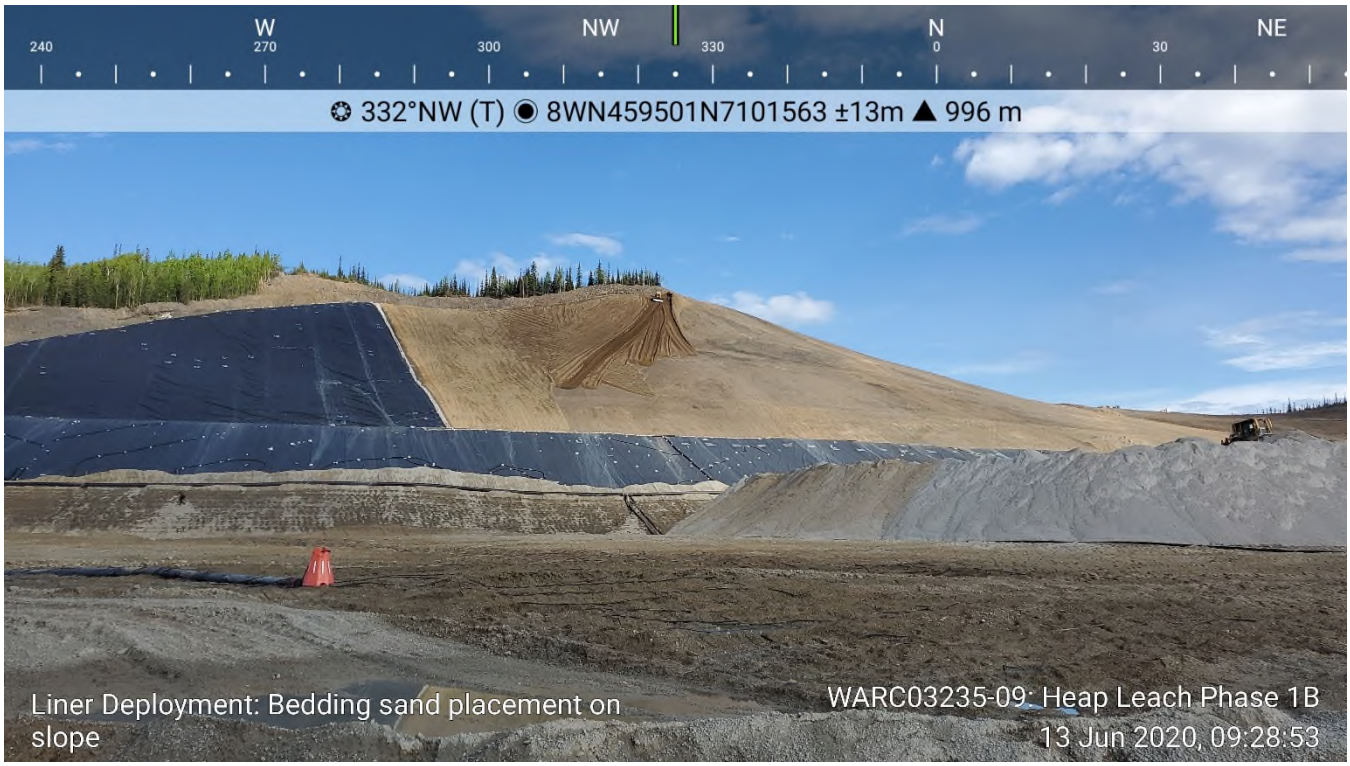


Figure 19: Bedding Sand Deployed on Slope on June 13

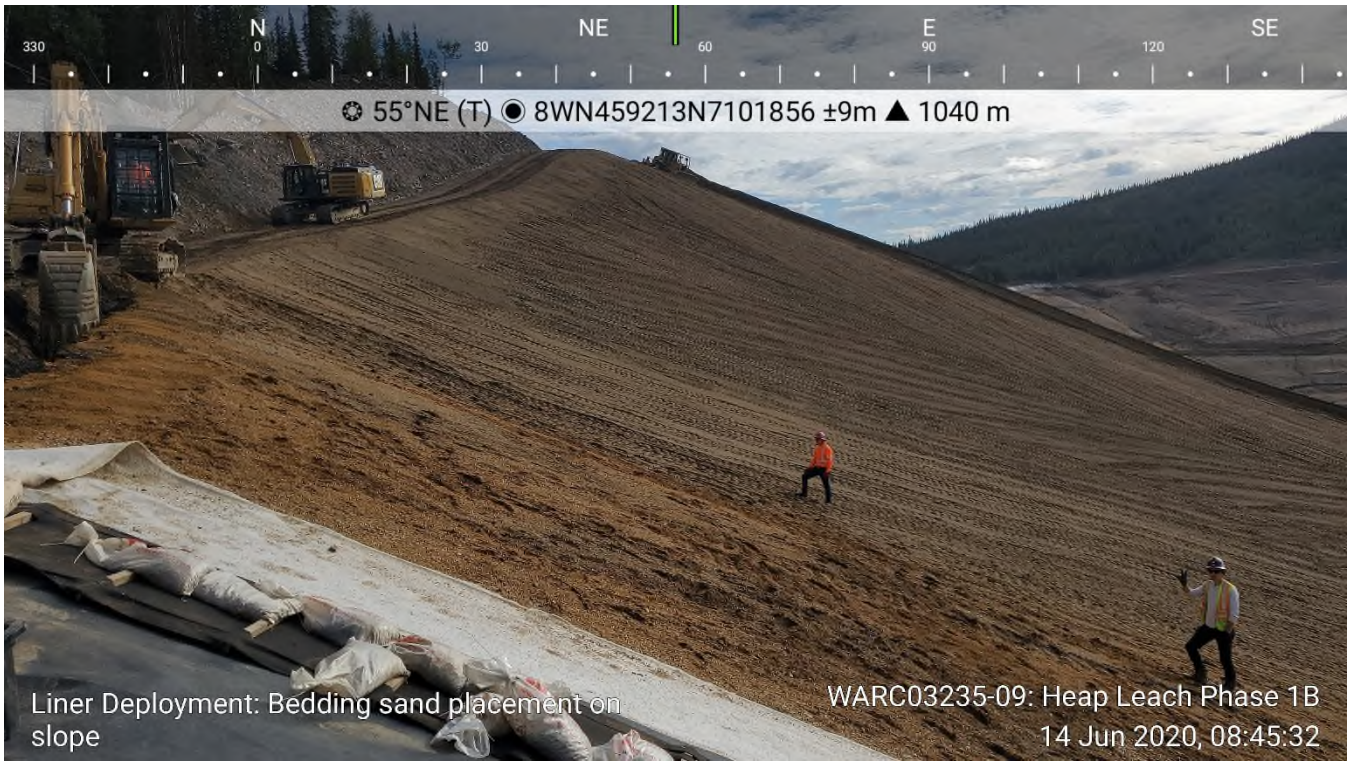


Figure 20: Bedding Sand on Slope in Advance of Liner Deployment

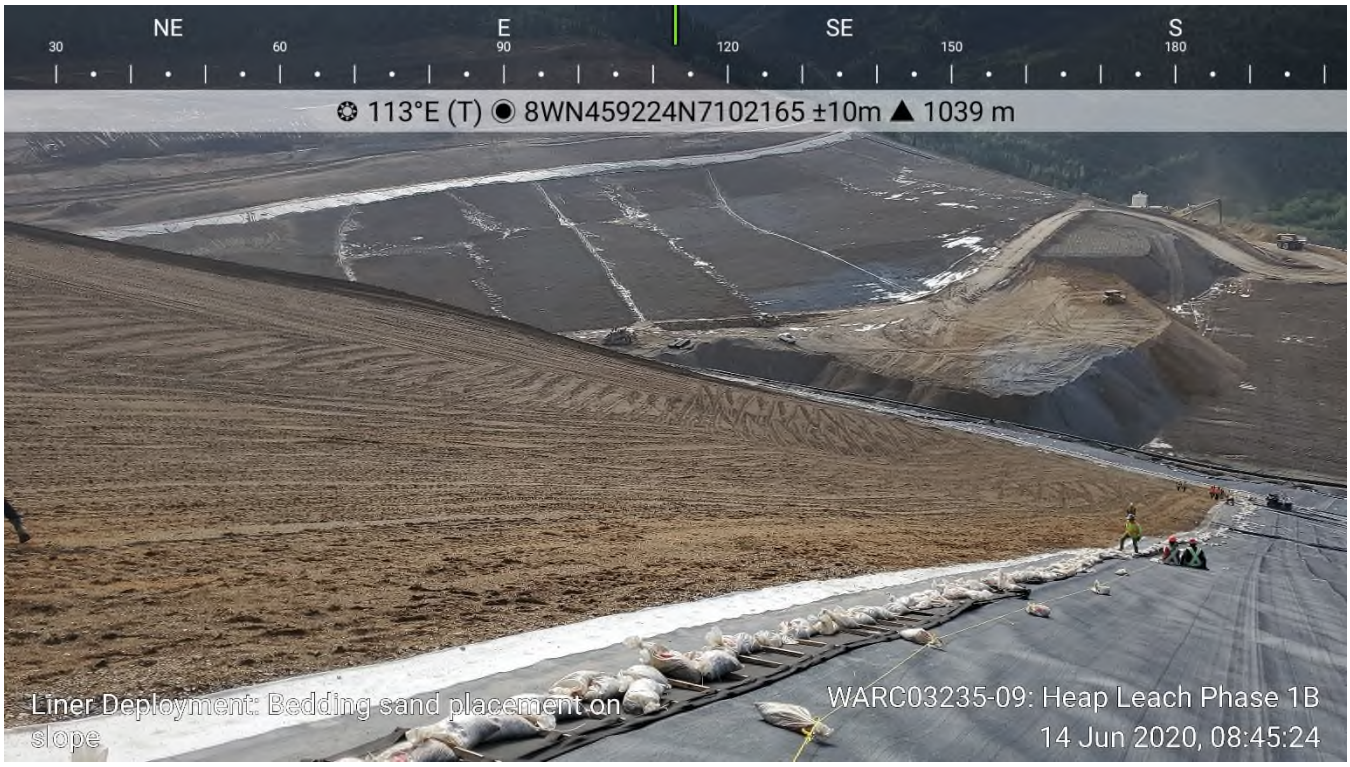


Figure 21: Bedding Sand on Slope



Figure 22: Anchor Trench Excavation



Figure 23: Completed Anchor Trench Excavation



Figure 24: Bedding Sand after One Pull of GCL



Figure 25: GCL Deployed in Advance of Liner Placement



Figure 26: GCL in Anchor Trench



Figure 27: Panels P37 to P39 Deployed



Figure 28: Deployment to the End of June 14

TETRA TECH

WEEKLY FIELD REPORT

ISSUED FOR REVIEW

Project:	Eagle Gold Heap Leach Phase 1B	**Date:**	May 30, 2020
Location:	Eagle Gold Mine	**Contractor:**	Ewing Transport / Layfield
Client:	Victoria Gold Corp.	**Contractor's Rep:**	Marshall Ewing / Chad Messervey
Contact:	Clint Abel	**Contractor's Email:**	
Weather:	Variable (see daily entries)	**Tetra Tech Representative:**	Adam Mickey
File:	704-ENG.WARC03235-09	**Status:**	Issued for Review

This 'Issued for Review' report is provided solely for the purpose of client review and presents our findings and recommendations to date. Our findings and recommendations are provided only through an 'Issued for Use' report, which will be issued subsequent to this review. You should not rely on the interim recommendations made herein. Once our report is issued for use, the 'Issued for Review' document should be either returned to Tetra Tech Canada Inc. (Tetra Tech) or destroyed.

1.0 INTRODUCTION

Tetra Tech Canada Inc. (Tetra Tech) was retained by Victoria Gold Corp. (Victoria Gold) to provide CQA services at the Eagle Gold mine located north of Mayo, Yukon, at Dublin Gulch for the Eagle Gold Heap Leach Phase 1B expansion (Phase 1B). Mr. Adam Mickey, EIT, is Tetra Tech's representative on site.

Forte Dynamics (Forte) out of Fort Collins, Colorado provided the design and specification for Phase 1B, and Forte's representative is Clint Green.

Clint Abel, of JDS Energy & Mining, is Victoria Gold's project manager on site at the Eagle Gold mine.

Ewing Transport (Ewing), based out of Mayo, Yukon, is the construction contractor for Phase 1B.

Layfield Environmental Containment (Layfield) has been retained to provide and install the liner for Phase 1B, and their supervisor on site is Chad Messervey.

The following Field Report outlines Tetra Tech's CQA for the period of June 15, 2020, to June 21, 2020.

2.0 DAILY REPORTS

2.1 Highlights

- Rain delayed liner deployment throughout the week.
- Layfield is placing three panels of GCL for every two panels of 80 mm LLDPE liner.

2.2 June 15, 2020

- Weather: partly cloudy turning to cloudy

Tetra Tech Canada Inc.
61 Wasson Place
Whitehorse, YT Y1A 0H7 CANADA
Tel 867.668.3068 Fax 867.668.4349

- Ewing is continuing to place bedding sand on slopes.
- Layfield is continuing to deploy GCL and liner. See Figures 1 to 6.
  - Four slope lengths of GCL deployed and two slope lengths of liner deployed.
- Ewing and Layfield picked rocks out of bedding sand for approximately 45 m from edge of P47 along anchor trench.
  - Tetra Tech inspected the subgrade and approved it for liner deployment. For subgrade approval going forward, subgrade will be approved on a daily basis, but a Layfield subgrade inspection report will be generated based on the liner panels deployed over the subgrade.
- Layfield began extrusion on panels placed since June 14 and extruded at the top seams to allow anchor trench to be backfilled.

2.3 June 16, 2020

- Weather: cloudy and light rain turning to mostly cloudy in the afternoon.
- Ewing is not placing bedding sand on slope due to slippery road conditions from stockpile to site.
- Layfield is continuing to deploy GCL and liner. See Figures 7 to 11.
  - Tetra Tech approved the subgrade for liner deployment.
  - One more slope length of GCL panels were deployed and then liner panels P48 and P49 were deployed overtop.
  - Deployment was halted at 10:30 am due to rain and resumed at 1:00 pm when the rain stopped.
  - Layfield continued to place GCL till the end of the day. At the end of the day, five slope lengths of GCL were deployed.
    - Layfield folded up the GCL at the bottom of the slope in case of rain.
- Tetra Tech attended the weekly Phase 1B meeting and updated all parties on the progress. No specific issues were raised.
- Tetra Tech performed compaction testing on subgrade fills as required.

2.4 June 17, 2020

- Weather: cloudy turning to rain at 8:00 am.
- It rained heavily overnight on deployed GCL. See Figures 12 to 14.
  - Heavy erosion was evident of the bedding sand on the slope as it washed to the bottom in places.
    - Sand was displaced on to leading panels along the slope.
    - An erosion gully formed along the leading edge of the GCL. It will have to be raked smooth prior to further deployment.
    - Areas at the bottom of the slope will have to be raked to smooth out contours and fix erosional features.

- Tetra Tech and Layfield inspected the GCL on the slope. GCL on the slope did not hydrate due to the rainfall, but the GCL that was folded back hydrated at the fold. Layfield is replacing the GCL and cutting it off 1 m up from the folded area.
    - Weather conditions during deployment have been unpredictable throughout the project and weather reports do not reflect the conditions experienced at site. It is impossible to protect the GCL on the slope overnight by covering it, and it has been shown that the GCL will not hydrate on the steep slopes during rainfall, so Layfield has continued deployment to advance the project understanding that GCL may need to be replaced at the toe of the slope.

- Due to rain and saturated conditions, deployment was shut down for the day at 9:30 am.

2.5 June 18, 2020

- Weather: Partly cloudy turning to cloudy with periods of rain in the afternoon.
- Layfield fixed subgrade and replaced hydrated GCL.
    - Subgrade was smoothed out using rakes and additional sand was placed in wet spots by Ewing and Layfield personnel.
    - The subgrade had dried out sufficiently to place liner.
    - Layfield is not going to leave any GCL exposed overnight anymore due to unpredictable weather. This could lead to shorter days due to the time it takes to deploy GCL and liner, as well as fusing the liner.
- Layfield is deploying liner to cover the deployed GCL.
    - Panels P50 to P57 were deployed on the slope and fused.
- Layfield placed two more slope lengths of GCL and then deployed and fused panels P58 and P59.
- Layfield performed extrusion welding on deficient areas from panels P1 to P36, including fixing seams to finish pressure testing.
- Rock picking and subgrade acceptance will be required to continue deployment.

3.0 GEOSYNTHETIC ROLL NUMBERS PLACED

Table 1 summarizes the daily geosynthetic roll numbers placed on the slope during liner installation. All panel lengths are approximate and where 45 degree joints are used, panel length is based from the center of the panel.

Table 1: Geosynthetic Roll Numbers Placed on Slope

Date	GCL Roll Number	LLDPE Liner Roll Number	Panel Number (Length)
June 15	502344581, 502344142 502344706, 502344702 502344679, 502344160 502343898, 502344659, 502344680, 502344660 502344163, 502344159 502344704, 502344716 502344701	10694-001 10697-011 10697-012 10696-006	P43 (102.3 m) P44 (78.8 m), P45 (50.8 m) P46 (124.6 m) P47 (14.9 m)
June 16	502343946, 502343904	10696-006	P48 (114 m)

Date	GCL Roll Number	LLDPE Liner Roll Number	Panel Number (Length)
	502343942, 502343937 502343956, 502344154 502343926, 502343957 502343924, 502343895 502344158, 502343901 502343886, 502343896 502344176, 502344173 502344151, 502344156 502343905, 502343897 0242-347762, 0242-347840	10697-014	P49 (74.4 m)
June 17			
June 18		10697-014 10696-005 10696-028 10696-010 10696-029 10696-032	P50 P51 P52, P53 P54, P55 P56 P57
June 19			
June 20			
June 21			

4.0 TRIAL SEAM

Table 2 summarizes the weekly trial seam results. For fusion, the apparatus settings are temperature and speed, and for extrusion, the apparatus settings are preheat and barrel temperature. Five tests are performed for each criterion.

Table 2: Trial Seam Results

Date	Time	Fusion or Extrusion	Tech	Apparatus #	Temp or Preheat (ºF)	Speed (%) or Barrel Temp (ºF)	$Peel_{inside}$ (100 min)	$Peel_{outside}$ (100 min for Fusion 88 min for Extrusion)	Shear (120 min)	Smooth or Textured
Jun 15	11:20	Fusion	DT	WW-026	850	35	178 158 150 152 160	149 150 145 137 148	183 172 189 182 190	Textured
Jun 15	11:15	Fusion	EP	WW-022	850	55	126 132 129 150 149	154 152 154 158 149	165 165 164 170 161	Smooth
Jun 15	3:00	Extrusion	RP	04037	505	495	N/A	117 102 116 115 106	152 156 153 149 153	Textured

Date	Time	Fusion or Extrusion	Tech	Apparatus #	Temp or Preheat (ºF)	Speed (%) or Barrel Temp (ºF)	$Peel_{inside}$ (100 min)	$Peel_{outside}$ (100 min for Fusion 88 min for Extrusion)	Shear (120 min)	Smooth or Textured
Jun 15	3:05	Extrusion	EA	04037	505	495	N/A	106	159	Textured
								104	161	
								103	159	
								104	174	
								119	164	
Jun 16	8:45	Fusion	DT	WW-026	850	35	142	155	183	Textured
							152	158	178	
							152	146	175	
							163	163	178	
							164	158	185	
Jun 16	8:35	Fusion	EP	WW-022	850	55	147	153	170	Smooth
							146	137	168	
							150	146	178	
							143	136	179	
							147	147	168	
Jun 16	9:00	Fusion	DT	WW-026	850	50	158	162	167	Smooth
							153	147	163	
							157	160	171	
							147	159	170	
							154	155	165	
Jun 18	7:50	Fusion	DT	WW-026	850	35	156	170	178	Textured
							162	161	169	
							153	164	182	
							169	150	185	
							162	160	174	
Jun 18	7:45	Fusion	EP	WW-022	850	55	132	159	167	Smooth
							125	152	161	
							122	155	167	
							150	157	161	
							132	155	166	
Jun 18	9:35	Fusion	DT	WW-020	850	55	123	133	160	Smooth
							120	129	153	
							124	147	156	
							122	134	155	
							126	129	152	
Jun 18	12:00	Fusion	DT	WW-026	850	35	156	145	166	Textured
							147	147	173	
							155	159	170	
							149	147	166	
							152	148	160	
Jun 18	12:00	Fusion	EP	WW-022	850	55	134	138	153	Smooth
							140	135	147	
							138	135	152	
							139	132	149	
							138	135	151	
Jun 18	1:00	Extrusion	EA	04037	505	495	N/A	95	155	Textured

Date	Time	Fusion or Extrusion	Tech	Apparatus #	Temp or Preheat (ºF)	Speed (%) or Barrel Temp (ºF)	$Peel_{inside}$ (100 min)	$Peel_{outside}$ (100 min for Fusion 88 min for Extrusion)	Shear (120 min)	Smooth or Textured
								100 100 112 97	155 158 156 155	
Jun 18	1:00	Extrusion	RP	04037	505	495	N/A	100 97 112 114 101	154 155 162 159 162	Textured

5.0 NON-DESTRUCTIVE TESTING

Table 3 summarizes the weekly non-destructive pressure testing results.

Table 3: Non-Destructive Testing Results

Date Fused	Date Tested	Time Tested	Seam #	App #	Tech	psi Start	psi End	Pass or Fail	Notes

Date Fused	Date Tested	Time Tested	Seam #	App #	Tech	psi Start	psi End	Pass or Fail	Notes

Date Fused	Date Tested	Time Tested	Seam #	App #	Tech	psi Start	psi End	Pass or Fail	Notes

6.0 DESTRUCTIVE TESTING

Table 4 summarizes the weekly destructive testing results. Five tests are performed for each criterion.

Table 4: Destructive Testing Results

Date Fused	Time Fused	Tech	Apparatus	Location (UTM is +/- 4 m)	Sample ID	$Peel_{in}$ (100 min)	$Peel_{out}$ (100 min)	Shear (120 min)	Pass or Fail

7.0 PHOTO LOG



Figure 1: GCL Deployed in Advance of Liner Deployment

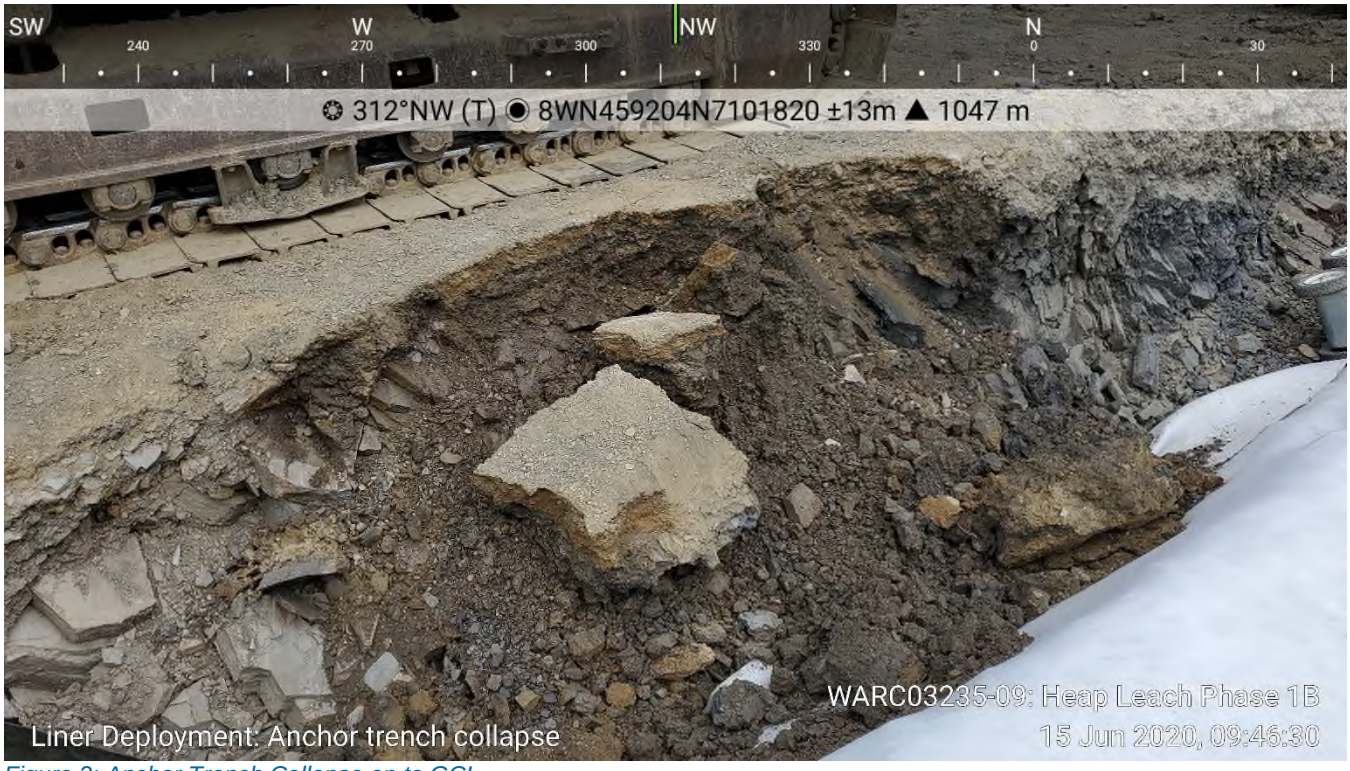


Figure 2: Anchor Trench Collapse on to GCL



Figure 3: Panels P43 to P47 Deployed on Slope



Figure 4: Panels P43 and P47 in the Anchor Trench



Figure 5: Anchor Trench Backfilled



Figure 6: Phase 1B West Side Liner Deployment as of June 15



Figure 7: GCL Deployed in Advance of Liner



Figure 8: Panels P44, P47, and P49 in Anchor Trench



Figure 9: Panels P48 and P49 Deployed



Figure 10: Anchor Trench in Advance of Liner Deployment



Figure 11: Phase 1B West Side as of June 16



Figure 12: Folded Back GCL after Heavy Rainfall Overnight



Figure 13: Saturated Toe of Slope and Folded Back GCL



Figure 14: Hydrated GCL Removed from Slope



Figure 15: Sand on GCL due to Erosion Cleaned Off



Figure 16: GCL Replaced at Base of Slope



Figure 17: Erosion Gully along Leading Edge of GCL

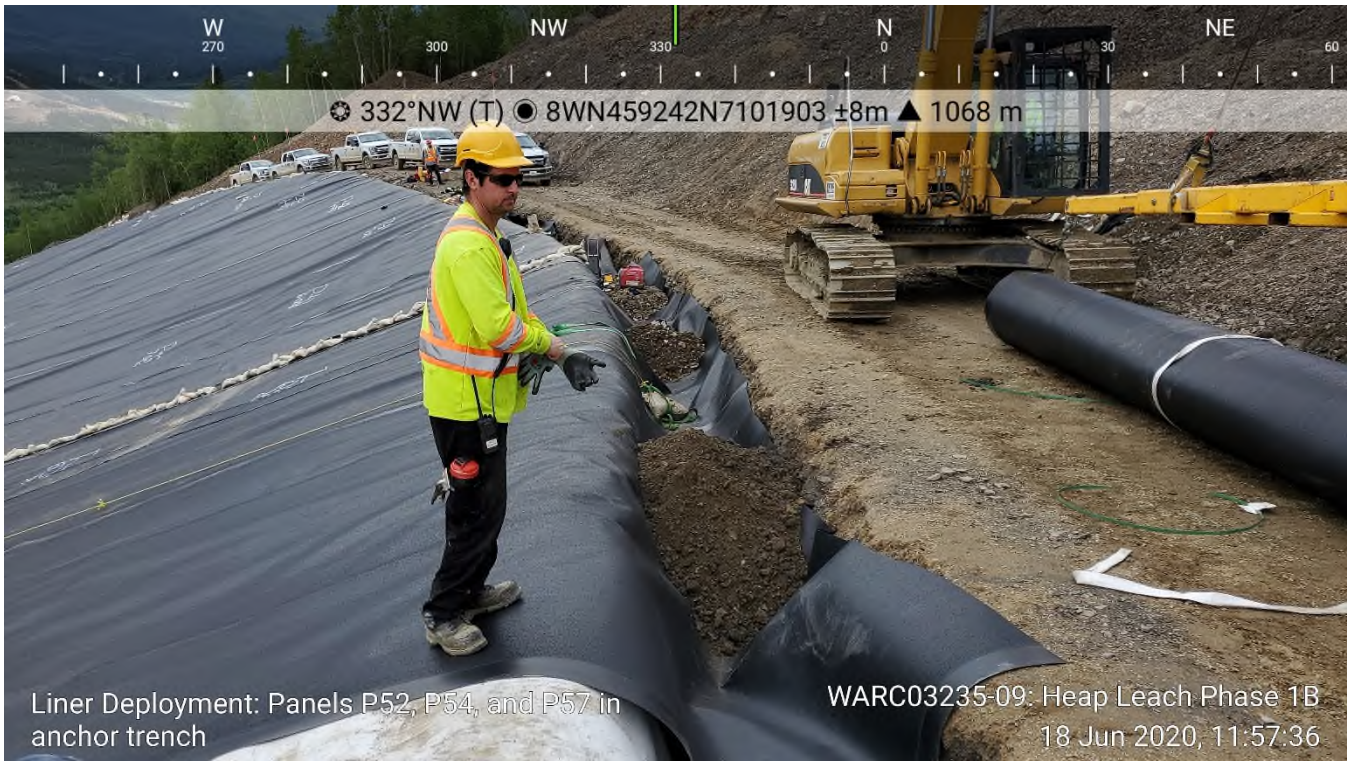


Figure 18: Panels P52, P54, and P57 in Anchor Trench



Figure 19: GCL Deployed in Advance of Linerad

TETRA TECH

WEEKLY FIELD REPORT

ISSUED FOR USE

Project:	Eagle Gold Heap Leach Phase 1B	**Date:**	June 28, 2020
Location:	Eagle Gold Mine	**Contractor:**	Ewing Transport / Layfield
Client:	Victoria Gold Corp.	**Contractor's Rep:**	Marshall Ewing / Chad Messervey
Contact:	Clint Abel	**Contractor's Email:**	
Weather:	Variable (see daily entries)	**Tetra Tech Representative:**	Adam Mickey
File:	704-ENG.WARC03235-09	**Status:**	Issued for Use

1.0 INTRODUCTION

Tetra Tech Canada Inc. (Tetra Tech) was retained by Victoria Gold Corp. (Victoria Gold) to provide CQA services at the Eagle Gold mine located north of Mayo, Yukon, at Dublin Gulch for the Eagle Gold Heap Leach Phase 1B expansion (Phase 1B). Mr. Adam Mickey, EIT, is Tetra Tech's representative on site.

Forte Dynamics (Forte) out of Fort Collins, Colorado provided the design and specification for Phase 1B, and Forte's representative is Clint Green.

Clint Abel, of JDS Energy & Mining, is Victoria Gold's project manager on site at the Eagle Gold mine.

Ewing Transport (Ewing), based out of Mayo, Yukon, is the construction contractor for Phase 1B.

Layfield Environmental Containment (Layfield) has been retained to provide and install the liner for Phase 1B, and their supervisor on site is Chad Messervey.

The following Field Report outlines Tetra Tech's CQA for the period of June 22, 2020, to June 28, 2020.

2.0 DAILY REPORTS

2.1 Highlights

- Rain delayed liner deployment for four days this week.
- Panels P63 through P76 were deployed this week for a total length of approximately 1,161.2 m and a total area covered of approximately 7,896 m^2.
- Pressure testing has been completed for all panels up to panel P57 has been completed and passed except for the P51-P54 vertical seam.
- Layfield is keeping up with all detailing of the liner panels.
- Layfield is placing three panels of GCL for every two panels of 80 mm LLDPE liner.
- All geotextiles deployed have been deployed as per contract specifications.

Tetra Tech Canada Inc.
61 Wasson Place
Whitehorse, YT Y1A 0H7 CANADA
Tel 867.668.3068 Fax 867.668.4349

2.2 June 22, 2020

- Weather: cloudy
- Layfield and Ewing came to site to assess the subgrade conditions and determine if deployment was possible.
  - No work performed today due to saturated subgrade conditions and erosion from heavy rainfall on June 21.
  - Rainfall caused erosion of sand on subgrade to the base of the slope and along GCL. See Figures 1 to 4.
  - Ewing is removing sand on GCL and flipping it over to protect the GCL from further sand migration.

2.3 June 23, 2020

- Weather: raining
- No work performed today due to rain.

2.4 June 24, 2020

- Weather: raining
- No work performed today due to rain.

2.5 June 25, 2020

- Weather: partly cloudy with periods of light rain.
- Ewing is fixing subgrade erosion for further liner deployment.
- Layfield is performing extrusion welding on panels P37 through P62 and also tying in deployed panels to Phase 1A.
- Tetra Tech and Layfield conducted pressure testing of seams.
  - Some seams failed requiring further block offs or patches.
- Destruct D14B was obtained and tested as a result of the failed destruct on June 20. The destruct passed.
- Tetra Tech inspected the subgrade that Ewing worked on throughout the day. At the toe of the slope along the anchor trench of Phase 1A, the subgrade was saturated as well as soft in areas. See Figures 6 and 7.
  - Tetra Tech discussed the issues with Clint Abel, and Clint noted that he had told Ewing to excavate out any soft or saturated materials.
  - Tetra Tech spoke to Clint Green about what would be tolerated with the subgrade to determine how much additional work would be required to deploy GCL.
    - It was agreed that no soft/yielding or saturated areas would be accepted for the subgrade, which follows the original specifications.
    - Tetra Tech spoke with Ewing and advised that the saturated sand at the toe of the slope would have to be removed.

2.6 June 26, 2020

- Weather: partly cloudy with periods of rain in the afternoon.
- Ewing is removing soft and saturated subgrade materials from the toe of the slope.
  - Tetra Tech directed the subgrade removal for the next two slope lengths of liner and showed Ewing what was expected for further subgrade excavation.
  - Once the subgrade materials had been removed, Ewing raked the subgrade smooth and removed any large rocks over 50 mm.
  - Ewing will continue to fix the subgrade in advance of liner deployment as they have time.
  - Tetra Tech advised Ewing that low spots that are saturated and soft along the Phase 1A anchor trench should be backfilled as soon as possible to limit further water infiltration due to rainfall.
- Tetra Tech approved the subgrade for the next two slope lengths of liner to be deployed.
- Layfield and Ewing labourers removed eroded sand from the GCL and then placed three slope lengths of GCL and one slope length of liner.
  - Layfield could not get all the GCL covered by the end of the day due to lost time in the morning because of subgrade prep and periodic rainstorms in the afternoon.
  - Layfield deployed liner panels P63 and P64.
- All extrusion welding and liner repairs identified by pressure testing were completed on June 25. Layfield completed pressure testing of seams for panels P37 to P57. One more seam requires extrusion welding to test on the P51-P54 vertical seam.

2.7 June 27, 2020

- Weather: partly cloudy with wind and rainy periods.
- Ewing continued to repair subgrade at toe of slope in advance of liner deployment. See Figures 8 to 11.
  - The toe was repaired to allow two slope lengths of liner to be deployed.
  - Upon completion of repairs, Tetra Tech inspected and approved the subgrade for GCL deployment.
- Layfield continued liner deployment.
  - Layfield deployed, and fused liner overtop of GCL from June 26, then deployed two slope lengths of GCL and one slope length of liner. The liner was fused immediately upon deployment.
  - Rain delayed deployment at 9:45 am for approximately 1.5 hours.
  - Layfield deployed one more slope length of GCL and liner.
  - Liner panels P65 through P71 were deployed today.
- Layfield conducted extrusion welding on identified repairs as well as conducted required extrusion welding on liner deployed June 26.

2.8 June 28, 2020

- Weather: sunny with windy periods in the afternoon.
- Ewing repaired subgrade at the toe of the slope to allow for two slope lengths of liner to be deployed. See Figure 13.
  - Tetra Tech approved the subgrade for liner deployment.
- Layfield deployed three slope lengths of GCL and two slope lengths of liner. See Figures 14 to 16.
  - Liner was fused immediately after deployment.
- Tetra Tech and Chad worked with Ewing to fix up the toe of the slope subgrade. See Figures 17 to 20.
  - Ewing continued to work on subgrade on the slope afterward.
- Tetra Tech and Layfield obtained seven destructive samples for testing.
  - Layfield immediately patched where destructive samples were taken on the slope.
  - Upon obtaining the destruct sample from the P68-P70 vertical seam, it was found that due to a fusion apparatus operator error, the air seam was damaged along the entire length of the seam. See Figures 21 and 22.
    - Although the seam is fused together, it cannot be pressure tested. Layfield will extrusion weld the entire seam.
  - Destructive testing was not performed today

3.0 GEOSYNTHETIC ROLL NUMBERS PLACED

Table 1 summarizes the daily geosynthetic roll numbers placed on the slope during liner installation. All panel lengths are approximate and where 45 degree joints are used, panel length is based from the center of the panel.

Table 1: Geosynthetic Roll Numbers Placed on Slope

Date	GCL Roll Number	LLDPE Liner Roll Number	Panel Number (Length)
June 22			
June 23			
June 24			
June 25			
June 26	0242-347865, 0242-347886 0242-347890, 0242-347887 0242-347899, 0242-347892 0242-347898, 502343968 502343561, 502343963 502343578, 502343958	10697-002 10700-029	P63 (93.5 m) P64 (104.7 m)
June 27	0242-347885, 0242-347860 0242-347788, 0242-347893 0242-347798, 0242-347888 0242-347897, 0242-347870 0242-347792, 0242-347797 0242-347889, 0242-347871	10700-029 10700-037 10697-010 10700-025 10700-028 10700-024	P65 (23 m) P66 (125.7 m) P67 (48.3 m), P68 (74.7 m) P69 (122.3 m) P70 (125.9 m) P71 (71.1 m)

Date	GCL Roll Number	LLDPE Liner Roll Number	Panel Number (Length)
	0242-347802, 0242-347794		
June 28	0242-347799, 0242-347801 0242-347800, 0242-347795 0242-347803, 0242-347793 0242-347864, 0242-347863 0242-347796, 0242-347862 0242-347804, 502347666	10700-021 10700-001 10700-004 10700-038	P72 (56.8 m) P73 (111.4 m) P74 (17.8 m), P75 (111.8 m) P76 (74.2 m)

4.0 TRIAL SEAM

Table 2 summarizes the weekly trial seam results. For fusion, the apparatus settings are temperature and speed, and for extrusion, the apparatus settings are preheat and barrel temperature. Five tests are performed for each criterion.

Table 2: Trial Seam Results

Date	Time	Fusion or Extrusion	Tech	Apparatus #	Temp or Preheat (ºF)	Speed (%) or Barrel Temp (ºF)	$Peel_{inside}$ (100 min)	$Peel_{outside}$ (100 min for Fusion 88 min for Extrusion)	Shear (120 min)	Smooth or Textured
Jun 25	7:40	Extrusion	EP	PX-011	510	500	N/A	134 122 126 138 135	167 171 159 169 162	N/A
Jun 25	8:00	Extrusion	RW	04037	500	495	N/A	94 115 108 109 113	141 142 144 144 162	N/A
Jun 25	12:00	Extrusion	EP	PX-011	510	500	N/A	96 141 130 105 138	151 156 158 174 169	N/A
Jun 25	12:25	Extrusion	RW	04037	500	495	N/A	127 103 133 130 119	173 177 179 170 174	N/A
Jun 26	12:50	Fusion	DT	WW-026	850	35	141 147 162 129 148	155 142 151 153 156	204 171 179 162 197	Textured

Date	Time	Fusion or Extrusion	Tech	Apparatus #	Temp or Preheat (ºF)	Speed (%) or Barrel Temp (ºF)	$Peel_{inside}$ (100 min)	$Peel_{outside}$ (100 min for Fusion 88 min for Extrusion)	Shear (120 min)	Smooth or Textured
Jun 26	12:50	Fusion	EP	WW-022	850	55	147 145 149 135 130	153 152 156 146 148	161 161 165 165 173	Smooth
Jun 26	12:55	Fusion	DT	WW-026	850	55	147 140 143 149 140	148 143 152 150 149	163 159 164 164 165	Smooth
Jun 27	7:30	Fusion	DT	WW-026	850	35	153 155 150 147 154	156 156 162 157 139	185 178 198 181 204	Textured
Jun 27	7:30	Fusion	JK	WW-022	850	55	141 143 145 144 142	144 157 148 146 146	166 164 179 176 168	Smooth
Jun 27	7:40	Fusion	DT	WW-026	850	55	154 141 143 144 151	155 155 153 159 158	165 159 166 169 170	Smooth
Jun 27	8:00	Extrusion	TH	04037	500	495	N/A	117 131 129 118 115	174 168 169 171 171	N/A
Jun 27	1:00	Extrusion	TH	04037	500	495	N/A	147 144 140 154 143	179 172 174 174 173	N/A
Jun 27	12:53	Fusion	DT	WW-026	850	35	144 143 136 136 150	154 135 151 155 167	172 167 170 176 171	Textured
Jun 27	12:50	Fusion	JK	WW-022	850	55	150 156 146 153 148	154 149 162 159 151	171 164 165 167 171	Smooth

Date	Time	Fusion or Extrusion	Tech	Apparatus #	Temp or Preheat (ºF)	Speed (%) or Barrel Temp (ºF)	$Peel_{inside}$ (100 min)	$Peel_{outside}$ (100 min for Fusion 88 min for Extrusion)	Shear (120 min)	Smooth or Textured
Jun 27	1:00	Fusion	DT	WW-026	850	55	141 150 147 146 149	151 150 153 149 146	168 161 172 166 159	Smooth
Jun 27	4:45	Fusion	DT	WW-026	850	55	150 128 146 141 142	132 142 142 140 143	149 151 160 152 158	Smooth
Jun 27	4:40	Fusion	JK	WW-022	850	55	126 143 140 142 130	130 125 130 122 131	149 145 151 152 153	Smooth
Jun 28	11:50	Fusion	DT	WW-026	850	35	137 137 138 150 148	156 150 148 137 144	169 161 170 163 165	Textured
Jun 28	11:40	Fusion	JK	WW-022	850	55	130 131 136 143 127	130 133 150 136 145	154 152 153 148 149	Smooth
Jun 28	11:55	Fusion	DT	WW-026	850	55	129 122 129 132 124	133 127 131 130 130	143 138 139 151 149	Smooth
Jun 28	12:30	Extrusion	TH	04037	500	495	N/A	121 120 114 133 128	154 148 167 161 161	N/A
Jun 28	4:50	Extrusion	EP	PX-035	500	490	N/A	120 143 123 124 142	158 157 151 163 163	N/A
Jun 28	5:00	Extrusion	EA	04037	500	495	N/A	88 102 122 110 131	152 151 158 149 157	N/A

5.0 NON-DESTRUCTIVE TESTING

Table 3 summarizes the weekly non-destructive pressure testing results.

Table 3: Non-Destructive Testing Results

Date Fused	Date Tested	Time Tested	Seam #	psi Start	psi End	Pass or Fail	Notes
Jun 14	Jun 25	8:46	P2-P39 Vertical	40	36	Pass	
Jun 14	Jun 25	8:45	P38-P39 Vertical	40	40	Pass	
Jun 14	Jun 25	8:50	P38-P42 Vertical	40	40	Pass	
Jun 14	Jun 25	8:50	P38-P41 Vertical	40	40	Pass	
Jun 14	Jun 25	8:50	P41-P42 Cross	40	40	Pass	
Jun 15	Jun 25	8:53	P42-P44 Vertical	40	40	Pass	
Jun 15	Jun 25	8:53	P41-P44 Vertical	40	40	Pass	
Jun 15	Jun 25	9:03	P44-P47 Vertical	40	40	Pass	
Jun 15	Jun 25	9:14	P46-P47 Cross	40	40	Pass	
Jun 15	Jun 25	9:03	P46-P44 Vertical	40	40	Pass	
Jun 16	Jun 25	9:05	P47-P49 Vertical	40	40	Pass	
Jun 16	Jun 25	9:16	P46-P49 Vertical	40	38	Pass	
Jun 18	Jun 25	9:09	P49-P52 Vertical	40	40	Pass	
Jun 18	Jun 25	9:09	P49-P51 Vertical	40	40	Pass	
Jun 18	Jun 25	9:27	P52-P54 Vertical	40	40	Pass	
Jun 18	Jun 25	9:41	P51-P52 Cross	40	39	Pass	
Jun 18	Jun 25		P51-P54 Vertical			Fail	Fast air leak, hole identified for repair
Jun 18	Jun 25	9:32	P54-P57 Vertical	40	37	Pass	
Jun 18	Jun 25	9:32	P54-P56 Vertical	40	40	Pass	
Jun 18	Jun 25	9:47	P57-P59 Vertical	40	36	Pass	
Jun 18	Jun 25		P56-P59 Vertical			Fail	Not holding air, requires re-block
Jun 18	Jun 25		P58-P59 Cross			Pass	Requires cap strip
Jun 18	Jun 25		P56-P58 Vertical			Fail	Requires extrusion
Jun 18	Jun 25	9:57	P53-P54 Cross	40	40	Pass	
Jun 18	Jun 25	9:57	P53-P56 Vertical	40	40	Pass	
Jun 18	Jun 25	9:59	P51-P53 Vertical	40	40	Pass	
Jun 18	Jun 25	10:01	P48-P51 Vertical	40	39	Pass	Above patch
Jun 16	Jun 25	10:01	P48-P49 Cross	40	40	Pass	
Jun 16	Jun 25	10:04	P46-P48 Vertical	40	40	Pass	
Jun 15	Jun 25	10:16	P43-P46 Vertical	40	40	Pass	
Jun 15	Jun 25	10:16	P43-P44 Cross	40	40	Pass	
Jun 15	Jun 25	10:18	P41-P43 Vertical	40	40	Pass	
Jun 14	Jun 25	10:22	P2-P38 Vertical	40	40	Pass	
Jun 14	Jun 25	10:22	P1-P38 Vertical	40	40	Pass	
Jun 14	Jun 25	10:46	P1-P37 Vertical	40	40	Pass	Above patch
Jun 14	Jun 25	10:46	P37-P38 Cross	40	40	Pass	
Jun 14	Jun 25	10:48	P37-P41 Vertical	40	40	Pass	
Jun 14	Jun 25	10:51	P1-P37 Vertical	40	39	Pass	Between patches
Jun 14	Jun 25	11:02	P37-P40 Vertical	40	40	Pass	
Jun 14	Jun 25	11:02	P40-P41 Cross	40	37	Pass	
Jun 15	Jun 25	11:06	P41-P43 Vertical			Fail	Below patch, requires block

Date Fused	Date Tested	Time Tested	Seam #	psi Start	psi End	Pass or Fail	Notes
Jun 15	Jun 25	11:05	P40-P43 Vertical	40	37	Pass	
Jun 15	Jun 25	11:10	P43-P45 Vertical	40	39	Pass	
Jun 15	Jun 25	11:10	P45-P46 Cross	40	38	Pass	
Jun 15	Jun 25	11:11	P45-P48 Vertical	40	39	Pass	
Jun 18	Jun 25	11:13	P48-P50 Vertical	40	39	Pass	
Jun 18	Jun 25	11:13	P50-P51 Cross	40	40	Pass	
Jun 18	Jun 25	11:15	P50-P53 Vertical	40	40	Pass	
Jun 18	Jun 25	11:16	P53-P55 Vertical	40	40	Pass	
Jun 18	Jun 26	10:00	P51-P54 Vertical	40	40	Pass	Above extrusion mid seam
Jun 18	Jun 26	8:26	P56-P59 Vertical	40	40	Pass	
Jun 18	Jun 26	8:26	P56-P58 Vertical	40	40	Pass	
Jun 15	Jun 26	9:05	P41-P43 Vertical	40	40	Pass	
Jun 14	Jun 26	9:20	P1-P37 Vertical	40	40	Pass	Between lower patch and patch above
Jun 18	Jun 26		P51-P54 Vertical			Fail	Below extrusion mid seam Failed due to no T-weld at cross seam
Jun 18	Jun 26	8:55	P55-P58 Vertical	40	40	Pass	

6.0 DESTRUCTIVE TESTING

Table 4 summarizes the weekly destructive testing results. Five tests are performed for each criterion.

Table 4: Destructive Testing Results

Date Fused	Time Fused	Tech	Apparatus	Location (UTM is +/- 4 m)	Sample ID	$Peel_{in}$ (100 min)	$Peel_{out}$ (100 min)	Shear (120 min)	Pass or Fail
Jun 14	3:15	DT	WW-026	P1-P38 Vertical 3 m up seam from D14A	D14B	152 146 173 154 149	163 159 159 158 152	184 184 187 185 183	Pass

7.0 PHOTO LOG



Figure 1: Eroded Sand Subgrade



Figure 2: Sand at Toe of Slope



Figure 3: Sand Eroded On To and Along GCL



Figure 4: Sand Eroded Along GCL and at Toe of Slope



Figure 5: Overall Deployment and Subgrade Sand Placement as of June 25

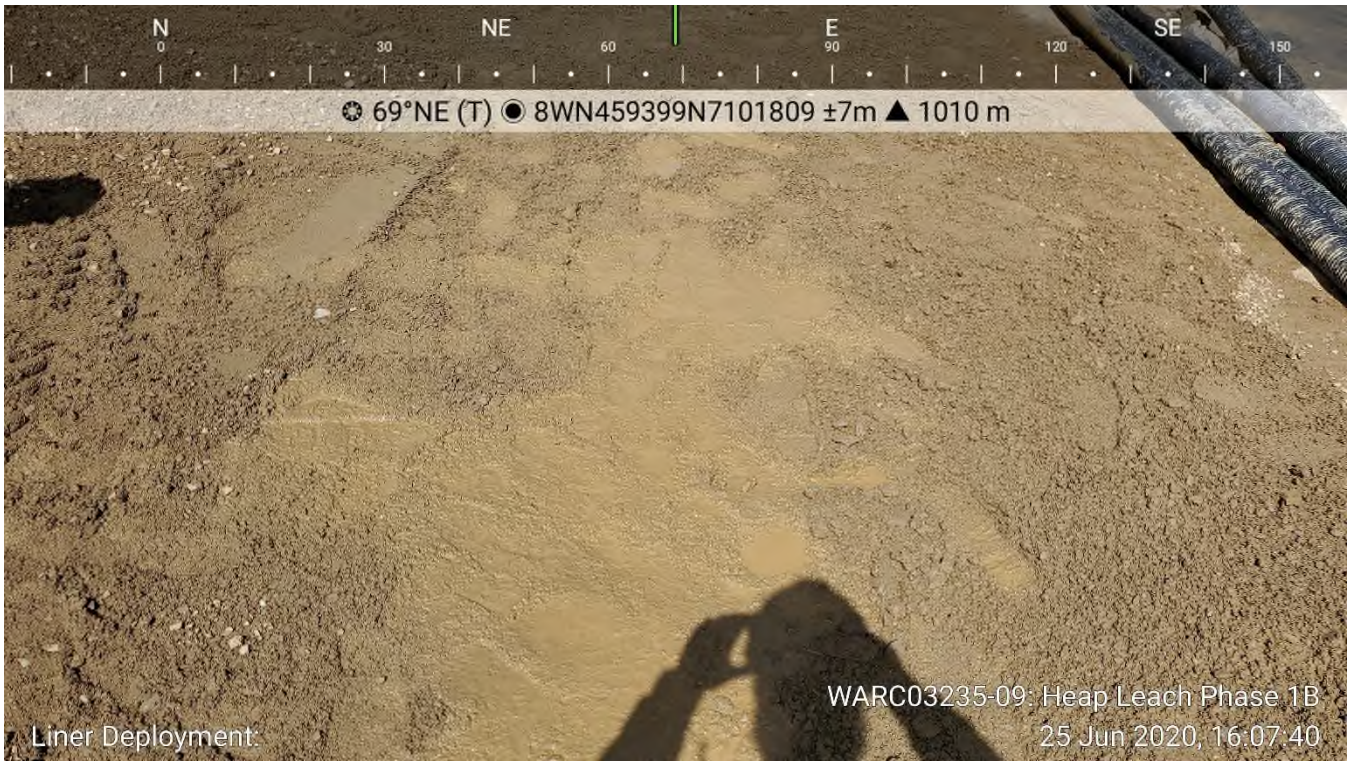


Figure 6: Wet Spot in Subgrade Sand at Toe of Slope



Figure 7: Soft Spot in Subgrade Sand at Toe of Slope



Figure 8: Soft and Saturated Subgrade Sand Excavated from Toe of Slope

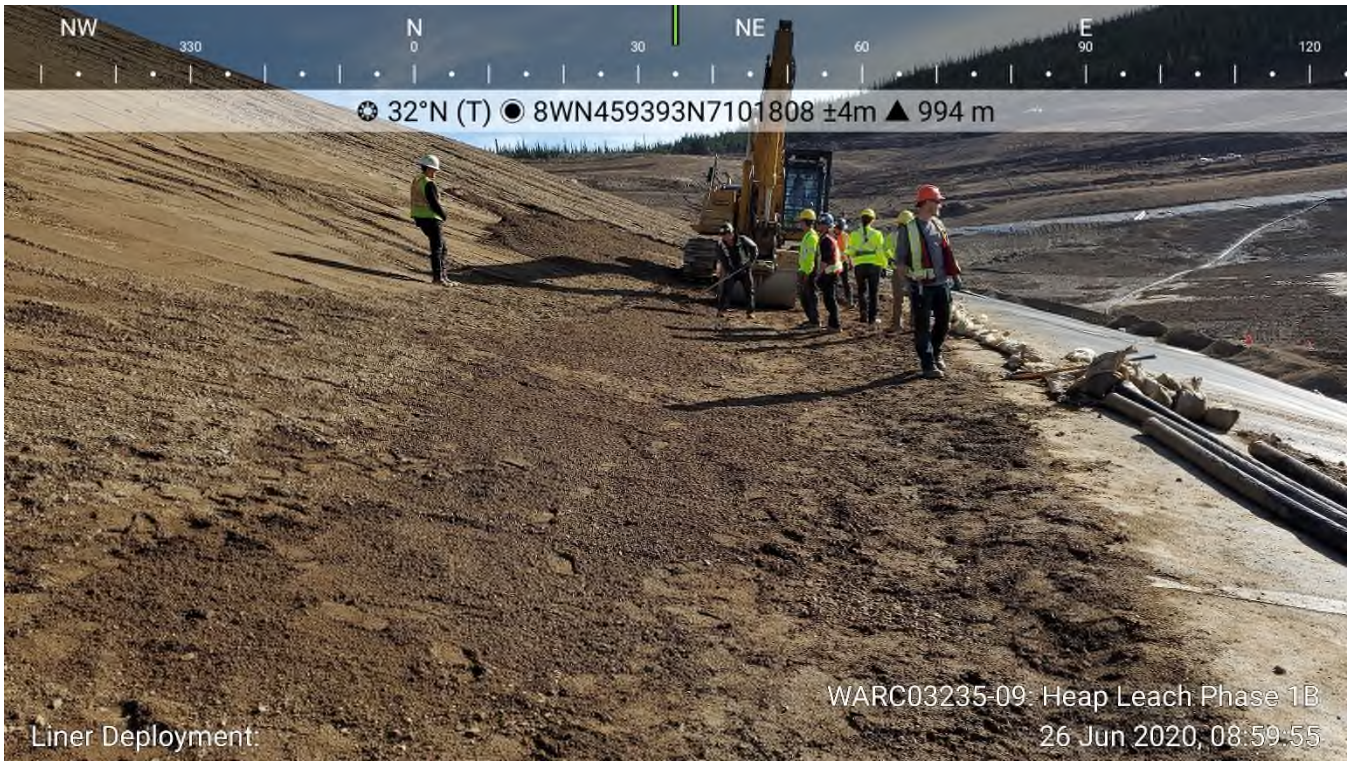


Figure 9: Toe of Slope Raked and Rock Picked



Figure 10: Cleaning Sand from GCL

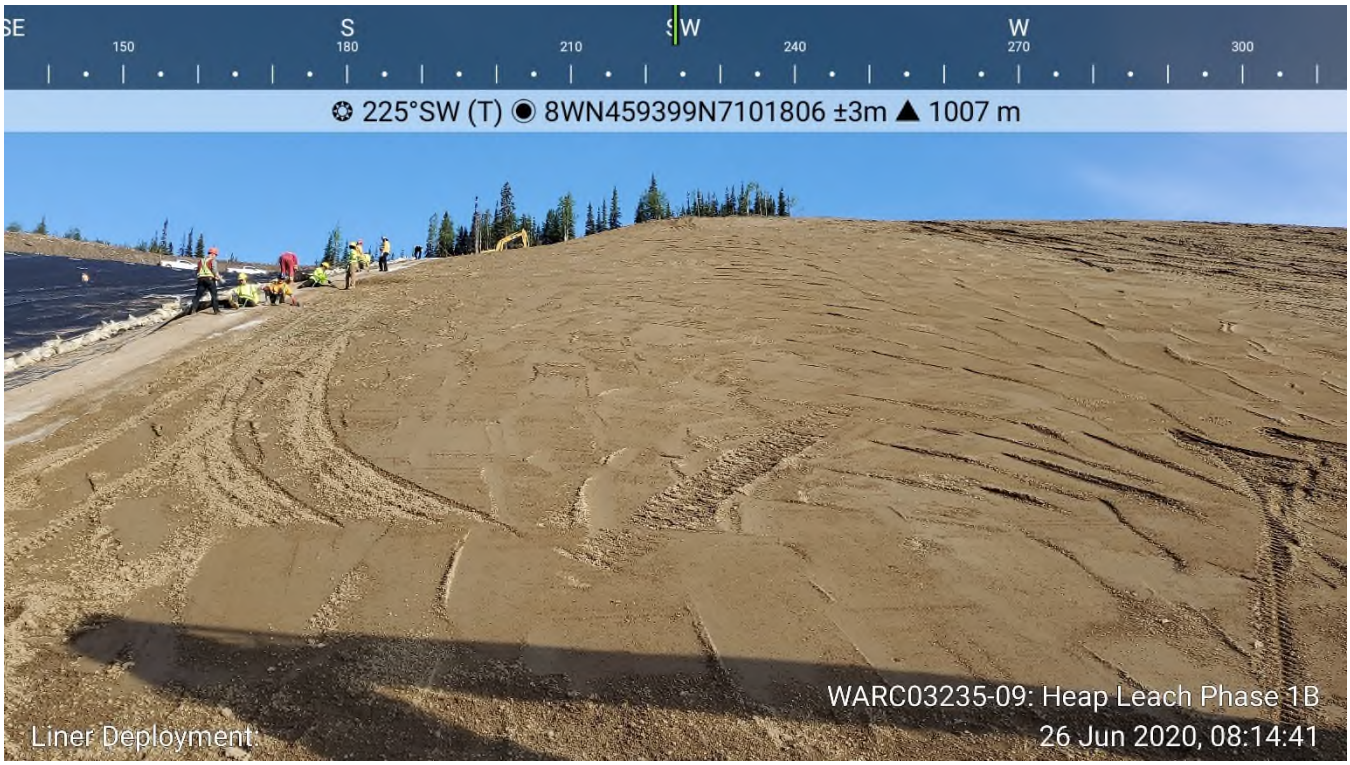


Figure 11: Subgrade Ready for GCL Deployment



Figure 12: Overall Slope as of June 26



Figure 13: Toe of Slope Subgrade Approved for June 27 Deployment



Figure 14: June 27 Liner Deployment

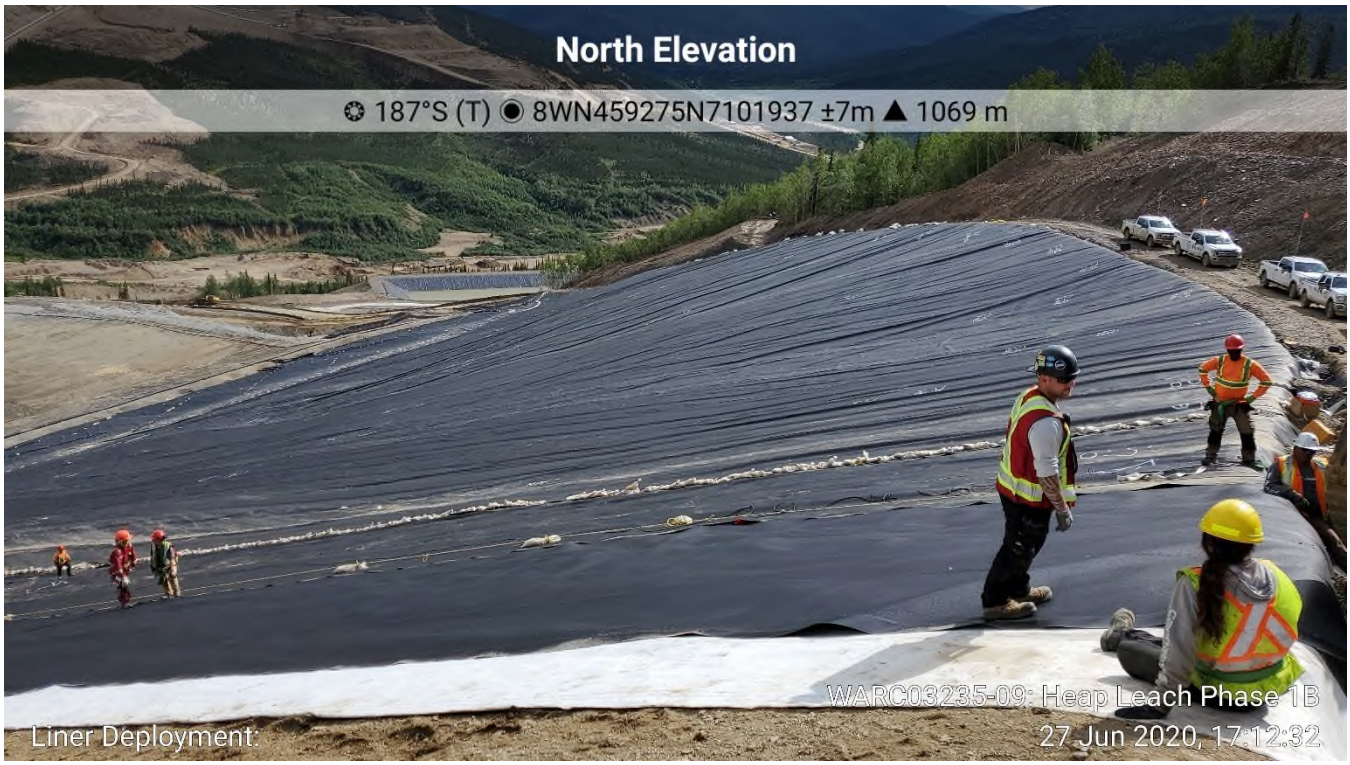


Figure 15: West Side of Phase 1B Total Deployment as of June 27



Figure 16: GCL on Slope in Advance of Liner Panels P75 and P76



Figure 17: Toe of Slope Subgrade prior to Rock Picking and Raking



Figure 18: Toe of Slope Subgrade after Rock Picking and Raking

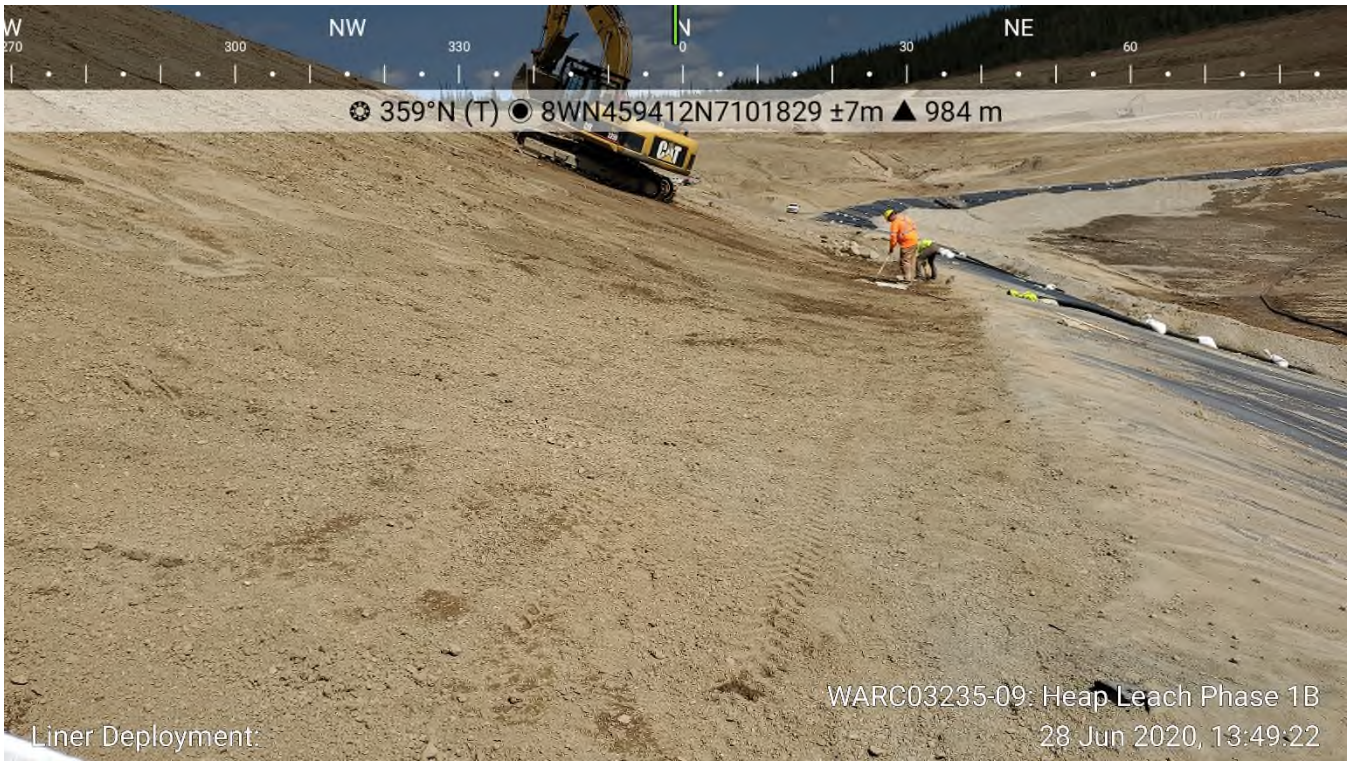


Figure 19: Toe of Slope after Second Clean Up and Rock Picking



Figure 20: Subgrade prior to GCL Deployment



Figure 21: Damaged Air Channel from Fusion Welding



Figure 22: Air Channel Damaged by Fusion Welding



Figure 23: Overall Slope as of June 28

StrataGold Corporation, Eagle Gold Project
Project: Victoria Gold
Weekly Report #17
July 5-11, 2020

Site Location: Phase 1B

Hours worked this period: 2,564
Hours total to date: 29,012

Summary:

- Construction
  - The day shift continues to remove unsuitable material on the eastern side of Phase 1B, hauled sand and 20mm to lateral drains, and finished raising the northwestern portion of the perimeter berm 2.5 meters.
  - Dozer continues finishing the surface working it way around to the east.
  - Continued excavating and installing lateral drain 3E.
  - Continued screening sand on Eagle Pup for Phase 1B.
  - Layfield crew continued to place liner along the western slope.
  - Nightshift supported ODF placement, and hauled unsuitable material from the eastern side.

Legend:
Red = Trouble
Yellow = Caution
Green = On track

Weather:

- Showers pretty much every day and completely shut down Friday night through Saturday due to heavy rain
- Temperatures: Morning lows of 5 C° with daytime highs of 17 C°

Incidents / Health & Safety:

- Incidents or accidents: Layfield had a piece of liner slide down the slope and Ewing wiggle wagon box tip.
- Weekly site safety inspection: No inspections this week.
- Weekly safety meeting: Toolbox meeting held every morning in the field to ensure enough room for social distancing.

Incidents to date:

6

Project Milestones:	**Responsible:**	**Completion Date:**
Nuway crushing gravel for underdrain construction – Sand was not completed before move the crusher to Secondary – Sand will now be recovered from wasted material during production of the ODF on Eagle Pup. Nuway screening plant screening oversize material out of the sand.	Nuway / Ewing	March 11th
Header Underdrain excavation and installation	Ewing	Complete
Lateral drain excavation and installation – Behind due to the much larger amounts of material requiring removal	Ewing	April 21st
Ditching for freshet / Water management	Ewing	Mostly Complete
Removal of all grubbing and shaping material for liner placement – Volume of material much larger then estimate	Ewing	April 20th
Removal of any unsuitable material – will not affect liner placement schedule	Ewing	May 4th
Surface preparation for liner placement – final surface preparation ahead of liner crew will continue until complete	Ewing	July 22nd
Liner placement – All material have been delivered to site – Started June 2nd and should close to completion August 30th	Layfield / Ewing	Aug 30th

Construction:
Activities This Week:

- Day shift finished building the western perimeter berm up an additional 2.5 meters. This requirement was confirmed by Clint Green (Forte). Continued removing unsuitable material on the eastern side of Phase 1B, hauled sand and 20mm to the lateral drains.
- Night shift hauled material to the west perimeter berm, ODF placement for Process, and hauled unsuitable material on the eastern side.
- Both crews were down from Friday night until Sunday morning due to rain.
- Ewing continued operating Nuway's screening plant to produce sand for Phase 1B. Mine Operations night shift hauled some sand away from the screening plant July 8th for steaming material.
- The dozer is continuing to finish the surface from the west and working around to the eastern side. The packer has been compacting finished areas behind the dozers.
- Finished excavating lateral drain 3E and continuing the install.
- Layfield was only able to place liner 3 days this week with rain delays on 2 of them. The crew took a couple rest days after the liner sliding incident to have a rest. The steep western portion of the slope is completed and signed off by Tetra Tech. The signoffs were sent to Forte for final approval before ODF can be placed on the surface.

Activities Planned for Next Week:

- Focus on removing unsuitable material on the eastern side of Phase 1B.
- Place sand where necessary ahead of the liner crew.
- Continue advancing the liner placement along the western side.
- Continue excavate anchor trench ahead of liner placement.
- Backfill and compact anchor trench behind completed section of liner placement.
- Excavate and install final lateral drain 4E.
- Continue screening sand on Eagle Pup for Phase 1B.

HSE Safety Report:

	PERIOD TO	MONTH TO DATE	YEAR TO DATE	
Total Hours	2,564	4,220.5	29,012	
Incidents (Non-injury)	2	3	4	
First Aid Injuries	0	0	2	
Medical Aid Injuries	0	0	0	
Loss Time Injuries (LTI)	0	0	0	
Recordable Incident	0	0	2	

Phase 1B Liner Placement:

	GCL	LLDPE 80	
Total Placed	59452	50678	110130
Total Area	266,680	266,680	533,360
Remaining	207,228	216,002	423,230
Percent Complete	20.65%		
Updated	11-Jul-20		

Production:

Material	Month Total (July 2020)	Total to Date
Shaping (Common)/ Grubbing	10,150 m^3	230,468 m^3
Re-handle Material	0 m^3	784 m^3
20mm Drain rock	168 m^3	3,290 m^3
Sand	602 m^3	13,776 m^3
Pit Run	3794 m^3	3794 m^3
Blast Rock Backfill	0 m^3	7,028 m^3
Blast Rock to Road Repairs	0 m^3	672 m^3
Total Material	14,714 m^3	259,812 m^3

Progress Photos:



Finishing northwestern perimeter berm



Removing unsuitable material on the eastern side

Progress Photos:



Screening sand July 9th



Dozer working it's way around to the eastern side

Progress Photos:



Installing lateral drain 3E



Liner install July 8th

Progress Photos:



Liner install July 9th



Liner & GCL placed up to July 11th

Progress Photos:



Rain out day July 11th

TETRA TECH

WEEKLY FIELD REPORT

ISSUED FOR USE

Project:	Eagle Gold Heap Leach Phase 1B	**Date:**	July 12, 2020
Location:	Eagle Gold Mine	**Contractor:**	Ewing Transport / Layfield
Client:	Victoria Gold Corp.	**Contractor's Rep:**	Marshall Ewing / Chad Messervey
Contact:	Clint Abel	**Contractor's Email:**	
Weather:	Variable (see daily entries)	**Tetra Tech Representative:**	Adam Mickey/James Buyck
File:	704-ENG.WARC03235-09	**Status:**	Issued for USE

This 'Issued for Review' report is provided solely for the purpose of client review and presents our findings and recommendations to date. Our findings and recommendations are provided only through an 'Issued for Use' report, which will be issued subsequent to this review. You should not rely on the interim recommendations made herein. Once our report is issued for use, the 'Issued for Review' document should be either returned to Tetra Tech Canada Inc. (Tetra Tech) or destroyed.

1.0 INTRODUCTION

Tetra Tech Canada Inc. (Tetra Tech) was retained by Victoria Gold Corp. (Victoria Gold) to provide CQA services at the Eagle Gold mine located north of Mayo, Yukon, at Dublin Gulch for the Eagle Gold Heap Leach Phase 1B expansion (Phase 1B). Mr. Adam Mickey, EIT, is Tetra Tech's representative on site.

Forte Dynamics (Forte) out of Fort Collins, Colorado provided the design and specification for Phase 1B, and Forte's representative is Clint Green.

Clint Abel, of JDS Energy & Mining, is Victoria Gold's project manager on site at the Eagle Gold mine.

Ewing Transport (Ewing), based out of Mayo, Yukon, is the construction contractor for Phase 1B.

Layfield Environmental Containment (Layfield) has been retained to provide and install the liner for Phase 1B, and their supervisor on site is Chad Messervey.

The following Field Report outlines Tetra Tech's CQA for the period of July 6, 2020, to July 12, 2020.

2.0 DAILY REPORTS

2.1 Highlights

- Rain delayed liner deployment throughout the week.
- Layfield is placing three panels of GCL for every two panels of 80 mm LLDPE liner.

2.2 July 6, 2020

- Weather: partly cloudy.

Tetra Tech Canada Inc.
61 Wasson Place
Whitehorse, YT Y1A 0H7 CANADA
Tel 867.668.3068 Fax 867.668.4349

- Layfield is continuing to deploy liner over deployed GCL.
  - During the deployment of the first panel an incident occurred where the 128 m of deployed liner slid down the hill to the toe of the slope.
    - Two of Layfield's employees were swept down the hill with the liner, and one of Layfield's employees and one of Ewing's employees sustained minor injuries.
    - Deployment was halted for the rest of the day due to the incident.
    - Tetra Tech attended the post-incident safety meeting with Layfield and Ewing and provided a witness statement.
    - Multiple factors led to the incident, including lack of communication, complacency, and fatigue.
    - Layfield will be taking July 7 off to give the crews a rest day.

2.3 July 7, 2020

- Tetra Tech spent part of the rest day working on paperwork and other miscellaneous tasks.
- Tetra Tech attended the weekly progress meeting at 10:30 am.
- James Buyck arrived on site to take over CQA Inspection duties for Adam Mickey

2.4 July 8, 2020

- Weather: mostly cloudy, light afternoon drizzle.
- Layfield and Tetra Tech performed a final inspection on panels P1 through P59.
  - Three areas requiring vacuum testing were identified and vacuum tested immediately.
  - The area is ready for final sign off and be passed over to the client.
- Layfield repaired the out of spec cross seam by cutting out the liner to a point 10 m away from the adjacent cross seam and replaced with new liner.
- Layfield recovered the liner that slide down the slope on July 6, cutting it into manageable pieces, and deploying it on the slope. Chad M. indicated there was no significant damage caused to the liner and Layfield was able to completely reuse.
- Tetra Tech signed off on Layfield's subgrade acceptance for liner deployed between June 29 and July 5.

2.5 July 9, 2020

- Weather: sun and cloud, light drizzle mid-afternoon.
- No GCL or 80 mm LLDPE liner placed today. Layfield concentrated on completing patch repair and extrude welding bottom section of entire length of panel placed to date to the previous Phase 1B.
- Anchor trench compacted along entire section of liner placed to date.
- Approximately 30 m of anchor trench excavated beyond last panel of liner placed.
- Ewing Transport continued placement and compaction of fill for liner bench

2.6 July 10, 2020

- Weather: sun and cloud, light medium rain in afternoon.
- Layfield deployed 21 GCL panels and no LLDPE liner – work delayed ~2.5 hours because of rainy and windy conditions.

2.7 July 11, 2020

- Weather: Overcast with rainy periods.
- Steady rain overnight with continued rain in the morning halted work for the day.

2.8 July 12, 2020

- Weather: Sun and cloud with periods of light rain. Little to moderate breeze.
- LLDPE Liner deployment and ground work commenced in the morning after site conditions were assessed by Ewing Transport and Layfield to be acceptable to proceed.
- GCL and LLDPE panels placed in the afternoon. Detail work also performed once GCL and LLDPE placed.
- Ewing completed regrading and static rolling of the next section of subgrade planned for GCL. The entire area had been scoured by recent rains.
- Trenching for anchoring the liners completed, as required.
- A number of failed pressure test were encountered from today's welding. Layfield QC representative investigated and discussed improvements required with the individuals completing the grinding prep work. A demonstration was provided to further improve this process.

3.0 GEOSYNTHETIC ROLL NUMBERS PLACED

Table 1 summarizes the daily geosynthetic roll numbers placed on the slope during liner installation. All panel lengths are approximate and where 45 degree joints are used, panel length is based from the center of the panel.

Table 1: Geosynthetic Roll Numbers Placed on Slope

Date	GCL Roll Number	LLDPE Liner Roll Number	Panel Number (Length)
July 6	None	None	None
July 7	None	None	None
July 8		10700-001	P108 (39.2 m)
		10700-023	P109 (39.4 m)
		10694-019	P110 (29.9 m)
		10700-001	P111 (39.2 m)
		10694-015	P112 (33.8 m)
		10694-015	P113 (29.4 m)
		10694-015	P114 (19.2 m)
		10694-013	P115 (24.9 m)
		10694-012	P116 (56.6 m)
		10694-013	P117 (27.1 m)
		10694-013	P118 (13.1 m)
		10694-013	P119 (22.8 m)
		10694-013	P120 (6.0 m)

Date	GCL Roll Number	LLDPE Liner Roll Number	Panel Number (Length)
July 9	None	One	None
July 10	0242-347526, 0242-347518, 0242-347529, 0242-347521, 0242-347536, 0242-347534, 502344560, 0242-347520, 502347101, 0242-347527, 0242-347530, 0242-347519, 0242-347525, 0242-347515, 502347101, 0242-347530, 502344555, 0242-347523, 502344563, 502344554, 502346997, 502346996		
July 11	None	None	None
July 12		E0010697-006, E0010694-006, E0010697-006, E0010697-006, E0010697-007, E0010694-031,E0010700-008, E0010694-005, E0010694-005, E0010694-031, E0010694-031	P121 (116.4) P122 (114.1) P123 (23.8) P124 (127.3) P125 (71.1) P126 (48.0) P127 (128.2) P128 (1.0) P129 (34.6)

4.0 TRIAL SEAM

Table 2 summarizes the weekly trial seam results. For fusion, the apparatus settings are temperature and speed, and for extrusion, the apparatus settings are preheat and barrel temperature. Five tests are performed for each criterion.

Table 2: Trial Seam Results

Date	Time	Fusion or Extrusion	Tech	Apparatus #	Temp or Preheat (ºF)	Speed (%) or Barrel Temp (ºF)	$Peel_{inside}$ (100 min)	$Peel_{outside}$ (100 min for Fusion 88 min for Extrusion)	Shear (120 min)	Smooth or Textured
Jul 8	0900	Fusion	JK	WW-023	850	35	173 169 161 160 155	162 138 120 112 160	181 189 194 193 185	Textured
Jul 8	0900	Fusion	JK	WW-023	850	55	163 162 154 165 155	119 127 139 125 141	174 176 178 181 179	Smooth
Jul 8	1300	Fusion	JK	WW-022	850	35	152 151 153 167 155	141 139 157 148 152	173 179 185 182 181	Textured

Jul 8	1300	Fusion	JK	WW-022	850	55	135 136 136 133 145	134 132 132 123 121	161 166 163 165 162	Smooth
Jul 8	1300	Fusion	JK	WW-026	850	55	145 138 156 146 144	129 129 125 126 127	162 160 159 157 161	Smooth
Jul 8	1645	Fusion	JK	WW-026	850	55	156 162 153 149 151	155 156 154 147 148	173 173 171 169 170	Smooth
Jul 8	1645	Fusion	JK	WW-022	850	55	146 134 150 149 149	147 146 142 144 145	156 161 162 165 168	Smooth
Jul 12	0740	Fusion	JK	WW-022	850	35	141 157 157 139 137	149 152 158 155 148	164 173 171 163 168	Textured
Jul 12	0740	Fusion	EA	WW-026	850	35	166 152 166 153 152	161 157 166 143 154	177 174 178 185 196	Smooth
Jul 12	0745	Fusion	JK	WW-022	850	55	142 141 146 129 139	150 147 154 146 148	166 166 173 168 173	Smooth
Jul12	0745	Fusion	EA	WW-026	850	55	157 146 156 150 147	149 151 151 160 160	183 182 187 185 186	Smooth
Jul 12	1200	Fusion	EA	WW-026	850	55	145 155 147 139 140	140 153 141 137 136	161 154 164 160 159	Smooth

5.0 NON-DESTRUCTIVE TESTING

Table 3 summarizes the weekly non-destructive pressure testing results.

Table 3: Non-Destructive Testing Results

Date Fused	Date Tested	Time Tested	Seam #	psi Start	psi End	Pass or Fail	Notes
Jun 29	July 8	14:31	P78-P79 Cross	40	40	Pass	
Jun 29	July 8	14:31	P76-P79 Vertical	40	40	Pass	
Jun 29	July 8	14:35	P79-P81 Vertical	40	39	Pass	
Jun 29	July 8	14:35	P78-P81 Vertical	40	40	Pass	
Jun 30	July 8	14:54	P83-P84 Cross	40	39	Pass	
Jun 30	July 8	14:56	P83-P86 Vertical	40	40	Pass	
Jun 30	July 8	14:56	P84-P86 Vertical	40	40	Pass	
Jul 1	July 8	15:17	P88-P89 Cross	40	40	Pass	
Jul 1	July 8	15:38	P91-P92 Cross	40	40	Pass	
Jul 1	July 8	15:18	P89-P91 Vertical	40	40	Pass	
Jul 1	July 8	15:39	P91-P94 Vertical	40	40	Pass	
Jul 8	Jul 10	1610	P82-P83 Cross	40	40	Pass	
Jul 8	Jul 10	1610	P80-P82 Vertical	40	38	Pass	
Jul 8	Jul 10	1536	P87-P85 Cross	40	39	Pass	
Jul 8	Jul 10	1555	P82-P87 Cross	40	39	Pass	
Jul 8	Jul 10	1550	P82-P87 Vertical	40	40	Pass	
Jul 8	Jul 10	1550	P87-P88 Vertical	40	40	Pass	
Jul 8	Jul 10	1536	P87-P88 Vertical	40	38	Pass	
Jul 8	Jul 10	1456	P86-P89 Cross	40	40	Pass	
Jul 1	Jul 10	1502	P89-P92 Vertical	40	40	Pass	
Jul 1	Jul 10	1502	P92-P94 Vertical	40	40	Pass	
Jul 5	Jul 10	1650	P102-P104 Cross	40	39	Pass	
Jul 8	Jul 10	1623	P111-P114 Vertical	40	40	Pass	
Jul 8	Jul 10	1623	P111-P113 Vertical	40	40	Pass	
Jul 8	Jul 10	1623	P113-P116 Vertical	40	40	Pass	
Jul 8	Jul 10	1632	P116-P118 Vertical	40	40	Pass	
Jul 8	Jul 10	1633	P117-P119 Vertical	40	40	Pass	
Jul 8	Jul 10	1631	P116-P117 Vertical	40	40	Pass	
Jul 8	Jul 10	1633	P118-P119 Vertical	40	40	Pass	
Jul 8	Jul 10	1651	P119-P120 Cross	40	40	Pass	
Jul 8	Jul 10	1651	P106-P120 Cross	40	40	Pass	
Jul 4	Jul 12	1242	P94-P96 Vertical	40	40	Pass	
Jul 4	Jul 12	1328	P98-P98 Cross	40	40	Pass	
Jul 4	Jul 12	1254	P98-P101 Vertical	40	40	Pass	
Jul 4	Jul 12	1242	P96-P98 Vertical	40	40	Pass	
Jul 5	Jul 12	1332	P102-P103 Cross	40	40	Pass	
Jul 5	Jul 12	1305	P98-P103 Vertical	40	38	Pass	
Jul 5	Jul 12	1317	P103-P105 Cross	40	40	Pass	
Jul 8	Jul 12	1623	P113-P114 Cross	40	40	Pass	
Jul 8	Jul 12	1632	P118-P117 Cross	40	40	Pass	
Jul 8	Jul 12	1653	P106-P119 Vertical	40	40	Pass	

6.0 DESTRUCTIVE TESTING

Destructive testing was not required this week.

Table 4: Destructive Testing Results

Date Fused	Time Fused	Tech	Apparatus	Location (UTM is +/- 4 m)	Sample ID	$Peel_{in}$ (100 min)	$Peel_{out}$ (100 min)	Shear (120 min)	Pass or Fail

7.0 PHOTO LOG



Figure 1: 128 m of Liner at the Toe of the Slope



Figure 2: Repaired Out of Spec Cross Seam



Figure 3: Creases Requiring Repair



Figure 4 View of recent liner deployed at end of 8 July, 2020



Figure 5 - Geotextile and drain pipe placement within infiltration trench



Figure 6 - Anchor trench excavated beyond last liner panel placed to date



Figure 7 - Continued placement and compaction of select fill for HLF perimeter berm



Figure 8 – Liner deployment as of 9 July, 2020



Figure 9 - Bentonite placement for recently placed GCL.



Figure 10 – Heat welding of GCL in progress



Figure 11 - Deployment of Liner in progress



Figure 12 - Regarding of slope in preparation for rolling and deployment of GLC

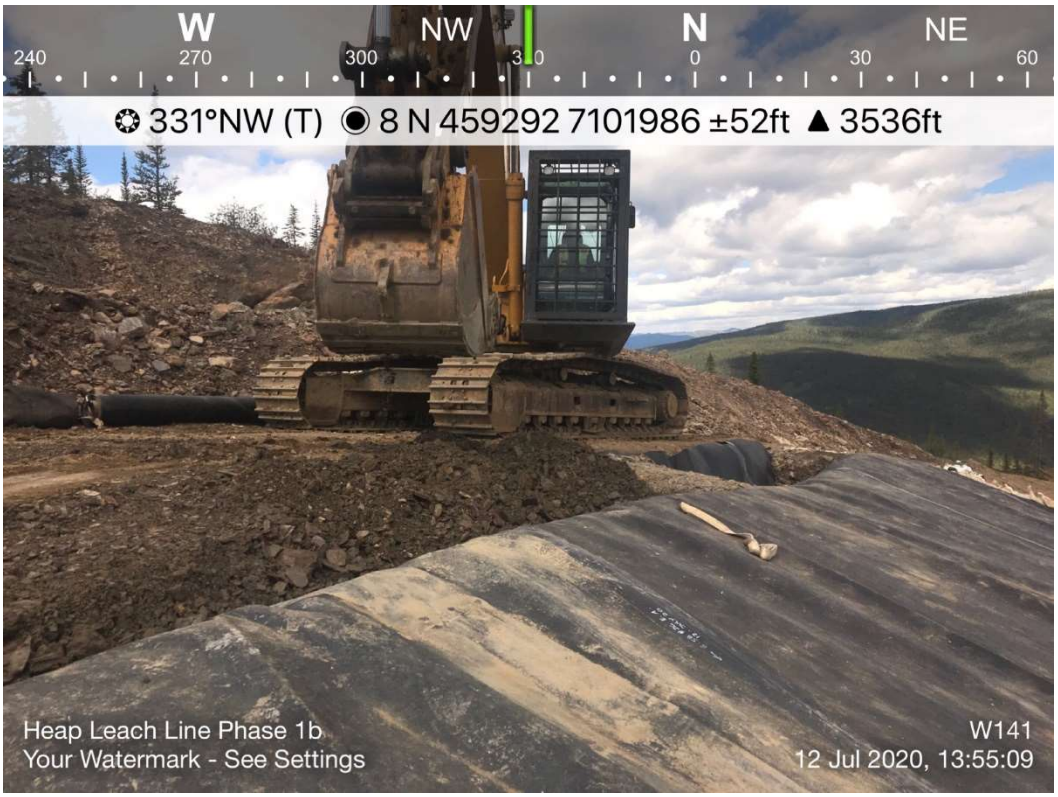


Figure 13 – Placement of rock fill within anchor trench in progress



Figure 14 - Progress view of liner deployment to date

TETRA TECH

WEEKLY FIELD REPORT

ISSUED FOR USE

Project:	Eagle Gold Heap Leach Phase 1B	**Date:**	July 22, 2020
Location:	Eagle Gold Mine	**Contractor:**	Ewing Transport / Layfield
Client:	Victoria Gold Corp.	**Contractor's Rep:**	Marshall Ewing / Chad Messervey
Contact:	Clint Abel	**Contractor's Email:**	
Weather:	Variable (see daily entries)	**Tetra Tech Representative:**	James Buyck
File:	704-ENG.WARC03235-09	**Status:**	Issued for Use

1.0 INTRODUCTION

Tetra Tech Canada Inc. (Tetra Tech) was retained by Victoria Gold Corp. (Victoria Gold) to provide CQA services at the Eagle Gold mine located north of Mayo, Yukon, at Dublin Gulch for the Eagle Gold Heap Leach Phase 1B expansion (Phase 1B). Mr. James Buyck is Tetra Tech's representative on site.

Forte Dynamics (Forte) out of Fort Collins, Colorado provided the design and specification for Phase 1B, and Forte's representative is Clint Green.

Clint Abel, of JDS Energy & Mining, is Victoria Gold's project manager on site at the Eagle Gold mine.

Ewing Transport (Ewing), based out of Mayo, Yukon, is the construction contractor for Phase 1B.

Layfield Environmental Containment (Layfield) has been retained to provide and install the liner for Phase 1B, and their supervisor on site is Chad Messervey.

The following Field Report outlines Tetra Tech's CQA for the period of July 13, 2020, to July 19, 2020.

2.0 DAILY REPORTS

2.1 Highlights

- Rain and some wind delayed liner deployment throughout the week.
- Layfield is placing three panels of GCL for every two panels of 80 mm LLDPE liner.

2.2 July 13, 2020

Weather: sun and cloud. Light breeze throughout the day.

- Layfield continued placement of GCL (17 rolls) and LLDPE liner (6 panels) with no major issues. Some delay early afternoon due to wind.
- Ewing Transport continued regrading and rolling subgrade ahead of liner deployment. As well, continued sub-excavation and hauling from NE slope. Areas of soft and wet subgrade and organics encountered.

Tetra Tech Canada Inc.
61 Wasson Place
Whitehorse, YT Y1A 0H7 CANADA
Tel 867.668.3068 Fax 867.668.4349

2.2 July 13, 2020

Weather: sun and cloud. Light breeze to light wind throughout the day.

- Continued regrading and rolling of subgrade and noted to be acceptable for liner deployment. Sub-excavation continues along the NE slope.
- Deployment of GLC and liner continued with good progress in the morning and delays in the afternoon due to windy conditions.

2.3 July 14, 2020

Weather: sun and cloud. Light breeze to light wind throughout the day.

- Continued deployment of GCL and Liner with detail work and Qc testing performed by Layfield. Ewing Transport continued removal of material and sloping NE section of HLF.

2.4 July 15, 2020

- Weather: Overcast, rain through the morning and early afternoon.
- Layfield suspended work for the day due to rain. Ewing Transport continued sub-excavation along NE slope.
- Layfield QC performed destruct testing (D58 to D62) with Tetra Tech QA present throughout. All results exceeded minimum specification.

2.5 July 16, 2020

- Weather: Mostly clear in the morning and overcast in the afternoon.
- The subgrade immediately ahead of planned deployment for today observed to be minimally affected by yesterday's rainfall. Only minor raking required to repair some localized areas along with additional rolling with the steel drum vibratory compactor.
- Upon Tetra Tech approval of subgrade and trenching ahead completed, deployment of GLC and Liner commenced in the morning immediately. Sub-excavation continues within the NE slope.

2.6 July 17, 2020

- Weather: Overcast with heavy rain starting at 12:30 pm until 2:00 pm. Work limited to detail work later in the day.
- Minor subgrade prep work required and once completed liner deployment approved by Tetra Tech QC and Layfield reps. GCL was placed at the request of the owner rep but was not yet covered by liner once the rain started. The subgrade and GCL will be evaluated prior to commencing further work.
- Ewing Transport did not perform sub-excavation work today to allow the crew relief from their extended work schedule.
- Additional work required by Ewing liner crew to regrade the next section of subgrade affected by the rainfall.
- GCL and LLDPE were deployed in the a.m. but halted around noon due to rain. Detail work commenced for a short period after rain but once again halted for the day due to further rain.
- Air testing, destructs, and non-destructive testing performed with applicable results to be summarized in tomorrows report submission.

2.7 July 18, 2020

- Weather: Sun, some clouds in the a.m. with drizzle starting around 12:30 pm and heavier with lightning from 1:30 p.m. to 2:00 p.m.
- Rainfall yesterday and overnight caused some minor scouring of the subgrade. The section scheduled for deployment was back-bladed with a dozer and compacted with a smooth drum vibratory compactor, as required.
- The exposed GCL was observed not to be adversely affected by the rain. Approval was granted to Layfield to proceed with LLDPE liner deployment.
- Deployment halted due to rain and lightning from 12:30 p.m. to 2:00 p.m. Deployment of LLDPE re-commenced shortly afterward until about 4:00 p.m. The crew then switched to detail work, testing and clean-up.
- Work suspended for the day due to rain around 5:15 p.m.

2.8 July 19, 2020

- Weather: Sun and some clouds in the a.m. with drizzle starting around.
- Layfield recovery day.
- Ewing Transport continues to sub-excavate and place sand along the NE slope.

3.0 GEOSYNTHETIC ROLL NUMBERS PLACED

Table 1 summarizes the daily geosynthetic roll numbers placed on the slope during liner installation. All panel lengths are approximate, and where 45 degree joints are used, panel length is based from the center of the panel.

Table 1: Geosynthetic Roll Numbers Placed on Slope

Date	GCL Roll Number	LLDPE Liner Roll Number	Panel Number (Length)
Jul 13	502344549, 502347102, 502346939, 502346938, 502347102, 502344544, 502344561, 502344556, 502344557, 502344546, 502344545, 502344005, 502344488, 0242-347537, 0242-347535, 0242-347528. 0242-3475224	10700-008 10694-031 10694-035 10694-035 10694-034 10694-036	P130 (23.0 m) P131 (93.2 m) P132 (82.2 m) P133 (30.4 m) P134 (128.8 m) P135 (28.5 m)
Jul 14	502344021, 502344022, 502344558, 502344552, 502334550, 502344032, 502344011, 502344551, 502344025, 502344127, 502344009, 502344016, 502344023, 502344034, 502344161, 502344033, 502344563, 502344029, 502344547, 502344562, 502344010, 502344030, 502344041	10694-035 10694-036 10693-018 10693-018 10694-030 10693-018 10694-030 10694-022	P136 (24.4 m) P137 (100.0 m) P138 (57.3 m) P139 (65.9 m) P140 (104.2 m) P141 (14.8 m) P142 (23.7 m) P143 (118.8 m)

Date	GCL Roll Number	LLDPE Liner Roll Number	Panel Number (Length)
Jul 15	0242-347626, 502344582, 502344607, 502344657, 502344576, 502344609, 502344664, 502344598	10694-025 10694-026 10694-025 10694-026 10697-005 10697-005 10697-005 10693-014	P144 (117.6 m) P145 (29.4 m) P146 (25.5 m) P147 (99.8 m) P148 (8.2 m) P149 (120.4 m) P150 (11.2 m) P151 (95.0 m)
Jul 16	502344647, 502344596, 502344652, 502344610, 502344645, 502344646, 502344598	10693-012 10694-029 10694-029 10693-012 10693-012 10693-012 10693-012 10693-013 10693-013 10693-013 10693-013 10693-014 10693-012	P152 (56.8 m) P153 (22.8 m) P154 (16.3 m) P155 (50.4 m) P156 (9.8 m) P157 (44.6 m) P158 (7.4 m) P159 (35.0 m) P160 (30.5 m) P161 (19.5 m) P162 (7.6 m) P163 (24.3 m) P164 (69.0 m)
Jul 17	502344606, 502?????, 502344643, 502344027, 502344608, 502344651	None	-
Jul 18	502344663, 502347003, 502347000, 50234490, 502347002, 502344648, 50234720, 502344642, 502344644, 502344662, 502344650	10693-013 10693-008 10693-008 10693-020 10693-020 10693-011 10693-011 10693-003	P165 (51.6 m) P166 (82.6 m) P167 (44.1 m) P168 (87.3 m) P169 (38.6 m) P170 (62.0 m) P171 (65.2 m) P172 (99.8 m)

4.0 TRIAL SEAM

Table 2 summarizes the weekly trial seam results. For fusion, the apparatus settings are temperature and speed, and for extrusion, the apparatus settings are preheat and barrel temperature. Five tests are performed for each criterion.

Table 2: Trial Seam Results

Date	Time	Fusion or Extrusion	Tech	Apparatus #	Temp or Preheat (ºF)	Speed (%) or Barrel Temp (ºF)	$Peel_{inside}$ (100 min)	$Peel_{outside}$ (100 min for Fusion 88 min for Extrusion)	Shear (120 min)	Smooth or Textured
Jul 13	9:43	Fusion	JK	WW-022	850	35	135 157 156 154 159	158 157 142 147 150	161 160 154 156 159	Textured
Jul 13	9:50	Fusion	EA	WW-026	850	35	146 142 149 148 147	135 162 155 152 155	160 170 168 173 171	Textured
Jul 13	9:56	Fusion	EA	WW-026	850	55	144 147 139 142 140	152 144 146 141 144	150 151 148 151 149	Smooth
Jul 13	10:10	Fusion	JK	WW-022	850	55	153 154 164 159 158	139 136 140 152 144	174 174 169 170 168	Smooth
Jul 13	16:23	Extrusion	GP	EX-35	495	490	N/A	111 122 128 121 113	156 155 148 157 151	N/A
Jul 13	16:23	Extrusion	EA	EX-35	495	490	N/A	136 131 122 121 118	145 141 158 151 149	N/A
Jul 13	17:40	Extrusion	RP	EX-4307	495	490	N/A	92 95 102 109 167	139 130 124 136 144	N/A
Jul 14	10:30	Fusion	EA	WW-026	850	35	150 134 149 161 165	144 164 158 160 143	186 189 184 187 185	Textured

Jul 14	10:30	Fusion	EA	WW-026	850	35	145 151 161 137 147	152 151 150 152 148	173 171 173 172 169	Smooth
Jul 14	10:30	Fusion	EA	WW-022	850	55	153 141 165 155 163	162 155 174 164 159	163 152 175 178 169	Textured
Jul 14	10:30	Fusion	JK	WW-022	850	55	170 170 163 166 164	166 151 159 163 165	167 174 158 155 171	Smooth
Jul 15	7:30	Fusion	EA	WW-026	850	55	149 149 154 143 146	128 127 143 149 137	164 163 171 166 166	Textured
Jul 15	7:30	Fusion	EA	WW-026	850	30	143 140 143 146 145	139 142 146 145 139	164 161 167 164 163	Smooth
Jul 15	7:35	Fusion	JK	WW-022	850	35	141 150 144 141 157	149 150 149 149 146	168 165 173 163 172	Textured
Jul 15	7:35	Fusion	JK	WW-022	850	55	141 150 152 140 145	148 154 140 148 144	169 166 170 171 172	Smooth
Jul 15	12:00	Fusion	EA	WW-026	850	35	136 137 143 134 154	178 152 128 157 139	188 181 179 187 192	Textured
Jul 15	12:00	Fusion	JK	WW-022	850	55	160 157 167 170 171	170 160 153 144 167	184 179 181 178 183	Smooth
Jul 15	13:00	Fusion	JK	WW-020	850	55	143 119 138 130 122	137 136 119 121 127	148 152 151 151 149	Smooth

Jul 16	11:00	Fusion	JK	WW-022	850	35	160 161 147 151 175	145 145 152 156 157	180 187 181 181 179	Smooth
Jul 16	11:00	Fusion	JK	WW-022	850	35	147 152 166 148 148	157 140 133 159 146	177 175 182 179 181	Textured
Jul 16	11:00	Fusion	EA	WW-026	850	55	162 165 158 155 157	149 139 143 161 160	178 179 173 170 168	Smooth
Jul 16	11:00	Fusion	EA	WW-026	850	35	151 172 154 166 142	151 162 158 134 148	174 178 190 186 188	Textured
Jul 16	14:15	Extrusion	EA	04037	495	490	N/A	89 89 112 110 94	144 152 122 142 148	N/A
Jul 16	15:45	Extrusion	RGP	04036	495	490	N/A	112 120 108 110 109	121 138 144 132 129	N/A
Jul 17	14:00	Extrusion	EA	EX-35	495	490	N/A	121 100 115 113 133	143 143 155 149 143	N/A
Jul 18	8:30	Fusion	RW	WW-054	850	35	133 143 142 150 152	141 140 134 138 135	154 169 167 173 170	Textured
Jul 18	9:00	Fusion	JK	WW-022	850	40	138 137 138 146 150	126 126 133 131 128	153 153 151 157 154	Texture
Jul 18	9:00	Fusion	EA	WW-026	850	40	117 124 145 152 133	128 127 147 139 149	151 154 149 167 158	Textured

Jul 18	14:15	Fusion	RW	WW-054	850	35	154 155 153 137 164	136 137 146 157 137	160 175 180 163 176	Textured
Jul 18	14:15	Fusion	EA	WW-026	850	55	148 157 134 156 147	146 156 158 154 153	164 166 166 166 169	Smooth
Jul 18	14:15	Fusion	JK	WW-022	850	55	154 156 145 156 147	154 153 151 151 152	179 176 175 177 178	Smooth

5.0 NON-DESTRUCTIVE TESTING

Table 3 summarizes the weekly non-destructive pressure testing results.

Table 3: Non-Destructive Testing Results

Date Fused	Date Tested	Time Tested	Seam #	psi Start	psi End	Pass or Fail	Notes
Jun 30	Jul 14	8:30	P81-P83 Vertical	40	38	Pass	
Jul 1	Jul 14	9:10	P93-P94 Cross	40	40	Pass	
Jul 4	Jul 14	8:48	P94-P98 Vertical	40	40	Pass	
Jul 4	Jul 14	11:02	P95-P99 Vertical	40	40	Pass	
Jul 5	Jul 14	8:40	P98-P105 Vertical	40	40	Pass	
Jul 8	Jul 14	10:45	P97-P108 Vertical	40	39	Pass	
Jul 8	Jul 14	9:35	P109-P110 Cross	40	38	Pass	
Jul 8	Jul 14	9:35	P97-P109 Vertical	40	40	Pass	
Jul 8	Jul 14	10:35	P109-P112 Vertical	40	40	Pass	
Jul 8	Jul 14	9:35	P97-P110 Vertical	40	40	Pass	
Jul 8	Jul 14	9:40	P110-P112 Vertical	40	40	Pass	
Jul 8	Jul 14	9:40	P107-P112 Vertical	40	40	Pass	
Jul 8	Jul 14	10:00	P112-P115 Vertical	40	40	Pass	
Jul 8	Jul 14	10:00	P107-P115 Vertical	40	39	Pass	
Jul 12	Jul 14	11:02	P95-P121 Vertical	40	39	Pass	
Jul 12	Jul 14	9:20	P122-P125 Vertical	40	39	Pass	
Jul 12	Jul 14	11:33	P128-P128 Cross	40	40	Pass	
Jul 12	Jul 14	11:33	P128-P129 Cross	40	40	Pass	
Jul 12	Jul 14	11:33	P125-P129 Vertical	40	40	Pass	
Jul 13	Jul 14	9:21	P125-P128 Vertical	40	40	Pass	
Jul 13	Jul 14	9:57	P129-P132 Vertical	40	40	Pass	
Jul 12	Jul 17	12:20	P127-P127 Cross	40	40	Pass	
Jul 13	Jul 17	12:20	P126-P131 Vertical	40	40	Pass	
Jul 13	Jul 17	12:20	P126-P130 Vertical	40	40	Pass	
Jul 15	Jul 17	16:52	P146-P147 Cross	40	40	Pass	
Jul 15	Jul 17	13:42	P148-P148 Vertical	40	38	Pass	

Date Fused	Date Tested	Time Tested	Seam #	psi Start	psi End	Pass or Fail	Notes
Jull 15	Jul 17	16:55	P144toP147 Vertical	40	40	Pass	
Jul 15	Jul 17	16:59	P144-P146 Vertical	40	38	Pass	
Jul 15	Jul 17	13:40	P148-P149 Vertical	40	39	Pass	
Jul 15	Jul 17	16:53	P147-P149 Vertical	40	40	Pass	
Jul 15	Jul 17	16:52	P146-P149 Vertical	40	40	Pass	
Jul 15	Jul 17	13:37	P151-P164 Vertical	40	40	Pass	
Jul 15	Jul 17	13:39	P149-P151 Vertical	40	40	Pass	
Jul 15	Jul 17	16:47	P149-P150 Vertical	40	39	Pass	
Jul 16	Jul 17	16:29	P152-P153 Cross	40	40	Pass	
Jul 16	Jul 17	13:36	P164-P153 Vertical	40	40	Pass	
Jul 16	Jul 17	16:29	P164-P152 Vertical	40	40	Pass	
Jul 16	Jul 17	14:07	P154-P155 Cross	40	40	Pass	
Jul 16	Jul 17	14:05	P156-P157 Cross	40	40	Pass	
Jul 16	Jul 17	16:37	P163-P152 Vertical	40	40	Pass	
Jul 16	Jul 17	14:17	P152-P154 Vertical	40	40	Pass	
Jul 16	Jul 17	14:07	P152-P155 Vertical	40	40	Pass	
Jul 16	Jul 17	14:07	P155-P156 Vertical	40	40	Pass	
Jul 16	Jul 17	14:05	P155-P157 Vertical	40	40	Pass	
Jul 16	Jul 17	13:34	P153-P155 Vertical	40	40	Pass	
Jul 16	Jul 17	13:33	P155-P157 Vertical	40	40	Pass	
Jul 16	Jul 17	14:08	P158-P159 Cross	40	40	Pass	
Jul 16	Jul 17	14:00	P157-P158 Vertical	40	40	Pass	
Jul 16	Jul 17	13:31	P157-P159 Vertical	40	40	Pass	
Jul 16	Jul 17	14:15	P159-P160 Vertical	40	40	Pass	
Jul 16	Jul 17	13:15	P161-P162 Vertical	40	40	Pass	
Jul 14	Jul 18	8:02	P137-P137 Cross	40	40	Pass	
Jul 14	Jul 18	9:17	P135-P138 Vertical	40	40	Pass	
Jul 14	Jul 18	8:25	P139-P140 Cross	40	40	Pass	
Jul 14	Jul 18	8:03	P133-P136 Vertical	40	40	Pass	
Jul 14	Jul 18	8:02	P137-P139 Vertical	40	40	Pass	
Jul 14	Jul 18	8:02	P136-P139 Vertical	40	40	Pass	
Jul 14	Jul 18	8:24	P142-P143 Cross	40	40	Pass	
Jul 14	Jul 18	8:00	P139-P140 Vertical	40	40	Pass	
Jul 14	Jul 18	8:59	P140-P143 Vertical	40	40	Pass	
Jul 14	Jul 18	8:00	P139-P142 Vertical	40	40	Pass	
Jul 14	Jul 18	8:25	P139-P143 Vertical	40	40	Pass	
Jul 14	Jul 18	8:59	P140-P143 Vertical	40	39	Pass	
Jul 14	Jul 18	8:59	P140-P143 Vertical	40	40	Pass	
Jul 15	Jul 18	9:01	P147-P149 Vertical	40	40	Pass	

6.0 DESTRUCTIVE TESTING

Table 4 summarizes the weekly destructive testing results. Five tests are performed for each criterion. Tetra Tech QA representative was present during testing.

Table 4: Destructive Testing Results

Date Fused	Time Fused	Tech	Apparatus	Location (UTM is +/- 4 m)	Sample ID	$Peel_{in}$ (100 min)	$Peel_{out}$ (100 min)	Shear (120 min)	Pass or Fail
Jul 4	12:47	EA	WW-026	P94-P96 Vertical Top of Seam	D46	133	126	155	Pass
						136	125	146	
						137	128	155	
						127	135	154	
						120	134	152	
Jul 4	10:37	EA	WW-026	P99-P95 Vertical Bottom of Seam	D47	139	151	157	Pass
						132	151	158	
						148	140	154	
						148	138	157	
						152	129	160	
Jul 5	10:37	JK	WW-022	P102-P99 Vertical Bottom of Seam	D48	136	143	152	Pass
						133	142	149	
						133	145	153	
						131	142	153	
						132	139	155	
Jul 5	11:06	EA	WW-020	P106-P104 Vertical Bottom of Seam	D49	158	119	160	Pass
						153	136	167	
						134	161	172	
						135	153	170	
						138	145	171	
Jul 5	9:58	JK	WW-022	P104-P102 Vertical Bottom of Seam	D50	129	153	155	Pass
						124	149	158	
						135	152	159	
						131	150	159	
						121	149	167	
Jul 8	12:24	JK	WW-022	P108-P109 Cross Left Side of Seam	D51	158	144	178	Pass
						148	154	171	
						152	141	178	
						160	146	155	
						145	147	175	
Jul 8	16:23	JK	WW-022	P113-P116 Vertical Bottom of Seam	D52	146	153	173	Pass
						149	162	173	
						154	155	172	
						142	150	171	
						159	143	172	
Jul 12	9:08	JK	WW-022	P95-P121 Vertical Bottom of Seam	D53	137	136	162	Pass
						134	134	164	
						136	146	162	
						134	142	164	
						138	142	165	
Jul 12	8:52	EA	WW-026	P96-P122 Vertical Top of Seam	D54	145	151	162	Pass
						147	146	163	
						138	151	165	
						142	153	166	
						143	149	163	

Date Fused	Time Fused	Tech	Apparatus	Location (UTM is +/- 4 m)	Sample ID	$Peel_{in}$ (100 min)	$Peel_{out}$ (100 min)	Shear (120 min)	Pass or Fail
Jul 8	16:33	JK	WW-022	P118-P119 Vertical Bottom of Seam	D55	144	161	174	Pass
						150	158	173	
						148	158	173	
						149	155	171	
						145	159	173	
Jul 12	10:36	EA	WW-026	P122-P125 Vertical Top of Seam	D56	153	135	161	Pass
						149	135	162	
						141	146	169	
						154	145	162	
						149	139	172	
Jul 12	11:33	EA	WW-026	P125-P129 Vertical Top of Seam	D57	134	147	158	Pass
						128	148	155	
						128	144	161	
						128	150	159	
						139	148	162	
Jul 14	10:33	EA	WW-026	P135-P138 Vertical Top of Seam	D58	150	156	163	Pass
						153	154	165	
						156	157	167	
						157	158	165	
						151	143	166	
Jul 14	11:41	JK	WW-022	P138-P140 Vertical Top of Seam	D59	150	157	172	Pass
						151	155	173	
						151	162	176	
						150	158	175	
						160	154	176	
Jul 15	8:25	EA	WW-026	P143-P145 Vertical Top of Seam	D60	136	157	161	Pass
						150	155	166	
						153	156	163	
						145	157	160	
						142	152	165	
Jul 15	9:08	JK	WW-022	P145-P148 Vertical Top of Seam	D61	147	138	156	Pass
						145	138	153	
						151	135	156	
						147	134	162	
						141	134	164	
Jul 15	12:30	JK	WW-022	P149-P150 Vertical Top of Seam	D62	142	143	155	Pass
						143	145	158	
						147	150	150	
						147	144	159	
						140	136	145	
Jul 4	13:53	JK	WW-022	P93-P97 Vertical Bottom of Seam	D63	139	147	164	Pass
						140	146	164	
						151	148	167	
						127	147	167	
						129	147	171	

Date Fused	Time Fused	Tech	Apparatus	Location (UTM is +/- 4 m)	Sample ID	$Peel_{in}$ (100 min)	$Peel_{out}$ (100 min)	Shear (120 min)	Pass or Fail
Jul 8	10:53	JK	WW-022	P97-P108 Vertical Bottom of Seam	D64	153	158	163	Pass
						152	138	157	
						151	147	164	
						147	136	166	
						148	148	167	
Jul 8	11:11	JK	WW-022	P108-P111 Vertical Bottom of Seam	D65	151	137	169	Pass
						146	148	165	
						135	155	175	
						150	138	159	
						148	138	168	
Jul 13	9:44	JK	WW-022	P131-P130 Vertical Right Side of Seam	D66	155	149	170	Pass
						140	149	171	
						145	145	178	
						159	148	171	
						145	150	176	
Jul 13	14:09	JK	WW-022	P130-P133 Vertical Top of Seam	D67	137	139	154	Pass
						119	127	155	
						122	145	151	
						139	141	151	
						137	129	151	
Jul 14	11:28	JK	WW-022	P139-P142 Vertical Top of Seam	D68	150	153	159	Pass
						149	143	155	
						150	165	159	
						149	143	160	
						150	154	158	
Jul 14	13:35	EA	WW-026	P142-P143 Cross Left Side of Seam	D69	160	157	176	Pass
						164	157	171	
						155	148	179	
						160	158	171	
						163	158	188	
Jul 15	9:11	JK	WW-022	P145-P147 Vertical Top of Seam	D70	153	152	161	Pass
						146	150	161	
						150	160	162	
						142	149	164	
						142	159	165	
Jul 15	10:48	EA	WW-026	P147-P149 Vertical Top of Seam	D71	147	145	167	Pass
						139	145	166	
						143	153	165	
						147	147	166	
						150	147	160	
Jul 16	12:22	EA	WW-026	P152-P154 Vertical Bottom of Seam	D72	150	152	158	Pass
						149	151	157	
						150	156	160	
						152	156	156	
						145	156	158	

6.0 PHOTO LOG



Figure 1: Rolling regraded subgrade in progress within Phase 1B.



Figure 2: Air pressure testing in progress within Phase 1B.

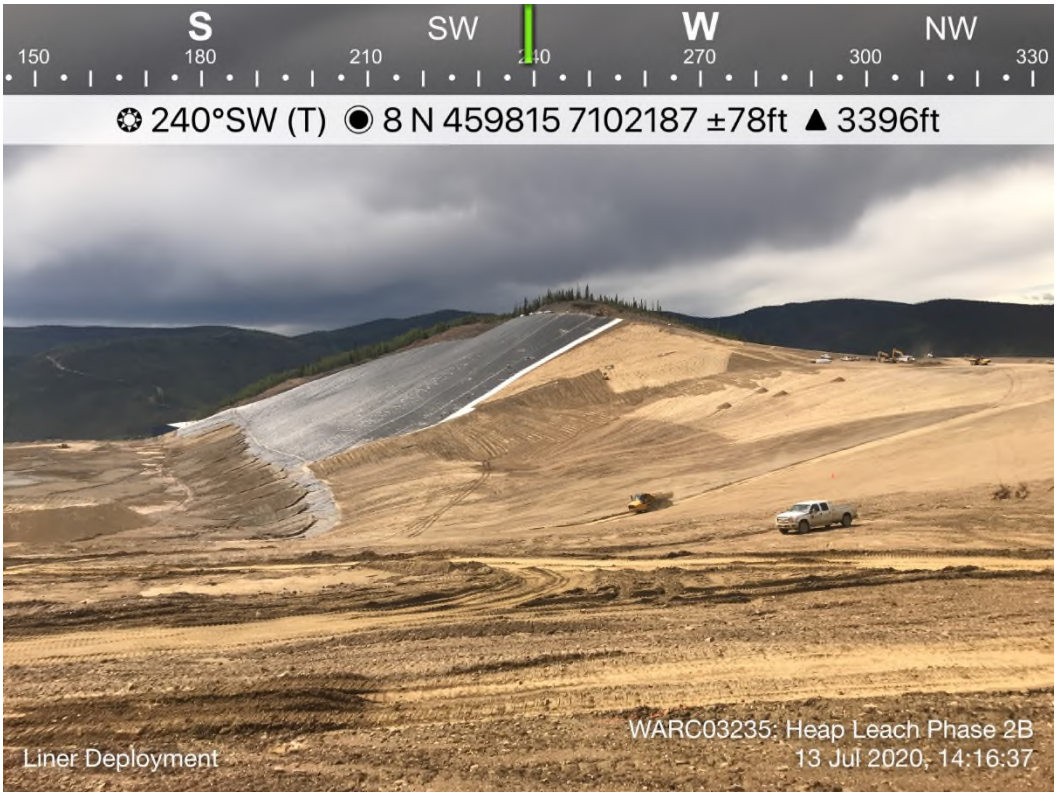


Figure 3: View of deployment, and regarding and rolling of subgrade



Figure 4: Typical scour of subgrade due to rain.



Figure 5: Rolling of subgrade in foreground with GCL deployment in background.



Figure 6: Deployment in progress.

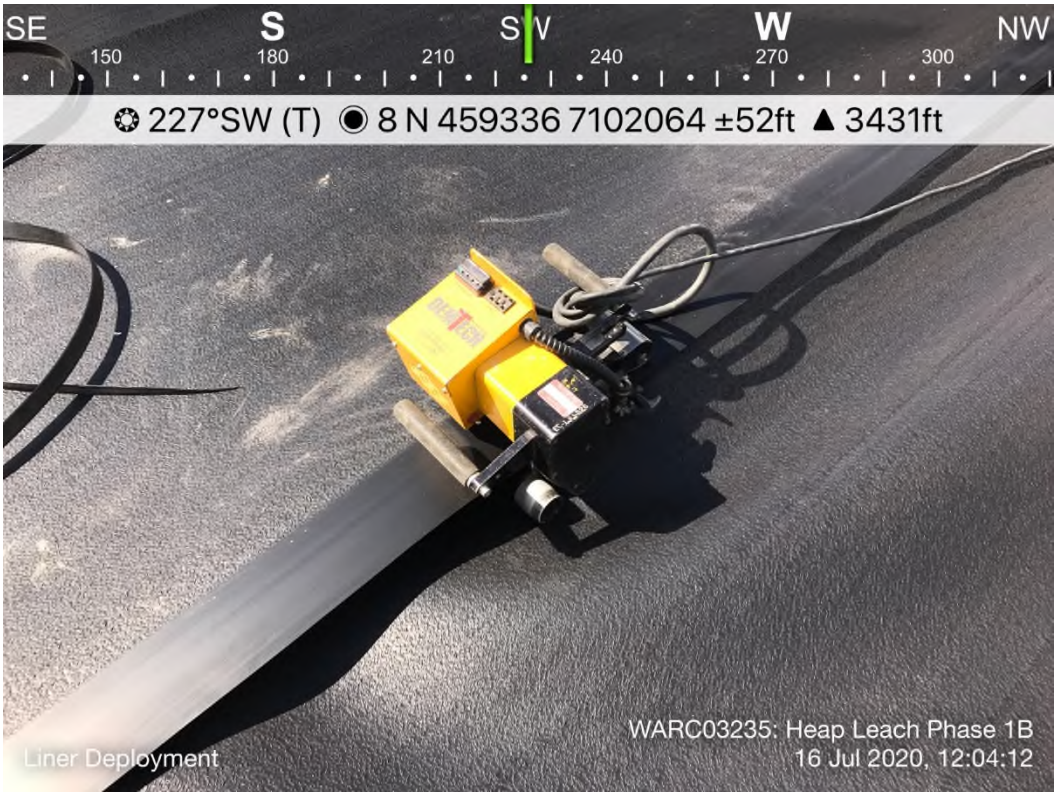


Figure 7: Typical wedge welding in progress.



Figure 8: View of GCL and Liner deployed to date.

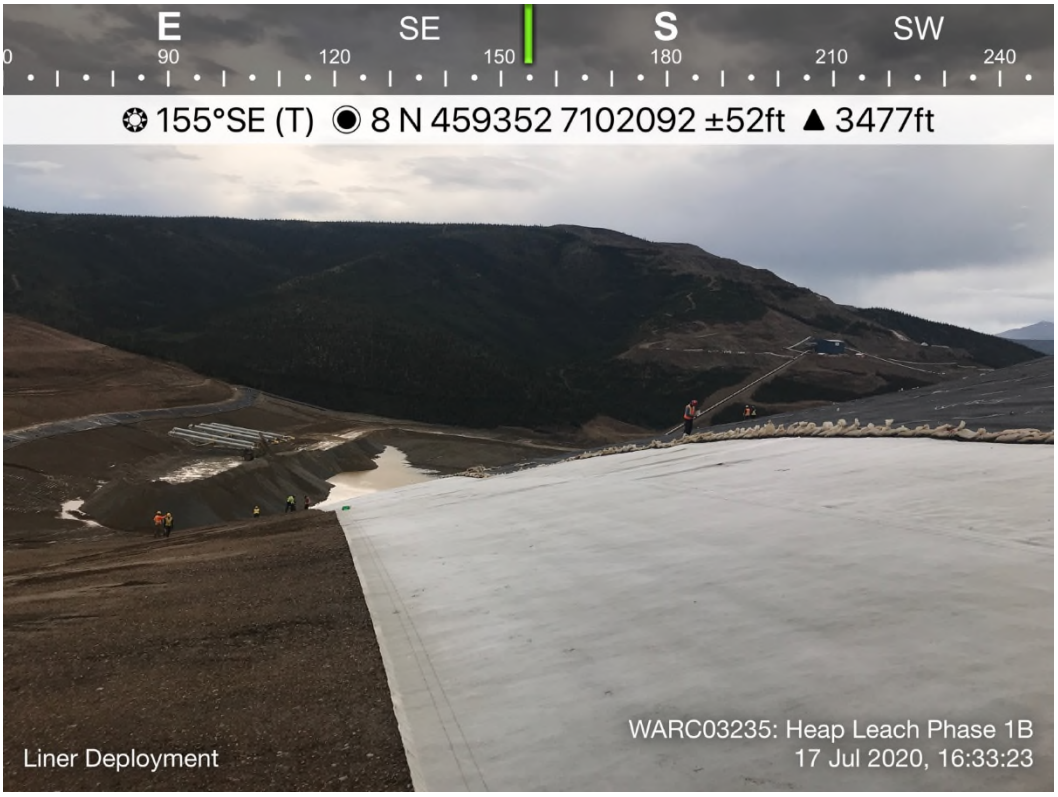


Figure 9: Two sections of GCL placed today.



Figure 10: Repairing scour of subgrade after recent rainfall.



Figure 11: Deployment of LLDPE and reconditioning of subgrade in progress.



Figure 12: Deployment of GCL and compaction of subgrade at base of slope.

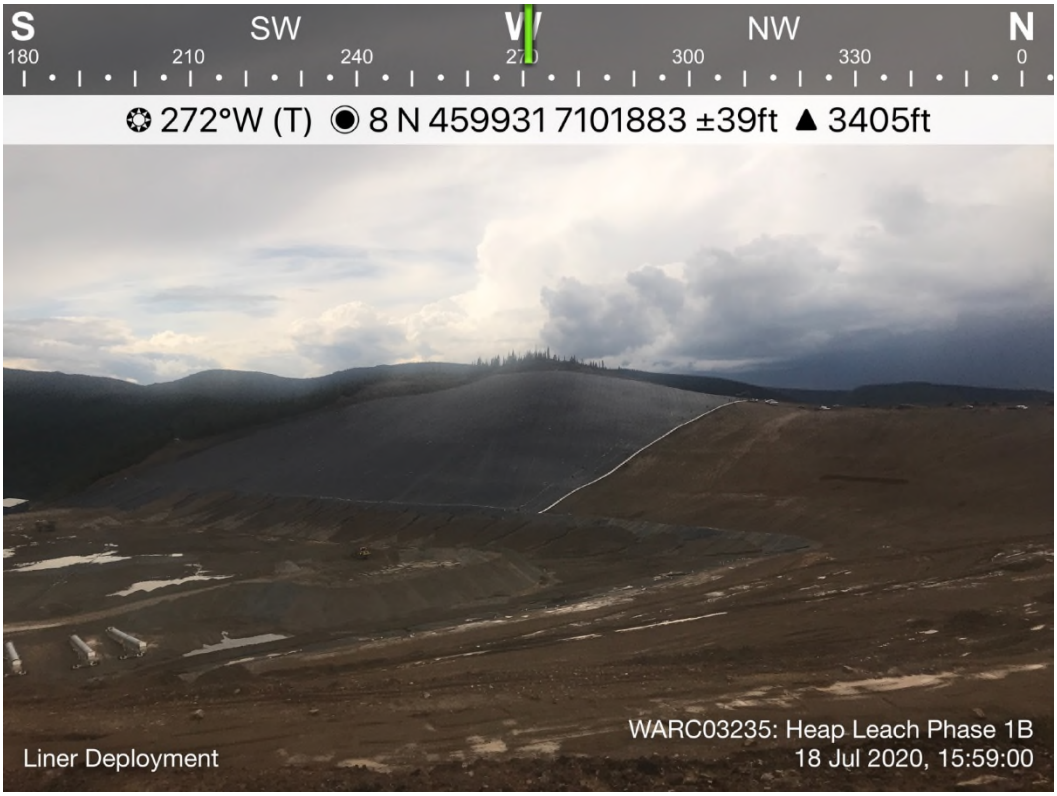


Figure 13: Deployment to date (Panel 172).

TETRA TECH

WEEKLY FIELD REPORT

ISSUED FOR USE

Project:	Eagle Gold Heap Leach Phase 1B	**Date:**	July 26, 2020
Location:	Eagle Gold Mine	**Contractor:**	Ewing Transport / Layfield
Client:	Victoria Gold Corp.	**Contractor's Rep:**	Marshall Ewing / Chad Messervey
Contact:	Clint Abel	**Contractor's Email:**	
Weather:	Variable (see daily entries)	**Tetra Tech Representative:**	James Buyck
File:	704-ENG.WARC03235-09	**Status:**	Issued for Use

1.0 INTRODUCTION

Tetra Tech Canada Inc. (Tetra Tech) was retained by Victoria Gold Corp. (Victoria Gold) to provide CQA services at the Eagle Gold mine located north of Mayo, Yukon, at Dublin Gulch for the Eagle Gold Heap Leach Phase 1B expansion (Phase 1B). Mr. James Buyck is Tetra Tech's representative on site.

Forte Dynamics (Forte) out of Fort Collins, Colorado provided the design and specification for Phase 1B, and Forte's representative is Clint Green.

Clint Abel, of JDS Energy & Mining, is Victoria Gold's project manager on site at the Eagle Gold mine.

Ewing Transport (Ewing), based out of Mayo, Yukon, is the construction contractor for Phase 1B.

Layfield Environmental Containment (Layfield) has been retained to provide and install the liner for Phase 1B, and their supervisor on site is Chad Messervey.

The following Field Report outlines Tetra Tech's CQA for the period of July 20, 2020, to July 26, 2020.

2.0 DAILY REPORTS

2.1 Highlights

- Rain delayed liner deployment throughout the week.
- Layfield is placing three panels of GCL for every two panels of 80 mm LLDPE liner.

2.2 July 20, 2020

- Weather: cloudy, turning to rain by mid-morning
- Layfield deployed two slope lengths of GCL before work halted by rain.
- Four additional destructive samples were obtained by Layfield with extrusion welded repair completed immediately afterward and just prior to rainfall.
- Ewing halted sub-excavation of NE Slope because of wet and slippery haul road. Continued placement and compaction of fill along the west side of the perimeter road.

Tetra Tech Canada Inc.
61 Wasson Place
Whitehorse, YT Y1A 0H7 CANADA
Tel 867.668.3068 Fax 867.668.4349

2.3 July 21, 2020

- Weather: Sunny in a.m., some cloud and rain in the p.m. L 9°C H 17°C
- The GCL placed yesterday prior to rainfall was evaluated and noted to have localized wetted areas estimated to be about 10 % of the total area placed. Select areas were further investigated by cutting through the GCL. The bentonite was noted to be moistened and 'pasty' with the internal fibres connecting the outer layers still intact. There was no noticeable migration of bentonite through the outer layers. Layfield superintendent (Chad M.) proceeded with placement with QA agreement.
- The area of subgrade planned for today's deployment was evaluated and noted to have only some localized minor scour and instability issues - permission granted to Layfield to proceed with deployment.
- Two slope lengths of GCL and slope length of LLDPE Liner deployed in the a.m. Two slope lengths of GCL and one slope length of LLDPE Liner placed in the p.m.
- Layfield also continued obtaining destructs and performing detail work.
- Ewing focused on placement of fill short-hauled from a nearby source to the West Perimeter Berm, as well, continued installation perforated corrugated pipe along Lateral #3.
- Ewing requested review of the sub-grade of the recently excavated Perimeter East Berm. The area observed to design grade, and with the exception of a few localized soft areas and minor clean-up, the majority of the area appears satisfactory -another review will be completed once clean-up has been finalized.

2.4 July 22, 2020

- Weather: Overcast, with rain by mid-morning L 10°C H 12°C
- Layfield deployed one slope length of LLDPE Liner and GCL until work halted around 10:30 a.m. due to rain.
- Work re-commenced after the rain stopped around 12:30 p.m., and two more slope lengths of GCL and one LLDPE Liner were deployed. Prior to deployment of the LLDPE, the GCL was observed to be wet but not adversely affected by the rain – No signs of 'popcorn' effect through liner, or delamination of the internal connective fibers.
- Ewing continued placement and compaction of fill hauled from nearby source to West Perimeter Berm, and install of perforated corrugated pipe along Lateral #3.
- Anchor trench excavated, but rain around 3:15 p.m. halted further deployment.
- Liner deployment halted for rest of the day at 4:00 p.m.

2.5 July 23, 2020

- Weather: Overcast, L 6°C H 15°C
- Regrading and rolling of subgrade required by Ewing prior to GCL deployment. Layfield commenced GCL deployment immediately afterward, around 9:00 a.m.
- Three slope lengths of GCL placed by 1:00 p.m. Deployment of LLDPE Liner commenced around 1:30 p.m.
- Two slope lengths of GCL and one slope length of LLDPE Liner placed in afternoon. No issues of concerns with deployment noted.
- Filled placement and compaction along the West Perimeter Berm completed for now. The area observed stable with little to no deflection under loaded haul truck traffic.

2.6 July 24, 2020

- Weather: Sunny with some cloud, L 6°C H 16°C
- Subgrade observed to be unchanged and acceptable for deployment. Ewing continued reconditioning subgrade further on in preparation for the next few days of deployment.
- Ewing Transport continued installation of drain at Lateral #3.
- Some delays encountered with deployment of LLDPE Liner due to windy conditions around 1:30 p.m. Layfield progressed with deploying GCL instead.
- Layfield deployed six slope lengths of GLC and one of LLDPE Liner. Four slope lengths remained exposed at the end of the day.

2.7 July 25, 2020

- Weather: Overcast, periods of light rain throughout the a.m. to steady rain in p.m. L 8°C H 14°C
- GCL left exposed from previous day's deployment observed wetted from overnight rain adjacent the last LLDPE Liner deployed. This was mainly due to run-off from the LLDPE. The remaining three slope lengths appeared less affected. Layfield indicated the wetted were not an issue, and no hydration had occurred, as confirmed by QA. It was further observed that 'popcorn' effect had not occurred.
- Subgrade observed to be in acceptable condition for GCL deployment when required.
- Three slope lengths of LLDPE placed by 10:30 p.m., totally covering the GCL. With rain forecast, Layfield moved to detail work, exclusively.
- Ewing continued installation of Lateral #3, sloping within NE Slope, and construction of West Perimeter Berm.

2.8 July 26, 2020

- Weather: Overcast, rainy in the p.m. L 7°C H 12°C
- With rain in the forecast for today, Layfield focused on detail work, exclusively.
- Ewing continued with fill placement and compaction of the West Perimeter Berm.
- Layfield suspended work for the day around 1:00 p.m. due to rain.

3.0 GEOSYNTHETIC ROLL NUMBERS PLACED

Table 1 summarizes the daily geosynthetic roll numbers placed on the slope during liner installation. All panel lengths are approximate, and where 45 degree joints are used, panel length is based from the center of the panel.

Table 1: Geosynthetic Roll Numbers Placed on Slope

Date	GCL Roll Number	LLDPE Liner Roll Number	Panel Number (Length)
Jul 19	-	-	-
Jul 20	0242-347635; 0242-347533, 0242-347613, 0242-347619, 0242-347617, 0242-347629		-

Date	GCL Roll Number	LLDPE Liner Roll Number	Panel Number (Length)
Jul 21	502344019, 0242-347558, 347660, 0242-347587, 0242-347599, 0242-347661, 0242-347638, 0242-347585, 0242-347648, 0242-347644, 0242-347645, 0242-347649, 0242-347542, 0242-347643, 0242-347654, 0242-347539, 0242-347541, 0242-347657, 0242-347642,	10693-003 10693-006 10693-006 10693-007 10693-007 10693-016 10693-016 10693-004 10693-004 10697-007	P173 (25.3 m) P174 (56.8 m) P175 (69.9 m) P176 (119.8 m) P177 (6.5 m) P178 (55.7 m) P179 (72.9 m) P180 (50.4 m) P181 (74.5 m) P182 (12.0 m)
Jun 22	0242-347522, 0242-347522, 0242-347646, 0242-347651, 502344658, 502344548, 502347143,	10693-034 10693-015 10693-015 10694-003 10694-003 10693-036 10693-036 10693-009	P183 (128.9 m) P184 (62.4 m) P185 (66.0 m) P186 (15.7 m) P187 (106.4 m) P188 (66.5 m) P189 (61.7 m) P190 (44.2 m)
Jun 23	0242-347637, 0242-347655, 0242-347540, 0242-347641, 0242-347652, 502344133, 502347603, 0242-347559, 0242-347658, 0242-347907, 0242-347779	10693-009 10693-033 10693-032 10697-007 10693-032 10693-035 10693-005	P191 (78.0 m) P192 (128.1 m) P193 (79.6 m) P194 (1.0 m) P195 (50.7 m) P196 (128.5 m) P197 (107.0 m)
Jun 24	0242-347770, 0242-347770, 0242-347627, 0242-347639, 0242-3477908, 0242-347774, 0242-347909, 0242-347857, 0242-347773, 0242-347876, 0242-347612, 0242-347560, 0242-347881, 0242-347769, 0242-347562, 0242-347776, 0242-347778, 0242-347592, 0242-347783, 0242-347784, 0242-347782, 0242-347771, 0242-347772, 0242-347777, 0242-347785, 0242-347770, 0242-347775, 0242-347781, 0242-347581, 0242-347586, 0242-347737, 0242-347905, 0242-347904, 0242-347600, 0242-347591, 0242-347786, , 0242-347877, 502344532, 502344538, 502347669, 502347668, 502344024	10693-005 10693-021 10693-024 10693-027 10693-027 10693-002 10693-031	P198 (18.8 m) P199 (127.0 m) P200 (125.2 m) P201 (16.6 m) P202 (111.4 m) P203 (128.9 m) P204 (47.3 m)

Date	GCL Roll Number	LLDPE Liner Roll Number	Panel Number (Length)
June 25	-	10693-031	P205 (81.2 m)
		10693-028	P206 (126.4 m)
		10693-029	P207 (82.9 m)
		10693-029	P208 (46.8 m)
		10693-030	P209 (129.0 m)
		10693-026	P210 (117.0 m)
		10693-026	P211 (11.9 m)
		10692-026	P212 (128.3 m)
		10692-028	P213 (128.4 m)
		10692-023	P214 (22.2 m)

4.0 TRIAL SEAM

Table 2 summarizes the weekly trial seam results. For fusion, the apparatus settings are temperature and speed, and for extrusion, the apparatus settings are preheat and barrel temperature. Five tests are performed for each criterion.

Table 2: Trial Seam Results

Date	Time	Fusion or Extrusion	Tech	Apparatus #	Temp or Preheat (ºF)	Speed (%) or Barrel Temp (ºF)	$Peel_{inside}$ (100 min)	$Peel_{outside}$ (100 min for Fusion 88 min for Extrusion)	Shear (120 min)	Smooth or Textured
Jul 20	8:00	Extrusion	EA	04035	500	495	N/A	99	154	N/A
								98	163	
								97	165	
								90	158	
								108	163	
Jul 21	8:00	Fusion	RW	EX-26	850	55	171	166	198	Smooth
							162	136	202	
							161	167	198	
							157	164	197	
							155	168	200	
Jul 21	8:00	Extrusion	EF	04036	500	490	N/A	139	192	N/A
								137	206	
								147	190	
								129	196	
								150	196	
Jul 21	8:00	Fusion	RW	WW-026	850	35	132	131	174	Textured
							123	130	174	
							153	151	176	
							144	148	178	
							126	141	179	
Jul 21	8:00	Fusion	EA	WW-054	850	55	148	146	199	Smooth
							146	133	193	
							156	144	186	
							152	136	197	
							153	153	194	

Date	Time	Fusion or Extrusion	Tech	Apparatus #	Temp or Preheat (ºF)	Speed (%) or Barrel Temp (ºF)	$Peel_{inside}$ (100 min)	$Peel_{outside}$ (100 min for Fusion 88 min for Extrusion)	Shear (120 min)	Smooth or Textured
Jul 21	12:15	Fusion	RW	WW-026	850	35	119 118 114 124 113	114 124 129 122 119	134 130 131 138 140	Textured
Jul 21	12:15	Fusion	JK	WW-022	850	55	135 134 138 139 143	117 121 119 124 123	150 144 142 151 148	Smooth
Jul 21	12:15	Fusion	RW	WW-026	850	55	117 120 131 137 123	128 136 128 121 138	165 166 166 159 154	Smooth
Jul 21	12:15	Extrusion	EF	04036	495	490	N/A	123 118 130 135 128	141 152 157 154 161	N/A
Jul 22	8:00	Fusion	RW	WW-026	850	35	148 150 170 145 152	154 144 131 120 162	206 203 188 172 189	Smooth
Jul 22	8:00	Fusion	RW	WW-026	850	55	138 136 140 150 149	145 169 165 166 158	158 150 164 160 171	Smooth
Jul 22	8:00	Fusion	JK	WW-022	850	55	155 154 143 161 138	154 155 167 167 158	179 178 172 179 182	Smooth
Jul 22	13:30	Fusion	RW	WW-026	850	35	134 150 111 154 124	101 125 123 121 128	171 178 172 168 171	Textured
Jul 22	13:30	Fusion	RW	WW-026	850	35	140 143 135 129 132	142 135 139 149 138	159 163 164 170 168	Smooth

Date	Time	Fusion or Extrusion	Tech	Apparatus #	Temp or Preheat (ºF)	Speed (%) or Barrel Temp (ºF)	$Peel_{inside}$ (100 min)	$Peel_{outside}$ (100 min for Fusion 88 min for Extrusion)	Shear (120 min)	Smooth or Textured
Jul 22	13:30	Fusion	JK	WW-022	850	55	121 152 119 149 136	127 124 145 136 144	169 170 168 159 172	Smooth
Jul 22	13:30	Fusion	JK	WW-022	850	40	123 132 140 153 139	127 136 132 131 143	167 168 170 171 162	Textured-Smooth
Jul 23	13:30	Fusion	RW	WW-026	850	35	132 131 153 158 142	142 154 144 141 146	187 187 186 191 185	Textured
Jul 23	13:30	Fusion	JK	WW-022	850	55	115 134 155 149 135	124 147 124 146 151	162 172 178 159 163	Smooth
Jul 23	13:30	Fusion	RW	WW-054	850	55	129 168 149 168 127	153 142 163 165 137	159 172 165 162 160	Smooth
Jul 24	8:00	Extrusion	EA	EX-4035	500	495	N/A	99 98 97 90 108	154 163 165 158 163	N/A
Jul 24	8:15	Extrusion	TH	EX-35	490	495	N/A	127 123 138 120 131	155 154 162 155 155	N/A
Jul 24	10:45	Fusion	JK	WW-022	850	35	145 124 161 169 135	166 139 142 161 145	168 159 165 161 173	Textured
Jul 24	10:45	Fusion	JK	WW-022	850	55	130 133 141 140 147	137 144 137 150 145	161 162 159 171 161	Smooth

Date	Time	Fusion or Extrusion	Tech	Apparatus #	Temp or Preheat (ºF)	Speed (%) or Barrel Temp (ºF)	$Peel_{inside}$ (100 min)	$Peel_{outside}$ (100 min for Fusion 88 min for Extrusion)	Shear (120 min)	Smooth or Textured
Jul 24	10:45	Fusion	RW	WW-026	850	35	151 137 140 139 142	126 152 169 124 152	167 165 171 162 172	Textured
Jul 24	10:45	Fusion	RW	WW-026	850	35	145 164 145 162 151	164 170 169 152 169	161 167 164 165 174	Smooth
Jul 25	8:45	Fusion	JK	WW-022	850	35	143 161 124 162 134	145 174 178 167 161	177 188 180 173 185	Textured
Jul 25	8:45	Fusion	JK	WW-022	850	55	145 154 156 161 143	165 166 157 156 149	175 169 184 175 172	Smooth
Jul 25	8:50	Fusion	RW	WW-026	850	55	153 173 153 161 142	173 159 170 173 134	175 166 174 168 172	Smooth

5.0 NON-DESTRUCTIVE TESTING

Table 3 summarizes the weekly non-destructive pressure testing results.

Table 3: Non-Destructive Testing Results

Date Fused	Date Tested	Time Tested	Seam #	psi Start	psi End	Pass or Fail	Notes
Jul 5	Jul 21	13:03	P102-P105 Vertical	40	40	Pass	
Jul 7	Jul 21	13:06	P109-P111 Vertical	40	39	Pass	
Jul 7	Jul 21	14:50	P141-P142 Cross	40	39	Pass	
Jul 15	Jul 21	14:50	P142-P144 Vertical	40	40	Pass	
Jul 18	Jul 21	14:46	P167-P166 Cross	40	40	Pass	
Jul 18	Jul 21	14:24	P168-P167 Cross	40	40	Pass	
Jul 18	Jul 21	14:02	P168-P162 Vertical	40	40	Pass	
Jul 18	Jul 21	14:58	P168-P161 Vertical	40	40	Pass	
Jul 18	Jul 21	14:09	P168-P160 Vertical	40	40	Pass	
Jul 18	Jul 21	14:11	P168-P159 Vertical	40	40	Pass	
Jul 18	Jul 21	14:11	P168-P158 Vertical	40	40	Pass	
Jul 18	Jul 21	14:20	P168-P156 Vertical	40	40	Pass	

Date Fused	Date Tested	Time Tested	Seam #	psi Start	psi End	Pass or Fail	Notes
Jul 18	Jul 21	14:20	P168-P154 Vertical	40	40	Pass	
Jul 18	Jul 21	14:24	P168-P152 Vertical	40	40	Pass	
Jul 18	Jul 21	14:24	P167-P163 Vertical	40	40	Pass	
Jul 18	Jul 21	15:15	P167-P151 Vertical	40	39	Pass	
Jul 18	Jul 21	14:32	P167-P150 Vertical	40	40	Pass	
Jul 18	Jul 21	14:45	P167-P148 Vertical	40	40	Pass	
Jul 18	Jul 21	14:46	P167-P146 Vertical	40	40	Pass	
Jul 18	Jul 21	14:46	P166-P146 Vertical	40	40	Pass	
Jul 18	Jul 21	14:47	P166-P144 Patch	40	40	Pass	
Jul 18	Jul 21	14:47	P166-P144 Patch	40	40	Pass	
Jul 18	Jul 21	15:02	P166-P141 Vertical	40	40	Pass	
Jul 18	Jul 21	15:03	P171-P170 Cross	40	40	Pass	
Jul 18	Jul 21	15:03	P171-P170 Cross	40	40	Pass	
Jul 18	Jul 21	15:15	P172-P171 Cross	40	39	Pass	
Jul 12	Jul 24	14:17	P122-P125 Vertical	40	39	Pass	Top of Seam to Patch
Jul 13	Jul 25	15:50	P130-P131 Cross	40	40	Pass	
Jul 13	Jul 25	14:28	P131-P132 Cross	40	40	Pass	
Jul 13	Jul 25	14:28	P127-P132 Vertical	40	40	Pass	
Jul 13	Jul 25	14:28	P127-P131 Vertical	40	38	Pass	
Jul 13	Jul 25	14:30	P132-P134 Vertical	40	40	Pass	
Jul 13	Jul 25	14:30	P131-P134 Vertical	40	39	Pass	
Jul 13	Jul 25	15:50	P131-P133 Vertical	40	40	Pass	
Jul 13	Jul 25	15:50	P130-P133 Vertical	40	40	Pass	
Jul 14	Jul 25	14:42	P138-P137 Vertical	40	40	Pass	
Jul 14	Jul 25	14:42	P134-P138 Vertical	40	40	Pass	
Jul 14	Jul 25	14:42	P134-P137 Vertical	40	39	Pass	
Jul 14	Jul 25	14:44	P138-P140 Vertical	40	40	Pass	
Jul 14	Jul 25	14:44	P137-P140 Vertical	40	40	Pass	
Jul 15	Jul 25	14:56	P144-P145 Cross	40	40	Pass	
Jul 15	Jul 25	14:56	P143-P144 Vertical	40	40	Pass	
Jul 15	Jul 25	17:07	P147-P148 Cross	40	40	Pass	
Jul 15	Jul 25	14:58	P145-P147 Vertical	40	40	Pass	
Jul 15	Jul 25	14:29	P151-P163 Vertical	40	40	Pass	
Jul 18	Jul 25	15:55	P165-P166 Cross	40	40	Pass	
Jul 18	Jul 25	15:33	P139-P166 Vertical	40	40	Pass	
Jul 18	Jul 25	15:48	P136-P166 Vertical	40	40	Pass	
Jul 18	Jul 25	15:48	P133-P166 Vertical	40	40	Pass	
Jul 18	Jul 25	15:55	P130-P166 Vertical	40	40	Pass	
Jul 18	Jul 25	15:55	P130-P165 Vertical	40	40	Pass	
Jul 18	Jul 25	16:00	P126-P165 Vertical	40	40	Pass	
Jul 18	Jul 25	16:02	P123-P165 Vertical	40	40	Pass	
Jul 18	Jul 25	16:02	P121-P165 Vertical	40	40	Pass	
Jul 18	Jul 25	15:05	P167-P171 Vertical	40	38	Pass	
Jul 18	Jul 25	15:15	P166-P171 Vertical	40	39	Pass	
Jul 18	Jul 25	15:16	P168-P172 Vertical	40	40	Pass	
Jul 18	Jul 25	15:15	P167-P172 Vertical	40	39	Pass	

6.0 DESTRUCTIVE TESTING

Table 4 summarizes the weekly destructive testing results. Five tests are performed for each criterion.

Table 4: Destructive Testing Results

Date Fused	Time Fused	Tech	Apparatus	Location (UTM is +/- 4 m)	Sample ID	$Peel_{in}$ (100 min)	$Peel_{out}$ (100 min)	Shear (120 min)	Pass or Fail
Jul 23	16:23	RW	WW-026	P193-P197 Vertical Top of Seam	D73	154 152 150 159 167	165 159 159 158 168	167 162 162 163 168	Pass
Jul 23	14:24	JK	WW-022	P190-P193 Vertical Top of Seam	D74	152 163 149 155 161	154 157 150 152 161	172 165 166 168 172	Pass
Jul 23	13:59	RW	WW-026	P190-P186 Vertical Top of Seam	D75	149 155 159 148 157	152 158 153 144 145	168 163 174 172 172	Pass
Jul 23	14:38	RW	WW-26	P187-P191 Vertical Bottom of Seam	D76	147 121 147 156 144	149 149 156 149 150	166 165 173 172 172	Pass
Jul 22	14:00	JK	WW-022	P183-P187 Vertical Bottom of Seam	D77	130 131 122 117 125	157 152 155 156 155	157 157 161 157 153	Pass
Jul 22	9:37	JK	WW-022	P177-P183 Vertical Bottom of Seam	D78	145 143 147 146 158	140 149 154 149 155	161 160 162 158 154	Pass
Jul 21	12:24	RW	WW-026	P177-P178 Cross Left Side of Seam	D79	148 145 160 148 144	153 148 145 161 151	174 170 166 166 173	Pass
Jul 21	15:18	RW	WW-026	P173-P177 Vertical Bottom of Seam	D80	142 141 143 138 142	141 150 146 147 151	170 162 176 177 169	Pass

Date Fused	Time Fused	Tech	Apparatus	Location (UTM is +/- 4 m)	Sample ID	$Peel_{in}$ (100 min)	$Peel_{out}$ (100 min)	Shear (120 min)	Pass or Fail
Jul 21	9:43	RW	WW-026	P173-P174 Cross Left Side of Seam	D81	155 150 149 153 147	158 154 148 158 153	157 156 171 168 176	Pass
Jul 21	10:33	RW	WW-026	P169-P173 Vertical Bottom of Seam	D82	153 149 152 149 151	150 151 151 151 144	157 155 163 156 160	Pass
Jul 18	14:55	RW	WW-054	P169-P170 Cross	D83	151 148 155 142 146	157 163 155 147 149	181 179 177 176 169	Pass
Jul 18	16:08	EA	WW-026	P165-P169 Vertical Top of Seam	D84	146 143 150 154 156	155 151 156 153 155	158 157 166 161 162	Pass
Jul 18	16:08	EA	WW-026	P165-P169 Vertical Bottom of Seam	D85	154 139 150 149 143	157 152 154 153 154	158 155 161 158 163	Pass
Jul 18	10:39	RW	WW-054	P126-P165 Vertical	D86	147 155 149 106 145	142 140 169 140 137	166 165 170 164 172	Pass
Jul 18	14:55	RW	WW-054	P210-P214 Vertical Top of Seam	D87	149 148 148 147 154	148 149 156 147 147	162 166 164 169 164	Pass
Jul 25	11:43	JK	WW-022	P207-P210 Vertical Top of Seam	D88	145 144 153 147 152	150 150 152 149 149	158 159 161 161 161	Pass
Jul 25	14:00	JK	WW-022	P208-P211 Vertical Bottom of Seam	D89	137 139 140 142 146	150 158 147 153 153	166 167 173 172 173	Pass
Jul 25	13:24	JK	WW-022	P205-P208 Vertical Bottom of Seam	D90	142 142 146 138 143	151 153 151 148 149	151 151 156 156 152	Pass

Date Fused	Time Fused	Tech	Apparatus	Location (UTM is +/- 4 m)	Sample ID	$Peel_{in}$ (100 min)	$Peel_{out}$ (100 min)	Shear (120 min)	Pass or Fail
Jul 25	10:16	RW	WW-026	P202-P205 Vertical Bottom of Seam	D91	141	153	146	Pass
						138	156	149	
						143	146	148	
						147	144	148	
						142	151	150	
Jul 25	8:50	RW	WW-026	P204-P207 Vertical Top of Seam	D92	145	136	154	Pass
						144	138	145	
						143	135	154	
						145	138	145	
						144	117	158	
Jul 24	13:00	JK	WW-022	P201-P204 Vertical Top of Seam	D93	149	153	162	Pass
						148	150	162	
						150	148	167	
						146	153	169	
						153	150	168	
Jul 24	13:23	RW	WW-026	P198-P202 Vertical Bottom of Seam	D94	149	150	156	Pass
						148	145	148	
						149	150	154	
						150	150	156	
						150	153	153	
Jul 24	11:08	RW	WW-026	P197-P201 Vertical Top of Seam	D95	152	148	160	Pass
						146	137	158	
						152	148	157	
						101	132	153	
						144	144	161	
Jul 24	11:48	JK	WW-022	P195-P198 Vertical Bottom of Seam	D96	144	145	155	Pass
						145	140	155	
						147	151	159	
						141	144	157	
						147	136	159	

7.0 PHOTO LOG



Figure 1: Anchor trench backfilled and compacted



Figure 2: Deploying GCL



Figure 3: Preparing destruct locations for repair.



Figure 4: On-going survey of liner seams by Underhill Geomatics

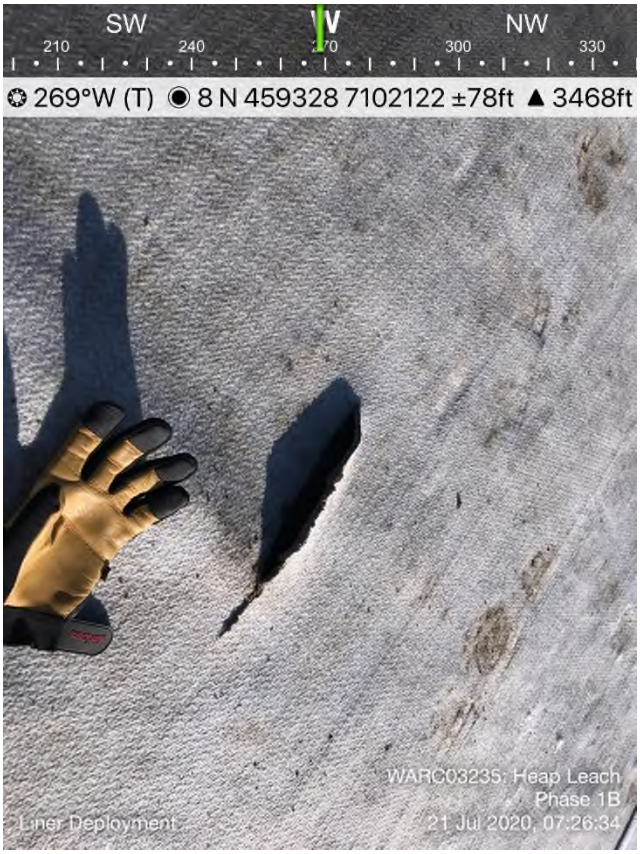


Figure 5: GCL Cut to evaluate severity of hydration and integrity of GCL exposed to rainfall.



Figure 6: View looking north along the East Perimeter Berm excavated to sub-grade.



Figure 7: Placed and compacted fill along the west perimeter berm.



Figure 8: Placement of fill in progress within NW area of Perimeter Berm.



Figure 9: Subgrade after reconditioning to remove scour prior to placement of the GCL.



Figure 10: Deployed GCL after rain event.



Figure 11: Extent of wetted GCL after rain event.



Figure 12: Trail seam test weld by technician.



Figure 13: Installation of Lateral drain #3 along NE slope in-progress.



Figure 14: Rolling of subgrade prior to placement of GCL.

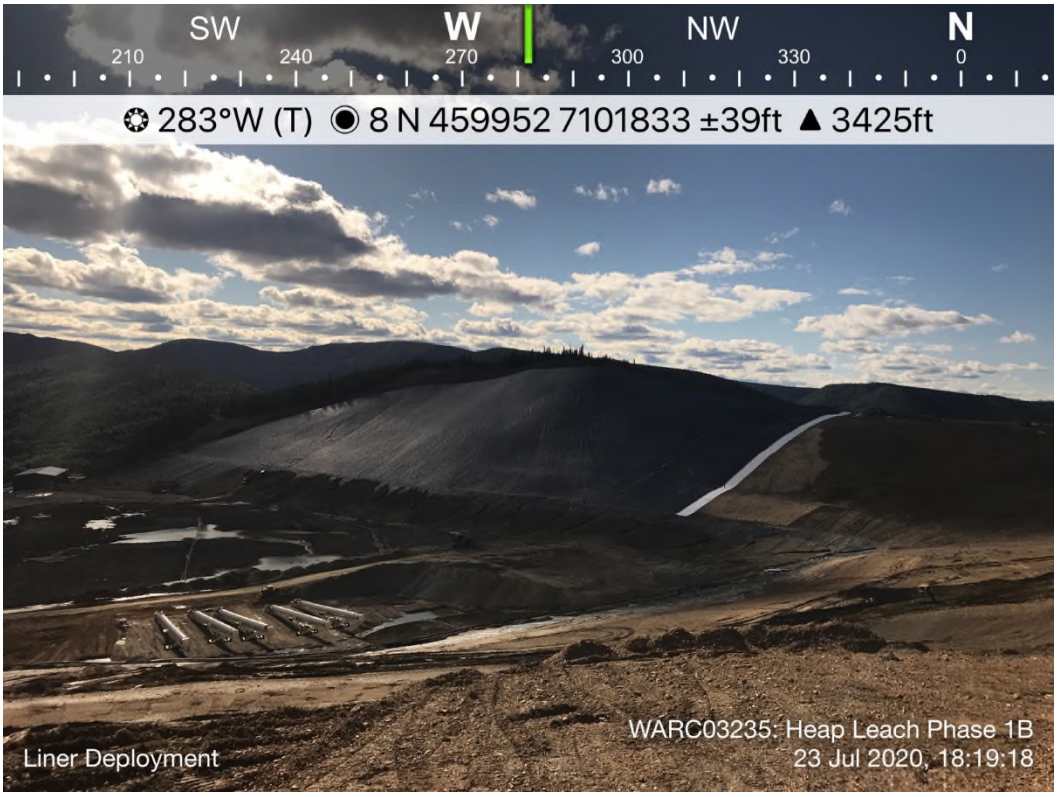


Figure 15: Deployment progress to date.



Figure 16: Extrusion welding of geomembrane panels used to patch destruct locations.

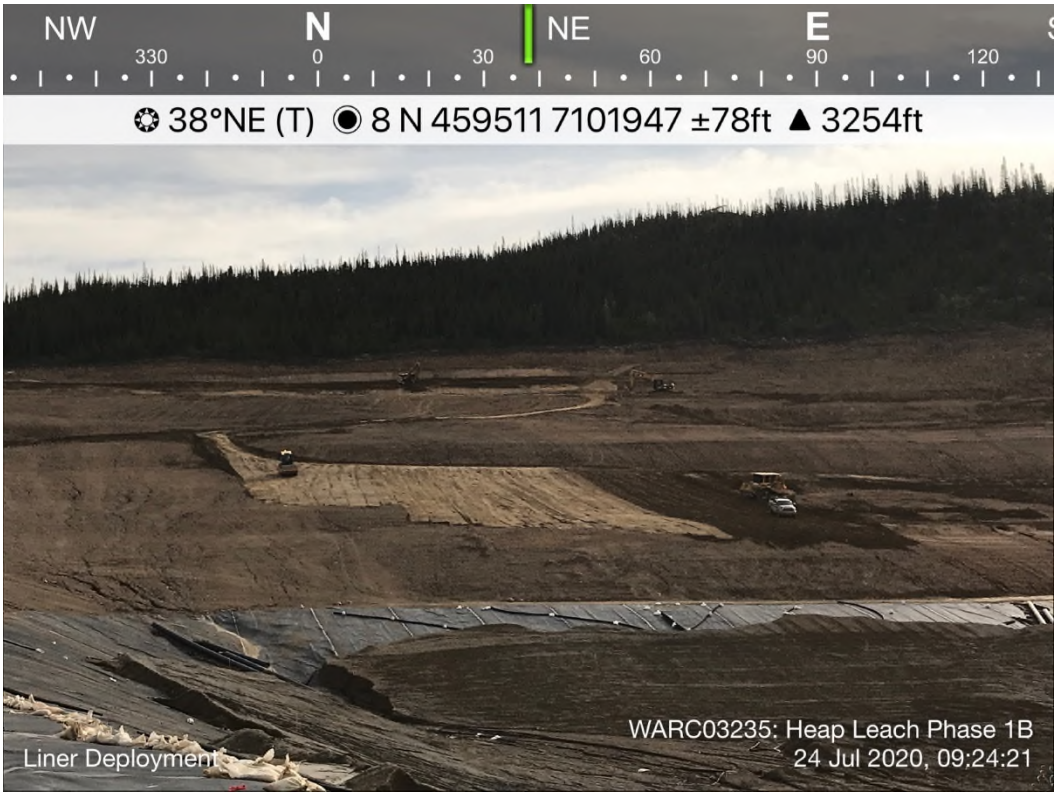


Figure 17: Ewing Transport continued installation at Lateral #3 and subgrade preparation



Figure 18: Extent of wetted GCL from overnight rain.



Figure 19: Extent of wetted GCL.

TETRA TECH

WEEKLY FIELD REPORT

ISSUED FOR REVIEW

Project:	Eagle Gold Heap Leach Phase 1B	**Date:**	July 21, 2020
Location:	Eagle Gold Mine	**Contractor:**	Ewing Transport / Layfield
Client:	Victoria Gold Corp.	**Contractor's Rep:**	Marshall Ewing / Chad Messervey
Contact:	Clint Abel	**Contractor's Email:**	
Weather:	Variable (see daily entries)	**Tetra Tech Representative:**	Adam Mickey
File:	704-ENG.WARC03235-09	**Status:**	Issued for Review

This 'Issued for Review' report is provided solely for the purpose of client review and presents our findings and recommendations to date. Our findings and recommendations are provided only through an 'Issued for Use' report, which will be issued subsequent to this review. You should not rely on the interim recommendations made herein. Once our report is issued for use, the 'Issued for Review' document should be either returned to Tetra Tech Canada Inc. (Tetra Tech) or destroyed.

1.0 INTRODUCTION

Tetra Tech Canada Inc. (Tetra Tech) was retained by Victoria Gold Corp. (Victoria Gold) to provide CQA services at the Eagle Gold mine located north of Mayo, Yukon, at Dublin Gulch for the Eagle Gold Heap Leach Phase 1B expansion (Phase 1B). Mr. Adam Mickey, EIT, is Tetra Tech's representative on site.

Forte Dynamics (Forte) out of Fort Collins, Colorado provided the design and specification for Phase 1B, and Forte's representative is Clint Green.

Clint Abel, of JDS Energy & Mining, is Victoria Gold's project manager on site at the Eagle Gold mine.

Ewing Transport (Ewing), based out of Mayo, Yukon, is the construction contractor for Phase 1B.

Layfield Environmental Containment (Layfield) has been retained to provide and install the liner for Phase 1B, and their supervisor on site is Chad Messervey.

The following Field Report outlines Tetra Tech's CQA for the period of June 15, 2020, to June 21, 2020.

2.0 DAILY REPORTS

2.1 Highlights

- Rain delayed liner deployment throughout the week.
- Layfield is placing three panels of GCL for every two panels of 80 mm LLDPE liner.

2.2 July 20, 2020

- Weather: cloudy, turning to rain by mid-morning
- Layfield deployed two slope lengths of GCL before work halted by rain.

Tetra Tech Canada Inc.
61 Wasson Place
Whitehorse, YT Y1A 0H7 CANADA
Tel 867.668.3068 Fax 867.668.4349

- Four additional destructive samples were obtained by Layfield with extrusion welded repair completed immediately afterward and just prior to rainfall.
- Ewing halted sub-excavation of NE Slope because of wet and slippery haul road. Continued placement and compaction of fill along the west side of the perimeter road.

2.3 July 21, 2020

Weather: Sunny in a.m., some cloud in the p.m. L 9°C H 17°C

- The GCL placed yesterday prior to rainfall was evaluated and noted to have localized wetted areas estimated to be about 10 % of the total area placed. Select areas were further investigated by cutting through the GCL. The bentonite was noted to be moistened and 'pasty' with the internal fibres connecting the outer layers still intact. There was no noticeable migration of bentonite through the outer layers. Layfield superintendent (Chad M.) proceeded with placement with QA agreement.
- The area of subgrade planned for today's deployment was evaluated and noted to have only some localized minor scour and instability issues - permission granted to Layfield to proceed with deployment.
- Two slope lengths of GCL and slope length of LLDPE Liner deployed in the a.m. Two slope lengths of GCL and one slope length of LLDPE Liner placed in the p.m.
- Layfield also continued obtaining destructs and performing detail work.
- Ewing focused on placement of fill short-hauled from a nearby source to the West Perimeter Berm, as well, continued installation of perforated corrugated pipe along lateral #3.
- Ewing requested review of the sub-grade of the recently excavated Perimeter East Berm. The area observed to design grade and with the exception of a few localized soft areas and minor clean-up the majority of the area appears satisfactory -another review will be completed once clean-up has been finalized.

3.0 GEOSYNTHETIC ROLL NUMBERS PLACED

Table 1 summarizes the daily geosynthetic roll numbers placed on the slope during liner installation. All panel lengths are approximate and where 45 degree joints are used, panel length is based from the center of the panel.

Table 1: Geosynthetic Roll Numbers Placed on Slope

Date	GCL Roll Number	LLDPE Liner Roll Number	Panel Number (Length)
Jul 19	None	None	-
Jul 20	0242-347635; 0242-347533, 0242-347613, 0242-347619, 0242-347617, 0242-347629		-
Jul 21	502344019, 0242-347558, 347660, 0242-347587, 0242-347599, 0242-347661, 0242-347638, 0242-347585, 0242-347648, 0242-347644, 0242-347645, 0242-347649, 0242-347542, 0242-347643, 0242-347654, 0242-347539, 0242-347541, 0242-347657, 0242-347642,		

Date	GCL Roll Number	LLDPE Liner Roll Number	Panel Number (Length)

4.0 TRIAL SEAM

Table 2 summarizes the weekly trial seam results. For fusion, the apparatus settings are temperature and speed, and for extrusion, the apparatus settings are preheat and barrel temperature. Five tests are performed for each criterion.

Table 2: Trial Seam Results

Date	Time	Fusion or Extrusion	Tech	Apparatus #	Temp or Preheat (°F)	Speed (%) or Barrel Temp (°F)	$Peel_{inside}$ (100 min)	$Peel_{outside}$ (100 min for Fusion 88 min for Extrusion)	Shear (120 min)	Smooth or Textured
Jul 20	8:00	Extrusion	EA	EX-4035	500	495	99 98 97 90 108		154 163 165 158 163	Textured

5.0 NON-DESTRUCTIVE TESTING

Table 3 summarizes the weekly non-destructive pressure testing results.

Table 3: Non-Destructive Testing Results

Date Fused	Date Tested	Time Tested	Seam #	psi Start	psi End	Pass or Fail	Notes

6.0 DESTRUCTIVE TESTING

Table 4 summarizes the weekly destructive testing results. Five tests are performed for each criterion.

Table 4: Destructive Testing Results

Date Fused	Time Fused	Tech	Apparatus	Location (UTM is +/- 4 m)	Sample ID	$Peel_{in}$ (100 min)	$Peel_{out}$ (100 min)	Shear (120 min)	Pass or Fail

7.0 PHOTO LOG

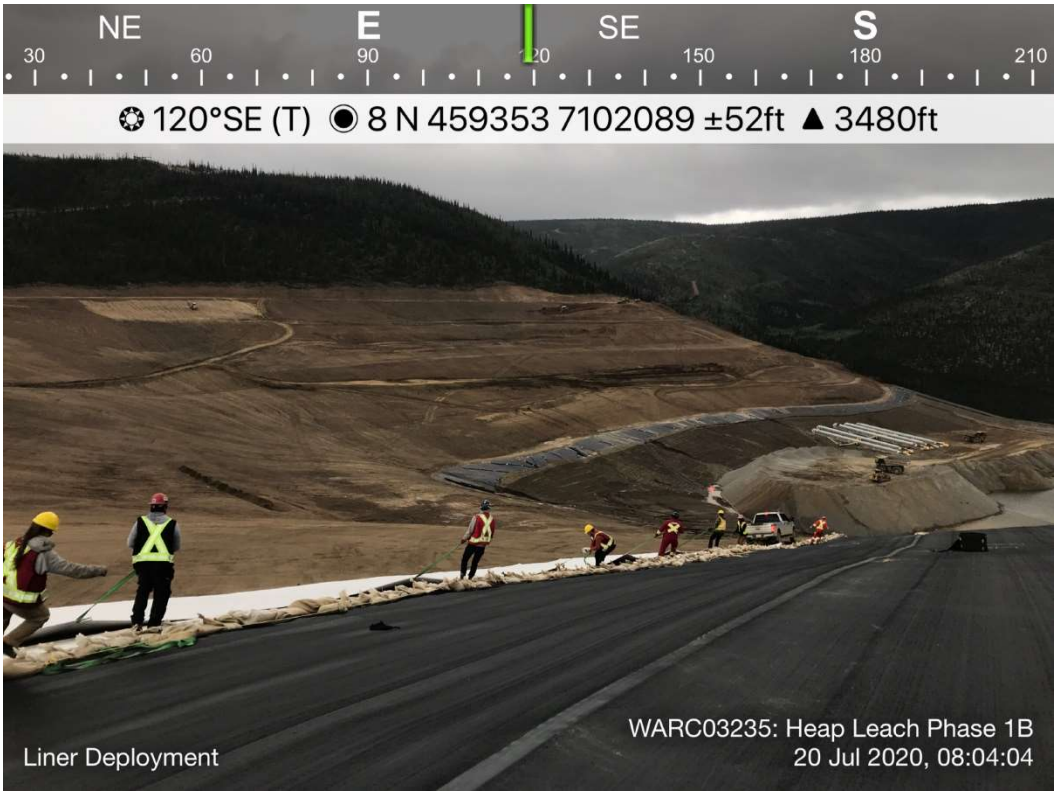


Figure 1 - Deploying GCL.



Figure 2 - Anchor Trenched backfilled and compacted.

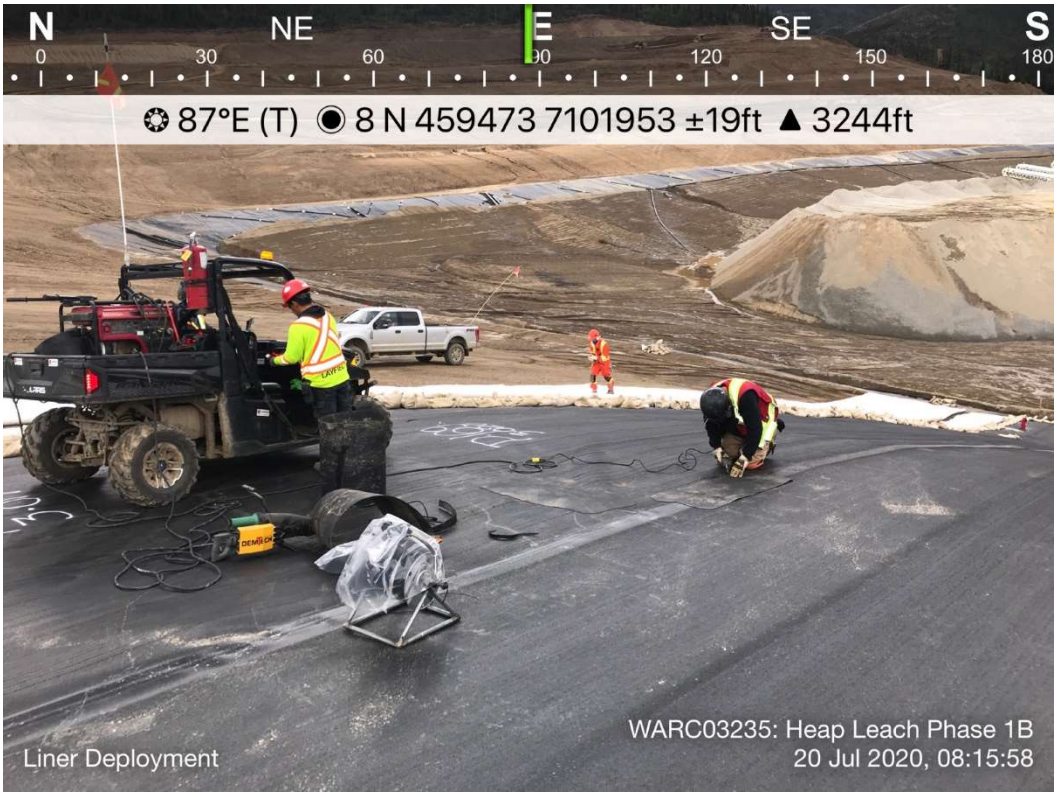


Figure 3 - Preparing destruct locations for repair.



Figure 4 - On-going survey of liner seams by Underhill Geomatics

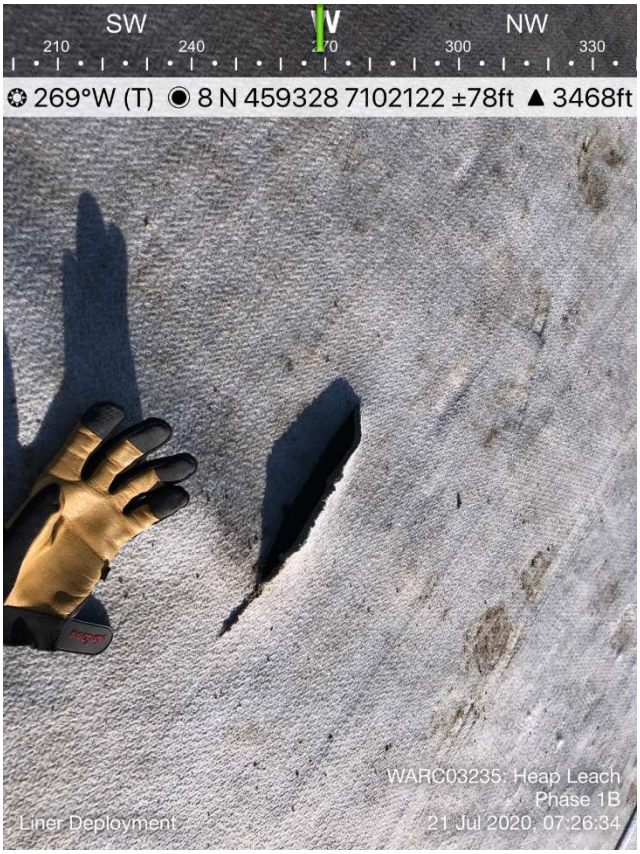


Figure 5 – GCL Cut to evaluate severity of hydration and integrity of GCL exposed to rainfall.



Figure 6 - View looking north along the East Perimeter Berm excavated to sub-grade.



Figure 7 - Placed and compacted fill along the west perimeter berm.



Figure 8 - Placement of fill in progress within NW area of Perimeter Berm.



Figure 9 - Subgrade after reconditioning to remove scour prior to placement of the GCL.

TETRA TECH

WEEKLY FIELD REPORT

ISSUED FOR USE

Project:	Eagle Gold Heap Leach Phase 1B	**Date:**	August 2, 2020
Location:	Eagle Gold Mine	**Contractor:**	Ewing Transport / Layfield
Client:	Victoria Gold Corp.	**Contractor's Rep:**	Marshall Ewing / Chad Messervey
Contact:	Clint Abel	**Contractor's Email:**	
Weather:	Variable (see daily entries)	**Tetra Tech Representative:**	Adam Mickey
File:	704-ENG.WARC03235-09	**Status:**	Issued for Use

1.0 INTRODUCTION

Tetra Tech Canada Inc. (Tetra Tech) was retained by Victoria Gold Corp. (Victoria Gold) to provide CQA services at the Eagle Gold mine located north of Mayo, Yukon, at Dublin Gulch for the Eagle Gold Heap Leach Phase 1B expansion (Phase 1B). Mr. Adam Mickey, EIT, is Tetra Tech's representative on site.

Forte Dynamics (Forte) out of Fort Collins, Colorado provided the design and specification for Phase 1B, and Forte's representative is Clint Green.

Clint Abel, of JDS Energy & Mining, is Victoria Gold's project manager on site at the Eagle Gold mine.

Ewing Transport (Ewing), based out of Mayo, Yukon, is the construction contractor for Phase 1B.

Layfield Environmental Containment (Layfield) has been retained to provide and install the liner for Phase 1B, and their supervisor on site is Chad Messervey.

The following Field Report outlines Tetra Tech's CQA for the period of July 27, 2020, to August 2, 2020.

2.0 DAILY REPORTS

2.1 Highlights

- Layfield deployed approximately 2,912.5 m of liner this week, covering an area of approximately 19,805 m^2.
- Soft subgrade conditions caused delays to deployment, causing Layfield to change their deployment plan.

2.2 July 27, 2020

- No work performed today due to rain.

2.3 July 28, 2020

- No work performed today due to rain

Tetra Tech Canada Inc.
61 Wasson Place
Whitehorse, YT Y1A 0H7 CANADA
Tel 867.668.3068 Fax 867.668.4349

2.4 July 29, 2020

- Weather: rain in the morning, turning to cloudy in the afternoon.
- See Figures 1 through 9.
- Layfield began work at 12:00 pm due to rain throughout the morning.
  - Layfield performed detail work on deployed liner and completed all detailing for liner deployed up to July 29.
- Tetra Tech conducted a shift change with Adam Mickey arriving back on site.
- Tetra Tech inspected the E4 lateral trench excavation to conduct a testpit log and organics were found at the base of the trench indicating that the soil between the lateral trench and the perimeter road is not the original subgrade
  - Clint Abel was notified but could not inspect immediately. Ewing is continuing to excavate the E4 lateral.
- The rain caused subgrade damage alongside the deployed liner requiring repair before further liner deployment, as well as the areas for further deployment.
  - The subgrade is too saturated to repair today.
    - Ewing to repair the subgrade during nightshift.
  - 2 m deep erosion trenches are present in the subgrade. Tetra Tech and Clint Abel will inspect and determine the best course of action to repair the subgrade at these locations.
    - Ewing will dig out the erosion trenches and backfill with rockfill in 0.9 m lifts, and compact then cap with sand.

2.5 July 30, 2020

- Weather: sunny with smoke in the air, turning to windy in the afternoon.
- See Figures 10 through 15.
- Tetra Tech and Layfield inspected the subgrade prior to the morning safety meeting.
  - The lower quarter of the slope to Phase 1A is still saturated and soft. Pickups leave ruts up to 200 mm deep in areas. Tetra Tech rejected the subgrade for deployment.
    - Ewing is stripping approximately 200 mm of saturated material off then recompacting.
  - Tetra Tech approved the rest of the subgrade for deployment to begin once Ewing proof rolled the slope with a packer.
  - Ewing continued to prep subgrade at the base of the slope and in advance of liner deployment.
    - Tetra Tech approved the subgrade as Ewing completed subgrade prep.
  - Tetra Tech inspected the subgrade at the base of the slope towards the end of the day.
    - Some soft spots were noted, and Ewing is going to scarify them and let them dry out overnight. If they are still soft in the morning, Ewing will excavate the soft spots and place dry material.
- Layfield is deploying GCL and liner on the approved subgrade while Ewing repairs the lower third of subgrade.

- Layfield deployed seven slope lengths of GCL and four slope lengths of liner.

- Layfield's QC is conducting pressure testing of seams.

2.6 July 31, 2020

- Weather: sunny and smoky with a light wind. Wind speed increased throughout the day.
- See Figures 16 through 35.
- Tetra Tech and Ewing inspected the subgrade at the base of the slope prior to the morning safety meeting.
  - Soft spots in the subgrade were found where the subgrade would move underfoot and/or deflection cracks from the packer.
  - Additional soft spots were found when the loader ran over them, causing depressions up to 50 mm deep.
  - Ewing is excavating out the soft spots with an average cut of 300 mm.
    - Additional cuts were required after the packer ran over the subgrade, and the subgrade was proof rolled with a loaded 30-ton rock truck.
  - Tetra Tech contacted Clint Green regarding the soft and yielding subgrade conditions to determine whether there could be some leeway to ensure that liner deployment is not hindered.
    - Based on the pictures that Tetra Tech provided, the saturated and soft subgrade must be excavated and replaced.
    - Tetra Tech informed Ewing of Clint's decision, and Ewing will continue to work on the subgrade as planned
  - Tetra Tech and Ewing agreed that all areas would be proof rolled with a loaded 30-ton rock truck to confirm that the subgrade is competent and ready for liner deployment.
  - Ewing will backfill the subgrade with sand in 300 mm compacted lifts.
    - Sand is too saturated to be used for backfilling. Ewing is blending subgrade materials and recompacting.
  - Ewing proof rolled the subgrade with a 30-ton rock truck in the presence of Tetra Tech.
    - 90% of the subgrade area was competent as identified by minimal to no deflection beneath rock truck tires.
    - Two soft areas were identified through proof rolling, and Ewing will remedy the soft spots prior to final subgrade sign off.
- Layfield is deploying GCL and Liner on the upper two-thirds of the slope.
  - Layfield placed three slope lengths of GCL, then placed liner.
  - The wind picked up in the afternoon, so Layfield continued to deploy GCL and laid out six more slope lengths of GCL.
- Layfield's QC continued to conduct pressure testing of deployed liner and completed pressure testing on liner seams for liner deployed prior to July 26.
- Layfield is conducting detail work on liner deployed yesterday.

- Four destructive samples were obtained from liner deployed yesterday.

2.7 August 1, 2020

- Weather: Sunny with a light wind, turning to cloudy and windy in the afternoon with a period of rain beginning at 5:00 pm
- See Figures 36 through 45.
- Tetra Tech and Ewing inspected the subgrade below the deployed liner on the lower third of the slope.
  - Soft spots identified on July 31 have been fixed.
  - The subgrade requires work to the north of liner deployed, and Ewing is working on the subgrade today.
  - Spots requiring sand were identified, and Ewing will place sand prior to liner deployment.
- Layfield is placing four slope lengths of liner on the upper two-thirds of the slope where GCL was deployed yesterday.
  - Layfield completed liner installation by first break. After break, Layfield moved to the lower third of the slope to tie in deployed liner to Phase 1A.
- After break, Layfield moved the bag line on deployed liner and moved to the bottom two-thirds of the slope to deploy liner.
  - Ewing's labour crew cleaned up the perimeter of the area and raked contours smooth for the tie in to Phase 1A.
  - Layfield and Ewing cleaned off debris from the GCL from the rainfall prior to rolling out GCL.
  - Layfield began deploying the GCL, using the skid steer to roll it out.
  - Layfield deployed nine slope lengths of GCL, then switched to liner and got six slope lengths of liner out.

2.8 August 2, 2020

- Weather: Sunny and windy.
- See Figures 46 through 54.
- Tetra Tech and Ewing inspected the subgrade on the lower third of the slope.
- Ewing is removing approximately 400 mm of subgrade at an identified soft spot with a D7 dozer.
  - Tetra Tech inspected the subgrade prior to rolling with a packer to confirm that the subgrade was firm.
  - Ewing blended the subgrade for smooth transitions and rolled it with a packer.
  - Tetra Tech inspected the subgrade after rolling and approved the subgrade for deployment.
    - Due to the packer's vibration being broken, some cat tracks were left in the subgrade, but the divots were less than 25 mm in depth.
- Ewing continued to fix soft spots in the subgrade, as identified by Tetra Tech.
- The rain from yesterday evening had minimal impact on the prepared subgrade.

  - Layfield used their skid steer to smooth the slope and add sand to erosion areas.
  - Ewing smoothed the subgrade with the packer.
  - Ewing's labourers raked the subgrade smooth at the tie in to the Phase 1A liner as well as cleaned the liner off.
- Ewing is continuing to prep subgrade on the upper two-thirds of the slope in advance of GCL deployment.
- Layfield is deploying GCL and liner to tie in to the deployed liner on the upper two-thirds of the slope.
  - Six slope lengths of GCL and four slope lengths of liner were deployed.
- Layfield is conducting extrusion detail work and pressure testing of liner seams.
- Layfield and Tetra Tech obtained destructs for liner placed up to 12:00 pm on August 2.
- Layfield moved back to the perimeter road and began deploying GCL on the upper two-thirds of the slope.
  - Six slope lengths of GCL were deployed by the end of the day.

3.0 GEOSYNTHETIC ROLL NUMBERS PLACED

Table 1 summarizes the daily geosynthetic roll numbers placed on the slope during liner installation. All panel lengths are approximate, and where 45 degree joints are used, panel length is based from the center of the panel.

Table 1: Geosynthetic Roll Numbers Placed on Slope

Date	GCL Roll Number	LLDPE Liner Roll Number	Panel Number (Length)
July 27	-	-	
July 28	-	-	
July 29	-	-	
July 30	0242-347073, 0242-247767 0242-347766, 0242-347081 0242-247763, 0242-347758 0242-347760, 0242-347872 0242-347074. 0242-347852 0242-347855, 0242-347815 0242-347842, 0242-347849 0242-347844, 0242-347820 0242-347843, 0242-347841 0242-347875, 0242-347901 0242-347805, 0242-347817 0242-347900, 0242-347894 0242-347874, 0242-347854 0242-347827, 0242-347839 0242-347821, 0242-347838 502347679, 502347678	10692-023 10692-027 10692-036 10692-022 10692-024 10692-010 10693-022 10692-021	P215 (100.2 m) P216 (107.7 m), P217 (15.6 m) P218 (125.4 m) P219 (67.3 m), P220 (56.5 m) P221 (125.2 m) P222 (26.6 m), P223 (27.5 m) P224 (126.4 m) P225 (59.0 m)

Date	GCL Roll Number	LLDPE Liner Roll Number	Panel Number (Length)
July 31	0242-347829, 0242-347075 0242-347076, 0242-347833 0242-347822, 0242-347823 0242-347847, 0242-347761 0242-347903, 0242-347824 0242-347850, 0242-347845 0242-347755, 0242-347077 0242-347832, 0242-347808 0242-347741, 0242-347078 0242-347744, 0242-347818 0242-347851, 0242-347813 0242-347846 502347699, 502347511 502347677, 502347680 502347673, 502347697 502347489, 502347853 502347494, 502347688 502347706, 502347675 502347496, 502347700 502347505	10692-021 10692-015 10692-016 10692-033	P226 (66.5 m) P227 (129.4 m) P228 (16.8 m), P229 (112.8 m) P230 (83.1 m)
August 1	0242-347848, 0242-347079 0242-347747, 0242-347879 0242-347080, 0242-347902 0242-347831, 0242-347807 0242-347896, 0242-347547 502347689, 502347506 502347703, 502347691	10692-033 10692-001 10692-025 10692-014 10693-010 10692-007 10693-023 10692-037 10692-005 10693-019 10692-019	P231 (25.2 m) P232 (128.5 m) P233 (59.4 m), P234 (71.2 m) P235 (129.4 m) P236 (13.0 m), P237 (109.8 m) P238 (115.2 m), P239 (26.0 m) P240 (127.3 m) P241 (58.7 m) P242 (77.0 m), P243 (48.4 m) P244 (33.6 m), P245 (77.0 m), P246 (13.3 m) P247 (69.3 m), P248 (57.6 m)

Date	GCL Roll Number	LLDPE Liner Roll Number	Panel Number (Length)
August 2	0242-347895, 0242-347828 0242-347878, 0242-347835 0242-347814, 0242-347756 0242-347809, 0242-347789 0242-347745, 0242-347819 0242-347791, 0242-347746 0242-347764, 0242-347787 0242-347790, 0242-347751 0242-347743, 0242-347880 0242-347765, 0242-347768 0242-347752, 0242-347759 0242-347753, 0242-347806 0242-347830, 0242-347730 0242-347811, 0242-347754 502347491, 502347671 502347674, 502347676 502347667, 502347707 502344525, 502347508 502347682, 502347701 502347705, 502347698 502347704	10693-025 10690-041 10690-040 10692-017	P249 (20.0 m), P250 (77.6 m), P251 (19.5 m) P252 (60.1 m), P253 (63.8 m) P254 (20.8 m), P255 (75.9 m), P256 (20.1 m) P257 (68.8 m)

4.0 TRIAL SEAM

Table 2 summarizes the weekly trial seam results. For fusion, the apparatus settings are temperature and speed, and for extrusion, the apparatus settings are preheat and barrel temperature. Five tests are performed for each criterion.

Table 2: Trial Seam Results

Date	Time	Fusion or Extrusion	Tech	Apparatus #	Temp or Preheat (ºF)	Speed (%) or Barrel Temp (ºF)	$Peel_{inside}$ (100 min)	$Peel_{outside}$ (100 min for Fusion 88 min for Extrusion)	Shear (120 min)	Smooth or Textured
Jul 29	13:00	Extrusion	RGP	04036	510	495	N/A	135 134 137 139 153	165 167 164 165 162	N/A
Jul 29	13:15	Extrusion	GP	04037	495	490	N/A	171 143 154 155 148	179 177 174 169 178	N/A
Jul 29	13:15	Extrusion	EA	04037	495	490	N/A	137 149 129 136 160	170 162 171 169 178	N/A

Date	Time	Fusion or Extrusion	Tech	Apparatus #	Temp or Preheat (ºF)	Speed (%) or Barrel Temp (ºF)	$Peel_{inside}$ (100 min)	$Peel_{outside}$ (100 min for Fusion 88 min for Extrusion)	Shear (120 min)	Smooth or Textured
Jul 30	10:30	Fusion	EA	WW-022	850	35	159 158 161 165 127	165 155 156 177 159	173 181 18 178 156	Textured
Jul 30	10:35	Fusion	EA	WW-022	850	55	155 142 147 148 134	138 140 150 153 133	158 157 155 160 159	Smooth
Jul 30	10:30	Fusion	RP	WW-026	850	35	132 160 142 153 139	118 132 154 155 124	163 172 175 172 165	Textured
Jul 30	10:35	Fusion	RP	WW-026	850	55	155 137 151 142 144	150 150 150 121 147	169 164 165 171 165	Smooth
Jul 30	16:40	Fusion	EA	WW-022	850	35	127 162 153 160 146	144 147 130 141 142	146 172 172 178 172	Textured
Jul 30	16:40	Fusion	RP	WW-026	850	55	136 133 125 144 134	122 145 145 142 147	141 167 150 151 146	Smooth
Jul 30	16:40	Fusion	EA	WW-022	850	55	140 143 138 141 137	133 158 141 141 149	161 170 163 162 162	Smooth
Jul 30	14:00	Extrusion	RW	EX-035	495	495	N/A	154 151 159 145 145	168 165 175 168 182	N/A
Jul 31	12:15	Fusion	EA	WW-022	850	35	114 146 143 143 129	131 154 111 123 143	160 175 162 158 173	Textured

Date	Time	Fusion or Extrusion	Tech	Apparatus #	Temp or Preheat (ºF)	Speed (%) or Barrel Temp (ºF)	$Peel_{inside}$ (100 min)	$Peel_{outside}$ (100 min for Fusion 88 min for Extrusion)	Shear (120 min)	Smooth or Textured
Jul 31	12:15	Fusion	EA	WW-022	850	55	142 147 133 144 126	141 137 146 144 141	161 161 151 164 159	Smooth
Jul 31	12:00	Fusion	RP	WW-022	850	55	143 143 155 149 142	149 139 150 151 146	148 163 152 162 156	Smooth
Jul 31	8:30	Extrusion	RW	EX-035	495	495	N/A	140 138 127 126 127	198 188 179 195 178	N/A
Aug 1	8:00	Fusion	EA	WW-022	850	35	137 162 151 164 146	155 161 153 153 154	178 159 181 178 154	Textured
Aug 1	8:00	Fusion	RP	WW-026	850	35	145 142 142 145 128	142 147 154 151 143	171 165 159 172 182	Textured
Aug 1	8:15	Fusion	EA	WW-022	850	55	130 145 144 147 124	140 143 130 145 144	164 169 172 169 171	Smooth
Aug 1	8:15	Fusion	RP	WW-026	850	55	145 146 147 150 133	144 142 127 151 147	165 163 163 162 168	Smooth
Aug 1	8:15	Extrusion	RW	EX-035	495	495	N/A	127 152 156 152 149	157 166 166 172 170	N/A
Aug 1	11:00	Fusion	DT	WW-045	850	55	114 109 117 121 119	128 129 130 136 134	135 140 152 156 139	Smooth

Date	Time	Fusion or Extrusion	Tech	Apparatus #	Temp or Preheat (ºF)	Speed (%) or Barrel Temp (ºF)	$Peel_{inside}$ (100 min)	$Peel_{outside}$ (100 min for Fusion 88 min for Extrusion)	Shear (120 min)	Smooth or Textured
Aug 1	14:53	Fusion	EA	WW-022	850	35	141 136 136 129 130	139 135 135 146 131	146 158 153 157 159	Textured
Aug 1	15:00	Fusion	RP	WW-026	850	55	135 147 148 152 138	129 142 129 144 136	154 153 145 155 156	Smooth
Aug 1	15:01	Fusion	EP	WW-045	850	55	140 142 141 143 148	137 137 131 125 128	152 153 147 155 149	Smooth
Aug 1	14:40	Fusion	EA	WW-022	850	55	135 140 114 145 144	143 142 125 147 139	151 162 157 161 160	Smooth
Aug 1	14:38	Fusion	RP	WW-026	850	35	163 155 140 139 157	119 150 147 148 124	166 157 168 168 164	Textured
Aug 1	14:45	Extrusion	RW	EX-035	495	495	N/A	125 150 145 157 127	152 152 165 158 168	N/A
Aug 2	9:00	Fusion	EA	WW-022	850	35	145 144 150 151 145	161 159 171 157 138	159 178 175 183 180	Textured
Aug 2	9:00	Fusion	EP	WW-045	850	35	128 132 146 151 159	141 132 142 138 147	200 187 176 181 181	Textured
Aug 2	9:00	Fusion	RP	WW-026	850	55	147 148 146 154 126	153 156 158 152 147	169 170 166 163 169	Smooth

Date	Time	Fusion or Extrusion	Tech	Apparatus #	Temp or Preheat (ºF)	Speed (%) or Barrel Temp (ºF)	$Peel_{inside}$ (100 min)	$Peel_{outside}$ (100 min for Fusion 88 min for Extrusion)	Shear (120 min)	Smooth or Textured
Aug 2	9:00	Fusion	EA	WW-022	850	55	144 151 150 145 137	147 148 145 150 146	139 145 153 158 147	Smooth
Aug 2	9:00	Fusion	EP	WW-045	850	55	142 153 146 149 146	160 148 152 159 153	151 163 159 162 161	Smooth
Aug 2	8:45	Extrusion	RW	EX-035	495	495	N/A	142 144 155 162 160	146 147 163 152 174	N/A
Aug 2	12:00	Extrusion	RW	EX-035	495	495	N/A	110 143 113 128 125	154 165 172 166 164	N/A
Aug 2	15:55	Extrusion	RW	O4037	95	495	N/A	134 123 145 126 141	164 169 166 171 156	N/A

5.0 NON-DESTRUCTIVE TESTING

Table 3 summarizes the weekly non-destructive pressure testing results.

Table 3: Non-Destructive Testing Results

Date Fused	Date Tested	Time Tested	Seam #	psi Start	psi End	Pass or Fail	Notes
Jul 21	Jul 29	17:17	P172-P176 Vertical	40	40	Pass	
Jul 21	Jul 29	17:18	P180-P181 Cross	40	40	Pass	
Jul 21	Jul 29	17:18	P176-P182 Vertical	40	40	Pass	
Jul 22	Jul 29	17:21	P185-P186 Cross	40	40	Pass	
Jul 22	Jul 29	17:19	P182-P186 Vertical	40	40	Pass	
Jul 22	Jul 29	17:21	P181-186 Vertical	40	40	Pass	
Jul 22	Jul 29	18:23	P189-P190 Cross	40	40	Pass	
Jul 22	Jul 29	17:22	P186-P190 Vertical	40	40	Pass	
Jul 22	Jul 29	18:23	P185-P190 Vertical	40	40	Pass	
Jul 22	Jul 29	18:23	P185-P189 Vertical	40	39	Pass	
Jul 23	Jul 29	18:24	P189-P193 Vertical	40	40	Pass	
Jul 23	Jul 29	17:40	P193-P197 Vertical	40	40	Pass	

Date Fused	Date Tested	Time Tested	Seam #	psi Start	psi End	Pass or Fail	Notes
Jul 24	Jul 29	17:51	P200-P201 Cross	40	40	Pass	
Jul 24	Jul 29	17:51	P197-P201 Vertical	40	40	Pass	
Jul 24	Jul 29	17:52	P201-P204 Vertical	40	40	Pass	
Jul 25	Jul 29	17:55	P204-P207 Vertical	40	40	Pass	
Jul 25	Jul 29	17:54	P207-P210 Vertical	40	40	Pass	
Jul 25	Jul 29	17:55	P210-P214 Vertical	40	40	Pass	
Jul 21	Jul 30	12:58	P175-P176 Cross	40	40	Pass	
Jul 21	Jul 30	13:41	P171-P175 Vertical	40	40	Pass	
Jul 21	Jul 30	12;58	P171-P176 Vertical	40	40	Pass	
Jul 21	Jul 30	13:44	P179-P180 Cross	40	40	Pass	
Jul 21	Jul 30	13:02	P181-P182 Cross	40	39	Pass	
Jul 21	Jul 30	13:02	P176-P181 Vertical	40	40	Pass	
Jul 21	Jul 30	13:44	P175-P179 Vertical	40	40	Pass	Top of seam to patch
Jul 21	Jul 30	14:04	P175-P179 Vertical	40	40	Pass	Patch to bottom of seam
Jul 21	Jul 30	12:58	P176-P180 Vertical	40	40	Pass	
Jul 21	Jul 30	12:58	P175-P180 Vertical	40	40	Pass	
Jul 22	Jul 30	13:12	P184-P185 Cross	40	40	Pass	
Jul 22	Jul 30	13:53	P183-P184 Cross	40	40	Pass	
Jul 22	Jul 30	13:12	P181-P185 Vertical	40	40	Pass	
Jul 22	Jul 30	13:03	P181-P184 Vertical	40	40	Pass	
Jul 22	Jul 30	13:03	P180-P184 Vertical	40	39	Pass	
Jul 22	Jul 30	13:45	P179-P184 Vertical	40	39	Pass	
Jul 22	Jul 30	14:13	P187-P188 Cross	40	40	Pass	
Jul 22	Jul 30	13:23	P188-P189 Cross	40	40	Pass	
Jul 22	Jul 30	14:13	P183-P187 Vertical	40	40	Pass	Top of seam to patch
Jul 22	Jul 30	13:12	P184-P189 Vertical	40	40	Pass	
Jul 22	Jul 30	13:23	P184-P188 Vertical	40	39	Pass	
Jul 22	Jul 30	13:59	P183-P188 Vertical	40	40	Pass	
Jul 23	Jul 30	14:23	P191-P192 Cross	40	40	Pass	
Jul 23	Jul 30	14:14	P188-P192 Vertical	40	40	Pass	Patch to bottom of seam
Jul 23	Jul 30	14:14	P187-P192 Vertical	40	40	Pass	
Jul 23	Jul 30	8:16	P192-P194 Cross	40	39	Pass	
Jul 23	Jul 30	8:16	P193-P194 Cross	40	40	Pass	
Jul 23	Jul 30	14:23	P187-P191 Vertical	40	40	Pass	Top of seam to patch
Jul 23	Jul 30	14:41	P187-P191 Vertical	40	40	Pass	Patch to bottom of seam
Jul 23	Jul 30	13:24	P189-P192 Vertical	40	40	Pass	
Jul 23	Jul 30	13:24	P188-P192 Vertical	40	40	Pass	Top of seam to patch
Jul 23	Jul 30	14:42	P195-P196 Cross	40	40	Pass	
Jul 23	Jul 30	8:22	P196-P197 Cross	40	40	Pass	
Jul 23	Jul 30	14:24	P192-P196 Vertical	40	40	Pass	
Jul 23	Jul 30	14:24	P191-P196 Vertical	40	40	Pass	
Jul 23	Jul 30	8:16	P192-P197 Vertical	40	40	Pass	
Jul 23	Jul 30	14:42	P191-P195 Vertical	40	40	Pass	
Jul 24	Jul 30	15:00	P198-P199 Cross	40	40	Pass	
Jul 24	Jul 30	8:26	P199-P200 Cross	40	40	Pass	
Jul 24	Jul 30	14:49	P196-P199 Vertical	40	40	Pass	Top of seam to patch
Jul 24	Jul 30	8:22	P197-P200 Vertical	40	40	Pass	
Jul 24	Jul 30	8:22	P196-P200 Vertical	40	39	Pass	

Date Fused	Date Tested	Time Tested	Seam #	psi Start	psi End	Pass or Fail	Notes
Jul 24	Jul 30	14:43	P196-P199 Vertical	40	40	Pass	Patch to bottom of seam
Jul 24	Jul 30	14:43	P195-P199 Vertical	40	40	Pass	
Jul 24	Jul 30	15:00	P195-P198 Vertical	40	40	Pass	
Jul 24	Jul 30	9:33	P202-P203 Cross	40	40	Pass	
Jul 24	Jul 30	8:49	P203-P204 Cross	40	40	Pass	
Jul 24	Jul 30	14:50	P199-P202 Vertical	40	40	Pass	Top of seam to patch
Jul 24	Jul 30	8:49	P200-P204 Vertical	40	40	Pass	
Jul 24	Jul 30	14:50	P199-P202 Vertical	40	40	Pass	Patch to bottom of seam
Jul 24	Jul 30	8:26	P200-P203 Vertical	40	40	Pass	
Jul 24	Jul 30	15:00	P198-P202 Vertical	40	40	Pass	
Jul 24	Jul 30	9:33	P199-P203 Vertical	40	40	Pass	
Jul 25	Jul 30	15:31	P205-P206 Cross	40	40	Pass	
Jul 25	Jul 30	8:59	P206-P207 Cross	40	40	Pass	
Jul 25	Jul 30	8:49	P203-P207 Vertical	40	40	Pass	
Jul 25	Jul 30	8:59	P203-P206 Vertical	40	40	Pass	Top of seam to patch
Jul 25	Jul 30	9:33	P203-P206 Vertical	40	40	Pass	Patch to bottom of seam
Jul 25	Jul 30	15:15	P208-P209 Cross	40	40	Pass	
Jul 25	Jul 30	9:00	P209-P210 Cross	40	40	Pass	
Jul 25	Jul 30	9:42	P212-P213 Cross	40	39	Pass	
Jul 25	Jul 30	9:21	P213-P214 Cross	40	40	Pass	
Jul 25	Jul 30	9:20	P210-P213 Vertical	40	40	Pass	
Jul 25	Jul 30	8:59	P206-P210 Vertical	40	40	Pass	
Jul 25	Jul 30	15:37	P206-P209 Vertical	40	40	Pass	
Jul 25	Jul 30	9:42	P209-P213 Vertical	40	40	Pass	
Jul 25	Jul 30	15:37	P209-P212 Vertical	40	40	Pass	Top of seam to patch
Jul 25	Jul 30	15:16	P205-P209 Vertical	40	40	Pass	
Jul 25	Jul 30	15:16	P205-P208 Vertical	40	40	Pass	
Jul 25	Jul 30	15:15	P209-P212 Vertical	40	40	Pass	Patch to bottom of seam
Jul 25	Jul 30	15:15	P208-P212 Vertical	40	40	Pass	
Jul 18	Jul 31	8:36	P169-P170 Cross	40	40	Pass	
Jul 18	Jul 31	8:48	P166-P170 Vertical	40	40	Pass	
Jul 18	Jul 31	8:37	P165-P170 Vertical	40	40	Pass	
Jul 18	Jul 31	8:37	P165-P169 Vertical	40	40	Pass	
Jul 21	Jul 31	8:55	P174-P175 Cross	40	40	Pass	
Jul 21	Jul 31	8:55	P173-P174 Cross	40	40	Pass	
Jul 21	Jul 31	8:55	P170-P175 Vertical	40	40	Pass	
Jul 21	Jul 31	8:36	P170-P174 Vertical	40	40	Pass	
Jul 21	Jul 31	8:31	P169-P174 Vertical	40	40	Pass	
Jul 21	Jul 31	8:31	P169-P173 Vertical	40	40	Pass	
Jul 21	Jul 31	8:30	P169-P173 Vertical	40	40	Pass	Top of seam to patch
Jul 21	Jul 31	8:11	P177-P178 Cross	40	40	Pass	Patch to bottom of seam
Jul 21	Jul 31	8:09	P178-P179 Cross	40	39	Pass	
Jul 21	Jul 31	8:09	P174-P179 Vertical	40	39	Pass	
Jul 21	Jul 31	8:04	P174-P178 Vertical	40	40	Pass	
Jul 21	Jul 31	8:12	P173-P178 Vertical	40	40	Pass	
Jul 21	Jul 31	8:12	P173-P177 Vertical	40	40	Pass	
Jul 22	Jul 31	8:11	P178-P183 Vertical	40	40	Pass	Patch to bottom of seam
Jul 22	Jul 31	8:11	P177-P183 Vertical	40	40	Pass	

Date Fused	Date Tested	Time Tested	Seam #	psi Start	psi End	Pass or Fail	Notes
Jul 22	Jul 31	7:59	P183-P187 Vertical	40	40	Pass	Patch to bottom of seam
Jul 25	Jul 31	7:59	P202-P205 Vertical	40	40	Pass	
Jul 30	Aug 1	9:52	P215-P216 Cross	40	40	Pass	
Jul 30	Aug 1	15:24	P214-P216 Vertical	40	40	Pass	
Jul 30	Aug 1	15:43	P213-P216 Vertical	40	39	Pass	
Jul 30	Aug 1	9:52	P213-P215 Vertical	40	40	Pass	
Jul 30	Aug 1	9:17	P218-P219 Cross	40	40	Pass	
Jul 30	Aug 1	15:25	P216-P219 Vertical	40	40	Pass	
Jul 30	Aug 1	9:17	P216-P218 Vertical	40	40	Pass	
Jul 30	Aug 1	9:52	P215-P218 Vertical	40	40	Pass	
Jul 30	Aug 1	10:07	P220-P221 Cross	40	40	Pass	
Jul 30	Aug 1	15:42	P221-P222 Cross	40	40	Pass	
Jul 30	Aug 1	15:25	P219-P222 Vertical	40	40	Pass	
Jul 30	Aug 1	15:42	P219-P221 Vertical	40	40	Pass	
Jul 30	Aug 1	9:17	P218-P221 Vertical	40	40	Pass	
Jul 30	Aug 1	9:22	P224-P225 Cross	40	40	Pass	
Jul 30	Aug 1	15:25	P222-P225 Vertical	40	40	Pass	
Jul 30	Aug 1	15:42	P221-P225 Vertical	40	40	Pass	
Jul 30	Aug 1	10:07	P218-P220 Vertical	40	40	Pass	
Jul 30	Aug 1	9:22	P221-P224 Vertical	40	40	Pass	
Jul 30	Aug 1	10:07	P220-P224 Vertical	40	40	Pass	
Jul 31	Aug 1	10:09	P226-P227 Cross	40	40	Pass	
Jul 31	Aug 1	15:27	P227-P228 Cross	40	40	Pass	
Jul 31	Aug 1	15:26	P225-P228 Vertical	40	40	Pass	
Jul 31	Aug 1	9:22	P225-P227 Vertical	40	40	Pass	
Jul 31	Aug 1	9:41	P229-P230 Cross	40	40	Pass	
Jul 31	Aug 1	9:22	P224-P227 Vertical	40	40	Pass	
Jul 31	Aug 1	15:26	P228-P230 Vertical	40	40	Pass	
Jul 31	Aug 1	9:41	P227-P230 Vertical	40	40	Pass	
Jul 31	Aug 1	10:08	P224-P226 Vertical	40	40	Pass	
Jul 31	Aug 1	9:41	P227-P229 Vertical	40	39	Pass	
Aug 1	Aug 1	15:27	P230-P233 Vertical	40	39	Pass	
Aug 1	Aug 1	9:34	P230-P232 Vertical	40	40	Pass	Top of seam to patch
Aug 1	Aug 1	9:41	P230-P232 Vertical	40	40	Pass	Patch to bottom of seam
Aug 1	Aug 1	9:41	P229-P232 Vertical	40	40	Pass	

6.0 DESTRUCTIVE TESTING

While destructive samples were obtained throughout the week, no destructive testing was performed.

7.0 PHOTO LOG



Figure 1: Organics in E4 Lateral



Figure 2: Organics in E4 Lateral



Figure 3: Trees Removed from Organic Layer in E4 Lateral

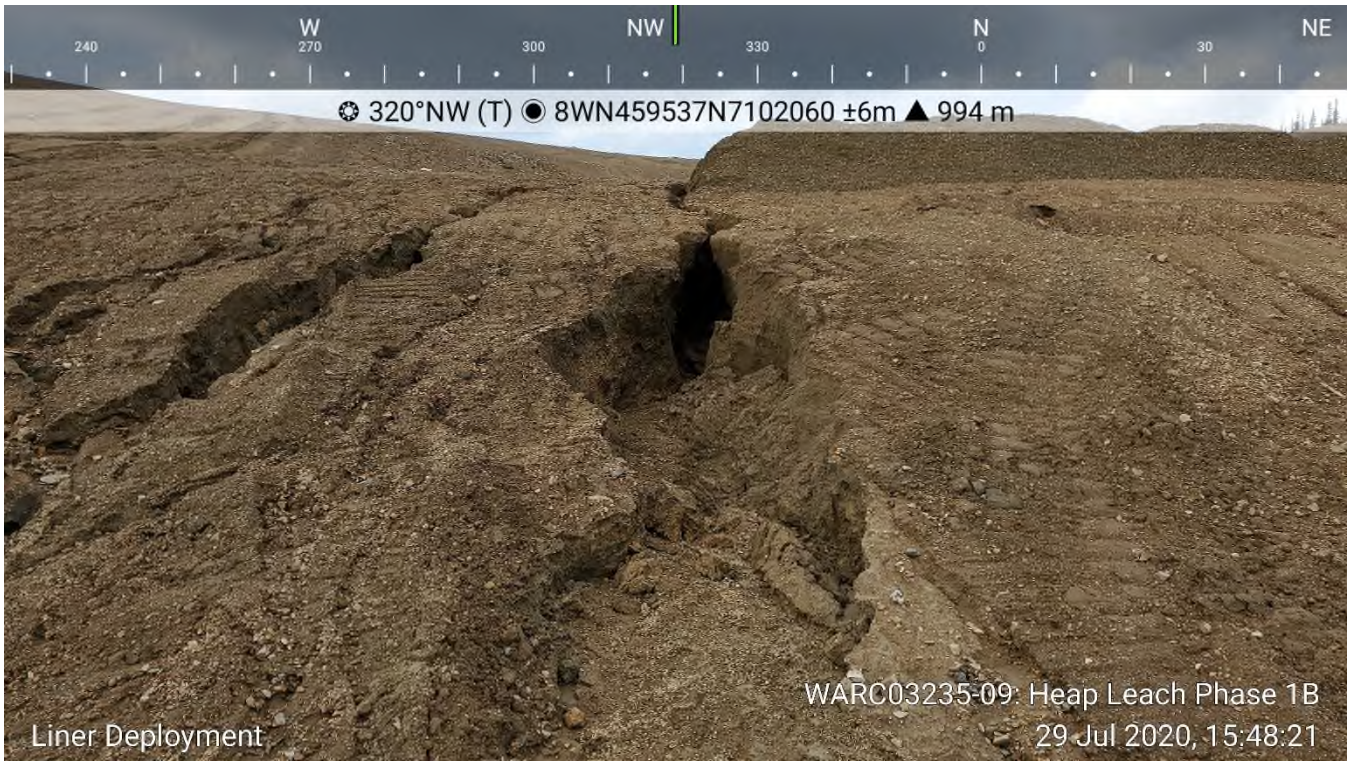


Figure 4: 2 m Deep Trench due to Erosion from Rainfall



Figure 5: Saturated Subgrade from Rainfall



Figure 6: Rilling Erosion from Rainfall

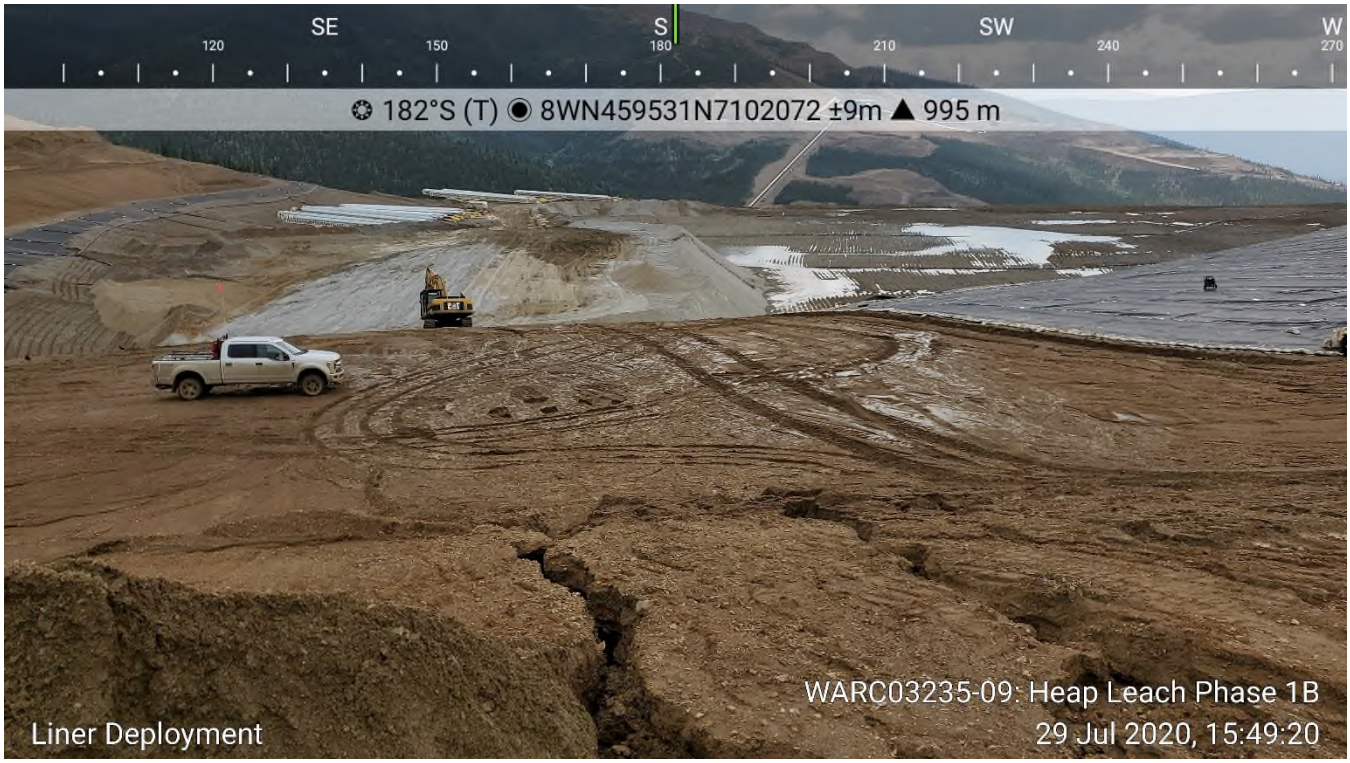


Figure 7: Saturated Base of Slope Requiring Excavation



Figure 8: Erosion along Deployed Liner



Figure 9: Extent of Damaged Subgrade ahead of Liner Deployment



Figure 10: Prepared Subgrade



Figure 11: Subgrade Repaired and Recompacted



Figure 12: Packer Compacting Sand Fill



Figure 13: End of Deployment due to Unprepared Subgrade at Base of Slope



Figure 14: Preparing the Subgrade at the Base of the Slope



Figure 15: Overall Slope as of July 30



Figure 16: Wheel Ruts in Soft Subgrade from Loader

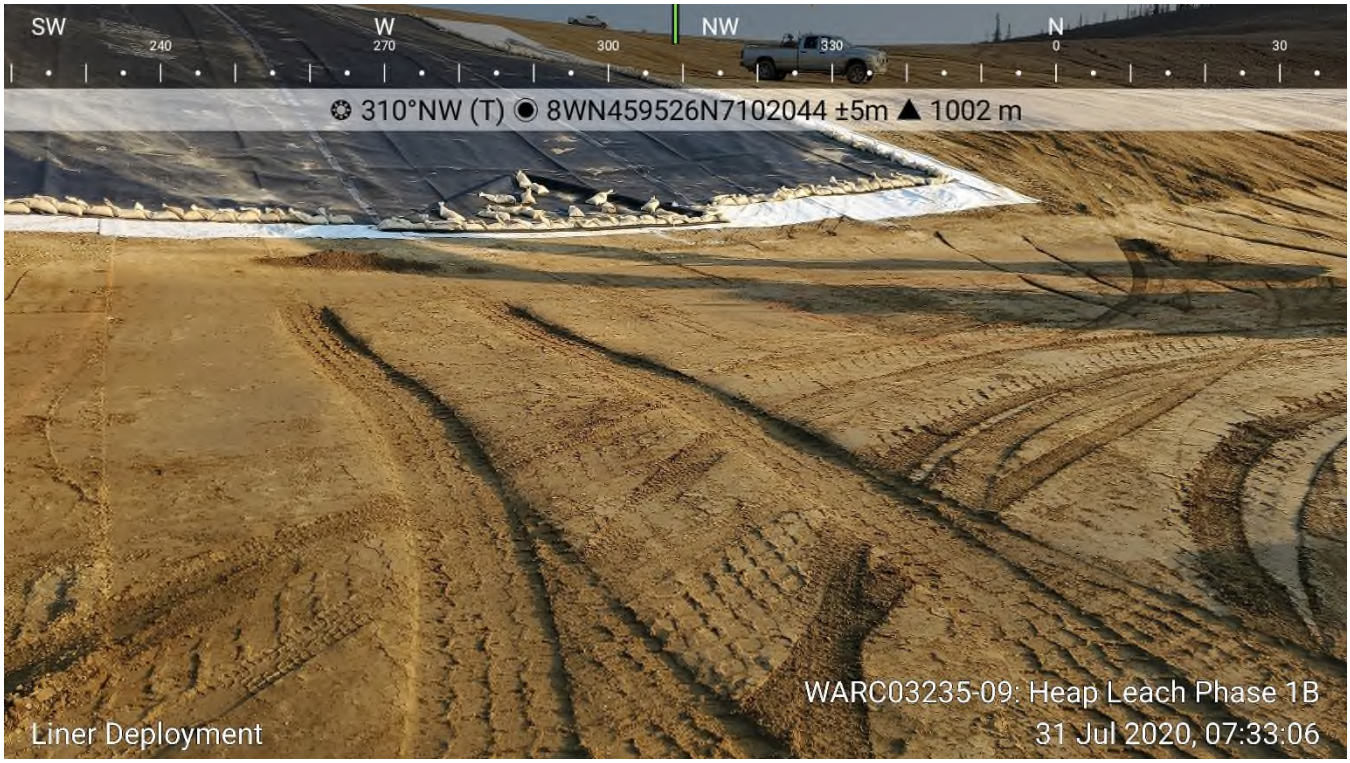


Figure 17: Soft Subgrade Conditions



Figure 18: Excavating Soft Subgrade

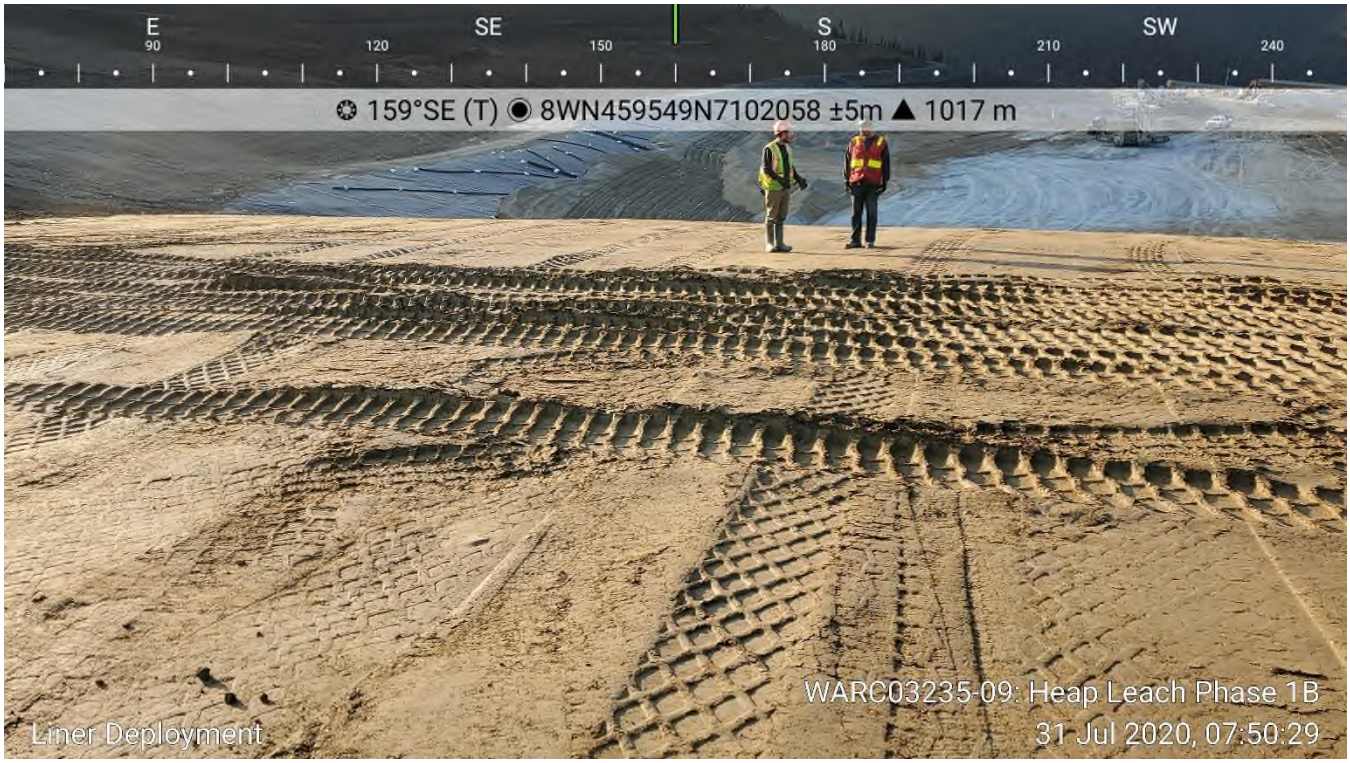


Figure 19: Soft Subgrade Conditions



Figure 20: Competent Subgrade after Proof Roll with 30-ton Rock Truck



Figure 21: Excavating Soft Subgrade Materials



Figure 22: Proof Rolling Excavated Subgrade with 30-Ton Rock Truck

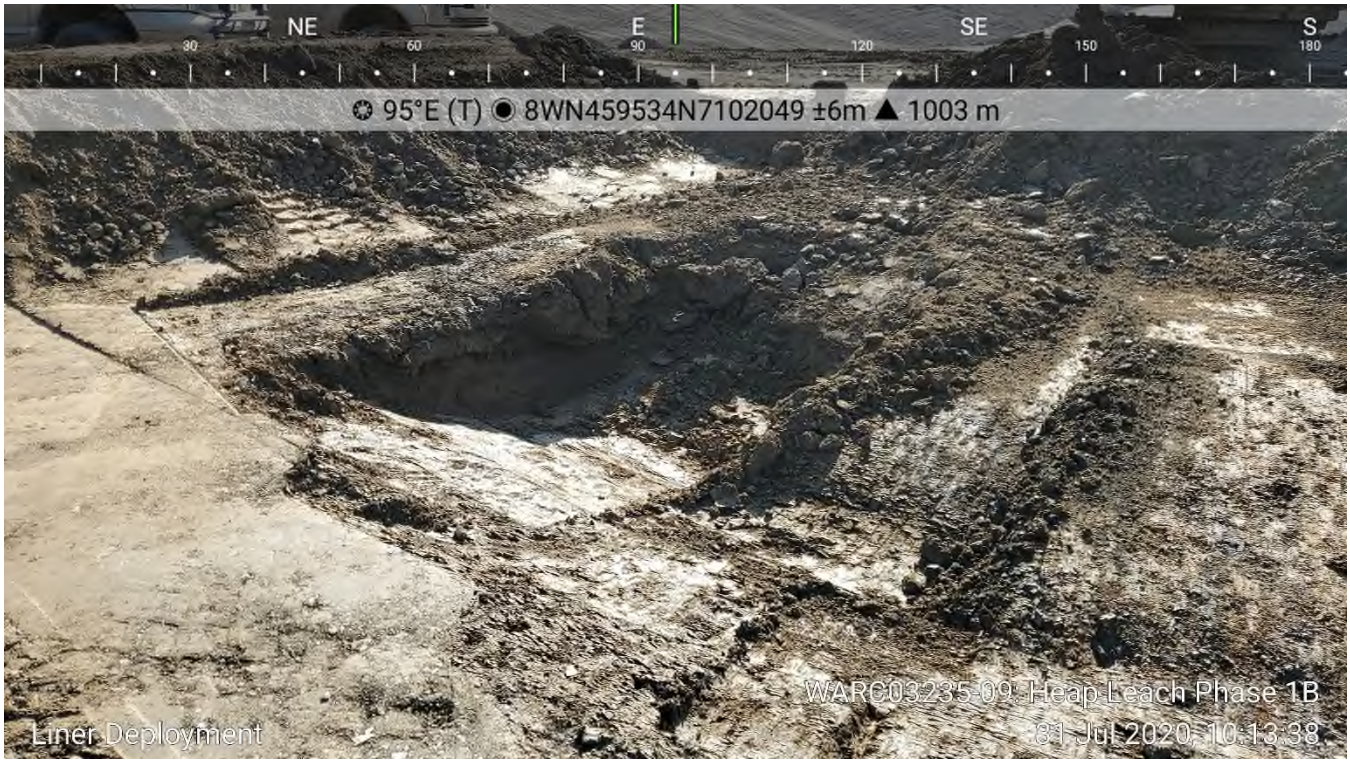


Figure 23: Excavated Soft Spot



Figure 24: Extra Excavation of Soft Subgrade



Figure 25: Sand Backfill after Proof Roll



Figure 26: Repairing Subgrade



Figure 27: Subgrade Repaired prior to Compaction

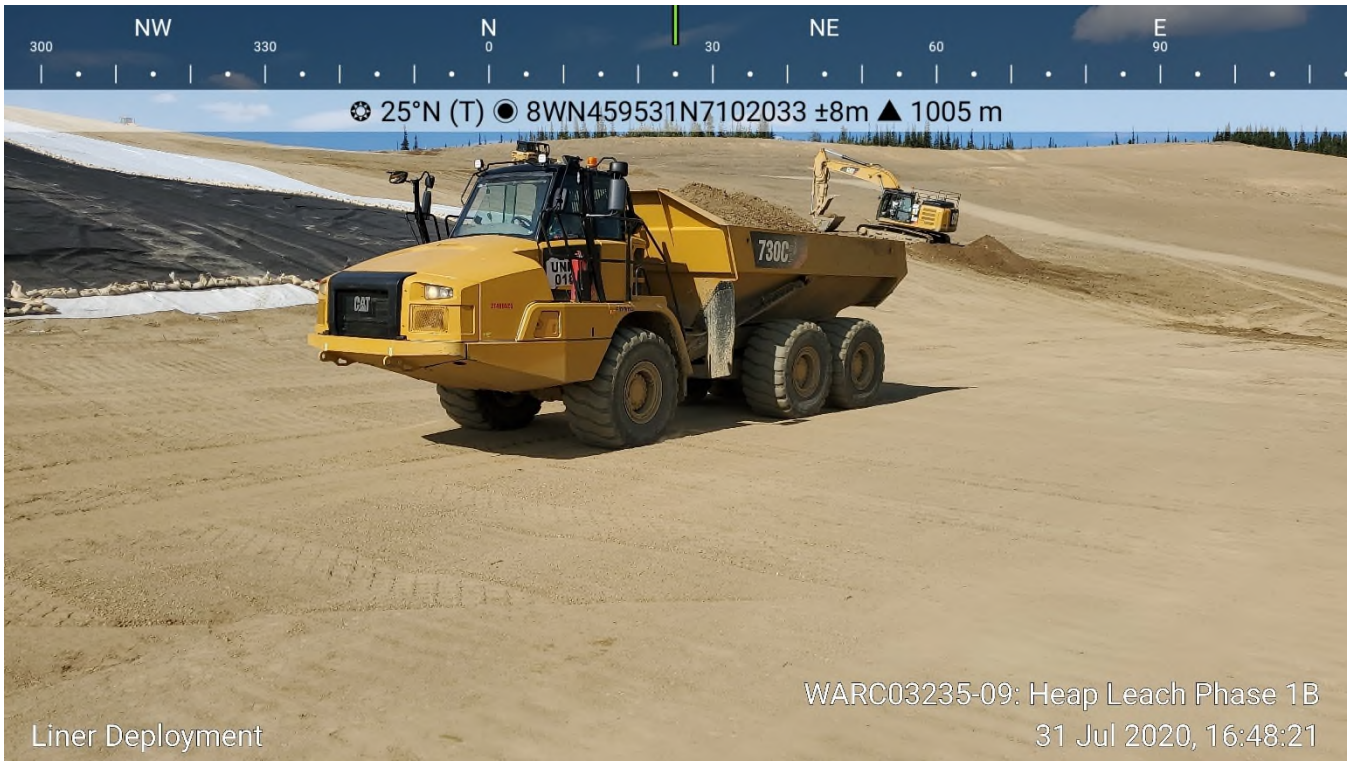


Figure 28: Proof Rolling Subgrade



Figure 29: Areas Identified by Proof Rolling for Remedial Work



Figure 30: Prepared and Inspected Subgrade



Figure 31: GCL in Advance of Deployment



Figure 32: Repair Patches on GCL

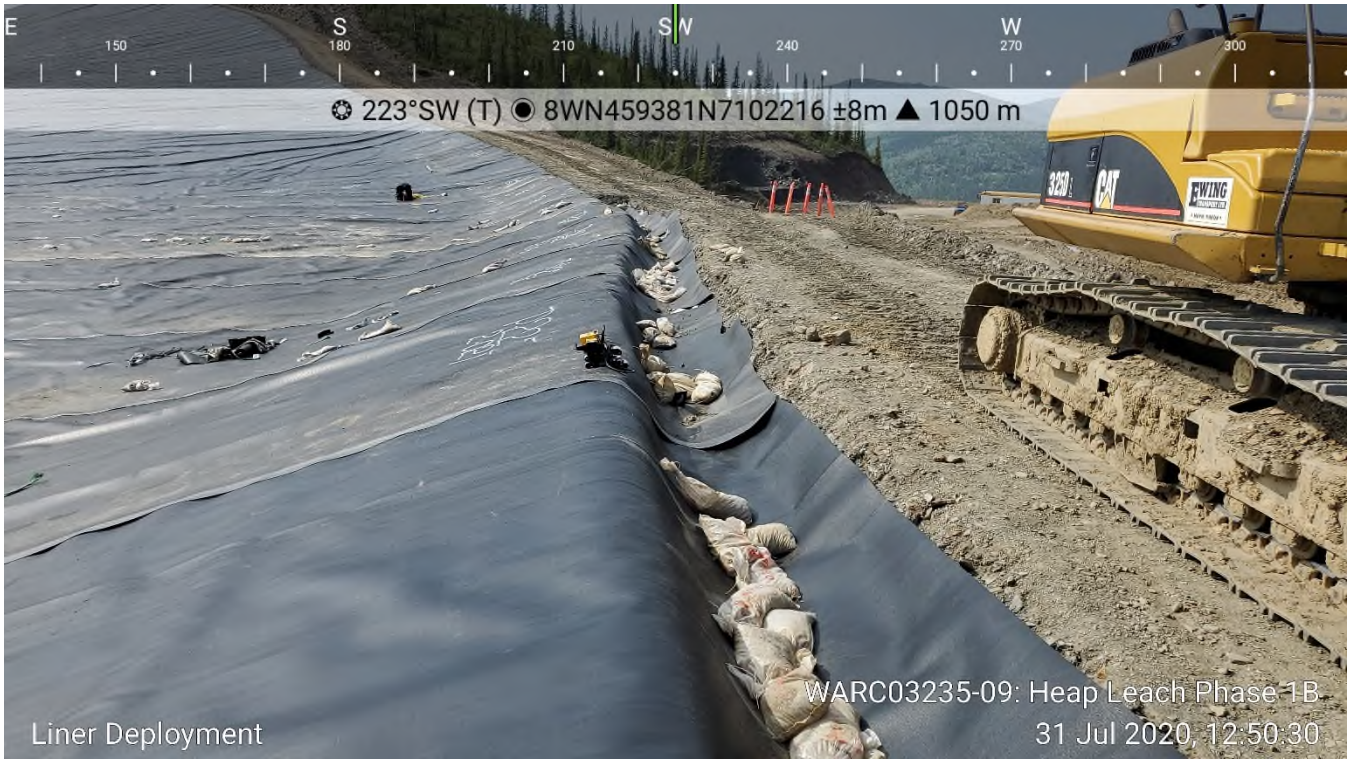


Figure 33: Liner in Anchor Trench



Figure 34: Anchor Trench in Advance of GCL Deployment



Figure 35: Overall Deployment as of July 31



Figure 36: Prepared Subgrade Ready for Liner Deployment



Figure 37: Subgrade Requiring Minimal Remedial Fills



Figure 38: GCL prior to Liner Deployment



Figure 39: Liner Edge Two Thirds Down Slope



Figure 40: Cleaning GCL in Advance of Liner Deployment



Figure 41: Toe of Slope Prepared for Liner Deployment



Figure 42: GCL Deployed on Lower Third of Slope



Figure 43: Bentonite at GCL Overlap



Figure 44: GCL prior to Liner Deployment

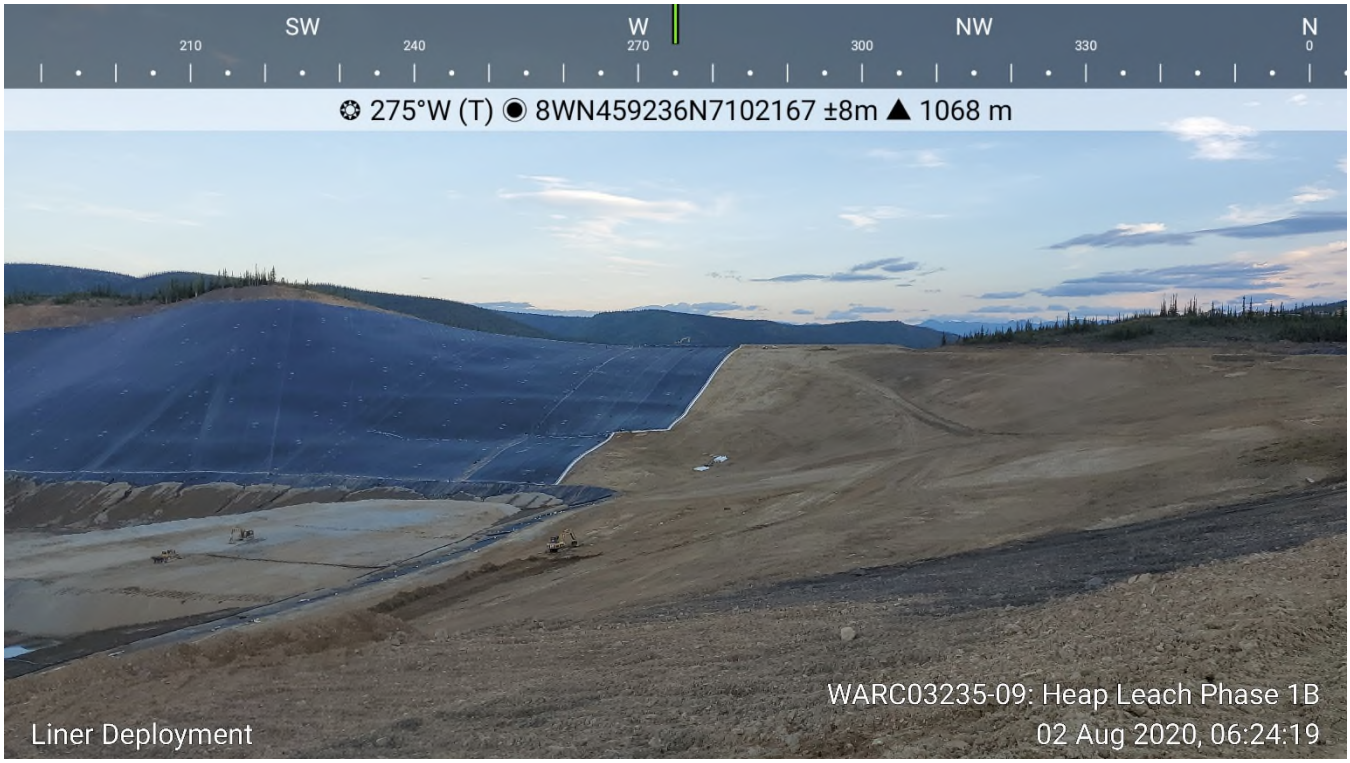


Figure 45: Overall Deployment as of August 1

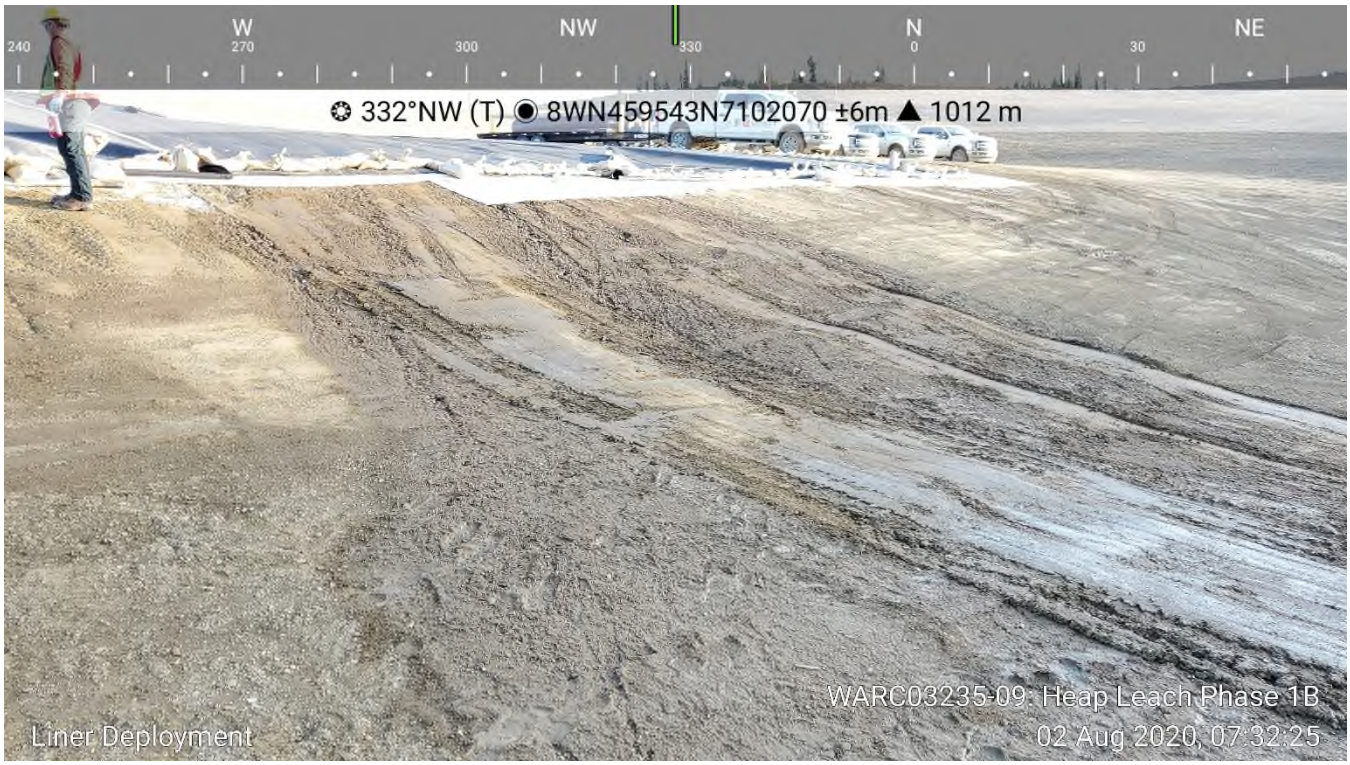


Figure 46: Subgrade after Rainfall on August 1



Figure 47: Smoothed out Subgrade prior to Rolling



Figure 48: Ewing Cleaning Up Toe of Slope



Figure 49: Rolling Subgrade prior to Deployment



Figure 50: Prepared and Inspected Subgrade

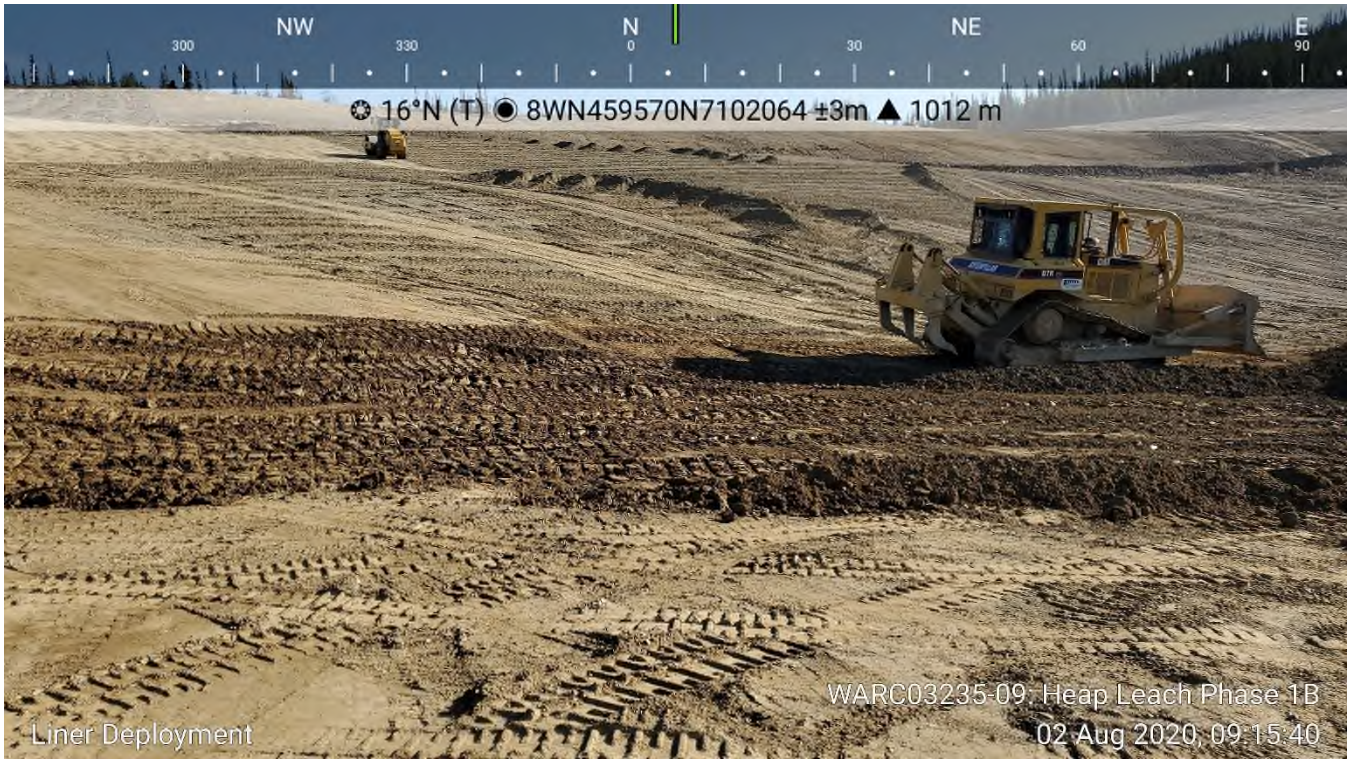


Figure 51: Cutting Out Identified Soft Spot



Figure 52: Prepared and Inspected Subgrade



Figure 53: Deployed GCL



Figure 54: Overall Deployment as of Aug 2

TETRA TECH

WEEKLY FIELD REPORT

ISSUED FOR USE

Project:	Eagle Gold Heap Leach Phase 1B	**Date:**	August 9, 2020
Location:	Eagle Gold Mine	**Contractor:**	Ewing Transport / Layfield
Client:	Victoria Gold Corp.	**Contractor's Rep:**	Marshall Ewing / Chad Messervey
Contact:	Clint Abel	**Contractor's Email:**	
Weather:	Variable (see daily entries)	**Tetra Tech Representative:**	Adam Mickey
File:	704-ENG.WARC03235-09	**Status:**	Issued for Use

1.0 INTRODUCTION

Tetra Tech Canada Inc. (Tetra Tech) was retained by Victoria Gold Corp. (Victoria Gold) to provide CQA services at the Eagle Gold mine located north of Mayo, Yukon, at Dublin Gulch for the Eagle Gold Heap Leach Phase 1B expansion (Phase 1B). Mr. Adam Mickey, EIT, is Tetra Tech's representative on site.

Forte Dynamics (Forte) out of Fort Collins, Colorado provided the design and specification for Phase 1B, and Forte's representative is Clint Green.

Clint Abel, of JDS Energy & Mining, is Victoria Gold's project manager on site at the Eagle Gold mine.

Ewing Transport (Ewing), based out of Mayo, Yukon, is the construction contractor for Phase 1B.

Layfield Environmental Containment (Layfield) has been retained to provide and install the liner for Phase 1B, and their supervisor on site is Chad Messervey.

The following Field Report outlines Tetra Tech's CQA for the period of August 3, 2020, to August 9, 2020.

2.0 DAILY REPORTS

2.1 Highlights

- Layfield deployed approximately 5,589 m of liner covering an area of approximately 38,005 m^2.
- Layfield is placing three panels of GCL for every two panels of 80 mm LLDPE liner.

2.2 August 3, 2020

- Sunny and calm, turning to cloudy with periods of rain in the late afternoon.
- See Figures 1 through 4.
- A heavy rainstorm occurred on the evening of August 2. Therefore, Tetra Tech and Ewing inspected the subgrade prior to deployment.
  - No erosion was noted in the subgrade due to the rain.

Tetra Tech Canada Inc.
61 Wasson Place
Whitehorse, YT Y1A 0H7 CANADA
Tel 867.668.3068 Fax 867.668.4349

  - Ewing is going to roll the subgrade with a packer in advance of GCL deployment today.
- Ewing is working on the subgrade at the top of the slope to cover rocky areas with sand.
- Layfield is covering GCL deployed on August 2 with liner.
  - Layfield checked the GCL for hydration and none of the GCL hydrated.
  - Four slope lengths of liner were deployed and fused.
- Layfield moved to the bottom third of the slope and deployed six slope lengths of GCL and four slope lengths of liner.
- Tetra Tech and Layfield's QC conducted destructive testing for all liner deployed up to August 2.
  - All destructive samples passed testing.
- Layfield is conducting pressure testing on liner deployed up to August 2.
- After liner deployment, Layfield finished the day by doing detail extrusion work and tying in to Phase 1A.

2.3 August 4, 2020

- Weather: mostly sunny and calm, turning to mostly cloudy with periods of rain in the afternoon.
- See Figures 5 through 7.
- Tetra Tech inspected the subgrade conditions for today's deployment and approved the subgrade once Ewing rolled one spot with a packer.
- Tetra Tech discussed with Ewing about sanding rocky areas of the subgrade. Ewing is going to sand areas on nightshift that they will not be able to access once deployment begins on the east perimeter road.
- Layfield is continuing to deploy GCL and liner.
  - Layfield deployed five slope lengths of GCL and three slope lengths of liner.
  - Rain in the afternoon did not inhibit liner deployment.
- Layfield conducted extrusion welding detail work on deployed liner.
- Layfield's QC conducted pressure testing of seams on deployed liner.
  - Layfield noted some seams failed requiring re-blocks at intersections.

2.4 August 5, 2020

- Weather: partly cloudy with scattered rain showers in the afternoon.
- See Figures 8 through 15.
- Tetra Tech inspected the subgrade in advance of today's deployment with Ewing.
  - Nightshift did not get subgrade to spec.
  - Ewing is continuing to place sand on rocky areas and compact today.
  - The packer is rolling the subgrade in advance of deployment.

  - Ewing rock picked the subgrade to remove angular rocks greater than 50 mm that could be plucked out of the subgrade.
- Tetra Tech approved the subgrade for deployment after remedial work had been completed.
- Layfield is continuing deployment today.
  - Layfield placed four slope lengths of GCL and three slope lengths of liner.
- Layfield performed detail extrusion work on deployed liner in the afternoon.
- Additional organics were found in the E4 lateral beyond the limits of excavation of the organics found last week. Ewing is going to step the lateral out to see if they get out of the organics.
- Ewing is going to place sand on rocky areas of the slope on nightshift in advance of liner deployment tomorrow.

2.5 August 6, 2020

- Weather: partly cloudy, turning to cloudy and windy in the afternoon with rain beginning at 4:00 pm.
- See Figures 16 through 33.
- Tetra Tech inspected the subgrade for today's deployment.
  - Rocky areas were identified and covered with sand.
  - Ewing continued to roll the subgrade with a packer.
  - Tetra Tech approved the subgrade for today's deployment.
- Ewing is continuing to work on subgrade prep.
- Ewing was digging anchor trench in advance of deployment and reached the header drain trench by the end of the day.
  - Ewing is raking the edge of the anchor trench to remove rocks.
  - Roots were identified along areas of the anchor trench up to 300 mm in depth.
    - No organic soils were identified, and the roots were cut flush with the anchor trench sidewall.
  - Tetra Tech noted rocky areas along the edge of the anchor trench and directed Ewing to place sand in these areas.
- Layfield and Tetra Tech signed off on subgrade acceptance for liner deployed between July 17 and August 5.
- Layfield is performing detail extrusion work on deployed liner.
- Layfield and Tetra Tech obtained destructive samples for testing.
  - Destructive samples are caught up for deployment up to and including August 5.
- Layfield is beginning deployment along the north perimeter road, which is between the header drain trench and the west perimeter road.
  - Layfield changed the direction of deployment and tied in to liner deployed on Aug 5.
  - Layfield is leaving slack at the tie in to allow for contraction of the liner.

- Ewing is backfilling the anchor trench along the west perimeter road as the liner is beginning to pull out.

2.6 August 7, 2020

- Weather: partly cloudy.
- See Figures 34 through 39.
- Rainfall occurred overnight. Tetra Tech inspected the subgrade in the deployment area, and no damage occurred. Tetra Tech approved the subgrade for liner deployment.
- Ewing is continuing to prepare subgrade for deployment.
- Layfield is continuing to deploy GCL and liner.
  - Layfield performed a correction in deployment angle due to curve in north perimeter road.
- Tetra Tech and Layfield performed testing of destructive samples.
  - All samples passed destructive testing.
  - Destructive testing is caught up for all liner deployed up to and including August 5.

2.7 August 8, 2020

- No work performed today due to rain.

2.8 August 9, 2020

- Weather: mostly cloudy with periods of wind, turning to rain at 6:00 pm.
- See Figures 40 through 43.
- Tetra Tech inspected the subgrade for today's deployment.
  - No erosion of the subgrade from the rain.
  - The subgrade may be too saturated for deployment. Layfield will attempt to deploy, and if it is too saturated, will let the liner dry out and move to detail.
    - Subgrade was not too saturated, and Tetra Tech approved the subgrade for deployment.
- Layfield deployed GCL and liner.
  - Layfield deployed eight runs of liner and fused it by the end of the day.

3.0 GEOSYNTHETIC ROLL NUMBERS PLACED

Table 1 summarizes the daily geosynthetic roll numbers placed on the slope during liner installation. All panel lengths are approximate, and where 45 degree joints are used, panel length is based from the center of the panel.

Table 1: Geosynthetic Roll Numbers Placed on Slope

Date	GCL Roll Number	LLDPE Liner Roll Number	Panel Number (Length)
August 3	0242-347826 502347815, 502347810 502347825, 502344522 502344528, 502344516 502344521	10692-037 10692-029 10692-013 10693-017 10692-031 10692-034 10692-020 10692-002 10692-011 10692-017 10693-001 10692-006	P258 (67.2 m) P259 (128.3 m) P260 (50.4 m), P261 (77.0 m) P262 (128.7 m) P263 (44.0 m), P264 (81.6 m) P265 (128.5 m) P266 (47.8 m), P267 (72.4 m) P268 (128.0 m) P269 (53.0 m) P270 (55.1 m) P271 (51.9 m), P272 (44.2 m), P273 (25.0 m) P274 (16.0 m)
August 4	0242-347742, 0242-347757 5023445211, 502347007 502344507, 502347107 502344514, 502347109 502344524, 502344517 502344523, 502344510 502344583, 502344526 502344534, 502344518 502347135, 502347118 502344529, 502344501 502318995, 502344530 502344537, 502344527 502344536, 502344493 502344487, 502347427 502347025, 502347022 502347111, 502347108 502347016	10692-011 10692-030 10692-009 10690-018 10697-013 10690-020 10692-006 10692-035	P275 (76.1 m) P276 (128.8 m) P277 (97.4 m), P278 (30.0 m) P279 (128.1 m) P280 (125.6 m) P281 (18.6 m), P282 (108.1 m) P283 (109.0 m) P284 (85.6 m)
August 5	502344613, 502344512 502344515, 502344496 502343570, 502344612 502344614, 502344519 502347009, 502344162 502343965, 502344513 502343571, 502347128 502343564, 502343579 502347006, 502347105 502347018, 502347137 502347136, 502347110 502346959, 502344492 502344520, 502347017 502344601	10692-035 10692-012 10692-032 10692-003 10692-004 10690-022 10690-014 10690-021	P285 (41.3 m) P286 (129.9 m) P287 (107.8 m), P289 (12.0 m) P288 (13.5 m), P290 (113.7 m) P291 (118.6 m) P292 (47.5 m), P293 (76.2 m) P294 (129 m) P295 (84.3 m)

Date	GCL Roll Number	LLDPE Liner Roll Number	Panel Number (Length)
August 6	0242-347834 502347121, 502347119 502347119, 502347005 502347004, 502346961 502347012, 502347123 502347115, 502346973 502347106, 502346980 502347011, 502346962 502347124, 502347014 502347020, 502347162 502347013	10692-008 10698-016 10690-033 10690-039 10690-035 10690-032 10690-016	P296 (29.5 m), P297 (16.3 m), P298 (8.5 m), P303 (25.1 m), P304 (27.9 m), P306 (12.4 m) P299 (5.5 m), P300 (9.2 m), P302 (19.8 m) P301 (4.2 m), P310 (38.6 m), P311 (40.3 m), P312 (37.9 m) P305 (35.1 m), P307 (32.2 m), P308 (34.2 m), P309 (36.6 m) P313 (4.6 m), P314 (45.2 m), P315 (47.2 m), P316 (23.3 m) P317 (25.8 m), P318 (52.3 m) P319 (2.0 m)
August 7	502347125, 502346958 502343540, 502343687 502347116, 502347117 502346993, 502346964 502346994, 502347021 502347120, 502347059 502346972, 502346983 502347104, 502346963 502346971, 502347112 502347113, 502347126 502347138, 502346992 502347015, 502346995 502347129, 502347114 502347122	10690-033 10690-032 10690-012 10699-002 10690-019 10690-017 10698-011 10699-004 10699-001	P320 (43.5 m) P321 (12.7 m) P322 (61.0 m), P323 (49.5 m) P324 (16.7 m), P325 (100.9 m) P326 (92.7 m), P327 (14.7 m) P328 (53.4 m), P329 (55.3 m) P330 (33.1 m), P331 (19.7 m), P332 (50.1 m) P333 (56.6 m) P334 (66.3 m) P335 (50.3 m)
August 8	-	-	-
August 9	502347019, 502347024 502343626, 502347008 502343623, 502343627 502343595, 502343683 502344115, 502343647 502344112, 502346960 502344129, 502343619 502346936, 502343636 502343649, 502343682 502343622, 502343638 502343656, 502347060 502346974, 502346978 502343577, 502347055 502346976, 502343559 502343568, 502343592 502346981, 502343593 502346970, 502346979 502346975, 502346977 502346629, 502346991 502343631 0242-347583	10699-001 10699-012 10699-017 10699-003 10699-018 10699-029 10699-030 10699-013 10699-016 10699-031 10699-021	P336 (68.3 m), P338 (8.9 m) P337 (63.5 m), P339 (65.7 m) P340 (66.8 m), P341 (66.8 m) P342 (73.1 m), P343 (51.1 m) P344 (96.4 m), P345 (28.1 m) P346 (125.3 m) P347 (124.2 m) P348 (35.9 m), P349 (87.1 m) P350 (76.5 m), P351 (47.9 m) P352 (128.3 m) P353 (4.7 m)

4.0 TRIAL SEAM

Table 2 summarizes the weekly trial seam results. For fusion, the apparatus settings are temperature and speed, and for extrusion, the apparatus settings are preheat and barrel temperature. Five tests are performed for each criterion.

Table 2: Trial Seam Results

Date	Time	Fusion or Extrusion	Tech	Apparatus #	Temp or Preheat (ºF)	Speed (%) or Barrel Temp (ºF)	$Peel_{inside}$ (100 min)	$Peel_{outside}$ (100 min for Fusion 88 min for Extrusion)	Shear (120 min)	Smooth or Textured
Aug 3	8:15	Fusion	EA	WW-022	850	35	119 156 144 138 117	155 159 135 171 149	178 179 148 181 179	Textured
Aug 3	8:15	Fusion	EA	WW-022	850	55	154 144 152 159 149	138 148 142 154 139	159 167 160 167 155	Smooth
Aug 3	8:00	Fusion	EP	WW-045	850	55	153 143 146 142 146	150 156 148 152 151	156 171 159 173 160	Smooth
Aug 3	8:05	Fusion	EP	WW-045	850	35	153 153 150 154 156	153 149 162 154 161	155 176 161 178 160	Textured
Aug 3	8:00	Fusion	CC	WW-026	850	55	152 156 146 160 154	134 154 144 157 156	163 167 151 166 157	Smooth
Aug 3	8:00	Fusion	CC	WW-026	850	35	150 158 100 157 130	156 157 140 158 148	173 182 159 174 173	Textured
Aug 3	12:30	Extrusion	RW	04037	495	495	N/A	118 124 103 143 129	148 155 146 167 147	N/A
Aug 3	13:00	Fusion	EA	WW-022	850	35	138 144 137 137 123	132 18 132 140 111	140 150 156 164 137	Textured

Date	Time	Fusion or Extrusion	Tech	Apparatus #	Temp or Preheat (ºF)	Speed (%) or Barrel Temp (ºF)	$Peel_{inside}$ (100 min)	$Peel_{outside}$ (100 min for Fusion 88 min for Extrusion)	Shear (120 min)	Smooth or Textured
Aug 3	13:00	Fusion	EA	WW-022	850	55	132 135 129 133 140	129 141 141 159 129	148 156 140 156 156	Smooth
Aug 3	13:30	Fusion	EP	WW-045	850	35	141 104 128 136 117	120 154 118 142 136	144 159 160 163 156	Textured
Aug 3	13:25	Fusion	EP	WW-045	850	55	132 142 128 135 129	135 127 134 134 129	152 141 156 145 158	Smooth
Aug 3	13:28	Fusion	CC	WW-026	850	35	160 155 134 129 152	141 147 137 142 140	159 162 166 176 158	Textured
Aug 3	13:26	Fusion	CC	WW-026	850	55	133 143 132 145 140	117 154 125 149 134	160 153 161 137 160	Smooth
Aug 3	14:30	Extrusion	RW	04037	495	495	N/A	104 110 105 102 102	142 147 145 158 147	N/A
Aug 3	17:15	Extrusion	RP	04036	495	495	N/A	127 138 128 147 141	149 164 156 162 153	N/A
Aug 4	9:15	Fusion	EA	WW-022	850	35	133 148 132 141 130	145 160 147 150 158	172 170 171 170 161	Textured
Aug 4	9:15	Fusion	CC	WW-045	850	55	144 149 140 148 153	148 152 155 151 144	157 158 160 164 159	Smooth

Date	Time	Fusion or Extrusion	Tech	Apparatus #	Temp or Preheat (ºF)	Speed (%) or Barrel Temp (ºF)	$Peel_{inside}$ (100 min)	$Peel_{outside}$ (100 min for Fusion 88 min for Extrusion)	Shear (120 min)	Smooth or Textured
Aug 4	9:15	Fusion	EA	WW-022	850	55	142	135	164	Smooth
							137	140	171	
							153	138	169	
							149	138	172	
							144	135	157	
Aug 4	9:15	Fusion	CC	WW-045	850	35	144	133	157	Textured
							157	147	183	
							157	131	177	
							151	159	174	
							150	129	173	
Aug 4	13:00	Fusion	EA	WW-022	850	55	128	138	147	Smooth
							111	129	135	
							120	135	147	
							130	135	154	
							121	129	139	
Aug 4	13:00	Fusion	EA	WW-022	850	35	138	133	169	Textured
							159	139	162	
							138	150	161	
							164	153	171	
							143	140	160	
Aug 4	14:00	Fusion	CC	WW-045	850	55	126	128	142	Smooth
							124	133	148	
							129	129	149	
							127	137	143	
							133	133	147	
Aug 4	16:45	Fusion	EA	WW-022	850	35	135	127	148	Textured
							129	123	153	
							132	124	165	
							139	133	165	
							143	124	147	
Aug 4	16:45	Fusion	EA	WW-022	850	55	123	118	140	Smooth
							129	125	147	
							129	135	149	
							134	135	150	
							106	133	144	
Aug 5	11:45	Fusion	CC	WW-045	850	35	138	137	149	Textured
							142	136	160	
							138	126	151	
							141	144	166	
							140	143	166	
Aug 5	11:45	Fusion	JC	WW-022	850	35	145	157	152	Textured
							131	147	176	
							141	127	161	
							151	138	179	
							140	158	171	

Date	Time	Fusion or Extrusion	Tech	Apparatus #	Temp or Preheat (ºF)	Speed (%) or Barrel Temp (ºF)	$Peel_{inside}$ (100 min)	$Peel_{outside}$ (100 min for Fusion 88 min for Extrusion)	Shear (120 min)	Smooth or Textured
Aug 5	11:45	Fusion	CC	WW-045	850	55	127 139 128 140 137	150 144 150 147 144	145 155 150 153 156	Smooth
Aug 5	11:45	Fusion	JC	WW-022	850	55	136 124 130 140 131	141 147 145 143 144	147 147 149 152 149	Smooth
Aug 5	15:00	Extrusion	TH	04037	495	495	N/A	155 154 143 150 150	186 190 177 164 175	N/A
Aug 5	16:00	Fusion	CC	WW-045	850	35	120 129 155 143 147	139 125 128 153 143	163 176 171 169 165	Textured
Aug 5	16:00	Fusion	CC	WW-045	850	55	136 151 138 142 134	138 141 129 131 127	159 160 161 158 167	Smooth
Aug 5	17:00	Fusion	DT	WW-022	850	55	139 148 146 151 151	145 142 148 150 156	177 177 179 172 171	Smooth
Aug 6	9:25	Fusion	CC	WW-045	850	35	123 135 126 146 118	128 131 154 134 134	157 177 166 182 164	Textured
Aug 6	9:25	Fusion	CC	WW-045	850	55	144 155 148 144 150	149 157 159 153 152	158 156 153 168 155	Smooth
Aug 6	9:25	Fusion	JC	WW-022	850	55	150 162 166 153 141	142 141 145 145 144	151 175 172 181 165	Smooth

Date	Time	Fusion or Extrusion	Tech	Apparatus #	Temp or Preheat (ºF)	Speed (%) or Barrel Temp (ºF)	$Peel_{inside}$ (100 min)	$Peel_{outside}$ (100 min for Fusion 88 min for Extrusion)	Shear (120 min)	Smooth or Textured
Aug 6	12:45	Extrusion	TH	04037	495	495	N/A	105 139 130 131 116	195 155 155 164 165	N/A
Aug 6	12:50	Fusion	DT	WW-026	850	50	114 124 135 130 136	143 120 136 140 135	154 155 159 171 166	Smooth
Aug 6	13:30	Fusion	CC	WW-045	850	35	138 155 150 145 152	125 143 130 141 169	167 170 171 168 172	Textured
Aug 6	13:30	Fusion	CC	WW-045	850	55	133 153 140 133 144	133 131 135 136 143	169 168 171 170 167	Smooth
Aug 6	13:30	Fusion	JC	WW-022	850	55	151 148 131 133 138	144 143 141 141 141	175 174 171 175 172	Smooth
Aug 6	13:30	Extrusion	TH	04037	495	495	N/A	143 142 139 135 125	177 166 164 172 164	N/A
Aug 6	17:15	Extrusion	EA	EX-008	490	495	N/A	133 150 131 150 149	166 171 165 164 168	N/A
Aug 7	9:00	Fusion	JC	WW-022	850	35	156 153 144 157 165	123 157 146 152 133	168 165 179 175 175	Textured
Aug 7	9:00	Fusion	CC	WW-045	850	35	147 148 149 161 132	144 139 162 159 140	160 162 144 177 176	Textured

Date	Time	Fusion or Extrusion	Tech	Apparatus #	Temp or Preheat (ºF)	Speed (%) or Barrel Temp (ºF)	$Peel_{inside}$ (100 min)	$Peel_{outside}$ (100 min for Fusion 88 min for Extrusion)	Shear (120 min)	Smooth or Textured
Aug 7	9:00	Fusion	CC	WW-045	850	55	143 144 135 137 141	138 151 137 153 140	150 158 149 164 155	Smooth
Aug 7	9:00	Fusion	JC	WW-022	850	35	141 145 143 122 129	144 149 151 141 140	157 166 158 165 159	Smooth
Aug 7	13:30	Fusion	JC	WW-022	850	55	133 130 112 126 137	136 146 130 139 128	149 139 137 146 143	Smooth
Aug 7	13:30	Fusion	CC	WW-045	850	35	148 152 133 142 145	137 133 160 155 145	157 170 175 174 166	Textured
Aug 7	13:30	Fusion	JC	WW-022	850	35	132 142 139 145 146	136 154 153 157 143	173 161 168 174 170	Textured
Aug 7	13:30	Fusion	CC	WW-045	850	55	136 124 135 121 130	124 137 132 129 135	147 138 147 137 142	Smooth
Aug 7	16:00	Fusion	JC	WW-022	850	40	140 149 160 150 143	150 140 157 140 130	162 170 168 174 172	Smooth-Textured
Aug 9	9:00	Fusion	CC	WW-045	850	55	145 143 153 146 139	150 148 143 144 139	172 158 164 157 168	Smooth
Aug 9	9:00	Fusion	JC	WW-022	850	35	141 156 153 145 145	148 165 150 150 153	173 179 174 182 157	Textured

Date	Time	Fusion or Extrusion	Tech	Apparatus #	Temp or Preheat (ºF)	Speed (%) or Barrel Temp (ºF)	$Peel_{inside}$ (100 min)	$Peel_{outside}$ (100 min for Fusion 88 min for Extrusion)	Shear (120 min)	Smooth or Textured
Aug 9	9:00	Fusion	CC	WW-045	850	35	150	160	177	Textured
							146	158	185	
							154	152	186	
							155	163	181	
							154	140	175	
Aug 9	9:00	Fusion	JC	WW-022	850	55	140	147	164	Smooth
							144	124	165	
							152	137	160	
							146	135	165	
							146	136	155	
Aug 9	13:30	Fusion	JC	WW-022	850	35	130	117	151	Textured
							141	147	156	
							142	122	154	
							148	138	160	
							125	133	162	
Aug 9	13:30	Fusion	JC	WW-022	850	55	126	133	139	Smooth
							127	123	140	
							127	121	140	
							124	125	125	
							121	129	144	
Aug 9	13:30	Fusion	CC	WW-045	850	35	133	151	150	Textured
							147	129	160	
							136	129	160	
							124	140	164	
							131	135	170	
Aug 9	14:30	Fusion	CC	WW-026	850	55	123	130	144	Smooth
							112	135	140	
							114	130	153	
							127	131	150	
							120	130	131	
Aug 9	16:00	Fusion	CC	WW-054	850	52	128	123	143	Smooth
							115	119	140	
							117	127	139	
							114	120	140	
							128	119	141	
Aug 9	16:30	Fusion	CC	WW-054	850	35	139	141	166	Smooth
							147	149	164	
							142	153	150	
							139	144	163	
							138	127	157	

5.0 NON-DESTRUCTIVE TESTING

Table 3 summarizes the weekly non-destructive pressure testing results.

Table 3: Non-Destructive Testing Results

Date Fused	Date Tested	Time Tested	Seam #	psi Start	psi End	Pass or Fail	Notes
Jul 30	Aug 3	13:50	P215-P217 Vertical	40	40	Pass	
Jul 30	Aug 3	13:52	P217-P218 Cross	40	39	Pass	
Jul 30	Aug 3	13:49	P212-P215 Vertical	40	39	Pass	Top of seam to patch
Jul 31	Aug 3	13:49	P212-P215 Vertical	40	40	Pass	Patch to bottom of seam
Jul 30	Aug 3	14:09	P223-P224 Cross	40	39	Pass	
Jul 30	Aug 3	13:52	P217-P220 Vertical	40	40	Pass	
Jul 30	Aug 3	14:07	P220-P223 Vertical	40	40	Pass	
Jul 31	Aug 3	14:09	P223-P226 Vertical	40	40	Pass	
Jul 31	Aug 3	14:27	P226-P229 Vertical	40	40	Pass	
Aug 1	Aug 3	14:32	P231-P232 Cross	40	40	Pass	
Aug 1	Aug 3	14:37	P234-P235 Cross	40	40	Pass	
Aug 1	Aug 3	14:28	P229-P231 Vertical	40	40	Pass	
Aug 1	Aug 3	14:32	P232-P234 Vertical	40	40	Pass	
Aug 1	Aug 3	14:37	P235-P237 Vertical	40	40	Pass	
Aug 1	Aug 3	14:37	P234-P237 Vertical	40	40	Pass	
Aug 1	Aug 3	14:32	P231-P234 Vertical	40	40	Pass	
Aug 1	Aug 3	14:45	P237-P239 Vertical	40	40	Pass	
Aug 1	Aug 3	13:59	P215-P244 Vertical	40	40	Pass	
Aug 1	Aug 3	15:08	P242-P244 Vertical	40	40	Pass	
Aug 1	Aug 3	15:08	P242-P243 Vertical	40	40	Pass	
Aug 1	Aug 3	14:06	P244-P220 Vertical	40	40	Pass	
Aug 1	Aug 3	15:09	P244-P245 Vertical	40	40	Pass	
Aug 1	Aug 3	15:09	P243-P245 Vertical	40	40	Pass	
Aug 1	Aug 3	14:07	P220-P247 Vertical	40	39	Pass	
Aug 1	Aug 3	15:46	P245-P247 Vertical	40	40	Pass	
Aug 1	Aug 3	15:46	P245-P246 Vertical	40	40	Pass	
Aug 1	Aug 3	14:11	P226-P247 Vertical	40	40	Pass	
Aug 1	Aug 3	15:47	P246-P248 Vertical	40	39	Pass	
Aug 2	Aug 3	14:27	P226-P250 Vertical	40	40	Pass	
Aug 2	Aug 3	15:28	P249-P250 Vertical	40	40	Pass	
Aug 2	Aug 3	15:28	P248-P250 Vertical	40	38	Pass	
Aug 2	Aug 3	16:02	P251-P252 Cross	40	40	Pass	
Aug 2	Aug 3	15:36	P253-P254 Cross	40	40	Pass	
Aug 2	Aug 3	14:28	P250-P231 Vertical	40	39	Pass	
Aug 2	Aug 3	14:51	P231-P254 Vertical	40	40	Pass	
Aug 2	Aug 3	15:36	P252-P254 Vertical	40	40	Pass	
Aug 2	Aug 3	15:36	P252-P253 Vertical	40	38	Pass	
Aug 2	Aug 3	16:03	P251-P253 Vertical	40	40	Pass	
Aug 2	Aug 3	14:50	P237-P254 Vertical	40	40	Pass	
Aug 2	Aug 3	15:37	P254-P255 Vertical	40	40	Pass	
Aug 2	Aug 3	15:37	P253-P255 Vertical	40	40	Pass	
Aug 2	Aug 3	14:50	P237-P257 Vertical	40	40	Pass	

Date Fused	Date Tested	Time Tested	Seam #	psi Start	psi End	Pass or Fail	Notes
Aug 2	Aug 3	16:05	P255-P257 Vertical	40	38	Pass	
Aug 2	Aug 3	16:05	P255-P256 Vertical	40	38	Pass	
Aug 3	Aug 4	15:12	P241-P260 Vertical	40	40	Pass	
Aug 3	Aug 4	15:12	P240-P259 Vertical	40	40	Pass	
Aug 3	Aug 4	17:28	P260-P263 Vertical	40	40	Pass	
Aug 3	Aug 4	17:41	P260-P262 Vertical	40	40	Pass	
Aug 3	Aug 4	17:41	P259-P262 Vertical	40	40	Pass	
Aug 3	Aug 4	17:29	P263-P266 Vertical	40	40	Pass	
Aug 3	Aug 4	17:42	P262-P266 Vertical	40	40	Pass	
Aug 3	Aug 4	17:44	P262-P265 Vertical	40	40	Pass	
Aug 3	Aug 4	17:30	P266-P269 Vertical	40	40	Pass	
Aug 3	Aug 4	17:43	P265-P269 Vertical	40	40	Pass	
Jul 22	Aug 6	10:40	P179-P183 Vertical	40	39	Pass	
Jul 22	Aug 6	13:46	P178-P183 Vertical	40	40	Pass	Top of seam to patch
Jul 22	Aug 6	13:46	P178-P183 Vertical	40	40	Pass	Patch to bottom of seam
Jul 23	Aug 6	13:11	P190-P193 Vertical	40	40	Pass	
Jul 25	Aug 6	11:09	P211-P212 Cross	40	40	Pass	
Jul 25	Aug 6	10:43	P202-P206 Vertical	40	40	Pass	Top of seam to patch
Jul 25	Aug 6	10:43	P202-P206 Vertical	40	40	Pass	Patch to bottom of seam
Jul 25	Aug 6	14:51	P208-P211 Vertical	40	40	Pass	
Aug 1	Aug 6	15:17	P237-P238 Cross	40	40	Pass	
Aug 1	Aug 6	15:37	P238-P241 Vertical	40	40	Pass	Top of seam to patch
Aug 1	Aug 6	15:12	P238-P241 Vertical	40	40	Pass	Patch to bottom of seam
Aug 1	Aug 6	15:12	P238-P240 Vertical	40	40	Pass	
Aug 1	Aug 6	15:17	P237-P240 Vertical	40	40	Pass	
Aug 1	Aug 6	11:09	P212-P242 Vertical	40	40	Pass	
Aug 1	Aug 6	11:09	P211-P242 Vertical	40	40	Pass	
Aug 1	Aug 6	11:20	P247-P249 Vertical	40	40	Pass	
Aug 1	Aug 6	11:20	P247-P248 Vertical	40	39	Pass	Top of seam to patch
Aug 1	Aug 6	15:47	P247-P248 Vertical	40	40	Pass	Patch to bottom of seam
Aug 2	Aug 6	13:51	P250-P252 Vertical	40	40	Pass	Top of seam to patch
Aug 2	Aug 6	13:51	P250-P252 Vertical	40	40	Pass	Patch to bottom of seam
Aug 2	Aug 6	11:16	P250-P251 Vertical	40	40	Pass	
Aug 3	Aug 5	13:11	P258-P259 Cross	40	40	Pass	
Aug 3	Aug 5	17:41	P259-P260 Cross	40	40	Pass	
Aug 3	Aug 5	13:12	P2261-P262 Cross	40	40	Pass	
Aug 3	Aug 5	17:42	P262-P263 Cross	40	40	Pass	
Aug 3	Aug 5	13:00	P240-P258 Vertical	40	39	Pass	
Aug 3	Aug 5	13:00	P239-P258 Vertical	40	40	Pass	
Aug 3	Aug 5	17:43	P265-P266 Cross	40	40	Pass	
Aug 3	Aug 5	13:12	P259-P261 Vertical	40	40	Pass	
Aug 3	Aug 5	13:14	P265-P268 Vertical	40	39	Pass	
Aug 3	Aug 5	13:13	P261-P265 Vertical	40	40	Pass	
Aug 3	Aug 6	13:13	P264-P268 Vertical	40	40	Pass	
Aug 1	Aug 3	9:34	P230-P232 Vertical	40	40	Pass	Top of seam to patch
Aug 1	Aug 3	15:01	P235-P236 Cross	40	40	Pass	
Aug 1	Aug 3	14:37	P234-P235 Cross	40	40	Pass	
Aug 3	Aug 4	15:12	P241-P259 Vertical	40	40	Pass	

Date Fused	Date Tested	Time Tested	Seam #	psi Start	psi End	Pass or Fail	Notes
Aug 3	Aug 5	13:13	P264-P265 Cross	40	40	Pass	
Aug 3	Aug 7	14:21	P232-P233 Cross	40	40	Pass	

6.0 DESTRUCTIVE TESTING

Table 4 summarizes the weekly destructive testing results. Five tests are performed for each criterion.

Table 4: Destructive Testing Results

Date Fused	Time Fused	Tech	Apparatus	Location (UTM is +/- 4 m)	Sample ID	$Peel_{in}$ (100 min)	$Peel_{out}$ (100 min)	Shear (120 min)	Pass or Fail
Jul 24	11:01	RW	WW-026	P200-P201 Cross Left Side of Seam	D97	166 134 159 164 142	138 158 154 165 142	156 184 182 186 173	Pass
Jul 30	17:28	RP	WW-026	P219-P222 Vertical Top of Seam	D98	153 151 148 147 146	139 150 137 140 139	165 142 165 141 162	Pass
Jul 30	12:23	EA	WW-022	P216-P219 Vertical Top of Seam	D99	158 162 145 160 138	144 143 149 156 149	146 156 161 164 155	Pass
Jul 30	17:01	EA	WW-022	P220-P221 Cross Left Side of Seam	D100	154 153 170 169 122	137 159 142 147 154	178 180 166 171 168	Pass
Jul 30	18:26	EA	WW-022	P221-P224 Vertical Bottom of Seam	D101	147 138 146 146 146	153 128 143 135 154	156 160 155 163 162	Pass
Jul 30	18:06	EA	WW-022	P222-P225 Vertical Top of Seam	D102	149 160 146 147 147	111 149 118 156 138	156 132 158 147 161	Pass
Jul 31	14:07	RP	WW-026	P224-P226 Vertical Top of Seam	D103	153 140 153 153 156	151 151 154 155 154	150 160 154 149 155	Pass

Date Fused	Time Fused	Tech	Apparatus	Location (UTM is +/- 4 m)	Sample ID	$Peel_{in}$ (100 min)	$Peel_{out}$ (100 min)	Shear (120 min)	Pass or Fail
Jul 31	12:47	EA	WW-022	P226-P227 Cross Left Side of Seam	D104	164	155	186	Pass
						135	152	176	
						157	124	179	
						142	155	177	
						140	151	180	
Jul 31	13:10	RP	WW-026	P225-P228 Vertical Top of Seam	D105	139	156	156	Pass
						160	144	158	
						136	155	161	
						155	143	164	
						156	147	138	
Jul 31	13:43	EA	WW-022	P228-P230 Vertical Top of Seam	D106	142	157	141	Pass
						150	154	162	
						145	149	156	
						153	158	164	
						147	139	144	
Aug 1	8:45	RP	WW-026	P230-P233 Vertical Top of Seam	D107	145	138	163	Pass
						150	160	141	
						151	121	135	
						154	158	145	
						144	141	152	
Aug 1	10:35	EA	WW-022	P233-P236 Vertical Top of Seam	D108	152	150	152	Pass
						154	149	171	
						154	158	157	
						151	144	168	
						150	145	162	
Aug 1	10:48	RP	WW-026	P236-P238 Vertical Top of Seam	D109	156	135	162	Pass
						157	147	165	
						147	156	165	
						153	152	158	
						152	148	165	
Aug 1	11:34	DT	WW-045	P238-P241 Vertical Top of Seam	D110	151	152	150	Pass
						146	155	152	
						150	146	151	
						147	143	160	
						149	148	149	
Aug 1	12:23	EA	WW-022	P242-P243 Vertical Bottom of Seam	D111	145	134	167	Pass
						145	146	158	
						147	133	169	
						143	152	156	
						143	147	164	
Aug 1	16:27	RP	WW-026	P243-P245 Vertical Bottom of Seam	D112	153	158	154	Pass
						155	154	160	
						131	158	153	
						145	142	166	
						150	154	158	
Aug 1	16:55	EA	WW-022	P245-P246 Vertical Bottom of Seam	D113	144	133	156	Pass
						150	137	162	
						142	140	162	
						149	156	161	
						129	146	158	

Date Fused	Time Fused	Tech	Apparatus	Location (UTM is +/- 4 m)	Sample ID	$Peel_{in}$ (100 min)	$Peel_{out}$ (100 min)	Shear (120 min)	Pass or Fail
Aug 2	17:45	EA	WW-022	P248-P250 Vertical Bottom of Seam	D114	153 137 152 134 152	144 152 147 141 153	147 156 153 161 157	Pass
Aug 2	9:47	RP	WW-026	P250-P251 Vertical Bottom of Seam	D115	141 154 142 141 144	144 148 139 147 154	161 137 161 144 154	Pass
Aug 2	10:06	EP	WW-045	P251-P253 Vertical Bottom of Seam	D116	148 138 148 145 149	143 144 139 142 141	144 158 144 151 156	Pass
Aug 2	12:04	EA	WW-022	P253-P255 Vertical Bottom of Seam	D117	114 130 123 128 126	121 136 132 135 125	142 134 140 143 143	Pass
Aug 2	12:58	EP	WW-045	P255-P256 Vertical Bottom of Seam	D118	130 120 127 105 139	130 135 133 134 135	135 145 134 147 144	Pass
Aug 3	8:58	EA	WW-022	P241-P260 Vertical Top of Seam	D119	148 145 159 126 147	149 151 148 154 136	156 162 157 164 157	Pass
Aug 3	9:39	CC	WW-026	P260-P263 Vertical Top of Seam	D120	149 154 158 157 155	153 155 152 156 158	175 161 176 168 177	Pass
Aug 3	11:07	EA	WW-022	P263-P266 Vertical Top of Seam	D121	159 147 150 141 162	152 152 157 156 154	166 173 171 171 166	Pass
Aug 3	11:08	EP	WW-045	P266-P269 Vertical Top of Seam	D122	150 154 154 146 140	145 163 165 146 152	162 164 167 161 171	Pass
Aug 3	14:56	EA	WW-022	P256-P270 Vertical Bottom of Seam	D123	115 132 160 131 151	158 150 157 151 155	173 175 168 171 153	Pass

Date Fused	Time Fused	Tech	Apparatus	Location (UTM is +/- 4 m)	Sample ID	$Peel_{in}$ (100 min)	$Peel_{out}$ (100 min)	Shear (120 min)	Pass or Fail
Aug 4	10:55	CC	WW-045	P269-P277 Vertical Top of Seam	D124	153	132	168	Pass
						163	127	164	
						165	144	167	
						150	138	157	
						152	135	166	
Aug 3	14:56	CC	WW-026	P270-P271 Vertical Bottom of Seam	D125	148	160	159	Pass
						156	152	170	
						168	155	148	
						150	160	169	
						150	164	160	
Aug 3	15:12	EA	WW-022	P271-P272 Vertical Bottom of Seam	D126	156	158	152	Pass
						151	152	172	
						161	137	176	
						149	147	150	
						153	150	174	
Aug 3	15:24	EP	WW-045	P272-P273 Vertical Bottom of Seam	D127	162	139	164	Pass
						147	158	167	
						162	148	165	
						149	152	169	
						156	154	164	
Aug 4	12:54	CC	WW-045	P273-P275 Vertical Bottom of Seam	D128	150	162	170	Pass
						164	164	175	
						162	153	182	
						146	163	174	
						153	148	177	
Aug 4	15:00	CC	WW-045	P275-P278 Vertical Bottom of Seam	D129	159	148	161	Pass
						155	146	160	
						155	151	162	
						136	155	170	
						154	154	166	
Aug 4	18:21	CC	WW-045	P278-P282 Vertical Bottom of Seam	D130	147	140	168	Pass
						139	141	165	
						146	138	166	
						153	142	164	
						146	145	167	
Aug 4	14:01	EA	WW-022	P277-P281 Vertical Top of Seam	D131	149	156	149	Pass
						156	151	159	
						155	155	162	
						152	148	165	
						156	151	161	
Aug 4	17:50	EA	WW-022	P281-P284 Vertical Top of Seam	D132	132	153	162	Pass
						125	158	162	
						130	146	172	
						121	159	170	
						125	146	173	
Aug 5	14:46	CC	WW-045	P282-P285 Vertical Bottom of Seam	D133	134	153	144	Pass
						125	149	159	
						149	137	139	
						126	153	158	
						145	154	141	

Date Fused	Time Fused	Tech	Apparatus	Location (UTM is +/- 4 m)	Sample ID	$Peel_{in}$ (100 min)	$Peel_{out}$ (100 min)	Shear (120 min)	Pass or Fail
Aug 5	12:55	CC	WW-045	P284-P288 Vertical Top of Seam	D134	131	154	166	Pass
						156	160	160	
						136	158	166	
						148	150	153	
						151	155	163	
Aug 5	12:37	CC	WW-045	P287-P288 Cross Left Side of Seam	D135	167	168	173	Pass
						150	168	193	
						150	165	171	
						161	162	184	
						158	150	172	
Aug 5	14:05	JC	WW-022	P288-P292 Vertical Top of Seam	D136	152	132	159	Pass
						152	143	147	
						149	136	156	
						150	151	150	
						153	131	159	
Aug 5	15:47	JC	WW-022	P285-P289 Vertical Top of Seam	D137	156	155	153	Pass
						155	156	164	
						159	160	153	
						55	156	164	
						155	155	139	
Aug 5	17:16	JC	WW-022	P289-P293 Vertical Top of Seam	D138	139	154	167	Pass
						155	139	158	
						144	143	170	
						158	154	160	
						147	149	171	
Aug 5	16:50	CC	WW-045	P292-P295 Vertical Top of Seam	D139	137	146	146	Pass
						136	142	156	
						139	140	145	
						120	139	155	
						116	144	153	

7.0 PHOTO LOG



Figure 1: Prepared and Inspected Subgrade



Figure 2: Subgrade in Advance of Liner Deployment



Figure 3: Liner Deployed on Lower Third of the Slope



Figure 4: Overall Deployment as of August 3



Figure 5: Deployment and Prepared Subgrade



Figure 6: Preparing Subgrade



Figure 7: Overall Deployment as of August 4



Figure 8: Prepared and Inspected Subgrade



Figure 9: Prepared and Inspected Subgrade

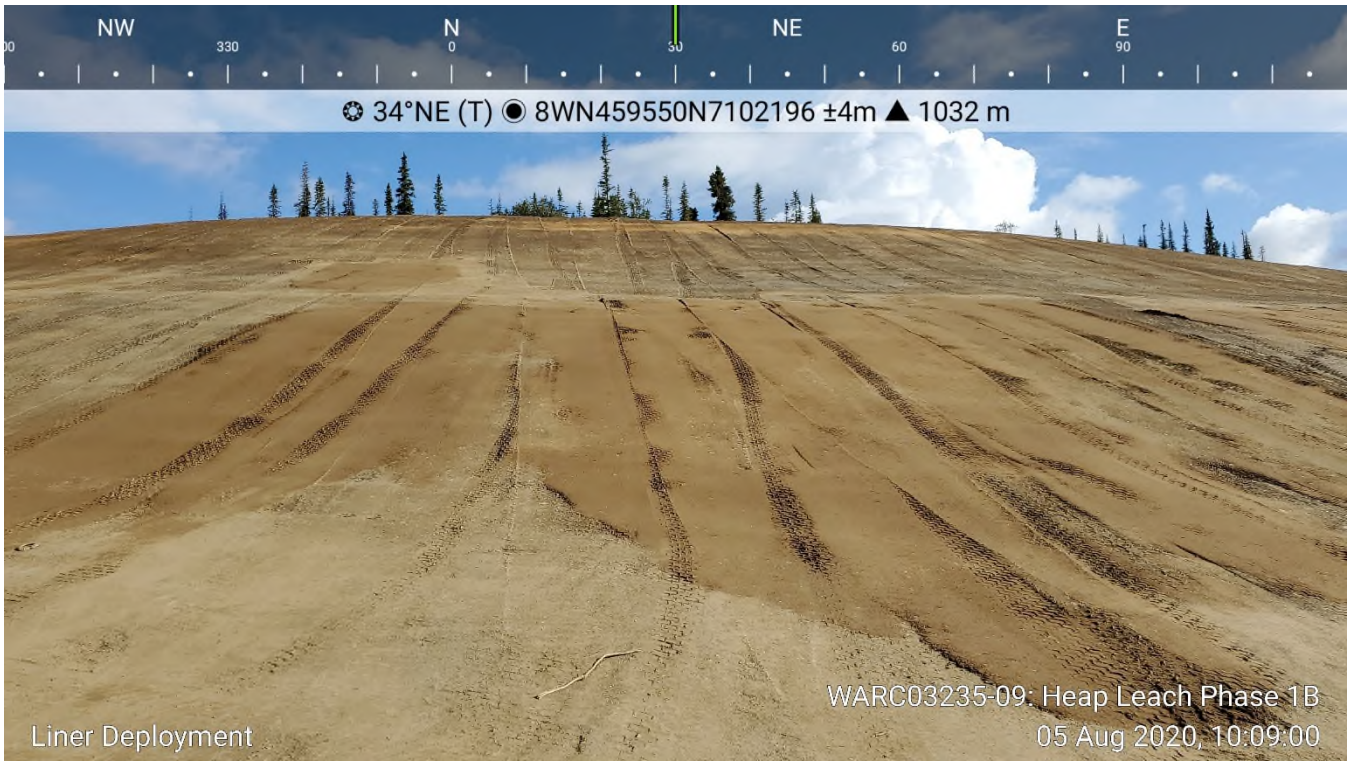


Figure 10: Sand Placed on Rocky Areas of Slope



Figure 11: Compacted Subgrade



Figure 12: Deployed GCL



Figure 13: Anchor Trench Excavation



Figure 14: Anchor Trench Excavation



Figure 15: Overall Deployment as of August 5



Figure 16: Prepared and Inspected Subgrade



Figure 17: Prepared and Inspected Subgrade

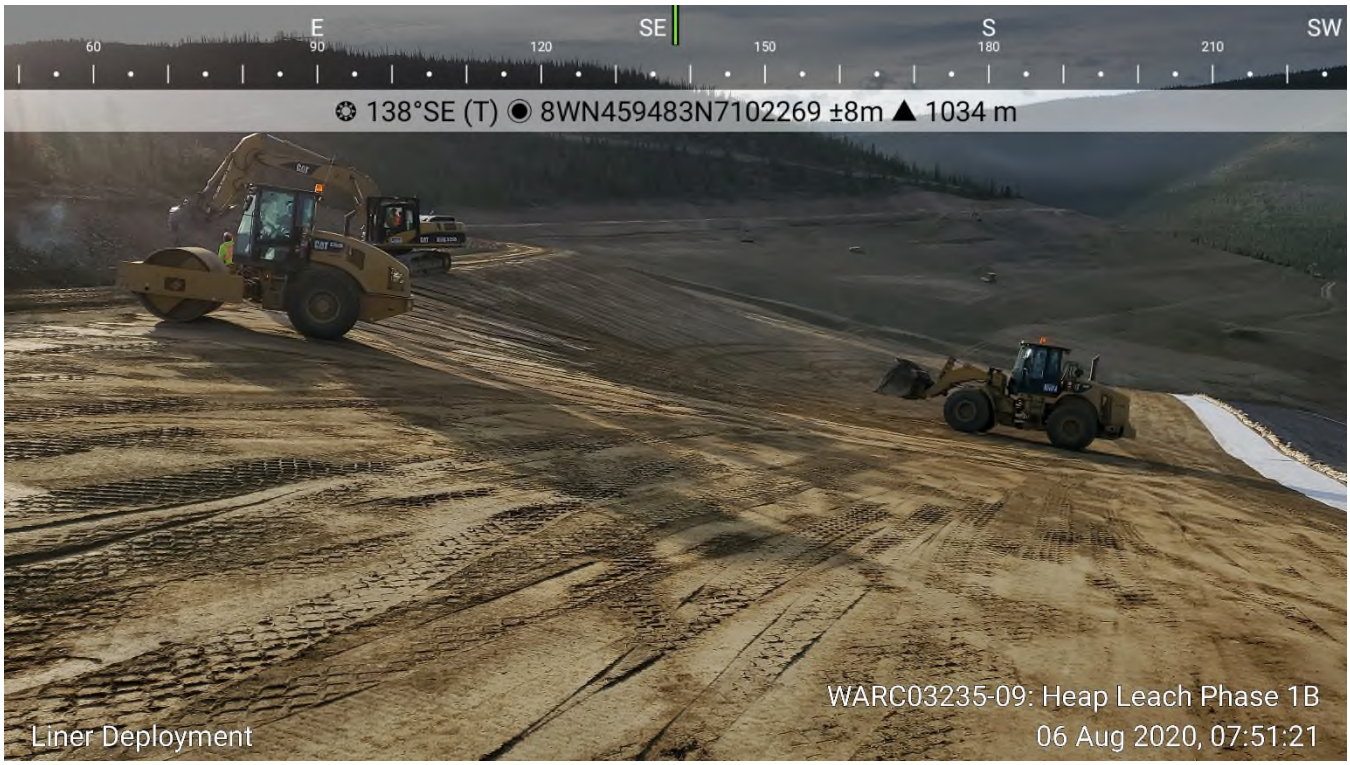


Figure 18: Placing Sand on Rocky Areas of Subgrade

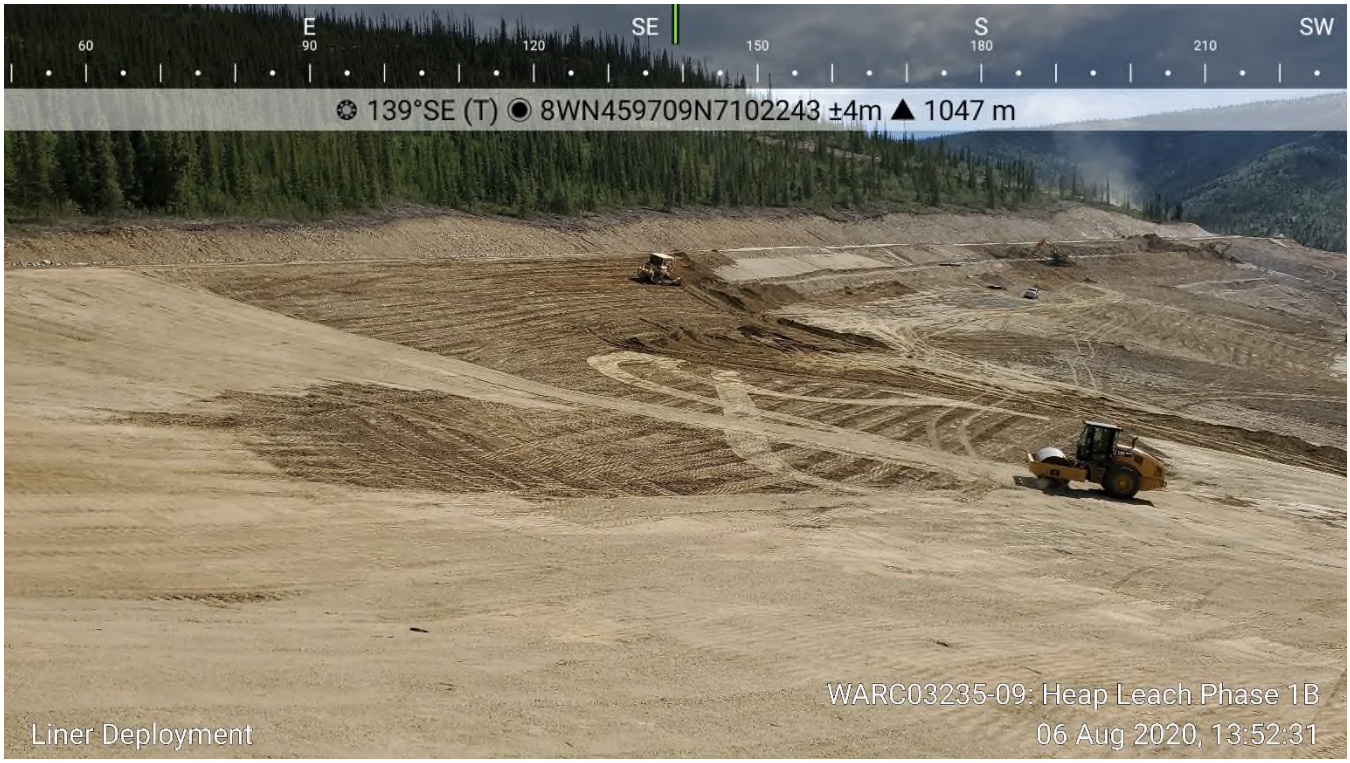


Figure 19: Preparing Subgrade to the East of the Header Drain



Figure 20: Anchor Trench Excavation



Figure 21: Anchor Trench Excavation



Figure 22: Anchor Trench Excavation



Figure 23: Beginning GCL Deployment in Northwest Corner of Phase 1B



Figure 24: GCL at Northwest Corner of Anchor Trench



Figure 25: GCL at Northwest Corner of Anchor Trench



Figure 26: GCL Deployed in Northwest Corner of Phase 1B



Figure 27: GCL Overlap



Figure 28: GCL in Anchor Trench



Figure 29: Liner Deployment in Northwest Corner

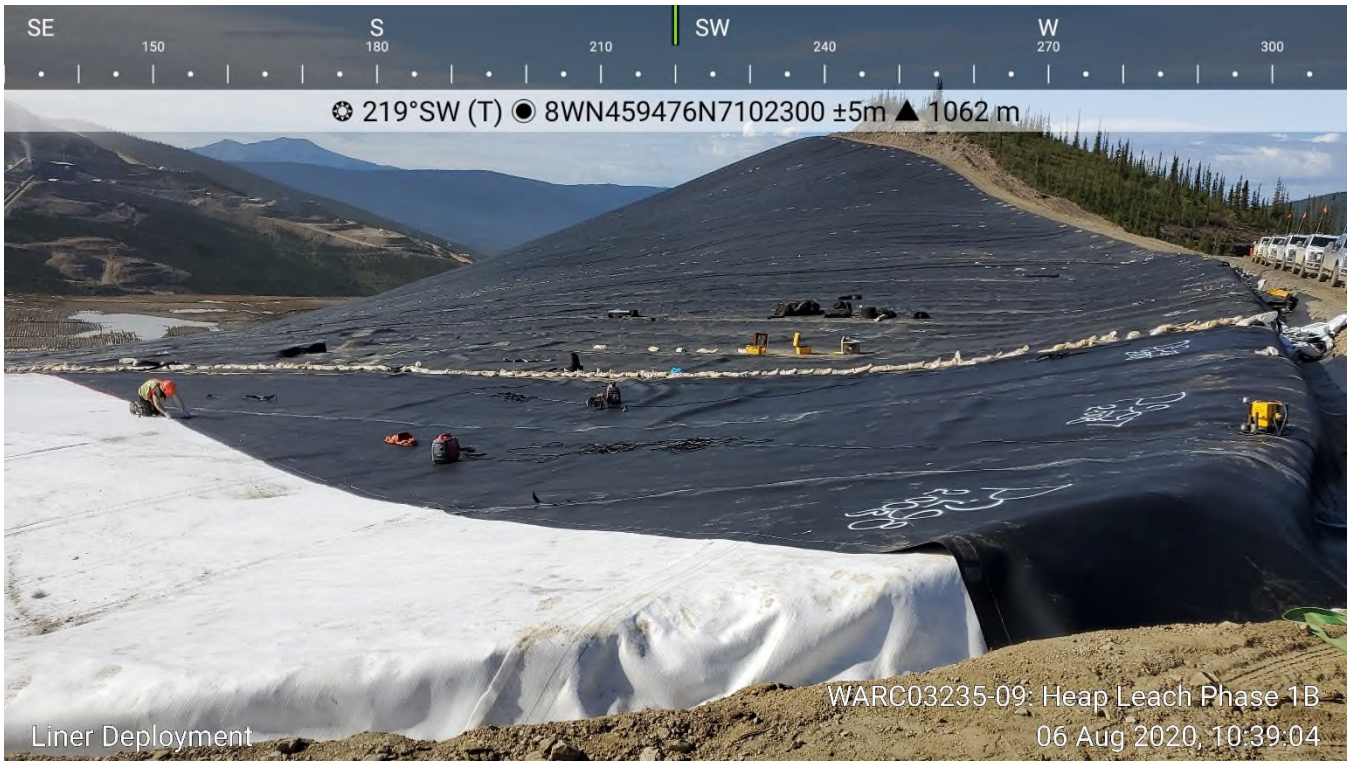


Figure 30: Liner Deployment in Northwest Corner



Figure 31: Liner Deployment from North Perimeter Road



Figure 32: Liner Deployed in Northwest Corner of Phase 1B



Figure 33: Overall Deployment as of August 6



Figure 34: Prepared and Inspected Subgrade for Today's Deployment



Figure 35: Prepared and Inspected Subgrade for Today's Deployment

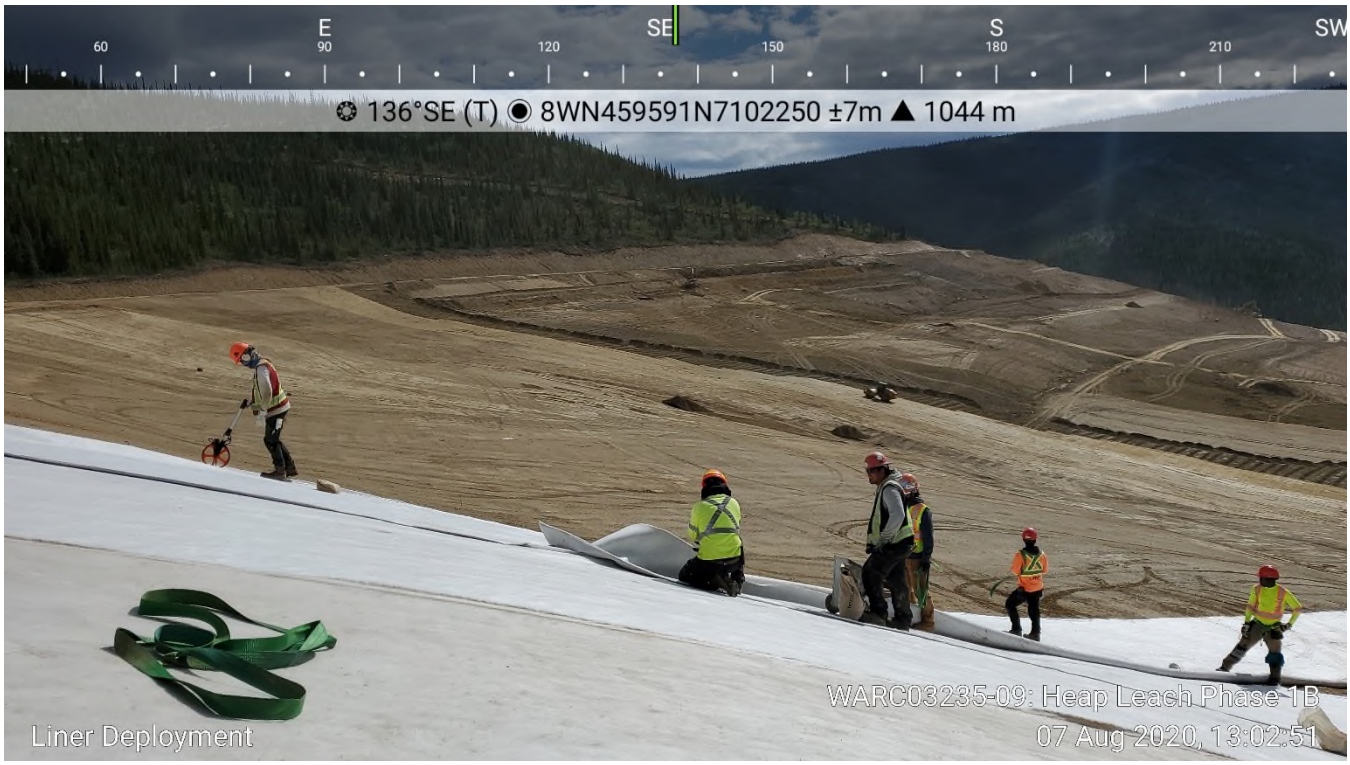


Figure 36: GCL Deployment and Ewing Rolling Prepared Subgrade



Figure 37: Liner Deployment



Figure 38: Angle Correction of Liner



Figure 39: Overall Deployment as of August 7



Figure 40: Prepared and Approved Subgrade for Today's Deployment



Figure 41: Prepared and Approved Subgrade



Figure 42: Subgrade After Pulling GCL Down Slope



Figure 43: Overall Deployment at the End of August 9

TETRA TECH

WEEKLY FIELD REPORT

ISSUED FOR USE

Project:	Eagle Gold Heap Leach Phase 1B	**Date:**	August 16, 2020
Location:	Eagle Gold Mine	**Contractor:**	Ewing Transport / Layfield
Client:	Victoria Gold Corp.	**Contractor's Rep:**	Marshall Ewing / Chad Messervey
Contact:	Clint Abel	**Contractor's Email:**	
Weather:	Variable (see daily entries)	**Tetra Tech Representative:**	Adam Mickey
File:	704-ENG.WARC03235-09	**Status:**	Issued for Use

1.0 INTRODUCTION

Tetra Tech Canada Inc. (Tetra Tech) was retained by Victoria Gold Corp. (Victoria Gold) to provide CQA services at the Eagle Gold mine located north of Mayo, Yukon, at Dublin Gulch for the Eagle Gold Heap Leach Phase 1B expansion (Phase 1B). Mr. Adam Mickey, EIT, is Tetra Tech's representative on site.

Forte Dynamics (Forte) out of Fort Collins, Colorado provided the design and specification for Phase 1B, and Forte's representative is Clint Green.

Clint Abel, of JDS Energy & Mining, is Victoria Gold's project manager on site at the Eagle Gold mine.

Ewing Transport (Ewing), based out of Mayo, Yukon, is the construction contractor for Phase 1B.

Layfield Environmental Containment (Layfield) has been retained to provide and install the liner for Phase 1B, and their supervisor on site is Chad Messervey.

The following Field Report outlines Tetra Tech's CQA for the period of August 10, 2020, to August 16, 2020.

2.0 DAILY REPORTS

2.1 Highlights

- Layfield deployed approximately 2280.9 m of liner covering an area of approximately 15,282 m^2.
- Soft spots in the subgrade associated with the east laterals were found ahead of deployment. Ewing excavated the soft spots and replaced with rock fill to improve the subgrade conditions.
- Layfield is placing three panels of GCL for every two panels of 80 mm LLDPE liner.

2.2 August 10, 2020

- Weather: cloudy, turning to periods of heavy rain in the afternoon.
- See Figures 1 and 2.
- Layfield finished fusion welding seams and completed the work by first break.

Tetra Tech Canada Inc.
61 Wasson Place
Whitehorse, YT Y1A 0H7 CANADA
Tel 867.668.3068 Fax 867.668.4349

- After first break, weather conditions permitted deployment of liner.
  - Tetra Tech inspected the subgrade and found muddy spots as well as erosion of the subgrade from the heavy rain.
    - Tetra Tech deemed the subgrade unacceptable for deployment, requiring time to dry out and repairs.
- Layfield moved to detail extrusion work, vacuum testing, and pressure testing for the rest of the day.

2.3 August 11, 2020

- Weather: mostly sunny.
- See Figures 3 through 6.
- Ewing is repairing subgrade washed out by rain.
  - Ewing completed the repairs at 1:00 pm, and Tetra Tech approved the subgrade for deployment.
- Layfield is performing detail extrusion work, vacuum box testing, and pressure testing of seams.
- After subgrade repairs were completed, Layfield began deploying liner.
  - Layfield deployed three runs of liner.

2.4 August 12, 2020

- Weather: rain in the morning, turning to cloudy with periods of rain in the afternoon.
- Layfield took the morning off due to rain and arrived on site at 12:20 pm to begin work.
- Subgrade conditions are too saturated to deploy liner.
- Layfield is performing detail extrusion work, vacuum box testing, and pressure testing of seams.
  - Layfield qualified the extruders, and then rain began again at 1:00 pm.
  - Layfield left site at 3:00 pm because the periods of rain did not cease.

2.5 August 13, 2020

- Weather: Cloudy and raining, with rain ceasing in the afternoon.
- Ewing is repairing subgrade for deployment.
- Layfield is continuing detail work on deployed liner.
  - Layfield qualified the extruders, and then it began raining.
  - Rain ceased at 1:00 pm, and Layfield began detail work for the rest of the day.
- Tetra Tech and Layfield's QC conducted destructive testing of obtained samples.
  - D155A failed due to peel into the weld. As the sample was obtained from the anchor trench, Layfield will obtain a sample 3 m from the sample location and retest. If the test fails, Layfield will extrude the seam.
    - D155B was obtained 3.0 m down seam from 155A and passed destructive testing. Layfield patched the destruct location and extrusion welded between patches.

2.6 August 14, 2020

- Weather: cloudy with periods of wind.
- See Figures 7 through 14.
- Ewing is repairing subgrade in the northeast corner.
  - Ewing repaired the subgrade along the area prior to deployment by scraping the saturated subgrade and placing sand over rocky areas.
  - Ewing continued to repair the subgrade in the northeast corner throughout the day.
  - Tetra Tech approved the areas for today's deployment.
- Layfield began the day by prepping areas for deployment and continued detail extrusion work, including finishing the tie in to Phase 1A.
  - Layfield deployed three runs of liner prior to 4:00 pm, then bagged off the deployed liner. No further deployment as we're waiting for subgrade to be prepped.
- Layfield continued conducting pressure testing on deployed and detailed liner.
- Layfield obtained destructive samples for testing.

2.7 August 15, 2020

- Weather: mostly cloudy, turning to rain in the later afternoon.
- See Figures 15 through 25.
- Ewing is continuing to prepare subgrade for deployment.
- Tetra Tech approved the subgrade in the northeast corner for deployment.
- Layfield is deploying GCL and liner.
  - Layfield started on the east side of the corner, working towards the deployed liner.
  - Layfield deployed eight runs of liner.
  - Rain shut down deployment at 5:00 pm.

2.8 August 16, 2020

- Weather: cloudy with periods of rain ending at 9:00 am.
- See Figures 26 through 39.
- Ewing is continuing to prepare subgrade in advance of deployment.
  - Tetra Tech noted soft spots along the E4 Lateral.
    - Ewing will excavate out the soft material and replace with rockier material then skim with sand.
  - Tetra Tech inspected the entire subgrade and found many areas that were deficient due to either being soft or yielding when stepped on, organics protruding from the surface, or rocky areas requiring sand cover.

- Soft areas were identified based on cracks left by rolling with a packer, meaning that the ground was deflecting under the weight of the packer.
- Soft areas could also be identified by wheel ruts from pickup traffic.
- Many of the soft spots are associated with the E2, E3, and E4 Lateral Drains.
- After consulting with Clint Green, Tetra Tech informed Ewing that the soft spots would have to be fixed.

- Tetra Tech and Ewing worked together on a cluster of soft spots to determine what remedial works would be required to repair them.
  - Subexcavation of 600 to 700 mm of colluvium, then backfill with rock fill was required to repair the soft spots.
  - Ewing will coat the rock fill with sand prior to deployment.
- Layfield is continuing to fill in the northeast corner with liner.
  - Tetra Tech inspected the subgrade to assess whether yesterday's rain impacted the subgrade. The subgrade was deemed acceptable for deployment.
  - Layfield completed deployment in the northeast corner by 12:30 pm.
  - Layfield finished the day conducting detail work, pressure testing, and cleaning up.

3.0 GEOSYNTHETIC ROLL NUMBERS PLACED

Table 1 summarizes the daily geosynthetic roll numbers placed on the slope during liner installation. All panel lengths are approximate, and where angled joints are used, panel length is based from the center of the panel.

Table 1: Geosynthetic Roll Numbers Placed on Slope

Date	GCL Roll Number	LLDPE Liner Roll Number	Panel Number (Length)
August 10	-	10690-013	P354 (4.7 m)
August 11	502344124, 502347054 502344120, 502344134 502344119, 502347010 502347023, 502344111 502347045, 502347046 502347069, 502346931 502347057, 502346998 502347065, 502343589	10699-021 10699-028 10699-022 10692-006 10699-023	P355 (51.5 m) P356 (52.5 m), P357 (73.2 m) P358 (90.7 m), P359 (36.7 m) P360 (47.3 m) P361 (77 m)
August 12	-	-	-
August 13	-	-	-
August 14	502343597, 502343627 502343635, 502347064 502343624, 502343633 502343596, 502346929 502343625, 502346923 502347072, 502347068 502347062, 502344110 502346999, 502343640	10699-028 10699-023 10699-008 10699-020 10699-010	P362 (4.2 m) P363 (51.0 m) P364 (92.0 m), P365 (34.4 m) P366 (107.1 m), P367 (30.4 m) P368 (118.3 m)

Date	GCL Roll Number	LLDPE Liner Roll Number	Panel Number (Length)
August 15	0242-347582, 0242347602 0242-347596 502346933, 502344122 502344118, 502344116 502344130, 502344136 502344135, 502343634 502346924, 502343609 502347056, 502344114 502343642, 502344121 502346985, 502343640 502343643, 502347067 502343628, 502346934 502346984, 502347051 502347048, 502344131 502347047, 502347070 502347063, 502346926 502344597, 502346932	10699-036 10699-009 10699-033 10699-011 10699-026 10699-024 10699-019 10699-025 10699-015	P369 (123.4 m) P370 (23.0 m), P371 (100.4 m) P372 (39.8 m), P373 (81.7 m) P374 (52.6 m), P375 (71.4 m) P376 (56.8 m), P377 (63.1 m) P378 (58.8 m), P379 (63.7 m) P380 (51.4 m), P381 (71.9 m) P382 (35.3 m), P383 (83.6 m) P384 (15.5 m)
August 16	502343644, 502343606 502343621, 502344604 502344017, 502343605 502347053, 502347048 502247061, 502346990 502344602, 502344611 502344028	10699-015 10699-007 10699-032 10699-007 10699-032 10699-006	P385 (91.2 m), P386 (9.7 m) P387 (73.7 m), P388 (30.5 m) P389 (24.6 m), P390 (14.3 m) P391 (10.7 m), P392 (19.9 m) P393 (11.6 m), P394 (29.6 m), P395 (22.7 m) P396 (5.6 m), P397 (25.7 m), P398 (16.9 m), P399 (11.4 m), P400 (4.6 m), P401 (6.1 m), P402 (8.7 m)

4.0 TRIAL SEAM

Table 2 summarizes the weekly trial seam results. For fusion, the apparatus settings are temperature and speed, and for extrusion, the apparatus settings are preheat and barrel temperature. Five tests are performed for each criterion.

Table 2: Trial Seam Results

Date	Time	Fusion or Extrusion	Tech	Apparatus #	Temp or Preheat (ºF)	Speed (%) or Barrel Temp (ºF)	$Peel_{inside}$ (100 min)	$Peel_{outside}$ (100 min for Fusion 88 min for Extrusion)	Shear (120 min)	Smooth or Textured
Aug 10	8:00	Fusion	EA	WW-022	850	40	160 153 145 143 144	160 145 152 145 148	164 165 168 170 163	Smooth-Textured

Date	Time	Fusion or Extrusion	Tech	Apparatus #	Temp or Preheat (ºF)	Speed (%) or Barrel Temp (ºF)	$Peel_{inside}$ (100 min)	$Peel_{outside}$ (100 min for Fusion 88 min for Extrusion)	Shear (120 min)	Smooth or Textured
Aug 10	8:50	Fusion	CC	WW-045	850	55	152 144 133 127 143	130 129 130 132 146	160 169 163 152 153	Smooth
Aug 10	13:00	Extrusion	GP	04037	500	495	N/A	131 109 122 125 127	160 153 153 161 163	N/A
Aug 10	13:00	Extrusion	RP	O4037	500	495	N/A	121 128 137 107 122	155 148 161 158 163	N/A
Aug 10	13:00	Extrusion	RW	EX-35	495	495	N/A	163 140 152 158 149	166 160 166 157 160	N/A
Aug 10	13:00	Extrusion	EA	EX-035	495	495	N/A	117 126 139 131 131	170 168 158 165 166	N/A
Aug 11	8:40	Extrusion	GP	EX-023	495	490	N/A	135 124 131 141 137	156 162 171 178 165	N/A
Aug 11	8:40	Extrusion	RP	EX-023	495	490	N/A	129 129 136 146 132	162 165 172 167 159	N/A
Aug 11	9:00	Extrusion	EA	04037	505	500	N/A	134 114 124 116 118	174 160 186 171 183	N/A
Aug 11	9:00	Extrusion	RW	04037	505	500	N/A	92 103 128 117 128	142 165 182 175 167	N/A

Date	Time	Fusion or Extrusion	Tech	Apparatus #	Temp or Preheat (ºF)	Speed (%) or Barrel Temp (ºF)	$Peel_{inside}$ (100 min)	$Peel_{outside}$ (100 min for Fusion 88 min for Extrusion)	Shear (120 min)	Smooth or Textured
Aug 11	13:45	Extrusion	RW	04037	500	495	M/A	115 117 115 114 123	143 145 139 140 141	N/A
Aug 11	13:45	Extrusion	EA	04037	500	495	N/A	129 121 123 125 117	142 142 135 151 157	N/A
Aug 11	16:00	Fusion	JK	WW-022	850	35	148 155 151 155 140	156 138 153 150 143	169 175 170 186 171	Textured
Aug 11	16:00	Fusion	JC	WW-045	850	55	142 140 132 145 147	129 119 134 138 139	162 166 160 163 160	Smooth
Aug 11	16:00	Fusion	JK	WW-022	850	55	144 137 122 137 138	131 131 129 128 125	145 153 143 152 142	Smooth
Aug 11	16:00	Fusion	JC	WW-045	850	35	158 159 151 153 155	146 149 140 158 145	176 161 169 154 177	Textured
Aug 11	17:30	Extrusion	EA	04037	500	495	N/A	129 140 128 137 145	128 144 164 164 159	N/A
Aug 11	17:30	Extrusion	RW	04037	500	495	N/A	130 127 135 134 129	151 168 160 172 154	N/A
Aug 13	8:00	Extrusion	GP	04037	500	495	N/A	97 109 100 98 104	166 173 173 167 173	N/A

Date	Time	Fusion or Extrusion	Tech	Apparatus #	Temp or Preheat (ºF)	Speed (%) or Barrel Temp (ºF)	$Peel_{inside}$ (100 min)	$Peel_{outside}$ (100 min for Fusion 88 min for Extrusion)	Shear (120 min)	Smooth or Textured
Aug 13	8:00	Extrusion	EA	04037	500	495	N/A	121 126 125 102 144	175 162 176 175 173	N/A
Aug 13	8:00	Extrusion	RW	EX-023	495	495	N/A	121 139 123 133 139	171 172 177 157 160	N/A
Aug 13	13:15	Extrusion	GP	04037	500	495	N/A	157 139 128 135 144	185 181 162 184 186	N/A
Aug 13	13:15	Extrusion	RW	EX-023	495	495	N/A	101 107 134 135 119	167 154 147 173 168	N/A
Aug 13	13:15	Extrusion	EA	04037	500	495	N/A	114 103 128 147 122	152 160 161 179 169	N/A
Aug 13	17:00	Extrusion	GP	04037	500	495	N/A	126 123 131 134 127	164 161 159 160 162	N/A
Aug 13	17:00	Extrusion	EA	04037	500	495	N/A	122 124 118 120 126	175 157 163 161 160	N/A
Aug 13	15:20	Extrusion	RW	04037	495	495	N/A	130 131 124 133 138	142 143 150 145 144	N/A
Aug 14	8:15	Extrusion	RW	EX-023	500	495	N/A	100 137 101 144 144	163 162 163 161 164	N/A

Date	Time	Fusion or Extrusion	Tech	Apparatus #	Temp or Preheat (ºF)	Speed (%) or Barrel Temp (ºF)	$Peel_{inside}$ (100 min)	$Peel_{outside}$ (100 min for Fusion 88 min for Extrusion)	Shear (120 min)	Smooth or Textured
Aug 14	8:15	Extrusion	EA	EX-023	500	495	N/A	103 127 112 120 108	165 170 171 164 172	N/A
Aug 14	12:30	Extrusion	RW	EX-023	500	495	N/A	131 131 129 104 133	172 159 164 164 163	N/A
Aug 14	12:30	Extrusion	EA	EX-023	500	495	N/A	135 135 152 140 130	149 153 161 153 151	N/A
Aug 14	13:00	Fusion	CC	WW-054	850	35	125 136 143 138 128	128 144 129 156 134	157 158 156 154 147	Textured
Aug 14	13:00	Fusion	JK	WW-022	850	55	138 148 142 141 115	142 133 129 136 137	151 147 158 135 151	Smooth
Aug 14	13:00	Fusion	CC	WW-054	850	55	153 147 149 151 145	142 142 141 142 143	153 157 150 157 143	Smooth
Aug 14	13:00	Fusion	JK	WW-022	850	35	140 146 144 147 147	151 154 146 156 147	165 154 165 158 171	Textured
Aug 14	16:45	Extrusion	RW	EX-023	500	495	N/A	110 121 110 115 111	149 171 172 157 167	N/A
Aug 14	16:45	Extrusion	EA	EX-023	500	495	N/A	112 115 110 106 108	150 144 151 164 149	N/A

Date	Time	Fusion or Extrusion	Tech	Apparatus #	Temp or Preheat (ºF)	Speed (%) or Barrel Temp (ºF)	$Peel_{inside}$ (100 min)	$Peel_{outside}$ (100 min for Fusion 88 min for Extrusion)	Shear (120 min)	Smooth or Textured
Aug 15	11:00	Extrusion	EA	EX-023	500	495	N/A	175 171 129 157 162	185 176 182 193 184	N/A
Aug 15	11:00	Fusion	CC	WW-054	850	55	151 158 153 149 148	166 164 159 160 144	158 161 157 160 174	Smooth
Aug 15	11:00	Fusion	RW	WW-045	850	35	130 138 154 136 157	145 156 156 151 154	159 172 172 172 156	Textured
Aug 15	11:00	Fusion	JK	WW-022	850	55	127 129 130 130 133	142 141 145 142 133	147 148 138 151 150	Smooth
Aug 15	11:00	Fusion	JK	WW-022	850	35	133 114 151 132 156	138 139 142 157 144	170 175 171 171 178	Textured
Aug 15	15:00	Fusion	CC	WW-054	850	55	158 141 142 141 134	136 156 153 148 152	160 165 166 161 161	Smooth
Aug 15	15:00	Fusion	JK	WW-022	850	55	137 142 135 130 129	135 135 141 132 136	147 153 161 154 154	Smooth
Aug 15	15:00	Fusion	RW	WW-045	850	35	161 155 145 142 143	151 139 153 132 137	162 163 165 170 157	Textured
Aug 15	13:00	Extrusion	EA	EX-023	500	495	N/A	129 138 140 132 141	159 179 159 169 168	N/A

Date	Time	Fusion or Extrusion	Tech	Apparatus #	Temp or Preheat (ºF)	Speed (%) or Barrel Temp (ºF)	$Peel_{inside}$ (100 min)	$Peel_{outside}$ (100 min for Fusion 88 min for Extrusion)	Shear (120 min)	Smooth or Textured
Aug 16	10:30	Fusion	CC	WW-045	850	55	138 143 138 141 136	145 152 142 138 150	152 160 158 163 172	Smooth
Aug 16	10:30	Fusion	GP	WW-054	850	35	130 156 153 161 146	154 151 153 131 132	178 181 181 183 167	Textured
Aug 16	10:30	Fusion	JK	WW-022	850	55	134 132 132 126 130	141 140 140 138 136	161 154 163 155 156	Smooth
Aug 16	10:30	Extrusion	EA	EX-023	500	495	N/A	133 143 148 149 138	175 174 175 167 165	N/A
Aug 16	12:15	Fusion	JC	WW-054	850	55	133 148 137 140 134	140 140 141 137 141	152 154 159 159 157	Smooth
Aug 16	14:00	Fusion	CC	WW-045	850	40	109 121 129 127 129	101 122 127 129 117	148 145 146 146 152	Smooth-Textured
Aug 16	14:00	Fusion	JK	WW-022	850	40	119 116 136 125 125	127 129 128 119 145	155 150 159 158 154	Smooth-Textured
Aug 16	14:30	Extrusion	EA	EX-023	500	495	N/A	129 150 140 137 135	174 175 159 169 167	N/A

5.0 NON-DESTRUCTIVE TESTING

Table 3 summarizes the weekly non-destructive pressure testing results.

Table 3: Non-Destructive Testing Results

Date Fused	Date Tested	Time Tested	Seam #	psi Start	psi End	Pass or Fail	Notes
Aug 1	Aug 11	11:40	P235-P238 Vertical	40	40	Pass	Top of seam to first patch
Aug 1	Aug 11	14:21	P232-P235 Vertical	40	40	Pass	
Aug 1	Aug 11	11:50	P235-P238 Vertical	40	38	Pass	Between patches
Aug 1	Aug 11	10:17	P235-P238 vertical	40	40	Pass	Second patch to bottom of seam
Aug 3	Aug 11	13:19	P268-P269 Cross	40	39	Pass	
Aug 4	Aug 11	13:00	P276-P277 Cross	40	40	Pass	
Aug 4	Aug 11	13:19	P269-P277 Vertical	40	40	Pass	
Aug 4	Aug 11	13:00	P268-P277 Vertical	40	38	Pass	
Aug 4	Aug 11	13:00	P268-P276 Vertical	40	40	Pass	
Aug 4	Aug 11	13:23	P279-P280 Cross	40	39	Pass	
Aug 4	Aug 11	12:36	P280-P281 Cross	40	40	Pass	
Aug 4	Aug 11	12:36	P277-P281 Vertical	40	40	Pass	
Aug 4	Aug 11	12:35	P277-P280 Vertical	40	40	Pass	
Aug 4	Aug 11	12:55	P276-P280 Vertical	40	40	Pass	
Aug 4	Aug 11	12:55	P283-P284 Cross	40	40	Pass	
Aug 4	Aug 11	13:06	P281-P284 Vertical	40	40	Pass	
Aug 4	Aug 11	12:33	P280-P284 Vertical	40	40	Pass	
Aug 4	Aug 11	12:55	P280-P283 Vertical	40	40	Pass	
Aug 5	Aug 11	13:24	P286-P287 Cross	40	40	Pass	
Aug 5	Aug 11	13:01	P287-P288 Cross	40	39	Pass	
Aug 5	Aug 11	13:00	P284-P288 Vertical	40	39	Pass	
Aug 5	Aug 11	12:53	P283-P287 Vertical	40	40	Pass	
Aug 5	Aug 11	12:20	P291-P292 Cross	40	40	Pass	
Aug 5	Aug 11	13:05	P288-P292 Vertical	40	40	Pass	
Aug 5	Aug 11	12:20	P287-P292 Vertical	40	40	Pass	
Aug 5	Aug 11	12:25	P287-P291 Vertical	40	40	Pass	
Aug 5	Aug 11	12:40	P294-P295 Cross	40	40	Pass	
Aug 5	Aug 11	12:12	P292-P295 Vertical	40	40	Pass	
Aug 5	Aug 11	12:15	P291-P295 Vertical	40	40	Pass	Top of seam to patch
Aug 5	Aug 11	12:25	P291-P295 Vertical	40	40	Pass	Patch to bottom of seam
Aug 6	Aug 11	12:11	P295-P296 Vertical	40	39	Pass	
Aug 6	Aug 11	8:02	P296-P297 Vertical	40	40	Pass	
Aug 6	Aug 11	8:15	P297-P298 Vertical	40	40	Pass	
Aug 6	Aug 11	9:16	P308-P309 Vertical	40	40	Pass	
Aug 6	Aug 11	8:44	P307-P308 Vertical	40	40	Pass	
Aug 6	Aug 11	8:29	P305-P306 Cross	40	40	Pass	
Aug 6	Aug 11	8:41	P306-P307 Vertical	40	40	Pass	
Aug 6	Aug 11	8:52	P304-P306 Vertical	40	40	Pass	Top of seam to patch
Aug 6	Aug 11	8:41	P305-P307 Vertical	40	40	Pass	
Aug 6	Aug 11	8:26	P304-P305 Vertical	40	40	Pass	
Aug 6	Aug 11	8:29	P304-P306 vertical	40	40	Pass	Patch to bottom of seam
Aug 6	Aug 11	8:24	P303-P304 Vertical	40	40	Pass	

Date Fused	Date Tested	Time Tested	Seam #	psi Start	psi End	Pass or Fail	Notes
Aug 6	Aug 11	8:18	P300-P301 Cross	40	40	Pass	
Aug 6	Aug 11	8:19	P301-P302 Vertical	40	39	Pass	
Aug 6	Aug 11	7:56	P302-P303 Vertical	40	40	Pass	
Aug 6	Aug 11	8:02	P300-P302 Vertical	40	40	Pass	
Aug 6	Aug 11	8:18	P299-P301 Vertical	40	40	Pass	
Aug 6	Aug 11	8:07	P299-P300 Vertical	40	40	Pass	
Aug 6	Aug 11	15:05	P299-P319 Vertical	40	40	Pass	
Aug 6	Aug 11	9:18	P309-P310 Vertical	40	40	Pass	
Aug 6	Aug 11	14:46	P314-P315 Vertical	40	39	Pass	
Aug 6	Aug 11	9:26	P310-P311 Vertical	40	38	Pass	
Aug 6	Aug 11	10:57	P312-P313 Cross	40	40	Pass	
Aug 6	Aug 11	10:50	P311-P313 Vertical	40	40	Pass	
Aug 6	Aug 11	10:36	P311-P312 Vertical	40	40	Pass	Top of seam to first patch
Aug 6	Aug 11	10:37	P311-P312 Vertical	40	40	Pass	First patch to second patch
Aug 6	Aug 11	10:35	P311-P312 Vertical	40	40	Pass	Second patch to bottom of seam
Aug 6	Aug 11	15:12	P313-P314 Vertical	40	40	Pass	
Aug 6	Aug 11	14:43	P312-P314 Vertical	40	40	Pass	
Aug 6	Aug 11	15:00	P316-P317 Cross	40	40	Pass	
Aug 6	Aug 11	14:59	P315-P317 Vertical	40	39	Pass	
Aug 6	Aug 11	15:05	P298-P319 Tie In	40	40	Pass	
Aug 6	Aug 11	15:00	P317-P318 Vertical	40	37	Pass	
Aug 6	Aug 11	8:15	P298-P299 Tie In	40	38	Pass	
Aug 6	Aug 11	8:02	P297-P300 Tie In	40	40	Pass	
Aug 6	Aug 11	14:58	P315-P316 Vertical	40	40	Pass	
Aug 6	Aug 11	15:00	P296-P302 Tie In	40	40	Pass	
Aug 6	Aug 11	15:00	P316-P318 Vertical	40	40	Pass	
Aug 6	Aug 11	8:07	P297-P299 Tie In	40	40	Pass	
Aug 6	Aug 11	17:30	P294-P318 Tie In	40	40	Pass	
Aug 6	Aug 11	14:58	P294-P216 Tie In	40	40	Pass	
Aug 6	Aug 11	14:58	P294-P315 Tie In	40	39	Pass	
Aug 6	Aug 11	14:43	P294-P314 Tie In	40	40	Pass	
Aug 6	Aug 11	14:43	P294-P312 Tie In	40	40	Pass	
Aug 6	Aug 11	9:32	P294-P311 Tie In	40	40	Pass	
Aug 6	Aug 11	9:18	P295-P310 Tie In	40	40	Pass	
Aug 6	Aug 11	9:18	P295-P309 Tie In	40	40	Pass	
Aug 6	Aug 11	8:44	P295-P308 Tie In	40	40	Pass	
Aug 6	Aug 11	8:44	P295-P307 Tie In	40	40	Pass	
Aug 6	Aug 11	8:26	P295-P305 Tie in	40	40	Pass	
Aug 6	Aug 11	8:24	P295-P304 Tie In	40	40	Pass	
Aug 6	Aug 11	8:24	P295-P303 Tie In	40	40	Pass	
Aug 7	Aug 11	17:04	P320-P321 Cross	40	40	Pass	
Aug 7	Aug 11	17:04	P318-P321 Vertical	40	38	Pass	
Aug 7	Aug 11	17:04	P318-P320 Vertical	40	40	Pass	
Aug 7	Aug 11	17:14	P323-P324 Cross	40	40	Pass	
Aug 7	Aug 11	17:05	P322-P321 Vertical	40	39	Pass	
Aug 7	Aug 11	17:05	P320-P322 Vertical	40	40	Pass	
Aug 7	Aug 11	17:14	P322-P324 Vertical	40	40	Pass	
Aug 7	Aug 11	17:14	P322-P323 Cross	40	40	Pass	

Date Fused	Date Tested	Time Tested	Seam #	psi Start	psi End	Pass or Fail	Notes
Aug 2	Aug 13	17:47	P256-P257 Cross	40	40	Pass	
Aug 3	Aug 13	17:26	P257-P258 Vertical	40	39	Pass	
Aug 3	Aug 13	17:30	P258-P261 Vertical	40	40	Pass	
Aug 3	Aug 13	17:46	P261-P264 Vertical	40	40	Pass	
Aug 3	Aug 13	18:07	P264-P267 Cross	40	40	Pass	
Aug 3	Aug 13	17:25	P258-P270 Cross	40	40	Pass	
Aug 3	Aug 13	17:45	P261-P271 Vertical	40	40	Pass	
Aug 3	Aug 13	17:25	P257-P270 Vertical	40	39	Pass	
Aug 3	Aug 13	18:25	P267-P274 Cross	40	40	Pass	
Aug 3	Aug 13	18:05	P264-P272 Cross	40	40	Pass	
Aug 3	Aug 13	17:47	P256-P270 Vertical	40	40	Pass	
Aug 3	Aug 13	17:31	P261-P270 Vertical	40	40	Pass	
Aug 3	Aug 13	17:31	P270-P271 Vertical	40	40	Pass	
Aug 3	Aug 13	17:45	P264-P271 Vertical	40	40	Pass	
Aug 3	Aug 13	18:40	P273-P274 Cross	40	40	Pass	
Aug 3	Aug 13	18:05	P271-P272 Vertical	40	40	Pass	
Aug 3	Aug 13	18:40	P272-P273 Vertical	40	40	Pass	
Aug 3	Aug 13	18:06	P267-P272 Vertical	40	40	Pass	
Aug 3	Aug 13	18:07	P272-P274 Vertical	40	40	Pass	
Aug 4	Aug 13	16:35	P275-P276 Cross	40	40	Pass	
Aug 4	Aug 13	16:35	P267-P276 Vertical	40	40	Pass	
Aug 4	Aug 13	18:30	P267-P275 Vertical	40	39	Pass	
Aug 4	Aug 13	18:25	P274-P275 Vertical	40	40	Pass	
Aug 4	Aug 13	18:35	P273-P275 Vertical	40	40	Pass	
Aug 4	Aug 13	16:35	P276-P279 Vertical	40	40	Pass	
Aug 4	Aug 13	17:06	P282-P283 Cross	40	38	Pass	
Aug 4	Aug 13	18:45	P279-P282 Vertical	40	40	Pass	Top of seam to patch
Aug 4	Aug 13	16:20	P279-P283 Vertical	40	40	Pass	Top of seam to patch
Aug 4	Aug 13	16:43	P279-P283 Vertical	40	40	Pass	Patch to bottom of seam
Aug 5	Aug 13	14:05	P289-P290 Cross	40	40	Pass	
Aug 5	Aug 13	16:05	P284-P287 Vertical	40	40	Pass	
Aug 5	Aug 13	15:05	P290-P291 Cross	40	40	Pass	
Aug 5	Aug 13	16:10	P283-P286 Vertical	40	40	Pass	
Aug 5	Aug 13	17:06	P282-P286 Vertical	40	40	Pass	
Aug 5	Aug 13	15:07	P286-P291 Vertical	40	40	Pass	
Aug 5	Aug 13	14:00	P289-P293 Vertical	40	40	Pass	
Aug 5	Aug 13	15:05	P290-P294 Vertical	40	40	Pass	
Aug 5	Aug 13	14:05	P290-P293 Vertical	40	39	Pass	
Aug 5	Aug 13	15:05	P291-P294 Vertical	40	38	Pass	
Aug 9	Aug 13	13:25	P336-P338 Vertical	40	40	Pass	
Aug 9	Aug 13	13:35	P338-P341 Vertical	40	40	Pass	
Aug 10	Aug 13	13:42	P293-P345 Tie In	40	40	Pass	
Aug 10	Aug 13	13:40	P293-P343 Tie In	40	40	Pass	
Aug 10	Aug 13	13:40	P293-P341 Tie In	40	38	Pass	
Aug 10	Aug 13	13:24	P293-P338 Tie In	40	39	Pass	
Aug 10	Aug 13	17:38	P294-P323 Tie In	40	40	Pass	
Aug 10	Aug 13	17:38	P294-P322 Tie In	40	40	Pass	
Aug 10	Aug 13	17:31	P294-P320 Tie In	40	40	Pass	

Date Fused	Date Tested	Time Tested	Seam #	psi Start	psi End	Pass or Fail	Notes
Aug 3	Aug 14	14:51	P267-P268 Cross	40	40	Pass	
Aug 4	Aug 14	8:35	P278-P279 Cross	40	40	Pass	
Aug 4	Aug 14	9:05	P275-P279 Vertical	40	40	Pass	Top of seam to patch
Aug 4	Aug 14	8:35	P275-P279 Vertical	40	40	Pass	Patch to bottom of seam
Aug 4	Aug 14	8:35	P275-P278 Vertical	40	40	Pass	
Aug 4	Aug 14	8:37	P278-P282 Vertical	40	40	Pass	
Aug 4	Aug 14	8:37	P279-P282 Vertical	40	40	Pass	Patch to bottom of seam
Aug 5	Aug 14	8:40	P285-P286 Cross	40	40	Pass	
Aug 5	Aug 14	8:40	P282-P285 Vertical	40	40	Pass	
Aug 5	Aug 14	8:50	P286-P290 Vertical	40	40	Pass	
Aug 5	Aug 14	8:40	P285-P290 Vertical	40	40	Pass	
Aug 5	Aug 14	8:43	P293-P294 Cross	40	40	Pass	
Aug 7	Aug 14	9:35	P325-P326 Vertical	40	40	Pass	
Aug 7	Aug 14	9:26	P327-P328 Cross	40	40	Pass	
Aug 7	Aug 14	9:27	P326-P328 Vertical	40	40	Pass	
Aug 7	Aug 14	8:26	P329-P330 Vertical	40	40	Pass	
Aug 7	Aug 14	9:27	P326-P327 Vertical	40	40	Pass	
Aug 7	Aug 14	8:25	P330-P331 Vertical	40	40	Pass	
Aug 7	Aug 14	9:20	P328-P329 Vertical	40	40	Pass	
Aug 7	Aug 14	9:25	P327-P329 Vertical	40	40	Pass	
Aug 7	Aug 14	9:20	P324-P328 Vertical	40	40	Pass	
Aug 7	Aug 14	9:15	P323-P329 Vertical	40	40	Pass	
Aug 7	Aug 14	9:15	P323-P300 Vertical	40	40	Pass	
Aug 7	Aug 14	8:20	P232-P331 Vertical	40	40	Pass	
Aug 7	Aug 14	9:41	P332-P333 Cross	40	40	Pass	
Aug 7	Aug 14	10:10	P334-P335 Cross	40	40	Pass	
Aug 7	Aug 14	9:42	P325-P333 Vertical	40	40	Pass	
Aug 7	Aug 14	10:11	P333-P335 Vertical	40	40	Pass	
Aug 7	Aug 14	9:41	P325-P332 Vertical	40	40	Pass	
Aug 7	Aug 14	9:42	P333-P334 Vertical	40	40	Pass	
Aug 7	Aug 14	9:43	P332-P334 Vertical	40	40	Pass	
Aug 9	Aug 14	10:12	P336-P337 Cross	40	40	Pass	
Aug 9	Aug 14	15:45	P338-P339 Cross	40	39	Pass	
Aug 9	Aug 14	17:05	P339-P340 Cross	40	40	Pass	
Aug 9	Aug 14	10:05	P335-P337 Vertical	40	40	Pass	
Aug 9	Aug 14	15:57	P337-P340 Vertical	40	40	Pass	
Aug 9	Aug 14	10:05	P334-P337 Vertical	40	40	Pass	
Aug 9	Aug 14	17:05	P337-P339 Vertical	40	40	Pass	
Aug 9	Aug 14	10:13	P336-P339 Vertical	40	40	Pass	
Aug 9	Aug 14	10:12	P334-P336 Vertical	40	40	Pass	
Aug 9	Aug 14	17:11	P341-P342 Cross	40	39	Pass	
Aug 9	Aug 14	17:13	P343-P344 Cross	40	40	Pass	
Aug 9	Aug 14	16:02	P342-P344 Vertical	40	40	Pass	
Aug 9	Aug 14	15:58	P340-P342 Vertical	40	40	Pass	
Aug 9	Aug 14	17:05	P339-P342 Vertical	40	40	Pass	
Aug 9	Aug 14	17:11	P341-P344 Vertical	40	40	Pass	
Aug 9	Aug 14	15:43	P339-P341 Vertical	40	40	Pass	
Aug 9	Aug 14	15:21	P341-P343 Vertical	40	40	Pass	

Date Fused	Date Tested	Time Tested	Seam #	psi Start	psi End	Pass or Fail	Notes
Aug 9	Aug 14	15:48	P345-P346 Cross	40	40	Pass	
Aug 9	Aug 14	16:53	P347-P348 Cross	40	40	Pass	
Aug 9	Aug 14	16:03	P344-P346 Vertical	40	40	Pass	
Aug 9	Aug 14	17:13	P343-P346 Vertical	40	39	Pass	
Aug 9	Aug 14	15:22	P343-P345 Vertical	40	40	Pass	
Aug 9	Aug 14	16:03	P346-P348 Vertical	40	40	Pass	
Aug 9	Aug 14	16:53	P346-P347 Vertical	40	40	Pass	
Aug 9	Aug 14	15:22	P345-P347 Vertical	40	40	Pass	
Aug 9	Aug 14	17:35	P349-P350 Cross	40	40	Pass	
Aug 9	Aug 14	16:08	P348-P350 Vertical	40	40	Pass	
Aug 9	Aug 14	16:53	P347-P350 Vertical	40	40	Pass	
Aug 9	Aug 14	17:35	P347-P349 Vertical	40	39	Pass	Top of seam to patch
Aug 9	Aug 14	16:25	P352-P353 Cross	40	40	Pass	
Aug 9	Aug 14	15:24	P347-P349 Vertical	40	40	Pass	Patch to bottom of seam
Aug 9	Aug 14	16:11	P350-P353 Vertical	40	40	Pass	
Aug 9	Aug 14	16:25	P350-P352 Vertical	40	40	Pass	Top of seam to first patch
Aug 9	Aug 14	15:25	P349-P351 Vertical	40	40	Pass	
Aug 9	Aug 14	17:47	P350-P352 Vertical	40	40	Pass	Between patches
Aug 9	Aug 14	17:38	P350-P352 Vertical	40	38	Pass	Second patch to bottom of seam
Aug 10	Aug 14	13:51	P289-P354 Tie In	40	38	Pass	
Aug 10	Aug 14	13:40	P293-P354 Tie In	40	40	Pass	
Aug 10	Aug 14	13:57	P351-P354 Vertical	40	40	Pass	
Aug 10	Aug 14	17:38	P349-P352 Vertical	40	40	Pass	
Aug 10	Aug 14	13:40	P293-P349 Tie In	40	40	Pass	
Aug 10	Aug 14	15:12	P293-P347 Tie In	40	40	Pass	
Aug 10	Aug 14	12:10	P292-P336 Tie In	40	40	Pass	
Aug 10	Aug 14	8:44	P293-P334 Tie In	40	40	Pass	
Aug 10	Aug 14	8:43	P294-P332 Tie In	40	40	Pass	
Aug 10	Aug 14	8:35	P294-P325 Tie In	40	40	Pass	
Aug 10	Aug 14	8:35	P294-P326 Tie In	40	38	Pass	
Aug 10	Aug 14	8:29	P294-P327 Tie In	40	40	Pass	
Aug 10	Aug 14	8:28	P294-P329 Tie In	40	40	Pass	
Aug 10	Aug 14	8:23	P294-P330 Tie In	40	40	Pass	
Aug 10	Aug 14	8:23	P294-P331 Tie In	40	40	Pass	
Aug 11	Aug 14	17:54	P355-P356 Cross	40	40	Pass	
Aug 11	Aug 14	16:20	P357-P358 Cross	40	40	Pass	
Aug 11	Aug 14	17:54	P352-P356 Vertical	40	40	Pass	
Aug 11	Aug 14	17:55	P356-P358 Vertical	40	40	Pass	
Aug 11	Aug 14	17:54	P352-P355 Vertical	40	40	Pass	
Aug 11	Aug 14	18:06	P355-P358 Vertical	40	40	Pass	
Aug 11	Aug 14	16:20	P355-P357 Vertical	40	40	Pass	
Aug 11	Aug 14	18:28	P358-P360 Vertical	40	40	Pass	
Aug 11	Aug 14	18:27	P357-P360 Vertical	40	40	Pass	
Aug 11	Aug 15	13:25	P351-P355 Vertical	40	40	Pass	
Aug 11	Aug 15	13:49	P360-P361 Cross	40	40	Pass	
Aug 11	Aug 15	13:37	P359-P360 Cross	40	39	Pass	
Aug 11	Aug 15	13:49	P358-P361 Vertical	40	40	Pass	
Aug 11	Aug 15	13:37	P357-P359 Vertical	40	40	Pass	

Date Fused	Date Tested	Time Tested	Seam #	psi Start	psi End	Pass or Fail	Notes
Aug 14	Aug 15	13:57	P363-P364 Cross	40	40	Pass	
Aug 14	Aug 15	13:49	P361-P364 Vertical	40	40	Pass	
Aug 14	Aug 15	14:08	P365-P366 Cross	40	40	Pass	
Aug 14	Aug 15	14:05	P360-P364 Vertical	40	40	Pass	
Aug 14	Aug 15	13:57	P363-P366 Vertical	40	40	Pass	
Aug 14	Aug 15	13:37	P360-P363 Vertical	40	40	Pass	
Aug 14	Aug 15	13:57	P364-P366 Vertical	40	40	Pass	
Aug 14	Aug 15	13:37	P359-P363 Vertical	40	40	Pass	
Aug 14	Aug 15	13:39	P359-P362 Vertical	40	40	Pass	
Aug 14	Aug 15	14:08	P365-P368 Vertical	40	40	Pass	
Aug 14	Aug 15	15:37	P366-P368 Vertical	40	40	Pass	Top of seam to patch
Aug 14	Aug 15	15:37	P366-P386 Vertical	40	40	Pass	Patch to bottom of seam
Aug 15	Aug 16	17:11	P369-P370 Cross	40	40	Pass	
Aug 15	Aug 16	16:52	P371-P372 Cross	40	40	Pass	
Aug 15	Aug 16	16:57	P370-P372 Vertical	40	40	Pass	
Aug 15	Aug 16	16:56	P369-P372 Vertical	40	40	Pass	
Aug 15	Aug 16	16:37	P369-P371 Vertical	40	40	Pass	
Aug 15	Aug 16	16:52	P373-P374 Cross	40	40	Pass	
Aug 15	Aug 16	16:55	P372-P374 Vertical	40	40	Pass	
Aug 15	Aug 16	16:53	P375-P376 Cross	40	40	Pass	
Aug 15	Aug 16	16:54	P371-P374 Vertical	40	40	Pass	
Aug 15	Aug 16	16:38	P371-P373 Vertical	40	40	Pass	
Aug 15	Aug 16	17:01	P374-P376 Vertical	40	40	Pass	
Aug 15	Aug 16	17:00	P373-P376 Vertical	40	38	Pass	
Aug 15	Aug 16	16:39	P373-P375 Vertical	40	40	Pass	
Aug 15	Aug 16	16:57	P377-P378 Cross	40	40	Pass	
Aug 15	Aug 16	17:26	P379-P380 Cross	40	40	Pass	
Aug 15	Aug 16	17:23	P376-P378 Vertical	40	39	Pass	
Aug 15	Aug 16	17:24	P378-P380 Vertical	40	40	Pass	
Aug 15	Aug 16	17:24	P378-P379 Vertical	40	40	Pass	
Aug 15	Aug 16	16:51	P377-P379 Vertical	40	40	Pass	
Aug 15	Aug 16	16:50	P375-P377 Vertical	40	40	Pass	
Aug 15	Aug 16	17:37	P381-P382 Cross	40	40	Pass	
Aug 15	Aug 16	17:42	P383-P384 Cross	40	40	Pass	
Aug 15	Aug 16	17:41	P382-P384 Vertical	40	40	Pass	
Aug 15	Aug 16	17:37	P380-P382 Vertical	40	40	Pass	
Aug 15	Aug 16	17:39	P382-P383 Vertical	40	39	Pass	
Aug 15	Aug 16	17:39	P381-P383 Vertical	40	40	Pass	
Aug 15	Aug 16	17:28	P380-P381 Vertical	40	40	Pass	
Aug 15	Aug 16	17:27	P379-P381 Vertical	40	40	Pass	
Aug 16	Aug 16	18:03	P367-P387 Cross	40	40	Pass	

6.0 DESTRUCTIVE TESTING

Table 4 summarizes the weekly destructive testing results. Five tests are performed for each criterion.

Table 4: Destructive Testing Results

Date Fused	Time Fused	Tech	Apparatus	Location (UTM is +/- 4 m)	Sample ID	$Peel_{in}$ (100 min)	$Peel_{out}$ (100 min)	Shear (120 min)	Pass or Fail
Aug 9	12:19	JC	WW-022	P342-P344 Vertical Top of Seam	D140	142 148 137 151 146	153 154 153 137 123	158 162 151 166 155	Pass
Aug 7	17:25	JC	WW-022	P325-P333 Vertical Bottom of Seam	D141	136 144 144 145 144	152 139 144 146 141	160 162 165 162 163	Pass
Aug 7	17:25	JC	WW-022	P325-P333 Vertical Top of Seam	D142	144 140 148 139 148	145 142 147 117 152	143 162 149 162 152	Pass
Aug 9	15:02	JC	WW-022	P343-P345 Vertical Bottom of Seam	D143	137 139 136 127 133	149 143 152 144 133	156 148 160 148 152	Pass
Aug 9	10:49	JC	WW-022	P336-P338 Vertical Top of Seam	D144	152 147 142 154 148	158 151 159 144 163	161 169 164 163 170	Pass
Aug 6	16:07	CC	WW-045	P295-P303 Tie In Bottom of Seam	D145	152 142 148 151 138	143 136 127 133 133	156 156 166 154 157	Pass
Aug 6	14:53	CC	WW-045	P296-P303 Tie In Bottom of Seam	D146	158 164 147 168 161	160 139 152 146 159	161 186 179 192 165	Pass
Aug 9	10:05	JC	WW-022	P337-P340 Vertical Top of Seam	D147	147 132 143 143 131	135 148 148 148 142	145 141 151 145 147	Pass

Date Fused	Time Fused	Tech	Apparatus	Location (UTM is +/- 4 m)	Sample ID	$Peel_{in}$ (100 min)	$Peel_{out}$ (100 min)	Shear (120 min)	Pass or Fail
Aug 9	9:52	JC	WW-022	P338-P339 Cross Left Side of Seam	D148	152 148 151 145 160	143 171 172 143 153	180 177 184 181 162	Pass
Aug 9	18:05	JC	WW-022	P349-P351 Vertical Bottom of Seam	D149	133 130 135 133 127	149 137 117 146 144	156 157 156 152 156	Pass
Aug 10	9:29	EA	WW-022	P293-P347 Tie In Top of Seam	D150	156 156 131 151 138	130 120 138 149 132	155 167 141 169 162	Pass
Aug 9	16:32	JC	WW-022	P345-P347 Vertical Bottom of Seam	D151	141 142 137 136 143	129 149 147 140 134	153 123 144 131 151	Pass
Aug 9	13:09	CC	WW-045	P338-P341 Vertical Bottom of Seam	D152	146 149 134 133 144	141 143 135 140 148	141 159 153 161 143	Pass
Aug 9	12:44	JC	WW-022	P301-P302 Vertical Top of Seam	D153	131 151 152 143 146	134 145 142 122 140	162 156 158 151 158	Pass
Aug 6	12:00	CC	WW-045	P306-P307 Vertical Top of Seam	D154	152 148 131 130 139	124 127 140 105 127	153 162 155 163 158	Pass
Aug 6	14:30	DT	WW-026	P317-P318 Vertical Top of Seam	D155A	138 136 136 140 139	130 141 140 142 145	156 135 149 126 149	Fail
Aug 7	13:56	CC	WW-045	P325-P326 Vertical Bottom of Seam	D156	131 140 130 124 135	119 137 142 128 139	155 164 164 166 154	Pass

Date Fused	Time Fused	Tech	Apparatus	Location (UTM is +/- 4 m)	Sample ID	$Peel_{in}$ (100 min)	$Peel_{out}$ (100 min)	Shear (120 min)	Pass or Fail
Aug 9	17:59	CC	WW-045	P350-P353 Vertical Top of Seam	D157	137 153 143 133 138	131 149 138 143 131	155 143 159 137 151	Pass
Aug 9	12:20	CC	WW-045	P340-P342 Vertical Top of Seam	D158	142 128 139 137 148	137 131 146 121 146	120 153 141 151 137	Pass
Aug 9	10:05	CC	WW-045	P335-P337 Vertical Top of Seam	D159	120 149 146 138 146	141 134 135 152 128	134 146 155 124 129	Pass
Aug 9	14:21	JC	WW-022	P344-P346 Vertical Top of Seam	D160	136 124 123 132 137	145 144 140 143 149	139 155 122 153 140	Pass
Aug 6	14:30	DT	WW-026	P317-P318 Vertical Top of Seam 3.0 m Down Seam from 155A	D155B	135 124 130 127 116	123 135 131 125 128	139 147 120 123 137	Pass

7.0 PHOTO LOG



Figure 1: Upper End of Subgrade



Figure 2: Damaged Subgrade due to Erosion

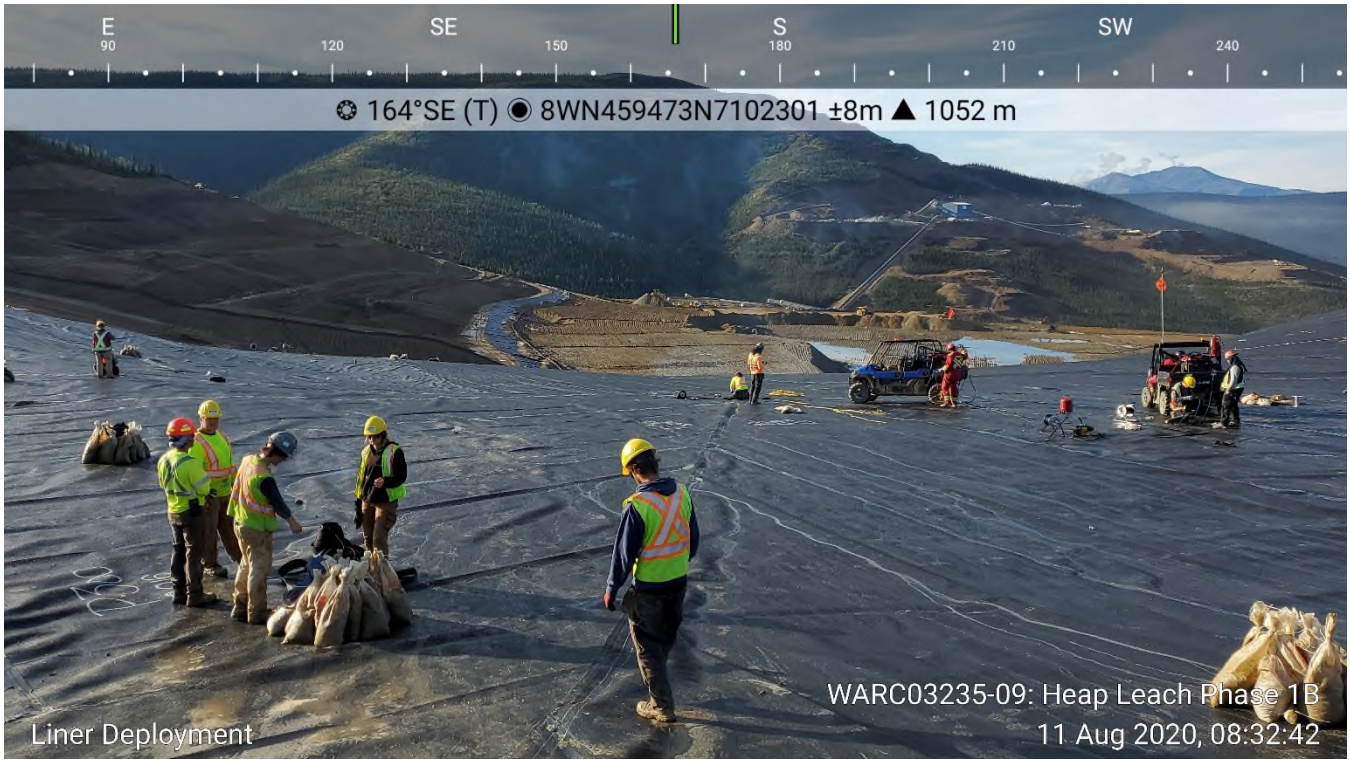


Figure 3: Detailing Work being Performed on Liner



Figure 4: Prepared and Inspected Subgrade



Figure 5: Deploying GCL



Figure 6: Overall Deployment at the End of August 11



Figure 7: Preparing Subgrade for Deployment

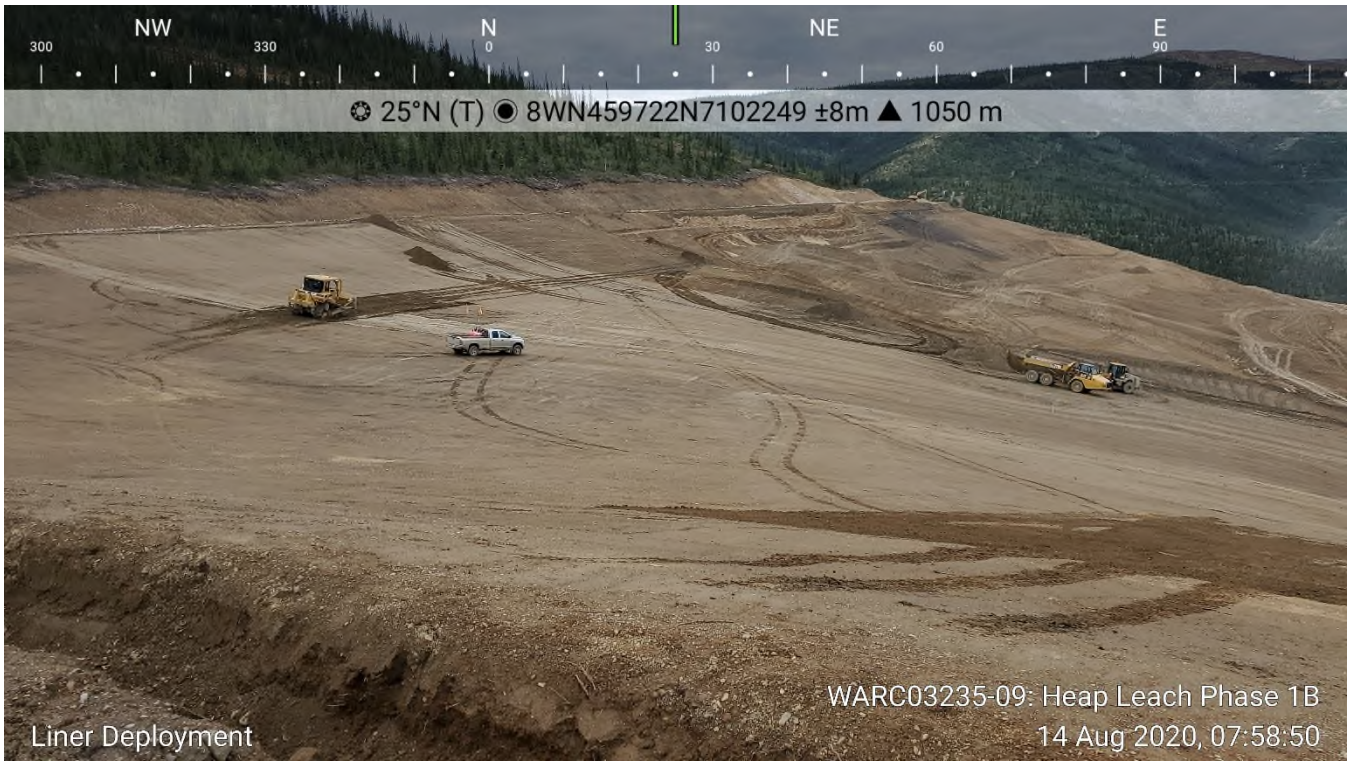


Figure 8: Preparing Subgrade in Northeast Corner



Figure 9: Prepared Subgrade for Deployment



Figure 10: Prepared Subgrade for Deployment



Figure 11: Area Requiring Sand prior to Deployment

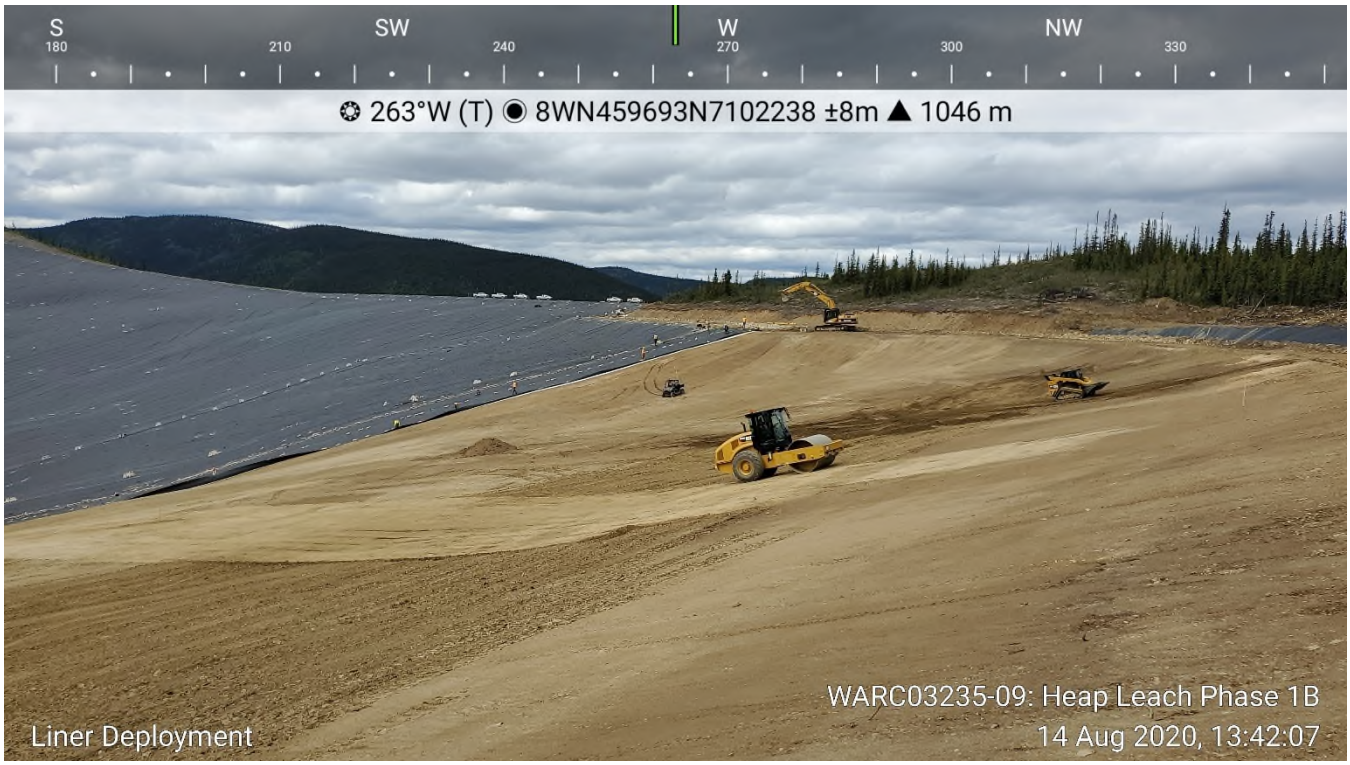


Figure 12: Packing Northeast Corner

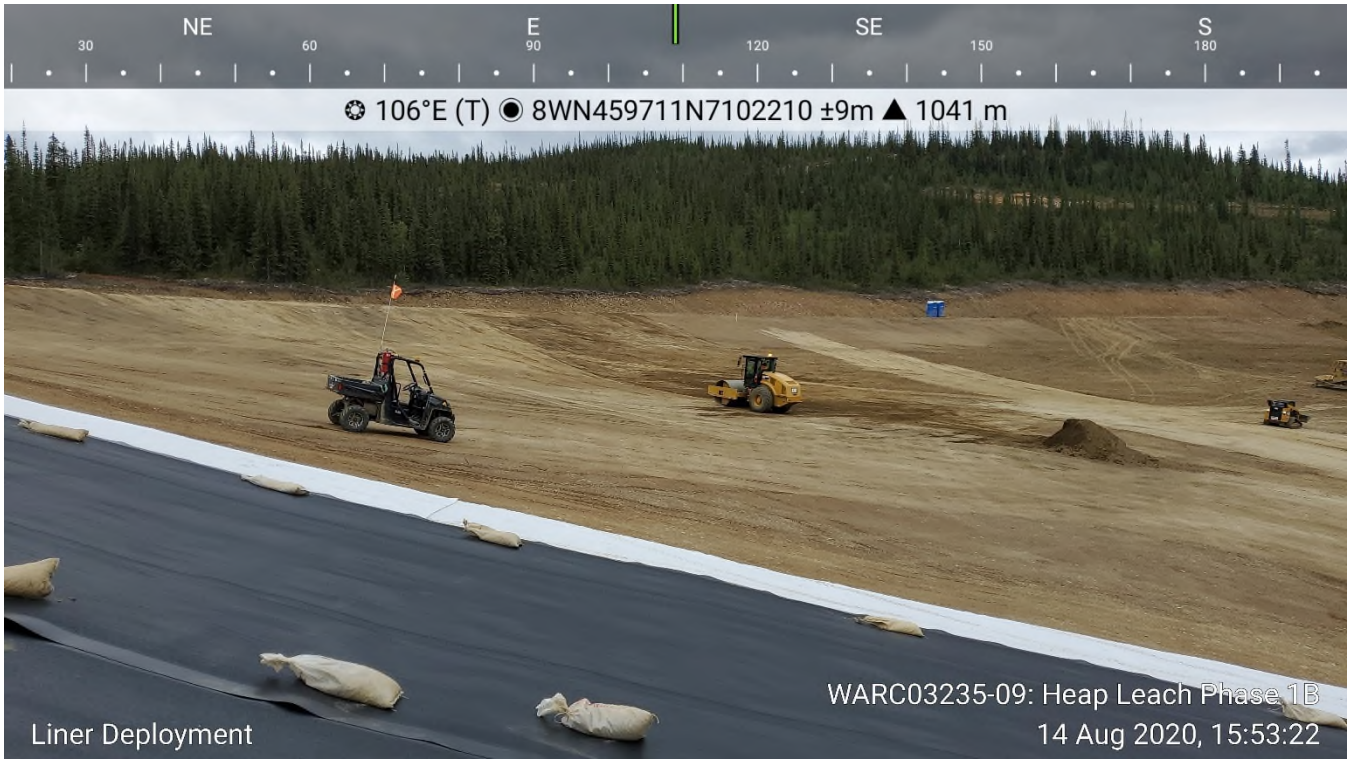


Figure 13: Packing Northeast Corner



Figure 14: Deployed GCL



Figure 15: Overall Deployment as of August 14

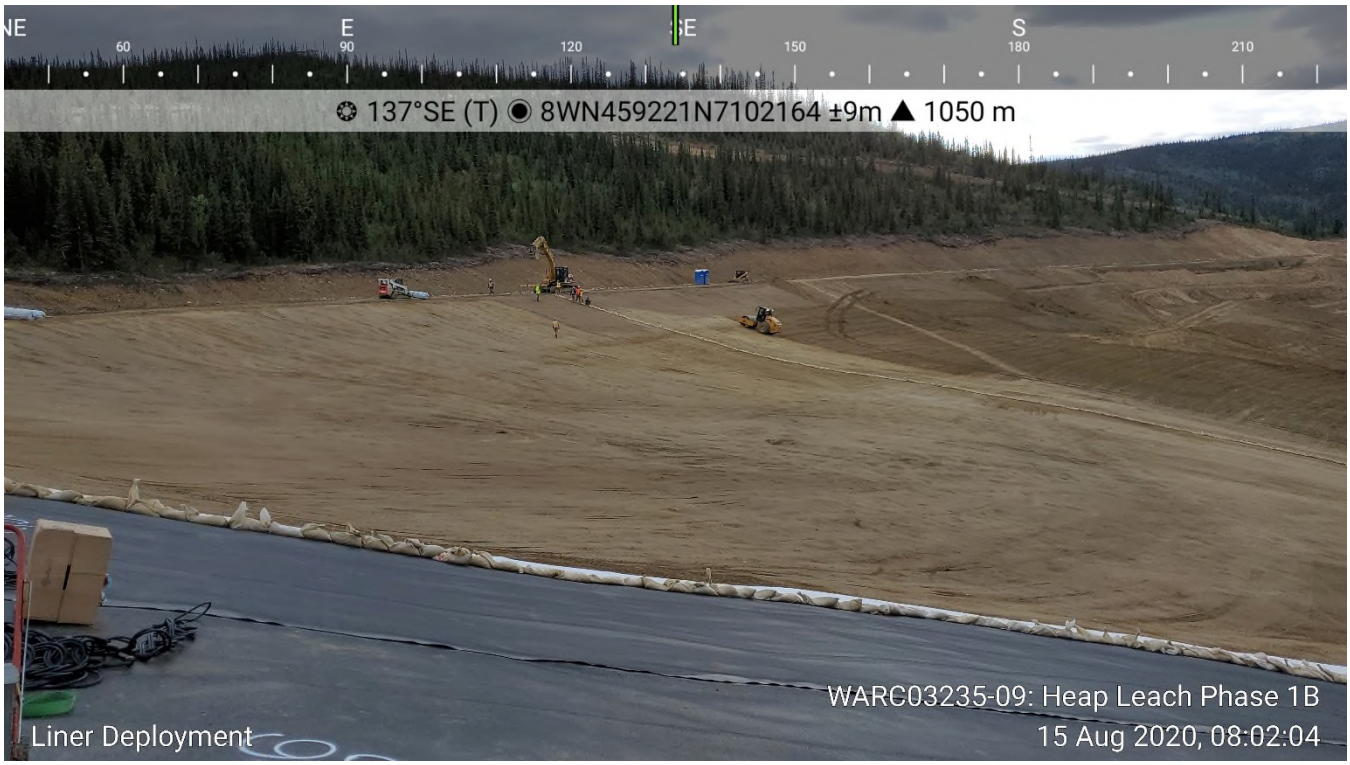


Figure 16: Prepared and Inspected Subgrade



Figure 17: Prepared and Inspected Subgrade



Figure 18: Prepared and Inspected Subgrade



Figure 19: Prepared and Inspected Subgrade



Figure 20: Holes in GCL



Figure 21: Holes in GCL Repaired



Figure 22: GCL Deployed on Slope



Figure 23: GCL Deployed on Slope



Figure 24: Liner Deployed on Slope



Figure 25: Overall Deployment as of August 15



Figure 26: GCL Deployed on Slope



Figure 27: Liner Deployed over GCL

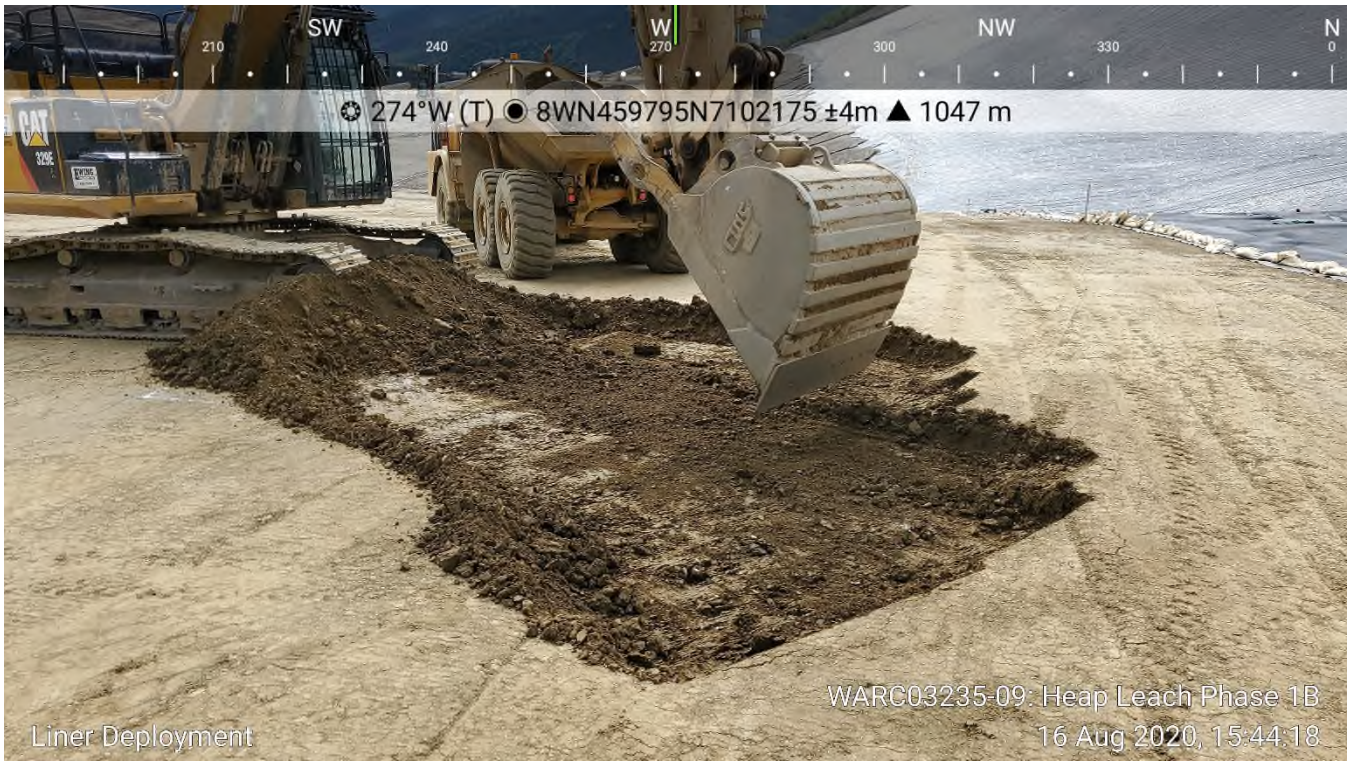


Figure 28: Excavating Subgrade Soft Spot 250 mm



Figure 29: Rolling Excavated Soft Spot



Figure 30: Subgrade after Rolling, Note the Marks Left by the Packer Showing 50 mm of Deflection



Figure 31: Soft Spot after Rolling



Figure 32: Excavating Soft Spot Adjacent to E3 Lateral

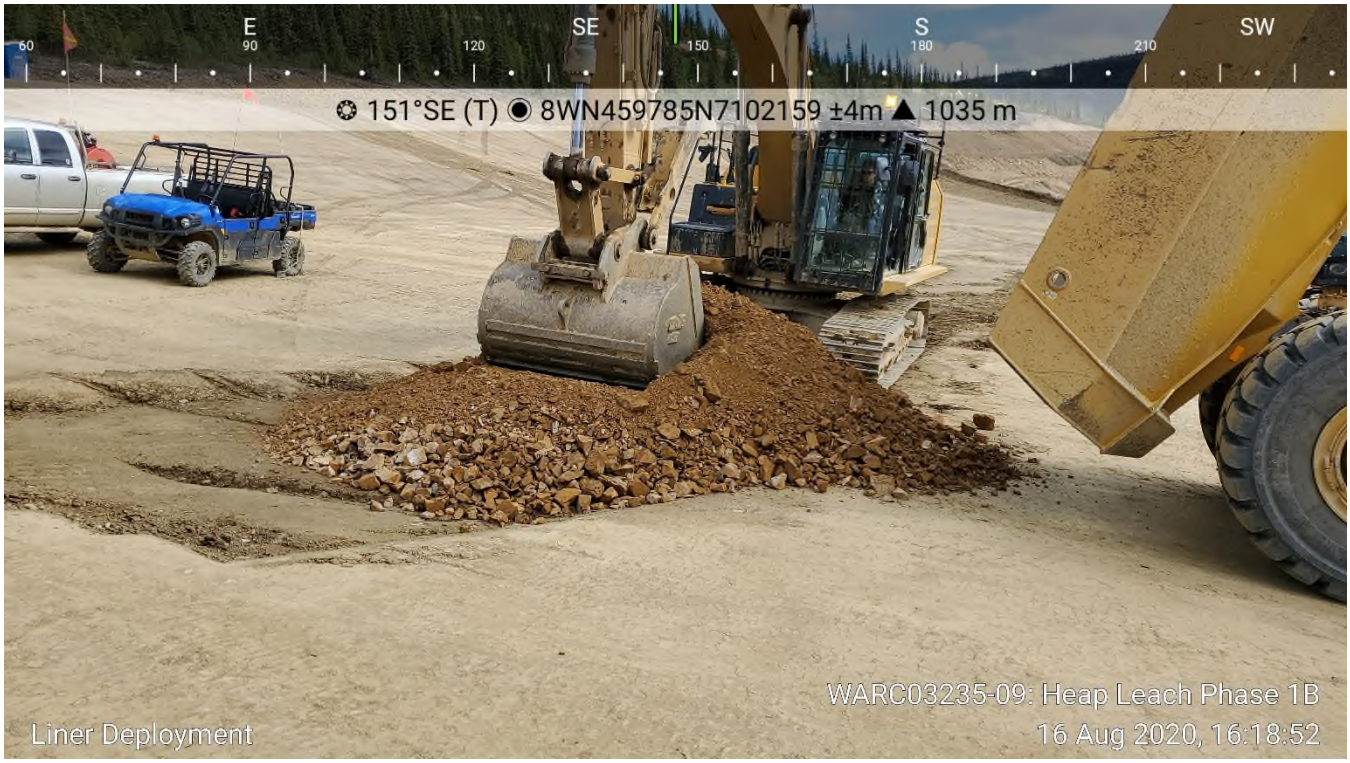


Figure 33: Backfilling Soft Spot with Rock Fill



Figure 34: Rock Fill after Compaction, Note the Indents Left by the Packer Drum



Figure 35: Rock Fill after 8 Passes with Packer



Figure 36: Excavating Soft Spot to 700 mm Depth



Figure 37: Soft Spot Excavation



Figure 38: Rock Fill after 2 Passes

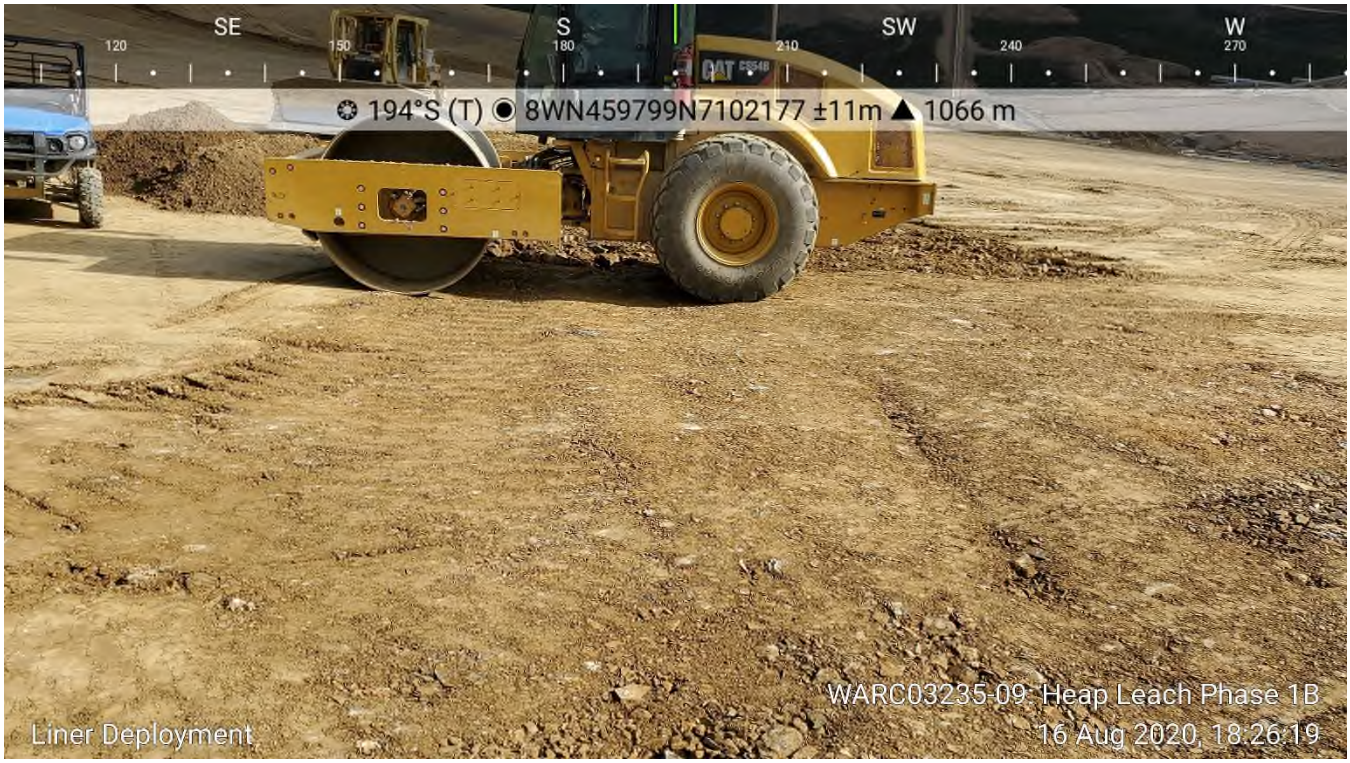


Figure 39: Rock Fill During Compaction, Note Minimal Indents by Drum after 2 Passes

TETRA TECH

WEEKLY FIELD REPORT

ISSUED FOR USE

Project:	Eagle Gold Heap Leach Phase 1B	**Date:**	August 23, 2020
Location:	Eagle Gold Mine	**Contractor:**	Ewing Transport / Layfield
Client:	Victoria Gold Corp.	**Contractor's Rep:**	Marshall Ewing / Chad Messervey
Contact:	Clint Abel	**Contractor's Email:**	
Weather:	Variable (see daily entries)	**Tetra Tech Representative:**	Adam Mickey
File:	704-ENG.WARC03235-09	**Status:**	Issued for Use

1.0 INTRODUCTION

Tetra Tech Canada Inc. (Tetra Tech) was retained by Victoria Gold Corp. (Victoria Gold) to provide CQA services at the Eagle Gold mine located north of Mayo, Yukon, at Dublin Gulch for the Eagle Gold Heap Leach Phase 1B expansion (Phase 1B). Mr. Adam Mickey, EIT, is Tetra Tech's representative on site.

Forte Dynamics (Forte) out of Fort Collins, Colorado provided the design and specification for Phase 1B, and Forte's representative is Clint Green.

Clint Abel, of JDS Energy & Mining, is Victoria Gold's project manager on site at the Eagle Gold mine.

Ewing Transport (Ewing), based out of Mayo, Yukon, is the construction contractor for Phase 1B.

Layfield Environmental Containment (Layfield) has been retained to provide and install the liner for Phase 1B, and their supervisor on site is Chad Messervey.

The following Field Report outlines Tetra Tech's CQA for the period of August 17, 2020, to August 23, 2020.

2.0 DAILY REPORTS

2.1 Highlights

- Layfield deployed approximately 6,642.3 m of liner, covering an area of approximately 44,503 m^2.
- Rain delayed liner deployment throughout the week.
- Layfield is placing three panels of GCL for every two panels of 80 mm LLDPE liner.

2.2 August 17, 2020

- Weather: cloudy with sunny periods.
- Tetra Tech and Ewing had a meeting with Matthew Mock, Clint Abel, and Forte at 11 am to discuss the soft spot in the subgrade.
  - Over the laterals, permission was given to excavate them till 10 cm of sand remained over the drain rock and then backfill with rock fill.

Tetra Tech Canada Inc.
61 Wasson Place
Whitehorse, YT Y1A 0H7 CANADA
Tel 867.668.3068 Fax 867.668.4349

  - Areas not in conflict with laterals were to be excavated to competent ground and backfill with rock fill and compacted.

- Ewing conducted a test section over the 4E lateral, and subgrade conditions improved once the rockfill had been placed and compacted.
- After the test section, Ewing began working at the northernmost limit of soft spots along the 4E lateral.
  - Water was encountered during digging, and Ewing quickly backfilled to seal the water up.
  - Tetra Tech informed Clint Green and Clint Abel about the issue.
    - Clint Abel and Clint Green agreed that a sub-lateral should be run between 4E and 3E laterals to capture the water.
  - Ewing continued to work on other soft spots in the subgrade.
- Layfield deployed two slope lengths of liner and one slope length of GCL to complete the tie in seam to the panels deployed in a different direction.
- Layfield conducted pressure testing, vacuum box testing, and extrusion detail work on all deployed liner.
- Tetra Tech and Layfield conducted a walk-off of the deployed liner.
  - Five spots for extrusion and numerous placed that required vacuum box testing was identified.
  - 70% of the walk-off was completed by the end of the day, with the rest to be completed on the next workday.
- Tetra Tech and Layfield conducted destructive testing of samples.
  - All samples passed, and destructive testing is caught up to all deployment up to and including August 16 (Panel P402).
- Due to subgrade not being ready for deployment, Layfield will be taking August 18 off.

2.3 August 18, 2020

- No work performed today due to no prepared subgrade.
- Ewing continued to work on subgrade.

2.4 August 19, 2020

- Weather: mostly cloudy.
- Ewing is continuing to work on subgrade in advance of deployment.
  - Ewing is identifying soft spots as they arise and repairing them by excavating the material and replacing it with rock fill.
- Tetra Tech inspected and approved the subgrade in advance of today's deployment.
- Layfield is deploying liner on the prepared subgrade.
  - Layfield deployed nine slope lengths of GCL and four slope lengths of liner by the end of the day.
- Tetra Tech and Layfield's QC finished the walk-off of all liner deployed up to and including August 16 (Panels P92 through P402).

- Some areas require patching and vacuum box testing.
  - All Patching and vacuum box testing was completed by the end of the day.

2.5 August 20, 2020

- Weather: mostly sunny.
- Ewing is continuing to prepare subgrade and excavate soft spots in advance of liner deployment.
  - Soft spots were identified where repairs had been made along the 4E lateral.
    - Clint Abel authorized deployment over the areas.
- Tetra Tech inspected and approved the subgrade in advance of today's deployment.
  - Rocks are continuing to be an issue as they are pulled out of the subgrade by the side by sides. Layfield is picking the larger rocks off the slope as they occur.
- Layfield is continuing to deploy liner.
  - Layfield deployed ten slope runs of GCL and seven slope runs of liner.
  - Layfield had an extruder out on the slope conducting detail work as required.
- Layfield's QC conducted pressure testing of seam as they were ready.
- Tetra Tech and Layfield signed the Certificate of Final Inspection and Acceptance for panels P93 to P402 as well as the Certificate of Inspection of Soil Subgrade Surface for liner panels P295 to P402. All documentation was submitted to Forte, Clint Abel, and Victoria Gold.

2.6 August 21, 2020

- Weather: cloudy with periods of light rain, turning to mostly cloudy in the afternoon.
- Ewing is continuing to prepare subgrade and excavate soft spots in advance of deployment.
  - Deployment is quickly catching up to subgrade preparation.
- Tetra Tech inspected and approved the subgrade in advance of today's deployment.
- Layfield is continuing to deploy liner.
  - Layfield has an extruder at deployment to conduct detail work as required.
  - Layfield deployed three slope lengths of liner by first break. After first break, Layfield could not deploy GCL due to soft spot repairs until 1:00 pm then began at 1:30 pm due to rain. Layfield conducted clean up until they could deploy.
  - Layfield deployed five slope lengths of liner by the end of the day.
- Layfield's QC conducted pressure testing of seams as they were ready.

2.7 August 22, 2020

- Weather: mostly cloudy.
- Ewing is continuing to prepare subgrade in advance of deployment.

  - Small and isolated soft spots still exist in the subgrade, but at Clint Abel's authorization, liner will be deployed over them.

- Tetra Tech inspected and approved the subgrade for today's deployment.
  - Rocks being picked out of the subgrade is continuing to be an ongoing problem. Layfield is picking the rocks in advance of deployment, and Ewing is covering the rocky section as they are identified.
- Layfield is continuing to deploy GCL and liner.
  - Layfield has an extruder at deployment, conducting detail work as required.
  - Layfield deployed five slope runs of liner by 5:00 pm.
  - For the rest of the day, Layfield cleaned up garbage and did miscellaneous tasks.
- Layfield's QC is conducting pressure testing of seams.

2.8 August 23, 2020

- Weather: partly cloudy.
- Ewing is continuing to prepare subgrade in advance of liner deployment.
  - Ewing is sanding rocky areas on the slope.
  - Tetra Tech identified a soft spot requiring repair.
    - Ewing excavated the soft spot and backfilled with rock fill, then coated it with sand.
- Tetra Tech inspected and approved the subgrade for today's deployment.
- Layfield is continuing to deploy liner.
  - Layfield deployed four slope lengths of liner.
    - Layfield finished deploying at 4:30 pm and held off further deployment due to rain in tomorrow's forecast.
  - Rocks in the subgrade are continuing to be an issue.
    - While Ewing is sanding rock fill areas on the slope, the use of side by sides are loosening up the dry subgrade surface and pulling rocks out in areas that have not been sanded.
      - Rocks are being found beneath the GCL, and Layfield is pulling out the rocks larger than 50 mm.
- Layfield's QC conducted pressure testing of fused seams.

3.0 GEOSYNTHETIC ROLL NUMBERS PLACED

Table 1 summarizes the daily geosynthetic roll numbers placed on the slope during liner installation. All panel lengths are approximate, and where angled joints are used, panel length is based from the center of the panel.

Table 1: Geosynthetic Roll Numbers Placed on Slope

Date	GCL Roll Number	LLDPE Liner Roll Number	Panel Number (Length)
August 17	502343993, 502344594 502344654, 502344586 502344653, 502346982 502344675, 502343994 502344020, 502344587 502344605, 502344017 502343605	10699-006 10699-014 10690-030	P403 (37.6 m) P404 (129.4 m) P405 (99.9 m)
August 18	-	-	-
August 19	502346925, 502347071 502344690, 502344712 502344540, 502344699 502347066, 502347050 502346927, 502344592 502343996, 502346935 502347058, 502343995 502344584, 502344579 502344542, 502344693 502344689, 502344580 502344541, 502344543 502346928, 502344535 502344655, 502344656 502344639, 502344600 502344574, 502344674 502344015, 502344570 502344589, 502344649 502344638, 502344687 502344688, 502344677 502344590, 502343998 502344676, 502344640 502344673, 502344683 502344637, 502344575 502344568, 502344569 502344603, 502343992 502344665, 502344668 502344671, 502347052 502344591, 502344571 502344577, 502344578 502344026, 502344595 502344593, 502344031 502344672	10690-030 10690-027 10690-036 10690-026 10699-035 10699-034 10699-005 10699-013 10699-027	P406 (29.9 m) P407 (129.8 m) P408 (105.0 m), P409 (23.7 m) P410 (129.4 m) P411 (111.6 m), P412 (17.2 m) P413 (122.0 m) P414 (119.8 m), P415 (10.0 m) P416 (128.5 m) P417 (127.0 m)

Date	GCL Roll Number	LLDPE Liner Roll Number	Panel Number (Length)
August 20	502344573, 502347510	10696-017	P418 (129.7 m)
	502347509, 502344125	10696-017	P419 (112.0 m)
	502347683, 502347694	10696-003	P420 (8.8 m), P421 (117.5 m)
	502347692, 502347472	10696-016	P422 (121.8 m)
	502347499, 502347473	10690-034	P423 (21.2 m), P424 (107.4 m)
	502347085, 502347084	10696-013	P425 (121.5 m)
	502347469, 502347500	10696-004	P426 (31.6 m), P427 (95.3 m)
	502347480, 502347486	10696-026	P428 (121.7 m)
	502347684, 502347597	10696-036	P429 (43.5 m), P430 (84.0 m)
	502347487, 502347685	10696-027	P431 (121.3 m)
	502347681, 502347687	10696-033	P432 (55.2 m), P433 (75.3 m)
	502344107, 502347690	10696-037	P434 (127.9 m)
	502344113, 502344126	10696-009	P435 (63.4 m), P436 (66.1 m)
	502347471, 502347484	10696-034	P437 (127.9 m)
	502347093, 502344700	10696-007	P438 (1.0 m), P439 (71.5 m)
	502347481, 502347482		
	502344710, 502344696		
	502347488, 502347479		
	502347492, 502347490		
	502347478, 502344583		
	502343888, 502343891		
	502347475, 502347693		
	502347485, 502347094		
August 21	502347477, 502344695	10696-007	P440 (57.5 m)
	502347702, 502347696	10696-012	P441 (128.2 m)
	502347483, 502347467	10696-021	P442 (73.2 m), P443 (51.9 m)
	502347476, 502344036	10696-011	P444 (128.7 m)
	502344711, 502344066	10696-035	P445 (78.3 m), P446 (49.0 m)
	502344719, 502344013	10690-003	P447 (128.9 m)
	502344035, 502344012	10696-030	P448 (81.0 m), P449 (45.6 m)
	502344038, 502344070	10696-014	P450 (129.1 m)
	502344059, 502346408	10696-015	P451 (84.2 m), P452 (42.1 m)
	502344039, 502344014	10695-011	P453 (129.3 m)
	502347695, 502347470	10696-020	P454 (87.5 m)
	502344713, 502344617		
	502343907, 20032412		
	502344618, 502344152		
	502344172, 502347512		
	502347503, 502343909		
	502344069, 502343902		
	502344071, 502347474		
	502344073, 502347686		
	502344040, 502344037		

Date	GCL Roll Number	LLDPE Liner Roll Number	Panel Number (Length)
August 22	502343885, 502344166 502344165, 502343899 502344153, 502344170 502344635, 502343894 502344623, 502343908 502347502, 502344622 502343892, 502344175 502343934, 502344171 502343950, 502344168 502343900, 502347497 502344624, 502343910 502344174, 502343951 502344167, 502343929 502344169, 502343893 502343906, 502347569 502344065, 502344063 502344061	10696-020 10696-019 10696-025 10696-022 10696-024 10696-023 10695-014 10695-019 10695-016 10695-020 10695-027 10695-017	P455 (42.1 m) P456 (126.7 m) P457 (92.0 m), P458 (37.8 m) P459 (127.0 m) P460 (85.8 m), P461 (40.6 m) P462 (127.0 m) P463 (82.4 m), P464 (45.6 m) P465 (128.2 m) P466 (73.4 m), P467 (50.9 m) P468 (127.4 m) P469 (1.7 m) P470 (67.2 m)
August 23	0242-347565, 0242-347576 0242-347620, 0242-347571 502343887, 502343928 502344062, 502344047 522344084, 502344098 502344090, 502347504 502344634, 502344060 502344058, 502344628 502344097, 502344068 502344631, 502344076 502344103, 502344075 502344619, 502344632 502343939, 502344085 502343933, 502343651 502343960, 502343652 502344620, 502347493 502347507	10695-017 10695-013 10695-003 10695-022 10695-018 10695-029 10695-027 10695-026 10695-023	P471 (56.3 m) P472 (126.4 m) P473 (53.7 m). P474 (59.5 m) P475 (128.2 m) P476 (48.7 m), P477 (64.3 m) P478 (128.4 m) P479 (43.7 m), P480 (69.3 m) P481 (126.4 m) P482 (40.7 m)

4.0 TRIAL SEAM

Table 2 summarizes the weekly trial seam results. For fusion, the apparatus settings are temperature and speed, and for extrusion, the apparatus settings are preheat and barrel temperature. Five tests are performed for each criterion.

Table 2: Trial Seam Results

Date	Time	Fusion or Extrusion	Tech	Apparatus #	Temp or Preheat (ºF)	Speed (%) or Barrel Temp (ºF)	$Peel_{inside}$ (100 min)	$Peel_{outside}$ (100 min for Fusion 88 min for Extrusion)	Shear (120 min)	Smooth or Textured
Aug 17	8:50	Extrusion	EA	04037	500	495	N/A	94 90 104 116 119	166 162 173 176 171	N/A
Aug 17	12:30	Fusion	JC	WW-022	850	50	142 138 129 133 114	116 122 130 136 136	145 152 148 154 151	Smooth
Aug 17	12:30	Fusion	JC	WW-022	850	35	140 142 130 146 140	148 141 136 143 142	156 166 165 172 167	Textured
Aug 17	12:35	Fusion	JC	WW-022	850	40	123 129 145 142 148	119 119 147 143 133	140 155 142 143 156	Smooth-Textured
Aug 17	12:50	Fusion	JK	WW-054	850	55	126 134 129 134 127	120 128 122 133 123	144 145 144 149 143	Smooth
Aug 17	14:00	Extrusion	EA	04037	500	495	N/A	131 132 115 125 134	157 163 165 160 160	N/A
Aug 19	8:30	Extrusion	EA	04037	500	495	N/A	109 127 140 149 138	169 170 175 178 176	N/A
Aug 19	10:30	Fusion	CC	WW-026	850	35	137 139 141 142 134	135 141 148 146 144	165 173 167 168 155	Textured

Date	Time	Fusion or Extrusion	Tech	Apparatus #	Temp or Preheat (ºF)	Speed (%) or Barrel Temp (ºF)	$Peel_{inside}$ (100 min)	$Peel_{outside}$ (100 min for Fusion 88 min for Extrusion)	Shear (120 min)	Smooth or Textured
Aug 19	10:30	Fusion	JK	WW-022	850	55	146 147 149 144 129	142 160 154 159 147	158 169 162 167 166	Smooth
Aug 19	10:30	Fusion	JC	WW-045	850	55	141 135 145 138 147	141 142 131 147 152	158 162 158 160 158	Smooth
Aug 19	12:30	Extrusion	EA	04037	500	495	N/A	125 125 126 137 132	141 146 148 151 167	N/A
Aug 19	14:35	Fusion	CC	WW-026	850	35	122 129 125 130 128	127 121 126 133 124	129 161 147 146 127	Textured
Aug 19	14:30	Fusion	JC	WW-045	850	55	118 120 124 113 134	130 119 115 123 131	142 132 134 129 141	Smooth
Aug 19	14:30	Fusion	JK	WW-022	850	55	132 128 135 146 140	130 130 130 135 129	136 144 144 129 138	Smooth
Aug 19	16:35	Extrusion	EA	04037	500	495	N/A	134 129 134 128 131	148 147 151 154 159	N/A
Aug 20	8:30	Fusion	JK	WW-022	850	55	137 140 131 126 134	127 149 129 134 141	142 151 142 155 144	Smooth
Aug 20	8:30	Fusion	CC	WW-045	850	55	129 132 117 134 134	136 142 104 125 140	157 143 155 142 143	Smooth

Date	Time	Fusion or Extrusion	Tech	Apparatus #	Temp or Preheat (ºF)	Speed (%) or Barrel Temp (ºF)	$Peel_{inside}$ (100 min)	$Peel_{outside}$ (100 min for Fusion 88 min for Extrusion)	Shear (120 min)	Smooth or Textured
Aug 20	8:50	Fusion	JC	WW-026	850	35	136 134 130 132 145	148 148 150 146 145	162 171 155 178 172	Textured
Aug 20	12:30	Fusion	JC	WW-026	850	35	140 150 155 151 142	144 145 155 147 136	165 169 159 171 161	Textured
Aug 20	12:30	Fusion	JC	WW-026	850	55	127 128 122 128 125	127 126 127 135 126	140 137 140 141 136	Smooth
Aug 20	12:30	Extrusion	RW	04037	500	495	N/A	134 134 109 101 107	153 158 150 160 147	N/A
Aug 20	12:45	Fusion	CC	WW-045	850	55	120 129 132 122 128	133 125 130 115 122	131 137 135 143 135	Smooth
Aug 20	14:20	Fusion	JK	WW-022	850	55	124 131 125 135 131	126 133 130 137 126	142 144 142 144 144	Smooth
Aug 20	14:40	Fusion	JK	WW-022	850	35	140 151 143 140 150	115 147 147 143 136	152 161 160 163 162	Textured
Aug 20	16:00	Extrusion	RW	04037	500	495	N/A	134 132 133 110 115	145 140 135 139 129	N/A
Aug 21	8:00	Extrusion	EA	04037	500	495	N/A	115 104 120 139 115	141 143 143 150 152	N/A

Date	Time	Fusion or Extrusion	Tech	Apparatus #	Temp or Preheat (ºF)	Speed (%) or Barrel Temp (ºF)	$Peel_{inside}$ (100 min)	$Peel_{outside}$ (100 min for Fusion 88 min for Extrusion)	Shear (120 min)	Smooth or Textured
Aug 21	9:15	Fusion	JK	WW-022	850	35	143 141 148 143 141	149 144 122 147 137	160 166 163 166 167	Textured
Aug 21	9:15	Fusion	CC	WW-045	850	55	149 140 144 135 155	149 138 149 133 144	164 161 161 153 160	Smooth
Aug 21	9:15	Fusion	JC	WW-026	850	35	125 136 156 152 152	114 136 147 148 121	171 184 176 171 161	Textured
Aug 21	9:15	Fusion	CC	WW-045	850	35	147 142 135 143 140	150 142 110 126 156	160 133 157 146 170	Textured
Aug 21	9:15	Fusion	JK	WW-022	850	55	140 139 141 142 132	125 130 129 141 143	145 148 146 148 146	Smooth
Aug 21	9:15	Fusion	JC	WW-026	850	55	146 129 132 137 139	135 132 135 136 135	151 144 152 146 156	Smooth
Aug 21	15:00	Extrusion	EA	04037	500	495	N/A	154 133 106 139 140	120 175 176 183 158	N/A
Aug 21	15:00	Fusion	JK	WW-022	850	35	158 119 146 148 131	136 148 147 142 146	157 161 156 166 160	Textured
Aug 21	15:00	Fusion	CC	WW-045	850	55	120 140 155 141 122	133 140 147 145 125	153 161 156 161 158	Smooth

Date	Time	Fusion or Extrusion	Tech	Apparatus #	Temp or Preheat (ºF)	Speed (%) or Barrel Temp (ºF)	$Peel_{inside}$ (100 min)	$Peel_{outside}$ (100 min for Fusion 88 min for Extrusion)	Shear (120 min)	Smooth or Textured
Aug 21	15:00	Fusion	JC	WW-026	850	55	140 132 138 134 125	132 139 132 143 129	150 155 139 164 146	Smooth
Aug 21	15:00	Fusion	JC	WW-026	850	35	125 139 117 146 153	131 149 132 137 145	155 159 147 163 150	Textured
Aug 21	15:00	Fusion	CC	WW-045	850	35	144 144 146 109 140	131 155 147 142 141	161 160 154 163 152	Textured
Aug 21	15:00	Fusion	JK	WW-022	850	55	117 120 130 127 113	130 137 143 137 130	139 142 137 147 120	Smooth
Aug 22	8:30	Extrusion	EA	EX-35	500	495	N/A	103 104 121 105 106	152 152 151 153 148	N/A
Aug 22	9:30	Fusion	JK	WW-022	850	35	143 135 145 145 144	134 137 164 137 146	177 180 181 180 173	Textured
Aug 22	9:30	Fusion	JC	WW-045	850	55	140 136 136 134 134	115 115 128 126 129	157 151 153 149 156	Smooth
Aug 22	9:30	Fusion	JK	WW-022	850	55	132 141 133 130 141	140 126 123 132 124	157 147 154 154 155	Smooth
Aug 22	9:30	Fusion	JC	WW-045	850	35	124 154 154 143 161	154 147 146 139 142	171 178 171 177 169	Textured

Date	Time	Fusion or Extrusion	Tech	Apparatus #	Temp or Preheat (ºF)	Speed (%) or Barrel Temp (ºF)	$Peel_{inside}$ (100 min)	$Peel_{outside}$ (100 min for Fusion 88 min for Extrusion)	Shear (120 min)	Smooth or Textured
Aug 22	9:45	Fusion	CC	WW-026	850	35	141 130 145 149 147	148 144 138 145 133	177 182 166 153 165	Textured
Aug 22	12:30	Extrusion	EA	EX-35	500	495	N/A	140 141 145 146 151	171 139 161 157 161	N/A
Aug 22	13:00	Fusion	CC	WW-026	850	55	129 134 125 126 131	127 129 128 125 132	136 144 134 144 144	Smooth
Aug 22	13:00	Fusion	JK	WW-054	850	55	112 110 119 120 123	124 122 126 124 117	144 144 143 146 142	Smooth
Aug 22	13:30	Fusion	JK	WW-054	850	35	132 132 136 132 136	138 136 138 137 131	158 159 145 155 159	Textured
Aug 22	13:30	Fusion	CC	WW-026	850	35	142 148 129 128 128	148 152 139 139 140	145 161 152 159 160	Textured
Aug 22	13:30	Fusion	JC	WW-045	850	35	150 139 136 154 141	117 131 129 145 128	151 158 152 162 154	Textured
Aug 22	13:30	Fusion	JC	WW-045	850	55	139 150 137 134 141	136 142 145 142 142	160 144 148 145 151	Smooth
Aug 22	16:05	Extrusion	EA	EX-35	500	495	N/A	114 116 120 117 122	135 143 145 146 136	N/A

Date	Time	Fusion or Extrusion	Tech	Apparatus #	Temp or Preheat (ºF)	Speed (%) or Barrel Temp (ºF)	$Peel_{inside}$ (100 min)	$Peel_{outside}$ (100 min for Fusion 88 min for Extrusion)	Shear (120 min)	Smooth or Textured
Aug 23	10:15	Fusion	CC	WW-026	850	35	148	141	174	Textured
							140	145	175	
							163	122	164	
							151	146	176	
							122	140	171	
Aug 23	10:15	Fusion	JC	WW-045	850	55	127	118	138	Smooth
							114	127	141	
							119	129	135	
							126	129	142	
							128	127	139	
Aug 23	10:15	Fusion	RW	WW-054	850	55	141	133	140	Smooth
							126	134	134	
							135	131	143	
							126	129	141	
							130	126	140	
Aug 23	10:15	Fusion	CC	WW-026	850	55	141	139	150	Smooth
							150	140	143	
							149	139	147	
							141	145	147	
							139	144	146	
Aug 23	10:15	Fusion	RW	WW-054	850	35	137	150	172	Textured
							142	147	159	
							160	149	156	
							150	126	158	
							140	135	152	
Aug 23	10:15	Fusion	JC	WW-045	850	35	149	145	152	Textured
							142	145	161	
							125	130	150	
							144	139	165	
							143	149	164	
Aug 23	15:00	Fusion	JC	WW-045	850	35	144	160	183	Textured
							143	150	172	
							153	135	176	
							137	163	179	
							152	152	177	
Aug 23	15:00	Fusion	CC	WW-026	850	55	147	145	158	Smooth
							142	137	159	
							144	142	160	
							138	120	159	
							143	146	161	
Aug 23	15:00	Fusion	CC	WW-026	850	35	142	148	151	Textured
							158	166	153	
							140	140	170	
							136	155	171	
							146	161	153	

Date	Time	Fusion or Extrusion	Tech	Apparatus #	Temp or Preheat (ºF)	Speed (%) or Barrel Temp (ºF)	$Peel_{inside}$ (100 min)	$Peel_{outside}$ (100 min for Fusion 88 min for Extrusion)	Shear (120 min)	Smooth or Textured
Aug 23	15:00	Fusion	JC	WW-045	850	55	149 151 140 132 144	144 149 149 132 145	172 152 161 156 159	Smooth

5.0 NON-DESTRUCTIVE TESTING

Table 3 summarizes the weekly non-destructive pressure testing results.

Table 3: Non-Destructive Testing Results

Date Fused	Date Tested	Time Tested	Seam #	psi Start	psi End	Pass or Fail	Notes
Aug 9	Aug 17	13:23	P351-P352 Cross	40	40	Pass	
Aug 14	Aug 17	8:39	P367-P368 Cross	40	40	Pass	
Aug 5	Aug 19	17:13	P285-P389 Vertical	40	40	Pass	
Aug 10	Aug 19	17:14	P389-P351 Tie In	40	40	Pass	
Aug 14	Aug 19	17:58	P363-P365 Vertical	40	40	Pass	
Aug 14	Aug 19	17:58	P362-P362 Cross	40	40	Pass	
Aug 14	Aug 19	18:00	P365-P367 Vertical	40	40	Pass	
Aug 16	Aug 16	18:00	P384-P385 Vertical	40	40	Pass	
Aug 16	Aug 16	18:01	P383-P385 Vertical	40	40	Pass	
Aug 16	Aug 16	18:29	P394-P395 Cross	40	40	Pass	
Aug 16	Aug 16	18:03	P385-P387 Vertical	40	40	Pass	
Aug 16	Aug 16	18:35	P394-P396 Vertical	40	40	Pass	
Aug 16	Aug 16	18:29	P392-P394 Vertical	40	40	Pass	
Aug 16	Aug 16	18:22	P395-P397 Vertical	40	40	Pass	
Aug 16	Aug 16	18:16	P398-P399 Vertical	40	40	Pass	
Aug 16	Aug 16	18:21	P397-P398 Vertical	40	40	Pass	
Aug 16	Aug 16	18:03	P385-P386 Vertical	40	40	Pass	
Aug 16	Aug 16	18:22	P400-P401 Vertical	40	40	Pass	
Aug 16	Aug 16	18:15	P399-P401 Tie In	40	40	Pass	
Aug 16	Aug 16	18:22	P399-P400 Tie In	40	40	Pass	
Aug 16	Aug 16	18:15	P387-P402 Tie In	40	38	Pass	
Aug 16	Aug 16	18:15	P387-P399 Tie In	40	40	Pass	
Aug 16	Aug 16	18:16	P387-P398 Tie In	40	40	Pass	
Aug 16	Aug 16	18:23	P387-P397 Tie In	40	38	Pass	
Aug 16	Aug 16	18:23	P387-P395 Tie In	40	40	Pass	
Aug 16	Aug 16	18:29	P387-P394 Tie In	40	39	Pass	
Aug 16	Aug 17	8:07	P390-P391 Vertical	40	40	Pass	
Aug 16	Aug 17	7:58	P390-P389 Vertical	40	40	Pass	
Aug 16	Aug 17	7:46	P388-P389 Vertical	40	40	Pass	
Aug 16	Aug 17	7:41	P392-P388 Vertical	40	40	Pass	
Aug 16	Aug 17	7:41	P388-P393 Vertical	40	40	Pass	

Date Fused	Date Tested	Time Tested	Seam #	psi Start	psi End	Pass or Fail	Notes
Aug 16	Aug 17	8:17	P396-P397 Vertical	40	40	Pass	
Aug 16	Aug 17	7:40	P393-P394 Vertical	40	40	Pass	
Aug 16	Aug 17	7:44	P387-P388 Tie In	40	40	Pass	
Aug 16	Aug 17	7:44	P387-P389 Tie In	40	40	Pass	
Aug 16	Aug 17	7:57	P387-P390 Tie In	40	40	Pass	
Aug 16	Aug 17	7:57	P386-P391 Tie In	40	40	Pass	
Aug 16	Aug 17	8:07	P368-P388 Tie In	40	40	Pass	
Aug 16	Aug 17	7:55	P368-P389 Tie In	40	40	Pass	
Aug 16	Aug 17	7:55	P368-P390 Tie In	40	40	Pass	
Aug 16	Aug 17	8:08	P368-P391 Tie In	40	40	Pass	
Aug 16	Aug 17	8:09	P368-P386 Tie In	40	40	Pass	
Aug 16	Aug 17	8:20	P368-P385 Tie In	40	40	Pass	
Aug 16	Aug 17	8:19	P368-P383 Tie In	40	40	Pass	
Aug 16	Aug 17	8:23	P368-P381 Tie In	40	40	Pass	
Aug 16	Aug 17	8:24	P368-P379 Tie In	40	40	Pass	
Aug 16	Aug 17	9:19	P368-P377 Tie In	40	40	Pass	Top of seam to repair
Aug 16	Aug 17	9:21	P368-P377 Tie In	40	40	Pass	Repair to bottom of seam
Aug 16	Aug 17	9:27	P368-P375 Tie In	40	40	Pass	
Aug 16	Aug 17	8:34	P368-P375 Tie In	40	40	Pass	
Aug 16	Aug 17	8:36	P368-P373 Tie In	40	40	Pass	
Aug 16	Aug 17	8:39	P368-P371 Tie In	40	39	Pass	
Aug 16	Aug 17	8:39	P367-P371 Tie In	40	40	Pass	
Aug 16	Aug 17	8:47	P367-P369 Tie In	40	40	Pass	
Aug 17	Aug 19	17:22	P370-P405 Vertical	40	40	Pass	
Aug 17	Aug 19	17:22	P369-P405 Vertical	40	40	Pass	Top of seam to patch
Aug 17	Aug 19	17:36	P369-P405 Vertical	40	40	Pass	Patch to bottom of seam
Aug 17	Aug 19	17:36	P369-P404 Vertical	40	40	Pass	
Aug 17	Aug 19	17:54	P367-P404 Tie In	40	40	Pass	
Aug 17	Aug 19	17:54	P365-P404 Tie In	40	40	Pass	
Aug 17	Aug 19	17:56	P362-P404 Tie In	40	40	Pass	
Aug 17	Aug 19	17:56	P359-P404 Tie In	40	40	Pass	
Aug 17	Aug 19	18:05	P357-P404 Tie In	40	40	Pass	
Aug 17	Aug 19	18:05	P355-P404 Tie In	40	40	Pass	
Aug 17	Aug 19	18:07	P351-P404 Tie In	40	40	Pass	
Aug 17	Aug 19	18:06	P354-P404 Tie In	40	40	Pass	
Aug 17	Aug 19	17:23	P285-P404 Tie In	40	40	Pass	
Aug 17	Aug 19	17:23	P282-P404 Tie In	40	40	Pass	
Aug 17	Aug 19	17:29	P287-P403 Tie In	40	40	Pass	
Aug 17	Aug 19	17:32	P275-P403 Tie In	40	40	Pass	
Aug 17	Aug 19	17:32	P273-P403 Tie In	40	38	Pass	
Aug 17	Aug 19	17:45	P272-P403 Tie In	40	39	Pass	
Aug 17	Aug 19	17:45	P271-P403 Tie In	40	40	Pass	
Aug 17	Aug 19	17:46	P270-P403 Tie In	40	40	Pass	
Aug 19	Aug 20	17:37	P404-P405 Cross	40	40	Pass	
Aug 19	Aug 20	17:29	P403-P404 Cross	40	39	Pass	
Aug 19	Aug 20	17:05	P406-P407 Cross	40	40	Pass	
Aug 19	Aug 20	15:13	P407-P408 Cross	40	40	Pass	
Aug 19	Aug 20	17:06	P409-P410 Cross	40	40	Pass	

Date Fused	Date Tested	Time Tested	Seam #	psi Start	psi End	Pass or Fail	Notes
Aug 19	Aug 20	15:40	P410-P411 Cross	40	40	Pass	
Aug 19	Aug 20	17:08	P412-P413 Cross	40	40	Pass	
Aug 19	Aug 20	15:42	P413-P414 Cross	40	40	Pass	
Aug 19	Aug 20	17:09	P415-P416 Cross	40	40	Pass	
Aug 19	Aug 20	16:10	P416-P417 Cross	40	40	Pass	
Aug 19	Aug 20	16:51	P403-P407 Vertical	40	40	Pass	
Aug 19	Aug 20	16:46	P404-P407 Vertical	40	40	Pass	
Aug 19	Aug 20	15:13	P404-P408 Vertical	40	39	Pass	
Aug 19	Aug 20	15:32	P405-P408 Vertical	40	39	Pass	
Aug 19	Aug 20	17:05	P406-P410 Vertical	40	40	Pass	
Aug 19	Aug 20	16:47	P407-P410 Vertical	40	38	Pass	Top of seam to patch
Aug 19	Aug 20	17:00	P407-P410 Vertical	40	40	Pass	Patch to bottom of seam
Aug 19	Aug 20	15:40	P407-P411 Vertical	40	40	Pass	
Aug 19	Aug 20	17:06	P409-P413 Vertical	40	40	Pass	
Aug 19	Aug 20	16:48	P410-P413 Vertical	40	40	Pass	Top of seam to patch
Aug 19	Aug 20	16:02	P410-P413 Vertical	40	40	Pass	Patch to bottom of seam
Aug 19	Aug 20	15:41	P410-P414 Vertical	40	40	Pass	
Aug 19	Aug 20	15:28	P411-P414 Vertical	40	40	Pass	
Aug 19	Aug 20	17:08	P412-P416 Vertical	40	39	Pass	
Aug 19	Aug 20	16:49	P413-P416 Vertical	40	40	Pass	
Aug 19	Aug 20	16:03	P413-P417 Vertical	40	40	Pass	
Aug 19	Aug 21	15:24	P408-P411 Vertical	40	40	Pass	
Aug 19	Aug 21	15:22	P414-P417 Vertical	40	40	Pass	Top of seam to patch
Aug 19	Aug 21	15:22	P414-P417 Vertical	40	40	Pass	Patch to bottom of seam
Aug 20	Aug 21	16:44	P418-P419 Cross	40	40	Pass	
Aug 20	Aug 21	15:53	P419-P420 Cross	40	40	Pass	
Aug 20	Aug 21	16:45	P421-P422 Cross	40	40	Pass	
Aug 20	Aug 21	15:54	P422-P423 Cross	40	40	Pass	
Aug 20	Aug 21	16:46	P424-P425 Cross	40	40	Pass	
Aug 20	Aug 21	16:56	P427-P428 Cross	40	40	Pass	RHS to patch
Aug 20	Aug 21	16:55	P427-P428 Cross	40	40	Pass	Patch to LHS
Aug 20	Aug 21	15:56	P428-P429 Cross	40	40	Pass	
Aug 20	Aug 21	16:56	P430-P431 Cross	40	40	Pass	
Aug 20	Aug 21	16:12	P431-P432 Cross	40	40	Pass	
Aug 20	Aug 21	16:57	P433-P434 Cross	40	40	Pass	
Aug 20	Aug 21	16:14	P434-P435 Cross	40	40	Pass	
Aug 20	Aug 21	17:08	P436-P437 Cross	40	40	Pass	
Aug 20	Aug 21	15:37	P417-P420 Vertical	40	39	Pass	
Aug 20	Aug 21	17:28	P417-P419 Vertical	40	40	Pass	
Aug 20	Aug 21	16:44	P416-P419 Vertical	40	39	Pass	
Aug 20	Aug 21	15:38	P420-P423 Vertical	40	40	Pass	
Aug 20	Aug 21	15;53	P419-P423 Vertical	40	40	Pass	
Aug 20	Aug 21	17:29	P419-P422 Vertical	40	40	Pass	
Aug 20	Aug 21	16:45	P418-P422 Vertical	40	40	Pass	
Aug 20	Aug 21	15;39	P423-P426 Vertical	40	40	Pass	
Aug 20	Aug 21	15:54	P422-P426 Vertical	40	40	Pass	
Aug 20	Aug 21	17:30	P422-P425 Vertical	40	40	Pass	
Aug 20	Aug 21	16:46	P421-P425 Vertical	40	40	Pass	

Date Fused	Date Tested	Time Tested	Seam #	psi Start	psi End	Pass or Fail	Notes
Aug 20	Aug 21	15:40	P426-P429 vertical	40	40	Pass	
Aug 20	Aug 21	15:55	P425-P429 Vertical	40	40	Pass	
Aug 20	Aug 21	16:55	P424-P428 Vertical	40	40	Pass	
Aug 20	Aug 21	15:41	P429-P432 Vertical	40	40	Pass	
Aug 20	Aug 21	16:10	P428-P432 Vertical	40	40	Pass	
Aug 20	Aug 21	16:56	P427-P431 Vertical	40	39	Pass	
Aug 20	Aug 21	15:42	P432-P435 Vertical	40	40	Pass	
Aug 20	Aug 21	16:12	P431-P435 Vertical	40	40	Pass	
Aug 20	Aug 21	17:40	P431-P434 Vertical	40	40	Pass	
Aug 20	Aug 21	16:57	P430-P434 Vertical	40	40	Pass	
Aug 20	Aug 21	16:24	P435-P439 Vertical	40	38	Pass	
Aug 20	Aug 21	16:14	P434-P439 Vertical	40	40	Pass	
Aug 20	Aug 21	17:44	P434-P437 Vertical	40	39	Pass	
Aug 20	Aug 21	17:08	P433-P437 Vertical	40	39	Pass	
Aug 20	Aug 22	15:13	P425-P426 Cross	40	40	Pass	Right side to patch
Aug 20	Aug 22	15:13	P425-P426 Cross	40	40	Pass	Patch to left side
Aug 20	Aug 22	15:22	P437-P438 Cross	40	40	Pass	
Aug 20	Aug 22	15:22	P438-P439 Cross	40	40	Pass	
Aug 20	Aug 22	15:20	P425-P428 Vertical	40	40	Pass	
Aug 20	Aug 22	15:21	P428-P431 Vertical	40	40	Pass	
Aug 21	Aug 22	17:12	P440-P441 Cross	40	40	Pass	
Aug 21	Aug 22	15:51	P441-P442 Cross	40	40	Pass	
Aug 21	Aug 22	17:18	P443-P444 Cross	40	40	Pass	Right side to patch
Aug 21	Aug 22	17:22	P443-P444 Cross	40	38	Pass	Patch to left side
Aug 21	Aug 22	15:52	P444-P445 Cross	40	40	Pass	
Aug 21	Aug 22	15:53	P447-P448 Cross	40	40	Pass	
Aug 21	Aug 22	16:02	P450-P451 Cross	40	40	Pass	
Aug 21	Aug 22	16:03	P453-P454 Cross	40	40	Pass	
Aug 21	Aug 22	16:48	P439-P442 Vertical	40	40	Pass	
Aug 21	Aug 22	15:51	P437-P442 Vertical	40	40	Pass	
Aug 21	Aug 22	17:12	P436-P441 Vertical	40	40	Pass	
Aug 21	Aug 22	16:32	P442-P445 Vertical	40	40	Pass	
Aug 21	Aug 22	15:52	P441-P445 Vertical	40	38	Pass	
Aug 21	Aug 22	17:18	P440-P444 Vertical	40	40	Pass	
Aug 21	Aug 22	16:31	P445-P448 Vertical	40	40	Pass	Patch to bottom of seam
Aug 21	Aug 22	15:53	P444-P448 Vertical	40	40	Pass	
Aug 21	Aug 22	17:22	P443-P447 Vertical	40	40	Pass	
Aug 21	Aug 22	16:30	P448-P451 Vertical	40	40	Pass	
Aug 21	Aug 22	16:02	P447-P451 Vertical	40	40	Pass	
Aug 21	Aug 22	16:29	P451-P454 Vertical	40	40	Pass	
Aug 21	Aug 22	16:03	P450-P454 Vertical	40	40	Pass	
Aug 22	Aug 22	16:28	P454-P457 Vertical	40	40	Pass	
Aug 22	Aug 22	16:05	P453-P457 Vertical	40	40	Pass	
Aug 19	Aug 23	13:29	P403-P406 Vertical	40	40	Pass	
Aug 19	Aug 23	13;38	P406-P409 Vertical	40	39	Pass	
Aug 19	Aug 23	13:37	P409-P412 Vertical	40	40	Pass	
Aug 19	Aug 23	13:36	P412-P415 Vertical	40	40	Pass	
Aug 20	Aug 23	13:35	P415-P418 Vertical	40	40	Pass	

Date Fused	Date Tested	Time Tested	Seam #	psi Start	psi End	Pass or Fail	Notes
Aug 20	Aug 23	13:12	P418-P421 Vertical	40	40	Pass	
Aug 20	Aug 23	13:16	P421-P424 Vertical	40	39	Pass	
Aug 20	Aug 23	12:46	P424-P427 Vertical	40	40	Pass	
Aug 20	Aug 23	12:45	P427-P430 Vertical	40	40	Pass	
Aug 20	Aug 23	12:44	P430-P433 Vertical	40	40	Pass	
Aug 20	Aug 23	12:43	P433-P436 Vertical	40	40	Pass	
Aug 21	Aug 23	11:46	P446-P447 Cross	40	40	Pass	
Aug 21	Aug 23	11:47	P449-P450 Cross	40	40	Pass	
Aug 21	Aug 23	11:48	P452-P453 Cross	40	40	Pass	
Aug 21	Aug 23	12:42	P436-P440 Vertical	40	38	Pass	
Aug 21	Aug 23	12:41	P440-P443 Vertical	40	39	Pass	
Aug 21	Aug 23	12:28	P443-P446 Vertical	40	40	Pass	
Aug 21	Aug 23	11:40	P446-P450 Vertical	40	40	Pass	
Aug 21	Aug 23	12:27	P446-P449 Vertical	40	40	Pass	
Aug 21	Aug 23	11:47	P449-P453 Vertical	40	40	Pass	
Aug 21	Aug 23	12:26	P449-P452 Vertical	40	40	Pass	
Aug 22	Aug 23	12:05	P455-P456 Cross	40	39	Pass	
Aug 22	Aug 23	12:06	P458-P459 Cross	40	40	Pass	
Aug 22	Aug 23	11:48	P452-P456 Vertical	40	40	Pass	
Aug 22	Aug 23	12:25	P452-P455 Vertical	40	40	Pass	
Aug 22	Aug 23	12:05	P455-P459 Vertical	40	40	Pass	
Aug 22	Aug 23	12:24	P455-P458 Vertical	40	40	Pass	
Aug 22	Aug 23	12:06	P459-P461 Vertical	40	40	Pass	
Aug 22	Aug 23	12:06	P459-P461 Vertical	40	40	Pass	
Aug 22	Aug 23	11:09	P462-P464 Vertical	40	38	Pass	
Aug 22	Aug 23	12:23	P461-P464 Vertical	40	40	Pass	

6.0 DESTRUCTIVE TESTING

Table 4 summarizes the weekly destructive testing results. Five tests are performed for each criterion.

Table 4: Destructive Testing Results

Date Fused	Time Fused	Tech	Apparatus	Location (UTM is +/- 4 m)	Sample ID	$Peel_{in}$ (100 min)	$Peel_{out}$ (100 min)	Shear (120 min)	Pass or Fail
Aug 16	13:19	JC	WW-054	P398-P399 Vertical Bottom of Seam	D161	132 138 139 147 146	143 134 136 146 135	151 159 163 162 150	Pass
Aug 15	15:26	CC	WW-054	P375-P377 Vertical Bottom of Seam	D162	137 137 141 143 139	142 140 136 141 142	153 147 159 149 152	Pass
Aug 15	17:57	JK	WW-022	P379-P381 Vertical Bottom of Seam	D163	145 155 145 141 143	137 139 139 139 142	152 162 156 160 155	Pass
Aug 16	11:58	CC	WW-054	P390-P391 Vertical Bottom of Seam	D164	134 144 136 132 131	148 132 140 148 135	156 158 161 159 159	Pass
Aug 11	18:16	JC	WW-045	P358-P361 Vertical Bottom of Seam	D165	140 134 140 136 147	137 141 138 144 144	145 158 156 159 146	Pass
Aug 16	15:07	CC	WW-045	P386-P391 Tie In Bottom of Seam	D166	150 143 142 142 147	136 137 136 133 135	156 147 153 159 154	Pass
Aug 15	17:15	RW	WW-045	P381-P382 Cross Right Side of Seam	D167	157 157 145 138 160	150 144 157 148 157	160 175 186 184 170	Pass
Aug 14	15:22	CC	WW-054	P365-P367 Vertical Top of Seam	D168	129 138 127 127 125	138 140 132 138 132	163 159 160 156 157	Pass

Date Fused	Time Fused	Tech	Apparatus	Location (UTM is +/- 4 m)	Sample ID	$Peel_{in}$ (100 min)	$Peel_{out}$ (100 min)	Shear (120 min)	Pass or Fail
Aug 14	15:16	CC	WW-054	P367-P368 Cross Left Side of Seam	D169	161 161 163 145 163	163 145 160 152 164	176 175 169 166 181	Pass
Aug 14	14:17	JK	WW-022	P364-P366 Vertical Top of Seam	D170	138 132 130 147 134	136 140 137 135 133	161 149 157 152 160	Pass
Aug 14	13:37	CC	WW-054	P361-P364 Vertical Top of Seam	D171	144 131 138 139 141	141 124 140 133 128	140 156 150 156 152	Pass
Aug 16	13:22	JK	WW-022	P385-P386 Vertical Bottom of Seam	D172	123 134 127 132 128	137 137 134 137 144	149 150 152 151 151	Pass
Aug 16	12:09	JK	WW-022	P383-P385 Vertical Bottom of Seam	D173	139 133 140 153 140	131 139 138 135 141	144 151 145 155 147	Pass
Aug 16	12:32	JC	WW-054	P388-P392 Vertical Bottom of Seam	D174	145 142 149 142 145	136 129 127 131 127	150 142 149 143 147	Pass
Aug 15	13:16	CC	WW-054	P371-P373 Vertical Bottom of Seam	D175	135 141 140 129 140	139 120 137 134 145	144 146 145 151 147	Pass
Aug 16	12:36	CC	WW-054	P394-P395 Vertical Bottom of Seam	D176	136 133 133 145 133	141 132 137 141 132	150 146 149 143 148	Pass
Aug 16	16:36	JK	WW-022	P367-P369 Tie In Bottom of Seam	D177	153 151 144 147 147	148 143 139 148 142	147 154 149 158 133	Pass

7.0 PHOTO LOG



Figure 1: Backfilled Soft Spot Ready for Liner Deployment



Figure 2: Backfilled Soft Spot



Figure 3: Excavating Soft Soil over 4E Lateral



Figure 4: 4E Lateral Soft Spot Excavation



Figure 5: Backfilled 4E Lateral Soft Spot



Figure 6: Water Coming Out of Excavated Soft Spot Below 4E Lateral



Figure 7: Liner Deployment



Figure 8: GCL Deployed on Slope



Figure 9: Deploying GCL on Slope



Figure 10: Overall Deployment at the End of August 19



Figure 11: Prepared Subgrade for Liner Deployment



Figure 12: Prepared and Inspected Subgrade



Figure 13: Soft Spot in Subgrade



Figure 14: Soft Spot in Subgrade along 4E Lateral



Figure 15: Applying Bentonite to GCL Seam



Figure 16: Liner Deployed on Slope

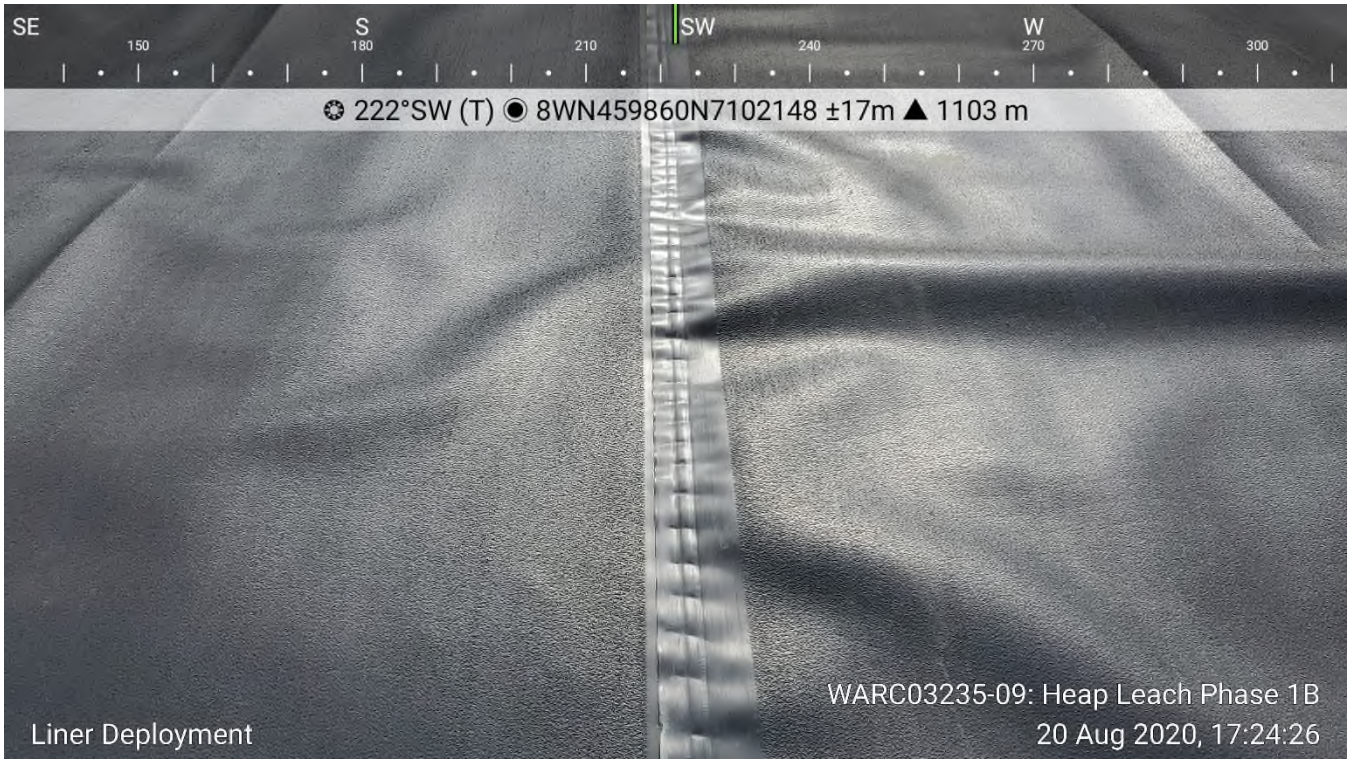


Figure 17: Wrinkles in Fused Liner Seam



Figure 18: Overall Deployment as of August 20

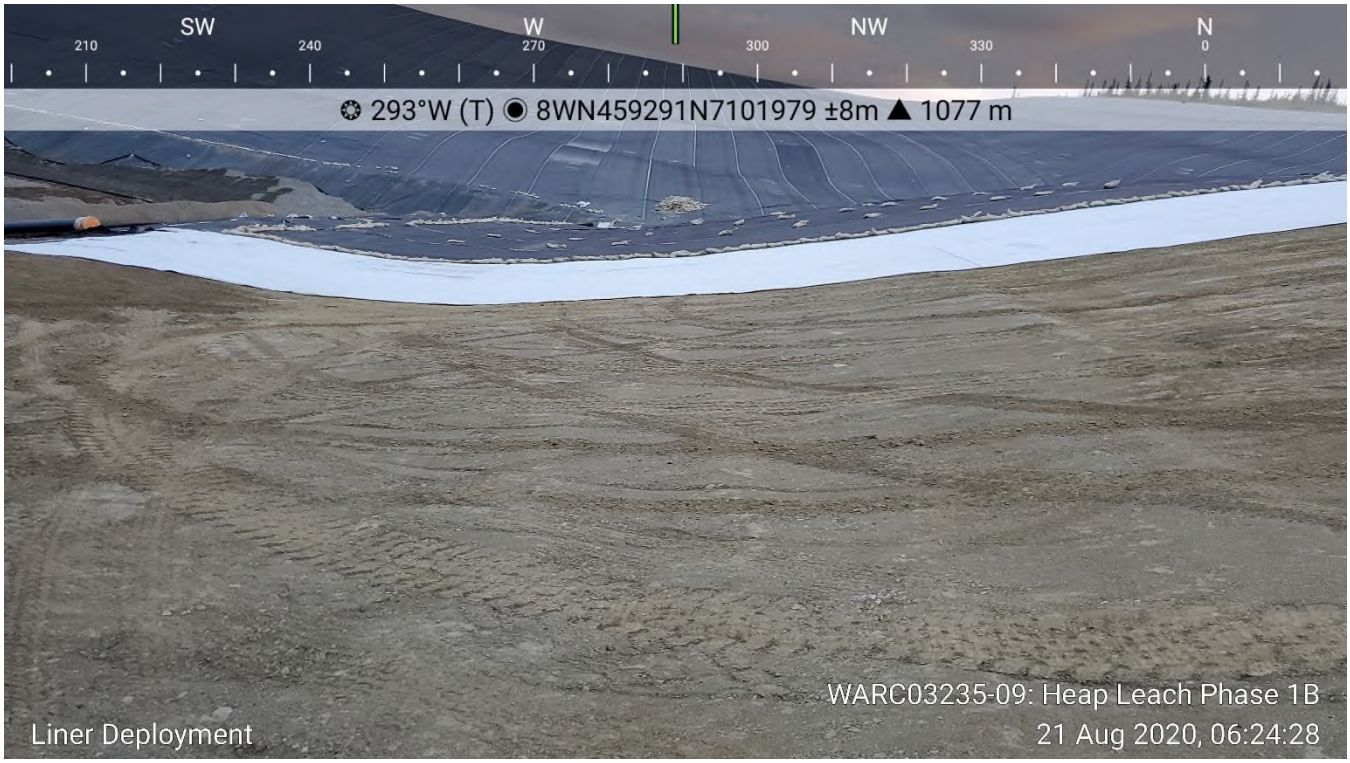


Figure 19: Prepared and Inspected Subgrade



Figure 20: Prepared and Inspected Subgrade

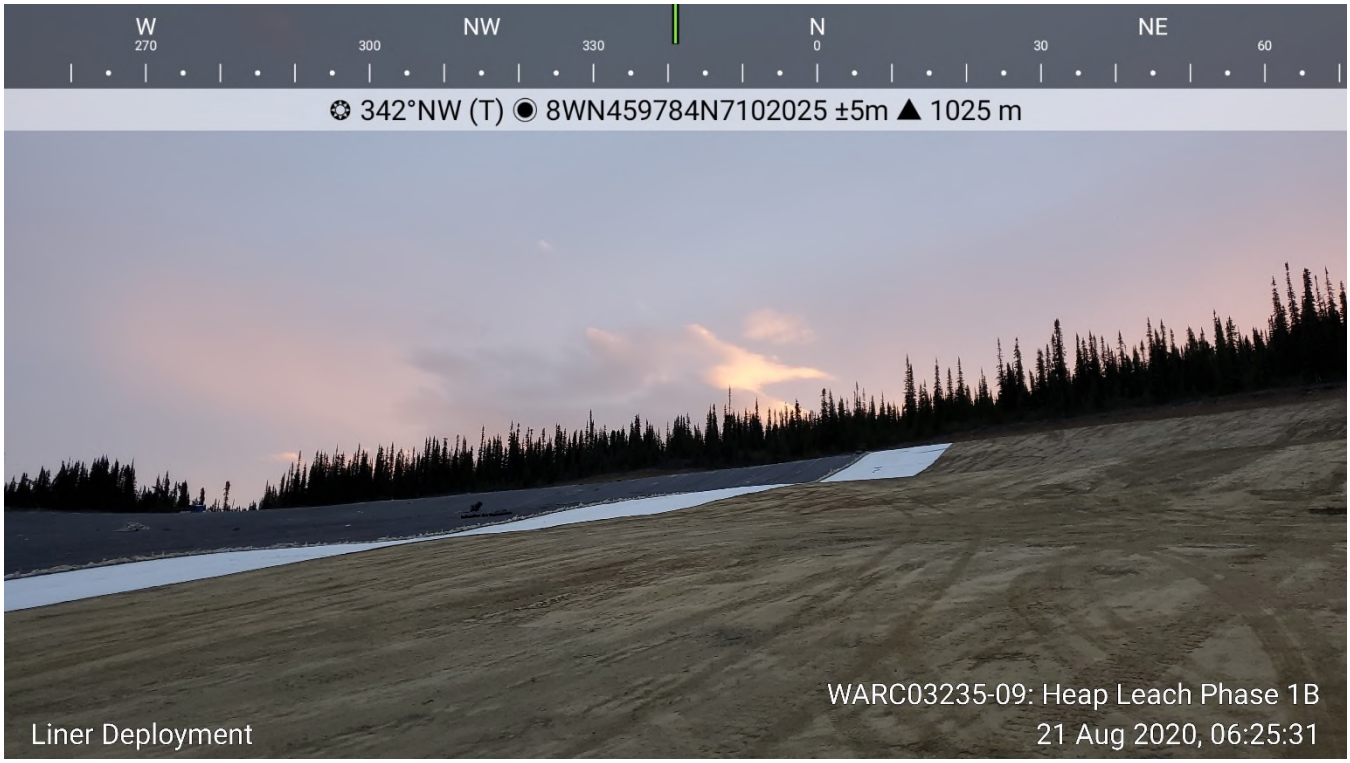


Figure 21: Prepared and Inspected Subgrade



Figure 22: Liner Deployed on Slope



Figure 23: Overall Deployment as of August 21



Figure 24: Prepared and Inspected Subgrade



Figure 25: Prepared and Inspected Subgrade



Figure 26: Prepared and Inspected Subgrade



Figure 27: Overall Deployment as of August 22



Figure 28: Inspected and Approved Subgrade



Figure 29: Inspected and Approved Subgrade



Figure 30: Inspected and Approved Subgrade



Figure 31: Soft Spots in Subgrade

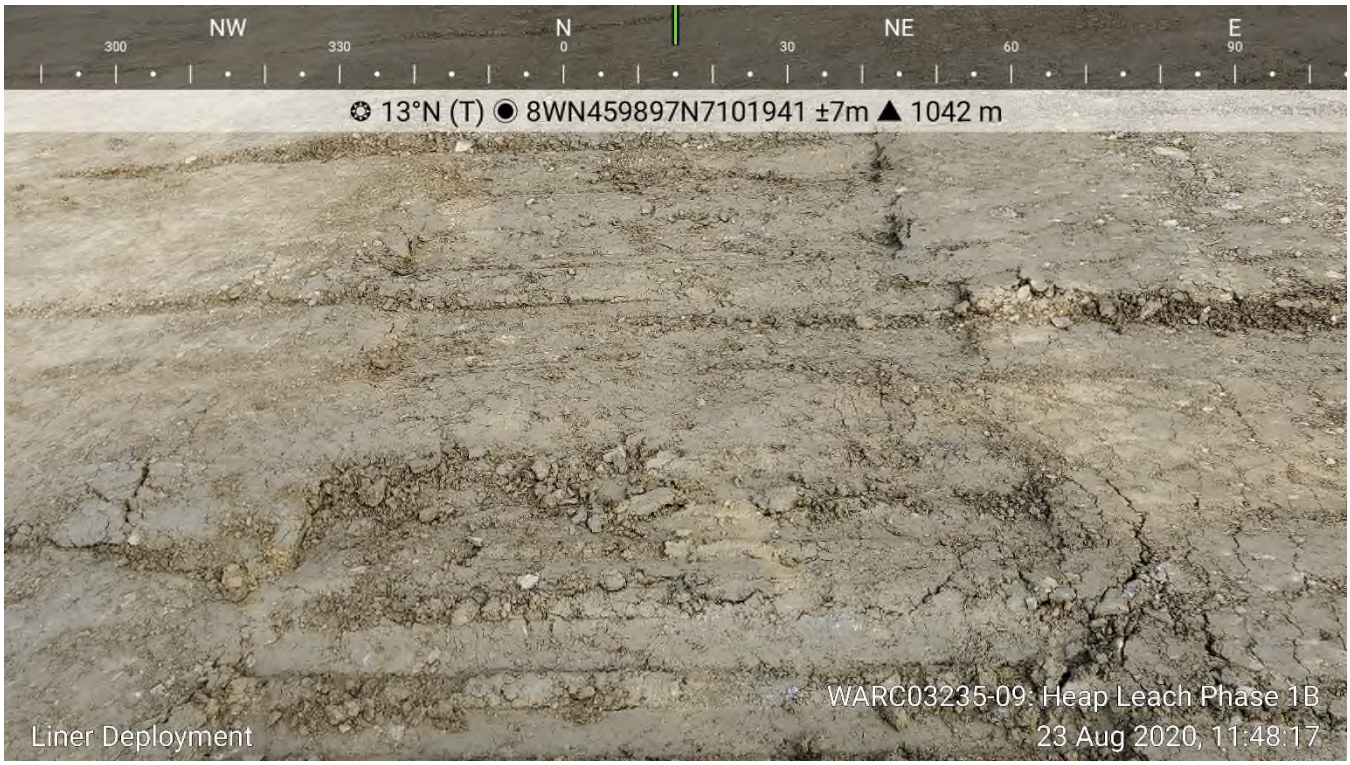


Figure 32: Soft Spots in Subgrade



Figure 33: Excavating Soft Spot below 3E Lateral



Figure 34: GCL Deployment



Figure 35: Rocks Pulled from Beneath GCL



Figure 36: Rocks Pulled from Beneath GCL



Figure 37: Rocks Pulled out of Subgrade by Side by Side



Figure 38: Overall Deployment as of August 23

StrataGold Corporation, Eagle Gold Project
Project: Victoria Gold
Weekly Report #25
August 30 – September 5, 2020

Site Location: Phase 1B

Hours worked this period: 1,536
Hours total to date: 48,133

Summary:

- Construction
  - Continued constructing the southeastern perimeter berm.
  - Layfield placed liner Sunday on the eastern side of Phase 1B.
  - Finished ditching along the western perimeter access.

Legend:
Red = Trouble
Yellow = Caution
Green = On track

Weather:

- Rained Monday, Tuesday, Friday, and Saturday this week.
- Temperatures: Morning lows of 0 C° with daytime highs of 12 C°

Incidents / Health & Safety:

- Incidents or accidents: No incidents this week.
- Weekly site safety inspection: No inspections this week.
- Weekly safety meeting: Toolbox meeting held every morning in the field to ensure enough room for social distancing.

Incidents to date:

9

Project Milestones:	Responsible:	Completion Date:
Nuway crushing gravel for underdrain construction – Sand was not completed before moving the crusher to Secondary – Sand will now be recovered from wasted material during production of the ODF on Eagle Pup. Nuway screening plant screening oversize material out of the sand.	Nuway / Ewing	Complete
Header Underdrain excavation and installation	Ewing	Complete
Lateral drain excavation and installation – Behind due to the much larger amounts of material requiring removal	Ewing	Complete
Ditching for freshet / Water management	Ewing	Complete
Removal of all grubbing and shaping material for liner placement – Volume of material much larger then estimate	Ewing	Complete
Removal of any unsuitable material – will not affect liner placement schedule	Ewing	May 4th
Surface preparation for liner placement – final surface preparation ahead of liner crew will continue until complete	Ewing	July 22nd
Liner placement – All material has been delivered to site – Started June 2nd and should be close to completion August 30th	Layfield / Ewing	Aug 30th

Construction:
Activities This Week:

- Continued constructing the southeastern perimeter berm when possible this week due to rain.
- Layfield was only able to placed liner on Sunday this week. The crew was given a few days off site because of continual rain forecasted for the week. Layfield traveled to Whitehorse Tuesday morning and return to site Friday. No deployment on Saturday due to additional rain.
- The Ewing Liner Support crew left site on Monday and returned to site Friday.
- Ewing finished excavating the western perimeter access ditch.

Activities Planned for Next Week:

- Remove any unsuitable material if encounter on the eastern side of Phase 1B.
- Finished constructing the southeastern perimeter burn along Phase 1A &B.
- Place sand where necessary ahead of the liner crew and remove mud whenever required.
- Continue advancing the liner deployment to the east along the interceptor ditch.
- Continue excavating anchor trench as required for liner placement.
- Backfill and compact anchor trench behind completed section of liner placement.

HSE Safety Report:

	PERIOD TO	MONTH TO DATE	YEAR TO DATE	
Total Hours	1,536	1,014	48,133	
Incidents (Non-injury)	0	1	6	
First Aid Injuries	0	0	3	
Medical Aid Injuries	0	0	0	
Loss Time Injuries (LTI)	0	0	0	
Recordable Incident	0	0	2	

Phase 1B Liner Placement:

	GCL	LLDPE 80	
Total Placed	244,430	237,649	482,079
Total Area	266,680	266,680	533,360
Remaining	22,250	29,031	51,281
Percent Complete	90%		
Updated	September 7, 2020		

Production:

Material	Month Total (September 2020)	Total to Date
Shaping (Common)/ Grubbing	0 m^3	256,298 m^3
Re-handle Material	0 m^3	784 m^3
20mm Drain rock	0 m^3	3,906 m^3
Sand	0 m^3	16,814 m^3
Pit Run	0 m^3	9,926 m^3
Blast Rock Backfill	4,886 m^3	28,000 m^3
Blast Rock / Rip Rap to HLF/ Road Repairs	0 m^3	854 m^3
Total Material	4,886 m^3	316,582 m^3

Progress Photos:



Padding material on the southeastern perimeter berm



Padding southeastern perimeter road with blast rock

Progress Photos:



Eastern Perimeter Berm



Excavated ditch on western perimeter berm Sept. 1st

Progress Photos:



Ditching western perimeter berm



Wet sub-grade on September 2nd

TETRA TECH

WEEKLY FIELD REPORT

ISSUED FOR REVIEW

Project:	Eagle Gold Heap Leach Phase 1B	**Date:**	September 13, 2020
Location:	Eagle Gold Mine	**Contractor:**	Ewing Transport / Layfield
Client:	Victoria Gold Corp.	**Contractor's Rep:**	Marshall Ewing / Chad Messervey
Contact:	Clint Abel	**Contractor's Email:**	
Weather:	Variable (see daily entries)	**Tetra Tech Representative:**	Adam Mickey
File:	704-ENG.WARC03235-09	**Status:**	Issued for Review

This 'Issued for Review' report is provided solely for the purpose of client review and presents our findings and recommendations to date. Our findings and recommendations are provided only through an 'Issued for Use' report, which will be issued subsequent to this review. You should not rely on the interim recommendations made herein. Once our report is issued for use, the 'Issued for Review' document should be either returned to Tetra Tech Canada Inc. (Tetra Tech) or destroyed.

1.0 INTRODUCTION

Tetra Tech Canada Inc. (Tetra Tech) was retained by Victoria Gold Corp. (Victoria Gold) to provide CQA services at the Eagle Gold mine located north of Mayo, Yukon, at Dublin Gulch for the Eagle Gold Heap Leach Phase 1B expansion (Phase 1B). Mr. Adam Mickey, EIT, is Tetra Tech's representative on site.

Forte Dynamics (Forte) out of Fort Collins, Colorado provided the design and specification for Phase 1B, and Forte's representative is Clint Green.

Clint Abel, of JDS Energy & Mining, is Victoria Gold's project manager on site at the Eagle Gold mine.

Ewing Transport (Ewing), based out of Mayo, Yukon, is the construction contractor for Phase 1B.

Layfield Environmental Containment (Layfield) has been retained to provide and install the liner for Phase 1B, and their supervisor on site is Chad Messervey.

The following Field Report outlines Tetra Tech's CQA for the period of September 7, 2020, to September 13, 2020.

2.0 DAILY REPORTS

2.1 Highlights

- Rain delayed liner deployment throughout the week.
- Layfield is placing three panels of GCL for every two panels of 80 mm LLDPE liner.

2.2 September 7, 2020

- Weather: cloudy and windy with periods of rain, turning to cloudy at 10:00 am.
- Ewing in continuing to prepare subgrade in advance of deployment.

Tetra Tech Canada Inc.
61 Wasson Place
Whitehorse, YT Y1A 0H7 CANADA
Tel 867.668.3068 Fax 867.668.4349

- Rain in the morning halted subgrade preparation.
    - Ewing is waiting for the subgrade to dry prior to continuing preparation.
        - Tetra Tech and Ewing inspected the subgrade at 12:00 pm. The subgrade is too saturated to get the packer on it and prepare more subgrade.
- Ewing was able to begin prepping subgrade around 3:00 pm. Soft spots were found, and they were excavated out, filled with rock fill, and compacted and covered with sand.

- Tetra Tech inspected and approved the subgrade for today's deployment.
- Layfield is continuing to deploy liner.
    - Rain delayed deployment at 7:45 am till 8:30 am.
    - Layfield deployed and fused two slope runs of liner by 1:30 pm. As there was no prepared subgrade, Layfield moved over to conducting detail work.
- Tetra Tech and Layfield conducted destructive testing on samples obtained from the liner.
    - All destructive testing is caught up for all liner deployed up to and including August 30.
    - The P526-P529 vertical seam destructive sample failed testing due to excessive peel into the weld. Layfield will obtain a new sample 3 m down seam from the original test location.
    - The P500-P532 tie in seam marginally passed testing. Tetra Tech requested that Layfield extrusion weld the seam, but no further destructive testing is required.

2.3 September 8, 2020

- Weather: cloudy.
- Ewing is continuing to prepare subgrade for deployment.
    - Tetra Tech and Ewing identified soft spots requiring subex and replacement with rock fill.
        - Ewing worked on the soft spots throughout the day.
- Layfield is continuing to deploy liner.
    - Layfield deployed four slope runs of liner by 4:00 pm.
    - Layfield could not deploy any more liner as there was no more prepared subgrade to deploy on.

2.4 September 9, 2020

- Weather: partly cloudy.
- Ewing is continuing to prepare subgrade for deployment.
    - Nightshift removed excess subgrade soils from the slope, but also dug up the E3 lateral, which had to be repaired.
    - Soft spots are continuing to be excavated and repaired as identified.
    - Tetra Tech identified soft spots at the toe of the slope where 1B meets 1A. Tetra Tech worked with Ewing to remove the soft soil to ready the area for deployment.

- Layfield is continuing to deploy liner.
  - Layfield deployed four slope runs of liner and two additional GCL beyond the deployed liner by the end of the day.

2.5 September 10, 2020

- Weather: sunny, turning to cloudy with a period of rain in the afternoon.
- Ewing is continuing to prepare subgrade in advance of deployment.
  - Heavy rainfall from yesterday evening saturated the subgrade too much to compact it.
    - Ewing is attempting to repair the subgrade to allow for deployment.
  - Tetra Tech informed Ewing that the subgrade at the toe of the slope would have to be excavated due to soft conditions. No fill is required, the soft subgrade can be excavated and reshaped.
- Tetra Tech inspected the subgrade first thing and determined that it was too saturated to deploy.
  - Tetra Tech inspected the subgrade at 12:00 pm and authorized deployment of GCL.
- Layfield is continuing to deploy liner.
  - Layfield deployed one slope length of liner, and then had to wait to continue deployment until the subgrade was prepared.
  - Layfield was authorized to deploy liner at 12:00 pm.
  - Layfield deployed three slope runs of liner by 4:00 pm and finished the day by continuing to deploy GCL. Only two slope runs of GCL could be deployed before they were out of prepared subgrade to deploy on.
- After laying the first slope run of liner, Tetra Tech and Layfield walked off all of the deployed liner laid from last walk off to August 30.

2.6 September 11, 2020

- Weather: partly cloudy.
- Ewing is continuing to prepare subgrade in advance of deployment.
  - The skid steer is covering any rocky areas with sand.
  - The packer is rolling the subgrade.
  - By the end of the day, all sloping of the subgrade was complete, and the remainder of work required is rolling the subgrade with a packer and sanding rocky areas.
- Tetra Tech inspected and approved the prepared subgrade for today's deployment.
  - Tetra Tech had to inspect and approve the subgrade as it was prepared.
- Layfield is continuing to deploy liner.
  - Layfield deployed two slope runs of liner.
  - Due to wind in the afternoon, Layfield continued to deploy GCL for the rest of the day.

- Layfield began working down the perimeter road from Phase 1B perimeter road to the Phase 1A perimeter road.
- Layfield's QC conducted pressure testing of deployed liner seams.

2.7 September 12, 2020

- Weather: mostly sunny.
- Ewing is continuing to perform finish work on the subgrade.
  - The skid steer is sanding rocky areas and removing soft spots at the toe of the slope.
  - The packer is packing rough areas and sanded areas.
- Tetra Tech inspected and approved the subgrade for deployment.
  - Soft spots were identified at the toe of the slope, which the skid steer removed.
- Layfield is continuing to deploy liner.
  - Below freezing temperatures last night resulted in frost on the liner. Layfield could not deploy liner due to slippery conditions, so began the day by deploying GCL.
  - Once the liner had warmed up, Layfield began deploying liner overtop of the GCL.
  - Layfield deployed four slope runs of liner and finished the day by deploying one slope run of GCL.
- Layfield conducted pressure testing of fused seams.
- ODF placement damaged the signed off liner on nightshift, so Layfield had to send an extrusion team to repair it in the afternoon.

2.8 September 13, 2020

- Weather: sunny, turning to partly cloudy in the afternoon.
- Ewing is continuing to perform finish work on the subgrade in advance of liner deployment.
- Tetra Tech inspected and approved the subgrade for deployment as required.
- Layfield is continuing to deploy liner.
  - Layfield deployed seven slope runs of liner.
  - One small corner remains to be covered. Deployment will be complete tomorrow.
- Tetra Tech and Layfield's QC conducted destructive testing of deployed liner samples.
  - One sample failed due to peel into the weld. The samples was DxxxA of panels Pxxx-Pxxx.
    - Tetra Tech was informed that this seam had been extrusion welded, so to confirm, a destructive sample was obtained from panels Pxxx-Pxxx for testing.

3.0 GEOSYNTHETIC ROLL NUMBERS PLACED

Table 1 summarizes the daily geosynthetic roll numbers placed on the slope during liner installation. All panel lengths are approximate, and where angled joints are used, panel length is based from the center of the panel.

Table 1: Geosynthetic Roll Numbers Placed on Slope

Date	GCL Roll Number	LLDPE Liner Roll Number	Panel Number (Length)
September 7	0242-347713, 0242-347551 502343944, 502343914 502343912, 502343922 502343923, 502343916 502343917, 502343915	10697-025 10697-026 10697-031 10697-034 10697-008	P547 (19.8 m) P548 (128.0 m) P549 (63.0 m), P550 (60.9 m) P551 (127.3 m) P552 (21.5 m)
September 8	502343558, 502343641 502343654, 502343547 502343556, 502343573 502343982, 502343913 502343943, 502343918 502343984, 502343987 502343549, 502343557 502343551, 502343567 502343565, 502343981 502343542, 502343986 502343566, 502343974 502343921, 502343930 502343991	10697-008 10697-033 10697-009 10697-032 10697-019 10697-020 10606-002 10697-017	P553 (103.8 m) P554 (101.5 m), P555 (24.3 m) P556 (128.0 m) P557 (52.4 m), P558 (75.2 m) P559 (128.7 m) P560 (126.6 m) P561 (74.2 m) P562 (3.5 m)
September 9	502343911, 502343580 502343932, 502343919 502343931, 502343920 502343569, 502343973 502343576, 502343563 502343572, 502343550 502343562, 502343976 502343978, 502343544 502343975, 502343983 502343655, 502343977 502343952, 502343541 502343653, 502343985 502343988, 502343989 502343552, 502343990 502343548, 502343553 502343979, 502343992 502343554, 502343639	10697-017 10697-016 10697-018 10698-030 10697-015 10698-027 10698-033	P563 (125.2 m) P564 (79.6 m), P565 (45.1 m) P566 (128.4 m) P567 (35.9 m), P568 (89.9 m) P569 (123.1 m) P570 (129.4 m) P571 (88.1 m)
September 10	0242-247715, 0242-347562 0242-347883, 0242-347634 0242-347550 502343967, 502343971 502343955, 502343650 502343959, 502343667 502343659, 502343668 502343658, 502343632	10968-033 10698-031 10698-029 10698-032 10698-034 10698-017	P572 (38.5 m) P573 (127.8 m) P574 (54.8 m), P575 (70.8 m) P576 (128.0 m) P577 (24.7 m), P578 (98.7 m) P579 (128.0 m) P580 (3.3 m)

Date	GCL Roll Number	LLDPE Liner Roll Number	Panel Number (Length)
September 11	502343678, 502343645 502343608, 502343702 502343603, 502343582 502343675, 502343648 502343602, 502343699 502343674, 502343700 502343584, 502343583 502343698, 502343686 502343620, 502343673 502343613, 502343657 502343630, 502343676 502343685, 502343660 502343665, 502343661 502343614, 502343607 502343591, 502343604 502343646, 502343601 502343681, 502343701	10698-017 10698-018 10698-036 10698-002	P581 (120.7 m) P582 (110.0 m), P583 (14.8 m) P584 (128.1 m) P585 (80.0 m)
September 12	502343666, 502343594 502343677, 502343672 502343669, 502343954 502343545, 502343543 502343618, 502343663 502343587, 502343600		
September 13			

4.0 TRIAL SEAM

Table 2 summarizes the weekly trial seam results. For fusion, the apparatus settings are temperature and speed, and for extrusion, the apparatus settings are preheat and barrel temperature. Five tests are performed for each criterion.

Table 2: Trial Seam Results

Date	Time	Fusion or Extrusion	Tech	Apparatus #	Temp or Preheat (ºF)	Speed (%) or Barrel Temp (ºF)	$Peel_{inside}$ (100 min)	$Peel_{outside}$ (100 min for Fusion 88 min for Extrusion)	Shear (120 min)	Smooth or Textured
Sep 7	10:30	Fusion	EA	WW-045	850	35	149 157 162 144 146	159 147 151 149 139	173 171 183 176 176	Textured
Sep 7	10:30	Fusion	DT	WW-054	850	35	148 158 134 160 168	143 157 159 160 144	172 175 170 172 176	Textured

Date	Time	Fusion or Extrusion	Tech	Apparatus #	Temp or Preheat (ºF)	Speed (%) or Barrel Temp (ºF)	$Peel_{inside}$ (100 min)	$Peel_{outside}$ (100 min for Fusion 88 min for Extrusion)	Shear (120 min)	Smooth or Textured
Sep 7	10:30	Fusion	JK	WW-022	850	35	150 148 160 157 157	142 164 154 157 156	178 172 175 172 177	Textured
Sep 7	10:30	Fusion	EA	WW-045	850	55	143 146 138 147 144	138 137 139 139 141	169 171 171 171 166	Smooth
Sep 7	10:30	Fusion	DT	WW-054	850	55	157 149 154 158 148	142 142 143 143 140	171 167 167 167 167	Smooth
Sep 7	10:30	Fusion	JK	WW-022	850	55	143 147 135 141 137	148 150 147 147 130	158 159 157 159 159	Smooth
Sep 7	15:00	Extrusion	JL	04037	500	500	N/A	121 119 118 132 120	159 142 149 153 164	N/A
Sep 7	15:00	Extrusion	RW	EX-023	500	495	N/A	135 147 124 129 132	168 154 164 170 167	N/A
Sept 8	8:40	Fusion	EA	WW-045	850	35	133 157 152 150 149	140 145 161 149 151	166 167 165 182 162	Textured
Sept 8	8:40	Fusion	JK	WW-022	850	35	155 173 178 160 143	151 154 154 161 142	173 175 178 167 184	Textured
Sept 8	8:40	Fusion	EA	WW-045	850	55	145 144 140 145 137	146 152 157 151 152	163 166 169 169 164	Smooth

Date	Time	Fusion or Extrusion	Tech	Apparatus #	Temp or Preheat (ºF)	Speed (%) or Barrel Temp (ºF)	$Peel_{inside}$ (100 min)	$Peel_{outside}$ (100 min for Fusion 88 min for Extrusion)	Shear (120 min)	Smooth or Textured
Sept 8	8:40	Fusion	JK	WW-022	850	55	161 166 137 145 137	150 136 150 142 143	167 167 166 170 169	Smooth
Sept 8	8:40	Fusion	JL	WW-054	850	55	137 147 147 142 149	143 153 143 148 143	169 163 161 164 162	Smooth
Sept 8	13:00	Fusion	EA	WW-045	850	35	152 132 163 155 138	147 156 122 153 155	170 173 170 173 179	Textured
Sept 8	13:00	Fusion	JL	WW-054	850	35	126 143 152 148 151	153 144 144 149 120	168 174 175 166 158	Textured
Sept 8	13:00	Fusion	EA	WW-045	850	55	149 148 145 139 138	143 139 147 135 145	161 160 162 160 158	Smooth
Sept 8	13:00	Fusion	JK	WW-022	850	55	130 136 139 126 130	146 146 137 144 131	148 162 160 161 161	Smooth
Sept 8	13:00	Fusion	JL	WW-054	850	55	150 142 147 146 145	141 138 138 138 140	160 160 160 149 162	Smooth
Sep 9	8:15	Extrusion	JL	EX-008	500	500	N/A	104 105 106 103 101	162 168 167 159 163	N/A
Sep 9	9:00	Fusion	EA	WW-045	850	35	147 142 131 125 146	140 147 147 147 145	171 173 178 180 174	Textured

Date	Time	Fusion or Extrusion	Tech	Apparatus #	Temp or Preheat (ºF)	Speed (%) or Barrel Temp (ºF)	$Peel_{inside}$ (100 min)	$Peel_{outside}$ (100 min for Fusion 88 min for Extrusion)	Shear (120 min)	Smooth or Textured
Sep 9	9:00	Fusion	RGP	WW-054	850	35	145	116	169	Textured
							162	150	172	
							164	142	172	
							152	146	172	
							169	139	169	
Sep 9	9:00	Fusion	JK	WW-022	850	35	155	152	172	Textured
							139	128	167	
							142	150	169	
							149	124	164	
							154	120	171	
Sep 9	9:00	Fusion	EA	WW-045	850	55	119	139	155	Smooth
							130	146	148	
							131	142	142	
							134	146	146	
							126	145	145	
Sep 9	9:00	Fusion	RGP	WW-054	850	55	131	142	124	Smooth
							136	140	139	
							140	142	130	
							124	136	133	
							129	136	120	
Sep 9	9:00	Fusion	JK	WW-022	850	55	124	138	135	Smooth
							139	139	132	
							130	142	141	
							133	138	142	
							120	140	141	
Sep 9	13:00	Fusion	EA	WW-045	850	35	146	132	173	Textured
							140	141	170	
							132	149	170	
							149	131	173	
							142	136	170	
Sep 9	13:00	Fusion	RGP	WW-054	850	35	155	141	169	Textured
							154	149	152	
							160	138	162	
							144	147	153	
							146	142	173	
Sep 9	13:00	Fusion	JK	WW-022	850	35	156	122	159	Textured
							148	149	166	
							152	129	156	
							140	147	171	
							125	141	155	
Sep 9	13:00	Fusion	EA	WW-045	850	55	137	139	155	Smooth
							128	136	149	
							138	135	153	
							136	133	151	
							139	139	157	

Date	Time	Fusion or Extrusion	Tech	Apparatus #	Temp or Preheat (ºF)	Speed (%) or Barrel Temp (ºF)	$Peel_{inside}$ (100 min)	$Peel_{outside}$ (100 min for Fusion 88 min for Extrusion)	Shear (120 min)	Smooth or Textured
Sep 9	13:00	Fusion	RGP	WW-054	850	55	134 126 136 143 129	137 129 137 119 136	152 153 156 156 154	Smooth
Sep 9	13:00	Fusion	JK	WW-022	850	55	123 136 151 141 158	146 148 129 144 146	156 145 155 157 156	Smooth
Sep 9	12:30	Extrusion	JL	EX-008	500	500	N/A	144 138 111 126 136	155 155 153 159 164	N/A
Sep 10	10:45	Fusion	JK	WW-022	850	35	151 161 160 161 150	115 148 128 144 154	171 172 174 176 174	
Sep 10	10:45	Fusion	RGP	WW-054	850	35	158 153 159 157 155	157 151 156 162 146	174 185 166 157 177	
Sep 10	10:45	Fusion	EA	WW-026	850	55	158 152 144 153 150	145 139 117 147 125	155 147 157 160 157	
Sep 10	10:45	Fusion	JK	WW-022	850	55	143 145 142 146 148	147 140 142 159 139	166 164 165 164 165	
Sep 10	10:45	Fusion	RGP	WW-045	850	55	153 126 135 141 125	148 146 149 148 132	156 157 159 158 155	
Sep 10	17:30	Fusion	JK	WW-022	850	35	147 151 161 144 157	147 158 160 133 154	151 141 161 167 177	

Date	Time	Fusion or Extrusion	Tech	Apparatus #	Temp or Preheat (ºF)	Speed (%) or Barrel Temp (ºF)	$Peel_{inside}$ (100 min)	$Peel_{outside}$ (100 min for Fusion 88 min for Extrusion)	Shear (120 min)	Smooth or Textured
Sep 10	17:30	Fusion	EA	WW-026	850	55	142	139	166	
							140	145	166	
							137	143	161	
							135	145	167	
							139	151	162	
Sep 10	17:30	Fusion	RGP	WW-054	850	55	153	132	163	
							136	146	164	
							144	143	164	
							146	146	164	
							145	144	172	
Sep 10	17:30	Fusion	JK	WW-022	850	55	142	139	159	
							137	155	163	
							149	152	157	
							143	155	163	
							142	151	161	
Sep 10	17:30	Fusion	RGP	WW-054	850	35	169	126	177	
							147	150	173	
							155	168	185	
							153	142	162	
							130	153	184	
Sep 11	10:15	Extrusion	JL	EX-008	500	500	N/A	101	175	N/A
								99	157	
								99	179	
								107	172	
								110	172	
Sep 11	11:00	Fusion	JK	WW-022	850	35	165	156	157	Textured
							143	154	159	
							153	141	163	
							149	151	161	
							133	155	155	
Sep 11	11:00	Fusion	JK	WW-022	850	55	122	151	162	Smooth
							130	152	151	
							138	152	174	
							129	143	163	
							136	152	165	
Sep 11	11:00	Fusion	DT	WW-054	850	35	119	137	158	Textured
							142	153	165	
							159	137	166	
							151	151	166	
							151	154	159	
Sep 11	11:00	Fusion	DT	WW-054	850	55	140	142	153	Smooth
							145	147	151	
							132	152	151	
							146	136	153	
							142	147	153	

Date	Time	Fusion or Extrusion	Tech	Apparatus #	Temp or Preheat (ºF)	Speed (%) or Barrel Temp (ºF)	$Peel_{inside}$ (100 min)	$Peel_{outside}$ (100 min for Fusion 88 min for Extrusion)	Shear (120 min)	Smooth or Textured
Sep 11	11:00	Fusion	EA	WW-026	850	35	150 141 143 141 160	150 163 148 159 148	161 157 172 165 166	Textured
Sep 11	11:00	Fusion	EA	WW-026	850	55	145 131 136 136 134	139 142 147 145 152	147 149 152 151 146	Smooth
Sep 11	14:00	Extrusion	JL	EX-008	500	500	N/A	111 129 106 103 125	166 144 139 145 161	N/A
Sep 12	10:20	Fusion	JK	WW-022	850	35	153 147 161 146 162	161 127 161 160 141	211 198 198 205 204	Textured
Sep 12	10:20	Fusion	EA	WW-026	850	35	154 145 158 122 142	133 131 135 140 145	174 147 173 173 174	Textured
Sep 12	10:20	Fusion	DT	WW-054	850	55	146 147 146 142 150	144 136 126 136 154	161 163 163 161 148	Smooth
Sep 12	10:20	Fusion	JK	WW-022	850	55	141 143 142 137 142	143 143 140 132 143	161 160 160 162 161	Smooth
Sep 12	10:20	Fusion	EA	WW-026	850	55	142 133 139 138 113	132 143 139 146 138	153 162 157 159 157	Smooth
Sep 12	10:20	Fusion	DT	WW-054	850	35	123 148 137 154 163	139 159 121 155 149	162 173 179 176 177	Textured

Date	Time	Fusion or Extrusion	Tech	Apparatus #	Temp or Preheat (ºF)	Speed (%) or Barrel Temp (ºF)	$Peel_{inside}$ (100 min)	$Peel_{outside}$ (100 min for Fusion 88 min for Extrusion)	Shear (120 min)	Smooth or Textured
Sep 12	13:40	Extrusion	JL	EX-008	500	500	N/A	124 122 130 108 118	166 156 160 153 146	N/A
Sep 12	14:30	Fusion	JK	WW-022	850	35	155 150 159 151 152	149 151 162 143 150	159 169 169 163 165	Textured
Sep 12	14:30	Fusion	JK	WW-022	850	55	136 131 149 145 134	129 140 128 144 140	150 154 152 149 156	Smooth
Sep 12	14:30	Fusion	DT	WW-054	850	35	126 151 143 153 149	150 140 138 139 152	161 170 171 170 169	Textured
Sep 12	14:30	Fusion	DT	WW-054	850	55	145 149 139 141 136	143 146 139 138 141	154 157 153 145 154	Smooth
Sep 12	14:30	Fusion	EA	WW-026	850	35	139 145 150 112 154	136 131 152 132 128	163 165 172 160 127	Textured
Sep 12	14:30	Fusion	EA	WW-026	850	55	137 129 112 158 151	152 153 151 107 138	158 156 157 155 161	Smooth

5.0 NON-DESTRUCTIVE TESTING

Table 3 summarizes the weekly non-destructive pressure testing results.

Table 3: Non-Destructive Testing Results

Date Fused	Date Tested	Time Tested	Seam #	psi Start	psi End	Pass or Fail	Notes
Aug 28	Aug 29	10:29	P498-P499 Cross		40		
Aug 28	Aug 29	10:25	P497-P498 Cross		40		

Date Fused	Date Tested	Time Tested	Seam #	psi Start	psi End	Pass or Fail	Notes
Aug 28	Aug 29	16:09	P496-P497 Cross		40		
Aug 29	Aug 30	17:18	P508-P509 Cross		40		
Aug 29	Aug 30	17:20	P509-P510 Vertical		40		
Aug 29	Aug 30	17:28	P512-P514 Vertical		40		
Aug 29	Aug 30	17:21	P508-P510 Vertical		40		
Aug 29	Aug 30	17:28	P510-P512 Vertical		40		
Aug 29	Aug 30	17:17	P507-P508 Vertical		40		
Aug 29	Aug 30	17:26	P501-P514 Tie In		40		
Aug 29	Aug 30	17:28	P501-P512 Tie In		40		
Aug 29	Aug 30	17:25	P501-P510 Tie In		39		
Aug 29	Aug 30	17:25	P502-P510 Tie In		40		
Aug 29	Aug 30	17:17	P502-P508 Tie In		40		
Aug 24	Sep 7	15:31	P489-P490 Cross		40		
Aug 24	Sep 7	15:12	P486-P489 Vertical		40		
Aug 28	Sep 7	15:09	P492-P493 Cross		40		
Aug 28	Sep 7	9:26	P493-P495 Vertical		40		
Aug 28	Sep 7	9:26	P493-P494 Vertical		40		
Aug 28	Sep 7	9:11	P492-P494 Vertical		40		
Aug 28	Sep 7	10:37	P495-P499 Vertical		40		Top of seam to patch
Aug 28	Sep 7	10:27	P495-P499 Vertical		40		Patch to bottom of seam
Aug 28	Sep 7	15:37	P500-P501 Vertical		39		
Aug 28	Sep 7	15:37	P497-P500 Vertical		40		
Aug 28	Sep 7	15:37	P497-P501 Vertical		40		
Aug 28	Sep 7	10:24	P495-P497 Vertical		40		
Aug 28	Sep 7	9:26	P494-P497 Vertical		40		
Aug 29	Sep 7	8:31	P510-P511 Cross		40		
Aug 29	Sep 7	8:46	P515-P516 Cross		38		
Aug 29	Sep 7	8:33	P512-P513 Cross		40		
Aug 29	Sep 7	8:54	P515-P518 Vertical		40		
Aug 29	Sep 7	8:34	P513-P514 Vertical		40		
Aug 29	Sep 7	8:21	P505-P506 Cross		40		
Aug 29	Sep 7	8:32	P511-P513 Vertical		40		
Aug 29	Sep 7	8:33	P510-P513 Vertical		40		
Aug 29	Sep 7	8:31	P509-P511 Vertical		40		
Aug 29	Sep 7	8:20	P506-P507 Vertical		40		
Aug 29	Sep 7	8:22	P504-P506 Vertical		40		
Aug 29	Sep 7	8:54	P501-P515 Tie In		40		
Aug 24	Sep 8	14:48	P490-P491 Cross		40		
Aug 28	Sep 8	14:48	P491-P493 Vertical		39		
Aug 28	Sep 8	14:48	P490-P493 Vertical		40		
Aug 28	Sep 8	15:18	P494-P495 Cross		40		
Aug 28	Sep 8	15:17	P501-P502 Cross		38		
Aug 28	Sep 8	16:02	P496-P500 Vertical		40		
Aug 28	Sep 8	15:17	P499-P501 Vertical		40		
Aug 28	Sep 8	16:09	P494-P496 Vertical		40		
Aug 28	Sep 8	15:17	P499-P502 Vertical		40		
Aug 29	Sep 8	17:40	P514-P516 Vertical		40		
Aug 29	Sep 8	17:39	P516-P518 Vertical		40		

Date Fused	Date Tested	Time Tested	Seam #	psi Start	psi End	Pass or Fail	Notes
Aug 29	Sep 8	17:28	P501-P518 Tie In		40		
Aug 29	Sep 8	17:28	P518-P520 Vertical		40		
Aug 30	Sep 8	17:26	P520-P523 Vertical		40		
Aug 30	Sep 8	16:59	P525-P528 Vertical		40		Top of seam to patch
Aug 30	Sep 8	17:09	P525-P528 Vertical		40		Patch to bottom of seam
Aug 30	Sep 8	17:17	P523-P525 Vertical		40		
Aug 30	Sep 8	17:17	P522-P523 Cross		40		
Aug 30	Sep 8	16:59	P527-P528 Cross		40		
Aug 30	Sep 8	17:16	P522-P525 Vertical		40		
Aug 30	Sep 8	16:57	P528-P530 Vertical		40		
Aug 30	Sep 8	16:56	P527-P530 Vertical		40		
Aug 30	Sep 8	16:42	P532-P533 Cross		40		
Aug 30	Sep 8	16:45	P533-P534 Cross		40		
Aug 30	Sep 8	16:45	P534-P536 Vertical		40		
Aug 30	Sep 8	16:45	P533-P536 Vertical		40		
Aug 30	Sep 8	16:28	P532-P536 Vertical		40		
Aug 30	Sep 8	16:46	P530-P534 Vertical		40		
Aug 30	Sep 8	16:42	P530-P533 Vertical		39		
Aug 30	Sep 8	16:22	P500-P536 Tie In		40		
Aug 30	Sep 8	16:34	P501-P532 Tie In		40		
Aug 30	Sep 8	16:56	P501-P530 Tie In		40		
Aug 30	Sep 8	16:56	P501-P527 Tie In		40		
Aug 30	Sep 8	17:16	P501-P525 Tie In		40		
Aug 30	Sep 8	17:16	P501-P522 Tie In		40		
Aug 30	Sep 8	17:26	P501-P520 Tie In		40		
Sep 6	Sep 8	16:20	P538-P539 Cross		40		
Sep 6	Sep 8	16:04	P541-P542 Cross		40		
Sep 6	Sep 8	16:20	P536-P539 Vertical		40		
Sep 6	Sep 8	16:20	P539-P542 Vertical		40		
Sep 6	Sep 8	16:06	P538-P542 Vertical		40		
Sep 6	Sep 8	16:06	P500-P541 Tie In		40		
Sep 6	Sep 8	16:06	P500-P538 Tie In		40		
Sep 6	Sep 8	16:04	P542-P545 Vertical		40		
Sep 6	Sep 8	16:04	P541-P545 Vertical		40		
Aug 29	Sep 11	13:25	P516-P517 Cross		40		
Aug 29	Sep 11	13:06	P518-P519 Cross		40		
Aug 29	Sep 11	11:35	P517-P519 Vertical		40		
Aug 29	Sep 11	11:34	P514-P517 Vertical		40		
Aug 29	Sep 11	13:04	P516-P519 Vertical		40		
Aug 29	Sep 11	11:33	P507-P509 Vertical		40		
Aug 29	Sep 11	11:15	P503-P504 Vertical		40		
Aug 29	Sep 11	11:18	P505-P507 Vertical		39		
Aug 29	Sep 11	11:18	P502-P507 Tie In		40		
Aug 29	Sep 11	11:18	P502-P505 Tie In		40		
Aug 29	Sep 11	13:01	P520-P521 Cross		40		
Aug 29	Sep 11	11:15	P502-P504 Vertical		40		
Aug 29	Sep 11	11:36	P519-P521 Vertical		40		
Aug 29	Sep 11	11:15	P502-P503 Vertical		39		

Date Fused	Date Tested	Time Tested	Seam #	psi Start	psi End	Pass or Fail	Notes
Aug 29	Sep 11	13:01	P519-P520 Vertical		40		
Aug 30	Sep 11	13:03	P523-P524 Cross		40		
Aug 30	Sep 11	13:32	P525-P526 Cross		40		
Aug 30	Sep 11	11:37	P521-P524 Vertical		40		
Aug 30	Sep 11	11:39	P524-P526 Vertical		40		
Aug 30	Sep 11	13:03	P523-P526 Vertical		40		
Aug 30	Sep 11	13:35	P528-P529 Cross		39		
Aug 30	Sep 11	13:38	P525-P529 Vertical		38		Top of seam to patch
Aug 30	Sep 11	13:32	P525-P529 Vertical		40		Patch to bottom of seam
Aug 30	Sep 11	11:40	P526-P529 Vertical		40		Bottom of seam to patch
Aug 30	Sep 11	11:39	P526-P529 Vertical		40		Patch to top of seam
Aug 30	Sep 11	14:06	P530-P531 Cross		40		
Aug 30	Sep 11	12:05	P529-P531 Vertical		40		
Aug 30	Sep 11	14:06	P528-P531 Vertical		40		
Aug 30	Sep 11	14:16	P534-P537 Vertical		40		Top of seam to patch
Aug 30	Sep 11	14:16	P534-P537 Vertical		40		Patch to bottom of seam
Aug 30	Sep 11	14:54	P534-P535 Cross		40		
Aug 30	Sep 11	14:06	P531-P534 Vertical		40		
Aug 30	Sep 11	12:07	P535-P537 Vertical		40		
Aug 30	Sep 11	14:15	P536-P537 Cross		40		
Sept 6	Sep 11	14:49	P539-P540 Cross		40		
Sept 6	Sep 11	15:06	P543-P544 Cross		40		
Sept 6	Sep 11	12:09	P537-P540 Vertical		39		
Sept 6	Sep 11	12:10	P540-P544 Vertical		40		
Sept 6	Sep 11	15:33	P542-P543 Cross		40		
Sept 6	Sep 11	14:49	P540-P543 Vertical		40		
Sept 6	Sep 11	14:28	P537-P539 Vertical		40		Top of seam to patch
Sept 6	Sep 11	14:24	P537-P539 Vertical		40		Patch to bottom of seam
Sept 6	Sep 11	14:34	P539-P543 Vertical		40		Top of seam to first patch
Sept 6	Sep 11	14:34	P539-P543 Vertical		40		Between patches
Sept 6	Sep 11	14:35	P539-P543 Vertical		40		Second patch to bottom of seam
Sept 6	Sep 11	15:21	P545-P546 Cross		40		
Sept 6	Sep 11	12:11	P544-P546 Vertical		40		
Sept 6	Sep 11	15:21	P543-P545 Vertical		40		
Sept 6	Sep 11	15:06	P543-P546 Vertical		40		

Date Fused	Date Tested	Time Tested	Seam #	psi Start	psi End	Pass or Fail	Notes

Date Fused	Date Tested	Time Tested	Seam #	psi Start	psi End	Pass or Fail	Notes

Date Fused	Date Tested	Time Tested	Seam #	psi Start	psi End	Pass or Fail	Notes

6.0 DESTRUCTIVE TESTING

Table 4 summarizes the weekly destructive testing results. Five tests are performed for each criterion.

Table 4: Destructive Testing Results

Date Fused	Time Fused	Tech	Apparatus	Location (UTM is +/- 4 m)	Sample ID	$Peel_{in}$ (100 min)	$Peel_{out}$ (100 min)	Shear (120 min)	Pass or Fail
Aug 29	18:06	JC	WW-045	P502-P503 Tie In Top of Seam	D228	145 145 150 153 153	160 153 157 162 133	173 175 174 175 172	
Aug 30	9:53	JC	WW-045	P521-P524 Vertical Top of Seam	D229	152 149 152 156 157	146 156 145 150 139	160 158 162 160 161	
Aug 28	17:30	CC	WW-026	P496-P500 Vertical Top of Seam	D230	156 154 155 152 155	156 150 155 155 154	159 162 166 168 166	
Aug 28	17:22	CC	WW-026	P496-P497 Cross Right Side of Seam	D231	129 136 169 148 154	163 144 167 141 145	178 175 174 180 172	
Aug 30	16:46	JK	WW-045	P500-P532 Tie In Bottom of Seam	D232	137 142 154 159 150	160 152 161 163 156	168 168 153 169 157	
Aug 30	15:41	DT	WW-022	P532-P536 Vertical Bottom of Seam	D233	157 156 156 155 162	158 152 153 145 143	163 164 164 152 156	
Aug 28	13:10	JK	WW-022	P491-P493 Vertical Top of Seam	D234	148 148 140 144 155	138 152 154 151 155	140 163 165 163 151	

Date Fused	Time Fused	Tech	Apparatus	Location (UTM is +/- 4 m)	Sample ID	$Peel_{in}$ (100 min)	$Peel_{out}$ (100 min)	Shear (120 min)	Pass or Fail
Aug 28	18:12	CC	WW-045	P499-P502 Vertical Top of Seam	D235	157 154 145 155 147	153 155 156 149 145	161 160 161 159 158	
Aug 28	17:05	JC	WW-054	P495-P499 Vertical Top of Seam	D236	150 124 146 148 144	158 138 151 148 146	165 165 170 166 170	
Aug 28	13:34	JC	WW-054	P493-P495 Vertical Top of Seam	D237	167 153 167 155 153	157 154 155 151 142	164 164 164 161 166	
Aug 30	11:11	CC	WW-026	P526-P529 Vertical Top of Seam	D238A	147 147 146 145 150	134 147 149 146 151	166 163 168 169 164	
Aug 30	12:45	DT	WW-022	P529-P531 Vertical Top of Seam	D239	165 158 167 153 161	160 137 152 145 154	171 167 168 170 165	
Aug 30	14:57	CC	WW-026	P531-P535 Vertical Top of Seam	D240	142 142 141 144 133	134 148 137 136 138	164 161 165 164 161	
Aug 30	15:19	JC	WW-045	P535-P537 Vertical Top of Seam	D241	138 123 145 136 141	140 139 122 142 121	159 159 159 155 156	
Aug 30	10:03	CC	WW-026	P524-P526 Vertical Top of Seam	D242	144 137 146 133 143	150 147 136 134 139	150 164 150 171 157	
Aug 29	13:41	CC	WW-026	P509-P511 Vertical Top of Seam	D243	152 147 132 144 139	144 155 147 151 142	162 152 160 148 155	

Date Fused	Time Fused	Tech	Apparatus	Location (UTM is +/- 4 m)	Sample ID	$Peel_{in}$ (100 min)	$Peel_{out}$ (100 min)	Shear (120 min)	Pass or Fail
Aug 29	12:38	JC	WW-045	P517-P519 Vertical Top of Seam	D244	147 150 153 130 153	156 150 156 144 153	144 154 158 159 144	
Aug 29	18:02	JK	WW-022	P519-P521 Vertical Top of Seam	D245	153 143 151 151 157	154 129 114 148 130	161 156 165 161 165	
Aug 29	14:23	JC	WW-045	P504-P506 Vertical Top of Seam	D246	141 129 145 140 148	148 141 148 148 147	162 169 168 173 163	
Aug 29	13:28	JK	WW-022	P513-P514 Vertical Top of Seam	D247	134 151 147 141 153	157 145 151 152 139	159 151 149 139 151	

Date Fused	Time Fused	Tech	Apparatus	Location (UTM is +/- 4 m)	Sample ID	$Peel_{in}$ (100 min)	$Peel_{out}$ (100 min)	Shear (120 min)	Pass or Fail

7.0 PHOTO LOG



Figure 1: Excavating Soft Spots in Subgrade



Figure 2: Overall Deployment as of September 7



Figure 3: Prepared and Inspected Subgrade



Figure 4: Prepared and Inspected Subgrade



Figure 5: Overall Deployment as of September 8



Figure 6: Inspected and Approved Subgrade



Figure 7: Inspected and Approved Subgrade



Figure 8: Inspected and Approved Subgrade



Figure 9: Overall Deployment as of September 9



Figure 10: Inspected and Approved Subgrade



Figure 11: Inspected and Approved Subgrade



Figure 12: Subgrade Conditions too Wet to Deploy

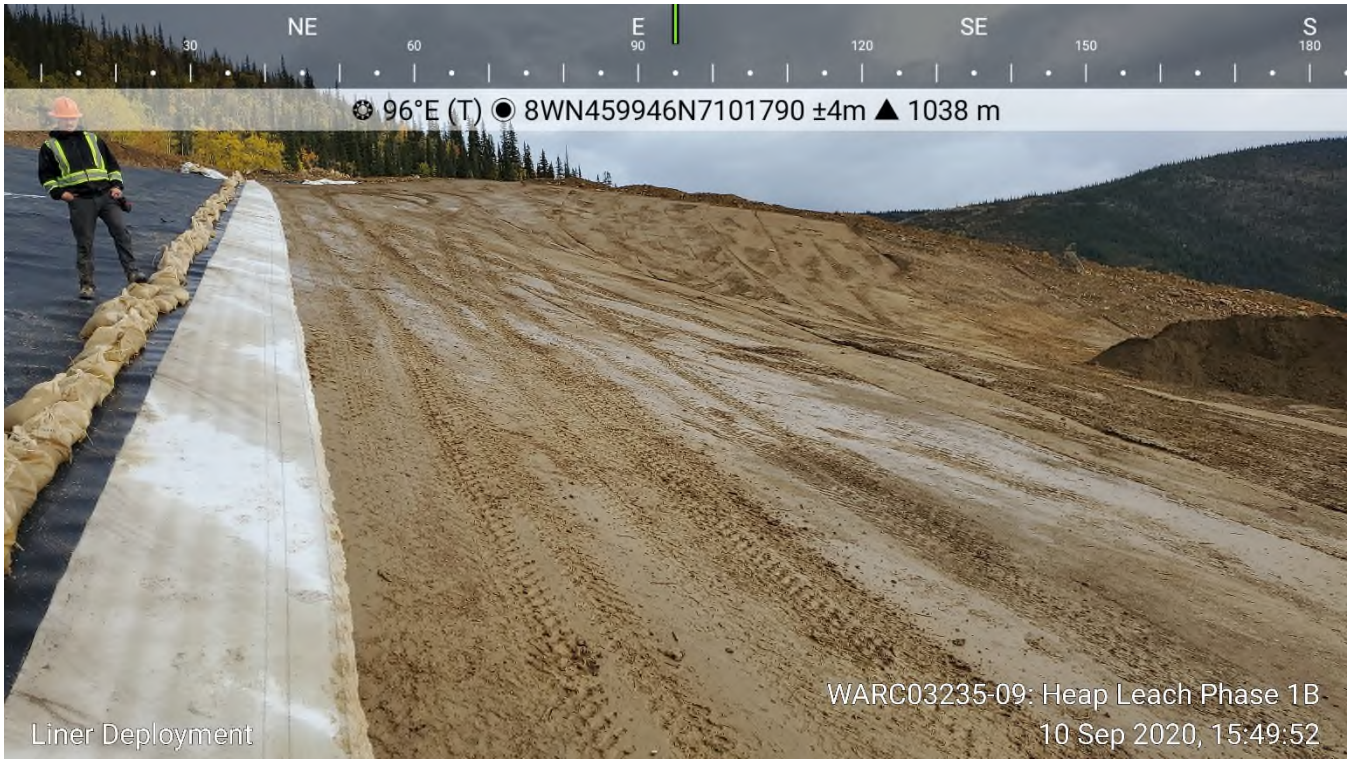


Figure 13: Subgrade Conditions too Wet to Deploy



Figure 14: Overall Deployment as of September 10



Figure 15: Prepared Subgrade



Figure 16: Inspected and Approved Subgrade

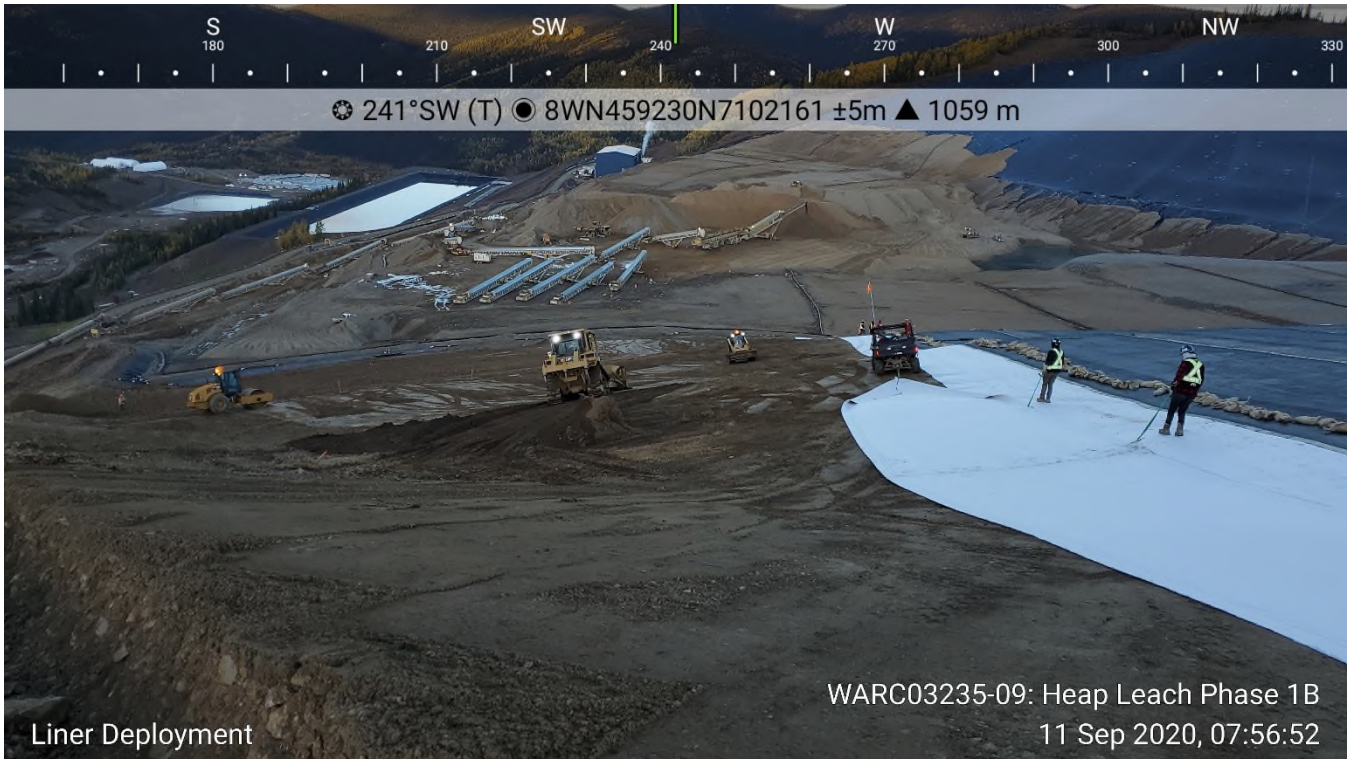


Figure 17: Prepared Subgrade at Anchor Trench

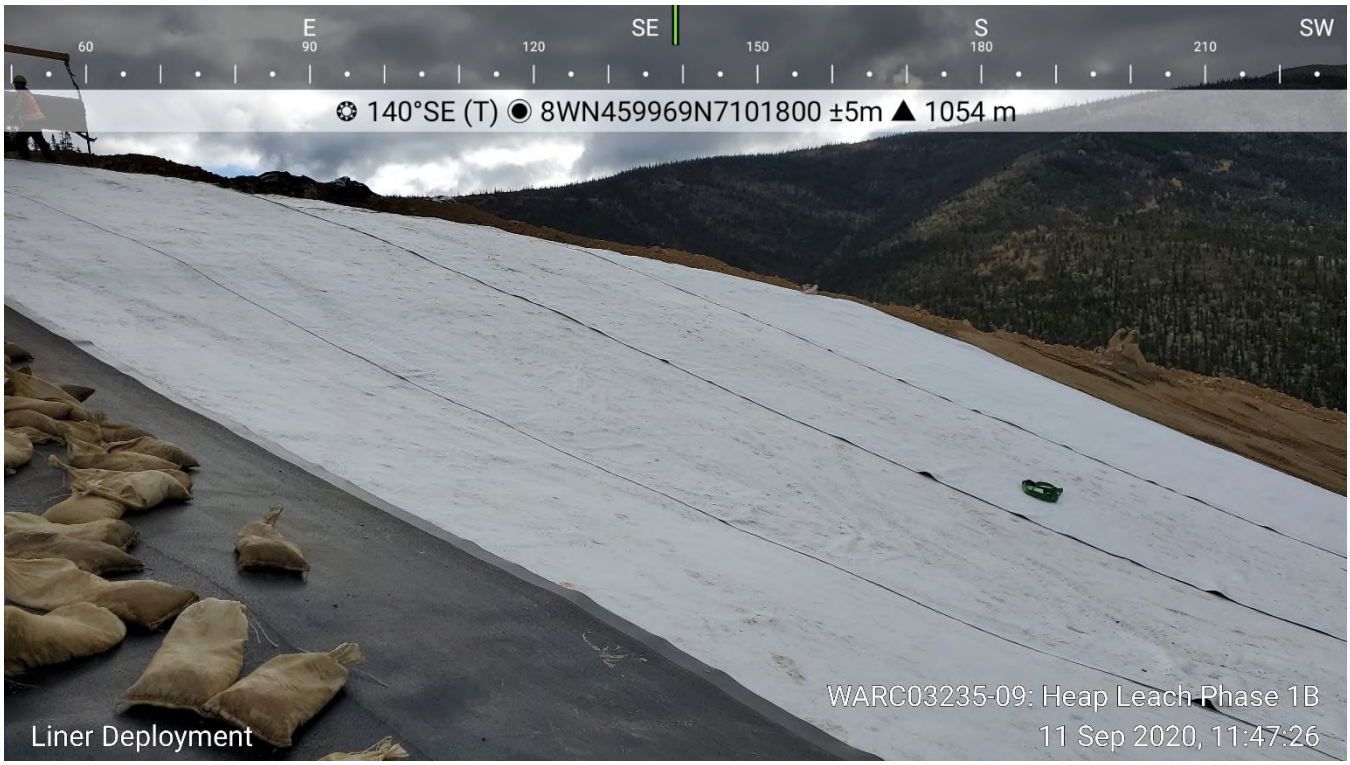


Figure 18: GCL Deployed on Slope



Figure 19: GCL and Liner Deployed on Slope



Figure 20: Liner in Anchor Trench at Corner Leading Down to Phase 1A



Figure 21: Overall Deployment as of September 11



Figure 22: Prepared Subgrade



Figure 23: Phase 1A Tie In Area Requiring Shaping



Figure 24: Rocky Areas along Phase 1A Requiring Removal



Figure 25: Prepared Subgrade Requiring Additional Rolling



Figure 26: Prepared Subgrade Requiring Spot Sanding

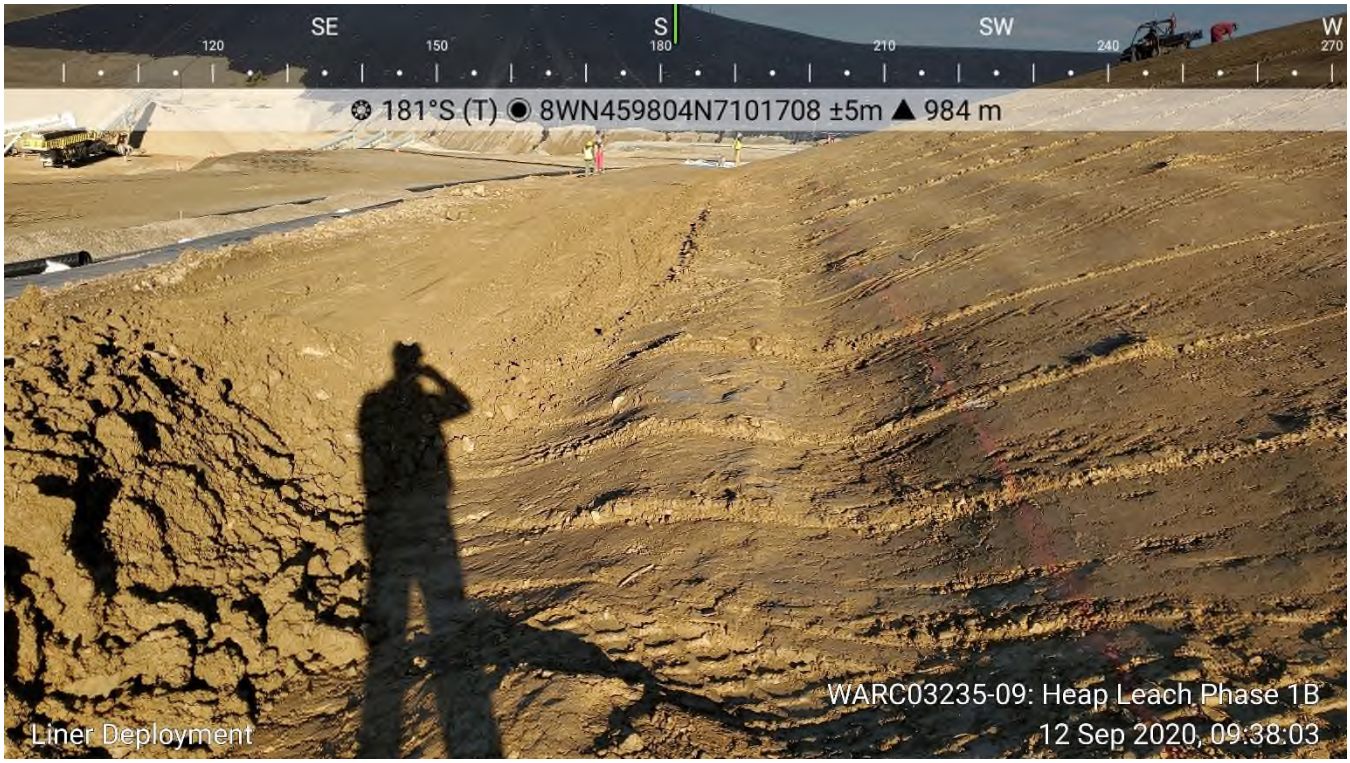


Figure 27: Soft Area at the Toe of the Slope Requiring Subex

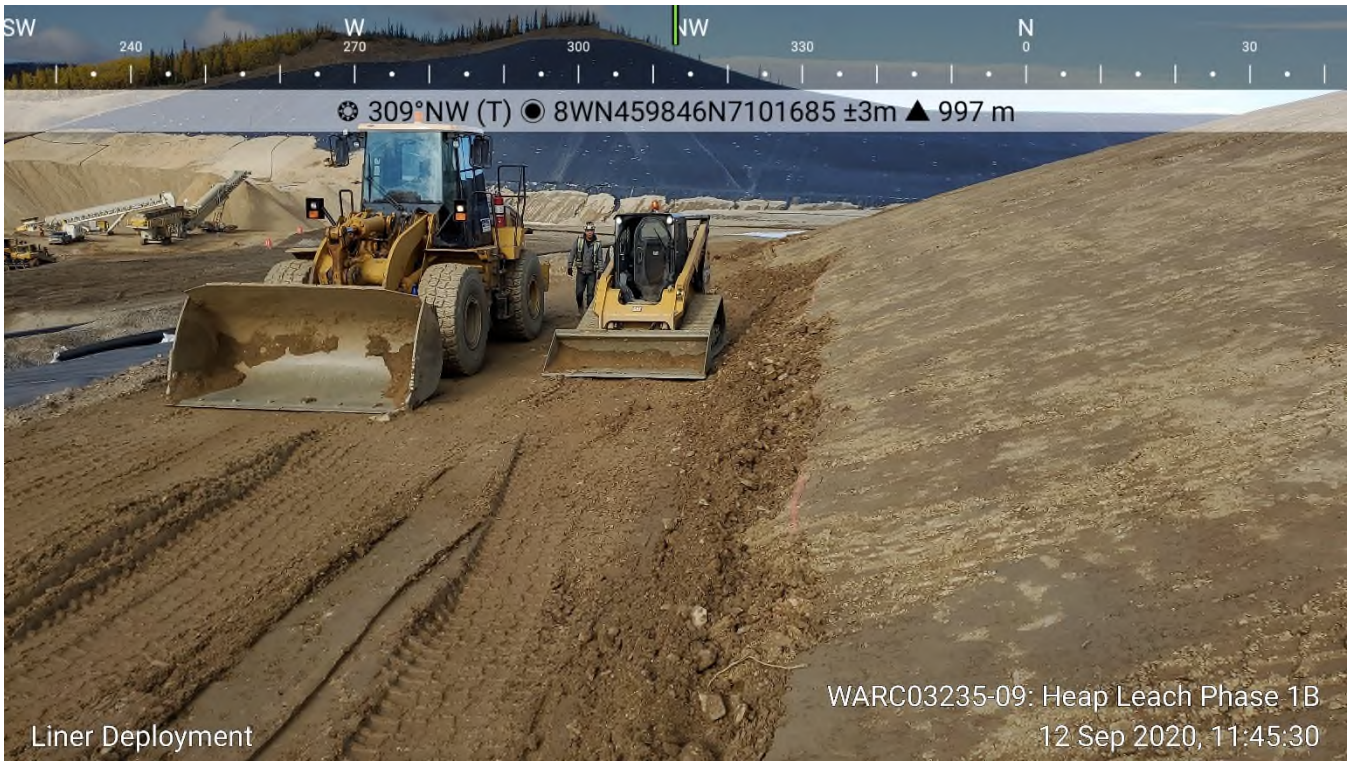


Figure 28: Soft Area Subexcavated



Figure 29: Soft Area Re-Sloped after Subex

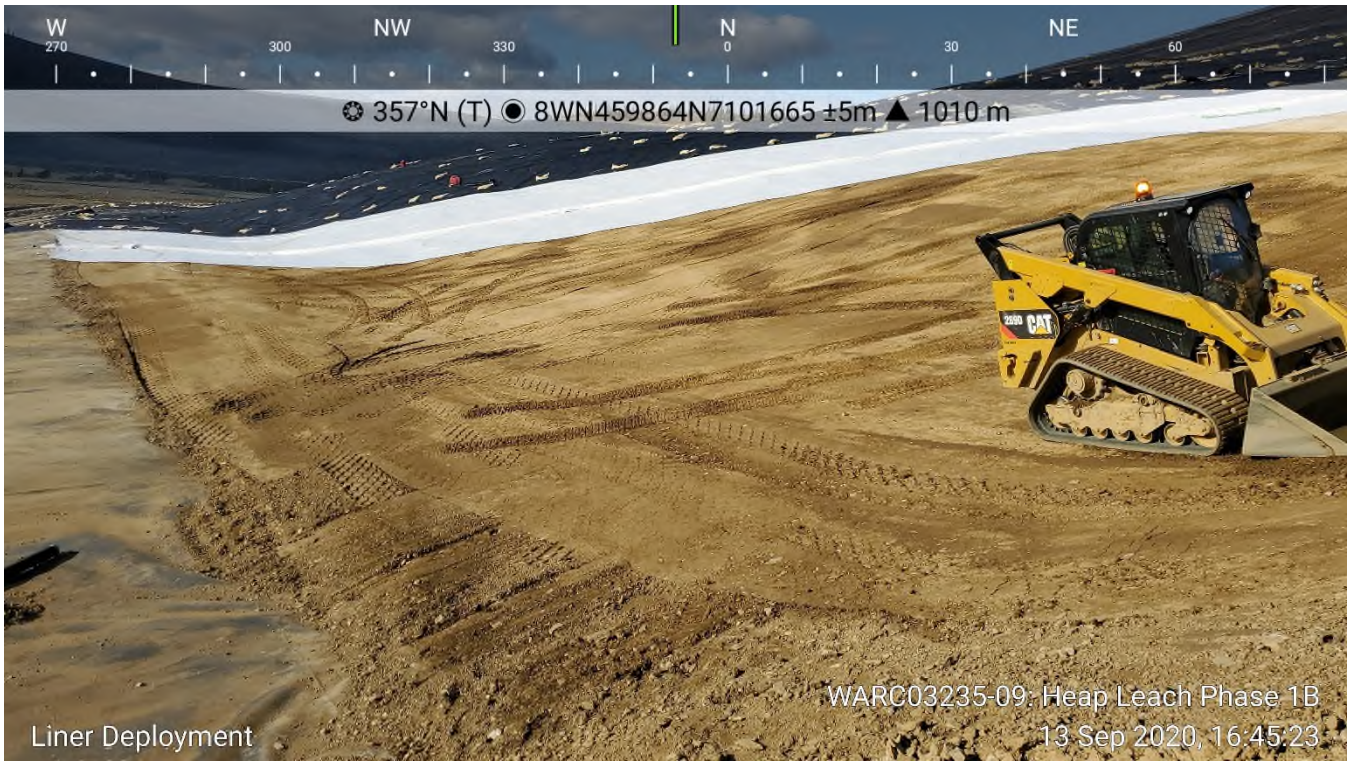


Figure 30: Prepared Subgrade



Figure 31: Overall Deployment as of September 13

StrataGold Corporation, Eagle Gold Project
Project: Victoria Gold
Weekly Report #27
September 13-19, 2020

Site Location: Phase 1B

Hours worked this period: 768
Hours total to date: 51,336

Summary:

- Construction
  - Layfield completed liner placement in Phase 1B this week.
  - Completed backfilling the liner anchor.
  - Placed ODF at the toe of the northwestern perimeter berm.

Legend:
Red = Trouble
Yellow = Caution
Green = On track

Weather:

- No rain delays to finish off liner placement
- Temperatures: Morning lows of -3 C° with daytime highs of 9C°

Incidents / Health & Safety:

- Incidents or accidents: No incidents this week.
- Weekly site safety inspection: No inspections this week.
- Weekly safety meeting: Toolbox meeting held every morning.

Incidents to date:

9

Project Milestones:	**Responsible:**	**Completion Date:**
Nuway crushing gravel for underdrain construction – Sand was not completed before moving the crusher to Secondary – Sand will now be recovered from wasted material during production of the ODF on Eagle Pup. Nuway screening plant screening oversize material out of the sand.	Nuway / Ewing	Complete
Header Underdrain excavation and installation	Ewing	Complete
Lateral drain excavation and installation – Behind due to the much larger amounts of material requiring removal	Ewing	Complete
Ditching for freshet / Water management	Ewing	Complete
Removal of all grubbing and shaping material for liner placement – Volume of material much larger then estimate	Ewing	Complete
Removal of any unsuitable material – will not affect liner placement schedule	Ewing	Complete
Surface preparation for liner placement – final surface preparation ahead of liner crew will continue until complete	Ewing	Complete
Liner placement – All material has been delivered to site – Started June 2nd and should be close to completion August 30th	Layfield / Ewing	Complete

Construction:
Activities This Week:

- Layfield finished placing liner September 14th before lunch and completed final walk through with Tetra Tech.
- Ewing finished backfilling the anchor trench on September 16th.
- Ewing placed ODF from Phase 3 along the toe of the northwestern perimeter berm on Wednesday and Thursday afternoon when temperatures were warmer. This was placed to stop the liner from trampolining during temperatures change.

Planned Activities:

- Complete final grading on the southeastern perimeter berm for CV65-1 & CV65-2 when final grades are received.
- Upgrade eastern access to install new conveyors.

HSE Safety Report:

	PERIOD TO	MONTH TO DATE	YEAR TO DATE	
Total Hours	768	4,217	51,336	
Incidents (Non-injury)	0	1	6	
First Aid Injuries	0	0	3	
Medical Aid Injuries	0	0	0	
Loss Time Injuries (LTI)	0	0	0	
Recordable Incident	0	0	2	

Phase 1B Liner Placement:

	GCL	LLDPE 80	
Total Placed	274,203	271,965	546,168
Total Area	266,680	266,680	533,360
Remaining	- 7,523	- 5,285	- 12,808
Percent Complete	102.4%		
Complete	September 14, 2020		

Final as-built surface excluding anchor trench: 265,327 m^2

Production:

Material	Month Total (September 2020)	Total to Date
Shaping (Common)/ Grubbing	1,638 m^3	257,936m^3
Re-handle Material	0 m^3	784 m^3
20mm Drain rock	28 m^3	3,934 m^3
Sand	378 m^3	17,192 m^3
Pit Run	0 m^3	9,926 m^3
Blast Rock Backfill	6,958 m^3	30,072 m^3
Blast Rock / Rip Rap to HLF/ Road Repairs	0 m^3	854 m^3
Total Material	9,002 m^3	320,698 m^3

Progress Photos:



Finishing liner detailing September 14th



Finishing liner detailing September 14th

Progress Photos:



Completed September 14th



Backfilling the anchor trench

Progress Photos:



Placed ODF on toe of Northwestern perimeter berm

TETRA TECH

WEEKLY FIELD REPORT

ISSUED FOR REVIEW

Project:	Eagle Gold Heap Leach Phase 1B	**Date:**	September 17, 2020
Location:	Eagle Gold Mine	**Contractor:**	Ewing Transport / Layfield
Client:	Victoria Gold Corp.	**Contractor's Rep:**	Marshall Ewing / Chad Messervey
Contact:	Clint Abel	**Contractor's Email:**	
Weather:	Variable (see daily entries)	**Tetra Tech Representative:**	Adam Mickey
File:	704-ENG.WARC03235-09	**Status:**	Issued for Review

This 'Issued for Review' report is provided solely for the purpose of client review and presents our findings and recommendations to date. Our findings and recommendations are provided only through an 'Issued for Use' report, which will be issued subsequent to this review. You should not rely on the interim recommendations made herein. Once our report is issued for use, the 'Issued for Review' document should be either returned to Tetra Tech Canada Inc. (Tetra Tech) or destroyed.

1.0 INTRODUCTION

Tetra Tech Canada Inc. (Tetra Tech) was retained by Victoria Gold Corp. (Victoria Gold) to provide CQA services at the Eagle Gold mine located north of Mayo, Yukon, at Dublin Gulch for the Eagle Gold Heap Leach Phase 1B expansion (Phase 1B). Mr. Adam Mickey, EIT, is Tetra Tech's representative on site.

Forte Dynamics (Forte) out of Fort Collins, Colorado provided the design and specification for Phase 1B, and Forte's representative is Clint Green.

Clint Abel, of JDS Energy & Mining, is Victoria Gold's project manager on site at the Eagle Gold mine.

Ewing Transport (Ewing), based out of Mayo, Yukon, is the construction contractor for Phase 1B.

Layfield Environmental Containment (Layfield) has been retained to provide and install the liner for Phase 1B, and their supervisor on site is Chad Messervey.

The following Field Report outlines Tetra Tech's CQA for the period of September 14, 2020, to September 17, 2020.

2.0 DAILY REPORTS

2.1 Highlights

- Rain delayed liner deployment throughout the week.
- Layfield is placing three panels of GCL for every two panels of 80 mm LLDPE liner.

2.2 September 14, 2020

- Weather: cloudy.

Tetra Tech Canada Inc.
61 Wasson Place
Whitehorse, YT Y1A 0H7 CANADA
Tel 867.668.3068 Fax 867.668.4349

- Ewing finished preparing the subgrade is the southeast corner to tie Phase 1B into Phase 1A at the anchor trench.
- Layfield deployed four slope runs of liner and finished all deployment for Phase 1B.
- After liner deployment, Layfield put three extrusion teams out on the slope to detail all remaining deployed liner as well as to tie Phase 1B into Phase 1A at the Phase 1A anchor trench.
- Layfield and Tetra Tech obtained the remaining destructive samples from the deployed liner and conducted destructive testing.
  - All samples passed destructive testing, including D151B.
- Layfield's QC conducted pressure testing of deployed liner seams.
- Ewing labourers are cleaning up all the garbage around Phase 1B.

2.3 September 15, 2020

- Weather: cloudy.
- Layfield completed all detail work for Phase 1B, including extrusion welding, pressure testing, and vacuum boxing.
- Tetra Tech and Layfield walked-off the liner deployed since the last walk-off. Seven vacuum testes were missed.
  - After the vacuum testing was completed, Tetra Tech signed the final Certificate of Acceptance for both the liner and subgrade.

3.0 GEOSYNTHETIC ROLL NUMBERS PLACED

Table 1 summarizes the daily geosynthetic roll numbers placed on the slope during liner installation. All panel lengths are approximate, and where angled joints are used, panel length is based from the center of the panel.

Table 1: Geosynthetic Roll Numbers Placed on Slope

Date	GCL Roll Number	LLDPE Liner Roll Number	Panel Number (Length)
September 14	502343546, 502343586 502343585, 502343662 502343691	10698-006 10698-013	P615 (17.2 m) P616 (30.3 m), P617 (30.1 m), P618 (29.1 m), P619 (3.6 m)

4.0 TRIAL SEAM

Table 2 summarizes the weekly trial seam results. For fusion, the apparatus settings are temperature and speed, and for extrusion, the apparatus settings are preheat and barrel temperature. Five tests are performed for each criterion.

Table 2: Trial Seam Results

Date	Time	Fusion or Extrusion	Tech	Apparatus #	Temp or Preheat (ºF)	Speed (%) or Barrel Temp (ºF)	$Peel_{inside}$ (100 min)	$Peel_{outside}$ (100 min for Fusion 88 min for Extrusion)	Shear (120 min)	Smooth or Textured
Sep 14	9:40	Fusion	JK	WW-022	850	35	149 144 168 131 149	163 157 127 172 162	197 202 196 201 196	Textured
Sep 14	9:40	Fusion	DT	WW-054	850	55	150 144 150 153 146	149 149 147 147 136	168 165 167 168 167	Smooth
Sep 14	9:40	Fusion	EA	WW-026	850	55	146 149 142 133 141	150 149 142 146 141	166 166 166 169 167	Smooth
Sep 14	9:40	Fusion	JK	WW-022	850	55	155 146 144 154 146	129 141 141 141 141	166 166 167 164 166	Smooth
Sep 14	9:40	Extrusion	JL	EX-008	500	500	N/A	130 133 136 132 124	141 168 168 165 165	N/A
Sep 14	9:40	Fusion	DT	WW-054	850	35	159 177 169 154 141	154 169 173 161 180	178 183 191 186 185	Textured
Sep 14	9:40	Fusion	EA	WW-026	850	35	163 159 169 160 159	171 163 156 171 159	193 183 174 198 191	Textured
Sep 14	13:00	Extrusion	EC	EX-035	500	495	N/A	115 117 120 121 119	156 149 148 152 154	N/A
Sep 14	12:40	Extrusion	GP	EX-023	500	495	N/A	147 157 147 167 155	172 164 171 177 176	N/A

Date	Time	Fusion or Extrusion	Tech	Apparatus #	Temp or Preheat (ºF)	Speed (%) or Barrel Temp (ºF)	$Peel_{inside}$ (100 min)	$Peel_{outside}$ (100 min for Fusion 88 min for Extrusion)	Shear (120 min)	Smooth or Textured
Sep 14	14:00	Extrusion	JL	EX-008	500	500	N/A	143 151 148 145 126	140 179 159 177 172	N/A
Sep 14	16:30	Extrusion	GP	EX-023	500	495	N/A	142 131 145 141 137	158 159 161 158 158	N/A
Sep 14	17:10	Extrusion	RL	EX-035	500	495	N/A	112 127 131 128 132	157 161 163 159 160	N/A
Sep 15	8:00	Extrusion	JL	EX-008	500	500	N/A	138 139 162 159 150	172 167 182 167 169	N/A
Sep 15	8:00	Extrusion	GP	EX-035	500	495	N/A	100 128 130 138 100	164 162 159 156 167	N/A

5.0 NON-DESTRUCTIVE TESTING

Table 3 summarizes the weekly non-destructive pressure testing results.

Table 3: Non-Destructive Testing Results

Date Fused	Date Tested	Time Tested	Seam #	psi Start	psi End	Pass or Fail	Notes
Sep 7	Sep 14	1248	P550-P551 Cross		40		
Sep 7	Sep 14	1249	P548-P550 Vertical		40		
Sep 7	Sep 14	1249	P548-P551 Vertical		40		Top of seam to patch
Sep 8	Sep 14	1248	P551-P553 Vertical		40		
Sep 8	Sep 14	1248	P550-P553 Vertical		40		
Sep 9	Sep 14	1224	P568-P569 Cross		40		
Sep 9	Sep 14	1221	P570-P571 Cross		40		
Sep 9	Sep 14	1221	P569-P571 Vertical		40		
Sep 9	Sep 14	1224	P568-P570 Vertical		40		
Sep 9	Sep 14	1221	P569-P570 Vertical		39		
Sep 10	Sep 14	1222	P571-P573 Vertical		39		
Sep 10	Sep 14	1222	P570-P573 Vertical		40		

Date Fused	Date Tested	Time Tested	Seam #	psi Start	psi End	Pass or Fail	Notes
Sep 10	Sep 14	1640	P579-P580 Cross		40		
Sep 10	Sep 14	1602	P575-P578 Vertical		40		
Sep 10	Sep 14	1333	P576-P579 Vertical		40		
Sep 10	Sep 14	1544	P576-P578 Vertical		40		
Sep 11	Sep 14	1745	P581-P582 Cross		40		
Sep 11	Sep 14	1642	P582-P582 Vertical		39		
Sep 11	Sep 14	1545	P579-P581 Vertical		40		
Sep 11	Sep 14	1640	P580-P582 Vertical		40		
Sep 11	Sep 14	1640	P579-P582 Vertical		40		Top of seam to patch
Sep 11	Sep 14	1642	P579-P582 Vertical		40		Patch to bottom of seam
Sep 11	Sep 14	1545	P578-P581 Vertical		39		
Sep 11	Sep 14	1650	P584-P585 Cross		40		
Sep 11	Sep 14	1650	P582-P585 Vertical		40		
Sep 11	Sep 14	1745	P582-P584 Vertical		40		
Sep 11	Sep 14	1334	P577-P579 Cross		40		
Sep 12	Sep 14	1758	P587-P588 Cross		40		
Sep 12	Sep 14	1758	P584-P587 Vertical		40		
Sep 12	Sep 14	1651	P588-P589 Cross		40		
Sep 12	Sep 14	1651	P585-P589 Vertical		40		
Sep 12	Sep 14	1650	P585-P588 Vertical		40		
Sep 12	Sep 14	1758	P584-P588 Vertical		40		
Sep 12	Sep 14	1711	P591-P592 Cross		40		
Sep 12	Sep 14	1759	P587-P591 Vertical		40		
Sep 12	Sep 14	1711	P589-P592 Vertical		40		
Sep 12	Sep 14	1759	P588-P591 Vertical		40		
Sep 12	Sep 14	1711	P589-P591 Vertical		40		Top of seam to patch
Sep 12	Sep 14	1653	P589-P591 Vertical		40		Patch to bottom of seam
Sep 12	Sep 14	1811	P593-P594 Cross		40		
Sep 12	Sep 14	1812	P591-P593 Vertical		40		
Sep 12	Sep 14	1712	P592-P594 Vertical		40		
Sep 12	Sep 14	1712	P591-P594 Vertical		40		
Sep 12	Sep 14	1811	P593-P596 Vertical		38		
Sep 12	Sep 14	1724	P596-P597 Cross		39		
Sep 12	Sep 14	1722	P597-P598 Cross		40		
Sep 12	Sep 14	1722	P594-P598 Vertical		40		
Sep 12	Sep 14	1722	P594-P597 Vertical		40		
Sep 12	Sep 14	1811	P594-P596 Vertical		40		
Sep 13	Sep 14	1826	P599-P600 Cross		40		
Sep 13	Sep 14	1723	P597-P600 Vertical		40		
Sep 13	Sep 14	1826	P596-P600 Vertical		40		
Sep 13	Sep 14	1826	P596-P599 Vertical		39		
Sep 11	Sep 15	1232	P583-P584 Cross		40		
Sep 11	Sep 15	1243	P581-P584 Vertical		40		Top of seam to patch
Sep 11	Sep 15	1232	P581-P584 Vertical		40		Patch to bottom of seam
Sep 11	Sep 15	1232	P581-P583 Vertical		40		
Sep 12	Sep 15	1250	P586-P587 Cross		40		
Sep 12	Sep 15	1233	P584-P586 Vertical		40		
Sep 12	Sep 15	1233	P583-P586 Vertical		40		

Date Fused	Date Tested	Time Tested	Seam #	psi Start	psi End	Pass or Fail	Notes
Sep 12	Sep 15	1302	P590-P591 Cross		40		
Sep 12	Sep 15	1250	P587-P590 Vertical		40		
Sep 12	Sep 15	1250	P586-P590 Vertical		40		
Sep 12	Sep 15	1302	P590-P593 Vertical		40		
Sep 12	Sep 15	1303	P595-P596 Cross		40		
Sep 12	Sep 15	1724	P593-P595 Vertical		39		
Sep 13	Sep 15	1124	P597-P600 Vertical		40		Patch to bottom of seam
Sep 13	Sep 15	1303	P595-P599 Vertical		40		
Sep 13	Sep 15	1314	P601-P602 Cross		40		
Sep 13	Sep 15	1126	P600-P602 Vertical		40		
Sep 13	Sep 15	1222	P603-P604 Cross		40		
Sep 13	Sep 15	1128	P604-P605 Cross		40		
Sep 13	Sep 15	1314	P599-P601 Vertical		40		
Sep 13	Sep 15	1126	P599-P602 Vertical		40		
Sep 13	Sep 15	1128	P602-P605 Vertical		40		
Sep 13	Sep 15	1315	P601-P604 Vertical		40		
Sep 13	Sep 15	1128	P602-P604 Vertical		40		
Sep 13	Sep 15	1222	P601-P603 Vertical		40		
Sep 13	Sep 15	1131	P606-P607 Cross		40		
Sep 13	Sep 15	1130	P604-P606 Vertical		40		
Sep 13	Sep 15	1129	P605-P607 Vertical		40		
Sep 13	Sep 15	1129	P604-P607 Vertical		40		
Sep 13	Sep 15	1150	P608-P609 Vertical		40		
Sep 13	Sep 15	1131	P607-P609 Vertical		40		
Sep 13	Sep 15	1146	P606-P608 vertical		40		
Sep 13	Sep 15	1131	P606-P609 Vertical		40		
Sep 13	Sep 15	1156	P610-P611 Cross		40		
Sep 13	Sep 15	1153	P609-P611 Vertical		39		
Sep 13	Sep 15	1202	P612-P623 Cross		40		
Sep 13	Sep 15	1150	P609-P610 Vertical		40		
Sep 13	Sep 15	1150	P608-P610 Vertical		40		
Sep 13	Sep 15	1201	P611-P613 Vertical		40		
Sep 13	Sep 15	1156	P611-P612 Vertical		40		
Sep 13	Sep 15	1156	P610-P612 Vertical		40		
Sep 14	Sep 15	1202	P613-P614 Vertical		39		
Sep 14	Sep 15	1208	P615-P616 Cross		40		
Sep 14	Sep 15	1202	P612-P614 Vertical		40		
Sep 14	Sep 15	1208	P614-P616 Vertical		40		
Sep 14	Sep 15	1208	P614-P615 Vertical		39		
Sep 14	Sep 15	1209	P616-P617 Vertical		40		
Sep 14	Sep 15	1211	P618-P619 Vertical		40		
Sep 14	Sep 15	1209	P615-P617 Vertical		40		
Sep 14	Sep 15	1210	P617-P618 Vertical		40		

Date Fused	Date Tested	Time Tested	Seam #	psi Start	psi End	Pass or Fail	Notes

Date Fused	Date Tested	Time Tested	Seam #	psi Start	psi End	Pass or Fail	Notes

Date Fused	Date Tested	Time Tested	Seam #	psi Start	psi End	Pass or Fail	Notes

Date Fused	Time Fused	Tech	Apparatus	Location (UTM is +/- 4 m)	Sample ID	$Peel_{in}$ (100 min)	$Peel_{out}$ (100 min)	Shear (120 min)	Pass or Fail
Sep 8	16:50	JL	WW-054	P559-P561 Vertical 16 m from D251A Top of Seam	D251B	154 158 152 153 153	150 130 147 147 145	158 155 158 158 157	
Sep 8	16:40	JL	WW-054	P561-P562 Cross Left Side of Seam	D272	158 153 154 160 171	151 141 142 119 155	177 166 176 163 171	
Sep 14	11:07	EA	WW-026	P618-P619 Vertical Bottom of Seam	D273	143 133 142 146 147	141 142 142 141 141	157 159 153 160 132	
Sep 14	10:54	EA	WW-026	P614-P615 Vertical Bottom of Seam	D274	151 142 142 142 151	131 135 143 152 143	164 154 156 163 166	
Sep 13	17:23	DT	WW-054	P609-P611 Vertical Top of Seam	D275	151 149 141 147 150	153 141 143 143 134	156 161 157 162 161	
Sep 12	16:56	DT	WW-054	P594-P598 Vertical Top of Seam	D276	137 142 134 152 144	141 141 140 143 136	156 157 157 153 156	
Sep 12	14:30	JK	WW-022	P592-P594 Vertical Top of Seam	D277	145 148 139 141 143	150 148 143 145 139	148 158 160 159 142	
Sep 11	13:31	JK	WW-022	P582-P585 Vertical Top of Seam	D278	147 147 153 141 138	138 146 135 142 145	165 160 164 159 163	
Sep 7	13:18	JK	WW-022	P549-P552 Vertical Top of Seam	D279	146 138 136 128 137	142 141 139 150 139	159 155 161 164 161	

Date Fused	Time Fused	Tech	Apparatus	Location (UTM is +/- 4 m)	Sample ID	$Peel_{in}$ (100 min)	$Peel_{out}$ (100 min)	Shear (120 min)	Pass or Fail
Sep 12	11:48	DT	WW-054	P585-P589 Vertical Top of Seam	D280	156 159 147 146 150	156 145 153 153 151	169 157 171 159 170	
Sep 13	12:16	DT	WW-054	P597-P600 Vertical Top of Seam	D281	141 150 153 146 146	138 142 142 130 136	159 162 159 163 162	
Sep 13	13:04	DT	WW-054	P600-P602 Vertical Top of Seam	D282	144 136 139 138 142	140 148 152 142 148	157 159 160 130 161	
Sep 13	13:34	EA	WW-026	P602-P605 Vertical Top of Seam	D283	149 142 152 149 148	145 144 135 136 138	153 149 153 152 153	
Sep 13	16:17	EA	WW-026	P607-P609 Vertical Top of Seam	D284	145 141 145 143 147	154 139 139 148 142	164 157 163 155 157	
Sep 13	15:03	DT	WW-054	P605-P607 Vertical Top of Seam	D285	140 149 141 140 156	149 142 147 126 116	156 162 157 158 154	
Sep 12	13:22	JK	WW-022	P589-P592 Vertical Top of Seam	D286	151 150 137 148 145	152 130 132 149 137	164 159 163 162 143	
Sep 13	13:09	JK	WW-022	P603-P604 Cross Left Side of Seam	D287	136 157 133 151 148	128 153 149 156 139	164 169 160 167 158	

7.0 PHOTO LOG



Figure 1: Prepared Subgrade at Southeast Corner of Phase 1B



Figure 2: Prepared Subgrade at Southeast Corner of Phase 1B



Figure 3: GCL on Prepared Subgrade at Southeast Corner



Figure 4: Overall Deployment as of September 14

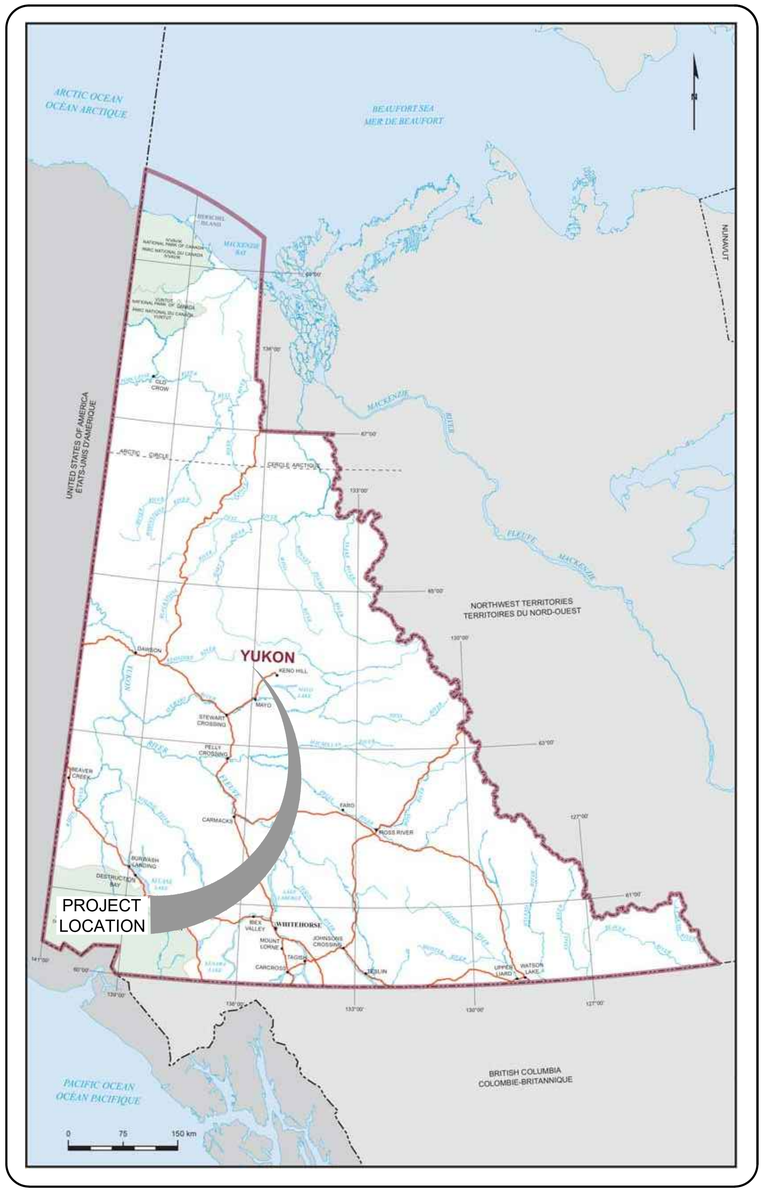


Figure 5: Completed East Side of Phase 1B

APPENDIX 4
Record Drawings

VICTORIA EAGLE GOLD
HEAP LEACH FACILITY PHASE 1B
FINAL DESIGN

DECEMBER, 2019



NORTH

VICINITY MAP

NOT TO SCALE

SHEET LIST TABLE				
SHEET NUMBER	DRAWING NUMBER	DESCRIPTION	CURRENT REV.	REV. DATE
1	GA-F001	COVER SHEET AND DRAWING LIST	1	03-12-2021
2	GA-F002	NOTES AND LEGEND	1	03-12-2021
3	GA-F003	OVERALL LAYOUT PLAN AND SURVEY CONTROL TABLE	1	03-12-2021
4	GA-F004	SURFACE GEOLOGY MAP	1	03-12-2021
5	GA-F005	SITE INVESTIGATION PLAN	1	03-12-2021
6	CV-F001	PHASE 1 HEAP CONFIGURATION	1	03-12-2021
7	CV-F003	UNDERDRAIN PIPING PLAN VIEW	1	03-12-2021
8	CV-F004	SUBGRADE GRADING PLAN	1	03-12-2021
9	CV-F006	INTERCEPTOR DITCH SECTIONS	1	03-12-2021
10	DTL-F001	TYPICAL DETAILS SHEET 1 OF 4	2	03-12-2021
11	DTL-F003	TYPICAL DETAILS SHEET 3 OF 4	1	03-12-2021
12	DTL-F004	TYPICAL DETAILS SHEET 4 OF 4	1	03-12-2021

Prepared for:

Victoria GOLD CORP

YUKON, CA

RECORD DRAWINGS

ISSUE	DATE	DESCRIPTION	DRAWN	CHKD	APPD
1	031221	RECORD OF CONSTRUCTION	SMC	WR	BC
0	010820	ISSUED FOR CONSTRUCTION	SMC	CJG	BC

COORD SYSTEM: NAD 83 UTM ZONE 8

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FIELD DEVIATIONS FROM THIS DESIGN ARE NOT PERMITTED WITHOUT DOCUMENTED APPROVAL BY THE ENGINEER.

FD PROJECT NO: 109005

PREPARED BY:
FORTE DYNAMICS
120 COMMERCE DRIVE, UNITS 3 & 4
FORT COLLINS, CO 80524

VICTORIA EAGLE GOLD, PHLF

COVER SHEET AND DRAWING LIST

YUKON, CANADA

DRAWING NUMBER:
109005-51100-03
GA-F001

[scronk] [Mar 08, 2021 – 10:46am] [C:\Users\Scronk\OneDrive – Forte Dynamics\Documents\Work from Home\Victoria\CAD\DRAWINGS\PLAN SET\COVER AND OVERALL.dwg]

GENERAL NOTES:

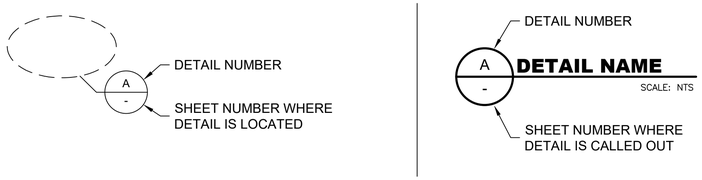
UNLESS OTHERWISE INDICATED ON THE DRAWINGS, THE FOLLOWING GENERAL NOTES SHALL APPLY:

1. ALL COORDINATES AND ELEVATIONS ARE SHOWN IN METRES, UNLESS NOTED OTHERWISE. COORDINATES AND TOPOGRAPHY ARE IN NAD83 (CSRS) UTM ZONE 8N COORDINATE SYSTEM. SURVEY PROVIDED BY UNDERHILL GEOMATICS LTD.
2. THESE DRAWINGS ARE TO BE READ IN CONJUNCTION WITH ACCOMPANYING DRAWINGS AND SPECIFICATIONS. THE CONTRACTOR SHALL IMMEDIATELY NOTIFY THE ENGINEER SHOULD UNCERTAINTIES ARISE WITH THE DRAWINGS, SCOPE, AND/OR TECHNICAL SPECIFICATIONS.
3. UNLESS FORTE DYNAMICS AGREES OTHERWISE IN WRITING, THIS DRAWING SHALL NOT BE MODIFIED OR USED FOR ANY PURPOSE OTHER THAN THE PURPOSE FOR WHICH FORTE GENERATED IT. FORTE SHALL HAVE NO LIABILITY FOR ANY DAMAGES OR LOSS ARISING IN ANY WAY FROM ANY USE OR MODIFICATION OF THIS DOCUMENT NOT AUTHORIZED BY FORTE. ANY USE OF OR RELIANCE UPON THIS DOCUMENT OR ITS CONTENT BY THIRD PARTIES SHALL BE AT SUCH THIRD PARTIES' SOLE RISK
4. SURFICIAL GEOLOGY PROVIDED BY BGC.
5. ALL DIMENSIONS, STATIONING, AND SCALES ARE SI METRIC SYSTEM.
6. SITE INVESTIGATION BOREHOLES, TEST PITS, AND SEISMIC LINE LOCATIONS SHOWN ON THESE DRAWINGS ARE THE BASIS FOR INTERPRETATION OF SUBSURFACE CONDITIONS FOR DESIGN. SEE APPENDIX A - SUPPORTING INFORMATION OF THE REPORT TITLED: "EAGLE GOLD PROJECT - HEAP LEACH FACILITY DETAILED DESIGN - FINAL" DATED JANUARY, 2018. SUBSURFACE CONDITIONS MAY VARY BETWEEN THE SITE INVESTIGATION LOCATIONS DURING CONSTRUCTION. THE CONTRACTOR SHALL BE RESPONSIBLE FOR VERIFICATION OF ACTUAL SUBSURFACE CONDITIONS FOR CONSTRUCTION, AS WELL AS ANY CHANGES IN DESIGN GROUND LINES VERSUS EXISTING GROUND LINES BASED ON 2 METRE CONTOUR INTERVAL TOPOGRAPHY.
7. TOPOGRAPHY FOR MINE FACILITY AND PROCESS PLANT LAYOUTS PROVIDED BY HATCH'S DESIGN.
8. ROAD SURFACES TO BE SLOPED AND GRADED TO DRAIN. CULVERTS TO BE INSTALLED AS REQUIRED TO PREVENT PONDING.
9. FINAL DESIGN OF SITE-WIDE ACCESS ROADS BY OTHERS, OTHER THAN THAT SHOWN HEREIN.
10. FINAL DESIGN OF THE PROCESS PLANT, CONVEYORS AND RELATED FACILITIES BY OTHERS. ELECTRICAL UTILITIES DESIGNED BY OTHERS.
11. ALL FOUNDATIONS AND OTHER EXCAVATIONS SHALL BE INSPECTED BY THE OWNER'S ENGINEER PRIOR TO FILL PLACEMENT.
12. ALL DRILL HOLES SHALL BE PLUGGED WITH CEMENT OR BENTONITE (WITHIN LIMITS OF AFFECTED AREA).
13. PHASE 2 AND 3 FACILITY LAYOUT IS PRELIMINARY AND CONSTRUCTION OF PHASE 2 AND 3 FACILITY IS NOT IN CONTRACT.

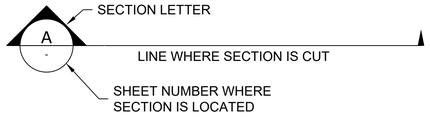
LEGEND

- 450mm CAP
- 250mm CAP
- 100mm CAP
- 450mm WYE
- 150mm WYE
- 300 X 450 mm REDUCER
- PROJECT BOUNDARY
- EXISTING CONTOURS (m)
- RECORD OF CONST. CONTOURS (m)
- PROPOSED CONTOURS (m)
- ORE (HEAP) CONTOURS (m)
- 450mm SDR11 HDPE PIPE
- 250mm PERFORATED CPP PIPE
- 100mm PERFORATED CPP PIPE
- 150mm SDR17 HDPE PIPE
- 100mm PERFORATED CPP PIPE

DETAIL CALL-OUT



CROSS-SECTION LOCATION



ABBREVIATIONS:

ADS	- ADVANCED DRAINAGE SYSTEMS, INC.
ASTM	- AMERICAN SOCIETY FOR TESTING AND MATERIALS
AWWA	- AMERICAN WATER WORKS ASSOCIATION
BGC	- BGC ENGINEERING INC.
CL	- CENTRELINE
CPP	-CORRUGATED PLASTIC PIPE
CQA	- CONSTRUCTION QUALITY ASSURANCE
CS	- CARBON STEEL
CSRS	- CANADIAN SPATIAL REFERENCE SYSTEM
DIA.	- DIAMETER
E	- EASTING (COORDINATE)
EL.	- ELEVATION
FG	- FINISHED GRADE
GCL	- GEOSYNTHETIC CLAY LINER
GWL	- GROUND WATER LEVEL
HDPE	- HIGH-DENSITY POLYETHYLENE
HLF	- HEAP LEACH FACILITY
I.D.	- INSIDE DIAMETER
INV	- INVERT
LDRS	- LEAK DETECTION AND RECOVERY SYSTEM
LLDPE	- LINEAR LOW-DENSITY POLYETHYLENE
MAX.	- MAXIMUM
MIN.	- MINIMUM
N	- NORTHING (COORDINATE)
NIC	- NOT IN CONTRACT
NOM	- NOMINAL
N.T.S.	- NOT TO SCALE
O.C.	- ON CENTRE
O.D.	- OUTSIDE DIAMETER
ODF	- OVERLINER DRAIN FILL
OZ.	- OUNCE
PLS	- PREGNANT LEACH SOLUTION
PE	- POLYETHYLENE
PVC	- POLYVINYL CHLORIDE
SCH.	- SCHEDULE
SDR	- STANDARD DIMENSION RATIO
SL	- SEISMIC LINE
STA	- STATION
S.S.	- STAINLESS STEEL
TBD	- TO BE DETERMINED
TYP	- TYPICAL
UV	- ULTRAVIOLET
VWP	- VIBRATING WIRE PIEZOMETER
WSE	- WATER SURFACE ELEVATION
50 m	- DIMENSION IN METRES
2.5:1	- 2.5 HORIZONTAL TO 1 VERTICAL SLOPE
~	- APPROXIMATELY

FILL TYPES FOR CONSTRUCTION

MATERIAL No.	FILL MATERIAL NAME	FILL DESCRIPTION	MOISTURE CONDITIONING	LOOSE LIFT THICKNESS	COMPACTION EFFORT	HATCH
1	SITE GRADING FILL	SITE GRADING SOILS FROM REQUIRED EXCAVATIONS AND CUT/FILL ACTIVITIES	2% +/- OF OPTIMUM	300 mm MAX.	95% OF ASTM D698 COMPACTION	
2	SELECT FILL	FINE GRAINED MATERIALS FOR LINER BEDDING	-2% + 1% OF OPTIMUM	150 mm MAX.	95% OF ASTM D698 COMPACTION	
4	OVERLINER DRAIN FILL (ODF)	CLEAN GRAVEL MATERIALS FOR HLF LINER COVER, PLS AND LDRS SUMPS	NONE	FILL NOTE 1	NONE REQUIRED	
5	SELECT DRAIN FILL	CLEAN GRAVEL MATERIAL FOR UNDERDRAIN PIPES	NONE	AS REQUIRED	NONE REQUIRED	
7	COMPACTED ROCKFILL	HIGH STRENGTH ROCK MATERIALS	AS REQUIRED	FILL NOTE 2	LARGE SCALE TEST FILL REQUIRED (FILL NOTE 2)	
8	ANCHOR TRENCH BACKFILL	SITE GRADING FILL MATERIAL FOR USE IN LINER ANCHOR TRENCHES	AS REQUIRED	150 mm	85% OF ASTM D698 COMPACTION	
9	ROAD WEARING COARSE	WELL GRADED SANDY GRAVEL	AS REQUIRED	150 mm	95% OF ASTM D698 COMPACTION	
11	ORE	CRUSHED ORE MATERIAL FOR HEAP LEACHING	N/A	N/A	N/A	

FILL NOTES:

1) OVERLINER DRAIN FILL TO BE PLACED IN A SINGLE LOOSE LIFT OF 0.6 m (MINIMUM) ON THE UPPER PAD AREAS.
2) COMPACTED ROCKFILL THICKNESS AND COMPACTION DEPENDING ON AVAILABLE MATERIALS AND RESULTS OF LARGE SCALE TEST FILLS CONDUCTED BY THE ENGINEER DURING CONSTRUCTION, AS REQUIRED BY THE SPECIFICATIONS.
3) FILL TYPES 3, 6, & 10 INTENTIONALLY OMITTED.

RECORD DRAWINGS

ISSUE	DATE	DESCRIPTION	DRAWN	DSGN	CHKD	APPD
1	031221	RECORD OF CONSTRUCTION	SMC	SMC	WR	BC
0	010820	ISSUED FOR CONSTRUCTION	SMC	SMC	CJG	BC

COORD SYSTEM: NAD 83 UTM ZONE 8

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FIELD DEVIATIONS FROM THIS DESIGN ARE NOT PERMITTED WITHOUT DOCUMENTED APPROVAL BY THE ENGINEER.

FDI PROJECT NO: 109005

PREPARED BY:
forte DYNAMICS
120 COMMERCE DRIVE, UNITS 3 & 4
FORT COLLINS, CO 80524

VICTORIA EAGLE GOLD, PHLF

NOTES AND LEGEND

YUKON, CANADA

DRAWING NUMBER: 109005-51100-03

GA-F002

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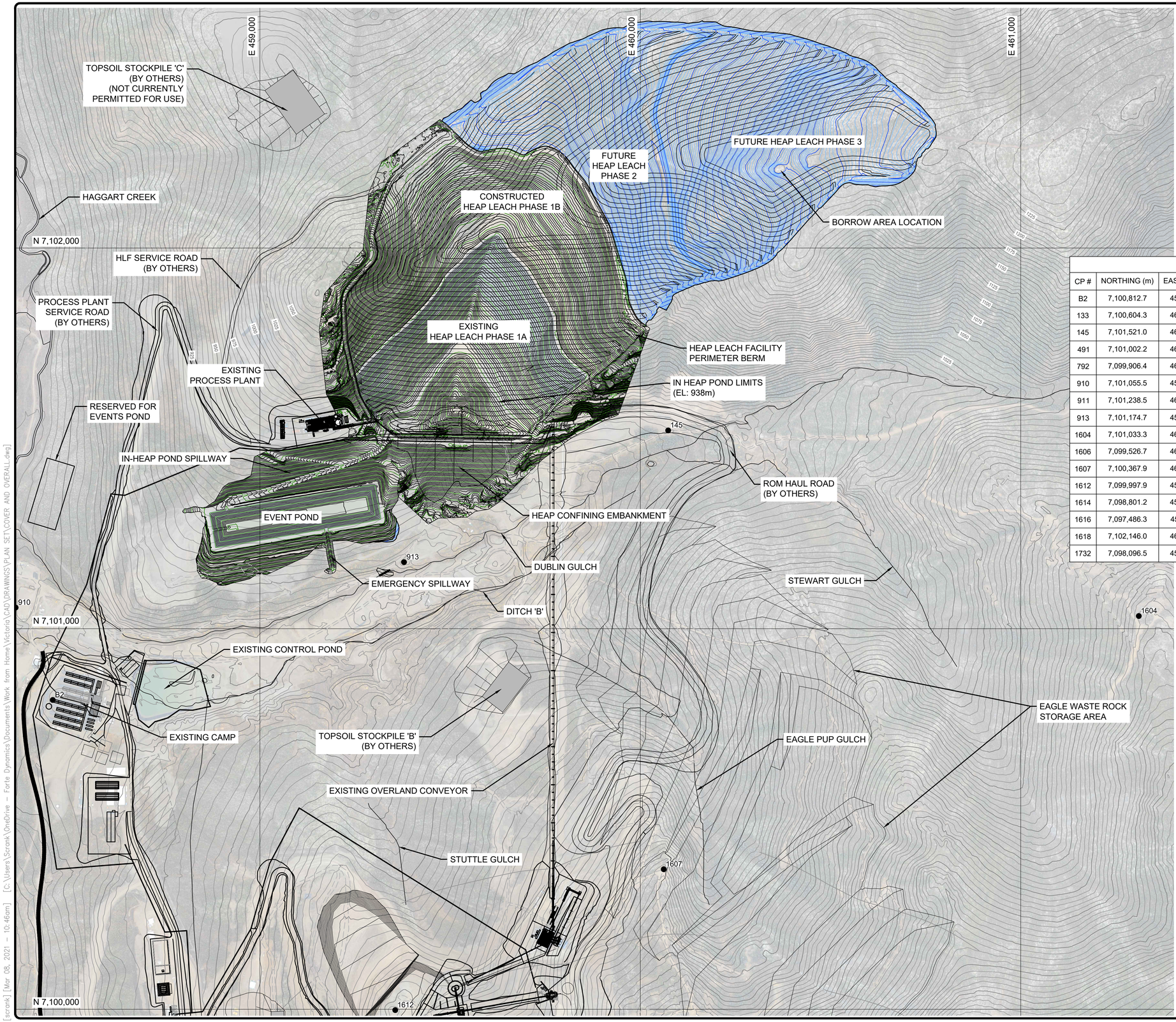

150 0 150

(In Meters)
1 cm = 50 M
(1 : 5,000)

EXISTING SURVEY CONTROL POINTS

CP #	NORTHING (m)	EASTING (m)	ELEVATION (m)	DESCRIPTION
B2	7,100,812.7	458,455.6	816.1	IRON BAR TAG "B2" 1.5 m TRIPOD
133	7,100,604.3	463,444.3	1430.2	FD. IRON BAR WITH TAG 133
145	7,101,521.0	460,073.3	934.0	FD. BCLS IP WITH UGL TAG 145
491	7,101,002.2	462,993.4	1379.6	FD. CLS 77 MARKED "1981" TAG 491
792	7,099,906.4	461,400.7	1368.4	FOUND CLS 77 WITH UGL TAG 792
910	7,101,055.5	458,358.2	795.0	IRON BAR IN GRAVEL BERN NEAR CAMP
911	7,101,238.5	462,842.3	1353.5	BOLT IN BOULDER (DRILLED AND CEMENTED)
913	7,101,174.7	459,378.9	856.3	
1604	7,101,033.3	461,310.3	1217.5	FD. BCLS IP WITH UGL TAG 1604
1606	7,099,526.7	460,089.4	1259.0	IRON BAR WITH UNDERHILL TAG 1606
1607	7,100,367.9	460,061.6	1088.7	IRON BAR WITH UNDERHILL TAG 1607
1612	7,099,997.9	459,356.0	1010.4	IRON BAR WITH UNDERHILL TAG 1612
1614	7,098,801.2	459,897.5	1173.8	IRON BAR WITH UNDERHILL TAG 1614
1616	7,097,486.3	458,209.1	744.2	FD. BCLS IP WITH UGL TAG 1616
1618	7,102,146.0	462,652.7	1299.6	IRON BAR WITH UNDERHILL TAG 1618
1732	7,098,096.5	459,516.6	1051.9	FD. CLS 77 MARKED "1732,1995" TAG 1732

RECORD DRAWINGS

ISSUE	DATE	DESCRIPTION	DRAWN	DSGN	CHKD	APPD
1	031221	RECORD OF CONSTRUCTION	SMC	SMC	WR	BC
0	010820	ISSUED FOR CONSTRUCTION	SMC	SMC	CJG	BC

COORD SYSTEM: NAD 83 UTM ZONE 8

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FDI PROJECT NO: 109005

PREPARED BY:
FORTE DYNAMICS
120 COMMERCE DRIVE, UNITS 3 & 4
FORT COLLINS, CO 80524

VICTORIA EAGLE GOLD, PHLF

OVERALL LAYOUT PLAN AND SURVEY CONTROL TABLE

YUKON, CANADA

DRAWING NUMBER:
109005-51100-03

GA-F003

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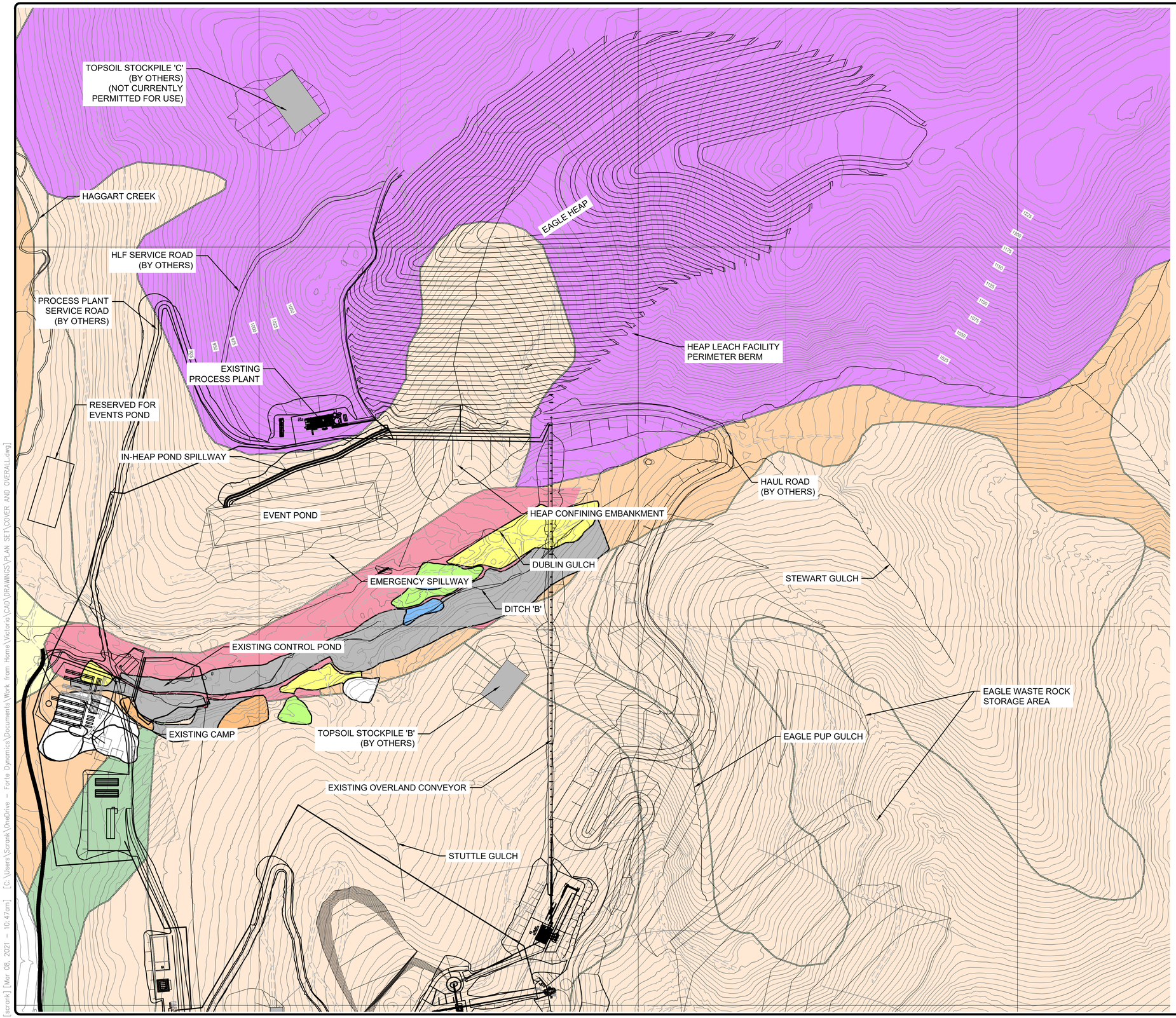

150 0 150

(In Meters)

1 cm = 50 M

(1 : 5,000)

LEGEND

- ALLUVIAL FAN
- BEDROCK WITH COLLUVIUM VENEER
- COLLUVIAL APRON OR BLANKET
- GLACIOFLUVIAL TERRACE
- OTHER ALLUVIAL DEPOSITS
- PLACER TAILINGS
- TILL BLANKET
- COBBLES AND BOULDERS
- GW - WELL GRADED SAND
- GP - POORLY GRADED GRAVEL
- SW - WELL GRADED SAND
- SM - SILTY SAND

NOTES:

1. SEE DRAWING GA-F002 FOR GENERAL NOTES, ABBREVIATIONS, LEGEND, AND FILL TYPES.
2. GEOLOGY MAPPING FROM BGC '2011 GEOTECHNICAL INVESTIGATION FOR MINE SITE INFRASTRUCTURE FACTUAL DATA REPORT', SURFACE GEOLOGY, DRAWING 04 (2012).

RECORD DRAWINGS

ISSUE	DATE	DESCRIPTION				
1	031221	RECORD OF CONSTRUCTION	SMC	SMC	MR	BC
0	010820	ISSUED FOR CONSTRUCTION	SMC	SMC	CJG	BC
COORD SYSTEM		NAD 83 UTM ZONE 8	DRAWN	DSGN	CHKD	APPD

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FDI PROJECT NO: 109005

PREPARED BY:
FORTE DYNAMICS
120 COMMERCE DRIVE, UNITS 3 & 4
FORT COLLINS, CO 80524

VICTORIA EAGLE GOLD, PHLF

SURFACE GEOLOGY MAP

YUKON, CANADA

DRAWING NUMBER:
109005-51100-03

GA-F004

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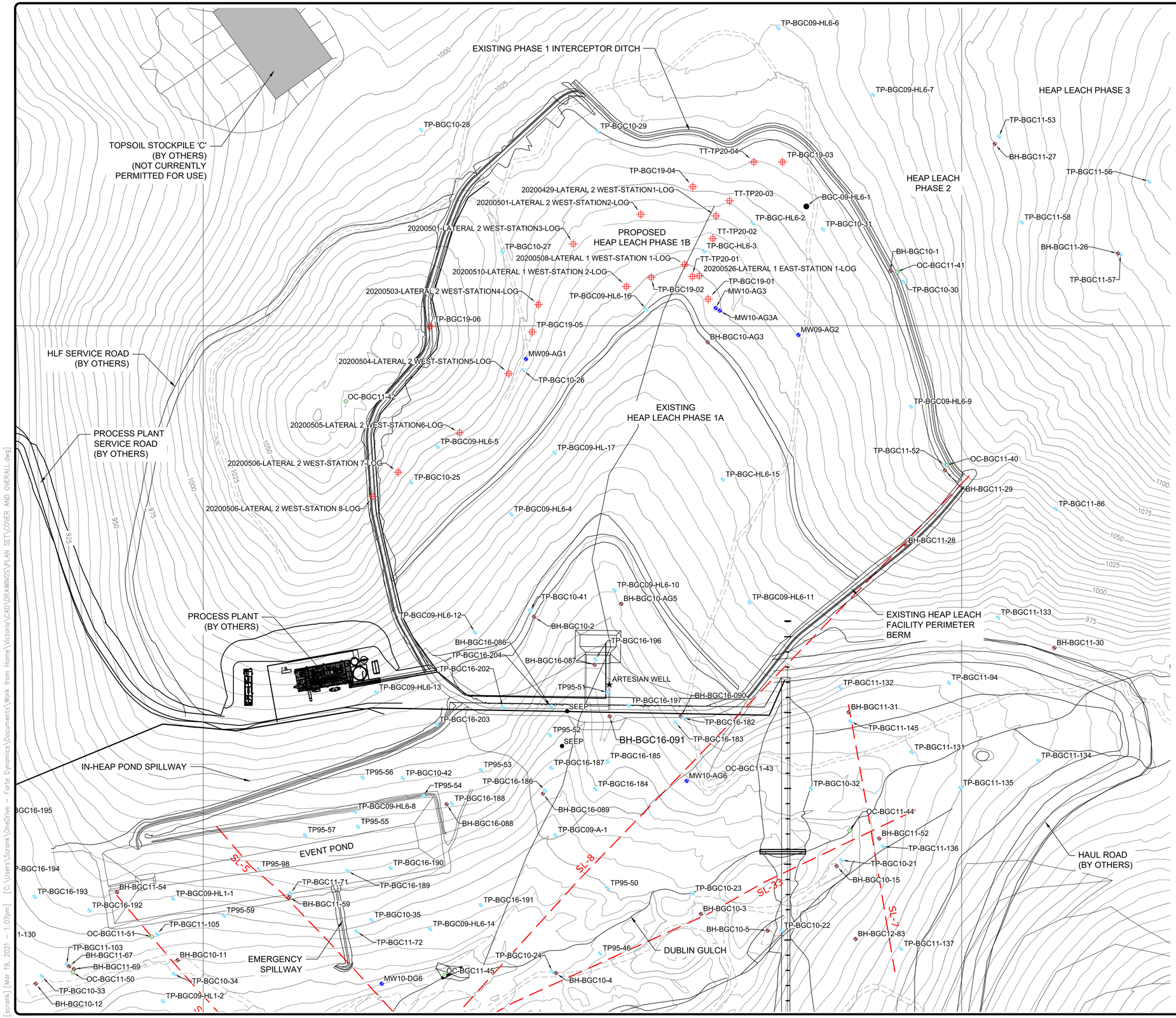

LEGEND

SL-7	SEISMIC SURVEY LINE
BH-XX-XX	BORE HOLE
DH-XX-XX	DRILL HOLE
TP-XX-XX	TEST PIT
OC-XX-XX	OUTCROP
MW-XX-XX	MONITORING WELL
XX-XX-XX	NEW TEST PIT LOCATIONS

NOTES:

1. SEISMIC LINES (SL), BOREHOLES, AND MASW LOCATIONS OBTAINED FROM 'REPORT ON SEISMIC REFRACTION AND DOWNHOLE SEISMIC INVESTIGATION PROPOSED MINE SITE FACILITIES' EAGLE GOLD PROJECT, YUKON, DATED SEPTEMBER 2011 PREPARED FOR BGC ENGINEERING, INC.
2. SITE INVESTIGATION PER BCG REPORT 'EAGLE GOLD PROJECT HEAP LEACH FACILITY DETAILED DESIGN' DATED JANUARY 8, 2018 APPENDIX A1-A3; BGC GEOTECHNICAL INVESTIGATIONS (2012a), (2012b), & (2017a)
3. BH-BGC 16-091 IS BOREHOLE WITH PIEZOMETER AND STAND PIPE
4. TEST PITS TP-BGC19-01 THRU TP-BGC19-06 LOCATIONS ARE APPROXIMATE BASED OFF FIELD MAPPING, COORDINATES WERE NOT FOUND.

ISSUE	DATE	DESCRIPTION				
1	031221	RECORD OF CONSTRUCTION	SMC	SMC	WR	BC
0	010820	ISSUED FOR CONSTRUCTION	SMC	SMC	CJG	BC
COORD SYSTEM	NAD 83 UTM ZONE 8		DRAWN	DSGN	CHKR	APPD

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FDI PROJECT NO: 109005

PREPARED BY:
FORTE DYNAMICS
120 COMMERCE DRIVE, UNITS 3 & 4
FORT COLLINS, CO 80524

VICTORIA EAGLE GOLD, PHLF

YUKON, CANADA

SITE INVESTIGATION PLAN

DRAWING NUMBER:
109005-51100-03

GA-F005

RECORD DRAWINGS

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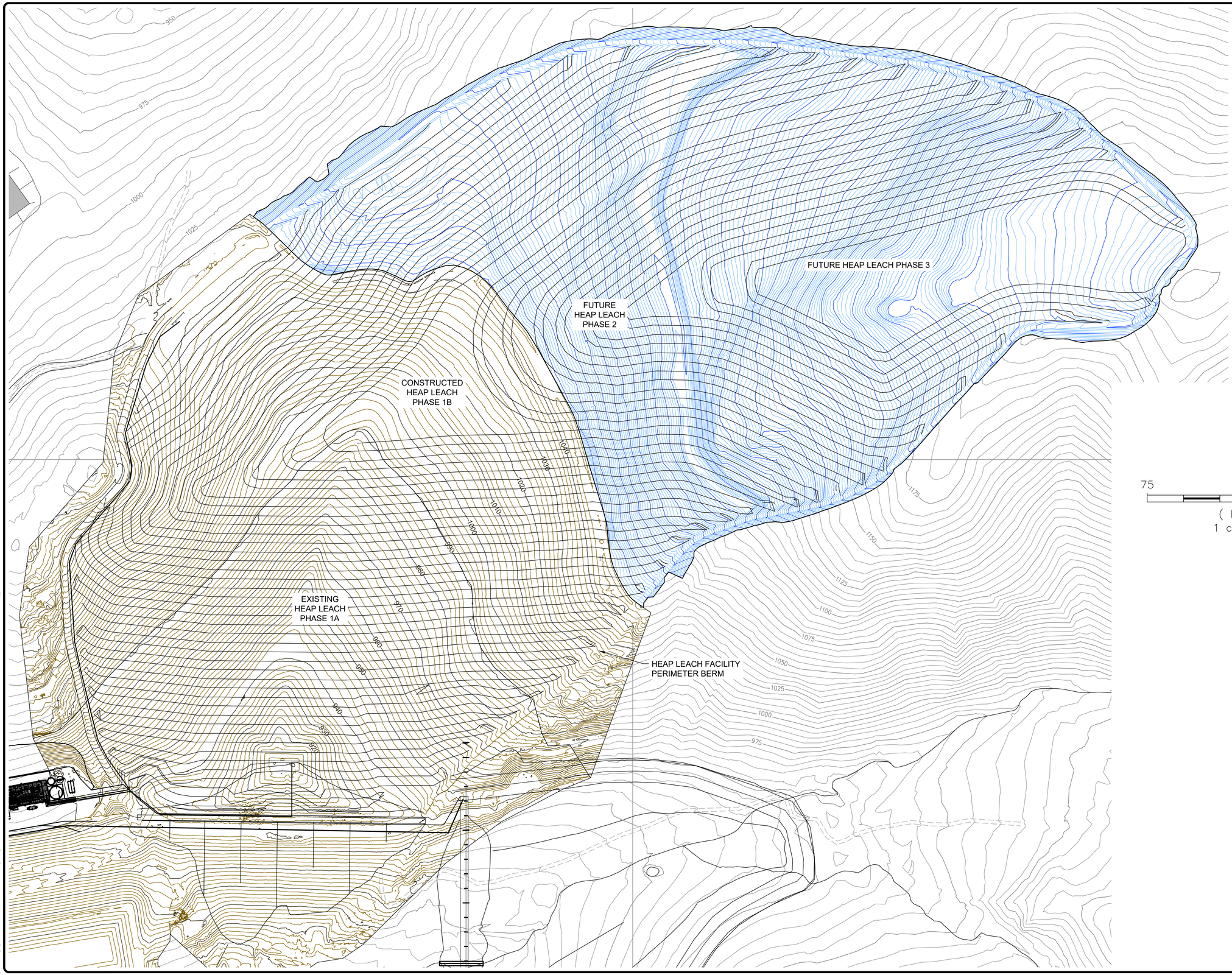

N

75 0 75

(In Meters)
1 cm = 25 M
(1 : 2,500)

ISSUE	DATE	DESCRIPTION					
1	031221	RECORD OF CONSTRUCTION	SMC	SMC	WR	BC	
0	010820	ISSUED FOR CONSTRUCTION	SMC	SMC	CJG	BC	
COORD SYSTEM		NAD 83 UTM ZONE 8	DRAWN	DSGN	CHKD	APPD	

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FDI PROJECT NO: 109005

PREPARED BY:

FORTE DYNAMICS
120 COMMERCE DRIVE, UNITS 3 & 4
FORT COLLINS, CO 80524

VICTORIA EAGLE GOLD, PHLF

PHASE 1 HEAP CONFIGURATION

YUKON, CANADA

DRAWING NUMBER:
109005-51100-03
CV-F001

RECORD DRAWINGS

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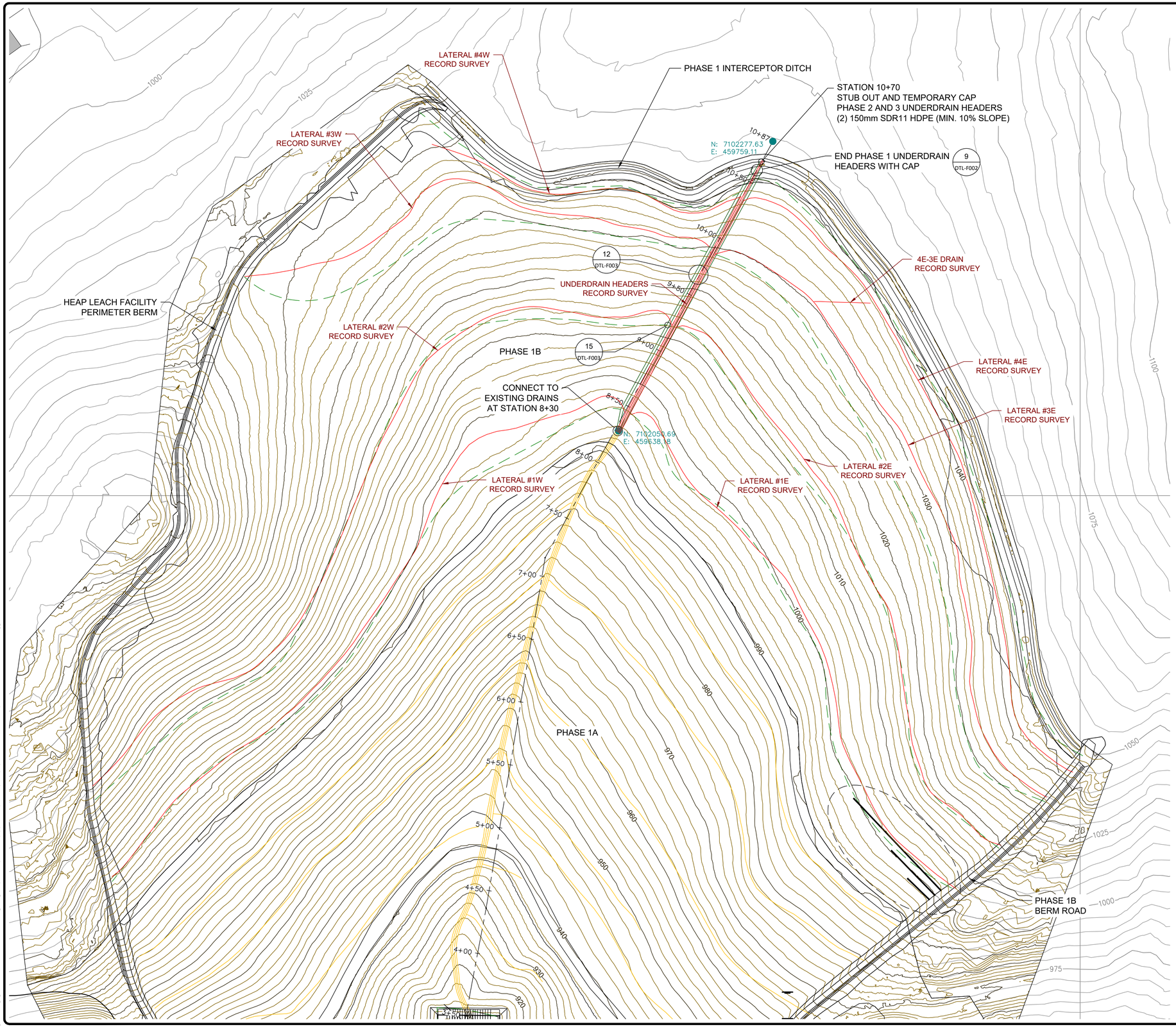

45 0 45

(In Meters)
1 cm = 15 M
(1 : 1,500)

NOTES:

1. LATERAL DRAIN LINES SPACES +/- 75 METERS ALONG UNDERDRAIN MAIN DRAIN LINES. EXTEND FROM MAIN DRAINS TO SEEPAGE AREAS AT +/- 3% POSITIVE GRADE AS DIRECTED BY FIELD ENGINEER.

2. HLF UNDERDRAINS TO BE CONSTRUCTED AS SHOWN WITH ADDITIONAL DRAINS EXTENDED TO SEEPAGE AREAS BASED ON FIELD OBSERVATIONS DURING CONSTRUCTION.

ISSUE	DATE	DESCRIPTION				
1	031221	RECORD OF CONSTRUCTION	SMC	SMC	WR	BC
0	010820	ISSUED FOR CONSTRUCTION	SMC	SMC	CJG	BC
COORD SYSTEM		NAD 83 UTM ZONE 8	DRAWN	DSGN	CHKD	APPD

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FORT COLLINS, CO 80524

VICTORIA EAGLE GOLD, PHLF

UNDERDRAIN PIPING PLAN VIEW

YUKON, CANADA

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CV-F003

RECORD DRAWINGS

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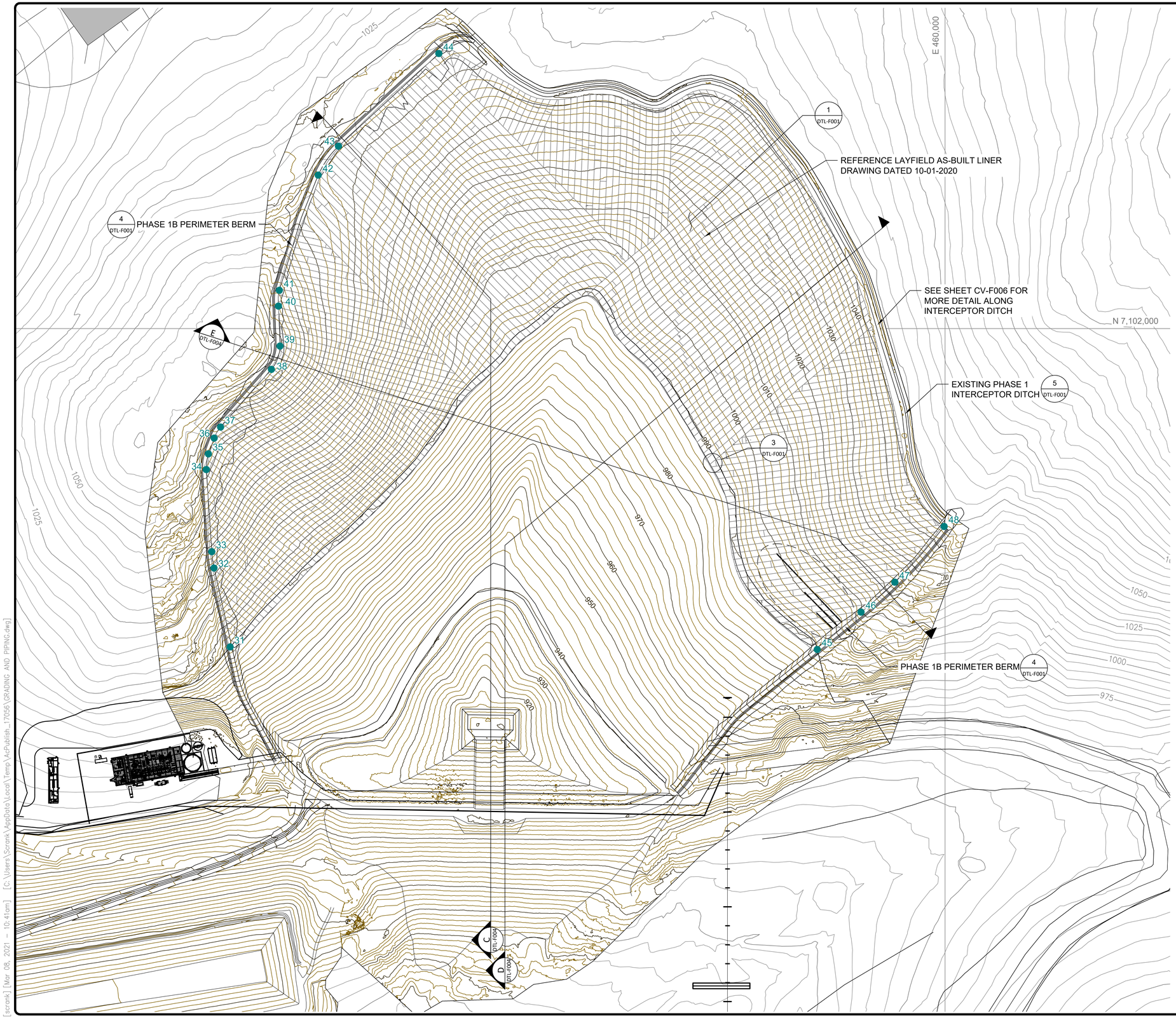

60 0 60

(In Meters)
1 cm = 20 M
(1 : 2,000)

Point Table

POINT #	NORTHING	EASTING	ELEVATION
31	7101664.18	459246.00	994.00
39	7101981.57	459298.60	1069.78
32	7101747.42	459228.98	1023.85
33	7101764.68	459226.65	1029.65
34	7101851.31	459220.88	1053.96
35	7101867.88	459223.07	1057.39
36	7101884.49	459229.15	1058.99
37	7101896.14	459235.88	1059.86
38	7101957.01	459289.52	1068.92
40	7102023.77	459296.99	1067.69
41	7102040.39	459297.90	1063.83
42	7102162.00	459338.89	1043.69
43	7102192.45	459360.26	1040.25
44	7102290.24	459466.15	1042.22
45	7101661.50	459865.21	993.13
46	7101700.91	459911.50	1009.61
47	7101732.47	459947.14	1023.51
48	7101791.23	459999.12	1047.00

ISSUE	DATE	DESCRIPTION	DRAWN	DSGN	CHKD	APPD
1	031221	RECORD OF CONSTRUCTION	SMC	SMC	WR	BC
0	010820	ISSUED FOR CONSTRUCTION	SMC	SMC	CJG	BC

COORD SYSTEM: NAD 83 UTM ZONE 8

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VICTORIA EAGLE GOLD, PHLF

SUBGRADE GRADING PLAN

YUKON, CANADA

DRAWING NUMBER:
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CV-F004

RECORD DRAWINGS

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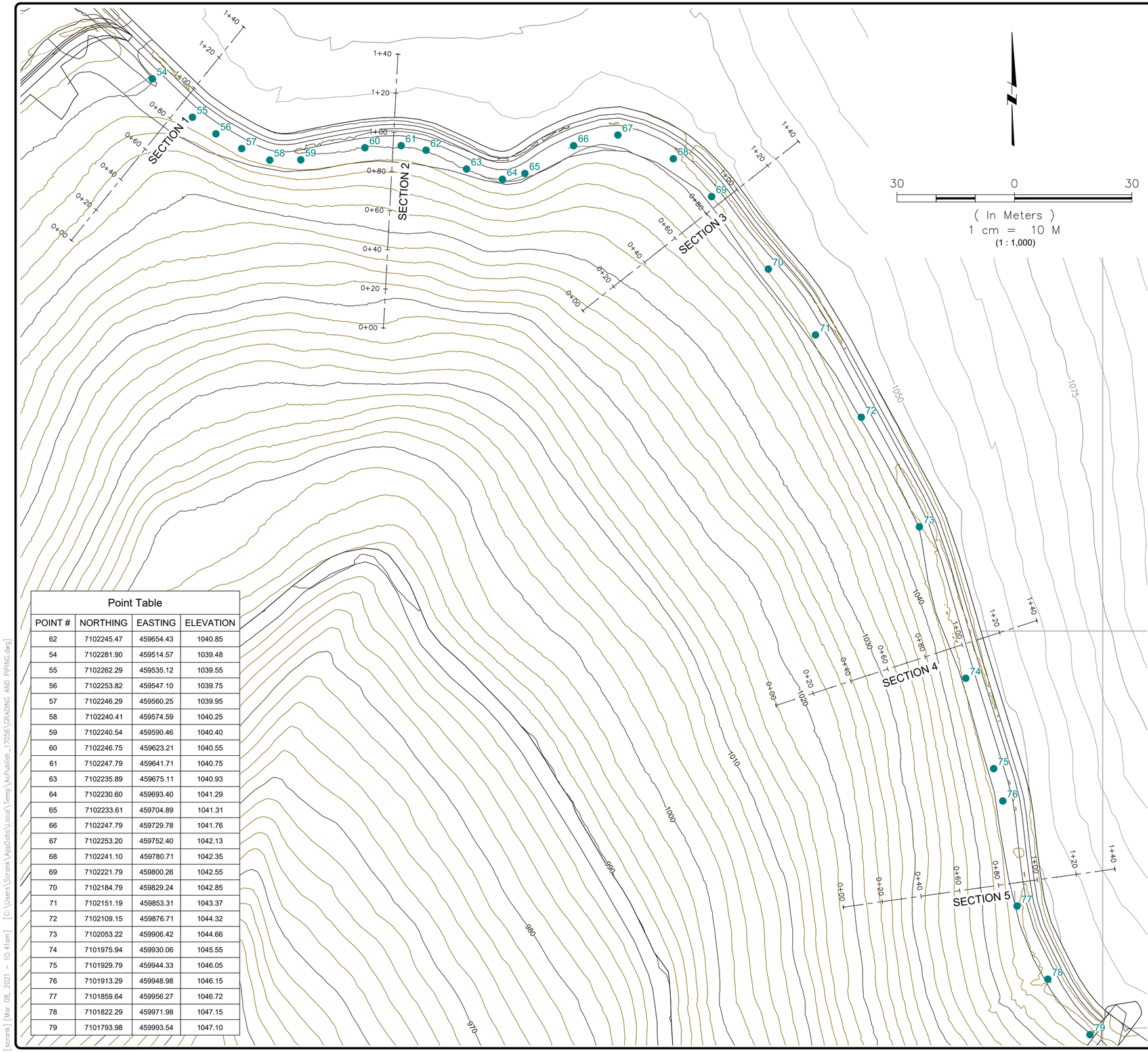
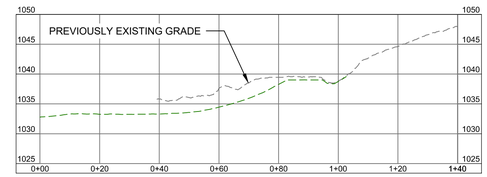
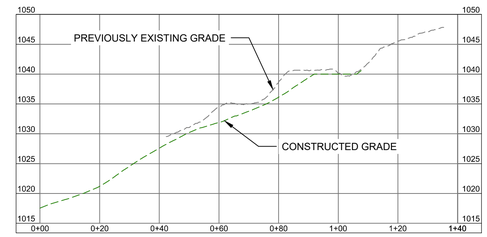


Point Table			
POINT #	NORTHING	EASTING	ELEVATION
62	7102245.47	459654.43	1040.85
54	7102281.90	459514.57	1039.48
55	7102262.29	459535.12	1039.55
56	7102253.82	459547.10	1039.75
57	7102246.29	459560.25	1039.95
58	7102240.41	459574.59	1040.25
59	7102240.54	459590.46	1040.40
60	7102246.75	459623.21	1040.55
61	7102247.79	459641.71	1040.75
63	7102235.89	459675.11	1040.93
64	7102230.60	459693.40	1041.29
65	7102233.61	459704.89	1041.31
66	7102247.79	459729.78	1041.76
67	7102253.20	459752.40	1042.13
68	7102241.10	459780.71	1042.35
69	7102221.79	459800.26	1042.55
70	7102184.79	459829.24	1042.85
71	7102151.19	459853.31	1043.37
72	7102109.15	459876.71	1044.32
73	7102053.22	459906.42	1044.66
74	7101975.94	459930.06	1045.55
75	7101929.79	459944.33	1046.05
76	7101913.29	459948.98	1046.15
77	7101859.64	459956.27	1046.72
78	7101822.29	459971.98	1047.15
79	7101793.98	459993.54	1047.10



SECTION 1



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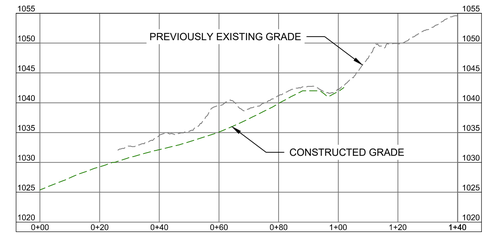

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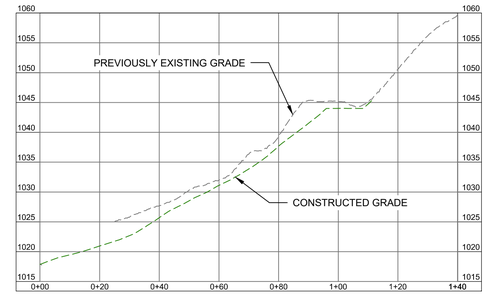

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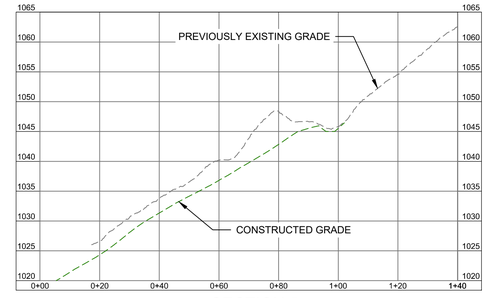

SECTION 5

RECORD DRAWINGS

ISSUE	DATE	DESCRIPTION	DRAWN	DSGN	CHKD	APPD
1	031221	RECORD OF CONSTRUCTION	SMC	SMC	WR	BC
1	123119	CLIENT REVIEW	SMC	SMC	CJG	CJG

COORD SYSTEM: NAD 83 UTM ZONE 8

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FDI PROJECT NO: 109005

PREPARED BY:
FORTE DYNAMICS
120 COMMERCE DRIVE, UNITS 3 & 4
FORT COLLINS, CO 80524

VICTORIA EAGLE GOLD, PHLF

INTERCEPTOR DITCH SECTIONS

YUKON, CANADA

DRAWING NUMBER: 109005-51100-03

CV-F006

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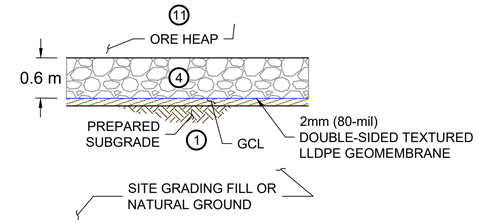
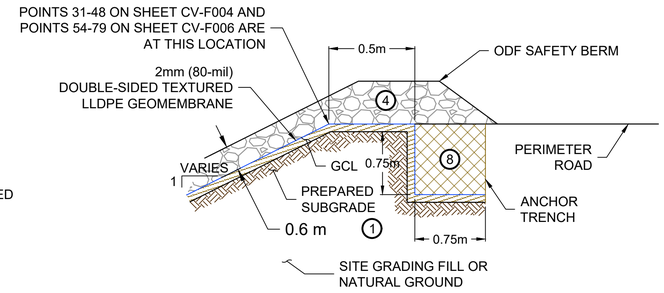
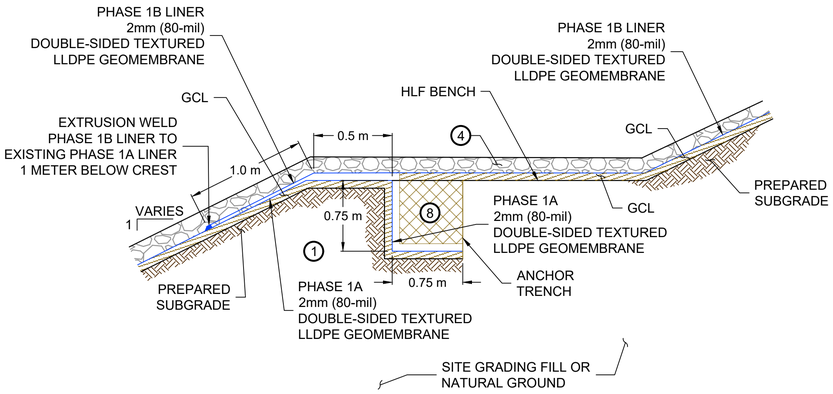


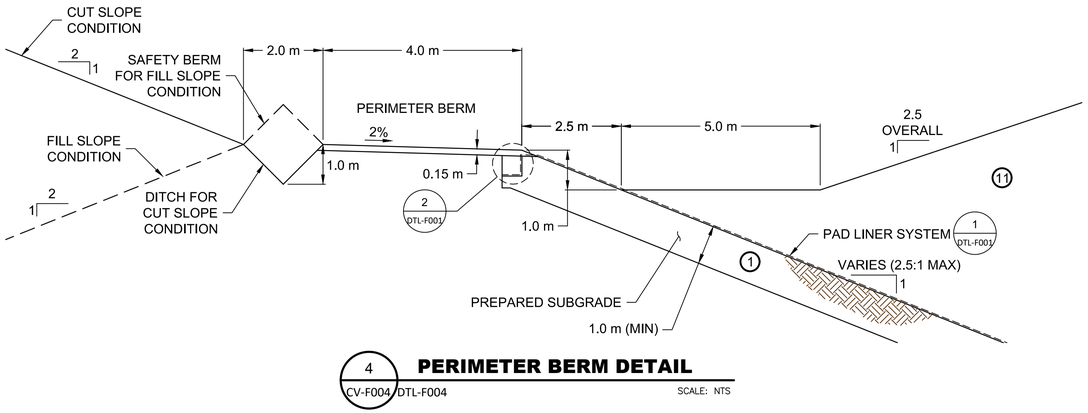
1 PAD SINGLE LINER DETAIL
CV-F004 DTL-F001 SCALE: NTS



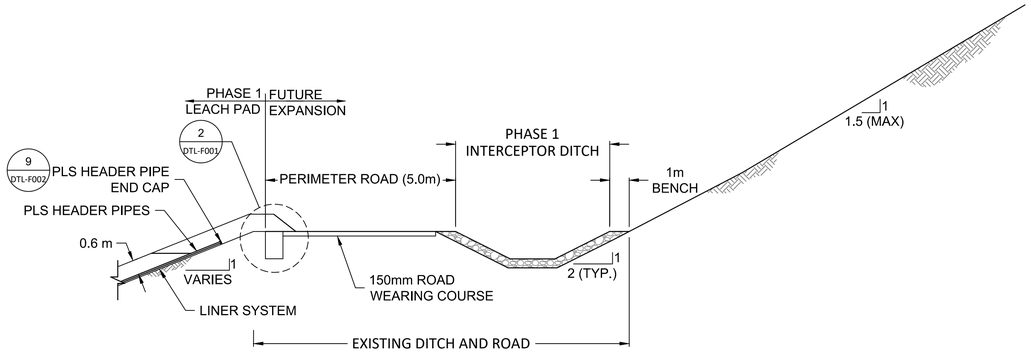
2 SINGLE LINER ANCHOR TRENCH DETAIL
DTL-F001 SCALE: NTS



3 PHASE 1B LINER AND ANCHOR TRENCH TIE-IN DETAIL
CV-F004 DTL-F004 SCALE: NTS



4 PERIMETER BERM DETAIL
CV-F004 DTL-F004 SCALE: NTS



5 TYPICAL PHASE 1 PERIMETER ROAD W/ INTERCEPTOR DITCH
CV-F004 SCALE: NTS

NOTES:
1. SEE DRAWING 109005-51100-03-GA-F002 FOR GENERAL NOTES, ABBREVIATIONS, LEGEND AND FILL TYPES.
2. OVERLINER DRAIN FILL THICKNESS SHALL BE 0.6 m (MINIMUM) IN UPPER PAD AREAS. ENGINEER MAY REQUIRE THICKER ODF LAYER BASED ON SITE CONDITIONS AND PLACEMENT METHOD.
3. PLACE SELECT FILL AS REQUIRED PRIOR TO PLACEMENT OF GCL AT ENGINEER'S DISCRETION TO MAINTAIN INTEGRITY OF GCL.

RECORD DRAWINGS

ISSUE	DATE	DESCRIPTION	COORD SYSTEM: NAD 83 UTM ZONE 8
2	031221	RECORD OF CONSTRUCTION	SMC WR BC
1	061020	ADD PIEZOMETERS	SMC CJG BC
0	010820	ISSUED FOR CONSTRUCTION	SMC CJG BC

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FORT COLLINS, CO 80524

VICTORIA EAGLE GOLD, PHLF

TYPICAL DETAILS
SHEET 1 OF 4

YUKON, CANADA

DRAWING NUMBER: 109005-51100-03
DTL-F001

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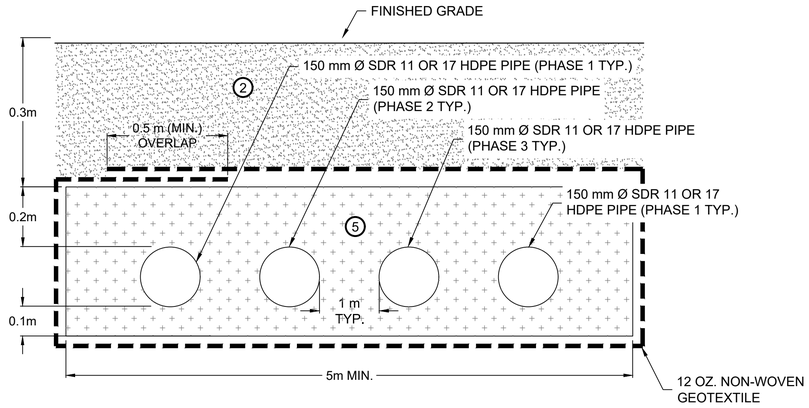
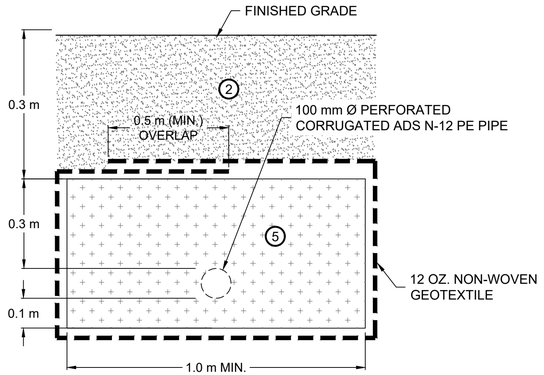


TYPICAL HLF 150 mm UNDERDRAIN HEADERS DETAIL

12 / CV-F003

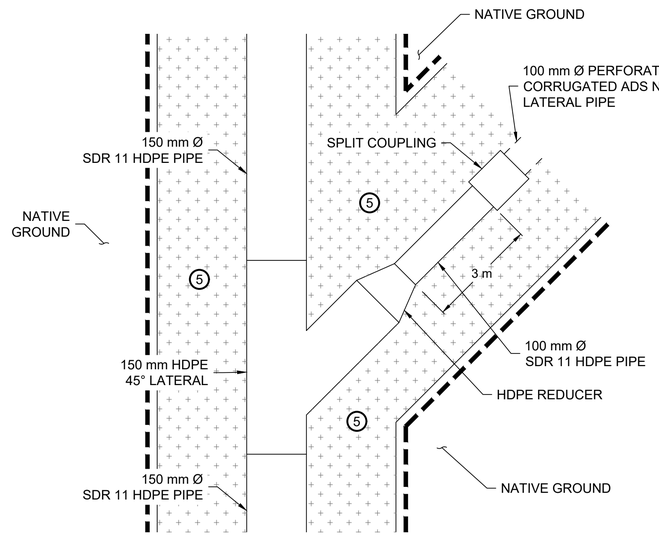
SCALE: NTS



TYPICAL HLF 100 mm UNDERDRAIN LATERAL DETAIL

14 / CV-F003

SCALE: NTS



LATERAL CONNECTION

TYPICAL UNDERDRAIN PIPE CONNECTION DETAIL

15 / CV-F003

SCALE: NTS

NOTES:
1. SEE DRAWING 109005-51100-03-GA-F002 FOR GENERAL NOTES, ABBREVIATIONS, LEGEND AND FILL TYPES.

2. SELECT FILL SHALL BE USED IN ALL TRENCH LOCATIONS OVERLAIN BY LINER.

ISSUE	DATE	DESCRIPTION				
1	031221	RECORD OF CONSTRUCTION	SMC	SMC	WR	BC
0	010820	ISSUED FOR CONSTRUCTION	SMC	SMC	CJG	BC
COORD SYSTEM		NAD 83 UTM ZONE 8	DRAWN	DSGN	CHKD	APPD

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FORT COLLINS, CO 80524

VICTORIA EAGLE GOLD, PHLF

TYPICAL DETAILS
SHEET 3 OF 4

YUKON, CANADA

DRAWING NUMBER:
109005-51100-03
DTL-F003

RECORD DRAWINGS

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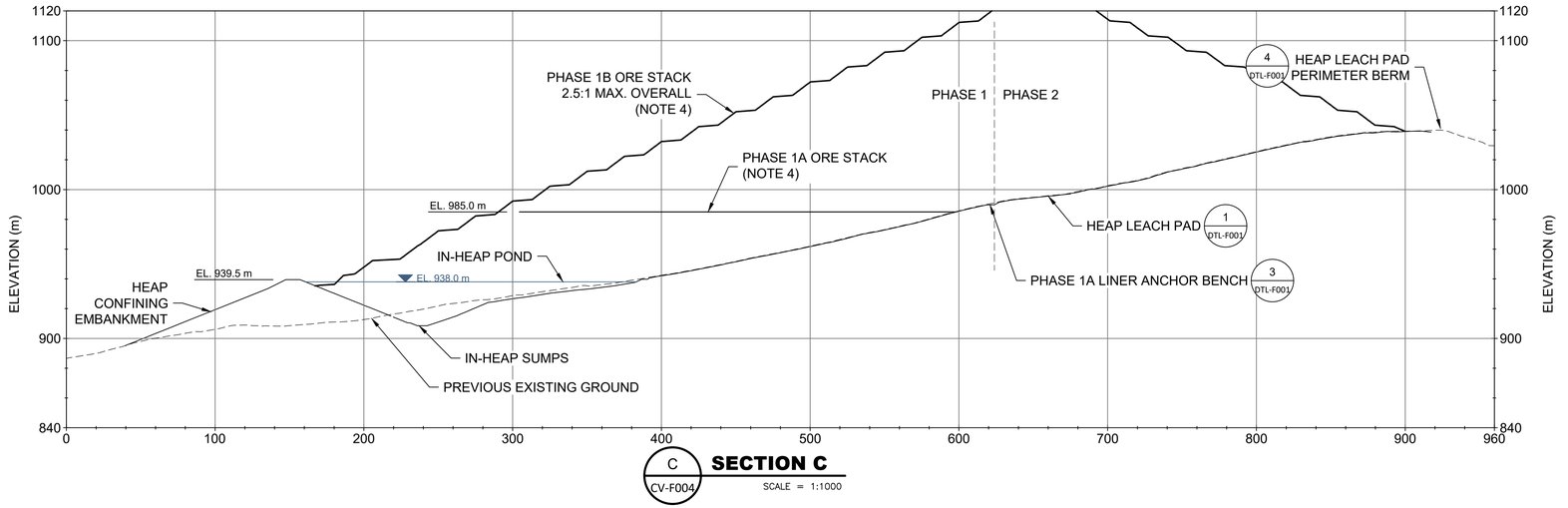
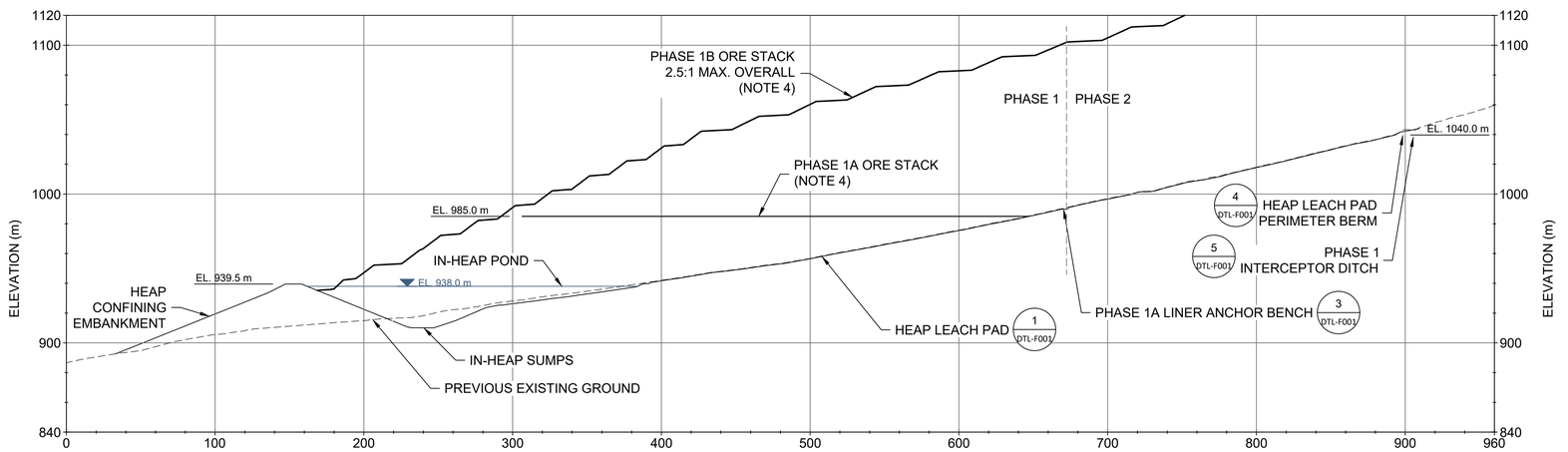


C
CV-F004

SECTION C

SCALE = 1:1000



D
CV-F004

SECTION D

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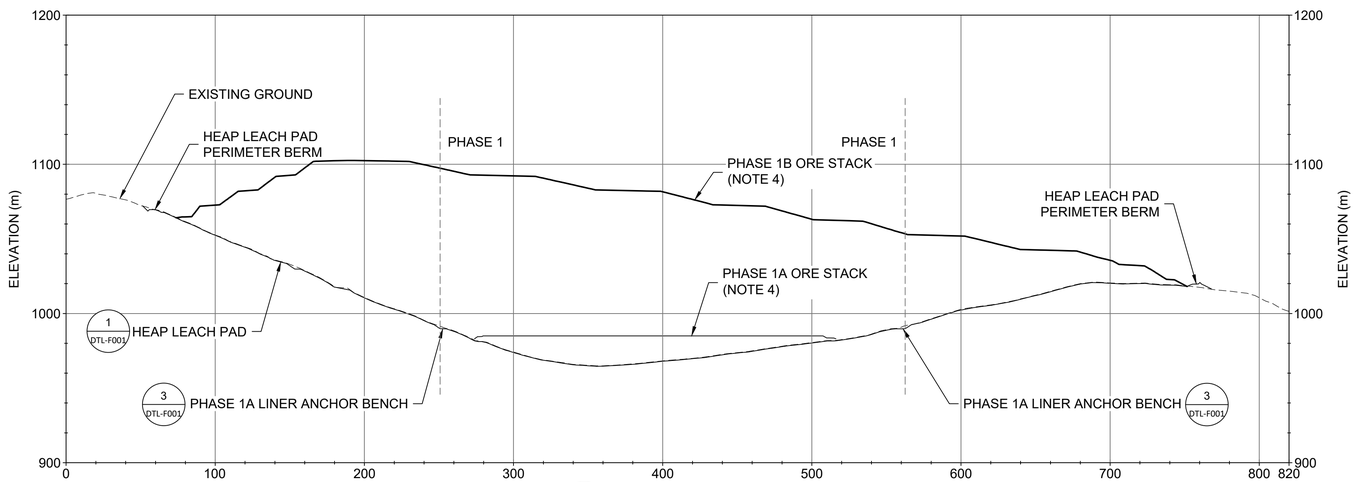

E
CV-F004

SECTION E

SCALE = 1:1000

NOTES:

1. SEE DRAWING GA-F002 FOR GENERAL NOTES, ABBREVIATIONS, LEGEND AND FILL TYPES.
2. PHASE 2 AND 3 PAD AND ORE STACK ARE NOT DESIGNED IN THIS CONSTRUCTION PACKAGE AND ARE NOT SHOWN.
3. ABOVE ELEVATION 940m, CLEAR & GRUB THEN REMOVE 0.3m NATIVE MATERIAL TO PREPARED SUBGRADE.
4. ORE STACKING PLAN (BY OTHERS) MAY RESULT IN ORE HEAP STACK LIMITS DIFFERENT FROM SHOWN HERE.
5. REQUIRED CONVEYOR RAMPS ON ORE HEAP STACK NOT SHOWN.
6. MAXIMUM OVERALL HEAP ORE STACK OUTSLOPE OF 2.5H:1V SHOWN. ORE WILL BE STACKED AT ANGLE OF REPOSE WITH BENCHES NECESSARY TO ACHIEVE THE OVERALL MAXIMUM OUTSLOPE ANGLE.

RECORD DRAWINGS

ISSUE	DATE	DESCRIPTION					
1	031221	RECORD OF CONSTRUCTION	SMC	SMC	WR	BC	
0	010820	ISSUED FOR CONSTRUCTION	SMC	SMC	CJG	BC	
COORD SYSTEM	NAD 83 UTM ZONE 8		DRAWN	DSGN	CHKR	APPD	

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120 COMMERCE DRIVE, UNITS 3 & 4
FORT COLLINS, CO 80524

VICTORIA EAGLE GOLD, PHLF

TYPICAL DETAILS
SHEET 4 OF 4

YUKON, CANADA

DRAWING NUMBER:
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DTL-F004

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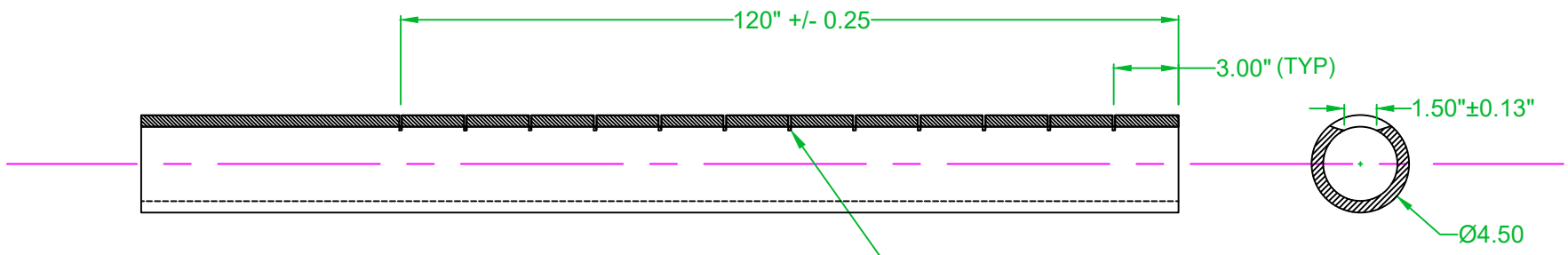

- ☐ REJECTED, DO NOT PROCEED
- ☐ REJECTED, REVISE AS NOTED ON NEXT SUBMISSION
- ☐ APPROVED AS NOTED
- ☒ APPROVED

forte DYNAMICS

DISCLAIMER

–All dimensions are in inches unless noted otherwise.
–All dimensions approximate, subject to change without notice.
–This drawing only applicable if a copy is referenced at time of order.
–Dimensions +/– 1" @ 73 deg F., Angles +/– 2 deg @ 73 deg F.
–All measurements are based on shop temperatures.

NOTE

–ASTM D3035
–ASTM D3261
–ASTM D3350
–ASTM F2206

No.	DATE	REVISION	Dwn.	Ch'd.	Ap'd.
A	05 Oct 20	ISSUED FOR CUSTOMER REVIEW	EJ	RJ	RJ

CORROSION RESISTANT PIPING
PRODUCTS & MANUFACTURING
3001 - 84 Avenue
Edmonton, Alberta
Suppliers and Custom Fabricators of Process Plastic Pipe and Fittings

Project		Title	4" HDPE DR 9 Pipe Slotted
SCALE: 1:1	CAD FILE:	SHEET: 1 of 1	
Drawn by: Edmundo (Ed) Januario		Date: 05 Oct 20	
Approved by: Rick Januario		Date: 05 Oct 20	Drawing No.: 32405
Drawn by: CRP Products & Mfg. Ltd.		Date: 05 Oct 20	Revision: A

APPENDIX 5
Technical Specifications

Eagle Gold Project Phase 1B Heap Leach Facility
Technical Specification Book

Prepared by:

FORTE DYNAMICS, INC
3003 East Harmony Road
Suite 320
Fort Collins, CO 80528
(720) 642-9328

Revision	Date	Status	Prepared By	Approved By
REV A	27 NOV 2019	Internal Review	W. Reinhardt	C. Green
REV B	6 DEC 2019	Client Review	W. Reinhardt	C. Green
REV 0	6 JAN 2020	Issued for Construction	W. Reinhardt	C. Green

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LIMITATIONS

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Eagle Gold Project Phase 1B Heap Leach Facility
Technical Specification – Scope and Requirements

Specification No.: 109005-51100-02-TS-F001

Revision	Date	Status	Prepared By	Approved By
REV A	27 NOV 2019	Internal Review	W/ Reinhardt	C. Green
REV B	6 DEC 2019	Client Review	W. Reinhardt	C. Green
REV 0	6 JAN 2020	Issued for Construction	W. Reinhardt	C. Green

1. SCOPE AND REQUIREMENTS

1.1 Definition of Terms

"Owner" is defined as an authorized representative of Victoria Gold Corporation.

"Engineer" is defined as a representative appointed and authorized by the Owner. The Engineer shall be a registered professional engineer or a designated site representative under the supervision of a registered professional engineer.

"Contractor" is defined as the party which has executed a contract agreement with the Owner for the specified Work.

"Technical Specifications" is defined as this document, prepared by Forte Dynamics Inc. (Forte) and all supplemental addenda.

"Drawings" are defined as the Drawings, in conjunction with these Technical Specifications, entitled "Victoria Eagle Gold, Heap Leach Pad Facility Phase 1B, Final Design" prepared by Forte and dated January 2019.

"Work" is defined as the entire completed construction or the various separately identifiable parts thereof, required to be furnished under the Contract Documents.

"Site" is defined as the project area where the Work is to be performed.

"Contract Documents" are defined as the Agreement, Addenda, Contractor's Bid (when attached as an Exhibit to the Agreement), Bonds, General Conditions, Special Conditions, Technical Specifications, Drawings and all modifications issued after execution of the Agreement.

"Modifications" are defined as changes made to the Technical Specifications or the Drawings that are approved by the Owner and Engineer in writing after the Technical Specifications and Drawings have been finalized.

1.2 Work Scope

The work scope of these Technical Specifications is to set out the requirements and procedures necessary to complete the construction of earthwork, geosynthetics and pipework for the Eagle Gold Heap Leach Facility (HLF). Any alternatives or exceptions to these specifications shall be submitted in writing to the Owner and shall require approval in writing from the Owner prior to implementation of the Work.

The work scope generally includes the following: site preparation, fill placement, geosynthetics installation and pipework installation. The process solution pumps and facilities, ore delivery and heap stacking equipment and their associated structures are not part of these Technical Specifications. Specific features of the work scope include, but are not limited to the following:

a. Mobilization/demobilization of all equipment and material required for the work
b. Installation of temporary and permanent diversions for surface water control
c. Clearing, grubbing and stripping in required areas (Potential Self-Perform)
d. Excavation in required areas
e. Development of borrow areas within and outside the HLF limits (Potential Self-Perform)
f. Construction of temporary and permanent access roads (Potential Self-Perform)
g. Foundation preparation for site grading fill and liner placement
h. Underdrain system (Potential Self-Perform)
i. Fill placement and compaction
j. Installation of geosynthetic materials for liner, drainage and leak detection systems
k. Installation of leach pad gravity flow drain pipework (solution collection piping)
l. Placement of overliner drain fill
m. Installation of required instrumentation
n. Furnishing and installing all materials and constructing all items appurtenant and incidental to the above.

The Owner may wish to supply and or install any or all work described above, to the specifications provided including required QA/QC testing.

The construction plans and the quality of the constructed leach pad and collection ponds are important aspects of this project. All earthwork and geosynthetic construction Quality Assurance/Quality Control (QA/QC) test locations and results shall be summarized in an as-built report, a copy of which shall be kept in the Owner's files at the completion of each phase of the HLF.

1.3 General Technical Requirements

The general technical requirements specified herein shall apply to all activities and operations relating to carrying out the Work or as required by the Engineer or the Owner.

In the event of a contradiction in the Technical Specifications and Drawings, the Contractor shall refer all questions to the Engineer for final decision. Work that concerns the contradiction shall not be performed until the contradiction is remedied or explained by the Engineer. In all events, the decision of the Engineer is final.

1.4 Submittals

Any alternatives or exceptions to these Technical Specifications shall be submitted in writing with the Contractor's bid.

The Contractor shall provide the Owner and Engineer with the procedures and equipment to be used for surveying and construction and the material specifications. This is required for review and approval prior to the Work being allowed to commence and the materials brought to the Site.

1.5 Mobilization and Demobilization

1.5.1 Mobilization

The Contractor shall mobilize to the Site sufficient labor, materials and equipment to allow commencement of the Work. The Contractor shall bring onto the Site, as and when necessary, any additional equipment, labor and materials which may be required to complete the remainder of the Work in the time specified in the General Terms and Conditions.

1.5.2 Construction Roads

All temporary construction roads, which the Contractor may require to complete the Work, shall be constructed at the Contractor's expense. The location of any temporary roads or portions thereof, on the Site shall be subject to the Owner's and Engineer's approval prior to construction. Unless otherwise approved by the Owner, all temporary roads shall be reclaimed at the Contractor's expense upon completion of the Work.

1.5.3 Drainage

The Contractor shall provide, maintain and operate any temporary drainage and/or pumping facilities required to control ground and surface water to keep the excavations dry and in a stable condition. Adequate drainage facilities in the form of ditches, culverts or other conduits shall be installed as necessary to protect the Work and to maintain temporary construction or access roads. The Contractor's dewatering operations shall be accomplished in a manner that will not adversely affect the stability of excavated slopes and will not cause erosion or softening of adjacent materials. These temporary drainage facilities shall be constructed to the satisfaction of the Engineer and Owner. The Owner reserves the right to stop work if it deems conditions to be unsafe.

1.5.4 Demobilization

Upon completion of the Work, the Contractor shall remove all the Contractor's equipment and materials from the Site. The Site shall be left in a clean and tidy state to the satisfaction of the Engineer and Owner. All waste and refuse shall be disposed of in a manner acceptable to the Owner.

End of Section

Eagle Gold Project Phase 1B Heap Leach Facility
Technical Specification – Earthworks

Specification No.: 109005-51100-03-TS-F001

Revision	Date	Status	Prepared By	Approved By
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2. EARTHWORKS

2.1 Clearing, Grubbing and Stripping

The natural ground surface shall be cleared, grubbed and stripped of all organic and objectionable materials by the Earthwork Contractor to the limits shown on the Drawings or as required by the Owner. The limits of stripping shall generally be 3 m outside of the Work activity areas or as shown on the Drawings. All usable topsoil, as determined by the Owner, shall be properly stockpiled in locations shown on the Drawings or designated by the Owner.

Clearing shall mean the removal of vegetation. Stripping shall mean the removal of topsoil, which shall be defined as soil of any gradation or degree of plasticity that contains significant quantities of visually identifiable vegetable matter, sod, roots or humus as determined by the Engineer or that can be used as growth medium. The depth of topsoil to be removed will be determined by the Engineer based on the character and thickness of material encountered, estimated at approximately the upper 6 to 12 inches in depth. Clearing and grubbing may generally be conducted as a single operation together with stripping.

Stripping shall be carried out using whatever method deemed necessary providing it is consistent with producing an acceptable end result as determined by the Owner. Stripped material will be brought to and stored at approved topsoil stockpile. Any stripping beyond the limits shown on the Drawings or as required by the Owner, shall be subject to the approval of the Owner. Any stripping of material that the Contractor elects to perform for his or her own purposes shall be to the approval of the Owner and shall be performed at the Contractor's expense. Unapproved stripping will be subject to remediation at the sole expense of the Earthwork Contractor.

After stripping of the required area, the ground surface shall be treated as specified on the Drawings or in these Technical Specifications. This activity can involve trimming and shaping the surface, scarifying, moisture conditioning and compacting fill material. Prior to any surface treatment on a stripped area, the Engineer shall be notified to inspect the stripped area and designate the method of treatment. A survey will be taken of the area to determine quantities and/or verification of lift/layer thickness.

The Owner may request to self-perform this work.

2.2 Excavation and Foundation Preparation

Excavation shall consist of excavating to the lines and grades shown on the Drawings and hauling materials to designated fill, stockpile or waste areas. Excavation methods, techniques and procedures shall be

developed by the Earthwork Contractor with due consideration of the nature of the materials to be excavated and shall include all precautions that are necessary to preserve, in an undisturbed condition, all areas outside the lines and grades shown on the Drawings or required by the Owner.

No excavation beyond the lines and grades shown on the Drawings or as required by the Engineer, shall be done without the prior written approval of the Owner. If such additional excavation is done without the prior written approval of the Owner and, in the opinion of the Engineer, requires backfilling in order to satisfactorily complete the Work, such backfilling shall be completed at the Contractor's expense. All such backfilling will be subject to approval by the Engineer.

Pockets of unsuitable materials within the limits of an excavation shall be removed and disposed of as directed by the Owner and Engineer. Unsuitable materials may include, but not be limited to, ice-rich materials, ash, boulder or gravel zones, soft saturated zones, highly organic zones, drilling mud pits and other deleterious material.

The Heap Leach Facility Foundation Improvement Plan provides a review of the characteristics and the estimated spatial extent of the ground ice under the HLF, highlights the characteristics of the ground ice encountered during site investigations and includes a definition and discussion of ice-rich soils. The report discusses how ice-rich soil can be identified during construction and reviews ground ice removal measures, as well as potential techniques to thaw ice-rich soils. The Earthwork Contractor shall prepare and submit a detailed excavation plan for the work for review by the Engineer. The plan shall comply with the requirements and follow the guidance of the Frozen Materials Management Plan (FMMP) and the Heap Leach Facility Foundation Improvement Plan. Removal of ice-rich materials and replacement (as necessary) with compacted fill shall be performed to the satisfaction of the Engineer. The general approach for excavation and identification and removal of ice-rich materials is provided below:

Identify and Remove Topsoil and Loose or Unsuitable Materials - The natural ground surface will be cleared, grubbed and stripped per requirements detailed in Section 2.1.

Excavation to Type 3 Bedrock - In the area of the HLF embankment, excavation to Type 3 bedrock (or better) will be completed. Bedrock at the Project site is subdivided into three broad categories - Type 1, Type 2 and Type 3. Type 3 bedrock consists of highly weathered metasedimentary rock that has a confined compressive strength of 1 to 5 MPa. Type 3 bedrock is the lowest quality rock mass that is considered to behave as rock (rather than as a soil) and can be recognized on the basis of evident preserved fabric of

the parent rock within the highly weathered rock mass and requires moderate effort to excavate with heavy excavators. Identification of Type 3 bedrock will be identified by suitable qualified construction personnel under the supervision of the Engineer.

Identify and Remove Ice-Rich Soils - Ice-rich soils in permafrost, when thawed and generating excess pore pressures, can result in soil instabilities and therefore, it is critical to identify and remove any ice-rich soils in the foundation of the HLF prior to liner construction and stacking. On the other hand, if the frozen ground does not contain excess ice (no ice-rich soils) and is thaw stable, there is negligible impact on the stability of the ground upon thaw.

For preparation of the HLF foundation subgrade, all organic soils will be removed, exposing the underlying colluvium. Removal of loose native colluvium and weathered bedrock will be required to provide a suitable subgrade for the placement of the liner and the ore in areas beyond the HLF embankment.

A primary goal of the HLF foundation preparation work will be to identify whether ice-rich soils exist in the foundation subgrade, and then if it does, since all ice-rich soil shall be removed from the footprint of the HLF, further classify it into the appropriate frozen soil type so it can be removed from the HLF footprint and managed accordingly. The identification and management of ice-rich soils can involve up to four steps that would include, in order:

1. Visual observations
2. Test pit excavations, where no visible ice was identified
3. Shallow auger drilling where test pitting was not conclusive
4. Increased density of test pitting and/or drilling

After completing the first two steps, the ground will then be inspected for the presence of ice and classification of the material (following the system described in Table 2-1), to determine if additional excavation may be necessary. The first observations in the field will be made using surficial grab-samples approximately every 25 m immediately upon excavation and exposure of the layer.

Table 2-1. Frozen material management.

Material Classification Type	Frozen Material Type	Strategy	Management Description
I	Fine and/or coarse-grained colluvial/alluvial soils or weathered bedrock with little or no ice content	Used as fill or stockpiled for closure	Used as general fill or if excess to a local fill requirement stored for reclamation.
II	Coarse-grained sands and gravels with zones of variable ice content	Used as fill	Exposed and readily thawed and drained, and then used as general fill within embankments and platforms.
III	Fine-grained soils with relatively thin zones (lenses) of low proportions of "excess ice"	Stockpiled for closure	Separated and co-disposed with other nonfrozen soils within stockpiles to be used for reclamation.
IV	Fine-grained silty and clayey soils with relatively thick lenses of highly visible "excess ice"	To IROSA*	Segregated at excavation site based on prior field data/ information, and additional observations during excavations. Excavated and hauled to IROSA located in the Haggart Creek valley.
V	Small quantities of ice-rich soils (fine or coarse)	Locally stored	Disposed of adjacent to excavation sites where thawing and drainage can be managed locally rather than hauled to the IROSA.

*IROSA: Ice-rich overburden storage area

If ground ice is visible, and the soil is predominantly fine-grained with visible ice laterally continuous between observation points and the ice lensing is greater than 1mm, and/or the volumetric ice content is estimated to be more than 10%, the material is classified as Type IV. This material is considered to be ice rich soil and shall be excavated and hauled to the IROSA.

If ground ice is visible, the soil is fine or coarse grained with isolated pockets between observation points with ice lensing less than 1mm, and/or the volumetric ice content is estimated to be less than 10%, the material is classified as Type I/II/III. This material, for the purposes of the HLF foundation, is not considered ice rich soil and will only be excavated and hauled to the Reclamation Stockpiles (location per the Owner) if in the opinion of the Engineer it is necessary.

If ground ice is not visible and the soil is predominantly fine-grained, the temperature of the sample shall be taken, and the sample manually warmed in the field. If the soil is <0 C and then excess water forms

upon warming, the soil is classified as Type III. This material, for the purposes of the HLF foundation, is not considered ice rich soil and will only be excavated and hauled to the Reclamation Stockpiles (location per the Owner) if in the opinion of the Engineer it is necessary.

If ground ice is not visible, the soil is fine or coarse-grained and the sample shows little moisture or remains intact upon warming, it is Type II, and this material, for the purposes of the HLF foundation, is not considered ice rich soil and will remain in-situ and/or can be used as fill within the HLF footprint.

Since the required subgrade excavation depth may be thin, it is possible that the excavation required for foundation preparation does not reach to the permafrost table. Therefore, ice-rich or thaw unstable soil that is not visible on the exposed subgrade cannot be excluded, so additional investigations will be conducted to demonstrate the absence of ice rich soils at depth (i.e., to a depth of 6 m below the initial subgrade). With respect to outside the HLF embankment foundation area, test pits using a large excavator will be excavated to Type 3 bedrock or, if bedrock is not encountered, to a depth of at least 6 m below the initial excavated subgrade. Due to the heterogeneous nature of the ground, investigations at 100 m x 100 m spacing will be completed while foundation preparation is being carried out. Samples will be visibly inspected as described above and classified accordingly. Test pits should be properly backfilled and compacted using approved, non-frost susceptible and ice-free fill material.

Shallow auger drilling, which will only be carried out at locations where test pit excavation is not successful (i.e., did not reach 6 m below the initial excavated subgrade). The locations and density of boreholes in an area will be determined in the field under the supervision of the Engineer, but in general, will be used to supplement and refine the test pitting findings. The ground ice inspection boreholes are expected to reach competent bedrock but also to be not deeper than 6 m.

All observations from site shall be supervised by an engineering professional with experience in ground ice characterization. Where adjacent test pitting and augering show conflicting results, additional test pitting and/or augering will be completed in the intervening zones to resolve any issues related to identifying lateral extent of ice-rich soil.

Excavating ice-rich soils, in particular coarse colluvium, is challenging due to the high strength of the frozen material at temperatures below mainly -1°C, as the amount of unfrozen water in the ground becomes negligible.

The frozen ground can be broken using a ripper tooth attached to a large dozer or an excavator. Once broken, the pieces of ice rich soil can be loaded and hauled with excavator and haul trucks to the reclamation stockpile or hauled to the IROSA. As described above, the goal of excavating will be to excavate to Type 3 bedrock in the area of the embankment, and if ice-rich soil is present, excavate to below the extent of ice-rich soil.

As stripping and excavating of the active layer and the permafrost advances, ground thawing is initiated at the new surfaces. These newly thawed conditions can result in surficial soil sliding and slumping, and cause non-trafficable condition for heavy equipment, necessitating the use of rig mats, or additional fill.

To evaluate the foundation conditions and demonstrate the absence of ice-rich soil in the foundation area, the subgrade will be visually monitored during the thawing season, following stripping, under the supervision of the Engineer. The monitoring will focus on visually identifying signs of subsidence and water surfacing. If ice-rich soil is present under the excavated subgrade and it is exposed to warming during the summer, the ground would start to thaw, settle and water would be visible at the surface. Depending on the time of the year, this would be visible within days following the excavation. The presence of ice rich soil in shallow ground can also be noted if runoff shows a daily pattern. In the absence of snow melt, increase in runoff at the bottom of HLF construction areas towards the end of day can be related to the melting of ground ice.

In addition to ripping ice rich soils, it is also possible to allow the exposed subgrade to thaw naturally during the summer. The thickness of the ground layer that thaws during a summer depends on the surface, ground and climate conditions. The vegetation forms the main insulating layer within the footprint of the HLF. By clearing the vegetation and stripping the active layer, ground ice containing permafrost is exposed to the atmosphere. Judging from the ground temperature data available (see Appendix A2) thaw depths between 2 m and 3 m can be expected for the area in one summer, where ice-rich soil is present. While natural thawing of ice-rich soils is generally not practical during preparation of the HLF subgrade due to time constraints, it may prove useful in some areas where the ice content is low (< 10%) and sporadically located (i.e. non ice rich soils), and the subgrade area can be exposed for the summer prior to development. The steps for natural thawing operations would include as follows:

- Strip vegetation and organic layer prior to summer;
- Expose frozen surface to atmosphere;
- Excavate any thawed ground at the end of the period or by end of summer.

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Independent of the thawing method used, controlling surficial melt water runoff, sediment transport and potential soil instabilities that occur upon ground thawing will be necessary. This will be achieved by digging dewatering trenches or installing drainage pipes that provide a controlled drainage system as well as potential sediment transport. Running or standing water on permafrost subgrades will be avoided.

The first excavation pass will then be undertaken to the lines and grades as specified by the Engineer. During final grade preparation, there may still be areas left with pockets of loose or unsuitable materials. Under the direction of the Engineer, these loose or unsuitable materials will be removed. Unsuitable materials may include ash, boulder or gravel zones, soft saturated zones, highly organic zones or drilling mud pits.

The evaluation methods for loose or unsuitable materials will depend on the location and the materials that will be placed over the subgrade. The evaluation methods may include proof-rolling with a loaded dump truck or similar pneumatic-tired equipment to ensure that the surface is firm and smooth. Probing with a metal rod may also be performed.

Soft or yielding areas delineated by the evaluation methods described above that cannot be stabilized by compacting under the supervision of the Engineer will be removed and replaced with site grading fill or structural fill meeting the requirements of these specifications. If deemed necessary by the Engineer, the treated areas will be re-evaluated by test pitting such that the cut face is clearly visible so that they can be examined and logged by the Engineer. After the re-evaluation has been completed, the test pit locations will be backfilled with the excavated material and compacted in layers to the surface to the satisfaction of the Engineer.

Once the foundation area has been managed to mitigate instances of loose or unsuitable materials or ice rich soils, and in the HLF embankment area confirmation that Type 3 bedrock is exposed, the Engineer will be notified, and a final inspection will be undertaken to determine the appropriate method of treatment for the ground surface prior to the placement of the embankment and underdrain system. The methods of treatment that will be utilized may include trimming and shaping the surface, scarifying, moisture conditioning, or compacting of any area where fill material was placed. Excavated surfaces shall not be covered with fill/liner until the surface has been approved by the Engineer. The Contractor shall uncover, at his or her own expense, any excavated surface, which has been covered prior to inspection and approval by the Engineer.

Any damage resulting from the Contractor's operations during site preparation or excavation, including damage to foundations and excavated surfaces, shall be repaired at the expense of the Contractor and to the satisfaction of the Owner and the Engineer.

Topsoil and waste stockpiles shall be leveled, trimmed and shaped as required by the Owner to prevent the occurrence of ponding or concentrations of surface runoff and to provide a neat appearance. Finished slopes of the topsoil stockpiles shall be graded to 2.5H:1V (horizontal: vertical) for interim reclamation. All surface water runoff shall be directed to existing surface water management structures.

2.3 Subgrade Preparation

After clearing, grubbing, stripping and excavating, the exposed subgrade surface shall be inspected and evaluated by the Engineer for the presence of loose or soft areas or unsuitable material prior to fill placement or geomembrane installation. Evaluation methods will depend on the location and the materials that will be placed over the subgrade and on the prevailing field conditions. Evaluation methods may include proof-rolling with a loaded dump truck or similar pneumatic-tired equipment to ensure that the surface is firm and smooth. Probing with a metal rod may also be performed. Soft or yielding areas delineated by the evaluation that cannot be stabilized by compacting shall be removed and replaced with site grading fill. Unsuitable materials shall also be removed and replaced with site grading fill as directed by the Engineer. The subgrade shall be prepared to the satisfaction of the Engineer.

If deemed necessary by the Engineer, evaluation of the subgrade soils may include excavating test pits to allow the Engineer to designate the method of surface treatment, as needed. The Earthwork Contractor shall, under the direction of the Engineer, excavate shallow test pits oriented as directed by the Engineer. The pits may cover the entire Work area and any other area designated by the Engineer and shall be spaced as directed by the Engineer. The pits may be excavated by whatever method the Contractor deems necessary provided it produces a clearly visible cut face in the soils. After the pits have been examined and logged by the Engineer, they are to be backfilled by backfilling the excavated material back into the pits and compacting in layers to the surface to the satisfaction of the Engineer.

Stripped rock subgrade surfaces and rock outcrops in at-grade areas shall be cleared of loose rock fragments greater than 50 mm in size and wetted in preparation for foundation preparation. Foundation preparation shall consist of placing and compacting granular soil fill material in varying thicknesses to suit field conditions to support the leach pad and collection ponds liner systems. The granular fill shall be placed and compacted as specified in Section 2.6 - Site Grading Fill of these Technical Specifications.

Soil subgrade surface receiving site grading fill shall be scarified to a minimum depth of 150 mm, moisture conditioned if necessary, to within plus or minus two (±2) percent of the optimum moisture content as determined by the Standard Proctor test (ASTM D-698) and recompacted to a minimum of 95 percent of the maximum dry density (ASTM D-698).

The Contractor shall modify (smooth) the existing contours such that the finished subgrade surface approximately conforms to the dimensions shown on the Drawings. While exact contours are not required, the Contractor shall maintain positive drainage and ensure that there are no abrupt changes in grade that would prohibit placement of or create stress in, the overlying liner systems. No site-grading fill shall be placed, until the stripped and reworked areas have been inspected and approved by the Engineer.

Soil subgrade surface receiving geosynthetics, including geosynthetic clay liner (GCL), should be rolled with a smooth-drum compactor to remove any wheel ruts, tracks, or other abrupt grade changes greater than 1" (25 mm) in depth. All protrusions extending more than 0.5 inch (12 mm) from the subgrade surface shall be removed. The prepared subgrade surface must be smooth and free of any vegetation, sharp-edged rocks, stones, sticks, construction debris, and other foreign matter that could contact and potentially the geosynthetic material.

2.4 Borrow Development

The majority of the site grading fill will consist of material excavated from the HLF area. The Contractor shall excavate, haul, place and compact site grading cut materials from required excavations within the limits of the HLF, as shown on the Drawings. In addition, the Owner will designate borrow areas and limits outside the HLF for the Contractor to excavate, haul, place and compact site grading fill, as needed. The Owner plans to stockpile crushed ore materials adjacent to the pad limits for the Contractor to haul and place as drain cover fill above the pad liner.

The Contractor may select and use any Owner/Engineer approved borrow area for this construction materials provided the materials meet the Specification requirements for the intended use. Representative tests shall be conducted by the Engineer on the borrow materials in the field or at an offsite laboratory to determine the materials' suitability for use as fill. It shall be the Contractor's responsibility to notify the Engineer of changes in borrow materials in advance of development to allow time for representative testing without unduly interrupting construction activities.

Should a borrow material prove to be unsuitable for fill, a new borrow source shall be designated by the Owner or the Contractor's processing operations shall be adjusted to produce acceptable fill material meeting the Specifications.

The Contractor shall liaise with the Owner, as needed, to schedule and coordinate the production and/or stockpiling of acceptable borrow materials from the mine pit area and other sources onsite and offsite for the execution of the Contractor's work.

Acceptable borrow areas shall be cleared, grubbed and stripped in stages, as approved by the Owner/Engineer, to minimize ground disturbance. Each stage of stripping shall be sufficient in areal extent for the Contractor to operate conventional earthwork equipment for conditioning and excavating materials acceptable for fill placement. Moisture conditioning in preparation for fill placement, if required, shall be done in the borrow areas as much as practical.

The final surfaces of all borrow areas developed by the Contractor shall be left in reasonably smooth, even conditions and graded to drain for long-term stability. Final surface grading shall be by dozer or grader blade operations, as approved by the Engineer. Final cut slopes shall be no steeper than 2.5H:1V unless approved by the Engineer. The Contractor shall replace stripped topsoil cover over the final borrow cuts, unless otherwise approved by the Owner.

2.5 General Fill Placement Procedures

All materials used for fill shall be loaded and hauled to the placement site, dumped, spread and leveled to the specified layer thickness, moisture conditioned if required and compacted to form a dense integral fill in accordance with these Technical Specifications and to the approval of the Owner and Engineer.

Under most conditions, the fill shall be constructed in near horizontal layers with each layer being completed over the full length and breadth of the zone before placement of subsequent layers. Each zone shall be constructed with materials meeting the specified requirements and shall be free from lenses, pockets and layers of materials that are substantially different in gradation from the surrounding material in the same zone as determined by the Engineer. All fill placed shall be free from organic debris, frozen soil, ice or other unsuitable materials. All oversized material shall be removed from the fill material either prior to it being placed or after it is dumped and spread but prior to compaction.

All particles that have dimensions that will interfere with compaction in the specified layer thickness, as determined by the Engineer, shall be removed from the zone in which they were placed either prior to or during compaction.

As approved by the Engineer, fill may be compacted by routing the hauling and spreading equipment approximately parallel to the long axis of fill. The hauling equipment shall be routed in such a manner that they do not follow the same paths but spread their traveled paths evenly over the surface of the fill.

Moisture conditioning is the operation required to increase or decrease the moisture content of material to within the specified limits. If moisture conditioning is necessary, it shall be carried out by whatever method the Earthwork Contractor deems suitable provided it produces the moisture content specified in these Technical Specifications or designated by the Engineer. The moisture shall be distributed uniformly throughout each layer of material being placed immediately prior to compaction. Measures shall be adopted as necessary to ensure that the designated moisture content is preserved after compaction and until the succeeding layer is placed.

Should the surface of the fill become rutted or uneven subsequent to compaction, it shall be regraded and recompacted before the next layer of fill is placed. To permit suitable bonding with the subsequent layer if necessary, the surface material shall be loosened by scarifying or disk harrowing, as approved by the Engineer and if necessary, it shall be moisture conditioned before an additional layer is placed.

Compaction of each layer of fill shall proceed in a systematic, orderly and continuous manner approved by the Engineer to ensure that each layer receives the compaction specified. The rolling pattern for compaction of all zone boundaries or construction joints shall be such that the full number of roller passes required in one of the adjacent zones or on one side of the construction joint, extends completely across the boundary or joint.

Fill shall not be placed on frozen soil or when air temperatures drop below 0°C unless otherwise approved by the Engineer.

2.5.1 Compaction Equipment

Sufficient compaction equipment shall be provided as necessary for compaction of the various fill materials. Compaction equipment shall be maintained in good working condition at all times to ensure that the amount of compactive effort obtained is a maximum for the equipment. Before commencing Work with the proposed

compaction equipment, the Owner and the Engineer shall be provided with a list of each piece of equipment to be used together with the Manufacturer's specifications.

If alternative equipment than initially proposed is to be used, a submittal shall be made to the Engineer for approval of the equipment and the submittal shall give complete details of such equipment and the methods proposed for its use. The Engineer's approval of the use of alternative equipment may be dependent upon completion of suitable test fills, to the satisfaction of the Engineer, to confirm that the alternative equipment will compact the fill materials to the specified density.

The Contractor's procedures for compaction of fill shall be subject to the approval of the Engineer. Compaction of each layer of fill or subgrade shall proceed in a systematic, orderly and continuous manner approved by the Engineer such as to ensure that all of each layer receives the compaction Specified. The compaction shall be carried out by routing the compaction equipment parallel to the axis of the fill, except that where such routing is impractical and where otherwise required by the Engineer, the compaction equipment may be routed in any direction approved by the Engineer.

For compaction by the vibratory roller, coverage shall consist of a minimum of one pass of the roller. A minimum overlap of 12 inches shall be maintained between the surfaces traversed by adjacent passes of the roller drum. During compaction the roller shall be propelled at a speed appropriate to achieve the desired compaction with reasonable number of passes. The power of the motor driving the vibrator shall be sufficient to maintain the specified frequency and centrifugal force under the most adverse conditions that may be encountered during the compaction of the fill.

The use of mine haul trucks or scrapers as compaction equipment shall be acceptable provided that test fills confirm the fill materials can be adequately compacted with the proposed equipment.

The following compaction equipment and specifications may be considered.

2.5.2 Smooth Steel Drum Vibratory Roller

Smooth steel drum vibratory rollers shall be equipped with a suitable cleaning device to prevent the accumulation of material on the drum during rolling. Each roller shall have a total static weight of not less than 9,000 kg at the drum when the roller is standing on level ground. The drum shall be not less than 1.5 m in diameter and 2 m in width. The vibration frequency of the roller drum during operation shall be between 1,100 and 1,500 vibrations per minute and the centrifugal force developed by the roller, at 1,250 vibrations

per minute, shall not be less than 170 kN. The power of the motor driving the vibrator shall be sufficient to maintain the specified frequency and centrifugal force under the most adverse conditions, which may be encountered during the compaction of the fill.

2.5.3 Tamping Foot Roller

In order to achieve the required compaction with fine-grained cohesive soils, including some of the engineered fill, the Contractor may be required to compact the fill with a tamping foot roller. Subgrade material which is conglomerated into blocks shall require compaction with the tamping foot roller to ensure that the intended permeability of the subgrade material is obtained.

The tamping foot roller shall be a self-propelled, fully ballasted, standard tamping foot design developing 75 kN per linear m of width at rest on level ground or equivalent, as approved by the Engineer. Following compaction with a tamping foot roller, the final surface shall be bladed smooth and then proof-rolled with a smooth drum compactor until the surface is smooth, firm and free from projections.

2.5.4 Special Compactors

Special compactors and compaction measures shall be used to compact materials that, in the opinion of the Engineer, cannot be compacted properly by the specified roller because of location or accessibility. Such special compactors and measures may include hand-held vibratory compactors or other methods approved by the Engineer to compact fill in trenches, around structures and in other confined areas that are not accessible to the larger vibratory roller or tamping foot roller. All compaction shall be to the specified density.

2.5.5 Test Fills

Test fills shall be conducted according to US Army Corps of Engineers standards to establish the specifications for the proper placement and compaction of site grading rockfill having more than 30 percent particles larger than 19 mm. Test fills shall also be conducted if circumstances arise where they are deemed necessary by the Engineer such as in order to determine if greater or lesser lift thicknesses are appropriate for certain soils and to still meet the design intent for site grading fill. The type of compaction equipment, number of passes and maximum particle size and loose lift thickness to be used in the Work will be approved by the Engineer in writing based on the acceptable test fill performance. The Contractor shall outline his proposed procedures for moisture conditioning and fill placement and submit them to the Engineer for review and approval.

The test fill shall be constructed within the limits of the Work to determine the compactive effort required to be applied to a particular material or increased lift thickness. The test fill shall be sufficiently wide to support the compaction equipment. The proposed compaction equipment to be used in actual site grading fill placement shall be routed over the test fill.

In the soil test fill, the number of compaction equipment passes shall be counted and, at certain numbers of passes, in-place density tests shall be performed by the nuclear gauge method (ASTM D-2922) or sand cone method (ASTM D-1556). This process shall be repeated until a curve representing number of passes versus density is generated. This information will allow the Engineer to evaluate the optimum density of the soil and the corresponding number of passes. This will establish a guideline for the compaction procedure required during construction.

For rockfills, the data to be collected from the test fill shall include the following:

- Lift thickness of 0.3, 0.6 and 0.9 m (three test fills to establish optimum lift thickness)
- Amount of settlement after every two passes of compactor to a maximum of 25 passes
- Gradation and moisture content of in-place material
- In-place fill density at completion of the test fill by nuclear gauge method (ASTM D-2922) or sand cone method (ASTM D-1556), as approved by the Engineer.

A curve showing change in rockfill lift settlement versus number of passes shall be produced from the data. The minimum number of passes to achieve acceptable compaction will be the number required to achieve 80 percent of the total settlement obtained after no fewer than ten complete passes of the compaction equipment. The lift thickness and minimum number of passes with compaction equipment shall be approved by the Engineer after review of test fill data.

Upon completion of each test fill, a test fill report shall be generated that must include all appropriate documentation pertinent to the test fill, including but not limited to, field and laboratory test results, graphics displaying the aforementioned curves, photographs and a written narrative of the test fill and results.

2.6 Site Grading Fill

Site grading fill will be placed within the HLF limits to achieve the desired final grades as shown on the Drawings.

2.6.1 Material Requirement

Material for compacted site grading fill may consist of any material which, when compacted, is suitable for use in the various parts of the Work. The site grading fill material will have a wide range of Unified Soil Classifications and may contain significant variations in gradation and compaction properties. Materials that contain or are contaminated by organic matter are not suitable for use as site grading fill. Site grading fill will be placed in areas where the material is not required to be of uniform character and engineering properties. The site grading fill will be obtained from several sources including from required excavation or regrading activities within the HLF limits and from borrow areas.

Site grading soil fill shall generally include inorganic soils with less than 30 percent particles larger than 19 mm and a maximum 150 mm particle size. Soft, weathered rock that breaks down during the excavation, hauling and processing operations to form essentially a soil and compacts without excessive voids may be used for site grading soil fill, as approved by the Engineer, but may not be used in the HLF confining embankment or event pond embankments. Materials (such as placer tailings) containing large size, sound rock or cobbles and gravels from required excavations may be used as site grading fill subject to the Engineer's approval and provided the rock is reasonably graded such that large void spaces do not result. The maximum particle size in the fill shall be no larger than two-thirds the fill compacted lift thickness, unless otherwise approved by the Engineer. Oversized materials shall be removed from the fill.

2.6.2 Placement

The surface upon which site grading fill is placed shall be prepared as specified in Section 2.3 - Subgrade Preparation of these Technical Specifications.

The site grading soil fill material shall be placed and spread in the fill to form lifts which shall not exceed 0.3 m in loose thickness unless otherwise specified by the Engineer and proven to achieve the specified compaction in a test fill. The actual lift thickness may need to be less than 0.3 m in loose thickness to meet the compaction requirement. Cobbles and boulders that are large enough to interfere with the construction of the designated lift thickness shall be removed and disposed of in areas specified by the Owner.

After spreading, the site grading soil fill material shall be moisture conditioned, if necessary, by sprinkling and disk harrowing until a uniform distribution of moisture is obtained. Material that is too wet may be spread on the fill area and permitted to dry, assisted by disking and harrowing if necessary, until the moisture is reduced to an amount within the specified limits. The Contractor shall utilize all measures necessary to achieve a moisture content for site grading soil fill within plus or minus two (±2) percent of the

optimum moisture content as determined by the Standard Proctor test (ASTM D-698), distributed uniformly throughout the lift of material being placed, immediately prior to compaction. The Contractor shall utilize whatever measures necessary to ensure that the designated moisture content is preserved after compaction until the succeeding lift is placed. The Engineer may specify deviation from the moisture content limits provided the required compaction is achieved. Each site grading soil fill lift shall be compacted to a minimum of 95 percent of the maximum dry density (ASTM D-698).

The site grading rockfill material shall also be spread in individual lifts and shall be conditioned, placed and compacted according to the specifications derived from the results of a test fill. The rockfill lifts shall generally not exceed 0.5 m in loose thickness unless otherwise specified by the Engineer and proven to achieve the specified compaction in the test fill. The actual lift thickness may need to be less than 0.5 m in loose thickness to meet the compaction requirement. The test fill procedures are outlined in the following section. Site Grading fill shall not be placed in freezing temperatures without approval from the Engineer.

2.7 Select Fill

The intent of the design is to construct a compacted thickness of soil beneath the liner system as shown on the Drawings.

If the in-place material is not suitable to meet the requirement in Section 2.3 – Subgrade Preparation, then suitable material shall be imported from required excavations within the HLF limits and/or from borrow sources. Imported Select Fill material shall be placed in maximum 0.15 m thick lifts (after compaction) and be moisture conditioned if necessary and compacted according to the requirements stated herein. Prior to placing each lift and if necessary, the surface of the first lift shall be scarified to a depth of 50 mm or otherwise roughened to ensure complete bonding between the lifts, as directed by the Engineer.

Moisture conditioning of Select Fill material to adjust the measured moisture content shall occur when the material is in a loose condition such as after scarifying or during placement of imported materials and never after compaction. The Select Fill material shall be scarified, mixed and moisture conditioned, if necessary, by sprinkling and disk harrowing until a uniform distribution of moisture is obtained. Material that is too wet may be spread on the fill area and permitted to dry, assisted by disking and harrowing if necessary, until the moisture content is reduced to within the specified limits.

The Contractor shall adopt removal of oversized or protruding particles at the top of Select Fills as specified in Section 2.3 - Subgrade Preparation of these specifications.

2.7.1 Material Requirement

In-place or imported fine-grained soil liner material meeting the requirements stated herein shall be acceptable. If suitable in-place soil liner material cannot be found as specified by the Engineer, additional material, which meets the material requirements, shall be imported from excavations within the HLF limits or designated borrow areas. Suitability of soils in this category is dependent on the properties of gradation to provide a suitable foundation for the geosynthetics.

The Engineer will have the authority to approve variations to the compaction and moisture content requirements. The Engineer will determine the suitability of the material for use as Select Fill material. The Select Fill material shall conform to the following gradation:

Table 2-2. Select Fill material gradation.

ASTM Sieve Size	Percent Passing
75 mm	100
No. 4	60-100
No. 200	35-100

Select Fill material shall be free of organic matter in quantities that would adversely affect the performance of the HLF, as specified by the Engineer.

2.7.2 Placement

Where suitable material exists in-place, the top 0.15 m of the material shall be removed and windrowed to allow access to the lower half of the Select fill layer. The lower 0.15 m of the soil liner shall be scarified by disking or other approved means, moisture conditioned if necessary and compacted to minimum of 95 percent of the maximum dry density at a moisture content between -2 and +1 percent of the optimum, as determined by the Standard Proctor test (ASTM D 698). Once the compaction of the lower layer has been confirmed, the upper 0.15 m of material shall be spread across the surface; moisture conditioned if necessary and compacted according to the requirements stated above. Select fill shall not be placed in freezing temperatures without approval from the Engineer.

2.8 Granular Fill

2.8.1 Overliner and Select Drain Fill (ODF & SDF)

Drain fill shall be used to construct the leach pad liner cover fill and in pipe trench drains as shown on the Drawings. The drain fill material shall be produced from crushing and/or screening operations of ore and/or

mine waste and/or from screening of sand and gravel aggregate from borrow sources. The material shall be free of organic matter and soft, friable particles in quantities objectionable to the Engineer.

2.8.1.1 Material Requirement

The ODF for the leach pad liner cover fill and select drain fill for the cover of the underdrain system shall consist of free-draining granular material with 38-mm maximum particle size and a maximum of 5 percent fines passing the No. 200 ASTM sieve size (0.075-mm). The ODF shall have an operational permeability to allow maximum phreatic surface of 0.6 meters. If compacted permeability utilizing loads equivalent to full heap height produce permeabilities less than of 2x10-2 cm/sec or lower, than pipe spacing may need to be reduced. The engineer of record will utilize actual permeabilities and analyze pregnant solution collection pipe spacing requirements.

Table 2-3. Overliner Drain Fill material gradation.

ASTM Sieve Size	Percent Passing
38 mm	100
No. 200	5

Drain Fill shall consist of hard and durable free-draining fine gravels with 12.5 mm maximum particle size and a maximum of 3 percent passing the No. 200 ASTM sieve size (0.075-mm). The select drain fill shall have an operational permeability of 1x10-2 cm/sec or higher.

Table 2-4. Select Drain Fill material gradation.

ASTM Sieve Size	Percent Passing
12 mm	100
No. 200	3

2.8.1.2 Placement

The drain fill material shall be placed in such a manner as to reduce segregation and construct the zones in accordance with the details and to the lines and grades shown on the Drawings or as specified by the Engineer. Methods shall be developed on site for placing the material in a manner that will protect the drain pipework from damage and keep compaction of the material to a minimum. Any drain fill material that has received too much compaction shall be scarified to a loose condition without damage to the underlying geomembrane and pipework.

The ODF above the geomembrane shall be placed in a single 0.6 m minimum lift thickness by suitable dozer and truck equipment, as approved by the Engineer. A thicker layer, a minimum of twice the pipe diameter, shall be placed above the larger diameter primary collection drain pipes as detailed on the Drawings. A thicker layer, a minimum of twice the pipe diameter, shall be placed above the larger diameter primary collection drain pipes as detailed on the Drawings. A layer thicker than 0.6 m may be required by the Engineer to protect the liner system based on conditions, ground slope, equipment type and observed placement methods. No moisture conditioning or compaction is required. Haul truck speeds, braking and turning during drain cover fill placement shall be strictly controlled by the Contractor to prevent damage to the underlying geomembrane and pipework. The cover fill thickness shall also be increased in concentrated traffic areas or across collection pipes, as required, to prevent damage to the geomembrane and pipework. Haul traffic on the cover fill surface shall be spread out as much as practical to prevent over-compaction of the cover fill in localized areas. A test fill shall be constructed by the contractor prior to placement of overliner drain fill on the pad to demonstrate the protection of the liner system upon trafficking and placement with proposed equipment. The Engineer shall oversee and evaluate the test pad and make final recommendations for thickness and crush size.

A sheet temperature of minus 10 degrees C (14 degrees F) is the lower limit that ODF shall be placed on the geomembrane unless it is shown otherwise to the satisfaction of the Engineer.

Select drain fill to backfill around pipes should be carefully placed and spread in uniform layers. and should be placed to approximately the same elevation on both sides of the pipe to prevent unequal loading and displacement of the pipe. Backfilling procedures shall generally follow guidance from “Plastic Pipe Used in Embankment Dams Best Practices for Design, Construction, Problem Identification and Evaluation, Inspection, Maintenance, Renovation, and Repair Federal Emergency Management Agency, November 2007”. The backfill in all areas shall be compacted by vibrating, tamping, or a combination thereof to seventy five percent (75%) relative density for Select drain fill as determined by the relative density of cohesionless soils test, ASTM D4253. Bedding shall be distributed in 150mm maximum lifts over the full width of the trench.

2.8.2 Compacted Rock Fill

Compacted Rock Fill shall be used for structural fills in the HLF as shown on the drawings. The rock fill will have more than 30 percent particles larger than 19 mm and the maximum rock particle size shall be no more than two thirds the loose thickness of the fill lift. The rockfill shall generally have 300 mm maximum rock particle size and oversized rocks larger than 300 mm shall be removed to the exterior fill slopes. Rocks

larger than 300 mm may be incorporated in thicker fill lifts provided the rocks do not protrude from the lift surfaces after compaction and the required compaction of the lifts is proven achievable by a test fill.

2.8.2.1 Material Requirement

Compacted rock fill shall consist of rock from required excavations and from mine pre-stripping operations that generate relatively high strength, durable and relatively clean rock resistant to weathering and to water action and free of potentially acid-generating rock, shale, soil, organic, deleterious or other objectionable material. Rounded rock, in general, is not desirable. The quality of the material must be approved by the Engineer prior to removal from the processed stockpile.

The maximum particle size for the compacted rock fill shall be no greater than 2/3 the fill loose lift thickness as determined in test fills and all rock fill material shall contain more than 30 percent particles larger than 19 mm.

Rock fill shall be competent material with a minimum strength rating determined by International Society for Rock Mechanics (ISRM) methods of R3, medium strong rock.

Rock fill shall not be placed in freezing temperatures without approval from the Engineer. A test fill may be performed to establish lower limits of fill temperature during placement and compaction.

2.8.2.2 Placement

The Contractor shall place the rock fill in maximum loose lifts and compact in accordance with specifications derived from results of test fills.

2.8.3 Anchor Trench Backfill

2.8.3.1 Material Requirement

Geomembrane anchor trenches shall be backfilled with inorganic material meeting the site grading fill material requirement.

2.8.3.2 Placement

The anchor trenches shall be excavated to the lines and grades shown on the Drawings. Particles greater than 138 mm size and any other protrusions shall be removed from the trench bottom and sides to protect the geomembrane from puncture. The backfill material shall be placed in nominal 150 mm thick lifts and compacted to a minimum of 85 percent of the maximum dry density as determined by the Standard Proctor

test (ASTM D-698). Moisture conditioning will not be critical, as determined by the Engineer. Compaction shall be accomplished by the use of hand-operated compactors. Care shall be exercised to avoid damage to the geomembrane. The final backfill surface shall be rolled by a rubber-tired front-end loader with loaded bucket or equivalent equipment approved by the Engineer. The final backfill surface shall be graded to drain.

2.8.4 Road Wearing Course

The road wearing course material shall be selected and placed as specified by the Owner. The following should be considered as guidelines.

2.8.4.1 Material Requirement

Generally, the road wearing course material shall be produced from crushing and/or screening operations of mine waste or borrow sources and shall consist of well-graded sandy gravel. The wearing course material shall conform to the following gradation:

Table 2-5. Wearing course material gradation.

ASTM Sieve Size	Percent Passing
50 mm	100
38 mm	95-100
19 mm	65-95
No. 4	35-55
No. 16	15-45
No. 200	4-15

2.8.4.2 Placement

The wearing course shall be placed and compacted to a compacted thickness of no less than 0.15 m to the lines and grades shown on the Drawings or as required by the Owner. The layer shall be graded to form a relatively smooth surface, free of rock pockets or protrusions of rock fragments. The wearing course shall be compacted by a minimum of three passes with a smooth drum roller to achieve a minimum 95 percent of the maximum dry density as determined by the Standard Proctor test (ASTM D-698). The wearing course shall contain enough moisture to produce a homogeneous, smooth and compacted layer. To achieve this, the Contractor may be required to moisture condition the material in the processing operation before placement or after spreading but before compaction.

2.9 QA/QC Testing

2.9.1 General

The Engineer and their quality assurance team will be responsible for testing construction materials to assess whether materials and methods comply with these Technical Specifications. All testing performed by the Engineer will be performed in accordance with procedures outlined in the Specifications. The results of the tests carried out by the Engineer will be final and conclusive in determining compliance with the Specifications. The QA/QC test results shall be used to document and verify the quality of work and the extent to which the earthwork and related installations have been completed as set forth in the Drawings, Technical Specifications and permits for the construction and operation of the facilities.

To the extent possible, QA/QC testing shall be conducted so as not to interfere with normal construction operations. However, if required for any reason, the Contractor shall stop work in the area being tested, until the QA/QC testing is complete or approval to proceed has been given by the Engineer or his appointed representative. Each lift of fill will require approval by the Engineer prior to placement of the next lift. Sufficient time shall be allowed by the Contractor for the Engineer to carry out the required test work and interpretation of the test results in order to decide upon the acceptability of each lift. Cooperation shall be given by the Contractor to the Owner and the Engineer for taking samples and making tests and such assistance shall be rendered as is necessary to enable sampling and testing to be carried out expeditiously.

The QA/QC guidelines do not relieve the Contractor of any of his responsibilities to conduct his own daily quality control testing or to complete in a timely manner the Work agreed to under the Contract Documents in accordance with the Specifications.

2.9.2 Tests

Laboratory tests including moisture content (ASTM D-2216), Atterberg limits (ASTM D-4318), gradation (ASTM C-136/D-6913[1]), moisture/density relationship (ASTM D-1557), permeability (ASTM D 5084) and other tests, where applicable, will be conducted by the Engineer on samples of fill materials taken from cuts within the HLF limits and from borrow areas at frequencies sufficient to assess whether the materials are in compliance with these Technical Specifications. The Engineer will also conduct field density tests (ASTM D-6938[2] /nuclear gauge method and/or ASTM D-1556/sand cone method) and will obtain samples of the compacted fill for related laboratory testing at such frequency as the Engineer considers necessary to

[1] ASTM C-136/D-6913 superseded ASTM D-422

[2] ASTM D-6938 superseded ASTM D-2922

assess whether the compacted fill is in full compliance with the Specifications. In-place field density testing on soil fills may also be conducted in accordance with ASTM D-2167 and D-6938[3], as specified by the Engineer. Rockfill materials exceeding the standard range of soil testing methods shall be tested for acceptable compactive effort as specified in Section 2.6 - Site Grading Fill of these Specifications.

2.9.3 QA/QC Plan

If the above tests indicate the Work does not meet the specified requirements, the following remedial action shall be performed.

Compaction below specified minimum: apply additional effort or scarify, moisture condition, recompact and retest.

Moisture content outside of specified limits during compaction:

- Moisture content below specified minimum: scarify the depth of the lift, moisture condition, mix to achieve uniform moisture content, compact and retest
- Moisture content above specified maximum: scarify the depth of the lift, allow to air dry, mix to achieve uniform moisture content, compact and retest; or remove the wet material. Mixing of dry material to lower the moisture content shall not be allowed without the prior approval of the Engineer and on a case by case basis.

Moisture content outside of specified limits after compaction and approval but prior to covering: determine depth of material outside of specified limits and correct as specified above.

Material not in accordance with the Specification requirements: remove material in its entirety, as directed by the Engineer.

2.9.4 Reporting

The Engineer will prepare daily progress reports throughout the period of construction. The reports will summarize pertinent construction activities and results of testing completed during the period as well as highlight any difficulties encountered.

[3] ASTM D-6938 superseded D-3017

The Engineer will maintain a record of all tests. The tests will be recorded on a form applicable to the test being performed. The location of all tests will be recorded and accurately described. A plan indicating the locations of all tests will be maintained.

On completion of the work the Engineer will prepare a construction report which will include a summary of results from all tests carried out as part of the QA/QC program and construction record drawings. The construction report will be submitted to the Owner for submittal to the appropriate regulatory agencies.

2.9.5 Testing Frequency

The testing frequencies in the following tables are the minimum number of record QC tests to be completed on the various fill materials during the Work. The Engineer may specify additional tests to be carried out, if in the opinion of the Engineer, such additional tests are required due to variability in the soil materials or soil properties that may affect the Work. Control tests shall be performed on the material, as necessary, to determine the suitability of borrow areas. The number of control tests shall satisfy the minimum record test frequency for the volume anticipated to be removed. This may entail performing enough testing to develop "families" of borrow area soils, classified by both gradation and moisture/density relationship. The control test results shall be submitted to the Engineer for approval prior to removing material from borrow areas for fill placement. The results must demonstrate that the borrow materials conform to the Specifications. The control tests conducted for borrow areas are considered essential to understanding how borrow area materials will be placed in the Work. Upon review of the control test data, the Engineer may specify that additional tests be performed prior to approval of a borrow area.

Table 2-6. Site grading fill.

Laboratory/Field Test	Test Frequency
Moisture Content	Minimum 1 per 5,000 m^3
Atterberg Limits	Minimum 1 per soil type or 1 per 5,000 m^3, whichever is more frequent
Gradation	Minimum 1 per soil type or 1 per 5,000 m^3, whichever is more frequent
Moisture/Density Relationship	Minimum 1 per soil type or 1 per 5,000 m^3, whichever is more frequent
In-Place Density and Moisture	Minimum 1 per 1,500 m^3 placed

Table 2-7. Select fill.

Laboratory/Field Test	Test Frequency
Moisture Content	Minimum 1 per 3,000 m^3
Atterberg Limits	Minimum 1 per soil type or 1 per 3,000 m^3, whichever is more frequent
Gradation	Minimum 1 per soil type or 1 per 3,000 m^3, whichever is more frequent
Moisture/Density Relationship	Minimum 1 per soil type or 1 per 3,000 m^3, whichever is more frequent
In-Place Density and Moisture	Minimum 1 per lift per 1,500 m^2

Table 2-8. Overliner drain fill, Select drain fill and Trench drain fill.

Laboratory/Field Test	Test Frequency
Gradation	Minimum 1 per 5,000 m^3
Laboratory Compacted Permeability	Minimum 1 per 50,000 m^3 or as directed by the Engineer based on gradation results

Table 2-9. Anchor trench backfill.

Laboratory/Field Test	Test Frequency
Moisture Content	Minimum 1 per 5,000 m^3
Atterberg Limits	Minimum 1 per soil type or 1 per 5,000 m^3, whichever is more frequent
Gradation	Minimum 1 per soil type or 1 per 5,000 m^3, whichever is more frequent
Moisture/Density Relationship	Minimum 1 per soil type or 1 per 5,000 m^3, whichever is more frequent
In-Place Density and Moisture	Minimum 1 per 150 linear m of trench length

Gradation testing of the rock fill shall not be required. The Engineer will visually inspect the rock fill in conjunction with measurement of the size of select stones to determine its compliance with the gradation requirements.

Tests may be conducted more frequently at the direction of the Engineer. More frequent testing shall be performed, where indicated by the following guidelines:

- Areas where special compaction equipment or methods are used

- Areas where the height of fill rises quickly versus the quantity of fill placed, specifically in areas of slope reduction fill
- Areas where compaction control is particularly important such as around appurtenant structures
- Areas where doubtful construction procedures are being used
- Areas where the required compaction may not have been achieved based upon visual observations
- Areas where unacceptable material may have been placed

End of Section

Eagle Gold Project Phase 1B Heap Leach Facility
Technical Specification – Geosynthetics

Specification No.: 109005-51100-03-TS-F002

Revision	Date	Status	Prepared By	Approved By
REV A	27 NOV 2019	Internal Review	W. Reinhardt	C. Green
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REV 0	6 JAN 2020	Issued for Construction	W. Reinhardt	C. Green

3. GEOSYNTHETICS

3.1 Geomembrane

3.1.1 General

The intent of the design is to provide linear low-density polyethylene (LLDPE) geomembrane for the leach pad. The geomembrane shall be manufactured in the largest widths and lengths possible to minimize the number of field seams. The Geomembrane Installer shall install geomembrane materials and miscellaneous materials incident thereto in accordance with the Manufacturer's recommendations. Alignments, lengths and areas are shown on the Drawings. Exact locations and lengths may vary to suit field conditions, as approved by the Engineer.

Direct vehicular contact with the geomembrane shall not be allowed to prevent geomembrane damage. Ultra-violet (UV) sensitive geomembrane shall be protected from exposure to sunlight until placement. After placement, the geomembrane shall be covered within three months of placement, unless otherwise approved by the Owner and warranted by the Manufacturer.

The Installer shall notify the Engineer for written acceptance of the completed geomembrane installation prior to covering the leach pad's geomembrane with drain fill.

The geomembrane materials, installation and testing shall be in accordance with the following sections and shall generally conform to the Geosynthetic Research Institute (GRI) standards GM 13, GM-17 and GM-19 or Engineer approved equivalent.

3.1.2 Manufacturer's Experience

The Manufacturer of the geomembrane shall have previously demonstrated the ability to produce the specified geomembrane by having successfully manufactured a minimum of 500 acres of similar geomembrane for hydraulic lining installations. A list of similar containment projects completed in which the manufactured material has been successfully used shall be submitted and is subject to approval by the Engineer.

3.1.3 Submittal of Engineering Data

The Installer is responsible for supplying engineering data and results of QC testing of the geomembrane materials. The Manufacturer shall allow sufficient time in his production schedule to perform the specified QC testing for the project. The results of all required testing shall be supplied at least seven days prior to

shipment of the materials to the site. The Installer shall furnish the following engineering data prior to construction:

- Shop drawings with panel layouts and appropriate details along with a time schedule for the installation of the geomembrane.
- An instruction manual which includes the proper storage, handling, deployment and seaming of the geomembrane. This manual shall be in compliance with these Technical Specifications and any conditions of warranty.
- QC certificates on the resin used to manufacture the geomembrane. The data submitted on the resin shall include production dates and the results of conformance tests. The submittals for the resin shall also include a statement that no reclaimed polymer was used. The edges of geomembrane that are trimmed during the manufacturing process are not considered reclaimed polymer. All resin shall be of the same type and quality.
- QC certificates on each geomembrane roll. Each certificate shall be customized for the project and shall include but not be limited to: the roll and resin batch numbers, production date of the roll, a listing of the QC tests, test method numbers, values specified for the project and the QC test results. All tests shall be performed prior to submittal of the QC certificates to the Engineer. Test results for each property specified shall be provided on the QC certificate.
- Certification that the geomembrane and extrudate rod or beads are made from the same resin type and have the same properties.

3.1.4 Delivery, Storage and Handling of the Geomembrane

The Installer shall be responsible for transporting, unloading and storing the geomembrane. At the discretion of the Owner, conformance testing, and a plant audit may be performed by the Engineer and/or Owner prior to shipment. In the event that conformance testing is to be performed, the Manufacturer shall not arrange for transport of the geomembrane until such testing is complete. The Installer or Manufacturer shall provide the Engineer and Owner a schedule for manufacturing the materials for the project at least 14 days prior to manufacturing so that testing and travel arrangements can be properly arranged. This schedule shall remain firm throughout the duration of the project. Any proposed changes to the production schedule shall be approved by the Owner. The Engineer shall notify the Manufacturer at least seven days prior to performing the testing or plant audit of his intentions to perform these tasks.

The geomembrane shall be shipped such that it is not damaged in transport and shall be offloaded in the presence of the Owner. Any damage to the geomembrane during the offloading process will be

documented by the Owner. All damaged rolls shall be separated from undamaged material. The final disposition of the damaged rolls shall be determined by the Owner with input from the Engineer. The Installer shall be responsible for replacing any geomembrane determined to be unacceptable at no additional cost to the Owner.

Once the geomembrane rolls have been offloaded, they shall be stacked on a prepared surface no more than three rolls high. The surface shall be prepared such that the geomembrane is not subjected to rocks or sharp objects, water, oil or other deleterious conditions. The geomembrane rolls shall not be placed on pallets.

The Installer shall use appropriate equipment to transport the geomembrane from the storage area and deploy it. This equipment may include a spreader and roll bars and shall not damage the geomembrane or subgrade. Any damage shall be repaired by the Installer to the satisfaction of the Engineer.

3.1.5 Material Requirement

The geomembrane shall be composed of new, first quality material designed and manufactured specifically for the purpose of liquid containment. The geomembrane shall be produced in rolls and shall be free of holes, blisters, undispersed raw material, cuts, folds or any sign of foreign matter. Each roll of geomembrane shall be identified with a label that provides the thickness, length, width, roll number and plant location.

The material shall be warranted against Manufacturer's defects as well as degradation due to UV light for exposed geomembrane for a minimum of 20 years from the date of installation or as mutually agreed upon in writing prior to award of the contract between the Owner and the Manufacturer. This warranty shall cover the cost of material, shipping and handling, labor and equipment to replace the defective or failed material.

The materials and testing shall conform to the standards in Table 3-1 and GRI - GM17 Standard Specification "Test Methods, Test Properties and Testing Frequency for Linear Low-Density Polyethylene (LLDPE) Smooth and Textured Geomembranes".

Table 3-1. Geomembrane properties.

Tested Property	Test Method	Frequency	Test Value
Thickness, Minimum average, mm Lowest individual reading, mm	 ASTM D 5994 ASTM D 5994	 every roll 10 out of 10 rolls	 1.90 1.70
Density, g/cm^3 (min.)	ASTM D 792	Every 10 rolls	0.939
Tensile Properties (min. ave, each direction) Strength at Break, kN/mm Elongation at Break, %	ASTM D 6693, Type IV	Every 2 rolls	 31 380
Tear Resistance (min ave.), N	ASTM D 1004	Every 5 rolls	200
Puncture Resistance, N	ASTM D 4833	Every 5 rolls	500
Carbon Black Content, % (Range)	ASTM D 4218	Every 2 rolls	2.0 - 3.0
Carbon Black Dispersion	ASTM D 5596	Every 10 rolls	Note 1
Asperity Height (min. avg), mm	ASTM D 7466	Every roll	0.50

Notes:

1. Carbon black dispersion (only near spherical agglomerates) for 10 different views: 9 in Categories 1 or 2 and 1 in Category 3.
2. Independent testing utilizing project specific materials may be required for allowances.

3.1.6 Conformance Testing

Prior to or upon delivery to the site, samples of the geomembrane shall be removed by the Owner or Engineer and sent to a laboratory selected by the Owner for testing to ensure conformance to the requirements of these Technical Specifications. Conformance sampling may be performed at the Manufacturer's plant or in the field at the site. Unless testing is performed prior to shipment, the Installer shall deliver the geomembrane to the site an adequate period of time prior to installation to allow for sufficient time for sampling and testing, as specified by the Owner or Engineer.

Samples shall be taken at the rate of one sample per batch or one sample per 6 acres, whichever is less. Samples shall be taken from across the entire width of the geomembrane roll and shall be at least 1 m long unless otherwise approved by the Engineer. The samples shall not include the first 1 m of the roll. The Engineer may increase the frequency of sampling in the event that test results do not comply with these

Specifications. Any material that is not certified in accordance with the Specifications shall be rejected and replaced with new material.

3.1.7 Installation

Installation of the geomembrane shall be performed by the geomembrane Manufacturer or an Installer trained and certified by the Manufacturer. The purpose of these Specifications is to achieve a lined system as free of defects as current installation and inspection techniques will allow.

Surfaces to receive geomembrane shall be prepared as specified in Section 2.3 - Subgrade Preparation of these Technical Specifications. The surfaces shall be smooth and free of all rocks, stones, sticks, roots, sharp objects or debris of any kind. The surface shall provide a firm, unyielding foundation for the geomembrane with no sudden, sharp or abrupt changes in grade. No standing water or excessive moisture shall be allowed. The Installer shall certify in writing that the surface on which the geomembrane is to be installed is acceptable before commencing work.

Once the subgrade is acceptable, it shall be maintained until the geomembrane has been installed and accepted. Any rough areas or damage caused by the installation shall be repaired by the Installer. The leading edge of the anchor trench shall be rounded to avoid a sharp bend in the geomembrane.

3.1.7.1 Placement

To the maximum extent possible, the geomembrane panels shall be oriented such that they are perpendicular to the natural contours (parallel to the maximum slope). Unless otherwise approved in writing by the Engineer, no horizontal seams will be allowed on slopes steeper than 3H:1V. All seams shall be oriented such that they are shingled in a down-slope direction. If cross seams are required on a steep slope, the end of each panel shall be cut at a diagonal of 45 degrees and seamed to prevent installation of a horizontal seam. The geomembrane shall be placed according to the panel layout drawing submitted by the Installer and approved by the Engineer.

Each geomembrane panel shall be labeled with a unique identification number or code which is agreed to by all parties. The geomembrane shall be placed using methods and equipment that do not damage it or the subgrade. Installation personnel working on the geomembrane shall not smoke, wear shoes that could damage the geomembrane or engage in potentially damaging activities.

The Installer shall use appropriate means to protect the geomembrane from uplift from the wind. Edges of panels shall have continuous ballast to lessen the chance of wind flow under the panels. The material used to hold down the geomembrane shall not cause damage to it. No vehicles shall be allowed to drive over exposed geomembrane.

As the geomembrane material is deployed, it shall be visually inspected, and any defects marked for repair. If a significant number of defects are identified as determined by the Engineer, the material shall be removed and replaced at no expense to the Owner. No geomembrane deployment shall be allowed during periods of wet or extremely windy weather or in the presence of ponded water.

The Installer shall provide sufficient slack in the geomembrane to allow for contraction due to cold temperatures. Prior to the start of construction, the Installer shall submit calculations and a resultant table showing the amount of extra material required per 30 m of geomembrane in place, for a given temperature.

3.1.7.2 Seaming

Prior to installation, the Installer shall submit the resumes of seaming personnel who will be used on the project. At least one seaming supervisor shall be present who has the experience of a minimum of 0.5 hectares of geomembrane installation using the seaming device proposed for use at the project site.

The Installer shall weld the geomembrane, where possible, using the double-wedge fusion welding method. No seaming shall begin until each welding technician and apparatus used in the field has passed a test weld. Scrap pieces of geomembrane material at least 1 m long and 0.3 m wide shall be seamed together under the same conditions as those in the area to be lined. A minimum of four 25 mm wide coupons shall be cut from the test weld and quantitatively tested for shear and peel with a field tensiometer in accordance with ASTM D-6392. A test weld passes when the break is ductile and a film tearing bond (FTB); and the following minimum values are met:

Table 3-2. LLDPE seam strength properties.

Material	Shear Strength (PPI)	Fusion Peel (PPI)	Extrusion Peel (PPI)
2.0 mm Textured	120	100	88

A test weld is considered passing when all coupons pass the above requirements. If repeated test welds fail, the welding technician or apparatus may not be used until the reason for the failing values is identified.

Once the test welds have passed and are approved by the Engineer, seaming of the geomembrane may begin.

The geomembrane panels shall overlap a minimum of 75 mm for extrusion welding and 100 mm for fusion welding. Any fish-mouths or wrinkles at seam overlaps shall be cut out and removed. If the overlap after cutting is less than 75 mm, the area shall be patched. As seaming progresses, the Installer shall log the temperature measured at 150 mm above the geomembrane, the operating temperature, pressure and speed of the wedge welder and the extrudate temperatures in the barrel and at the nozzle of the extrusion welder.

If a hot wedge welding device is used by the Installer, it shall be self-propelled and equipped with gauges that monitor the temperature and speed of the apparatus. The wedge welder shall not be placed directly on the geomembrane when not in use. The Installer shall make sure that there is no dirt or moisture build-up between the geomembrane sheets.

When using an extrusion welder, the Installer shall tack bond the geomembrane sheets together in a manner that does not damage the geomembrane. The Installer shall thoroughly clean and dry the seam area immediately before tack bonding (lystering) and wedge welding. Prior to welding and after any work stoppages of more than three minutes, the welding apparatus shall be purged of heat-degraded extrudate. The top edges of the geomembrane shall be beveled prior to welding and the oxidation on the geomembrane surface shall be removed by a disc grinder no more than a half hour before welding. On seams that are more than five minutes old, the end of the seam shall be ground prior to continuing the weld. All grind marks shall not extend more than 6 mm beyond the weld head. The grinder shall be held parallel to the geomembrane edge and any area where grinding removes more than 4 mils shall be patched.

Cold weather installations should follow guidelines as outlined in GRI GM9: Standard Practice for Cold Weather Seaming of Geomembranes. No geomembrane material shall be seamed when liner (sheet) temperatures are less than 0 degrees C (32 degrees F) unless the following conditions are complied with:

1. Seaming of the geomembrane at material temperatures below 0 degrees C (32 degrees F) is allowed if the Geomembrane Installer can demonstrate to the Engineer, using pre-qualification test seams, that field seams comply with the project specifications, the safety of the crew is ensured, and geomembrane material can be fabricated (i.e. pipe-boots, penetrations, repairs, etc.) at sub-freezing temperatures.

2. The Geomembrane Installer shall submit to the Engineer for approval, detailed procedures for seaming at low temperatures, including the following:
    a. Preheating of the geomembrane, if necessary.
    b. The provision of a tent or other device if necessary, to prevent heat losses during seaming and rapid heat losses subsequent to seaming.
    c. Number of test welds to determine appropriate seaming parameters.

Trial welds shall always be done in the environment (temperature) and geometry in which production welding is to be done.

Freezing temperatures can cause geomembrane sheets to crack when unrolled, folded, impacted or loaded. Geomembranes when unrolled or folded in cold weather should not crack, craze, or distort in texture. A sheet temperature of minus 10 degrees C (14 degrees F) is the lower limit that a geomembrane shall be unrolled unless it is shown otherwise to the satisfaction of the Engineer.

Section 2.8.1.2 of the project technical specifications addresses placement of Overliner Drain Fill (ODF) on the installed liner. A sheet temperature of minus 10 degrees C (14 degrees F) is the lower limit that ODF shall be placed on the geomembrane unless it is shown otherwise to the satisfaction of the Engineer.

3.1.7.3 Seaming Equipment

The approved processes for field seaming are extrusion welding and fusion (hot wedge) welding. The preferred method of seaming is the double-fusion welding. Proposed alternative processes shall be documented and submitted to the Owner or Engineer for approval.

The extrusion welding apparatus shall be equipped with gauges giving the temperature of the apparatus at the nozzle. The fusion-welding apparatus shall be an automated vehicular-mounted device which produces a double seam with an enclosed space. The fusion welding apparatus shall be equipped with gauges giving the applicable temperatures. The Engineer shall verify that:

- Equipment used for seaming is not likely to damage the geomembrane.
- The extrusion welder is purged prior to beginning a seam until all heat-degraded extrudate has been removed from the barrel.
- The electric generator is placed on a smooth base such that no damage occurs to the geomembrane.

The Installer shall carry on-site spare welders and the necessary spare parts for their repair, such that construction delays do not occur.

3.1.8 Field Quality Control

The Installer shall designate a technician that is responsible for supervising and/or conducting the Installer's field quality control program. Testing of the geomembrane seams shall consist of both destructive and non-destructive testing. All seams shall be 100 percent inspected using non-destructive test methods. Non-destructive and destructive testing procedures are outlined below.

In addition to the field seam testing specified herein, the Installer shall water test the top geomembrane installed in the Event Pond sump area with ponded fresh water to a level of 3 m above the top of the sump. No leaks shall be detected by the pond's leak detection system over a 48-hour period prior to acceptance by the Owner. If leaks occur in the installed geomembrane, the Installer shall find and repair the leaks and retest as before.

The Installer shall test the In-Heap Pond upper liner for post-installation damage utilizing spark testing technology per ASTM D 7240 and utilizing electrical resistivity testing per ASTM D 7002 on exposed geomembranes and ASTM D 7007 after water or cover soil placement. If leaks are detected in the installed geomembrane, the Installer shall find and repair the leaks and retest as before.

3.1.8.1 Non-Destructive Testing

Vacuum boxes shall be used to non-destructively test extrusion or single wedge fusion welds over their entire length. Prior to using the vacuum box, the weld to be tested shall be wetted with a soapy solution. The vacuum box shall then be placed over the weld and a vacuum of 35 to 56 kN/m2 (5 to 8 psi) shall be drawn. The entire length of the box shall be observed through the viewing window for the creation of bubbles for a period of at least 15 seconds and shall be tested with a minimum of 75 mm of overlap with the previous section. Any areas that bubbles appear on, shall be identified, repaired and retested.

In areas that cannot be tested with a vacuum box, the seam should be cap-stripped if possible. If the seam can be tested prior to installation, then the Installer shall do so. Seaming and testing in these areas shall be observed by the Engineer.

If the double hot wedge welding system is used, air pressure testing may be conducted instead of vacuum testing. Each continuous length of seam shall be pressurized to 210 kN/m2 (30 psi) and monitored for a

period of 5 minutes. In order to pass, the seam shall stabilize and not lose more than 28 kN/m2 (4 psi) of pressure. The test method shall include a method to verify that the entire length of the air channel is pressurized. If the wedge weld cannot be air tested because of a blockage in the air channel, the welded seam shall be considered a failure. Any failed seams shall be repaired and retested. The repair may include running an extrusion weld along the wedge weld.

3.1.8.2 Destructive Testing

The location of all destructive tests shall be determined by the Engineer. A minimum of one sample per 150 m of seam shall be obtained. The frequency of testing may be increased by the Engineer to suit the field conditions. The Installer shall repair any suspicious looking welds before release of a seam for destructive sampling. Destructive samples shall be cut as the installation progresses and not at the completion of the project. All destructive samples shall be marked with consecutive numbers along with the seam number. A log shall be kept with the date, time, location, seaming technician, apparatus, temperature and pass or fail criteria. All destructive sample holes shall be repaired immediately. The destructive samples shall be a minimum of 0.3 m wide by 1m long with the seam centered lengthwise.

The destructive samples shall be cut into three total samples, two which are 0.3 m by 0.3 m (one each for the Installer and Owner) and one which is 0.3 m by 1.0 m (for the Engineer). Prior to removing a destructive sample, two 25 mm coupons shall be cut off of each end of the designated destructive sample location and tested in the field using a field tensiometer. These coupons shall pass the specified requirements for shear and peel. If a coupon sample fails, the Installer shall go a minimum of 3 m in each direction and obtain additional samples for retesting. These samples shall also be given to the Engineer for testing using a field tensiometer. This procedure shall continue until the coupons on each side of a destructive sample location pass the shear and peel criteria.

Once the sample coupons pass the seam strength requirements, a destructive sample shall be obtained and divided as specified above. No destructive sample need be obtained between failing coupon tests. The destructive samples shall be tested in the field by the Engineer or the testing may be conducted offsite with the consent of the Owner.

For each destructive test, a minimum of five samples in shear and five samples in peel shall be tested according to ASTM D-6392. In order to have passing results, a minimum of four out of five samples shall meet the specified test values. In order for one failed test out of five to be acceptable, the failure shall be ductile, a film tearing bond and shall be within 80 percent of the required specifications.

The seam must exhibit film tear bond (FTB). Welds should have < 25% incursion into the weld. The minimum values in Tables 4-2 and 4-3 must be met.

The Engineer will notify the Installer and Owner of any failing results. Should a destructive sample fail, the Installer shall move 3 m in either direction from the failure and take additional destructive samples. This procedure shall continue until passing results are obtained. The Installer shall repair or cap-strip seams that have failing destructive tests. The Installer shall not cover any seams which have not been tested unless he agrees in writing to uncover any failing seams and make the required repairs.

3.1.9 Repairs

The Installer may repair holes smaller than 6 mm by using an extrusion weld. The surface oxidation surrounding the hole shall be removed a minimum of 125 mm around the hole and then immediately welded. After the hole has been welded, it shall be vacuum tested for leaks. The result of the test, the name of the tester and the date shall be recorded on the geomembrane near the repair.

All destructive sample holes, tears, large holes or areas with blisters or undispersed raw materials shall be patched. Patches shall be round or oval in shape, extend at least 150 mm beyond the defect and made of the same material as the geomembrane. The edge of the patch shall be beveled and welded to the geomembrane according the procedures outlined for extrusion welding. All patches shall be vacuum tested, and the results recorded on the geomembrane.

For areas that have very large defects, the material shall be removed and replaced. All folds or large wrinkles shall also be removed. The Engineer shall determine the areas that require removal. Seams that fail destructive testing or cannot be vacuum tested shall be cap-stripped. Bridging or trampolining of the geomembrane shall also be repaired prior to covering. At no time shall the Installer discard excess geomembrane, packaging materials or other items beneath the geomembrane.

3.1.10 Quality Assurance Acceptance

Quality Assurance testing will be performed by the Engineer in accordance with these Specifications. The Installer shall be responsible for notifying the Engineer when areas of Work are completed and ready for QA testing. Additionally, the Installer shall allow time for the testing to be performed. Every reasonable effort will be made to expedite the necessary testing; nevertheless, delays occasioned by testing will not be considered grounds for extension of time to complete the contract Work.

The Installer shall be responsible for maintaining the geomembrane until final acceptance by the Engineer. The Engineer will recommend final acceptance when all seams have passed destructive testing, the Installer has supplied all documentation and all field and laboratory testing is complete and satisfactory. As part of the final acceptance, the Installer shall furnish reproducible as-built drawings showing the location of the geomembrane panels, seams, repairs, patches and destructive samples. The drawings shall be prepared on 24 by 32-inch size sheets to a scale approved by the Engineer. They shall be submitted in final form to the Owner within two weeks after completion of each phase of construction.

3.2 Nonwoven Geotextile

A 405 gr/sq. m (12 oz/sq. yd) nonwoven geotextile will be used as specified on the Drawings.

3.2.1 Material Requirement

The nonwoven geotextile shall be of new, first-quality (needle-punched) material having polymer of 100 percent polyethylene, 100 percent polypropylene or polyester/polypropylene blend designed and manufactured specifically for the purpose of separation, tensile reinforcement, planar flow and filtration. The geotextile material shall be produced such that it is free of holes, undispersed raw materials, broken needles or any sign of contamination by foreign matter. The geotextile shall be uniform in color, thickness, size and texture and all rolls shall be properly tagged and identified by the Manufacturer.

The non-woven geotextile shall conform to the following minimum average roll values (MARV) unless otherwise specified.

Table 3-3. Minimum average roll values for non-woven geotextile.

Nonwoven Geotextile Property	ASTM Test Method	Value[1]
		405 gr/sq. m (12 oz/sq. yd)
Grab Tensile Strength, N (lb.)	D-4632	1,420 (320)
Grab Elongation, %	D-4632	50
Puncture Strength, N (lb.)	D-4833	930 (210)
Mullen Burst, kPa (psi)	D-3786	4,270 (620)
Trapezoidal Tear Strength, N (lb.)	D-4533	555 (125)
Apparent Opening Size, US Sieve No. (mm)	D-4751	100 (0.150)
Permeability, cm/sec	D-4491	0.29
Water Flow Rate, lpm/m^2 (gpm/ft^2)	D-4491	2,440 (60)
UV Resistance (retained after 500 hours), %	D-4355	70

Note:

1. All values are MARV except apparent opening size; it is the maximum average value per roll and the UV resistance is the minimum value.

3.2.2 Installation

The nonwoven geotextile fabric sheets shall be placed as shown on the Drawings or as directed by the Engineer. All joints shall have a 0.15 m minimum overlap and shall be heat fused or sewn. The integrity of each seam is important. As a means of regulating the fusion machines, frequent samples of seams will be tested for grab strength. Minimum grab strength of 80 percent of the fabric strength, as defined above, will be required. Any machine that produces failing samples shall be repaired or removed from the Work. On slopes steeper than 10H:1V, all seams shall be oriented parallel to the slope direction. Seams constructed perpendicular or transverse to the direction of the slope will not be accepted, unless approved by the Engineer.

Seams shall be sewn using a Type 401 stitch. One or two rows of stitching may be used. Each row of stitching shall consist of four to seven stitches per 25 mm. The minimum seam allowance (minimum distance from the geotextile edge to the stitch line nearest that edge) shall be 38 mm if a Type SSa (prayer or flat) seam is used. The minimum seam allowance for all other seam types shall be 25 mm. The Engineer

shall have final approval of all seams. The Installer shall ensure that no soil materials are present within seams or overlaps.

All seams will be inspected for continuity and the Installer shall repair any gaps or seams that are flawed. Costs for repairing the geotextile shall be borne by the Installer.

Sandbags shall be provided as ballast to hold the various layers of geotextile in place prior to the next operation. If permanently left in place to ensure that wind damage does not occur during the expected exposure life, sufficient ultraviolet-resistant sandbags shall be used.

3.3 Geosynthetic Clay Liner

A geosynthetic clay liner (GCL) will be used in the leach pad liner system instead of the low-permeability clay soil liner for the HLF and ponds, as shown on the Drawings.

3.3.1 Material Requirement

The GCL shall be reinforced consisting of a layer of sodium bentonite between two nonwoven geotextiles, which are needle-punched together (similar to GSE BentoLiner “NWL-60” or equivalent). The geotextile shall conform to the standards in the previous section of these Specifications. The GCL material shall be warranted against Manufacturer’s defects for a period mutually agreed upon in writing prior to award of the contract between the Owner and the Manufacturer. This warranty shall cover the cost of material, shipping and handling, labor and equipment to replace the defective or failed material.

The GCL material shall conform to the following standards and shall be free of tears, holes or other defects that may affect its serviceability.

Table 3-4. GCL material standards.

GCL Property	ASTM Test Method	Required Value
Bentonite Swell Index	D-5890	24 mL/2 g min.
Bentonite Fluid Loss	D-5891	18 mL max.
Bentonite Mass/Area[1]	D-5993	3.6 kg/m^2 min.
GCL Tensile Strength[2]	D-6768	7.8 kN/m MARV
GCL Peel Strength[2]	D-4632 D-6496	93 N min. 610 N/m min.
GCL Hydraulic Conductivity	D-5887	5 x 10^{-9} cm/sec max.
GCL Hydrated Internal Shear Strength[3]	D-5321 D-6243	24 kPa typ.

Notes:

1. At 0 percent moisture content.
2. Testing is performed in the machine direction using 100-mm grips. Results are reported as minimum average roll values (MARV) unless otherwise indicated.
3. Peak values measured at 10 kPa (200 psf) normal stress for a specimen hydrated for 48 hours.

The GCL material shall be sampled and tested in accordance with the Manufacturer's approved QC Manual.

3.3.2 Installation

In general, the GCL material shall be installed in accordance with the procedures provided in the Manufacturer's QC Manual and approved by the Engineer. In particular, the following procedures shall be followed.

The GCL rolls shall be protected from damage during shipping and exposure to the elements until time of deployment. Rolls damaged during shipping, storing and deploying or from climate exposure, in ways that affect the quality of the GCL as an effective seepage barrier, shall be rejected as determined by the Engineer and replaced with acceptable rolls.

The subgrade shall be prepared in accordance with Section 2.3 - Subgrade Preparation of these Technical Specifications prior to GCL installation. The GCL shall be installed in advance of the geomembrane

installation, provided the GCL panels can be covered with seamed geomembrane within each day of deployment. Only those GCL panels that can be covered in the same day shall be unpackaged and installed. If exposed GCL cannot be permanently covered before the end of the work day, it shall be temporarily covered with plastic or other waterproof material to prevent hydration.

The GCL panels shall be placed with seams oriented parallel to the line of maximum slope and shall be free of tension or stress upon completion of the installation. Panels shall be positioned with the seam overlap not less than 250 mm (12 in) for longitudinal seams and 500 mm (24 in) for end-of-panel seams. Dirt or other foreign matter shall be removed from the overlap area immediately prior to seaming. Granular sodium bentonite of the same type as the bentonite used in the GCL shall be placed along the entire seam overlap at minimum widths of 75 mm (3 in) and 250 mm (12 in) from the edge of the underlying panel for longitudinal and end-of-panel seams, respectively. The minimum application rate of the granular sodium bentonite shall be 0.27 lb./ft. End-of-panel overlapped seams shall be constructed such that they are shingled in the direction of the grade to prevent runoff from entering the overlap zone.

Holes or tears in the GCL shall be repaired by placing a patch of GCL extending a minimum of 250 mm (12 in) beyond the edges of the hole or tear on all sides. Granular sodium bentonite or bentonite mastic shall be applied in the overlap area. Patches shall be secured with construction adhesive or other approved methods.

GCL shall not be covered prior to inspection and approval by the Engineer.

End of Section

Eagle Gold Project Phase 1B Heap Leach Facility
Technical Specification – Pipework and Appurtenances

Specification No.: 109005-51100-07-TS-F001

Revision	Date	Status	Prepared By	Approved By
REV A	27 NOV 2019	Internal Review	W. Reinhardt	C. Green
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REV 0	6 JAN 2020	Issued for Construction	W. Reinhardt	C. Green

4. PIPEWORK AND APUURTENANCES

4.1 Corrugated PE Pipe

This section refers to all corrugated polyethylene (PE) pipework to be used in the project including solution collection and drainage pipes. Pipe and fittings shall be made of virgin polyethylene compounds, which shall have a minimum cell classification of 324420C for 75 mm through 250 mm diameters or 335420C for 300 mm through 1,500 mm diameters as defined in ATSM D-3350. Pipe and fittings shall be manufactured and comply with AASHTO Standard Specifications M-252, M-294 and MP-7. All sizes shall conform to the AASHTO classification “Type S” for dual wall smooth interior solid pipe, “Type SP” for dual wall smooth interior perforated pipe, and “type CP” for single wall perforated pipe, or “Type D” for diameters greater than 1,050 mm. Sealed couplers shall conform to ASTM D-3212.

Dual wall pipe shall have minimum pipe stiffness at 5 percent deflection when tested in accordance with ASTM D-2412. Where perforations are specified, they shall conform to the requirements as follows:

- ASTM F-667 for 75 mm diameter pipe
- AASHTO M-252 “Class 2” for 100 mm to 250 mm diameter pipe
- AASHTO M-294 “Class 2” for 300 mm to 1,200 mm diameter pipe
- AASHTO MP-7 “Class 2” for 1,500 mm diameter pipe

Slots shall be cut circumferentially unless specified otherwise.

Couplings shall be corrugated to match the pipe corrugations and shall provide sufficient longitudinal strength to preserve pipe alignment and prevent separation at the joints. Couplings, unless watertight connections are specified, shall be split collar and shall engage at least two full corrugations on each pipe section.

4.2 HDPE Pipe

Materials used for the manufacture of high-density polyethylene (HDPE) pipe and fittings shall not contain any recycled compounds other than those generated in the Manufacturer’s plant from the resin of the same specification and from the same raw material supplier. The material shall be very high molecular weight, high-density ethylene/hexene copolymer polyethylene resin, having a material designation of PE 4710. The material classification shall be Type III, PE 34 and the minimum Cell Classification shall be 345464C as per ASTM D-3350.

Table 3-5. Physical Material Properties for HDPE Pipe (PE 4710)

Property	Unit	Standard	Nominal Value
Material Designation	-	ASTM F412	PE 4710
Cell Classification	-	ASTM D3350	445474 C (black)
Density (Natural)	g/cc	ASTM D1505	0.947
Density (Black)	g/cc	ASTM D1505	0.959
Melt Index	g/10 minutes	ASTM D1238	<0.08
Flexural Modulus	psi	ASTM D790	140,000
Tensile Strength @ Ultimate	psi	ASTM D638	5,000
Tensile Strength @ yield	psi	ASTM D638	>36,000
PENT	hours	ASTM F1473	>500
ESCR	hours	ASTM D1693	>10,000
HDB at 73˚F (23˚C)	psi	ASTM D2837	1,600
Color; UV Stabilizer	% C	ASTM D1603	Black with minimum 2% carbon black with UV Stabilizer
Modulus of Elasticity (long term)	psi	ASTM D638	30,000

Dimensions and workmanship for HDPE pipe shall be as specified by ASTM F-714, D-2513 and D-3035, and pipe diameters shall be as specified on the Drawings. Slots in slotted pipe shall be as specified on the Drawings.

HDPE pipe lengths shall be joined by thermal butt fusion in strict accordance with the pipe Manufacturer's recommendations, unless flanged end pipes are specified on the Drawings. The butt fusion equipment used in the joining procedures shall be capable of meeting all conditions recommended by the pipe Manufacturer. Stub ends and pipe fittings for butt fusion shall be of at least the same wall thickness and pressure rating and the same resin type, grade, and cell classification and Manufacturer as the pipe to be joined, unless otherwise recommended by the Manufacturer. Thermal butt fusion of HDPE pipe shall be carried out by qualified technicians.

Backup rings for flanged joints shall be the convoluted type of ductile iron material (ASTM 536-80 Grade Range from 60/40/18 to 64/45/12), drilled to ANSI bolt circles, and have a pressure rating of 1,030 kPa (150 psi), unless otherwise specified. Backup flanges and bolts shall be as approved or supplied by the pipe Manufacturer.

4.3 Delivery, Handling and Storage

Pipe, fittings, valves and other appurtenances shall be loaded and unloaded by lifting with hoists in such a manner as to avoid damage or hazard. The interior of all pipe and fittings shall be kept free from dirt and foreign material at all times.

The Contractor shall be responsible for all material furnished to him and shall replace or repair, in a manner approved by the Engineer, at the Contractor's expense, all such material damaged in handling after delivery by the Owner. This shall include the furnishing of all materials and labor required for the replacement of installed material discovered damaged prior to the final acceptance of the work. All materials are to be stored on dunnage or other suitable materials to keep the piping material off the ground.

4.4 Installation

The Contractor shall furnish and install the pipework and miscellaneous materials incident thereto, in accordance with the Manufacturer's instructions and recommendations. The pipework shall be installed to the lines and grades and generally in the manner shown on the Drawings. Where specific lines and grades are not indicated on the Drawings, the lines and grades will be specified by the Engineer in the field to suit the existing ground conditions. The pipe shall be installed using equipment and methods described in these Specifications and in accordance with the pipe Manufacturer's recommendations for handling and placement of the pipe and fittings.

The pipework shall be installed in accordance with good piping practices, whether such practices are specifically detailed on the Drawings or not. The general layout as shown on the Drawings shall be maintained. Where interference is encountered during installation or relocation of pipework is deemed necessary, the Engineer shall be consulted and shall approve the revised plan before any changes are made.

All pipework shall be erected to preserve accurate alignment. Care shall be taken during the installation of pipeline runs where drainage is required to ensure that the pipeline has a continuous slope to the point of drainage.

Construction equipment shall not cross over installed pipework unless covered with specified material or protective cover fill approved by the Engineer. If pipework is damaged by the Contractor's method of installation and construction and are deemed not suitable for use in construction, as determined by the Engineer, the damaged pipework shall be replaced by the Contractor at no expense to the Owner.

Prior to installation, each segment of pipe and all fittings shall be inspected for defects and/or damage. Care shall be exercised to prevent foreign matter from entering the pipe while it is being installed. Open ends of the pipe shall be covered by temporary end caps or other approved means when installation is not in progress to prevent foreign matter from entering the pipe.

Pipe bends to form curves either in the horizontal or vertical plane shall not exceed that recommended by the Manufacturer or approved by the Engineer. The cutting of pipe for inserting fittings or closure pieces shall be done in a neat and workmanship like manner without damage to the pipe and so as to leave a smooth end at right angles to the axis of the pipe.

Couplers used to join two sections of corrugated pipe together or to join a pipe section with a fitting (e.g., wye, tee, etc.) shall be of the snap variety for diameters of 250 mm or less and of the split variety for diameters greater than 300 mm. Zip ties used to secure split couplers must be manufactured of the same material as that for the couplers themselves. All unions between pipe sections or specific fittings shall be completed such that the seam in the split coupler (for diameters that require split couplers) shall be rotated to the pipe spring line such that the potential ingress of solids is eliminated.

During actual solution collection pipework installation, methods shall be developed to ensure the corrugated pipe is not damaged during installation or backfilling. Sequencing of corrugated pipe placement on the leach pad shall be done such that vehicle traffic is minimized over the completed areas.

4.5 Joining

4.5.1 Heat Fusion

Pipe and fittings shall be joined by one of the following types of thermal fusion in accordance with the manufacturer's recommended procedures: butt fusion, saddle fusion, or socket fusion. Upon request, the manufacturer shall provide fusion training by authorized personnel or an authorized representative. The Contractor shall be responsible for ensuring that personnel have received proper training in accordance with the manufacturer's recommended procedures. Records of training shall be maintained by the Contractor and evidence of training shall not exceed 12 months from date of construction.

Butt fusions performed between pipe ends or pipe ends, and fittings shall be within the following allowable wall mismatches:

- Two (2) SDR difference for pipe and fitting diameters six (6) inch IPS and smaller
- One (1) SDR difference for above six (6) inch through 18 inches
- No difference for diameters above 18 inches.

The difference in SDR is determined from the following SDR values: 7, 9, 11, 13.5, 17, 21, 26, and 32.5. Contractor is to maintain a fusion map showing who was responsible for all fusion welds for all piping.

4.5.2 Other Methods of Joining

Polyethylene pipe and fittings where heat fusion is not possible may be joined together or to other materials through the use of electrofusion fittings; flange adapters with backup rings; mechanical couplings designed for connecting polyethylene pipe and fittings to itself or to another material; or Mechanical Joint (MJ) adapters. All alternative joining methods and devices shall be approved by the Engineer. The manufacturer of the joining device shall be consulted for proper installation procedures.

4.5.3 Marking

Pipe and tubing shall be permanently marked in accordance with all applicable standards in accordance with this specification. Marking, as follows, shall be continuously (or spaced at intervals not exceeding 5 feet) heat-stamped indent print and shall remain legible under normal handling and installation practices:

1. Name and/or trademark of the pipe manufacturer
2. Nominal pipe size
3. Dimensional Ratio (DR)
4. The letters PE followed by the polyethylene grade per ASTM D3350, followed by the Hydrostatic Design basis in 100's of psi, e.g., PE 4710
5. Manufacturing Standard Reference, e.g., ASTM F714
6. A production code from which the date and place of manufacture can be determined

Fittings shall be marked on the body or hub. Marking shall be in accordance with the applicable standard depending on the fitting type. Marking on the fitting shall include the following whenever possible:

1. Nominal size and Outside Diameter (OD) base (such as 12-inch IPS)
2. Standard material code designation (such as PE 4710)
3. Dimension ratio
4. Pressure class if for pressure service

Mechanical fittings shall be marked with size, body material designation code, pressure rating, and the manufacturer's name or trademark.

4.5.4 Testing

The Contractor shall be responsible for field setup and performance of the fusion equipment and the fusion procedure used by the operator. Upon request, the Contractor shall verify the fusion quality by marking and testing in accordance with the manufacturer's recommended qualification procedure. The Contractor shall be responsible for the necessary adjustments to the setup, equipment, operation, and fusion procedure. Fusions that fail the qualification procedure shall be remade.

At a minimum, in-service testing shall be conducted on all HDPE solid collection piping system and show no signs of leakage.

End of Section

APPENDIX 6
Liner QA Report

Construction Quality Assurance Report
Heap Leach Facility Phase 1B – Geosynthetics Installation
Eagle Gold Mine
Dublin Gulch, Yukon Territory
62°2’N, 135°50’W



PRESENTED TO
Victoria Gold Corp.

OCTOBER 19, 2020
ISSUED FOR USE
FILE: 704-ENG.WARC03235-09

Tetra Tech Canada Inc.
61 Wasson Place
Whitehorse, YT Y1A 0H7 CANADA
Tel 867.668.3068 Fax 867.668.4349

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EXECUTIVE SUMMARY

Tetra Tech Canada Inc. has completed the construction quality assurance program during the installation of the geosynthetic liner system at the Eagle Gold Heap Leach Facility – Phase 1B (HLF – Phase 1B) located at Dublin Gulch, Yukon territory, approximately 85 km north of the Town of Mayo, Yukon Territory, centred at 62° 2'N, 135° 50'W.

The HLF – Phase 1B project included constructing the subgrade, which included sloping of the subgrade, installing a central header drain, and installing lateral drains, and geosynthetic placement of geocomposite liner and 80 mm LLDPE liner.

This report covers the installation of the geosynthetic liner system for Phase 1B.

The purpose of the construction quality assurance program was to verify the Contractor's quality control program and conformance with the plans and specifications prepared for the project and the final preparation of the subgrade.

The completion of the construction quality assurance program demonstrates that the geosynthetic installation completed to date was completed in accordance with the project plans and specifications, and any variances documented and accepted by the proper authorities.

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ACRONYMS & ABBREVIATIONS

Acronyms/Abbreviations	Definition
CQA	Construction Quality Assurance
HLF	Heap Leach Facility
Tetra Tech	Tetra Tech Canada Inc.
QC	Quality Control
LLDPE	Linear Low-Density Polyethylene
GCL	Geosynthetic Clay Liner
JDS	JDS Energy and Mining Inc.
StrataGold	StrataGold Corporation
EPCM	Engineering, Procurement, and Construction Management
NELPCo.	NND-EBA Land Protection Corp., operating as NELPCo Limited Partnership
BGC	BGC Engineering Inc.
Layfield	Layfield Group Ltd.
LDRS	Leak Detection and Recovery System
Specs.	Technical Specifications provided by BGC October 16, 2017
ODF	Over-liner Drainage Fill
GRI	Geosynthetic Research Institute
FM	Field Memorandum
RFI	Request for Information
IFC	Issued for Construction

LIMITATIONS OF REPORT

This report and its contents are intended for the sole use of Victoria Gold Corp. and their agents. Tetra Tech Canada Inc. (Tetra Tech) does not accept any responsibility for the accuracy of any of the data, the analysis, or the recommendations contained or referenced in the report when the report is used or relied upon by any Party other than Victoria Gold Corp., or for any Project other than the proposed development at the subject site. Any such unauthorized use of this report is at the sole risk of the user. Use of this document is subject to the Limitations on the Use of this Document attached in the Appendix or Contractual Terms and Conditions executed by both parties.

1.0 INTRODUCTION

1.1 Project Organization

The StrataGold Corporation (StrataGold), a wholly-owned subsidiary of Victoria Gold Corp. who operates the Eagle Gold Mine (EGM), contracted NND-EBA Land Protection Corp., operating as NELPCo Limited Partnership (NELPCo) to conduct Construction Quality Assurance (CQA) inspections for the Eagle Gold Heap Leach Facility – Phase 1B (Phase 1B) geosynthetic liner installation at the Eagle Gold Mine in Central Yukon, north of Mayo, YT. Tetra Tech is NELPCo's engineering services provider and provided CQA services throughout the project's duration on behalf of NELPCo.

Tetra Tech's Project Manager for the project was Chad Cowan, P.Eng., with Adam Mickey, E.I.T. and James Buyck acting as Tetra Tech's CQA monitors for the entire geosynthetics portion of the project, as well, Mr. Mickey provided inspection services for header and lateral drain installation prior to the commencement of geosynthetic placement. Tetra Tech's CQA monitor was on site on a full-time basis for all geosynthetics installation. They worked closely with the Contractor supervising daily activities such as panel placement, wedge welder and extruder qualifications, liner installation and repair inspection, and all testing completed on the liner materials, both destructive and non-destructive.

Forte Dynamics (Forte), out of Fort Collins Colorado, was retained to provide the design and specifications for Phase 1B and be the Engineer-of-Record (EOR) for the project. Clint Green and Will Reinhart were Forte's representatives for Phase 1B.

JDS Energy and Mining (JDS) were retained to provide project management services for Phase 1B. Clint Abel was JDS's representative on site for the duration of the project.

Layfield Environmental Containment (Layfield) of Edmonton, Alberta were retained to provide the geosynthetics for the liner system, as well as install the geosynthetics and provide QC inspection of deployed liner. The project supervisor was Chad Messervey, and Jason Wheeler was the project manager for the project.

Ewing Transport Ltd (Ewing) was retained as the construction contractor for Phase 1B. Their activities included installing the lateral and header drains, preparing the subgrade for geosynthetics placement, and assisting with liner deployment activities.

1.2 General

Tetra Tech Canada Inc. (Tetra Tech) has prepared this CQA Report that details the CQA program completed during the installation of the geosynthetic liner system for Phase 1B of the Heap Leach Facility (HLF). The liner system was installed above the existing Heap Leach Facility – Phase 1A (Phase 1A).

The geosynthetics CQA program was implemented to ensure that the liner system installed for Phase 1B of the HLF satisfied the design requirements and was installed in accordance with the plans and specifications prepared for the project by Forte Dynamics, as well as any variances that were documented and accepted by the proper authorities.

For this report, the term CQA refers to the activities of Tetra Tech relating to the testing and inspections required to assure the Client that the various elements met the requirements of the project specifications, which is distinct from

quality control (QC). QC refers to the activities of the Contractor in the construction of various elements to meet the requirements of the specification.

1.3 Project Description

1.3.1 Project

The HLF at the Eagle Gold Mine (EGM) is constructed in phases as ore is stacked and leached in the facility, exhausting the installed liner systems' available space. The EGM will utilize three HLF construction phases to bring the HLF to its final size. Prior to Phase 1B, Phase 1A and the In-heap Pond had been constructed and lined with geosynthetics. The In-heap Pond is a double liner system, while all subsequent phases are a single liner system. The single liner system is installed directly on the prepared subgrade and consists of the following layers (starting from the top to the bottom):

- An 80-millimetre (80-mil), textured double-sided low-density polyethylene (LLDPE) geomembrane liner; and
- A geosynthetic clay liner (GCL), which is reinforced with a layer of sodium bentonite.

1.3.2 Project Location

The Eagle Gold Mine is located in Dublin Gulch, approximately 85 km north of Mayo, Yukon Territory, centred at 62°2'N, 135°50'W. The HLF is located in the northeast corner of the mine site across the Eagle Valley from the open-pit mining operations.

1.4 Project Documentation

The following documentation is included in various sections of this report and was collected by on-site personnel during CQA Inspection as well as by Layfield during QC testing:

- Tetra Tech's Weekly Inspection Reports, which include:
  - Daily notes of activities performed, and observations noted;
  - Daily trial seam results;
  - Weekly non-destructive testing results;
  - Weekly destructive testing results; and
  - Photographs.
- Supporting Documentation of Variances from Design;
- Testpit Logs for the Foundation Improvement Plan;
- Compaction Testing Results;
- Layfield's QC Package, which includes:
  - Certificate of Inspection of Soil Subgrade Surface;
  - Geomembrane Deployment Log;

  - Geomembrane Seam and Test Log;
  - Geomembrane Detail and Test Log;
  - Geomembrane Destruct Log;
  - As-built of Liner Panels;
  - Certificate of Final Inspection and Acceptance;
  - Geosynthetic Inventory Log;
  - Geomembrane Mill Certificates;
  - GCL Mill Certificates; and
  - Installation Warranty.
- Tetra Tech's Limitations on the Use of this Document.

2.0 CONSTRUCTION QUALITY ASSURANCE PROGRAM

2.1 Objective

The CQA program's objective was to ensure that the geosynthetic liner system was installed in accordance with the construction specifications.

The CQA program was designed to supplement the QC program implemented by Layfield, and fulfilled two purposes:

- To provide documentation of the specific technical requirements of the CQA program to be followed during the installation of the geosynthetic liner systems; and
- To be a source of information for personnel performing and monitoring construction.

2.2 Construction Quality Assurance Program Components

The following activities were performed as components of the CQA program:

- **Supervision of foundation preparation** performed by Ewing. The supervision activities included monitoring the installation of the header drain and lateral drains in Mr. Abel's absence, compaction testing, and logging soils in the lateral drains as part of Forte's foundation improvement plan. Compaction testing reports are found in Appendix D.
- **Field inspections** were performed by the CQA monitor. These inspections were primarily visual examinations and included measurements of materials and equipment used and techniques employed. The purpose of these inspections was to demonstrate that the specific guideline, specification, or procedure for the activity was successfully completed.
- **Field laboratory seam testing** performed on site by the Contractor and visually inspected by the CQA monitor according to specified procedures. Seam tests were performed on samples of the installed geomembrane

seams to confirm the Contractor's QC testing and ensure that actual seam performance was meeting the project seaming requirements.

- **Receiving inspections** performed by the CQA monitor. These inspections included visual examinations of materials received from the supplier along with their matching manufacturer certificates. The purpose of these inspections was to verify that the materials used met the specifications' requirements and were free from defects.

3.0 HLF GEOSYNTHETIC SYSTEM

3.1 Geosynthetic Liner Profile

The geosynthetics liner system for the Heap Leach Pad Phase 1B is a single liner system, which is installed directly on the prepared subgrade, consisting of the following layers (starting from the top to the bottom):

- An 80-mil double-sided, textured, LLDPE geomembrane; and
- GCL reinforced with a layer of sodium bentonite.

The 80-mil LLDPE double-sided, textured geomembrane was placed directly on the GCL throughout all areas of Phase 1B.

The GCL was placed directly on the prepared and inspected subgrade, which was smooth and free of all protruding rocks, stones, sticks, roots, sharp objects, or debris of any kind. GCL liner was covered the same day, if possible, to limit exposure to moisture.

3.2 Manufacturer's Quality Control Certification

Layfield and SOLMAX provided Manufacturing Quality Control certificates for the GCL and 80-mil LLDPE geomembrane produced and delivered to site. These certificates show the average and minimum values for each roll of material delivered to site.

A summary of the manufacturer's certifications for the GCL, geomembrane, and geocomposite materials used for this project are included in Layfield's QC package shown in Appendix F.

Tetra Tech reviewed the test data contained within the Manufacturer's Certificates for comparison to the product specifications. This comparison demonstrated that the material supplied met or exceeded all the typical project-specific requirements.

3.3 Installation of GCL

The GCL for the project was provided by SOLMAX and was installed directly on all prepared subgrade extending into the anchor trench. The GCL was overlapped at least 0.5 m at all horizontal seams and 0.15 m at all vertical seams. Along every seam, loose sodium bentonite powder was placed to act as a seam sealant. All horizontal seams were fused using a propane torch, and vertical seams were only torched as necessary.

3.4 Installation of 80-mil Linear Low-Density Polyethylene Geomembrane

The 80-mil geomembrane used for Phase 1B was 80-mil LLDPE Layfield Enviroliner manufactured by Layfield. The geomembrane was installed directly on the GCL and extended into the anchor trench to ensure that the liner system would be retained on the slope once the anchor trench was backfilled. The liner was deployed immediately after the placement of the GCL to limit the exposure of the GCL to rain. In instances where GCL was left exposed overnight, or longer, it was thoroughly inspected to ensure it was clear of debris, and no swelling had occurred prior to any placement of 80-mil geomembrane.

The geomembrane overall panel layout and tie-in seams are included in Layfield's QC package shown in Appendix F. This final as-built differs from Forte's design drawings, as discussed in Section 3.8.

During placement, each geomembrane panel was inspected for signs of manufacturing defects or damage that may have been caused by the shipping, handling, or storage of the material. Any damage identified as part of the inspection were marked and removed from the roll prior to installation or repaired once deployed on the slope.

3.5 Trial Seams

Seam quality is one of the most critical aspects of geomembrane installation. The ambient conditions at the time of seaming, setup of the welding equipment, and other variables can all affect the welded seams' quality. Care was taken by the Installer to ensure that the welding equipment was properly set up and producing a conforming seam prior to field seaming operations. The welding equipment was requalified at four-hour intervals, as per Layfield's QC program, and as necessary during the working day, in accordance with specifications. For Phase 1B, Layfield had a set speed and temperature for each type of seam, and no deviations from these specifications were required unless the wedge was not properly set up.

3.6 Seam Wedge (Fusion) Welding

The seaming operations were continuously monitored by the CQA monitor to ensure there were no isolated problems, such as water puddles or dirt under the liner that could affect seam quality over any length of the seam. The geomembrane's temporary leading edges occasionally became dirty due to windblown dust or rain washing debris onto an exposed seam. These edges were scrubbed and wiped clean prior to seaming.

3.6.1 Air Pressure Test

Fusion welded seams were non-destructively tested over their full-length using air pressure testing. The air pressure tests were performed by Layfield and observed by the CQA monitor. An air channel located between the dual tracks of the fusion welded seam was pressurized to a minimum of 276 kN/m^2 (40 lbs/in^2 (pounds per square inch [psi])) for a period of at least five minutes; an air pressure loss of more than 28 kN/m^2 or 4 psi required that the air leak be located, repaired, and retested.

3.6.2 Destructive Test

Samples of the fusion welded seams were destructively tested at regular intervals of a minimum of one per 150 linear metres of seam throughout the installation of the liner to ensure that seam quality did not change throughout seaming operations. In cases where a failed coupon from a destructive test was identified, the total length of failed seam was determined by taking additional destructive tests 3 linear metres before and after the first destructive test and retesting until a passing destructive test result was obtained in both directions of the first failed

destructive test. The length of seam between the passing destructive tests was then replaced, patched, or extrusion welded.

3.7 Extrusion Welding

Each panel and seam were inspected continuously by the CQA monitor during the installation. Any defects found in the LLDPE membrane or in the seams were marked so that the installation crew was aware that a defect was found. Once all repairs were completed by the Installer, the CQA monitor reviewed each panel and seam from the anchor trench to the panel end to ensure all defects were adequately repaired.

Any repairs to the panels or seams were completed by placing an extrusion welded bead over defects smaller than 6 mm or by extrusion welding a patch of LLDPE over any destructive sample holes, tears, holes larger than 6 mm, or areas with blisters. Scratches, scuffs, or creases were generally repaired by placing an extrusion welded bead over the defect area if required.

3.7.1 Vacuum Test

All extrusion welded repairs were non-destructively tested using the vacuum box test method. The vacuum box assembly consists of a rigid housing, a transparent viewing window, and a vacuum gauge. The weld to be tested was wetted with a soapy solution, and the vacuum box assembly was placed over the soapy weld, ensuring a seal over the test area.

A vacuum pressure between 5 psi to 8 psi was induced for at least 15 seconds, and the area within the viewing window was examined for the presence of bubbling, indicating a leak. Suspect areas were marked, repaired, and retested. As with the air pressure tests, the vacuum box tests were performed by Layfield and observed by the CQA monitor.

3.8 Variations from Design

3.8.1 Proposed Panel Layout

Layfield provided a proposed panel layout prior to the commencement of the project. The panel layout was based on plans provided by Forte. The in-field slope conditions did not match Forte's plans, so the as-built panel layout does not match the proposed panel layout. Multiple angle corrections were required as the project progressed to ensure that slope runs of liner were in-line with the slope grade and perpendicular to the anchor trench, and Phase 1A tie in as much as possible.

Forte’s slope plans were based on an idealized slope, whereas the constructed slope followed the valley's natural contours to minimize earthworks and material placement/removal. As such, the final panel layout was a field fit.

3.8.2 Horizontal Cross Seams on Steep Slopes

The original design called for no slopes to be steeper than 2:1 (H:V), and any slope steeper than 2.5:1 (H:V) to have cross seams cut at a 45-degree angle to eliminate horizontal cross seams. Steep slopes were checked prior to liner deployment to ensure they did not exceed 2:1 (H:V).

As the southwest section of Phase 1B had a large area with slopes steeper than 2.5:1 (H:V), Layfield requested a variance to install horizontal rather than 45-degree cross seams. Tetra Tech and Layfield conducted destructive

seam testing at a 45-degree angle to the wedge weld to verify if the strength was significantly different. The test results showed that the seam's strength did not vary significantly if it was pulled at a 45-degree angle vs a horizontal angle. Clint Abel submitted an RFI to authorize the use of horizontal seams on slopes greater than 2.5:1 (H:V) to Forte for consideration on June 3. Forte responded by saying that horizontal cross seams were acceptable so long as cross seams were spaced at least 10 m apart, and no cross seams could be installed within 10 m of the anchor trench or Phase 1A tie in. During installation, one cross seam was installed less than 1 m from an adjacent cross seam. Layfield repaired the out of spec cross seam. The RFI provided by Forte is found in Appendix C.

3.8.3 Acceptable Subgrade Conditions

The specifications provided by Forte stated that the prepared subgrade shall be smooth and free of rocks greater than 50 mm and all protruding rocks, stones, sticks, roots, sharp objects, or debris of any kind. As well, no soft or yielding subgrade conditions would be acceptable.

3.8.3.1 Rocky Subgrade Conditions

At the start of the project, on the steep slopes, an excavator had to be utilized to deploy the GCL and liner down the slope as the slope was too steep to utilize non-tracked equipment. During this process, the prepared subgrade was ripped up, which caused significant amounts of rocks to be lodged between the subgrade and the GCL. The rocks could not be controlled to adequately satisfy the contract specifications even though Layfield was picking rocks prior to and after GCL deployment. Layfield ensured that all rocks greater than 50 mm were removed from beneath the GCL. Tetra Tech requested guidance from Forte on how to proceed. A meeting was called between Forte, Victoria Gold, JDS, Tetra Tech, and Layfield to discuss the problem. At Victoria Gold’s and Forte’s direction, deployment was to continue deployment, and a test strip was performed to verify the liner’s resistance to puncture. Panels P1 through P35 were installed on rocky subgrade conditions, not meeting contract specifications. After this, rocky sections of the slope were covered with sand prior to GCL deployment. A copy of Tetra Tech’s RFI detailing the test strip results can be found in Appendix C.

Even though rocky subgrade sections were covered with sand for the remainder of the project, rocks plucked out of the subgrade by deployment practices continued to be an issue throughout the rest of the deployment. Subgrade that appeared to be acceptable once shaped and compacted had rocks just below the surface that could be removed by vehicle traffic and the side by sides used for deployment. Due to the changing conditions, Tetra Tech performed daily inspections on the prepared subgrade in advance of the day’s deployment. Layfield was constantly removing rocks from beneath the GCL that would be lodged between the GCL and the subgrade. Ewing continually placed sand on areas identified by Tetra Tech as unacceptable subgrade. Forte allowed Layfield to make a small vertical slice in the GCL to remove rocks without requiring a patch, so long as loose bentonite was added below the slice in the GCL and on the surface. The severity of rocks being removed from the subgrade increased as the subgrade surface dried out and lost cohesion.

3.8.3.2 Soft and Yielding Subgrade Conditions

Soft and yielding conditions began to be encountered as the project progressed off the steeper, west side of Phase 1B. These conditions were due to the excessive amount of rainfall experienced throughout the project and caused due to lack of adequate drainage either from flatter spots on the slope or piles of subgrade soil blocking water flow during lateral drain installation and the subgrade soils increasing fines content. The colluvium soils contain varying amounts of silt and clay. Tetra Tech noted that when these soils get saturated, they exhibit a plastic behaviour that causes them to soften even though they are not fully saturated. Tetra Tech performed daily inspections of the subgrade due to conditions changing regularly.

In the area covered by panels P242 through P257 and P270 through P274, heavy rainfall from July 26 to July 29 caused soft subgrade conditions after portions of the slope eroded and deposited the saturated material in the area. Tetra Tech identified extensive soft and yielding areas that required removal. Ewing worked on fixing the soft spots for five days while liner deployment continued, but due to requiring the affected area to deploy on, stopped short to allow the subgrade to be repaired. Even after cutting 300 to 500 mm of affected subgrade soils from the surface, small (< 1m^2) soft spots remained. Tetra Tech sought guidance from Forte for a variance from the specifications to allow deployment to continue due to the soft spots being on a flat area and the LLDPE liner's capabilities. In a phone call discussion with Clint Green on July 31, it was agreed that the small soft spots would not be an issue as they were surficial and not a larger issue with the underlying subgrade soils. See the weekly reports for July 27 to August 2 in Appendix B for details and pictures of the soft spots and repairs.

Beginning at panel P417, pervasive soft and yielding areas were encountered along the slopes, which were associated with the lateral drains. Laterals 4E, 3E, and 2E all had varying amounts of soft and yielding areas along their alignment, with 4E and 3E being the most affected. Tetra Tech and Ewing performed a test excavation to determine a solution to repair the soft areas. At the test area, the subgrade soils had to be excavated approximately 700 mm to reach competent ground. The area was then backfilled with rock fill, compacted, and capped with sand. In a meeting with Forte, JDS, Tetra Tech, and Ewing on August 17, it was agreed that the soft areas would be excavated to competent soils, backfilled with rock fill, compacted, and capped with sand for any area that Tetra Tech or Ewing identified as a soft or yielding area. At soft areas directly over a lateral, the soils would be excavated as deep as possible, then backfilled using the same method. Even after repairs of larger soft area, smaller ones still existed. On August 20, Tetra Tech noted smaller soft spots in the subgrade that began to show up after compaction where repairs had been made. Clint Abel authorized deployment over the areas at the mine’s discretion. See the weekly reports for August 10 to August 23 in Appendix B for details and pictures of the soft spots and repairs.

3.8.4 Anchor Trench

Due to the slope's length and its steepness in areas, the anchor trench was excavated deeper than design specifications to increase the weight of material holding the edge of the liner in the anchor trench. The liner was also extended further into the anchor trench to allow the liner to cycle without pulling it out of the anchor trench. Early on in the project, Layfield had to begin spot filling the anchor trench to retain the liner on the slope as sandbags were not sufficient to retain the liner in the anchor trench. Layfield continued to employ a deeper anchor trench for the remainder of the project.

3.8.5 Exposed GCL

The project specifications stated that GCL could not be left exposed overnight or for long periods of time, and hydrated GCL must not be allowed to hydrate prior to LLDPE liner deployment. Due to the weather experienced, sometimes, GCL was exposed to rain overnight or for multiple days. The GCL used for the project was highly resistant to hydration. Due to wind or timing and to keep the project advancing on schedule, Layfield had to leave GCL exposed overnight. On some of these nights, it would rain, or a multi-day rainstorm would occur. Prior to the liner being deployed over the GCL, Tetra Tech and Layfield would inspect the GCL for hydration and remove any GCL that had hydrated. To check for hydration, a slice would be made in the GCL to determine whether the fibres had broken between the upper and lower geosynthetic. As well, the surface of the GCL was checked for “popcorning” where the bentonite would expand out of the holes in the geosynthetic. Due to the GCL’s resistance to hydration, GCL was rarely removed from the slope after a rainfall event.

3.8.6 Destructive Testing

The project specifications stated that CQA was to conduct independent destructive testing alongside Layfield's QC destructive testing. For Phase 1A and the In-Heap Pond, Tetra Tech had observed Layfield's destructive testing and verified the results, which meant that Tetra Tech did not perform their own set of testing. After the project kickoff meeting with Forte, Tetra Tech confirmed that Forte would accept this destructive testing observation method in lieu of Tetra Tech performing their own testing. Mr. Green agreed that this method was acceptable for Phase 1B. Tetra Tech directly observed all destructive testing performed by Layfield for the duration of the project.

4.0 CONSTRUCTION QUALITY ASSURANCE RECORDS AND TESTS

The following tasks where performed during the installation of the geosynthetic liner system:

- Material Inventory Record;
- Panel Installation Record;
- Trial (or Qualification) Seams;
- Geomembrane Fusion Seam Installation;
- Air Pressure Tests (Wedge Welding);
- Vacuum Test and Repairs (Extrusion Welding);
- Panel Diagrams; and
- Destructive Testing of Geomembrane Seam.

The following provides a brief description of the various CQA testing methodologies. Records of these activities are included in Layfield's QC package shown in Appendix F.

4.1 Material Inventory

An inventory of the 80-mil LLDPE geomembrane liner was completed as the material was placed. This inventory is documented in the material inventory summary data sheets contained in the Installer's QC records.

A panel installation summary datasheet contains further information on the individual panels of geomembrane installed and can be found in Layfield's QC package shown in Appendix F.

4.2 Subgrade Acceptance

Prior to the deployment of the geosynthetics, the subgrade had to be accepted by both Tetra Tech and Layfield. Typically, a large area would be walked off and accepted, with a Certificate of Subgrade Acceptance being drafted by Layfield and signed off by Tetra Tech. Due to the ever-changing subgrade conditions, daily subgrade walk-offs were performed, with a Certificate of Subgrade Acceptance drafted at certain milestones of deployment, which was typically when the liner was signed off to the mine. For the subgrade to be accepted, the subgrade had to meet contract specifications to be accepted by Tetra Tech and meet Layfield's QC standards to be accepted by Layfield. The Certificates of Subgrade Acceptance can be found in Layfield's QC package shown in Appendix F.

4.3 Trial (or Qualifying) Seams

Trial seams using both the hot wedge welder and the extrusion welder were produced using LLDPE geomembrane strips prior to the welding of any seams each day, and every four hours thereafter for each type of seam. The three seam types fused using a wedge welder were: smooth-smooth, textured-textured, and textured-smooth. Seaming of installed geomembrane panels did not commence until passing trial seams were completed.

A minimum of five test coupons was cut from the trial seams for both peel and shear strength and tested by Layfield on site. The CQA monitor was present during trial seam testing to observe that quality seams were being produced. In order to receive a passing result, the trial seam sample was required to meet the criteria laid out in Table 1.

Table 1: LLDPE Seam Strength Properties

Material	Fusion (Wedge Weld) Shear Strength (PPI)	Fusion (Wedge Weld) Peel Strength (PPI)	Extrusion Shear Strength (PPI)	Extrusion Peel Strength (PPI)
80-mil LLDPE	120	100	120	88

In addition to meeting the minimum strength requirements, the test coupons were required to meet an adhesion specification of less than 25% incursion into the weld.

These minimum requirements are based on the project specifications from Forte.

All trial seam results are recorded and detailed in Tetra Tech's Weekly Reports found in Appendix B and Layfield's QC package shown in Appendix F.

4.4 Geomembrane Seaming

The CQA monitor observed and recorded information pertinent to fusion welding (hot wedge seaming) of the 80-mil geomembrane. The details include start times of the seam, the seam's length, ambient temperature, welding equipment identification and operator, and machine settings.

A summary of the seaming completed can be found in Layfield's QC package shown in Appendix B.

4.5 Non-destructive Testing of Geomembrane Seams

4.5.1 Hot Wedge Welding

All hot wedge welded seams were non-destructively tested using the air pressure test method by Layfield, as described in Section 3.6.1. Air pressure testing results can be found in Layfield's QC package shown in Appendix F. Seams that failed air pressure tests were investigated for possible causes and, depending on the cause, repaired and retested or extrusion welded, and vacuum tested. Typically, seams failed non-destructive testing due to a poor air channel block at cross seams.

4.5.2 Extrusion Welding

Extrusion welded repairs were non-destructively tested using the vacuum box test method by Layfield and observed by the CQA monitor. Any weld defects found using the vacuum box test method were marked as VTF (vacuum test failed) at the defect's location and repaired. Vacuum box testing results are documented in the repair logs contained

in Layfield's QC package shown in Appendix F. The panel diagrams contained in Appendix F display the location of each repair.

4.6 Destructive Testing of Geomembrane Seams

Destructive tests were carried out on wedge welded seams at a frequency of one per 150 linear metres (500 linear feet) of seam. Samples were selected by the CQA monitor to give the best representation of seam quality and were tested by the Installer under the observation of the CQA monitor. They were tested to ensure they met or exceeded the minimum peel and shear strength requirements outlined in Table 2. The locations of the destructive samples varied from seam to seam, but most samples were obtained from locations in the seam that would not affect the integrity of the liner system or require any extra patches or extrusion welding. Examples of locations of destructive samples include anchor trenches and seam cut-offs. Results of the destructive testing are presented in Tetra Tech's Weekly Reports in Appendix B and Layfield's QC package shown in Appendix F.

4.7 Final Inspection and Acceptance

Once the liner had been deployed, fused, repaired, and tested, a final walk-off was performed by Tetra Tech and Layfield to inspect for deficiencies such as holes, missing repairs, and missing testing. The walk-off consisted of inspecting the entire liner area, including seams, the tie in to Phase 1A, and the anchor trench. If any deficiency was noted, the deficiency would be remedied immediately. Once all deficiencies had been remedied, Layfield drafted a Certificate of Final Inspection and Acceptance to be signed by the CQA Monitor and Layfield's Supervisor or QC representative. Upon sign off, Tetra Tech provided the Certificate of Final Inspection and Acceptance to Victoria Gold and Forte. The Certificates of Final Inspection and Acceptance can be found in Layfield's QC package shown in Appendix F.

5.0 CLOSURE

We trust this document meets your present requirements. If you have any questions or comments, please contact the undersigned.

Respectfully submitted,
Tetra Tech Canada Inc.

FILE: 704-ENG.WARC03235-09

PROFESSIONAL ENGINEER YUKON TERRITORY CHADWYCK P. COWAN

Prepared by:
Adam Mickey, M.Eng., EIT
Junior Geotechnical Engineer, Arctic Group
Direct Line: 867.668.9242
Adam.Mickey@tetratech.com

Reviewed by:
Chad Cowan, P.Eng.
Geotechnical Manager, Yukon, Arctic Group
Direct Line: 867.668.9214
Chad.Cowan@tetratech.com

/cr

PERMIT TO PRACTICE
TETRA TECH CANADA INC.
SIGNATURE
Date Oct 19/20
PERMIT NUMBER PP003
Association of Professional Engineers of Yukon

APPENDIX A

TETRA TECH'S LIMITATIONS ON THE USE OF THIS DOCUMENT

LIMITATIONS ON USE OF THIS DOCUMENT

GEOTECHNICAL – YUKON GOVERNMENT

1.1 USE OF DOCUMENT AND OWNERSHIP

This document pertains to a specific site, a specific development, and a specific scope of work. The document may include plans, drawings, profiles and other supporting documents that collectively constitute the document (the "Professional Document").

The Professional Document is intended for the use of TETRA TECH's Client, its officers, employees, agents, representatives, successors and assigns (the "Client") as specifically identified in the TETRA TECH Services Agreement or other Contractual Agreement entered into with the Client (either of which is termed the "Contract" herein). TETRA TECH does not accept any responsibility for the accuracy of any of the data, analyses, recommendations or other contents of the Professional Document when it is used or relied upon by any party other than the Client, unless authorized in writing by TETRA TECH. Any changes to the conclusions, opinions, and recommendations presented in TETRA TECH's Professional Document must be authorized by TETRA TECH.

1.2 ALTERNATIVE DOCUMENT FORMAT

Where TETRA TECH submits electronic file and/or hard copy versions of the Professional Document or any drawings or other project-related documents and deliverables (collectively termed TETRA TECH's "Instruments of Professional Service"), only the signed and/or sealed versions shall be considered final. The original signed and/or sealed electronic file and/or hard copy version archived by TETRA TECH shall be deemed to be the original. TETRA TECH will archive a protected digital copy of the original signed and/or sealed version for a period of 10 years.

Electronic files submitted by TETRA TECH have been prepared and submitted using specific software and hardware systems, as per agreed project deliverable formats. TETRA TECH makes no representation about the compatibility of these files with the Client's future software and hardware systems.

1.3 STANDARD OF CARE

Services performed by TETRA TECH for the Professional Document have been conducted in accordance with the Contract, in a manner consistent with the level of skill ordinarily exercised by members of the profession currently practicing under similar conditions in the jurisdiction in which the services are provided. Professional judgment has been applied in developing the conclusions and/or recommendations provided in this Professional Document.

If any error or omission is detected by the Client or an Authorized Party, the error or omission must be brought to the attention of TETRA TECH within a reasonable time.

1.4 DISCLOSURE OF INFORMATION BY CLIENT

The Client acknowledges that it has fully cooperated with TETRA TECH with respect to the provision of all available information on the past, present, and proposed conditions on the site, including historical information respecting the use of the site.

1.5 INFORMATION PROVIDED TO TETRA TECH BY OTHERS

During the performance of the work and the preparation of this Professional Document, TETRA TECH may have relied on information provided by third parties other than the Client.

While TETRA TECH endeavours to verify the accuracy of such information, and subject to the standard of care herein, TETRA TECH accepts no responsibility for the accuracy or the reliability of such information even where inaccurate or unreliable information impacts any recommendations, design or other deliverables and causes the Client or an Authorized Party loss or damage, except where TETRA TECH has subcontracted for such information.

1.6 GENERAL LIMITATIONS OF DOCUMENT

This Professional Document is based solely on the conditions presented and the data available to TETRA TECH at the time the data were collected in the field or gathered from available databases.

The Client, and any Authorized Party, acknowledges that the Professional Document is based on limited data and that the conclusions, opinions, and recommendations contained in the Professional Document are the result of the application of professional judgment to such limited data.

The Professional Document is not applicable to any other sites, nor should it be relied upon for types of development other than those to which it refers. Any variation from the site conditions present, or variation in assumed conditions which might form the basis of design or recommendations as outlined in this report, at or on the development proposed as of the date of the Professional Document requires a supplementary exploration, investigation, and assessment.

TETRA TECH is neither qualified to make, nor is it making, any recommendations with respect to the purchase, sale, investment or development of the property, the decisions on which are the sole responsibility of the Client.

1.7 NOTIFICATION OF AUTHORITIES

In certain instances, the discovery of hazardous substances or conditions and materials may require that regulatory agencies and other persons be informed and the Client agrees that notification to such bodies or persons as required may be done by TETRA TECH in its reasonably exercised discretion.

1.8 ENVIRONMENTAL AND REGULATORY ISSUES

Unless stipulated in the report, TETRA TECH has not been retained to explore, address or consider and has not explored, addressed or considered any environmental or regulatory issues associated with development on the subject site.

1.9 NATURE AND EXACTNESS OF SOIL AND ROCK DESCRIPTIONS

Classification and identification of soils and rocks are based upon commonly accepted systems, methods and standards employed in professional geotechnical practice. This report contains descriptions of the systems and methods used. Where deviations from the system or method prevail, they are specifically mentioned.

Classification and identification of geological units are judgmental in nature as to both type and condition. TETRA TECH does not warrant conditions represented herein as exact, but infers accuracy only to the extent that is common in practice.

Where subsurface conditions encountered during development are different from those described in this report, qualified geotechnical personnel should revisit the site and review recommendations in light of the actual conditions encountered.

1.10 LOGS OF TESTHOLES

The testhole logs are a compilation of conditions and classification of soils and rocks as obtained from field observations and laboratory testing of selected samples. Soil and rock zones have been interpreted. Change from one geological zone to the other, indicated on the logs as a distinct line, can be, in fact, transitional. The extent of transition is interpretive. Any circumstance which requires precise definition of soil or rock zone transition elevations may require further investigation and review.

1.11 STRATIGRAPHIC AND GEOLOGICAL INFORMATION

The stratigraphic and geological information indicated on drawings contained in this report are inferred from logs of test holes and/or soil/rock exposures. Stratigraphy is known only at the locations of the test hole or exposure. Actual geology and stratigraphy between test holes and/or exposures may vary from that shown on these drawings. Natural variations in geological conditions are inherent and are a function of the historical environment. TETRA TECH does not represent the conditions illustrated as exact but recognizes that variations will exist. Where knowledge of more precise locations of geological units is necessary, additional exploration and review may be necessary.

1.12 PROTECTION OF EXPOSED GROUND

Excavation and construction operations expose geological materials to climatic elements (freeze/thaw, wet/dry) and/or mechanical disturbance which can cause severe deterioration. Unless otherwise specifically indicated in this report, the walls and floors of excavations must be protected from the elements, particularly moisture, desiccation, frost action and construction traffic.

1.13 SUPPORT OF ADJACENT GROUND AND STRUCTURES

Unless otherwise specifically advised, support of ground and structures adjacent to the anticipated construction and preservation of adjacent ground and structures from the adverse impact of construction activity is required.

1.14 INFLUENCE OF CONSTRUCTION ACTIVITY

Construction activity can impact structural performance of adjacent buildings and other installations. The influence of all anticipated construction activities should be considered by the contractor, owner, architect and prime engineer in consultation with a geotechnical engineer when the final design and construction techniques, and construction sequence are known.

1.15 OBSERVATIONS DURING CONSTRUCTION

Because of the nature of geological deposits, the judgmental nature of geotechnical engineering, and the potential of adverse circumstances arising from construction activity, observations during site preparation, excavation and construction should be carried out by a geotechnical engineer. These observations may then serve as the basis for confirmation and/or alteration of geotechnical recommendations or design guidelines presented herein.

1.16 DRAINAGE SYSTEMS

Where temporary or permanent drainage systems are installed within or around a structure, the systems which will be installed must protect the structure from loss of ground due to internal erosion and must be designed so as to assure continued satisfactory performance of the drains. Specific design detail of such systems should be developed or reviewed by the geotechnical engineer. Unless otherwise specified, it is a condition of this report that effective temporary and permanent drainage systems are required and that they must be considered in relation to project purpose and function.

1.17 DESIGN PARAMETERS

Bearing capacities for Limit States or Allowable Stress Design, strength/stiffness properties and similar geotechnical design parameters quoted in this report relate to a specific soil or rock type and condition. Construction activity and environmental circumstances can materially change the condition of soil or rock. The elevation at which a soil or rock type occurs is variable. It is a requirement of this report that structural elements be founded in and/or upon geological materials of the type and in the condition used in this report. Sufficient observations should be made by qualified geotechnical personnel during construction to assure that the soil and/or rock conditions considered in this report in fact exist at the site.

1.18 SAMPLES

TETRA TECH will retain all soil and rock samples for 30 days after this report is issued. Further storage or transfer of samples can be made at the Client's expense upon written request, otherwise samples will be discarded.

1.19 APPLICABLE CODES, STANDARDS, GUIDELINES & BEST PRACTICE

This document has been prepared based on the applicable codes, standards, guidelines or best practice as identified in the report. Some mandated codes, standards and guidelines (such as ASTM, AASHTO Bridge Design/Construction Codes, Canadian Highway Bridge Design Code, National/Provincial Building Codes) are routinely updated and corrections made. TETRA TECH cannot predict nor be held liable for any such future changes, amendments, errors or omissions in these documents that may have a bearing on the assessment, design or analyses included in this report.

APPENDIX B

TETRA TECH'S WEEKLY INSPECTION REPORTS

TETRA TECH

WEEKLY FIELD REPORT

ISSUED FOR USE

Project:	Eagle Gold Heap Leach Phase 1B	**Date:**	May 30, 2020
Location:	Eagle Gold Mine	**Contractor:**	Ewing Transport / Layfield
Client:	Victoria Gold Corp.	**Contractor's Rep:**	Marshall Ewing / Chad Messervey
Contact:	Clint Abel	**Contractor's Email:**	
Weather:	Variable (see daily entries)	**Tetra Tech Representative:**	Adam Mickey
File:	704-ENG.WARC03235-09	**Status:**	Issued for Use

1.0 INTRODUCTION

Tetra Tech Canada Inc. (Tetra Tech) was retained by Victoria Gold Corp. (Victoria Gold) to provide CQA services at the Eagle Gold mine located north of Mayo, Yukon, at Dublin Gulch for the Eagle Gold Heap Leach Phase 1B expansion (Phase 1B).

Forte Dynamics (Forte) out of Fort Collins, Colorado provided the design and specification for Phase 1B, and Forte's representative is Clint Green.

Clint Abel of JDS Energy and Mining is Victoria Gold's project manager on site at the Eagle Gold mine.

Ewing Transport (Ewing), based out of Mayo, Yukon, is the construction contractor for Phase 1B.

Layfield Environmental Containment (Layfield) has been retained to provide and install the liner for Phase 1B, and their supervisor on site is Chad Messervey.

The following Field Report outlines Tetra Tech's CQA from May 28, 2020, to May 31, 2020.

2.0 DAILY REPORTS

2.1 May 28, 2020

Tetra Tech's field representative, Adam Mickey, mobilized to site from Whitehorse.

2.2 May 29, 2020

- Weather: sunny and windy.
- Layfield began setting up for liner placement by making sandbags, taking inventory of GCL and liner rolls, and misc other duties. 4,000 sandbags were made.
- Chad brought up safety concerns over liner deployment on the west side of Phase 1B due to the slope of the top access road. Discussions with Layfield and Ewing resulted in determining that Ewing is responsible for the safety of the excavator used for deployment. If it is not deemed safe, a new plan will be made.

Tetra Tech Canada Inc.
61 Wasson Place
Whitehorse, YT Y1A 0H7 CANADA
Tel 867.668.3068 Fax 867.668.4349

- Underhill surveyed the west side of Phase 1B to confirm that no areas were steeper than 2:1 (H:V) at Layfield's request.
- Tetra Tech monitored and provided compaction testing for backfilling of an excavation where unsuitable material was found near the waste dump site.
  - Tetra Tech confirmed that the unsuitable material was excavated beyond the limits of the Phase 1B liner and perimeter road.
  - The excavated surface was uneven, as shown in Figures 1 and 2, as well as soft and wet in places.
  - Tetra Tech advised Ewing to place a 0.5 m lift in the deeper section beneath the liner area and rock along the edge where unsuitable material was left due to being outside the limits of excavation to reduce the impact of melting snow on backfill materials (Figure 3).
  - Moisture conditioning of backfill materials was not penetrating the soil. Tetra Tech advised Ewing to wet the surface of the compacted lift to allow water to be drawn into the lifts from the base. Ewing achieved compaction of 95% with this method.
- Tetra Tech had preliminary discussions with Layfield regarding QA and QC with Layfield's QC representative, Thomas Howald (Red).
- Ewing is continuing to work on E1 lateral and sloping of the west side of Phase 1B for liner placement.

2.3 May 30, 2020

- Weather: sunny and windy.
- Ewing is continuing E1 lateral drain, sloping of west side of Phase 1B, and backfilling of excavation.
- Layfield is making 4,000 more sandbags and prepping for liner placement.
- Tetra Tech discussed QA/QC plans with Layfield and examined the destructive testing apparatus' Calibration Certificate. The apparatus was last calibrated on November 11, 2019, and shows a Total Deviation Error of 0.00%. The calibration certificate is shown in Figure 4.
- Tetra Tech performed a subgrade inspection with Thomas on first 9,000 m^2 of the west slope beginning at the west limit of Phase 1B. See Figures 5 to 8.
  - Overall slope area ready for liner.
  - Ewing is placing sand at the crest of slope along perimeter road where fractured bedrock exposed and no fines to fill in voids. Figures 9 & 10.
  - Identified a yielding area approximately 2 m x 6 m where the subgrade had tension cracks and collapsed up to 300 mm when stepped on. See Figures 11 & 12.
    - After review of Forte specifications and a conversation with Chad, Tetra Tech informed Ewing that the area would have to be filled in and recompacted. Ewing placed sand with an excavator and bucket packed the sand into place. Ewing then compacted the yielding area with a roller compactor performing a minimum of two passes.
    - Ewing completed the repair, and the subsequent inspection showed that the soft spots had been eliminated. See Figure 13.

  - A Certificate of Inspection was signed off by Layfield and Tetra Tech, confirming that the subgrade is ready for liner placement. See Figure 14.

- Ewing filled in limits of excavation with rock fill and compacted it. See Figure 15.
- Layfield prepped for beginning liner placement on May 31, 2020, by digging anchor trench and staging liner materials and sandbags.

2.4 May 31, 2020

- Weather: cloudy turning to rain and windy mid-afternoon.
- Ewing is continuing to shape slopes, backfill excavation, and install E1 lateral drain.
- Layfield beginning liner placement (see Figures 16 to 22):
  - Ewing excavating anchor trench along perimeter road in deployment area. See Figure 16.
  - Tetra Tech noted damage to the approved compacted subgrade due to side by sides running up and down the slope on May 30. Where the side by sides traveled, sharp rocks between 50 to 150 mm were pulled out of slope. Tetra Tech spoke with Javier from Layfield and advised that the large rocks should be removed from slope prior to placement of GCL. Rocks are to be cast onto slope in next subgrade inspection area and Ewing will run a roller compactor along the slope again to prep the subgrade and drive the rocks into the slope.
  - Layfield inspected existing liner from west side to panel P320 where ODF has not been placed to check for damage due to rocks rolling down slope and impacting liner. Tetra Tech accompanied Layfield for the inspection. Defects and holes were found in panels P320 & 322. See Figure 17.
  - Due to slope steepness, Layfield using Ewing's CAT 325 excavator to pull GCL down slope. The excavator rips up the surface of the slope as it tracks up and down.
    - Tetra Tech requested that Layfield ensure that any rocks be removed from the slope face or soil protrusions from the slope face be smoothed out prior to placement of the GCL.
    - Layfield pulls out a roll of GCL then fuses it to the next roll and continues to pull down the slope. The GCL is pulled to the base of the slope to the edge of the key trench of the existing liner. The GCL is placed in the key trench at the top of the perimeter road.
  - After the 3:00 pm break, Layfield quit placing GCL due to rainy weather and high winds.
    - 2 panels of GCL were placed on the slope.
    - Sandbags were placed at leading edges of the GCL to prevent upheaval and movement due to wind.
  - Layfield conducted a trial seam on rough pieces of liner to simulate joint connections. The first trial seam failed due to the nature of the break during the peel test, but a subsequent trial seam passed. Trial seam numbers were not recorded due to not conducting any seaming today. A new trial seam will be conducted prior to liner fusing.

3.0 GEOSYNTHETIC ROLL NUMBERS PLACED

Table 1 summarizes the daily geosynthetic roll numbers placed on the slope during liner installation. All panel lengths are approximate, and where angled joints are used, panel length is based from the center of the panel.

Table 1: Geosynthetic Roll Numbers Placed on Slope

Date	GCL Roll Number	LLDPE Liner Roll Number	Panel Number (Length)
May 31	502347042, 502347028 502343043, 502346988 502347041, 502347034 502347044, 502347037	-	-

4.0 PHOTO LOG



Figure 1: Completed Excavation of Unsuitable Material Facing Northward



Figure 2: Completed Excavation of Unsuitable Material Facing West



Figure 3: Compacting Rock Fill along Edge of Unsuitable Material at Limits of Excavation

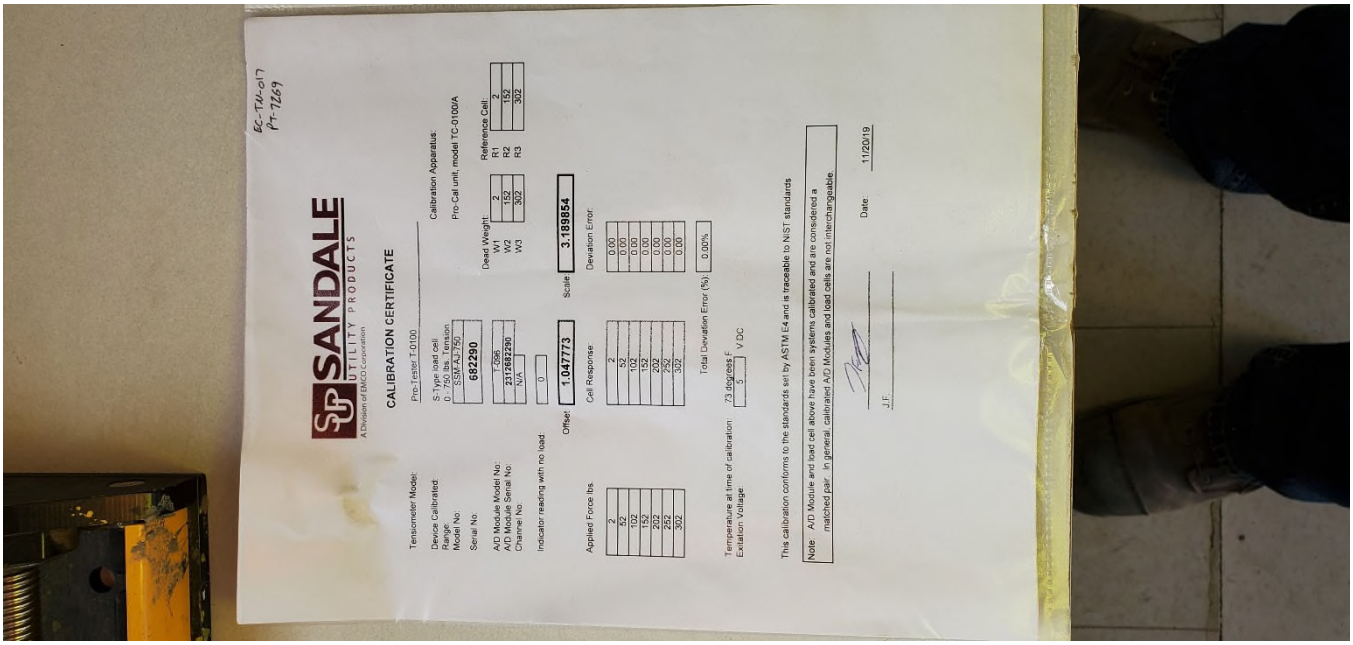


Figure 4: Destructive Testing Apparatus Calibration Certificate



Figure 5: May 30, 2020 CQA Subgrade Inspection, West Side Facing South



Figure 6: May 30, 2020 CQA Subgrade Inspection, West Side Facing Southeast



Figure 7: May 30, 2020 CQA Subgrade Inspection, Looking Up Slope from Base



Figure 8: May 30, 2020 CQA Subgrade Inspection, Rocky Areas on Slope



Figure 9: Sand Placement at Crest of Slope along Perimeter Road



Figure 10: Sand Placement at Crest of Slope along Rocky Areas



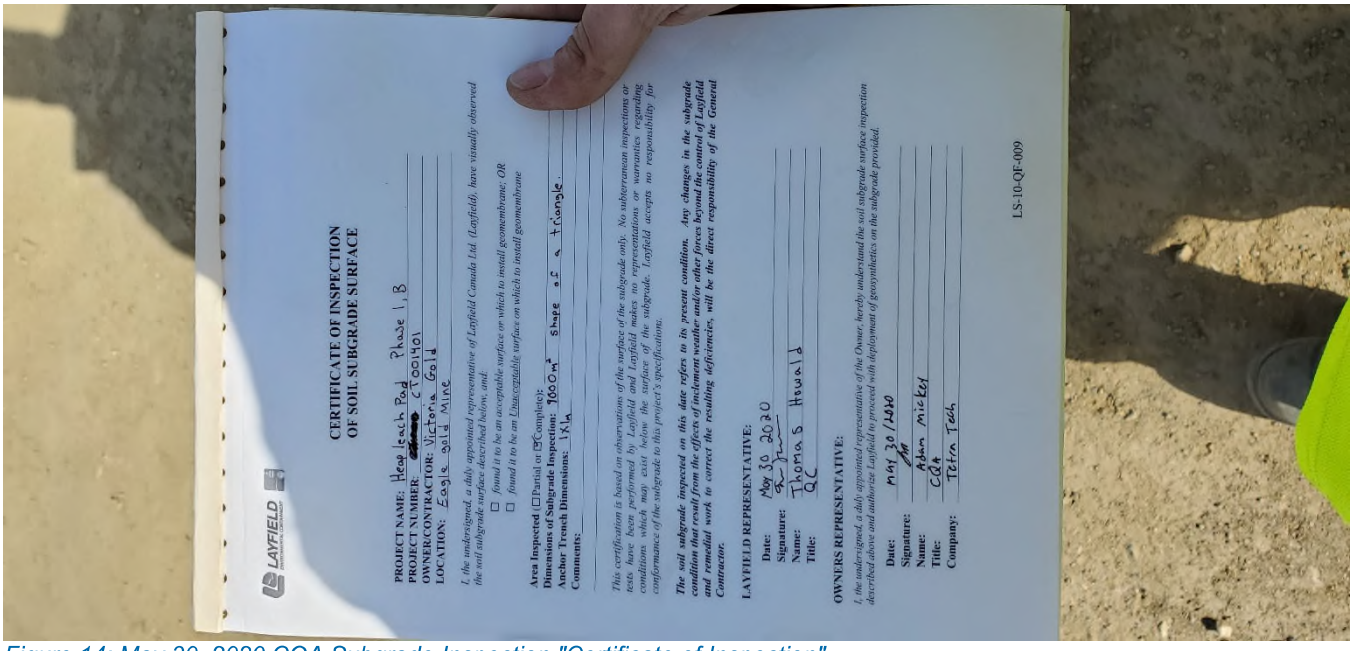
Figure 11: May 30, 2020 CQA Subgrade Inspection, Yielding Areas Marked for Repair



Figure 12: May 30, 2020 CQA Subgrade Inspection, Yielding Areas Marked for Repair



Figure 13: May 30, 2020 CQA Subgrade Inspection, Yielding Areas Repair



CERTIFICATE OF INSPECTION
OF SOIL SUBGRADE SURFACE

LAYFIELD

PROJECT NAME: Heap leach Pad Phase 1B
PROJECT NUMBER: 20001401
OWNER/CONTRACTOR: Victoria Gold
LOCATION: Eagle gold Mine

I, the undersigned, a duly appointed representative of Layfield Canada Ltd. (Layfield), have visually observed the soil subgrade surface described below, and:

☐ *found it to be an acceptable surface on which to install geomembrane; OR*
☐ *found it to be an Unacceptable surface on which to install geomembrane*

Area Inspected (☐Partial or ☑Complete): shape as a triangle
Dimensions of Subgrade Inspection: 1000 m²
Anchor Trench Dimensions: N/A
Comments:

This certification is based on observations of the surface of the subgrade only. No subterranean inspections or tests have been performed by Layfield and Layfield makes no representations or warranties regarding conditions which may exist below the surface of the subgrade. Layfield accepts no responsibility for conformance of the subgrade to this project's specifications.

The soil subgrade inspected on this date refers to its present condition. Any changes in the subgrade condition that result from the effects of inclement weather and/or other forces beyond the control of Layfield and remedial work to correct the resulting deficiencies, will be the direct responsibility of the General Contractor.

LAYFIELD REPRESENTATIVE:
Date: May 30 2020
Signature:
Name: Thomas Heuald
Title: QC

OWNERS REPRESENTATIVE:
I, the undersigned, a duly appointed representative of the Owner, hereby understand the soil subgrade surface inspection described above and authorize Layfield to proceed with deployment of geosynthetics on the subgrade provided.
Date: May 30 / 2020
Signature:
Name: Adam Mickey
Title: CQA
Company: Tetra Tech

LS-10-QF-009

Figure 14: May 30, 2020 CQA Subgrade Inspection "Certificate of Inspection"



Figure 15: Rock Fill Placed along Limits of Excavation



Figure 16: Anchor Trench Excavated



Figure 17: Existing Liner Defects



Figure 18: GCL Deployment



Figure 19: Hole in GCL from Handling



Figure 20: First Panel of GCL Deployed



Figure 21: GCL Panels in Anchor Trench



Figure 22: 2 GCL Panels Deployed on Slope (end of May 31, 2020)

TETRA TECH

WEEKLY FIELD REPORT

ISSUED FOR USE

Project:	Eagle Gold Heap Leach Phase 1B	**Date:**	June 7, 2020
Location:	Eagle Gold Mine	**Contractor:**	Ewing Transport / Layfield
Client:	Victoria Gold Corp.	**Contractor's Rep:**	Marshall Ewing / Chad Messervey
Contact:	Clint Abel	**Contractor's Email:**	
Weather:	Variable (see daily entries)	**Tetra Tech Representative:**	Adam Mickey
File:	704-ENG.WARC03235-09	**Status:**	Issued for USE

1.0 INTRODUCTION

Tetra Tech Canada Inc. (Tetra Tech) was retained by Victoria Gold Corp. (Victoria Gold) to provide CQA services at the Eagle Gold mine located north of Mayo, Yukon, at Dublin Gulch for the Eagle Gold Heap Leach Phase 1B expansion (Phase 1B). Mr. Adam Mickey, EIT, is Tetra Tech's representative on site.

Forte Dynamics (Forte) out of Fort Collins, Colorado provided the design and specification for Phase 1B, and Forte's representative is Clint Green.

Clint Abel, of JDS Energy & Mining, is Victoria Gold's project manager on site at the Eagle Gold mine.

Ewing Transport (Ewing), based out of Mayo, Yukon, is the construction contractor for Phase 1B.

Layfield Environmental Containment (Layfield) has been retained to provide and install the liner for Phase 1B, and their supervisor on site is Chad Messervey.

The following Field Report outlines Tetra Tech's CQA for the period of June 1, 2020, to June 7, 2020.

2.0 DAILY REPORTS

2.1 Highlights

- Panels P1 through P27 placed on slope. Total meters of liner placed are approximately 1,682.6m for a total area placed of approximately 11,273 m^2.
- Hole in GCL identified on May 31 was repaired by replacing hydrated GCL on June 2.
- Rain delayed liner deployment throughout the week.
- Layfield is placing three panels of GCL for every two panels of 80 mm LLDPE liner.
- Ongoing subgrade issues with rocks being plucked from subgrade and lodged between GCL and subgrade during GCL deployment. Forte and Victoria Gold were made aware of the issues.
- Layfield has been diligent about removing rocks from subgrade pre and post GCL deployment.

Tetra Tech Canada Inc.
61 Wasson Place
Whitehorse, YT Y1A 0H7 CANADA
Tel 867.668.3068 Fax 867.668.4349

- All QA/QC testing has met specifications throughout the week, except for the subgrade disturbance during deployment.

2.2 June 1, 2020

Heavy rain overnight and into the morning. No work performed today.

2.3 June 2, 2020

- Weather: partly cloudy with patches of rain in the afternoon.
- Clint Abel back on site and monitoring earthworks.
- Layfield identified areas where the GCL placed on May 31, hydrated due to rainfall on June 1. Layfield is removing hydrated sections and replacing them with new GCL. See Figures 1 & 2.
  - Layfield placed bentonite at seams and fused them together with a propane torch.
  - Removal of GCL at base of slope eliminated hole identified by Tetra Tech on May 31, 2020.
- Layfield placed a third panel of GCL then switched to 80 mm LLDPE.
- Trial seams performed for rough seams at joints and smooth seams along panel edges. Two fails on rough trial seam before getting a passing trial seam. Smooth seam trial passed on first test.
- Panel #'s P1 and P2 deployed, and the joint seamed between the two panels. See Figures 3 to 7.
- Layfield is having to drive spikes through the liner to hold sandbags and liner on the slope.
- P1-P2 panel joint is 40.2 m from anchor trench, and panel P1 is 128 m in length from P1-P2 joint to base of the slope.
- Rain/hail began at approximately 12:30 pm, putting deployment on hold.
- Deployment of panels P3 and P4 began at 1:30 pm.
- P3-P4 panel joint is 72 m from anchor trench, and panel P3 is 88 m in length from P3-P4 joint to base of slope.
- The downslope seam between panels P1, P2, P3, & P4 was fusion welded. Non-destructive testing was not performed due to the requirement for a patch at the P3-P4 joint. The seam was finished being welded at 4:10.
- No further deployment today due to rain in the forecast for tomorrow. Chad determined that Layfield would not be able to get GCL and liner deployed by the end of the day.
- Clint Green provided a plan to identifying areas on the slope for 45-degree cross seams (joints).

2.4 June 3, 2020

- Weather: Cloudy with rain showers in the distance turning to rain showers at site.
- Layfield held off deploying GCL due to large rain cloud in valley. At 10:30 am, Chad notified the crew that GCL deployment would commence at 11:00 am. Rain cloud appears to be dispersing.
- Layfield conducted an extrusion trial seam, which passed, and is patching holes on the existing liner where ODF placement is occurring, including a hole created today from an excavator.
- GCL deployment until 1:00 pm. Two panels were deployed until a rainstorm shut down deployment. Layfield placed sandbags to protect GCL from uplift due to wind. At 2:45 pm, Chad determined that deployment was done for the day due to weather. See Figures 8 & 9.
- Clint Abel submitted an RFI to Clint Green to use horizontal seams (joints) rather than 45-degree seams. Layfield used horizontal seams on previous liner installation.

2.5 June 4, 2020

- Weather: cloudy and raining, turning to partly cloudy with scattered rain showers in the afternoon.
- Deployment delayed in the morning due to weather.
- Layfield mobilized to begin deployment at 8:00 am once rain ceased. See Figures 10 through 20.
  - Layfield checked deployed GCL for hydration. No hydration noted.
  - Layfield deployed LLDPE panel P5 then panel P6.
  - 45-degree angles were cut for the P5-P6 joint, and then Layfield fused the joint. Non-destructive testing could not be performed due to ends of seam. Will be tested once T-joints are extrusion welded.
  - Rocks noted beneath liner by Tetra Tech and were marked for further inspection.
  - Panel P7 was rolled out and had a length of 13.6 m. P7 will be at the base of the slope at tie into Phase 1A liner. Layfield requested authorization for a horizontal seam by Tetra Tech. Tetra Tech authorized a horizontal seam as the slope was less than 2.5:1 (H:V).
  - Panels P7 through P9 was placed on the slope and fused.
  - Layfield switched seam testing apparatus. Calibration sheet shows a Total Deviation Error of 0.00% performed on July 25, 2019. See Figure 17 for the calibration sheet.
  - Layfield and Tetra Tech performed a non-destructive pressure test on the P7-P8 joint. The test passed with a pressure loss of 1 psi. The P7-P8 joint seam is a good seam that will only require a T-weld to finalize.
  - The P8-P9 joint seam could not be tested as the vertical P5 through P9 vertical seam had been fusion welded prior to testing. A T-weld will have to be performed to allow for testing of the joint seam.
  - GCL placement continuing in advance of liner placement.
  - Ewing is tidying up anchor trench and extending further towards the west end of the perimeter road.

- Layfield continued to place GCL till the end of the day and has 3 panels deployed ready for liner placement tomorrow.
- Destructive testing will not occur until Layfield uses extrusion apparatus to make repairs to the liner.

2.6 June 5, 2020

- Weather: partly cloudy turning to mostly cloudy in the afternoon.
- Layfield is placing LLDPE liner overtop of GCL placed on June 4. See Figures 21 to 33 for today's photos.
  - Trial seams being conducted for smooth and textured seams. Trial seam testing passed, and Layfield is authorized to fusion weld the liner as it is placed.
  - Chad checked one of the locations identified with rock beneath the liner and removed four rocks from the location, confirming that other locations will have to be checked. Layfield is checking the slope prior to GCL placement, but dragging the GCL along the slope pulls rocks out of the subgrade.
  - Non-destructive testing of joint seams for panels P10-P11 and P12-P13 joints could not be performed. Testing will be performed once T-welds are completed during extrusion welding.
    - Destructive tests D1, D2, & D3, tested by Layfield in the presence of Tetra Tech's representative. All destructive testing passed. For panels P1 through P9, one more destructive test is required, which will be performed when Layfield begins extrusion welding of repairs. Archive samples have been retained by tetra Tech as per Forte's specifications.
  - Layfield placed panels P10 through P13 on slope. Non-destructive testing of joints will not be performed until T-welds are performed by extrusion, where joints meet vertical seams.
    - P11-P13 seam has a defect 38.8 m from anchor trench. Repair will be required during extrusion welding. Fusion welding was interrupted due to generator falling over. See Figure 29.
  - Layfield is continuing to place GCL in advance of further liner deployment.
    - Four panels of GCL placed.
    - Holes in GCL were present at the beginning of the rolls due to handling. Layfield patched the holes in the presence of Tetra Tech to specifications.
    - Tetra Tech suggested to Layfield to address rocks pulled out of subgrade at the GCL deployment stage because it is easier to repair GCL than the GCL and the liner.
      - Rocks larger than 75 mm were to be either removed from beneath the GCL by pulling it back or cutting a hole in the GCL and repairing. If the rocks could be pounded into the slope, they were not required to be removed.
      - In advance of each GCL panel deployment, Layfield removed rocks from slope. Layfield is bringing armfuls of rocks larger than 75 mm off the slope.
      - Tetra Tech attempted to contact Clint Green regarding the subgrade as discussions with Layfield highlight that angular rocks as small as 50 mm could be problematic. Clint could not be reached by phone, so an email was sent. A phone call between Clint Green and Clint Abel was set up for the morning. Tetra Tech is seeking information regarding the minimum size of rock that must be removed beneath the liner as well as determining a plan for the rest of the 2:1 (H:V) slopes where rock is present.

- After conducting trial seams, panels P14 and P15 of LLDPE liner were deployed and fused.
    - Non-destructive testing of joints will take place after extrusion welding has been completed.

2.7 June 6, 2020

- Weather: partly cloudy with a thundershower at the end of shift.
- Layfield is continuing to deploy GCL and liner. See Figures 34 to 40.
    - Deployed and fused panels P16 through P21.
    - Ewing is digging the anchor trench deeper as the liner has pulled out of the anchor trench 300 mm over time.
    - Layfield extrusion welded liner panels along the anchor trench so that they could place backfill to limit the liner pulling down the slope. Ewing did not backfill the anchor trench completely and placed material between seams as they still require pressure testing.
        - Layfield's extrusion tech exceeded the allowable time for fusing between trial seams by one hour. Tetra Tech spoke with Layfield regarding the issue and reminded them that trial seams must be performed every four hours.
    - Tommy conducted vacuum testing on all extrusion welds. Tetra Tech observed the testing on fusion welds conducted in exceedance of allowable time between trial seams. All vacuum testing passed.
    - At approximately 3:30 pm, the wind picked up a panel of liner being deployed and carried it down the slope. Tetra Tech observed them pull the liner back up the slope with the excavator. A walkover will be required to confirm that no damage occurred to the liner.
- Tetra Tech had a conference call at 9:10 am with Clint Green, Victoria Gold's Mine Manager Mark Ayranto, Clint Abel, and Layfield's Project Manager Jason Wheeler regarding the subgrade issues.
    - Layfield was going to attempt deployment by walking the roll of GCL down the slope with an excavator with a spreader bar to limit the GCL moving on the slope and plucking rocks from the subgrade.
        - This was attempted at 10 am and deemed unsafe, so deployment has to continue as it has.
    - Mark suggested fabricating wheels to the spreader bar and lowering down the slope. This method would slow down deployment and cause a shut down until it was fabricated.
    - It was agreed upon that a test strip should be performed by placing rocks of varying sizes on a competent and flat subgrade, deploying GCL and LLDPE liner overtop, then placing 1 to 2 m of material overtop and running over with a rock truck.
        - Tetra Tech suggested using a loaded 785 rock truck to simulate loading of over 40 m of heap leach material on the liner.
        - Clint Green wanted to conduct the test strip on Monday or Tuesday once Clint Abel was back on site.
        - Tetra Tech asked what should be done for further deployment regarding the subgrade and rocks until the test strip trial was conducted.
            - As there was no clear answer, it was determined that Layfield would decide if it was acceptable to them first if Layfield deemed areas unacceptable, Tetra Tech would make note, and if the test strip

showed that liner puncture was likely, the owner would take responsibility for remedial actions to bring the liner to acceptable limits including remove and replace if necessary.

- After the meeting, Tetra Tech returned to site and spoke with Chad about what was decided in the meeting. Chad said that he could not feel confident about the subgrade and suggested that the test strip should be conducted as soon as possible.
  - Tetra Tech and Chad returned to the office and had a conference call with Clint Green.

    Tetra Tech suggested that a test strip should be conducted under extreme conditions to determine if the liner will puncture. The extreme conditions included using a flat and well-compacted subgrade, having an assortment of different rock sizes in different configurations, and not placing any cover material over the liner.

    Tetra Tech requested information for requirements for patches to GCL, where rocks cut out and removed from subgrade. Clint said if cuts are vertical, they can be patched with bentonite powder beneath the GCL and on top. If cuts are horizontal, then they would require a GCL patch.

- Tetra Tech coordinated and conducted the test strip as agreed upon in the meeting with Clint Green.
  - The liner was run over three times by a loaded 30-ton rock truck as well as the worst rock having a tire on top of it and twisting the liner overtop of it by turning the rock truck back and forth.
  - No punctures in the liner were observed by Tetra Tech or Layfield.
  - Coupon samples were obtained at highly stressed areas and pulled using the seam testing apparatus by Layfield. The coupons all exhibited similar strength characteristics to new liner, and where the rock truck was used to twist the liner overtop of a rock, the coupons maintained strength above the minimum shear values required for a fusion weld.
  - Tetra Tech and Chad from Layfield called Clint Green to inform him of the results. Clint could not give a definitive answer on how to proceed with the subgrade issues without reviewing the information.
    - Tetra Tech submitted an RFI detailing the subgrade issues, the liner puncture test strip, and requested guidance for subgrade acceptance.

2.8 June 7, 2020

- Weather: partly cloudy.
- Layfield is continuing to place GCL and LLDPE liner. See Figures 41 to 49.
  - Tetra Tech has requested that Layfield does thorough walkovers of the GCL once placed to remove any rocks that cannot be pounded into the subgrade.
    - On GCL placed today and immediately before liner deployment, Layfield is walking the slope before and after GCL placement to remove rocks from the subgrade. Rocks beneath the GCL are being cut out with vertical cuts, and bentonite powder is placed beneath and above the cut in the GCL.
    - Numerous rocks are being removed both pre and post GCL placement. Post GCL placement is leading to numerous vertical cuts in the GCL.
    - The slope length is getting shorter, and liner is being deployed with less joints.

        - Layfield deployed and fused panels P22 to P26 of liner today.
        - GCL is protected by liner in advance of potential rain tomorrow.

- Tetra Tech and Layfield QC obtained six destructive testing samples from fused seams and joints on the deployed liner. Testing was performed immediately, and all destructive samples passed. Tetra Tech retained archive samples of all destructive samples. Destructive testing is now caught up for all liner placed to the end of June 6.
- Layfield has raised concerns over the number of rocks on the surface of the remainder of the 2:1 slope. Chad said that they would not place liner on the remainder of the surface without sand being placed to cover the rocks. Once the liner has been laid to the south corner of Phase 1B, Layfield expects that there is approximately 40 m of slope that is acceptable enough to place liner.
    - Even after compaction of the subgrade, there are large amounts of rocks greater than 50 mm on the subgrade surface.
    - A review of the specifications shows that all rocks greater than 50 mm are required to be removed from the slope surface prior to liner placement. The amount of rocks greater than 50 mm is too great to be removed by hand. A surface covering of sand will be the most time effective method to provide and acceptable subgrade.
        - Ewing laid a test strip of 20 mm drain rock used for the drainage trenches and compacted it to show Layfield how the surface would be if used on the slope. Layfield stated that they do not typically accept any angular rocks beneath the GCL. Using the drain rock would be a better surface than the existing subgrade soils. Layfield would require Forte to spec the drain rock as an acceptable subgrade soil for continuing placement.
        - The subgrade that Layfield has been deploying liner on is marginally acceptable based on Forte's specifications. There were small areas that could be deemed unacceptable, but most of the rock beneath the GCL is the result of the excavator used in deployment, disturbing the subgrade, excavation of the anchor trench, and the GCL plucking rocks out of the subgrade.
    - See Figures 50 to 52 for subgrade conditions.

3.0 GEOSYNTHETIC ROLL NUMBERS PLACED

Table 1 summarizes the daily geosynthetic roll numbers placed on the slope during liner installation. All panel lengths are approximate and where 45-degree joints are used; panel length is based from the center of the panel.

Table 1: Geosynthetic Roll Numbers Placed on Slope

Date	GCL Roll Number	LLDPE Liner Roll Number	Panel Number (Length)
June 1	-	-	-
June 2	502346989, 502347001 502347039, 502346951	10694-012 10694-017 10694-007	P1 (128 m) P2 (40.2 m), P3 (88.6 m) P4 (72.1 m)
June 3	502346941, 502346953 502346947, 502347036	-	-
June 4	502344692, 502347040 502344669, 502344694 502346957, 502346986 502344682, 502344498 502347029, 502347032	10694-007 10694-024 10694-008 10694-016	P5 (47 m) P6 (107.4 m), P7 (13.6 m) P8 (128 m) P9 (11.5 m)

Date	GCL Roll Number	LLDPE Liner Roll Number	Panel Number (Length)
	502344691		
June 5	502344498, 502344682 502344691, 502344692 502344694, 502346957 502346986, 502347029 502347032, 502344681 502344495, 502344684 502344678, 502344685 502344497, 502344494 502346987. 502346954 502344686, 502346956 502346940	10694-016 10694-019 10694-033 10694-020	P10 (93.4 m) P11 (29.4 m), P12 (87.6 m) P13 (43.4 m), P14 (69.1 m) P15 (53.7 m)
June 6	502346846, 502344566 502346950, 502346945	10694-020 10694-021 10694-004 10694-023	P16 (52.5 m) P17 (52.4 m), P18 (45.1 m) P19 (58.4 m), P20 (60.6 m) P21 (45 m)
June 7	50344567, 502344616 502344509, 502344564 502344564, 502344572 502344703, 502344585 502344585, 502344705 502344667, 502344559 502344666, 502344509	10694-023 10694-010 10694-031 10694-018	P22 (73.6 m), P25 (3.0 m) P23 (32.0 m), P24 (90.1 m) P26 (86.2 m), P27 (35.3 m) P28 (35.4 m)

4.0 TRIAL SEAM

Table 2 summarizes the weekly trial seam results. For fusion, the apparatus settings are temperature and speed, and for extrusion, the apparatus settings are preheat and barrel temperature. Five tests are performed for each criterion.

Table 2: Trial Seam Results

Date	Time	Fusion or Extrusion	Tech	Apparatus #	Temp or Preheat (°F)	Speed (%) or Barrel Temp (°F)	$Peel_{inside}$ (100 min)	$Peel_{outside}$ (100 min for Fusion 88 min for Extrusion)	Shear (120 min)	Smooth or Textured
Jun 2	10:15	Fusion	EP	WW-054	850	55	159 160 141 165 157	141 153 155 150 159	171 179 171 169 178	Smooth
Jun 2	11:00	Fusion	DT	WW-019	850	45	154 146 155 149 156	110 156 151 157 148	180 177 185 193 182	Textured

Date	Time	Fusion or Extrusion	Tech	Apparatus #	Temp or Preheat (°F)	Speed (%) or Barrel Temp (°F)	$Peel_{inside}$ (100 min)	$Peel_{outside}$ (100 min for Fusion 88 min for Extrusion)	Shear (120 min)	Smooth or Textured
Jun 2	2:00	Fusion	EP	WW-054	850	50	165 155 147 146 154	167 154 143 155 157	175 177 177 174 171	Smooth
Jun 3	9:40	Extrusion	RP	04037	500	495	N/A	122 100 108 100 116	160 165 161 138 170	Textured
Jun 4	9:00	Fusion	DT	WW-019	850	40	148 131 173 149 113	153 172 162 163 109	185 187 196 198 200	Textured
Jun 4	8:45	Fusion	EP	WW-054	850	45	146 159 159 163 151	160 163 154 159 156	184 181 184 178 158	Smooth
Jun 4	12:50	Fusion	DT	WW-019	850	40	157 159 130 157 143	161 160 152 153 142	180 174 179 187 186	Textured
Jun 4	12:45	Fusion	EP	WW-054	850	45	162 164 157 157 160	155 159 150 158 155	169 172 173 174 171	Smooth
Jun 5	7:45	Fusion	DT	WW-019	850	45	140 149 156 141 157	155 148 158 149 155	198 187 196 179 177	Textured
Jun 5	7:50	Fusion	DT	WW-019	850	50	154 164 157 152 156	155 161 164 163 158	173 170 171 169 166	Smooth
Jun 5	7:50	Fusion	EP	WW-054	850	50	157 157 161 158 158	164 162 159 163 161	178 176 177 177 177	Smooth

Date	Time	Fusion or Extrusion	Tech	Apparatus #	Temp or Preheat (°F)	Speed (%) or Barrel Temp (°F)	$Peel_{inside}$ (100 min)	$Peel_{outside}$ (100 min for Fusion 88 min for Extrusion)	Shear (120 min)	Smooth or Textured
Jun 5	4:50	Fusion	EP	WW-054	850	50	146 140 144 148 144	150 153 151 153 150	171 174 179 173 172	Smooth
Jun 5	5:00	Fusion	DT	WW-019	850	45	158 155 156 157 160	157 158 157 153 157	173 171 177 177 176	Textured
Jun 5	5:30	Fusion	DT	WW-019	850	50	115 102 127 116 128	124 129 128 118 128	168 163 170 161 179	Smooth
Jun 6	8:15	Fusion	DT	WW-019	850	40	144 144 156 175 175	145 151 165 173 158	197 192 199 198 195	Textured
Jun 6	8:10	Extrusion	RP	04037	455	490	N/A	113 124 121 112 129	159 160 153 151 153	Textured
Jun 6	8:45	Fusion	EP	WW-022	850	60	120 117 130 132 128	146 145 146 151 151	153 163 168 179 173	Smooth
Jun 6	8:40	Fusion	DT	WW-019	850	50	130 123 131 131 135	141 143 143 142 137	165 166 174 170 167	Smooth
Jun 6	1:15	Fusion	DT	WW-019	850	40	147 142 158 142 139	142 149 161 145 144	182 183 178 178 199	Textured
Jun 6	1:15	Fusion	EP	WW-022	850	40	154 154 155 134 152	161 137 168 147 146	174 184 180 178 174	Textured

Date	Time	Fusion or Extrusion	Tech	Apparatus #	Temp or Preheat (°F)	Speed (%) or Barrel Temp (°F)	$Peel_{inside}$ (100 min)	$Peel_{outside}$ (100 min for Fusion 88 min for Extrusion)	Shear (120 min)	Smooth or Textured
Jun 6	1:10	Fusion	EP	WW-022	850	60	149 144 148 147 145	148 147 148 145 149	167 168 169 174 173	Smooth
Jun 6	1:20	Fusion	DT	WW-019	850	50	149 155 156 154 153	158 154 164 159 153	179 166 170 171 169	Smooth
Jun 7	8:06	Extrusion	RP	04037	500	490	N/A	98 96 96 104 102	162 165 168 168 167	Textured
Jun 7	9:20	Fusion	DT	WW-019	850	450	163 165 153 157 152	144 164 155 145 150	172 175 169 180 175	Textured
Jun 7	9:00	Fusion	EP	WW-022	850	55	149 137 138 139 146	156 149 153 155 158	170 172 173 170 174	Smooth
Jun 7	11:45	Extrusion	RP	04037	500	490	N/A	147 146 148 139 149	165 165 168 169 168	Textured
Jun 7	1:30	Fusion	DT	WW-019	850	50	141 138 142 132 138	156 145 152 154 158	162 164 160 164 170	Smooth
Jun 7	1:35	Fusion	DT	WW-019	850	40	153 161 157 146 148	153 157 143 152 136	180 181 182 177 182	Textured
Jun 7	1:37	Fusion	EP	WW-022	850	55	149 125 147 145 143	149 150 150 152 146	172 173 174 173 166	Smooth

Date	Time	Fusion or Extrusion	Tech	Apparatus #	Temp or Preheat (°F)	Speed (%) or Barrel Temp (°F)	$Peel_{inside}$ (100 min)	$Peel_{outside}$ (100 min for Fusion 88 min for Extrusion)	Shear (120 min)	Smooth or Textured
Jun 7	3:40	Extrusion	RP	04037	500	490	N/A	148 115 162 151 150	152 144 157 133 179	Textured

5.0 NON-DESTRUCTIVE TESTING

Table 3 summarizes the weekly non-destructive testing results.

Table 3: Non-Destructive Testing Results

Date Fused	Time (Fuse/Test)	Seam #	Fusion or Extrusion	Apparatus #	Tech	Pressure or Vacuum	Pass or Fail	Notes
Jun 2	11:31/11:37	P1-P2 Joint	Fusion	WW-19	DT	Pressure	Pass	0 psi pressure loss
Jun 2	2:45/3:10	P3-P4 Joint	Fusion	WW-19	DT	Pressure	Pass	0 psi pressure loss Patches will be required at each vertical liner seam due to holes
Jun 4	12:56/1:38	P7-P8 Joint	Fusion	WW-19	DT	Pressure	Pass	1 psi pressure loss No patches required

6.0 DESTRUCTIVE TESTING

Table 4 summarizes the weekly destructive testing results. Five tests are performed for each criterion.

Table 4: Destructive Testing Results

Date Fused	Time Fused	Tech	Apparatus	Location (UTM is +/- 4 m)	Sample ID	$Peel_{in}$ (100 min)	$Peel_{out}$ (100 min)	Shear (120 min)	Pass or Fail
Jun 2	14:50	EP	WW-054	P1-P3 Seam End of Seam 459,335E 7,101,754N	D1	160 152 159 160 161	157 155 155 153 154	167 158 162 159 162	Pass
Jun 4	10:22	EP	WW-054	P3-P5 Seam End of Seam 459,332E 7,101747N	D2	163 156 156 154 155	161 162 158 163 161	163 165 166 166 163	Pass

Date Fused	Time Fused	Tech	Apparatus	Location (UTM is +/- 4 m)	Sample ID	$Peel_{in}$ (100 min)	$Peel_{out}$ (100 min)	Shear (120 min)	Pass or Fail
Jun 4	13:36	EP	WW-054	P5-P7 Seam End of Seam 459,327E 7,1010,740N	D3	152 152 149 154 146	157 154 154 158 150	156 150 157 161 157	Pass
Jun 5	8:50	EP	WW-054	P8-P10 Seam m from end of seam 459,298E 7,101764N	D4	159 158 166 164 159	167 166 167 165 162	180 179 180 183 180	Pass
Jun 5	9:08	DT	WW-019	P12-P13 Joint 459,251E 7,101,784N	D5	179 165 167 168 171	155 165 163 157 155	186 182 186 198 181	Pass
Jun 5	17:55	EP	WW-054	P12-P14 Seam End of Seam 459,315E 7,101731N	D6	165 159 156 156 162	151 161 154 151 147	167 156 165 168 157	Pass
Jun 6	9:41	EP	WW-022	P14-P16 Seam End of Seam 459,313E 7,101,727N	D7	140 152 144 138 142	160 159 159 159 160	154 164 160 167 158	Pass
Jun 6	14:05	EP	WW-022	P16-P18 Seam End of Seam 459,304E 7,101,719N	D8	151 149 155 158 151	168 155 158 156 157	171 170 164 166 170	Pass
Jun 6	16:55	EP	WW-022	P18-P20 Seam End of Seam 459,300E 7,101,713N	D9	155 153 155 148 149	154 150 158 148 147	173 165 162 163 151	Pass

7.0 PHOTO LOG



Figure 1: Hydrated GCL Removed from Base of Slope at Tie In to Existing Liner



Figure 2: GCL Replaced at Base of Slope



Figure 3: LLDPE Panels P1 & P2 Deployed on Slope looking Up Slope

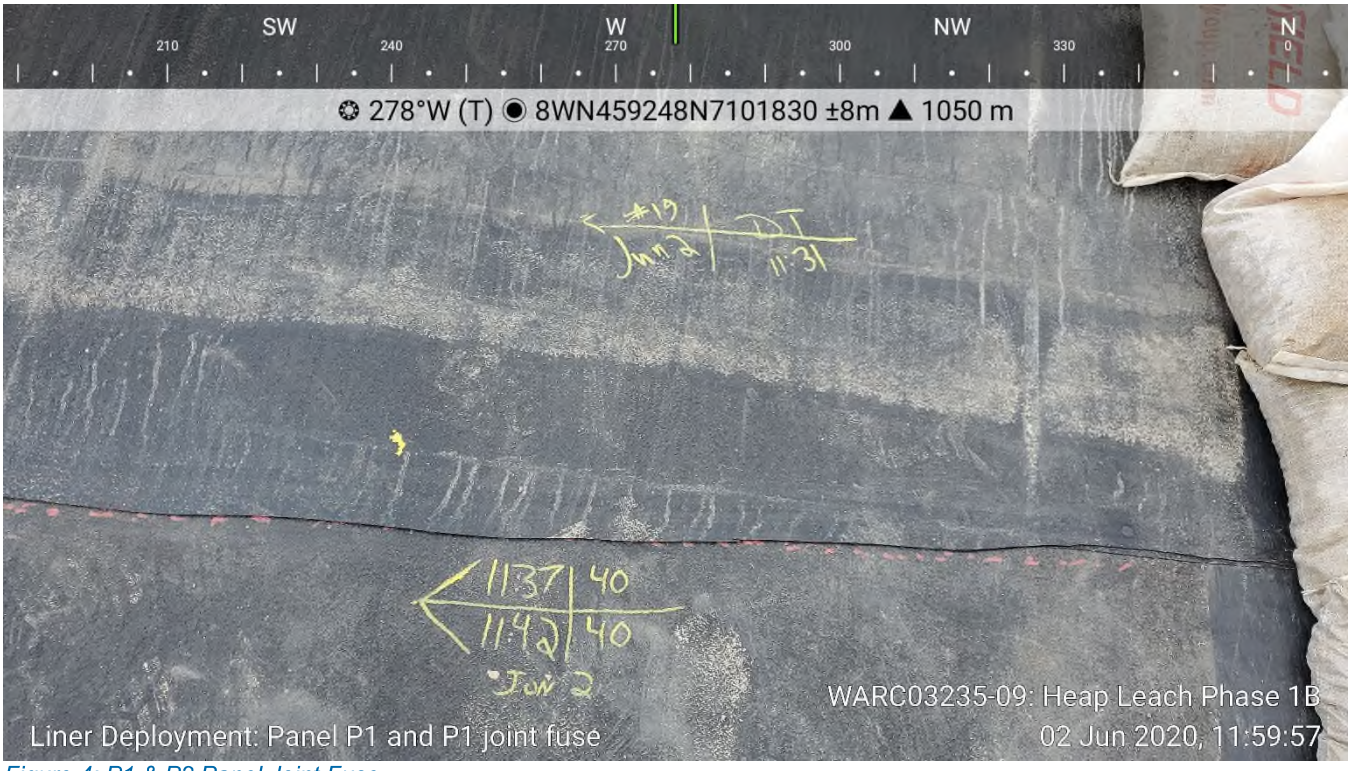


Figure 4: P1 & P2 Panel Joint Fuse



Figure 5: P1 & P2 Panels Deployed on Slope looking Down Slope from Perimeter Road



Figure 6: Panel P2 in Anchor Trench



Figure 7: Fusing of LLDPE Liner Vertical Seam



Figure 8: Panels P1 through P4 Deployed on Slope and Fused



Figure 9: Panels P2 and P4 in Anchor Trench along Perimeter Road



Figure 10: GCL and Panel P5 Deployed



Figure 11: P5-P6 45 Degree Joint Seam Pre-Fusion



Figure 12: P5-P6 45 Degree Joint Seam Post-Fusion



Figure 13: GCL Placed in Anchor Trench prior to Panels P7 to P9 Placement



Figure 14: Placement of Bentonite along GCL Panel Seam



Figure 15: Horizontal Seam for P7-P8 Joint

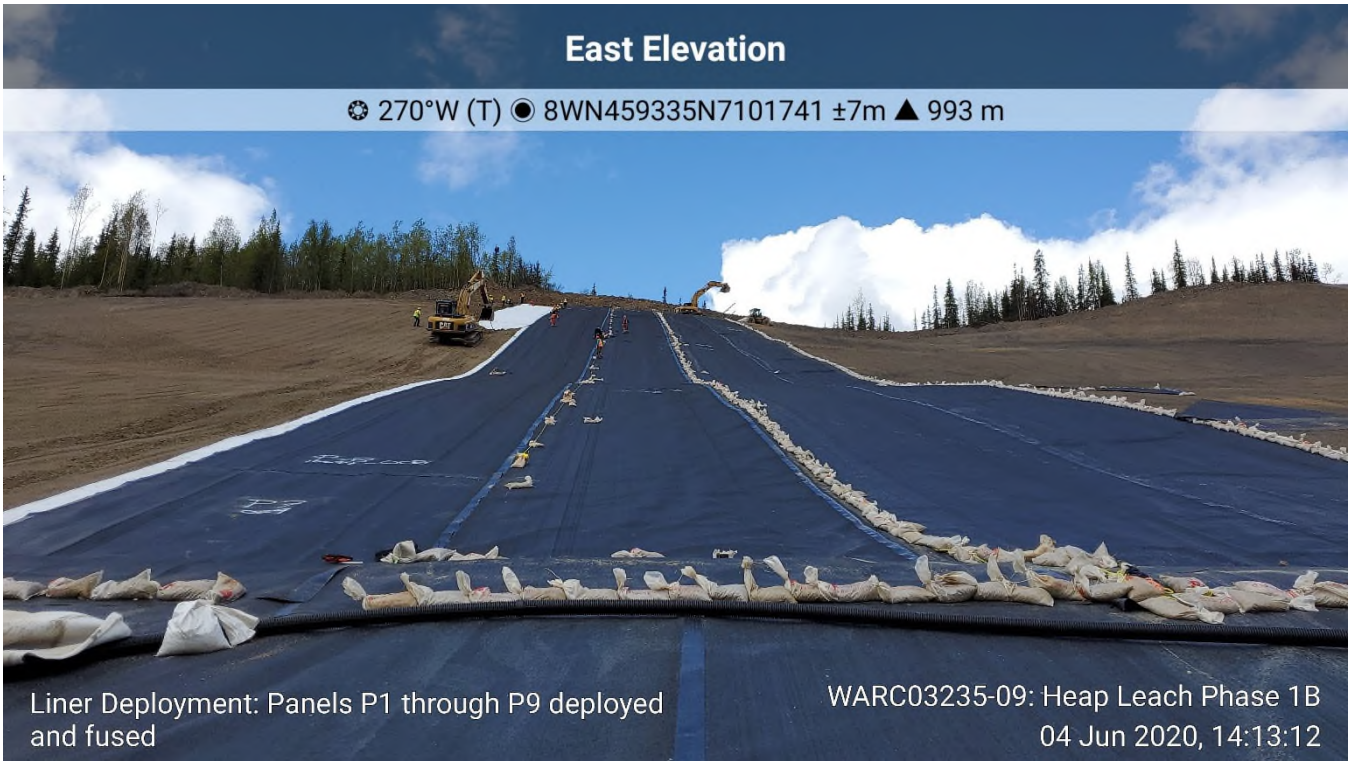


Figure 16: Panels P1 through P9 Deployed and Fused

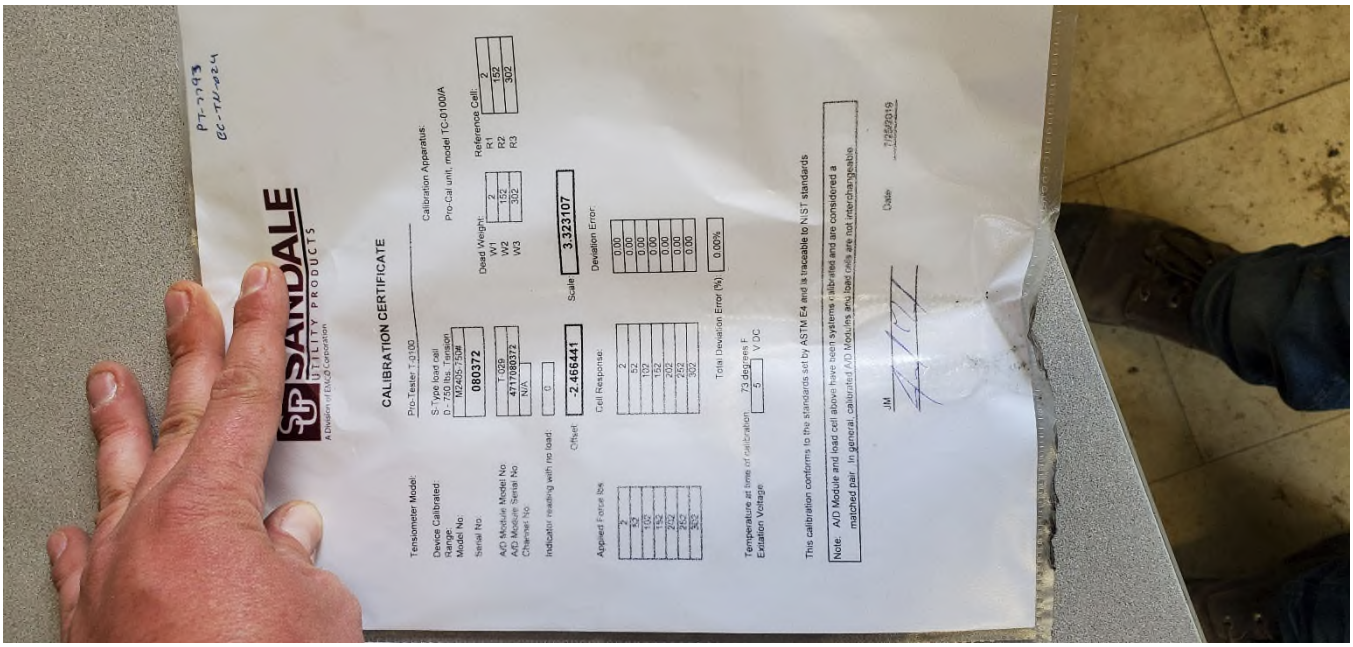


Figure 17: Calibration Certificate for Second Seam Testing Apparatus



Figure 18: Panel P4 and P6 Seam Requiring Extrusion Welding in Anchor Trench



Figure 19: Ongoing GCL Placement



Figure 20: GCL Placed by the End of June 4 in Advance of LLDPE Liner Placement



Figure 21: D1 Destructive Testing Shear Samples



Figure 22: D2 Destructive Testing Peel Samples



Figure 23: Panels P10 through P13 Deployed on Slope



Figure 24: Anchor Trench Excavated in Advance of GCL Deployment



Figure 25: Hole in Liner Cut by Layfield to Remove Rock from Subgrade



Figure 26: Hole Shown in Figure 25 Patched



Figure 27: holes in GCL due to Handling



Figure 28: Holes shown in Figure 27 Patched



Figure 29: P10 to P13 Seam Requiring Extrusion Repair



Figure 30: GCL Deployed on Slope in Advance of LLDPE Liner

:



Figure 31: GCL in Anchor Trench



Figure 32: Panels P12 to P15 Deployed on Slope



Figure 33: 3 Panels of GCL Deployed Ahead of Panel P15 at the End of June 5



Figure 34: Roughness of Subgrade with GCL Deployed



Figure 35: Roughness of Subgrade with GCL Placed



Figure 36: Liner Displaced Down Slope due to Wind



Figure 37: Pulling Displaced Liner Back Up Slope



Figure 38: Extrusion Weld Patch of Anchor Hole



Figure 39: Extrusion Weld Patch of Vertical Seam in Anchor Trench



Figure 40: Panels P17 to P21 Deployed and Fused on Slope



Figure 41: GCL Deployed and Rock Picked

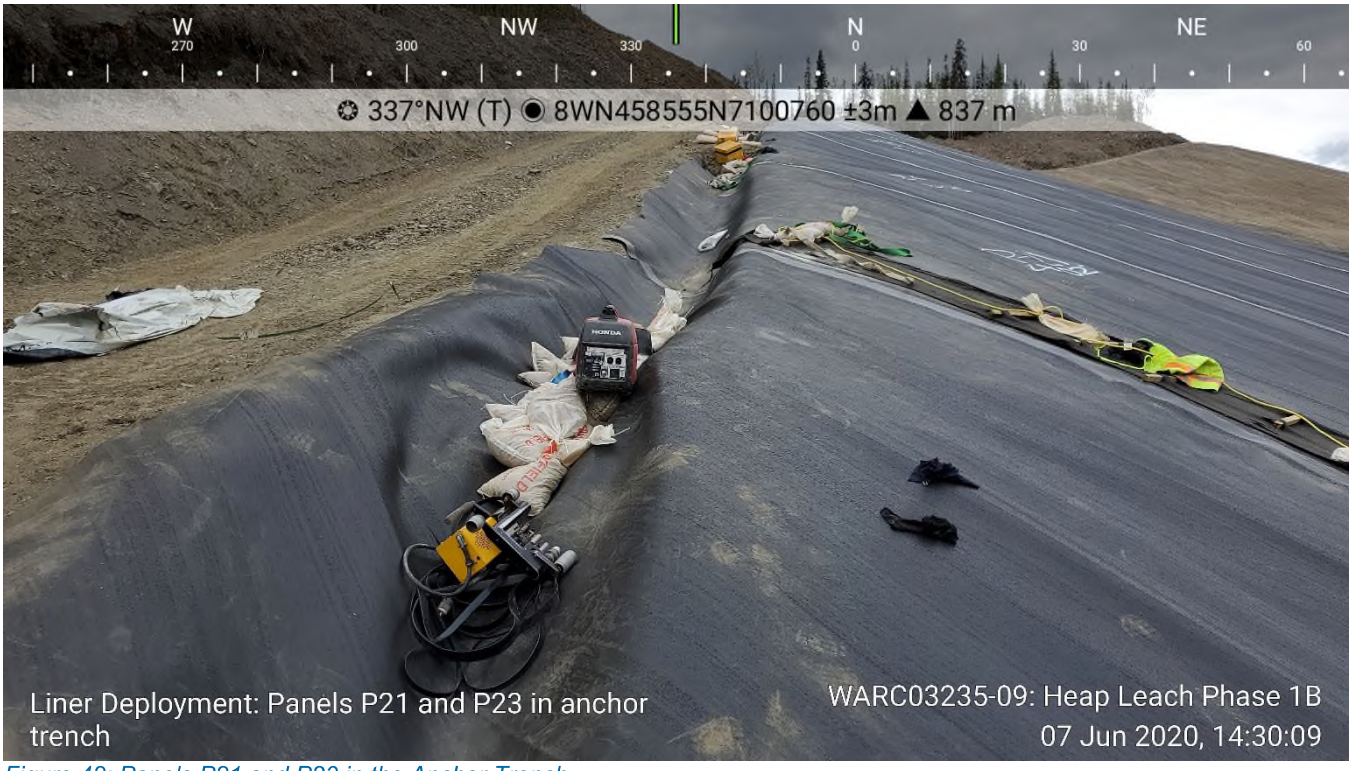


Figure 42: Panels P21 and P23 in the Anchor Trench



Figure 43: Panels P22 to P25 Deployed



Figure 44: GCL Deployed in Advance of Panel P26



Figure 45: Panels P28 to P28 Deployed



Figure 46: Anchor Trench Being Dug to South Corner



Figure 47: Typical Subgrade Conditions Beneath GCL



Figure 48: Rocks Pulled out from Beneath the GCL



Figure 49: Cuts in GCL Required to Remove Rocks



Figure 50: Uncompacted Unacceptable Subgrade



Figure 51: Unacceptable Subgrade after Compaction



Figure 52: Rocks Requiring Removal along Existing Liner Anchor Trench

TETRA TECH

WEEKLY FIELD REPORT

ISSUED FOR USE

Project:	Eagle Gold Heap Leach Phase 1B	**Date:**	June 14, 2020
Location:	Eagle Gold Mine	**Contractor:**	Ewing Transport / Layfield
Client:	Victoria Gold Corp.	**Contractor's Rep:**	Marshall Ewing / Chad Messervey
Contact:	Clint Abel	**Contractor's Email:**	
Weather:	Variable (see daily entries)	**Tetra Tech Representative:**	Adam Mickey
File:	704-ENG.WARC03235-09	**Status:**	Issued for Use

1.0 INTRODUCTION

Tetra Tech Canada Inc. (Tetra Tech) was retained by Victoria Gold Corp. (Victoria Gold) to provide CQA services at the Eagle Gold mine located north of Mayo, Yukon, at Dublin Gulch for the Eagle Gold Heap Leach Phase 1B expansion (Phase 1B). Mr. Adam Mickey, EIT, is Tetra Tech's representative on site.

Forte Dynamics (Forte) out of Fort Collins, Colorado provided the design and specification for Phase 1B, and Forte's representative is Clint Green.

Clint Abel, of JDS Energy & Mining, is Victoria Gold's project manager on site at the Eagle Gold mine.

Ewing Transport (Ewing), based out of Mayo, Yukon, is the construction contractor for Phase 1B.

Layfield Environmental Containment (Layfield) has been retained to provide and install the liner for Phase 1B, and their supervisor on site is Chad Messervey.

The following Field Report outlines Tetra Tech's CQA for the period of June 8, 2020, to June 14, 2020.

2.0 DAILY REPORTS

2.1 Highlights

- Panels P27 through P42 placed on slope. Approximate total length of panels deployed was 590.9 m for a total approximate area of 4,018 m^2.
- Deployment delayed during the week due to lack of prepared subgrade.
- All destructive testing for liner deployed up to June 13 was completed, and all destructive testing passed.
- Non-destructive testing of liner seams was performed for panels P1 through P36. Most seams passed with a few requiring further testing once extrusion welding has been performed to fix air leaks.
- All vacuum box testing was completed on extrusion welding for panels P1 through P36 up to June 13.

Tetra Tech Canada Inc.
61 Wasson Place
Whitehorse, YT Y1A 0H7 CANADA
Tel 867.668.3068 Fax 867.668.4349

- Panels P3 through P36 was tied into Phase 1A by extrusion welding.
- A final walkthrough is still required for panels P1 through P36 once all non-destructive testing has been completed.

2.2 June 8, 2020

- Weather: partly cloudy, turning to rain at 12:30 pm.
- Layfield is continuing to deploy GCL and liner towards the south corner of Phase 1B on the west side. Figure 1 and Figure 2.
  - All trial seams passed. The textured trials seam initially failed, but a subsequent test passed.
  - Layfield is continuing to pick rocks off to slope prior to GCL deployment and cutting rocks out of the GCL as required.
  - Layfield has two extrusion techs patching holes and doing T-welds at all joint seams.
- On June 7, Tetra Tech had a conversation with Clint Abel regarding the subgrade conditions. It was agreed that sand should be placed on the slope in advance of GCL placement as deployment continues northward from where liner deployment started.
  - Layfield does not think compaction of the sand will be necessary.
  - Tetra Tech informed Ewing of the plan to place sand on the slopes. Tetra Tech recommended that large rocks at the base of the slope where it meets the existing liner should be removed and that the subgrade should be compacted prior to sand placement. See Figure 3.
  - Tetra Tech worked with Ewing to determine the minimum thickness of sand required such that the D7 dozer can place sand without ripping up the subgrade.
  - Tetra Tech determined that 100 mm of sand is required on the slope in advance of liner deployment.
- Work shut down at 12:30 pm due to rain for the rest of the day.
- Tetra Tech and Layfield had a phone meeting with Clint Green at 2:00 pm.
  - Discussed the requirements for sand placement on the subgrade, including the area. It was determined that the slope area greater than 2:1 (H:V) would be required to be coated with sand prior to liner deployment and possibly the other slopes depending on how the subgrade looks after compaction.

2.3 June 9, 2020

- Weather: cloudy and raining, turning to partly cloudy in the afternoon.
- Rain and wet conditions delayed deployment and extrusion until 10:00 am.
- Layfield is extrusion seaming the deployed liner to the existing liner as well as continuing with extrusion patches on the deployed liner. See Figures 4 through 8.
- Layfield is placing rest of GCL into south corner and will finish lining the south corner tomorrow. See Figures 9 through 11.
  - Rained heavily overnight. Layfield is checking deployed GCL for hydration. Last 3 m on two panels require removal and replacement. Layfield replaced hydrated GCL.

- Tetra Tech attended the weekly Phase 1B meeting with Layfield, Ewing, Clint Abel, Matt Monk, and Mark Ayranto.
  - Forte to provide an answer on 45-degree cross seams soon.
  - The primary topic discussed was sand bedding on the rocky slopes.
    - Nuway is going to mob to Nuway pit to begin crushing approximately 6000 m^3 of bedding material.
    - It was discussed if the 20 mm drain rock would be acceptable to use as a bedding material as the pit will be out of sand today, and it could be up to three days until Nuway is producing sand. It was agreed to use the 20 mm drain rock on the lower portions of the slope, and Ewing will do their best to blend it with some sand.
    - Clint Abel asked if the gradation of the bedding material could be increased in size. Forte is going to look into a maximum size for bedding material.
    - Tetra Tech raised the question to bedding material thickness to Forte. It was determined that bedding material thickness should be based on performance in the field during GCL placement. Currently 100 mm of bedding material is being placed on the slope, but it could be increased or reduced depending on what happens when GCL is deployed.
    - Ewing will work on prepping another area for liner deployment to allow time for bedding material production and placement.
      - Tetra Tech requested an area get packed to view the potential subgrade conditions that will be on other areas of Phase 1B. If the subgrade conditions are not conducive to deploying liner, sand will be required on a larger area of the slope, or the entire of Phase 1B.
- Clint Abel found a sand source that has been mixed with large rocks. There is approximately 500 m^3 of sand, and Nuway is mobbing in a power screener to screen the rest.

2.4 June 10, 2020

- Weather: partly cloudy.
- Layfield is deploying liner into the south corner on the west side of Phase 1B. See Figures 12 to 14.
  - All fusion welding completed.
  - Panel P36 is the last panel at the south corner of the west side of Phase 1B.
- Layfield is continuing to patch, and extrusion weld holes on the liner and do T-welds at all fusion seaming intersections.
- Ewing continued to haul sand for slope bedding throughout the night. See Figures 15 and 16.
- Four destruct samples were obtained. All destructive testing is up to date for liner placed to June 10, and all samples passed. Layfield is patching all destruct samples immediately.
- Ewing backfilled the anchor trench completely up to June 10's deployment and spot filled the anchor trench for today's deployment. See Figure 17.

2.5 June 11, 2020

- Weather: partly cloudy, turning to rain at 1:30 pm.

- Ewing is continuing to place bedding sand on the slopes.
- Tetra Tech and Layfield's QC conducted pressure testing of seams. Three seams require more extrusion welding due to pressure loss; all pressure testing was not completed due to weather.
- Layfield conducted vacuum box testing. Tetra Tech confirmed that vacuum box testing was being conducted according to specifications and checked any extrusion welding areas for confirmation of passes while conducting pressure testing. Three areas failed and required repair; Layfield completed the repairs immediately.
- Layfield extrusion welded the remaining tie in of Phase 1B to Phase 1A. Layfield also fixed some extrusion areas that failed vacuum box testing.
  - Further extrusion welding is required to address areas where pressure testing failed.
- A hole was identified on Panel P8. Layfield was notified to repair it.
- Due to rain, work was halted at 1:30 pm for the rest of the day.
- Forte provided a response to the RFI regarding horizontal seams authorizing them as long as certain conditions were met. Layfield has been made aware of the conditions.

2.6 June 12, 2020

- Layfield did not work today due to not having an area to deploy liner onto.
- Ewing continued to place bedding sand on slope.
- Tetra Tech and Layfield's QC finished pressure testing of the fusion welded seams.
  - Four seams require repair to complete all pressure testing.

2.7 June 13, 2020

- No work today as bedding sand subgrade is not ready for liner placement. See Figure 19.

2.8 June 14, 2020

- Weather: partly cloudy to sunny.
- Ewing is continuing to place bedding sand on the rocky slopes in advance of liner deployment.
  - Tetra Tech noted depressions along the anchor trench of Phase 1A filled with water. Tetra Tech advised Ewing to fill them in with sand prior to GCL deployment.
- Tetra Tech and Layfield's QC approved subgrade for two panels of liner deployment. See Figures 20 and 21.
  - Due to rocks in the bedding sand, Ewing must remove rocks in advance of liner deployment. For now, subgrade will be approved on a daily basis.
  - Rocks greater than 50 mm are to be removed from subgrade bedding sand in advance of liner deployment.
  - Once a screener is on site, rocks will be screened from the bedding sand.
  - Bedding sand is being placed approximately 100 mm thick and track packed by the dozer as it is placed.
- Ewing excavated anchor trench in advance of liner deployment. See Figures 22 and 23.

  - Anchor trench is being excavated deeper than specifications to mitigate liner movement down slope due to expansion and contraction.

- Survey notified Tetra Tech that patches on the liner will be picked up during survey of the seams.
- Layfield is deploying GCL and liner moving northward from where the liner installation began on May 31. See Figures 24 to 28.
  - For the first deployment of GCL, the bedding sand was checked after each roll was deployed.
    - Bedding sand is not being stripped from the slope by GCL deployment.
    - Layfield is removing any rocks picked from the edge of the anchor trench after each deployment.
    - Tetra Tech checked high spots in GCL to identify rocks.
      - Rocks identified were generally flat and were easily pushed into the bedding sand on the slope by stepping on them.
  - Bedding sand placed on slope is proving to be a suitable subgrade for liner deployment as long as rocks are removed prior to GCL deployment.
  - Layfield placed three panels of GCL and two rows of liner panels, which was fused by the end of the day.

3.0 GEOSYNTHETIC ROLL NUMBERS PLACED

Table 1 summarizes the daily geosynthetic roll numbers placed on the slope during liner installation. All panel lengths are approximate and where 45-degree joints are used; panel length is based from the center of the panel.

Table 1: Geosynthetic Roll Numbers Placed on Slope

Date	GCL Roll Number	LLDPE Liner Roll Number	Panel Number (Length)
June 8	502344539, 502344003 502344506, 502344508 502344565	10694-031 10694-018	P27 (31.6 m) P28 (38.7 m)
June 9	502344500, 502344003 502344499, 502344505	-	-
June 10		10694-018 10694-028 10694-009	P29 (56.8 m), P34 (15.7 m), P35 (6.6 m), P36 (6.6 m) P30 (47.6 m), P31 (37.3 m), P33 (17.6 m) P32 (13.4 m)
June 11	-	-	-
June 12	-	-	-
June 13	-	-	-
June 14	502344504, 502344489 502344718, 502344715 502344615, 502344661 502344714, 502344503 502346952, 502344697 502344008, 502344670 502344717	10694-009 10694-027 10694-000 10694-001	P37 (73.3 m), P39 (21.6 m) **Note** P39 is a wedge P38 (98.8 m), P40 (25.1 m) P41 (77.6 m) P42 (22.6 m)

4.0 TRIAL SEAM

Table 2 summarizes the weekly trial seam results. For fusion, the apparatus settings are temperature and speed, and for extrusion, the apparatus settings are preheat and barrel temperature. Five tests are performed for each criterion.

Table 2: Trial Seam Results

Date	Time	Fusion or Extrusion	Tech	Apparatus #	Temp or Preheat (°F)	Speed (%) or Barrel Temp (°F)	$Peel_{inside}$ (100 min)	$Peel_{outside}$ (100 min for Fusion 88 min for Extrusion)	Shear (120 min)	Smooth or Textured
Jun 8	8:00	Fusion	EP	WW-022	850	55	155 163 157 159 154	138 137 140 143 132	177 178 180 185 178	Smooth
Jun 8	8:30	Fusion	DT	WW-019	850	40	156 153 154 155 158	164 164 172 175 163	181 178 176 187 193	Textured
Jun 8	7:45	Extrusion	RP	04037	500	495	N/A	113 112 111 123 117	169 172 167 167 169	Textured
Jun 8	8:25	Extrusion	RGP	PX-11	515	500	N/A	102 101 111 113 105	167 163 169 167 179	Textured
Jun 8	11:40	Extrusion	EA	04037	500	495	N/A	140 150 149 148 146	172 165 173 166 158	Textured
Jun 8	1:15	Fusion	DT	WW-019	850	40	144 167 146 144 139	146 164 159 128 138	192 185 183 183 185	Textured
Jun 8	1:05	Fusion	EP	WW-022	850	55	160 149 146 141 148	127 145 150 149 152	179 173 177 174 176	Smooth

Date	Time	Fusion or Extrusion	Tech	Apparatus #	Temp or Preheat (°F)	Speed (%) or Barrel Temp (°F)	$Peel_{inside}$ (100 min)	$Peel_{outside}$ (100 min for Fusion 88 min for Extrusion)	Shear (120 min)	Smooth or Textured
Jun 8	1:00	Extrusion	RGP	PX-11	500	515	N/A	138 151 145 144 117	189 189 188 187 182	Textured
Jun 9	8:00	Extrusion	EA	04037	500	495	N/A	92 115 100 107 115	160 149 162 162 165	Textured
Jun 9	7:45	Extrusion	RGP	PX-11	500	515	N/A	124 147 144 140 145	164 162 163 159 167	Smooth
Jun 9	8:15	Fusion	DT	WW-019	850	40	146 156 156 161 153	155 153 162 161 158	191 167 180 196 192	Textured
Jun 9	8:15	Fusion	DT	WW-019	850	50	142 141 143 157 145	158 152 163 154 154	170 168 174 176 177	Smooth
Jun 9	10:30	Extrusion	EA	04037	505	495	N/A	109 104 109 109 106	166 158 158 158 153	Textured
Jun 9	10:30	Extrusion	RGP	PX-11	500	515	N/A	99 99 95 91 95	163 170 163 163 163	Textured
Jun 10	7:30	Fusion	EP	WW-022	850	55	150 160 155 155 146	141 132 144 133 155	177 170 179 174 178	Smooth
Jun 10	8:15	Fusion	DT	WW-026	850	38	144 149 146 120 166	156 152 151 152 176	182 161 176 185 188	Textured

Date	Time	Fusion or Extrusion	Tech	Apparatus #	Temp or Preheat (°F)	Speed (%) or Barrel Temp (°F)	$Peel_{inside}$ (100 min)	$Peel_{outside}$ (100 min for Fusion 88 min for Extrusion)	Shear (120 min)	Smooth or Textured
Jun 10	8:05	Fusion	DT	WW-026	850	50	147 146 145 148 150	150 148 150 141 151	177 171 180 177 166	Smooth
Jun 10	9:15	Extrusion	RP	04037	500	490	N/A	103 104 108 111 109	157 174 175 159 166	Textured
Jun 10	9:10	Extrusion	EA	04037	500	490	N/A	122 111 104 104 109	169 162 167 166 159	Textured
Jun 10	11:25	Fusion	EP	WW-022	850	55	151 133 141 143 141	141 140 137 137 177	157 152 160 159 158	Smooth
Jun 11	9:10	Extrusion	EA	04037	500	490	N/A	149 128 119 126 149	172 183 175 189 175	Textured
Jun 11	9:10	Extrusion	RP	04037	500	490	N/A	109 109 119 105 103	172 177 178 172 177	Textured
Jun 14	12:30	Fusion	DT	WW-026	850	50	156 147 148 149 151	151 152 152 149 150	159 156 162 161 161	Smooth
Jun 14	12:30	Fusion	DT	WW-026	850	38	158 157 149 141 149	160 147 152 164 155	190 178 187 182 194	Textured
Jun 14	12:30	Fusion	EP	WW-022	850	50	156 146 159 150 149	139 134 135 127 143	164 158 171 168 166	Smooth/ Texture

Date	Time	Fusion or Extrusion	Tech	Apparatus #	Temp or Preheat (°F)	Speed (%) or Barrel Temp (°F)	$Peel_{inside}$ (100 min)	$Peel_{outside}$ (100 min for Fusion 88 min for Extrusion)	Shear (120 min)	Smooth or Textured
Jun 14	12:30	Fusion	EP	WW-022	850	55	144 145 148 145 146	150 147 145 144 138	164 161 167 164 160	Smooth
Jun 14	4:00	Fusion	EP	WW-022	850	55	137 138 143 138 135	135 135 140 133 139	159 151 157 136 143	Smooth
Jun 14	4:05	Fusion	EP	WW-022	850	40	146 142 145 140 137	142 144 149 131 141	166 172 177 167 173	Textured
Jun 14	4:35	Fusion	DT	WW-026	850	38	130 150 146 138 169	152 161 160 154 163	173 170 172 175 176	Textured
Jun 14	4:39	Fusion	DT	WW-026	850	53	128 141 139 135 142	143 145 147 147 143	154 152 156 152 154	Smooth

5.0 NON-DESTRUCTIVE TESTING

Table 3 summarizes the weekly non-destructive pressure testing results.

Table 3: Non-Destructive Testing Results

Date Fused	Date Tested	Time Tested	Seam #	App #	Tech	psi Start	psi End	Pass or Fail	Notes
Jun 2	Jun 11	9:25	P2-P4 Vertical	WW-054	EP	40	30	Fail	Extrusion T-weld at joint requires more extrusion
Jun 4	Jun 11	9:38	P4-P6 Vertical	WW-054	EP	40	40	Pass	
Jun 4	Jun 11	9:41	P6-P9 Vertical	WW-054	EP	40	39	Pass	
Jun 5	Jun 11	9:29	P9-P11 Vertical	WW-054	EP	40	40	Pass	
Jun 5	Jun 11	9:30	P11-P13 Vertical	WW-019	DT	40	33	Fail	Extrusion T-weld at joint requires more extrusion
Jun 5	Jun 11	9:34	P13-P15 Vertical	WW-054	EP	40	39	Pass	
Jun 6	Jun 11	9:34	P15-P17 Vertical	WW-022	EP	40	40	Pass	
Jun 6	Jun 11	9:35	P17-P19 Vertical	WW-022	EP	40	39	Pass	
Jun 6	Jun 11	9:36	P19-P21 Vertical	WW-022	EP	40	40	Pass	

Date Fused	Date Tested	Time Tested	Seam #	App #	Tech	psi Start	psi End	Pass or Fail	Notes
Jun 7	Jun 11	9:36	P21-P23 Vertical	WW-022	EP	40	40	Pass	
Jun 6	Jun 11	10:23	P22-P23 Cross	WW-019	DT	40	40	Pass	
Jun 7	Jun 11	10:12	P21-P22 Vertical	WW-022	EP	40	40	Pass	
Jun 6	Jun 11	10:15	P20-P21 Cross	WW-019	DT	40	39	Pass	
Jun 7	Jun 11	10:15	P20-P22 Vertical	WW-022	EP	40	40	Pass	
Jun 6	Jun 11	10:19	P18-P19 Cross	WW-019	DT	40	39	Pass	
Jun 6	Jun 11	10:19	P18-P20 Vertical	WW-022	EP	40	40	Pass	
Jun 6	Jun 11	10:19	P19-P20 Vertical	WW-022	EP	40	38	Pass	
Jun 6	Jun 11	Not tested	P16-P17 Cross	WW-019	DT				Extrusion required at intersection with vertical seam
Jun 6	Jun 11	10:38	P17-P18 Vertical	WW-022	EP	40	40	Pass	
Jun 6	Jun 11	10:38	P16-P18 Vertical	WW-022	EP	40	40	Pass	
Jun 5	Jun 11	10:53	P12-P14 Vertical	WW-054	EP	40	38	Pass	Below patch on seam
Jun 5	Jun 11	11:00	P12-P14 Vertical	WW-054	EP	40	40	Pass	Above patch on seam
Jun 5	Jun 11	11:00	P12-P15 Vertical	WW-054	EP	40	40	Pass	
Jun 5	Jun 11	11:05	P12-P13 Cross	WW-019	DT	40	39	Pass	Lefthand side of patch
Jun 5	Jun 11	11:05	P12-P13 Cross	WW-019	DT	40	39	Pass	Righthand side of patch
Jun 5	Jun 11	11:05	P10-P12 Vertical	WW-019	DT	40	38	Pass	
Jun 5	Jun 11	11:25	P10-P13 Vertical	WW-019	DT	40	38	Pass	Below patch on seam
Jun 5	Jun 11	11:34	P10-P13 Vertical	WW-019	DT	40	37	Pass	Above patch on seam
Jun 5	Jun 11	11:36	P10-P11 Cross	WW-019	DT	40	38	Pass	
Jun 5	Jun 11	11:45	P8-P10 Vertical	WW-019	DT	40	40	Pass	
Jun 5	Jun 11	11:45	P8-P11 Vertical	WW-019	DT	40	40	Pass	
Jun 4	Jun 11	11:48	P8-P9 Cross	WW-019	DT	40	39	Pass	
Jun 4	Jun 11	11:48	P6-P8 Vertical	WW-054	EP	40	39	Pass	
Jun 4	Jun 12	9:00	P3-P6 Vertical	WW-054	EP	40	40	Pass	
Jun 2	Jun 12	9:00	P1-P3 Vertical	WW-054	EP	40	40	Pass	Above patch on seam
Jun 2	Jun 12	9:05	P1-P4 Vertical	WW-054	EP	40	40	Pass	Below lower patch on seam
Jun 2	Jun 12	9:05	P1-P4 Vertical	WW-054	EP	40	40	Pass	Between patches on seam
Jun 2	Jun 12	9:10	P1-P4 Vertical	WW-054	EP	40	38	Pass	Above upper patch on seam
Jun 2	Jun 12	9:29	P1-P3 Vertical	WW-054	EP	40	38	Pass	Below patch on seam Air channel was blocked midway down and requires extrusion block
Jun 4	Jun 12	9:30	P3-P5 Vertical	WW-054	EP	40	40	Pass	
Jun 4	Jun 12	9:34	P5-P6 Cross	WW-019	DT	40	40	Pass	
Jun 4	Jun 12	9:52	P5-P8 Vertical	WW-054	EP	40	40	Pass	
Jun 5	Jun 12	10:01	P14-P15 Cross	WW-019	DT	40	37	Pass	
Jun 6	Jun 12	10:01	P14-P17 Vertical	WW-022	EP	40	37	Pass	
Jun 6	Jun 12	10:03	P16-P17 Cross	WW-019	DT	40	39	Pass	
Jun 6	Jun 12	10:03	P14-P16 Vertical	WW-022	EP	40	40	Pass	Above patch on seam
Jun 7	Jun 12	10:14	P23-P24 Vertical	WW-019	DT	40	39	Pass	
Jun 7	Jun 12	10:19	P23-P25 Vertical	WW-019	DT	40	35	Fail	
Jun 7	Jun 12	10:14	P24-P25 Cross	WW-019	DT	40	40	Pass	

Date Fused	Date Tested	Time Tested	Seam #	App #	Tech	psi Start	psi End	Pass or Fail	Notes
Jun 7	Jun 12	10:30	P22-P25 Vertical	WW-019	DT	40	38	Pass	
Jun 7	Jun 12	10:38	P25-P26 Vertical	WW-022	EP	40	40	Pass	
Jun 7	Jun 12	10:40	P26-P28 Vertical	WW-022	EP	40	39	Pass	
Jun 10	Jun 12	10:42	P28-P29 Vertical	WW-022	EP	40	40	Pass	
Jun 10	Jun 12	10:43	P29-P30 Vertical	WW-022	EP	40	39	Pass	
Jun 10	Jun 12	10:45	P30-P31 Vertical	WW-026	DT	40	40	Pass	
Jun 10	Jun 12	10:46	P31-P32 Vertical	WW-026	DT	40	39	Pass	
Jun 10	Jun 12	10:54	P32-P33 Vertical	WW-026	DT	40	40	Pass	
Jun 10	Jun 12	10:56	P33-P35 Vertical	WW-026	DT	40	39	Pass	
Jun 10	Jun 12	10:58	P35-P36 Vertical	WW-022	EP	40	40	Pass	
Jun 10	Jun 12	11:07	P32-P34 Cross	WW-026	DT	40	40	Pass	
Jun 10	Jun 12	11:07	P33-P34 Vertical	WW-026	DT	40	40	Pass	
Jun 10	Jun 12	11:18	P31-P34 Vertical	WW-026	DT			Fail	Requires retest due to air channel block
Jun 10	Jun 12	11:21	P27-P28 Cross	WW-026	DT	40	40	Pass	
Jun 10	Jun 12	11:24	P27-P26 Vertical	WW-022	EP	40	25	Fail	
Jun 6	Jun 12	11:33	P14-P16 Vertical	WW-022	EP	40	39	Pass	Below patch on seam
Jun 5	Jun 12	11:36	P7-P10 Vertical	WW-019	DT	40	40	Pass	
Jun 4	Jun 12	11:38	P5-P7 Vertical	WW-019	EP	40	40	Pass	
Jun 2	Jun 12		P1-P3 Vertical	WW-019	EP				Tested below air channel block and requires extrusion to test

6.0 DESTRUCTIVE TESTING

Table 4 summarizes the weekly destructive testing results. Five tests are performed for each criterion.

Table 4: Destructive Testing Results

Date Fused	Time Fused	Tech	Apparatus	Location (UTM is +/- 4 m)	Sample ID	$Peel_{in}$ (100 min)	$Peel_{out}$ (100 min)	Shear (120 min)	Pass or Fail
Jun 10	11:04	DT	WW-026	P32-P34 Cross Seam 459,252E 7,101,688N	D10	156 155 150 156 151	164 160 154 139 144	167 172 170 173 182	Pass
Jun 10	11:11	DT	WW-026	P31-P34 Seam Bottom of Seam 459,262E 7,101,674 N	D11	156 143 151 149 142	154 150 156 159 150	165 165 169 168 164	Pass
Jun 10	9:50	EP	WW-022	P29-P30 Seam Bottom of Seam 459,273E 7,1010,685N	D12	154 155 155 150 146	160 156 158 155 154	174 173 156 163 175	Pass

Date Fused	Time Fused	Tech	Apparatus	Location (UTM is +/- 4 m)	Sample ID	$Peel_{in}$ (100 min)	$Peel_{out}$ (100 min)	Shear (120 min)	Pass or Fail
Jun 6	5:15	EP	WW-022	P26-P27 Seam	D13	146	147	162	Pass
				Bottom of Seam		142	150	160	
				459,280E		152	155	168	
				7,101,696N		149	147	168	
						146	150	163	

7.0 PHOTO LOG



Figure 1: GCL Deployed in Advance of Liner Deployment



Figure 2: GCL in Anchor Trench



Figure 3: Bedding Sand Placed in Advance of Liner Deployment



Figure 4: Trimming Liner in Advance of Tie into Existing Liner

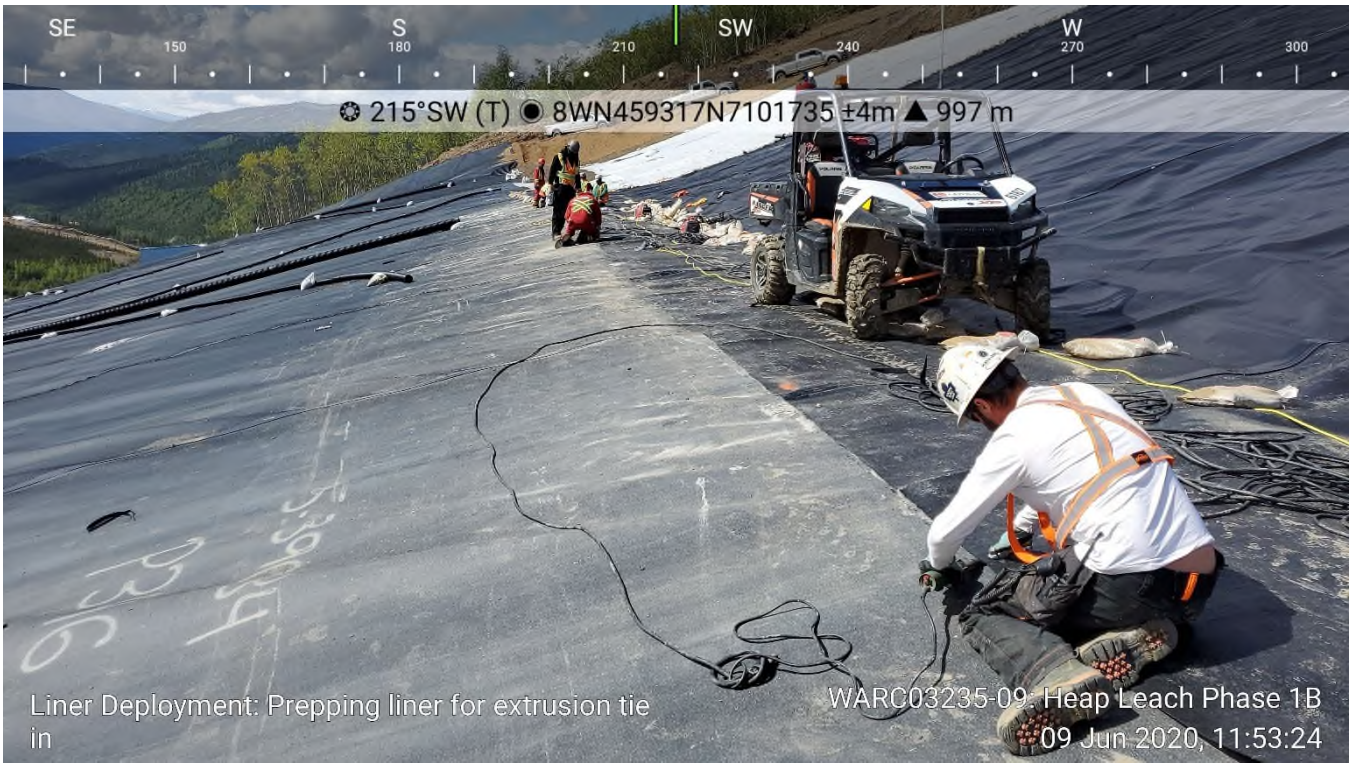


Figure 5: Prepping Liner for Extrusion Welding



Figure 6: Grinding Seams in Advance of Extrusion Welding



Figure 7: Extrusion Welding of Seams



Figure 8: Completed Tie into Existing Liner



Figure 9: Hydrated GCL to be Removed

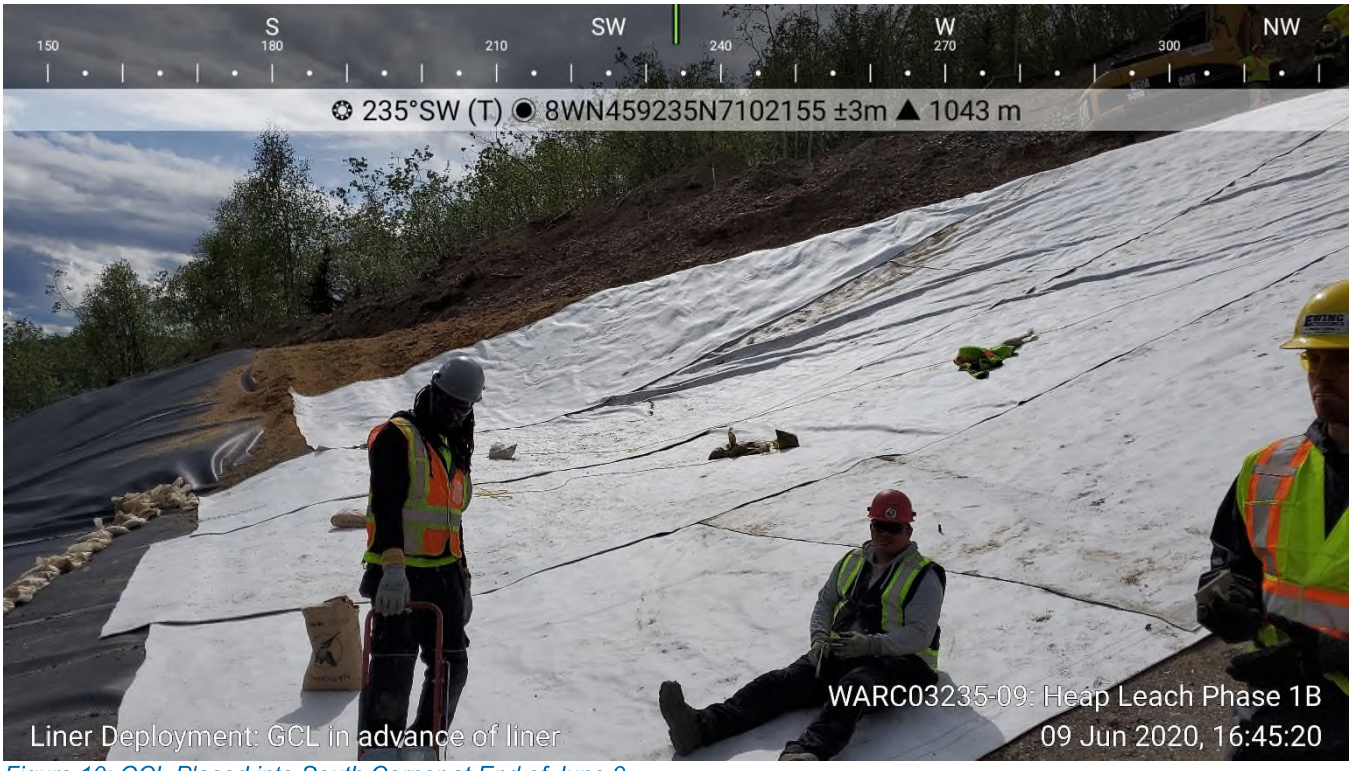


Figure 10: GCL Placed into South Corner at End of June 9



Figure 11: GCL Ready for Liner Deployment into South Corner



Figure 12: Panels P30 to P36 Deployed



Figure 13: Panels P29 to P36 in Anchor Trench



Figure 14: South Corner Anchor Trench with Liner Deployed



Figure 15: Bedding Sand Placed on Subgrade in Advance of Liner Deployment

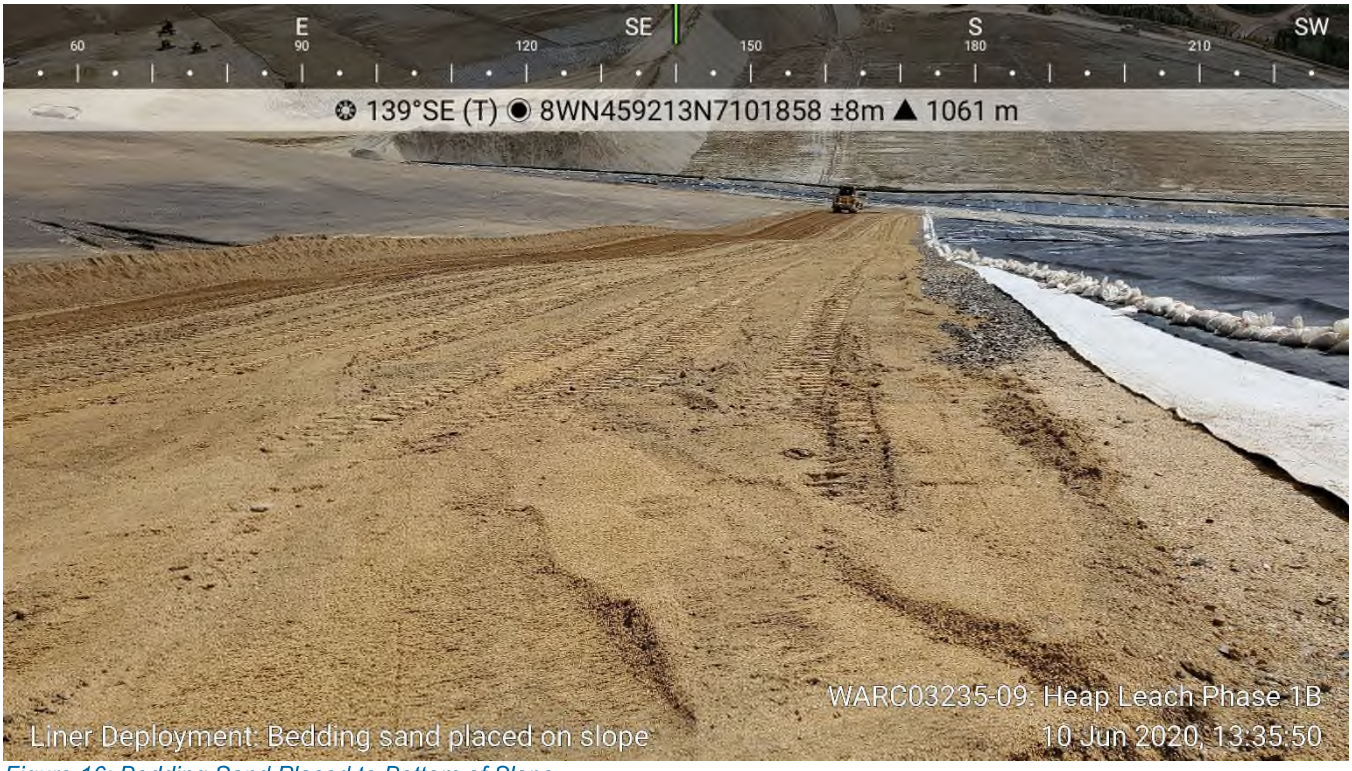


Figure 16: Bedding Sand Placed to Bottom of Slope

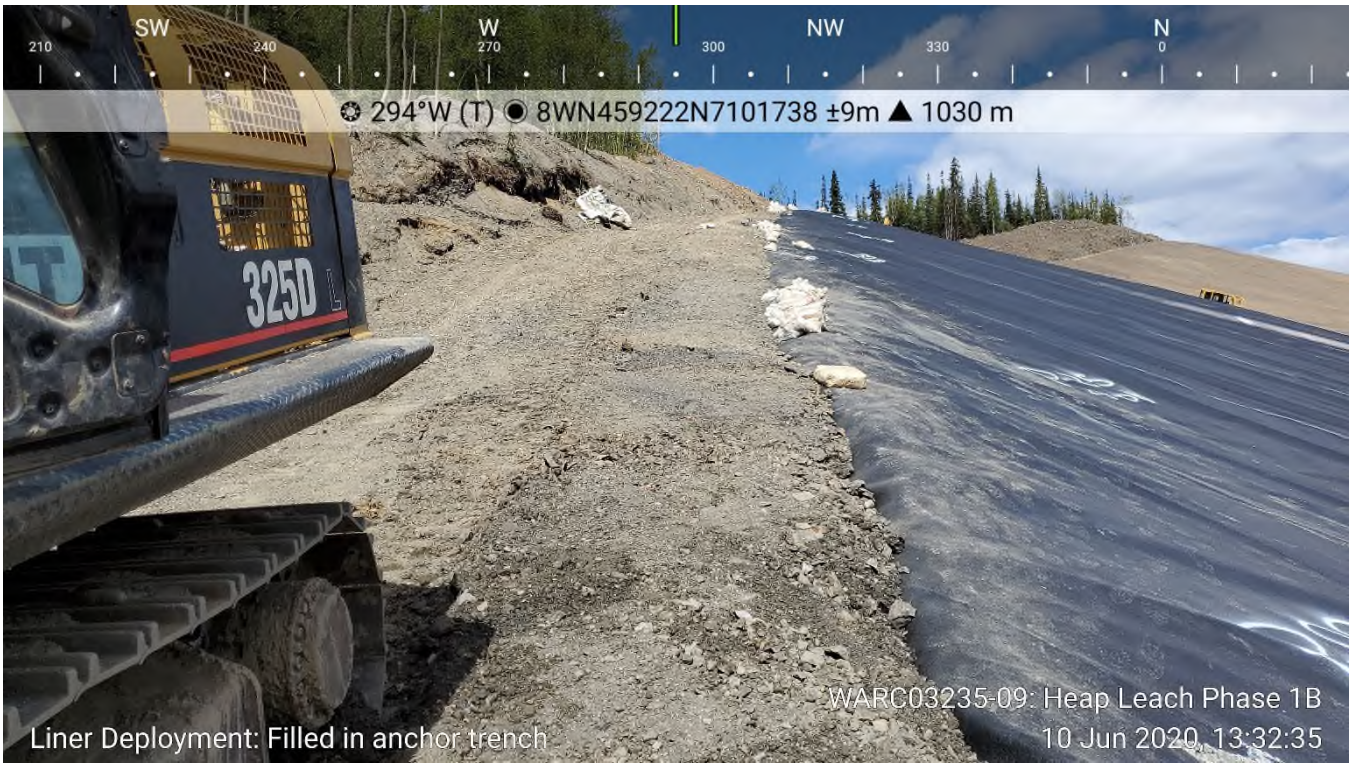


Figure 17: Anchor Trench Backfilled



Figure 18: Liner Deployed from May 31 to June 10

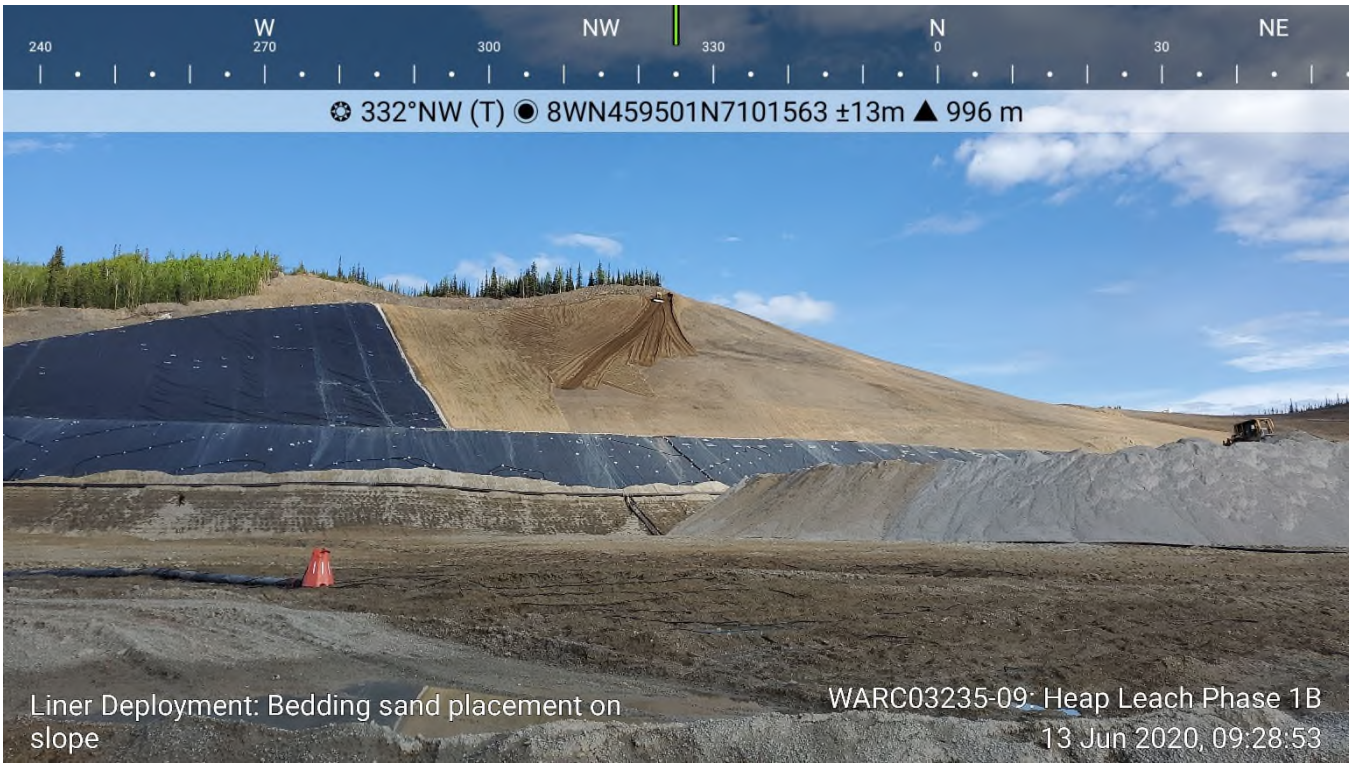


Figure 19: Bedding Sand Deployed on Slope on June 13

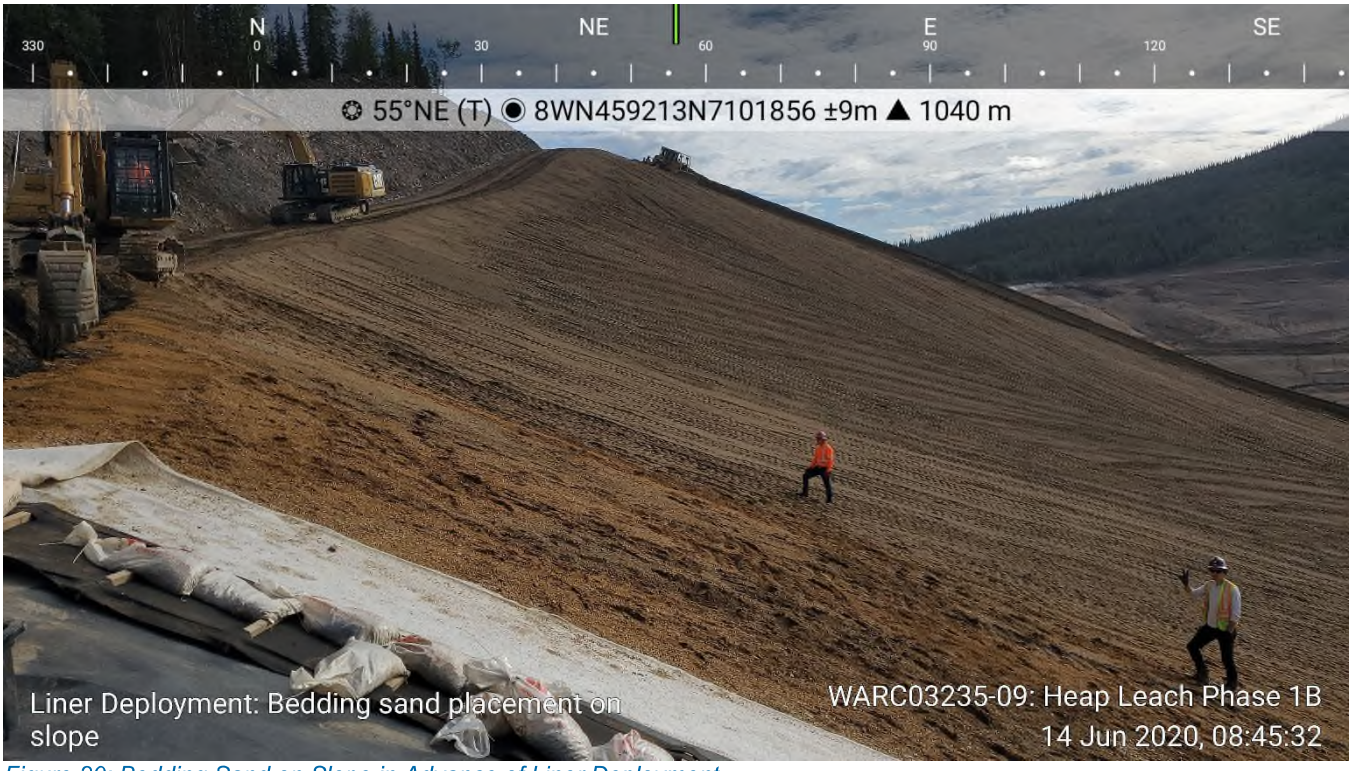


Figure 20: Bedding Sand on Slope in Advance of Liner Deployment



Figure 21: Bedding Sand on Slope



Figure 22: Anchor Trench Excavation



Figure 23: Completed Anchor Trench Excavation



Figure 24: Bedding Sand after One Pull of GCL



Figure 25: GCL Deployed in Advance of Liner Placement



Figure 26: GCL in Anchor Trench



Figure 27: Panels P37 to P39 Deployed



Figure 28: Deployment to the End of June 14

TETRA TECH

WEEKLY FIELD REPORT

ISSUED FOR USE

Project:	Eagle Gold Heap Leach Phase 1B	**Date:**	June 21, 2020
Location:	Eagle Gold Mine	**Contractor:**	Ewing Transport / Layfield
Client:	Victoria Gold Corp.	**Contractor's Rep:**	Marshall Ewing / Chad Messervey
Contact:	Clint Abel	**Contractor's Email:**	
Weather:	Variable (see daily entries)	**Tetra Tech Representative:**	Adam Mickey
File:	704-ENG.WARC03235-09	**Status:**	Issued for Use

1.0 INTRODUCTION

Tetra Tech Canada Inc. (Tetra Tech) was retained by Victoria Gold Corp. (Victoria Gold) to provide CQA services at the Eagle Gold mine located north of Mayo, Yukon, at Dublin Gulch for the Eagle Gold Heap Leach Phase 1B expansion (Phase 1B). Mr. Adam Mickey, EIT, is Tetra Tech's representative on site.

Forte Dynamics (Forte) out of Fort Collins, Colorado provided the design and specification for Phase 1B, and Forte's representative is Clint Green.

Clint Abel, of JDS Energy & Mining, is Victoria Gold's project manager on site at the Eagle Gold mine.

Ewing Transport (Ewing), based out of Mayo, Yukon, is the construction contractor for Phase 1B.

Layfield Environmental Containment (Layfield) has been retained to provide and install the liner for Phase 1B, and their supervisor on site is Chad Messervey.

The following Field Report outlines Tetra Tech's CQA for the period of June 15, 2020, to June 21, 2020.

2.0 DAILY REPORTS

2.1 Highlights

- Rain delayed liner deployment throughout the week.
- Layfield is placing three panels of GCL for every two panels of 80 mm LLDPE liner.
- Panels P43 through P62 were deployed, giving a total length of approximately 1,544.4 m placed on the slope for a total area of approximately 10,502 m^2.
- Ongoing rain in the evenings caused GCL to hydrate at the toe of the slope. Hydrated GCL was removed each morning at the direction of Tetra Tech.
- Rain also caused erosion of the placed bedding sand on the slope requiring ongoing maintenance to maintain subgrade integrity.

Tetra Tech Canada Inc.
61 Wasson Place
Whitehorse, YT Y1A 0H7 CANADA
Tel 867.668.3068 Fax 867.668.4349

2.2 June 15, 2020

- Weather: partly cloudy turning to cloudy
- Ewing is continuing to place bedding sand on slopes.
- Layfield is continuing to deploy GCL and liner. See Figures 1 to 6.
  - Four slope lengths of GCL deployed and two slope lengths of liner deployed.
- Ewing and Layfield picked rocks out of bedding sand for approximately 45 m from edge of P47 along anchor trench.
  - Tetra Tech inspected the subgrade and approved it for liner deployment. For subgrade approval going forward, subgrade will be approved on a daily basis, but a Layfield subgrade inspection report will be generated based on the liner panels deployed over the subgrade.
- Layfield began extrusion on panels placed since June 14 and extruded at the top seams to allow anchor trench to be backfilled.

2.3 June 16, 2020

- Weather: cloudy and light rain turning to mostly cloudy in the afternoon.
- Ewing is not placing bedding sand on slope due to slippery road conditions from stockpile to site.
- Layfield is continuing to deploy GCL and liner. See Figures 7 to 11.
  - Tetra Tech approved the subgrade for liner deployment.
  - One more slope length of GCL panels was deployed, and then liner panels P48 and P49 were deployed overtop.
  - Deployment was halted at 10:30 am due to rain and resumed at 1:00 pm when the rain stopped.
  - Layfield continued to place GCL till the end of the day. At the end of the day, five slope lengths of GCL were deployed.
    - Layfield folded up the GCL at the bottom of the slope in case of rain.
- Tetra Tech attended the weekly Phase 1B meeting and updated all parties on the progress. No specific issues were raised.
- Tetra Tech performed compaction testing on subgrade fills as required.

2.4 June 17, 2020

- Weather: cloudy, turning to rain at 8:00 am.
- It rained heavily overnight on deployed GCL. See Figures 12 to 14.
  - Heavy erosion was evident of the bedding sand on the slope as it washed to the bottom in places.
    - Sand was displaced on to leading panels along the slope.

    - An erosion gully formed along the leading edge of the GCL. It will have to be raked smooth prior to further deployment.
    - Areas at the bottom of the slope will have to be raked to smooth out contours and fix erosional features.
  - Tetra Tech and Layfield inspected the GCL on the slope. GCL on the slope did not hydrate due to the rainfall, but the GCL that was folded back hydrated at the fold. Layfield is replacing the GCL and cutting it off 1 m up from the folded area.
    - Weather conditions during deployment have been unpredictable throughout the project, and weather reports do not reflect the conditions experienced at site. It is impossible to protect the GCL on the slope overnight by covering it, and it has been shown that the GCL will not hydrate on the steep slopes during rainfall, so Layfield has continued deployment to advance the project understanding that GCL may need to be replaced at the toe of the slope.
- Due to rain and saturated conditions, deployment was shut down for the day at 9:30 am.

2.5 June 18, 2020

- Weather: Partly cloudy turning to cloudy with periods of rain in the afternoon.
- Layfield fixed subgrade and replaced hydrated GCL. See Figures 15 to 17.
  - Subgrade was smoothed out using rakes, and additional sand was placed in wet spots by Ewing and Layfield personnel.
  - The subgrade had dried out sufficiently to place liner.
  - Layfield is not going to leave any GCL exposed overnight anymore due to unpredictable weather. This could lead to shorter days due to the time it takes to deploy GCL and liner, as well as fusing the liner.
- Layfield is deploying liner to cover the deployed GCL. See Figures 18 and 19.
  - Panels P50 to P57 were deployed on the slope and fused.
- Layfield placed two more slope lengths of GCL and then deployed and fused panels P58 and P59.
- Layfield performed extrusion welding on deficient areas from panels P1 to P36, including fixing seams to finish pressure testing.
- Rock picking and subgrade acceptance will be required to continue deployment.

2.6 June 19, 2020

- Weather: cloudy with chances of rain.
- Rained overnight.
  - Layfield is assessing the slope to determine if deployment is possible.
- Ewing is picking rocks and cleaning up hydrated GCL at the base of the slope. Also, Ewing is fixing the subgrade at the base of the slope and placing sand in areas that the dozer could not finish.
- Layfield is extrusion welding the tie in to Phase 1A.
- Tetra Tech and Layfield's QC obtained 12 destructive testing samples for liner deployed to date.

  - The P1-P38 vertical seam failed and requires further destructive testing. Destructive testing failed due to peel into weld beyond specifications on four samples.
  - All other destructive samples passed, and the required amount of destructive samples have been obtained and tested for liner deployed.
- Rain delayed detail work at 10:00 am. Layfield shut down until 11:30 am.
  - Layfield continued extrusion and detail work.
  - Ewing is continuing to pick rocks and spread sand at the toe of the slope.

2.7 June 20, 2020

- Weather: Partly cloudy, turning to cloudy and rain.
- Layfield placed one slope length of GCL and then deployed and fused panels P60, P61, and P62.
  - Due to rain on the horizon and in the forecast, Layfield halted further deployment at 11:00 am. The rain began at 1:00 pm as they were gearing up to perform extrusion welding.
- Tetra Tech and Layfield's QC performed pressure testing on failed seams for panels P1 through P36 as the extrusion welders had re-blocked the air channels at the ends.
  - All pressure testing passed.
  - On the P1-P3 seam, there is an approximately 1 m section that will have to be extrusion welded along the seam as it is where the air channel was blocked.
- Work was halted for the rest of the day due to rain.

2.8 June 21, 2020

- No work performed today due to rain.

3.0 GEOSYNTHETIC ROLL NUMBERS PLACED

Table 1 summarizes the daily geosynthetic roll numbers placed on the slope during liner installation. All panel lengths are approximate, and where 45 degree joints are used, panel length is based from the center of the panel.

Table 1: Geosynthetic Roll Numbers Placed on Slope

Date	GCL Roll Number	LLDPE Liner Roll Number	Panel Number (Length)
June 15	502344581, 502344142	10694-001	P43 (102.3 m)
	502344706, 502344702	10697-011	P44 (78.8 m), P45 (50.8 m)
	502344679, 502344160	10697-012	P46 (124.6 m)
	502343898, 502344659,	10696-006	P47 (14.9 m)
	502344680, 502344660		
	502344163, 502344159		
	502344704, 502344716		
	502344701		

Date	GCL Roll Number	LLDPE Liner Roll Number	Panel Number (Length)
June 16	502343946, 502343904 502343942, 502343937 502343956, 502344154 502343926, 502343957 502343924, 502343895 502344158, 502343901 502343886, 502343896 502344176, 502344173 502344151, 502344156 502343905, 502343897 0242-347762, 0242-347840	10696-006 10697-014	P48 (114 m) P49 (74.4 m)
June 17	-	-	-
June 18	502343947, 502343945 502343927, 502343925 502343935, 502343966 502343949, 502343948	10697-014 10696-005 10696-028 10696-010 10696-029 10696-032 10696-031	P50 (52.7 m) P51 (129 m) P52 (12 m), P53 (116.7 m) P54 (78 m), P55 (49.1 m) P56 (128.4 m) P57 (18 m), P58 (107.4 m) P59 (89 m)
June 19	-	-	-
June 20	502343964, 502343945 502343936, 502343941 502343969, 502343940	10696-031 10696-018 10697-002	P60 (36.3 m) P61 (128 m) P62 (40 m)
June 21	-	-	-

4.0 TRIAL SEAM

Table 2 summarizes the weekly trial seam results. For fusion, the apparatus settings are temperature and speed, and for extrusion, the apparatus settings are preheat and barrel temperature. Five tests are performed for each criterion.

Table 2: Trial Seam Results

Date	Time	Fusion or Extrusion	Tech	Apparatus #	Temp or Preheat (°F)	Speed (%) or Barrel Temp (°F)	$Peel_{inside}$ (100 min)	$Peel_{outside}$ (100 min for Fusion 88 min for Extrusion)	Shear (120 min)	Smooth or Textured
Jun 15	11:20	Fusion	DT	WW-026	850	35	178 158 150 152 160	149 150 145 137 148	183 172 189 182 190	Textured
Jun 15	11:15	Fusion	EP	WW-022	850	55	126 132 129 150 149	154 152 154 158 149	165 165 164 170 161	Smooth

Date	Time	Fusion or Extrusion	Tech	Apparatus #	Temp or Preheat (°F)	Speed (%) or Barrel Temp (°F)	$Peel_{inside}$ (100 min)	$Peel_{outside}$ (100 min for Fusion 88 min for Extrusion)	Shear (120 min)	Smooth or Textured
Jun 15	3:00	Extrusion	RP	04037	505	495	N/A	117 102 116 115 106	152 156 153 149 153	Textured
Jun 15	3:05	Extrusion	EA	04037	505	495	N/A	106 104 103 104 119	159 161 159 174 164	Textured
Jun 16	8:45	Fusion	DT	WW-026	850	35	142 152 152 163 164	155 158 146 163 158	183 178 175 178 185	Textured
Jun 16	8:35	Fusion	EP	WW-022	850	55	147 146 150 143 147	153 137 146 136 147	170 168 178 179 168	Smooth
Jun 16	9:00	Fusion	DT	WW-026	850	50	158 153 157 147 154	162 147 160 159 155	167 163 171 170 165	Smooth
Jun 18	7:50	Fusion	DT	WW-026	850	35	156 162 153 169 162	170 161 164 150 160	178 169 182 185 174	Textured
Jun 18	7:45	Fusion	EP	WW-022	850	55	132 125 122 150 132	159 152 155 157 155	167 161 167 161 166	Smooth
Jun 18	9:35	Fusion	DT	WW-020	850	55	123 120 124 122 126	133 129 147 134 129	160 153 156 155 152	Smooth
Jun 18	12:00	Fusion	DT	WW-026	850	35	156 147 155 149 152	145 147 159 147 148	166 173 170 166 160	Textured

Date	Time	Fusion or Extrusion	Tech	Apparatus #	Temp or Preheat (°F)	Speed (%) or Barrel Temp (°F)	$Peel_{inside}$ (100 min)	$Peel_{outside}$ (100 min for Fusion 88 min for Extrusion)	Shear (120 min)	Smooth or Textured
Jun 18	12:00	Fusion	EP	WW-022	850	55	134 140 138 139 138	138 135 135 132 135	153 147 152 149 151	Smooth
Jun 18	1:00	Extrusion	EA	04037	505	495	N/A	95 100 100 112 97	155 155 158 156 155	Textured
Jun 18	1:00	Extrusion	RP	04037	505	495	N/A	100 97 112 114 101	154 155 162 159 162	Textured
Jun 18	4:00	Extrusion	RP	04037	505	495	N/A	134 118 127 126 130	148 160 156 163 159	Textured
Jun 18	4:00	Extrusion	EA	04037	505	495	N/A	132 140 141 116 136	179 174 171 180 179	Textured
Jun 18	4:45	Fusion	DT	WW-026	850	50	144 146 143 142 138	142 148 155 143 146	168 166 173 168 167	Smooth
Jun 19	8:30	Extrusion	EA	PX-11	505	495	N/A	141 146 141 156 142	191 194 183 176 184	Textured
Jun 19	8:30	Extrusion	RP	04037	505	500	N/A	121 154 149 137 152	180 181 189 184 178	Textured
Jun 19	12:30	Extrusion	EA	04037	505	495	N/A	120 98 128 99 134	154 169 165 168 162	Textured

Date	Time	Fusion or Extrusion	Tech	Apparatus #	Temp or Preheat (°F)	Speed (%) or Barrel Temp (°F)	$Peel_{inside}$ (100 min)	$Peel_{outside}$ (100 min for Fusion 88 min for Extrusion)	Shear (120 min)	Smooth or Textured
Jun 19	12:45	Extrusion	RGP	PX-11	515	500	N/A	136 137 148 131 141	159 171 166 166 173	Textured
Jun 20	9:15	Fusion	DT	WW-026	850	35	145 128 153 153 155	146 137 147 133 149	166 167 166 170 161	Textured
Jun 20	9:30	Fusion	DT	WW-026	850	55	137 131 150 134 141	155 148 161 149 145	169 162 177 169 171	
Jun 20	10:15	Fusion	GP	WW-022	850	55	120 124 128 127 132	117 105 129 127 132	155 147 160 155 160	Smooth

5.0 NON-DESTRUCTIVE TESTING

Table 3 summarizes the weekly non-destructive pressure testing results.

Table 3: Non-Destructive Testing Results

Date Fused	Date Tested	Time Tested	Seam #	App #	Tech	psi Start	psi End	Pass or Fail	Notes
Jun 2	Jun 20	7:42	P2-P4 Vertical	WW-054	EP	40	39	Pass	
Jun 5	Jun 20	7:51	P11-P13 Vertical	WW-019	DT	40	38	Pass	
Jun 7	Jun 20	8:00	P23-P25 Vertical	WW-019	DT	40	37	Pass	
Jun 10	Jun 20	8:10	P31-P34 Vertical	WW-026	DT	40	40	Pass	
Jun 10	Jun 20	8:16	P27-P29 Vertical	WW-019	EP	40	40	Pass	
Jun 2	Jun 20	8:27	P1-P3 Vertical	WW-019	EP	40	40	Pass	Below block
Jun 2	Jun 20	8:33	P1-P3 Vertical	WW-019	EP	40	40	Pass	Above block

6.0 DESTRUCTIVE TESTING

Table 4 summarizes the weekly destructive testing results. Five tests are performed for each criterion.

Table 4: Destructive Testing Results

Date Fused	Time Fused	Tech	Apparatus	Location (UTM is +/- 4 m)	Sample ID	$Peel_{in}$ (100 min)	$Peel_{out}$ (100 min)	Shear (120 min)	Pass or Fail
Jun 14	3:15	DT	WW-026	P1-P38 Vertical Bottom of Seam 459,341E 7,1010758N	D14A				Fail
Jun 14	5:38	EP	WW-022	P37-P40 Vertical Bottom of Seam 459,344E 7,101,762N	D15	147 121 155 125 141	159 166 160 155 150	174 170 174 175 175	Pass
Jun 15	12:41	EP	WW-022	P40-P43 Vertical Bottom of Seam 459,352E 7,101,767N	D16	158 159 158 161 158	153 159 160 162 159	174 170 173 168 173	Pass
Jun 16	10:00	EP	WW-022	P45-P48 Vertical Bottom of Seam 459,362E 7,101,766N	D17	145 148 157 148 153	155 151 149 146 148	172 178 172 171 171	Pass
Jun 18	12:48	EP	WW-022	P53-P55 Vertical Bottom of Seam 459,378E 7,101,788N	D18	138 139 139 135 136	142 144 146 139 140	163 161 158 164 156	Pass
Jun 18		EP	WW-022	P55-P58 Vertical Bottom of Seam 459,385E 7,101,788N	D19	146 125 148 151 144	146 143 140 139 139	166 161 166 159 161	Pass
Jun 15	12:57	DT	WW-026	P45-P46 Cross 459,327E 7,101,802N	D20	167 155 163 166 168	155 151 151 152 167	172 177 178 180 187	Pass
Jun 18	10:39	DT	WW-020	P50-P53 Vertical 459,339E 7,101,808N	D21	152 146 149 140 138	145 150 142 140 137	171 168 172 168 172	Pass

Date Fused	Time Fused	Tech	Apparatus	Location (UTM is +/- 4 m)	Sample ID	$Peel_{in}$ (100 min)	$Peel_{out}$ (100 min)	Shear (120 min)	Pass or Fail
Jun 18	9:36	EP	WW-022	P48-P51 Vertical 459,318E 7,101,819N	D22	154 164 156 148 153	147 141 146 150 142	161 161 167 159 161	Pass
Jun 15	12:13	DT	WW-026	P43-P44 Cross 459,260E 7,101,808N	D23	155 165 168 150 174	161 163 166 157 152	177 176 178 182 170	Pass
Jun 15	12:41	EP	WW-022	P41-P44 Vertical 459,277E 7,101,827N	D24	162 155 161 156 160	148 144 145 148 148	175 169 175 177 171	Pass
Jun 18	12:48	EP	WW-022	P54-P56 Vertical 459,296E 7,101,850N	D25	140 142 139 138 131	142 148 138 136 136	160 159 165 166 165	Pass

7.0 PHOTO LOG



Figure 1: GCL Deployed in Advance of Liner Deployment



Figure 2: Anchor Trench Collapse on to GCL



Figure 3: Panels P43 to P47 Deployed on Slope



Figure 4: Panels P43 and P47 in the Anchor Trench



Figure 5: Anchor Trench Backfilled



Figure 6: Phase 1B West Side Liner Deployment as of June 15



Figure 7: GCL Deployed in Advance of Liner



Figure 8: Panels P44, P47, and P49 in Anchor Trench



Figure 9: Panels P48 and P49 Deployed



Figure 10: Anchor Trench in Advance of Liner Deployment



Figure 11: Phase 1B West Side as of June 16



Figure 12: Folded Back GCL after Heavy Rainfall Overnight



Figure 13: Saturated Toe of Slope and Folded Back GCL



Figure 14: Hydrated GCL Removed from Slope



Figure 15: Sand on GCL due to Erosion Cleaned Off

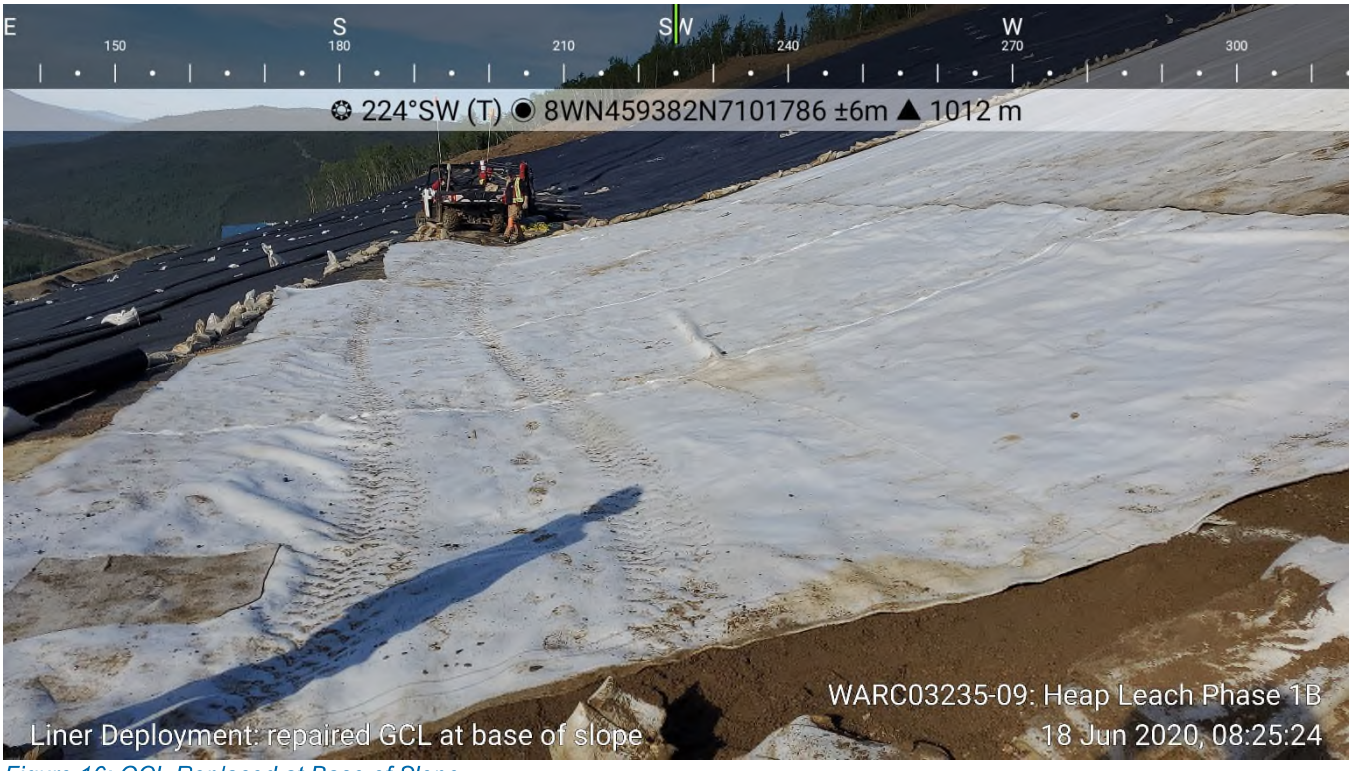


Figure 16: GCL Replaced at Base of Slope



Figure 17: Erosion Gully along Leading Edge of GCL

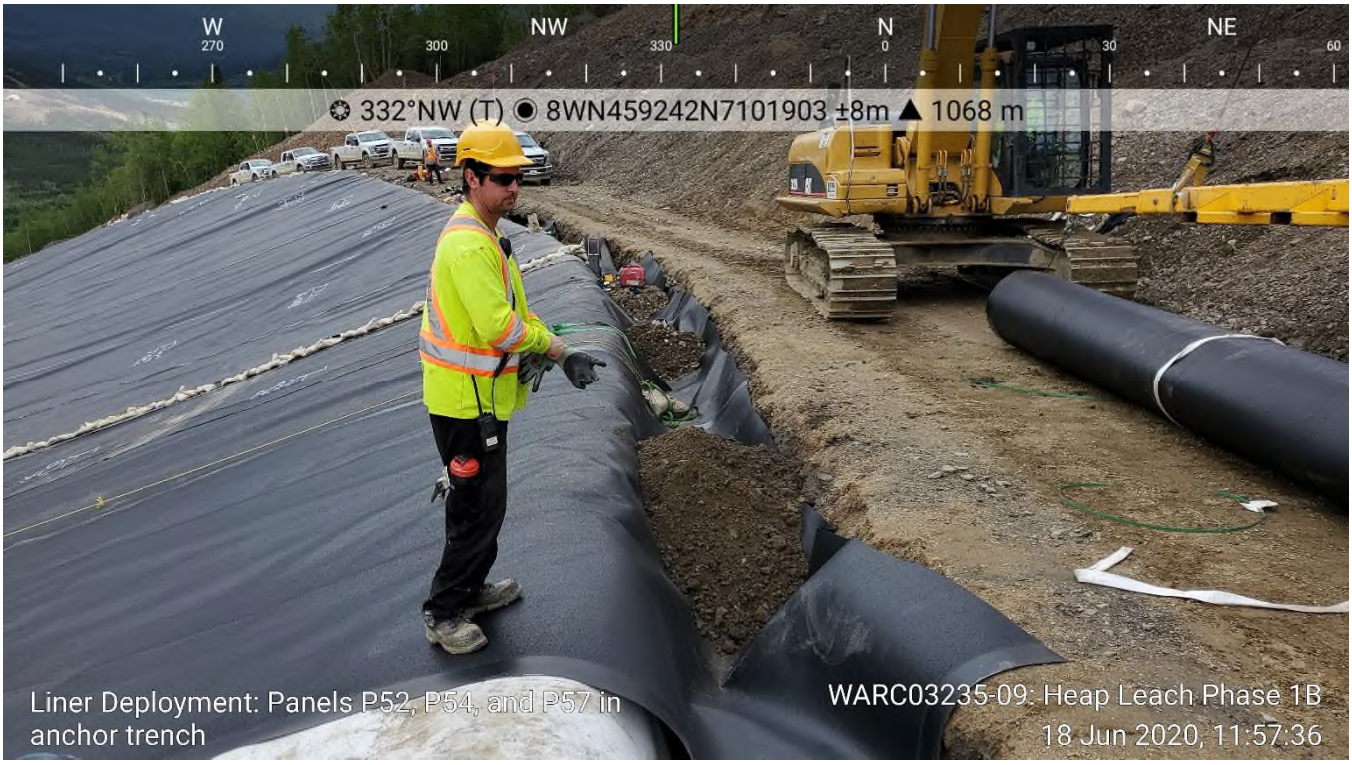


Figure 18: Panels P52, P54, and P57 in Anchor Trench



Figure 19: GCL Deployed in Advance of Linerad

TETRA TECH

WEEKLY FIELD REPORT

ISSUED FOR USE

Project:	Eagle Gold Heap Leach Phase 1B	**Date:**	June 28, 2020
Location:	Eagle Gold Mine	**Contractor:**	Ewing Transport / Layfield
Client:	Victoria Gold Corp.	**Contractor's Rep:**	Marshall Ewing / Chad Messervey
Contact:	Clint Abel	**Contractor's Email:**	
Weather:	Variable (see daily entries)	**Tetra Tech Representative:**	Adam Mickey
File:	704-ENG.WARC03235-09	**Status:**	Issued for Use

1.0 INTRODUCTION

Tetra Tech Canada Inc. (Tetra Tech) was retained by Victoria Gold Corp. (Victoria Gold) to provide CQA services at the Eagle Gold mine located north of Mayo, Yukon, at Dublin Gulch for the Eagle Gold Heap Leach Phase 1B expansion (Phase 1B). Mr. Adam Mickey, EIT, is Tetra Tech's representative on site.

Forte Dynamics (Forte) out of Fort Collins, Colorado provided the design and specification for Phase 1B, and Forte's representative is Clint Green.

Clint Abel, of JDS Energy & Mining, is Victoria Gold's project manager on site at the Eagle Gold mine.

Ewing Transport (Ewing), based out of Mayo, Yukon, is the construction contractor for Phase 1B.

Layfield Environmental Containment (Layfield) has been retained to provide and install the liner for Phase 1B, and their supervisor on site is Chad Messervey.

The following Field Report outlines Tetra Tech's CQA for the period of June 22, 2020, to June 28, 2020.

2.0 DAILY REPORTS

2.1 Highlights

- Rain delayed liner deployment for four days this week.
- Panels P63 through P76 were deployed this week for a total length of approximately 1,161.2 m and a total area covered of approximately 7,896 m^2.
- Pressure testing has been completed for all panels up to panel P57 has been completed and passed except for the P51-P54 vertical seam.
- Layfield is keeping up with all detailing of the liner panels.
- Layfield is placing three panels of GCL for every two panels of 80 mm LLDPE liner.
- All geotextiles deployed have been deployed as per contract specifications.

Tetra Tech Canada Inc.
61 Wasson Place
Whitehorse, YT Y1A 0H7 CANADA
Tel 867.668.3068 Fax 867.668.4349

2.2 June 22, 2020

- Weather: cloudy
- Layfield and Ewing came to site to assess the subgrade conditions and determine if deployment was possible.
  - No work performed today due to saturated subgrade conditions and erosion from heavy rainfall on June 21.
  - Rainfall caused erosion of sand on subgrade to the base of the slope and along GCL. See Figures 1 to 4.
  - Ewing is removing sand on GCL and flipping it over to protect the GCL from further sand migration.

2.3 June 23, 2020

- Weather: raining
- No work performed today due to rain.

2.4 June 24, 2020

- Weather: raining
- No work performed today due to rain.

2.5 June 25, 2020

- Weather: partly cloudy with periods of light rain.
- Ewing is fixing subgrade erosion for further liner deployment.
- Layfield is performing extrusion welding on panels P37 through P62 and also tying in deployed panels to Phase 1A.
- Tetra Tech and Layfield conducted pressure testing of seams.
  - Some seams failed requiring further block offs or patches.
- Destruct D14B was obtained and tested as a result of the failed destruct on June 20. The destruct passed.
- Tetra Tech inspected the subgrade that Ewing worked on throughout the day. At the toe of the slope along the anchor trench of Phase 1A, the subgrade was saturated as well as soft in areas. See Figures 6 and 7.
  - Tetra Tech discussed the issues with Clint Abel, and Clint noted that he had told Ewing to excavate out any soft or saturated materials.
  - Tetra Tech spoke to Clint Green about what would be tolerated with the subgrade to determine how much additional work would be required to deploy GCL.
    - It was agreed that no soft/yielding or saturated areas would be accepted for the subgrade, which follows the original specifications.
    - Tetra Tech spoke with Ewing and advised that the saturated sand at the toe of the slope would have to be removed.

2.6 June 26, 2020

- Weather: partly cloudy with periods of rain in the afternoon.
- Ewing is removing soft and saturated subgrade materials from the toe of the slope.
  - Tetra Tech directed the subgrade removal for the next two slope lengths of liner and showed Ewing what was expected for further subgrade excavation.
  - Once the subgrade materials had been removed, Ewing raked the subgrade smooth and removed any large rocks over 50 mm.
  - Ewing will continue to fix the subgrade in advance of liner deployment as they have time.
  - Tetra Tech advised Ewing that low spots that are saturated and soft along the Phase 1A anchor trench should be backfilled as soon as possible to limit further water infiltration due to rainfall.
- Tetra Tech approved the subgrade for the next two slope lengths of liner to be deployed.
- Layfield and Ewing labourers removed eroded sand from the GCL and then placed three slope lengths of GCL and one slope length of liner.
  - Layfield could not get all the GCL covered by the end of the day due to lost time in the morning because of subgrade prep and periodic rainstorms in the afternoon.
  - Layfield deployed liner panels P63 and P64.
- All extrusion welding and liner repairs identified by pressure testing were completed on June 25. Layfield completed pressure testing of seams for panels P37 to P57. One more seam requires extrusion welding to test on the P51-P54 vertical seam.

2.7 June 27, 2020

- Weather: partly cloudy with wind and rainy periods.
- Ewing continued to repair subgrade at toe of slope in advance of liner deployment. See Figures 8 to 11.
  - The toe was repaired to allow two slope lengths of liner to be deployed.
  - Upon completion of repairs, Tetra Tech inspected and approved the subgrade for GCL deployment.
- Layfield continued liner deployment.
  - Layfield deployed, and fused liner overtop of GCL from June 26, then deployed two slope lengths of GCL and one slope length of liner. The liner was fused immediately upon deployment.
  - Rain delayed deployment at 9:45 am for approximately 1.5 hours.
  - Layfield deployed one more slope length of GCL and liner.
  - Liner panels P65 through P71 were deployed today.
- Layfield conducted extrusion welding on identified repairs as well as conducted required extrusion welding on liner deployed June 26.

2.8 June 28, 2020

- Weather: sunny with windy periods in the afternoon.
- Ewing repaired subgrade at the toe of the slope to allow for two slope lengths of liner to be deployed. See Figure 13.
  - Tetra Tech approved the subgrade for liner deployment.
- Layfield deployed three slope lengths of GCL and two slope lengths of liner. See Figures 14 to 16.
  - Liner was fused immediately after deployment.
- Tetra Tech and Chad worked with Ewing to fix up the toe of the slope subgrade. See Figures 17 to 20.
  - Ewing continued to work on subgrade on the slope afterward.
- Tetra Tech and Layfield obtained seven destructive samples for testing.
  - Layfield immediately patched where destructive samples were taken on the slope.
  - Upon obtaining the destruct sample from the P68-P70 vertical seam, it was found that due to a fusion apparatus operator error, the air seam was damaged along the entire length of the seam. See Figures 21 and 22.
    - Although the seam is fused together, it cannot be pressure tested. Layfield will extrusion weld the entire seam.
  - Destructive testing was not performed today

3.0 GEOSYNTHETIC ROLL NUMBERS PLACED

Table 1 summarizes the daily geosynthetic roll numbers placed on the slope during liner installation. All panel lengths are approximate and where 45 degree joints are used, panel length is based from the center of the panel.

Table 1: Geosynthetic Roll Numbers Placed on Slope

Date	GCL Roll Number	LLDPE Liner Roll Number	Panel Number (Length)
June 22	-	-	-
June 23	-	-	-
June 24	-	-	-
June 25	-	-	-
June 26	0242-347865, 0242-347886 0242-347890, 0242-347887 0242-347899, 0242-347892 0242-347898, 502343968 502343561, 502343963 502343578, 502343958	10697-002 10700-029	P63 (93.5 m) P64 (104.7 m)

Date	GCL Roll Number	LLDPE Liner Roll Number	Panel Number (Length)
June 27	0242-347885, 0242-347860 0242-347788, 0242-347893 0242-347798, 0242-347888 0242-347897, 0242-347870 0242-347792, 0242-347797 0242-347889, 0242-347871 0242-347802, 0242-347794	10700-029 10700-037 10697-010 10700-025 10700-028 10700-024	P65 (23 m) P66 (125.7 m) P67 (48.3 m), P68 (74.7 m) P69 (122.3 m) P70 (125.9 m) P71 (71.1 m)
June 28	0242-347799, 0242-347801 0242-347800, 0242-347795 0242-347803, 0242-347793 0242-347864, 0242-347863 0242-347796, 0242-347862 0242-347804, 502347666	10700-021 10700-001 10700-004 10700-038	P72 (56.8 m) P73 (111.4 m) P74 (17.8 m), P75 (111.8 m) P76 (74.2 m)

4.0 TRIAL SEAM

Table 2 summarizes the weekly trial seam results. For fusion, the apparatus settings are temperature and speed, and for extrusion, the apparatus settings are preheat and barrel temperature. Five tests are performed for each criterion.

Table 2: Trial Seam Results

Date	Time	Fusion or Extrusion	Tech	Apparatus #	Temp or Preheat (°F)	Speed (%) or Barrel Temp (°F)	$Peel_{inside}$ (100 min)	$Peel_{outside}$ (100 min for Fusion 88 min for Extrusion)	Shear (120 min)	Smooth or Textured
Jun 25	7:40	Extrusion	EP	PX-011	510	500	N/A	134 122 126 138 135	167 171 159 169 162	N/A
Jun 25	8:00	Extrusion	RW	04037	500	495	N/A	94 115 108 109 113	141 142 144 144 162	N/A
Jun 25	12:00	Extrusion	EP	PX-011	510	500	N/A	96 141 130 105 138	151 156 158 174 169	N/A
Jun 25	12:25	Extrusion	RW	04037	500	495	N/A	127 103 133 130 119	173 177 179 170 174	N/A

Date	Time	Fusion or Extrusion	Tech	Apparatus #	Temp or Preheat (°F)	Speed (%) or Barrel Temp (°F)	$Peel_{inside}$ (100 min)	$Peel_{outside}$ (100 min for Fusion 88 min for Extrusion)	Shear (120 min)	Smooth or Textured
Jun 26	12:50	Fusion	DT	WW-026	850	35	141 147 162 129 148	155 142 151 153 156	204 171 179 162 197	Textured
Jun 26	12:50	Fusion	EP	WW-022	850	55	147 145 149 135 130	153 152 156 146 148	161 161 165 165 173	Smooth
Jun 26	12:55	Fusion	DT	WW-026	850	55	147 140 143 149 140	148 143 152 150 149	163 159 164 164 165	Smooth
Jun 27	7:30	Fusion	DT	WW-026	850	35	153 155 150 147 154	156 156 162 157 139	185 178 198 181 204	Textured
Jun 27	7:30	Fusion	JK	WW-022	850	55	141 143 145 144 142	144 157 148 146 146	166 164 179 176 168	Smooth
Jun 27	7:40	Fusion	DT	WW-026	850	55	154 141 143 144 151	155 155 153 159 158	165 159 166 169 170	Smooth
Jun 27	8:00	Extrusion	TH	04037	500	495	N/A	117 131 129 118 115	174 168 169 171 171	N/A
Jun 27	1:00	Extrusion	TH	04037	500	495	N/A	147 144 140 154 143	179 172 174 174 173	N/A
Jun 27	12:53	Fusion	DT	WW-026	850	35	144 143 136 136 150	154 135 151 155 167	172 167 170 176 171	Textured

Date	Time	Fusion or Extrusion	Tech	Apparatus #	Temp or Preheat (°F)	Speed (%) or Barrel Temp (°F)	$Peel_{inside}$ (100 min)	$Peel_{outside}$ (100 min for Fusion 88 min for Extrusion)	Shear (120 min)	Smooth or Textured
Jun 27	12:50	Fusion	JK	WW-022	850	55	150 156 146 153 148	154 149 162 159 151	171 164 165 167 171	Smooth
Jun 27	1:00	Fusion	DT	WW-026	850	55	141 150 147 146 149	151 150 153 149 146	168 161 172 166 159	Smooth
Jun 27	4:45	Fusion	DT	WW-026	850	55	150 128 146 141 142	132 142 142 140 143	149 151 160 152 158	Smooth
Jun 27	4:40	Fusion	JK	WW-022	850	55	126 143 140 142 130	130 125 130 122 131	149 145 151 152 153	Smooth
Jun 28	11:50	Fusion	DT	WW-026	850	35	137 137 138 150 148	156 150 148 137 144	169 161 170 163 165	Textured
Jun 28	11:40	Fusion	JK	WW-022	850	55	130 131 136 143 127	130 133 150 136 145	154 152 153 148 149	Smooth
Jun 28	11:55	Fusion	DT	WW-026	850	55	129 122 129 132 124	133 127 131 130 130	143 138 139 151 149	Smooth
Jun 28	12:30	Extrusion	TH	04037	500	495	N/A	121 120 114 133 128	154 148 167 161 161	N/A
Jun 28	4:50	Extrusion	EP	PX-035	500	490	N/A	120 143 123 124 142	158 157 151 163 163	N/A

Date	Time	Fusion or Extrusion	Tech	Apparatus #	Temp or Preheat (°F)	Speed (%) or Barrel Temp (°F)	$Peel_{inside}$ (100 min)	$Peel_{outside}$ (100 min for Fusion 88 min for Extrusion)	Shear (120 min)	Smooth or Textured
Jun 28	5:00	Extrusion	EA	04037	500	495	N/A	88 102 122 110 131	152 151 158 149 157	N/An

5.0 NON-DESTRUCTIVE TESTING

Table 3 summarizes the weekly non-destructive pressure testing results.

Table 3: Non-Destructive Testing Results

Date Fused	Date Tested	Time Tested	Seam #	psi Start	psi End	Pass or Fail	Notes
Jun 14	Jun 25	8:46	P2-P39 Vertical	40	36	Pass	
Jun 14	Jun 25	8:45	P38-P39 Vertical	40	40	Pass	
Jun 14	Jun 25	8:50	P38-P42 Vertical	40	40	Pass	
Jun 14	Jun 25	8:50	P38-P41 Vertical	40	40	Pass	
Jun 14	Jun 25	8:50	P41-P42 Cross	40	40	Pass	
Jun 15	Jun 25	8:53	P42-P44 Vertical	40	40	Pass	
Jun 15	Jun 25	8:53	P41-P44 Vertical	40	40	Pass	
Jun 15	Jun 25	9:03	P44-P47 Vertical	40	40	Pass	
Jun 15	Jun 25	9:14	P46-P47 Cross	40	40	Pass	
Jun 15	Jun 25	9:03	P46-P44 Vertical	40	40	Pass	
Jun 16	Jun 25	9:05	P47-P49 Vertical	40	40	Pass	
Jun 16	Jun 25	9:16	P46-P49 Vertical	40	38	Pass	
Jun 18	Jun 25	9:09	P49-P52 Vertical	40	40	Pass	
Jun 18	Jun 25	9:09	P49-P51 Vertical	40	40	Pass	
Jun 18	Jun 25	9:27	P52-P54 Vertical	40	40	Pass	
Jun 18	Jun 25	9:41	P51-P52 Cross	40	39	Pass	
Jun 18	Jun 25		P51-P54 Vertical			Fail	Fast air leak, hole identified for repair
Jun 18	Jun 25	9:32	P54-P57 Vertical	40	37	Pass	
Jun 18	Jun 25	9:32	P54-P56 Vertical	40	40	Pass	
Jun 18	Jun 25	9:47	P57-P59 Vertical	40	36	Pass	
Jun 18	Jun 25		P56-P59 Vertical			Fail	Not holding air, requires re-block
Jun 18	Jun 25		P58-P59 Cross			Pass	Requires cap strip
Jun 18	Jun 25		P56-P58 Vertical			Fail	Requires extrusion
Jun 18	Jun 25	9:57	P53-P54 Cross	40	40	Pass	
Jun 18	Jun 25	9:57	P53-P56 Vertical	40	40	Pass	
Jun 18	Jun 25	9:59	P51-P53 Vertical	40	40	Pass	
Jun 18	Jun 25	10:01	P48-P51 Vertical	40	39	Pass	Above patch
Jun 16	Jun 25	10:01	P48-P49 Cross	40	40	Pass	
Jun 16	Jun 25	10:04	P46-P48 Vertical	40	40	Pass	
Jun 15	Jun 25	10:16	P43-P46 Vertical	40	40	Pass	

Date Fused	Date Tested	Time Tested	Seam #	psi Start	psi End	Pass or Fail	Notes
Jun 15	Jun 25	10:16	P43-P44 Cross	40	40	Pass	
Jun 15	Jun 25	10:18	P41-P43 Vertical	40	40	Pass	
Jun 14	Jun 25	10:22	P2-P38 Vertical	40	40	Pass	
Jun 14	Jun 25	10:22	P1-P38 Vertical	40	40	Pass	
Jun 14	Jun 25	10:46	P1-P37 Vertical	40	40	Pass	Above patch
Jun 14	Jun 25	10:46	P37-P38 Cross	40	40	Pass	
Jun 14	Jun 25	10:48	P37-P41 Vertical	40	40	Pass	
Jun 14	Jun 25	10:51	P1-P37 Vertical	40	39	Pass	Between patches
Jun 14	Jun 25	11:02	P37-P40 Vertical	40	40	Pass	
Jun 14	Jun 25	11:02	P40-P41 Cross	40	37	Pass	
Jun 15	Jun 25	11:06	P41-P43 Vertical			Fail	Below patch, requires block
Jun 15	Jun 25	11:05	P40-P43 Vertical	40	37	Pass	
Jun 15	Jun 25	11:10	P43-P45 Vertical	40	39	Pass	
Jun 15	Jun 25	11:10	P45-P46 Cross	40	38	Pass	
Jun 15	Jun 25	11:11	P45-P48 Vertical	40	39	Pass	
Jun 18	Jun 25	11:13	P48-P50 Vertical	40	39	Pass	
Jun 18	Jun 25	11:13	P50-P51 Cross	40	40	Pass	
Jun 18	Jun 25	11:15	P50-P53 Vertical	40	40	Pass	
Jun 18	Jun 25	11:16	P53-P55 Vertical	40	40	Pass	
Jun 18	Jun 26	10:00	P51-P54 Vertical	40	40	Pass	Above extrusion mid seam
Jun 18	Jun 26	8:26	P56-P59 Vertical	40	40	Pass	
Jun 18	Jun 26	8:26	P56-P58 Vertical	40	40	Pass	
Jun 15	Jun 26	9:05	P41-P43 Vertical	40	40	Pass	
Jun 14	Jun 26	9:20	P1-P37 Vertical	40	40	Pass	Between lower patch and patch above
Jun 18	Jun 26		P51-P54 Vertical			Fail	Below extrusion mid seam Failed due to no T-weld at cross seam
Jun 18	Jun 26	8:55	P55-P58 Vertical	40	40	Pass	

6.0 DESTRUCTIVE TESTING

Table 4 summarizes the weekly destructive testing results. Five tests are performed for each criterion.

Table 4: Destructive Testing Results

Date Fused	Time Fused	Tech	Apparatus	Location (UTM is +/- 4 m)	Sample ID	$Peel_{in}$ (100 min)	$Peel_{out}$ (100 min)	Shear (120 min)	Pass or Fail
Jun 14	3:15	DT	WW-026	P1-P38 Vertical 3 m up seam from D14A	D14B	152 146 173 154 149	163 159 159 158 152	184 184 187 185 183	Pass

7.0 PHOTO LOG



Figure 1: Eroded Sand Subgrade



Figure 2: Sand at Toe of Slope



Figure 3: Sand Eroded On To and Along GCL



Figure 4: Sand Eroded Along GCL and at Toe of Slope



Figure 5: Overall Deployment and Subgrade Sand Placement as of June 25



Figure 6: Wet Spot in Subgrade Sand at Toe of Slope



Figure 7: Soft Spot in Subgrade Sand at Toe of Slope



Figure 8: Soft and Saturated Subgrade Sand Excavated from Toe of Slope



Figure 9: Toe of Slope Raked and Rock Picked

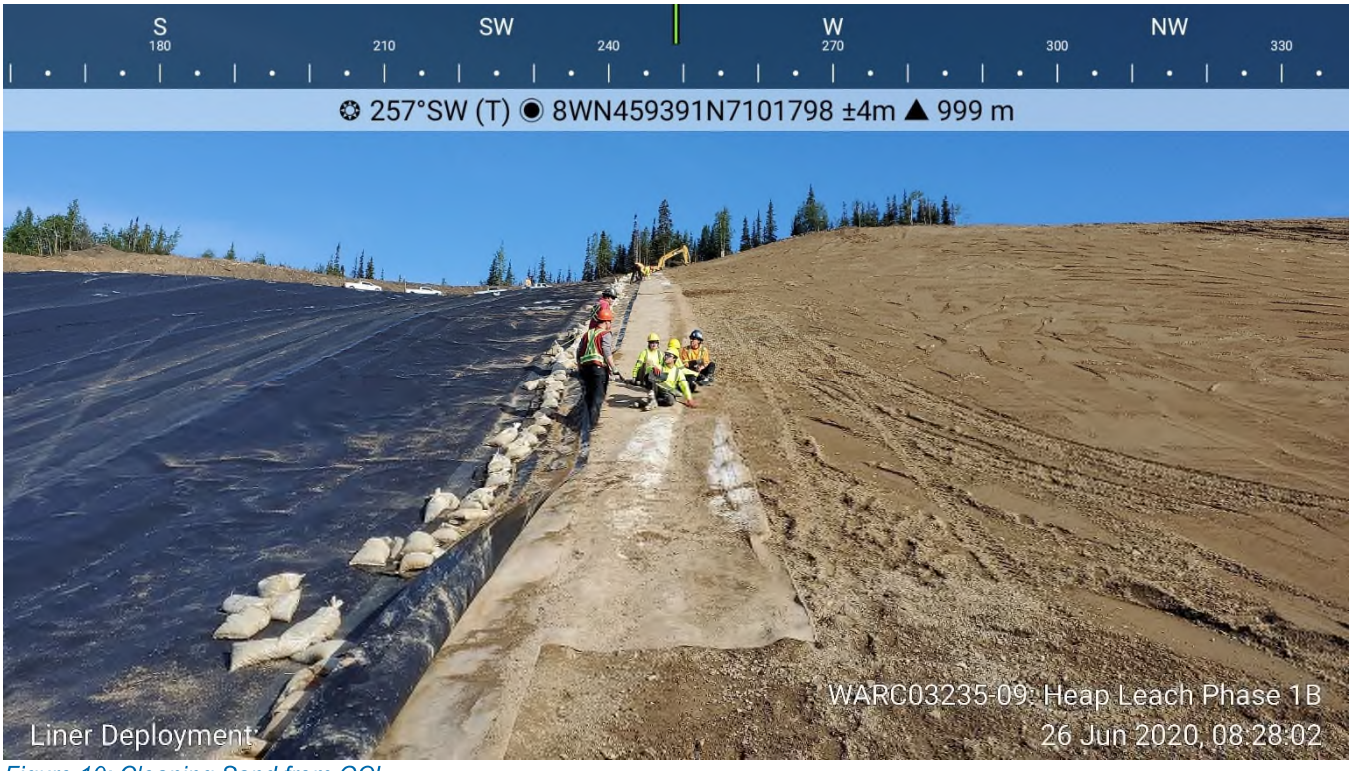


Figure 10: Cleaning Sand from GCL

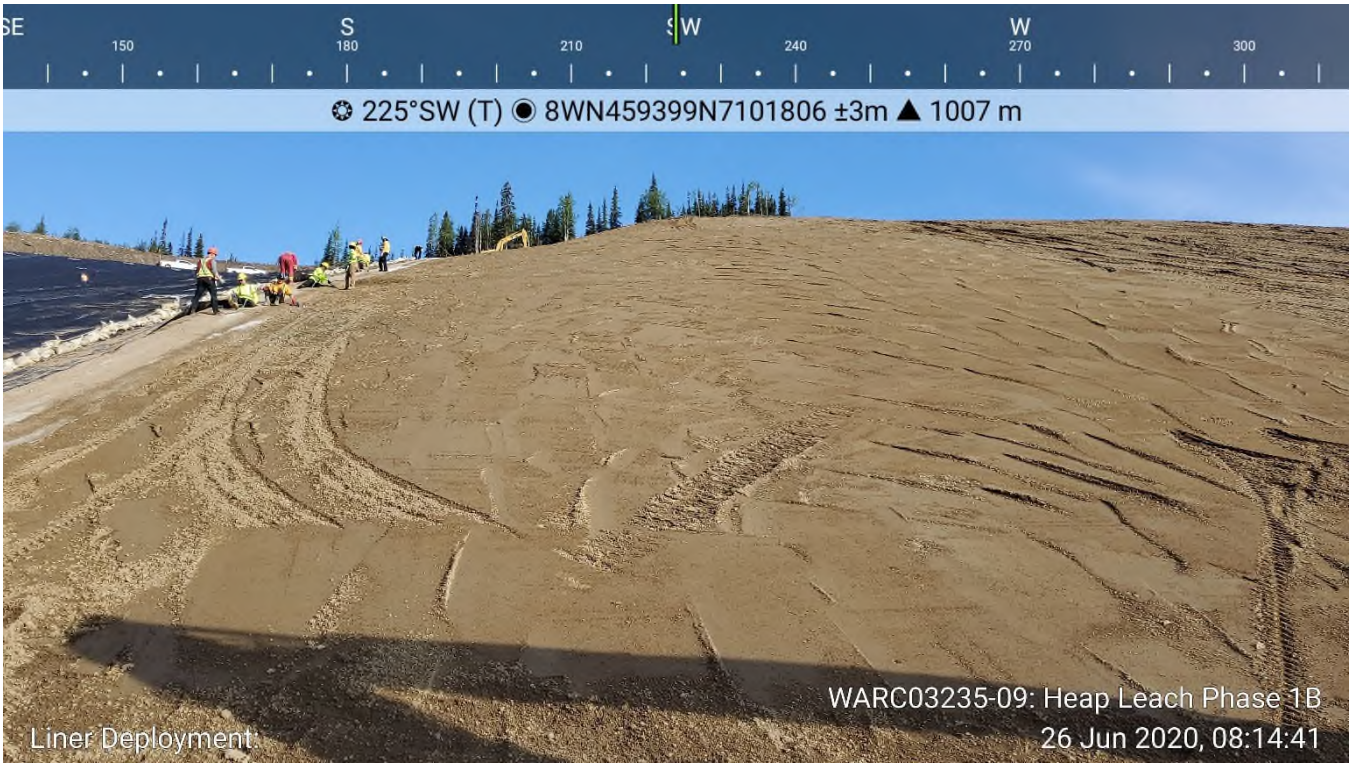


Figure 11: Subgrade Ready for GCL Deployment



Figure 12: Overall Slope as of June 26



Figure 13: Toe of Slope Subgrade Approved for June 27 Deployment



Figure 14: June 27 Liner Deployment



Figure 15: West Side of Phase 1B Total Deployment as of June 27



Figure 16: GCL on Slope in Advance of Liner Panels P75 and P76



Figure 17: Toe of Slope Subgrade prior to Rock Picking and Raking



Figure 18: Toe of Slope Subgrade after Rock Picking and Raking

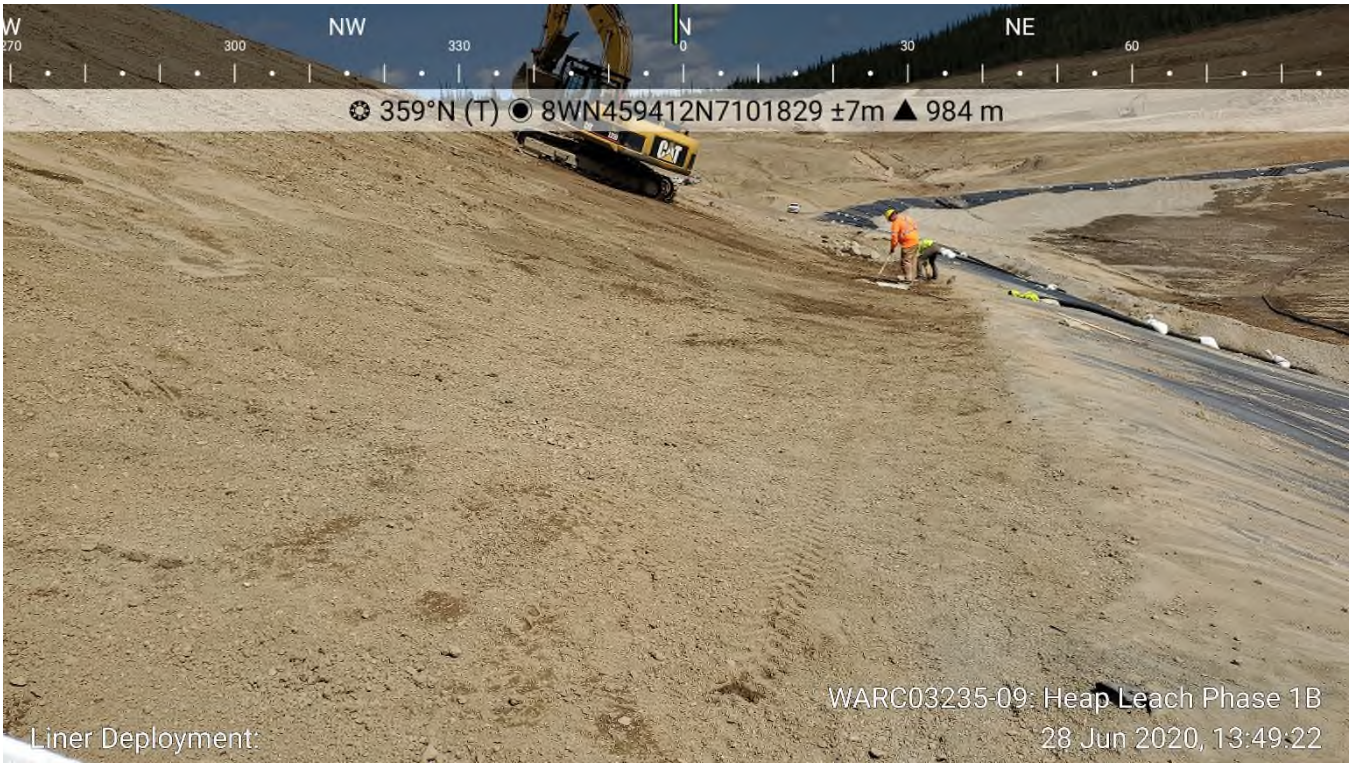


Figure 19: Toe of Slope after Second Clean Up and Rock Picking



Figure 20: Subgrade prior to GCL Deployment



Figure 21: Damaged Air Channel from Fusion Welding



Figure 22: Air Channel Damaged by Fusion Welding



Figure 23: Overall Slope as of June 28

TETRA TECH

WEEKLY FIELD REPORT

ISSUED FOR USE

Project:	Eagle Gold Heap Leach Phase 1B	**Date:**	July 5, 2020
Location:	Eagle Gold Mine	**Contractor:**	Ewing Transport / Layfield
Client:	Victoria Gold Corp.	**Contractor's Rep:**	Marshall Ewing / Chad Messervey
Contact:	Clint Abel	**Contractor's Email:**	
Weather:	Variable (see daily entries)	**Tetra Tech Representative:**	Adam Mickey
File:	704-ENG.WARC03235-09	**Status:**	Issued for Use

1.0 INTRODUCTION

Tetra Tech Canada Inc. (Tetra Tech) was retained by Victoria Gold Corp. (Victoria Gold) to provide CQA services at the Eagle Gold mine located north of Mayo, Yukon, at Dublin Gulch for the Eagle Gold Heap Leach Phase 1B expansion (Phase 1B). Mr. Adam Mickey, EIT, is Tetra Tech's representative on site.

Forte Dynamics (Forte) out of Fort Collins, Colorado provided the design and specification for Phase 1B, and Forte's representative is Clint Green.

Clint Abel, of JDS Energy & Mining, is Victoria Gold's project manager on site at the Eagle Gold mine.

Ewing Transport (Ewing), based out of Mayo, Yukon, is the construction contractor for Phase 1B.

Layfield Environmental Containment (Layfield) has been retained to provide and install the liner for Phase 1B, and their supervisor on site is Chad Messervey.

The following Field Report outlines Tetra Tech's CQA for the period of June 29, 2020, to July 5, 2020.

2.0 DAILY REPORTS

2.1 Highlights

- Panels P77 through P103 were deployed this week for a total length of approximately 2,162.2 m, giving a total area deployed of approximately 14,703 m^2.
- Destructive testing has been performed for all panels placed up to July 3, and all destructive samples passed.
- All pressure testing has been completed for all liner deployed to July 1.
- Rain delayed liner deployment throughout the week.
- Layfield is placing three panels of GCL for every two panels of 80 mm LLDPE liner.

Tetra Tech Canada Inc.
61 Wasson Place
Whitehorse, YT Y1A 0H7 CANADA
Tel 867.668.3068 Fax 867.668.4349

2.2 June 29, 2020

- Weather: cloudy, turning to rain in the afternoon.
- Layfield is deploying GCL and Liner.
  - Three slope lengths of GCL and two slope lengths of liner were deployed.
  - Rain at 3:00 halted deployment.
  - Deployment continued after rain, and Layfield deployed 1 ¾ slope lengths of GCL.
  - Panels P77 through P81 were deployed today.
- Three additional destructive samples were obtained by Tetra Tech and Layfield.
  - Destructive sampling is caught up to all deployment as of June 28.
  - Destructive testing was performed with all samples passing.

2.3 June 30, 2012

- Weather: mostly cloudy, turning to cloudy with periods of rain.
- Layfield is continuing deployment of GCL and liner.
  - Layfield is conducting trial seam testing at deployment location.
  - 1 ¼ slope lengths of GCL were placed, followed by two slope lengths of liner.
  - Periods of rain began at 12:00 pm halting deployment and fusing.
    - A break in the rain allowed fusing of the last vertical seam to commence.
    - Rain began again at 2:00 pm, shutting down deployment for the rest of the day.
  - Panels P82 through P87 were deployed today.

2.4 July 1, 2020

- Weather: cloudy, turning to partly cloudy in the late afternoon.
- Layfield is continuing deployment of GCL and liner.
  - Layfield deployed three slope lengths of GCL and two slope lengths of liner by 1:30 pm.
  - Layfield placed two more slope lengths of GCL and one more slope length of liner.
  - Panels P87 through P94 were deployed today.
- Layfield's QC conducted pressure testing on all untested seams up to panel P76.
  - With the exception of the P61-P64 vertical seam, all seams passed pressure testing.
  - The P51-P54 seam retest passed.

2.5 July 2, 2020

- Weather: sunny.
- Tetra Tech performed soils logging at three spots along the east laterals.
- Ewing is continuing to fix subgrade at the toe of the slope ahead of deployment.
  - Tetra Tech made regular inspections throughout the day to ensure that the subgrade was being prepared to contract specifications.
- Layfield is continuing deployment of GCL.
  - Layfield is beginning to angle deployment of the GCL to correct the angles for a continuation of straight deployment.
    - A straight piece of liner will be installed further along the perimeter road to correct the angle, and then the liner will be angled from the current deployment edge at approximately 45 degree angles to the slope.
  - Layfield spent the day deploying GCL.
    - Rain is not expected for the next few days. Layfield has to deploy the area shown in photos with GCL prior to deploying liner.
  - Layfield is picking large rocks out of the sand subgrade as they are found during deployment.
- Tetra Tech identified two cross seams that did not have the required 10 m of spacing between them.
  - Spacing is approximately 0.5 m.
  - Tetra Tech discussed with Chad about the issue. Chad is expecting that they will remove one of the cross seams and repair the section to have proper spacing between the cross seams.
- Layfield's QC performed extrusion welding on deployed liner.
  - Tetra Tech and QC determined required locations for destructive testing samples to be obtained. QC repaired any destructive testing samples obtained on the slope immediately.

2.6 July 3, 2020

- Weather: sunny and windy.
- Ewing is continuing to prep subgrade at the toe of the slope.
  - Tetra Tech is assessing the subgrade periodically to ensure it meets contract specifications.
- Layfield is continuing to deploy GCL on the slope.
  - Layfield intended to deploy liner, but wind conditions are not conducive to liner deployment.
  - Layfield completed GCL placement, but it was still too windy to begin liner deployment.
- Tetra Tech and Layfield QC performed destructive testing.
  - All destructive samples passed, and destructive testing is caught up to all liner deployed to date.

- After GCL placement, Layfield finished the day by doing extrusion welding on the deployed liner.
- Layfield has decided that the improper cross-seam panel will be removed and replaced as soon as possible.

2.7 July 4, 2020

- Weather: sunny.
- Layfield is deploying liner on GCL placed between July 2 and July 3.
  - Wind delayed deployment throughout the day, and deployment was halted at 4:30 pm due to wind.
  - Layfield got three slope lengths of liner on the slope but did not complete deployment of liner over the area of exposed GCL.
- Layfield's QC is extrusion welding liner deployed before July 1.
  - All panel intersections have been T-welded.
  - The P68-P70 seam with the damaged air channel has been extrusion welded for its length.
  - Remaining detail work required for panels P1 through P94:
    - Tie in to Phase 1A; and
    - Replace panels with out of spec distance between cross seams.
- Layfield's QC conducted pressure testing on seams up to P94.
- All geosynthetics have been delivered to site, and Tetra Tech completed the review of all Mill Certs. All geosynthetics meet or exceed contract specifications.

2.8 July 5, 2020

- Weather: Partly cloudy, turning to cloudy in the morning.
- Layfield is continuing to deploy liner on GCL deployed on July 2 and July 3.
  - Layfield had to stop deployment multiple times due to wind and shut down deployment for the day at 3:00 pm due to wind
    - Layfield could not do any other work due to rain beginning at 3:30 pm.
- Layfield's QC continued pressure testing on seams up to P94.

3.0 GEOSYNTHETIC ROLL NUMBERS PLACED

Table 1 summarizes the daily geosynthetic roll numbers placed on the slope during liner installation. All panel lengths are approximate and where 45 degree joints are used, panel length is based from the center of the panel.

Table 1: Geosynthetic Roll Numbers Placed on Slope

Date	GCL Roll Number	LLDPE Liner Roll Number	Panel Number (Length)
June 29	0242-347861, 0242-347859 0242-34791X, 0242-347614 0242-347725, 0242-347618 0242-347131, 0242-347139 0242-347158, 0242-347130 0242-347727, 0242-347884 502347131, 502347139 502347158, 502347130 502347134, 502347166 502347170, 502347161 502347140, 502347142 502347159, 502347145 502347133	10700-038 10700-023 10700-002 10700-031	P77 (35 m) P78 (112.4 m) P79 (38.6 m), P80 (82.4 m) P81 (104.6 m)
June 30	0242-347739, 0242-347722 0242-347734, 0242-347726 0242-347723, 502347672	10700-031 10700-009 10700-007 10700-004 10700-011	P82 (13.4 m) P83 (120.7 m) P84 (60.5 m), P85 (54.5 m) P86 (127.9 m) P87 (12.4 m)
July 1	0242-347724, 0242-347740 0242-347732, 0242-347733 0242-347731, 0242-347739 0242-347728, 502347148 502347141, 502347151 502347144, 502347147 502347164, 502347160 502347167, 502347175 502347149, 502347172 502347159, 502347143 502347132, 502347150 1 roll number unknown	10700-011 10700-010 10700-006 10700-016 10700-015	P88 (104.5 m) P89 (91.8 m), P90 (35.4 m) P91 (128.5 m) P92 (42.1 m), P93 (82.3 m) P94 (123.7 m)

Date	GCL Roll Number	LLDPE Liner Roll Number	Panel Number (Length)
July 2	0242-347531, 502347095 502347098, 502347173 502346969, 502347171 502346968, 502347030 502347169, 502347092 502347097, 502347100 502347088, 502347099 502347165, 502347026 502346948, 502346966 502347082, 502347096 502346967, 502347083 502347091, 502347086 502347172, 502347155 502347174, 502347168	-	-
July 3	0242-347517, 0242-347514 0242-347516, 0242-347532 0242-347xxx, 502347089 502347103, 502347090 502347031, 502347027 502346937, 502346955 502347087, 502346965 502347154	-	-
July 4	-	10700-001 10700-021 10700-029 10700-004 10700-003	P95 (123.3 m) P96 (97.9 m) P97 (128.4 m) P98 (73.3 m), P99 (50.6 m) P100 (129.4 m)
July 5	-	10700-021 10700-024 10700-035	P101 (12.1 m) P102 (126 m) P103 (50.5 m)

4.0 TRIAL SEAM

Table 2 summarizes the weekly trial seam results. For fusion, the apparatus settings are temperature and speed, and for extrusion, the apparatus settings are preheat and barrel temperature. Five tests are performed for each criterion.

Table 2: Trial Seam Results

Date	Time	Fusion or Extrusion	Tech	Apparatus #	Temp or Preheat (°F)	Speed (%) or Barrel Temp (°F)	$Peel_{inside}$ (100 min)	$Peel_{outside}$ (100 min for Fusion 88 min for Extrusion)	Shear (120 min)	Smooth or Textured
Jun 29	9:00	Fusion	DT	WW-026	850	35	164 168 155 169 149	159 157 151 150 151	183 177 169 176 182	Textured

Date	Time	Fusion or Extrusion	Tech	Apparatus #	Temp or Preheat (°F)	Speed (%) or Barrel Temp (°F)	$Peel_{inside}$ (100 min)	$Peel_{outside}$ (100 min for Fusion 88 min for Extrusion)	Shear (120 min)	Smooth or Textured
Jun 29	9:00	Fusion	JK	WW-022	850	55	143	135	163	Smooth
							139	143	172	
							148	122	165	
							152	119	154	
							131	136	158	
Jun 29	9:00	Fusion	DT	WW-026	850	55	149	148	161	Smooth
							133	141	164	
							156	147	154	
							133	147	146	
							149	145	165	
Jun 29	10:30	Extrusion	TH	04037	500	495	N/A	125	156	N/A
								132	157	
								132	153	
								121	165	
								121	159	
Jun 29	1:30	Fusion	DT	WW-026	850	35	158	150	159	Textured
							144	135	167	
							145	151	164	
							139	148	176	
							153	147	170	
Jun 29	1:00	Fusion	JK	WW-022	850	35	140	150	168	Textured
							145	152	182	
							147	150	185	
							140	134	169	
							141	139	169	
Jun 29	1:30	Fusion	JK	WW-022	850	55	134	154	174	Smooth
							129	151	174	
							122	150	172	
							146	150	175	
							115	150	161	
Jun 29	1:35	Fusion	DT	WW-026	850	55	144	155	160	Smooth
							144	147	166	
							139	154	168	
							138	154	167	
							146	151	165	
Jun 30	9:40	Fusion	JK	WW-022	850	55	140	171	162	Smooth
							164	142	164	
							158	149	165	
							152	140	169	
							141	143	167	
Jun 30	8:40	Fusion	DT	WW-026	850	35	174	159	183	Textured
							168	156	185	
							169	171	180	
							174	173	181	
							173	167	184	

Date	Time	Fusion or Extrusion	Tech	Apparatus #	Temp or Preheat (°F)	Speed (%) or Barrel Temp (°F)	$Peel_{inside}$ (100 min)	$Peel_{outside}$ (100 min for Fusion 88 min for Extrusion)	Shear (120 min)	Smooth or Textured
Jun 30	9:40	Fusion	DT	WW-026	850	55	156	150	176	Smooth
							154	151	175	
							158	147	180	
							161	146	180	
							157	151	181	
Jun 30	1:40	Fusion	JK	WW-022	850	55	142	136	159	Smooth
							161	145	160	
							159	147	161	
							158	141	165	
							151	144	160	
Jun 30	1:40	Fusion	DT	WW-026	850	55	157	149	177	Smooth
							156	152	174	
							157	148	179	
							160	149	180	
							161	150	182	
Jun 30	1:40	Fusion	DT	WW-026	850	35	173	160	180	Textured
							171	162	187	
							170	170	183	
							169	169	181	
							175	175	185	
Jul 1	11:00	Fusion	EA	WW-026	850	35	135	135	161	Textured
							129	139	170	
							137	135	170	
							134	151	169	
							134	138	171	
Jul 1	11:00	Fusion	EA	WW-026	850	55	125	128	149	Smooth
							135	127	148	
							129	132	152	
							132	129	148	
							131	128	145	
Jul 1	11:00	Fusion	JK	WW-022	850	55	111	118	142	Smooth
							123	147	139	
							127	119	129	
							134	121	130	
							118	122	135	
Jul 1	4:00	Fusion	EA	WW-026	850	35	146	141	184	Textured
							119	131	126	
							147	141	157	
							120	155	185	
							159	158	174	
Jul 1	4:00	Fusion	EA	WW-026	850	55	129	135	153	Smooth
							134	131	155	
							132	137	145	
							136	125	145	
							137	132	152	

Date	Time	Fusion or Extrusion	Tech	Apparatus #	Temp or Preheat (°F)	Speed (%) or Barrel Temp (°F)	$Peel_{inside}$ (100 min)	$Peel_{outside}$ (100 min for Fusion 88 min for Extrusion)	Shear (120 min)	Smooth or Textured
Jul 1	4:00	Fusion	JK	WW-022	850	55	142 136 135 133 131	131 130 132 139 129	146 145 150 150 148	Smooth
Jul 2	11:30	Extrusion	TH	04037	500	490	N/A	137 127 145 118 131	151 154 146 146 157	N/A
Jul 2	5:00	Extrusion	TH	04037	500	490	N/A	111 113 115 106 115	142 143 144 150 152	N/A
Jul 3	12:20	Extrusion	TH	04037	500	490	N/A	118 113 115 111 119	155 148 147 152 152	N/A
Jul 3	3:00	Extrusion	EA	04037	500	495	N/A	102 91 94 90 103	162 161 167 160 163	N/A
Jul 3	3:00	Extrusion	GP	04037	500	495	N/A	116 114 135 90 112	170 153 165 158 165	N/A
Jul 3	4:00	Extrusion	RP	PX-035	515	500	N/A	158 161 157 158 167	171 171 175 174 170	N/A
Jul 4	10:30	Fusion	EA	WW-026	850	35	137 135 155 142 147	151 133 137 134 147	138 140 141 144 139	Textured
Jul 4	10:30	Fusion	JK	WW-022	850	55	132 131 133 127 138	129 132 125 128 132	150 155 153 163 158	Smooth

Date	Time	Fusion or Extrusion	Tech	Apparatus #	Temp or Preheat (°F)	Speed (%) or Barrel Temp (°F)	$Peel_{inside}$ (100 min)	$Peel_{outside}$ (100 min for Fusion 88 min for Extrusion)	Shear (120 min)	Smooth or Textured
Jul 4	10:30	Fusion	EA	WW-026	850	55	120	123	140	Smooth
							123	133	142	
							125	132	148	
							125	131	139	
							124	130	143	
Jul 4	2:30	Fusion	EA	WW-026	850	35	125	142	153	Textured
							147	144	155	
							132	139	152	
							125	140	149	
							128	136	148	
Jul 4	2:30	Fusion	EA	WW-026	850	55	125	114	127	Smooth
							117	123	125	
							115	116	138	
							115	121	131	
							126	120	133	
Jul 5	8:00	Fusion	EA	WW-026	850	35	131	156	165	Textured
							160	140	169	
							133	159	182	
							139	152	180	
							141	148	175	
Jul 5	8:00	Fusion	EA	WW-026	850	55	160	141	173	Smooth
							166	121	174	
							161	121	176	
							159	124	175	
							165	136	171	
Jul 5	8:00	Fusion	JK	WW-022	850	55	153	117	153	Smooth
							148	118	144	
							145	143	176	
							120	145	151	
							142	146	152	
Jul 5	12:00	Fusion	JK	WW-022	850	55	148	119	151	Smooth
							149	121	145	
							141	142	178	
							138	147	150	
							140	140	151	
Jul 5	12:00	Fusion	EA	WW-020	850	35	135	129	162	Textured
							131	136	158	
							132	145	159	
							165	137	149	
							136	142	151	
Jul 5	12:00	Fusion	EA	WW-020	850	55	137	126	156	Smooth
							137	128	151	
							140	133	154	
							141	131	148	
							143	129	151	

5.0 NON-DESTRUCTIVE TESTING

Table 3 summarizes the weekly non-destructive pressure testing results.

Table 3: Non-Destructive Testing Results

Date Fused	Date Tested	Time Tested	Seam #	psi Start	psi End	Pass or Fail	Notes
Jun 28	July 1	8:46	P71-P73 Vertical	40	40	Pass	
Jun 28	July 1	8:46	P70-P71 Cross	40	40	Pass	
Jun 27	July 1	8:49	P69-P71 Vertical	40	40	Pass	
Jun 18	July 1	8:01	P51-P54 Vertical	40	37	Pass	Retest after re-block
Jun 20	July 1	8:09	P59-P62 Vertical	40	37	Pass	
Jun 20	July 1	8:14	P61-P62 Cross	40	40	Pass	
Jun 20	July 1	8:14	P62-P64 Vertical	40	40	Pass	
Jun 27	July 1	8:25	P64-P67 Vertical	40	40	Pass	
Jun 27	July 1	8:26	P66-P67 Cross	40	40	Pass	
Jun 27	July 1	8:28	P67-P69 Vertical	40	40	Pass	
Jun 28	July 1	9:56	P71-P74 Vertical	40	39	Pass	
Jun 28	July 1	9:57	P73-P74 Cross	40	38	Pass	
Jun 28	July 1	9:58	P74-P76 Vertical	40	40	Pass	
Jun 27	July 1	9:45	P66-P69 Vertical	40	40	Pass	
Jun 26	July 1	9:15	P63-P64 Cross	40	40	Pass	
Jun 20	July 1	10:28	P59-P61 Vertical	40	39	Pass	
	July 1		P61-P64 Vertical	40		Fail	Requires block off
Jun 27	July 1	9:14	P64-P66 Vertical	40	39	Pass	
Jun 20	July 1	11:40	P58-P60 Vertical	40	40	Pass	Below patch
Jun 20	July 1	11:43	P58-P60 Vertical	40	38	Pass	Above patch
Jun 20	July 1	11:45	P60-P61 Cross	40	39	Pass	
Jun 20	July 1	11:55	P60-P63 Vertical	40	37	Pass	
Jun 20	July 1	12:02	P61-P63 Vertical	40	40	Pass	Above patch
Jun 20	July 1	11:50	P61-P63 Vertical	40	40	Pass	Below patch
Jun 27	July 1	12:26	P63-P66 Vertical	40	40	Pass	
Jun 27	July 1	12:25	P63-P65 Vertical	40	40	Pass	
Jun 27	July 1	12:29	P65-P66 Cross	40	40	Pass	
Jun 27	July 1	12:28	P65-P68 Vertical	40	40	Pass	
Jun 27	July 1	12:27	P66-P68 Vertical	40	37	Pass	
Jun 20	July 1	12:00	P58-P61 Vertical	40	40	Pass	
Jun 26	July 4	5:42	P61-P64 Vertical	40	40	Pass	Above patch
Jun 26	July 4	5:42	P61-P64 Vertical	40	40	Pass	Below patch
Jun 28	July 4	4:46	P72-P73 Cross	40	40	Pass	
Jun 28	July 4	4:42	P70-P73 Vertical	40	40	Pass	
Jun 28	July 4	4:42	P70-P72 Vertical	40	40	Pass	
Jun 28	July 4	5:19	P73-P76 Vertical	40	40	Pass	
Jun 28	July 4	4:46	P73-P75 Vertical	40	40	Pass	
Jun 28	July 4	4:46	P72-P75 Vertical	40	39	Pass	
Jun 29	July 4	4:39	P77-P78 Cross	40	40	Pass	
Jun 29	July 4	5:15	P76-P78 Vertical	40	40	Pass	
Jun 29	July 4	4:39	P75-P78 Vertical	40	40	Pass	

Date Fused	Date Tested	Time Tested	Seam #	psi Start	psi End	Pass or Fail	Notes
Jun 29	July 4	4:40	P75-P77 Vertical	40	40	Pass	
Jun 29	July 4	4:09	P80-P81 Cross	40	40	Pass	
Jun 29	July 4	4:05	P78-P81 Vertical	40	40	Pass	Below patch
Jun 29	July 4	4:05	P78-P80 Vertical	40	40	Pass	
Jun 29	July 4	4:39	P77-P80 Vertical	40	40	Pass	
Jun 29	July 4	3:30	P75-P76 Cross	40	40	Pass	
Jun 30	July 4	4:03	P80-P83 Vertical	40	39	Pass	
Jun 30	July 4	3:21	P85-P86 Cross	40	39	Pass	
Jun 30	July 4	3:22	P83-P85 Vertical	40	39	Pass	
Jun 30	July 4	3:22	P83-P86 Vertical	40	40	Pass	
July 1	July 4	3:21	P85-P88 Vertical	40	40	Pass	
July 1	July 4	3:21	P86-P88 Vertical	40	40	Pass	
July 1	July 4	3:05	P90-P91 Cross	40	40	Pass	
July 1	July 4	3:03	P88-P90 Vertical	40	40	Pass	
July 1	July 4	3:04	P88-P91 Vertical	40	39	Pass	
July 1	July 4	3:05	P90-P93 Vertical	40	40	Pass	
July 1	July 4	3:05	P91-P93 Vertical	40	40	Pass	

6.0 DESTRUCTIVE TESTING

Table 4 summarizes the weekly destructive testing results. Five tests are performed for each criterion.

Table 4: Destructive Testing Results

Date Fused	Time Fused	Tech	Apparatus	Location (UTM is +/- 4 m)	Sample ID	$Peel_{in}$ (100 min)	$Peel_{out}$ (100 min)	Shear (120 min)	Pass or Fail
Jun 20	10:49	DT	WW-026	P58-P60 Vertical 459,380E 7,101,803N	D26	159 155 156 149 152	156 148 156 150 153	166 170 168 168 169	Pass
Jun 26	3:20	DT	WW-026	P60-P63 Vertical Bottom of Seam 459,391E 7,101,800N	D27	145 155 151 147 152	152 142 150 153 145	166 162 169 167 167	Pass
Jun 27	8:10	JK	WW-022	P63-P66 Vertical 459,380E 7,101,819N	D28	138 137 136 136 140	144 155 148 140 149	163 159 162 161 154	Pass
Jun 27	8:21	DT	WW-026	P65-P66 Cross 459,379E 7,101,819N	D29	151 153 155 152 150	156 152 164 154 153	169 162 167 176 176	Pass

Date Fused	Time Fused	Tech	Apparatus	Location (UTM is +/- 4 m)	Sample ID	$Peel_{in}$ (100 min)	$Peel_{out}$ (100 min)	Shear (120 min)	Pass or Fail
Jun 27	2:00	DT	WW-026	P65-P68 Vertical 459,402E 7,101,811N	D30	137 142 144 141 144	146 142 154 148 153	164 158 162 167 165	Pass
Jun 27	5:15	DT	WW-026	P68-P70 Vertical Bottom of Seam 459,399E 7,101,819N	D31	158 151 147 150 152	148 141 130 144 141	162 164 168 166 165	Pass
Jun 28	1:00	JK	WW-022	P70-P72 Vertical Bottom of Seam 459,408E 7,101,814N	D32	133 134 133 133 126	138 145 146 146 135	160 152 162 155 163	Pass
Jun 27	5:15	JK	WW-022	P69-P71 Vertical Top of Seam 459,266E 7,101,925N	D33	146 145 150 143 141	143 141 142 141 142	154 149 153 157 160	Pass
Jun 28	1:00	DT	WW-026	P73-P74 Cross 459,281E 7,101,930N	D34	167 157 167 164 158	156 147 142 158 157	178 184 175 180 179	Pass
Jun 28	3:30	JK	WW-022	P74-P76 Vertical Top of Seam 459,271E 7,101,950N	D35	139 133 139 136 140	149 148 142 148 146	148 157 151 150 153	Pass
Jul 1	5:27	JK	WW-022	P90-P93 Vertical Bottom of Seam	D36	136 134 136 132 134	139 132 140 143 132	160 157 160 159 156	Pass
Jul 1	2:03	JK	WW-022	P88-P90 Vertical Bottom of Seam	D37	136 142 131 127 133	147 146 147 146 147	161 156 158 150 157	Pass
Jun 30	1:50	JK	WW-022	P82-P87 Vertical Bottom of Seam	D38	142 139 136 143 136	140 144 137 149 144	165 167 164 159 156	Pass

Date Fused	Time Fused	Tech	Apparatus	Location (UTM is +/- 4 m)	Sample ID	$Peel_{in}$ (100 min)	$Peel_{out}$ (100 min)	Shear (120 min)	Pass or Fail
July 1	11:55	EA	WW-026	P87-P88 Vertical Bottom of Seam	D39	127 139 127 134 145	137 138 136 138 138	160 161 164 161 164	Pass
Jun 30	12:03	JK	WW-022	P80-P82 Vertical At Cross Seam of P82-P83	D40	137 139 139 138 141	154 155 151 145 150	166 163 158 162 162	Pass
Jun 30	10:16	DT	WW-026	P82-P83 Cross South Side of Seam	D41	155 166 162 145 144	162 160 154 156 153	159 187 172 181 179	Pass
July 1	11:40	DT	WW-026	P85-P87 Cross South Side of Seam	D42	188 184 170 177 178	161 168 166 173 157	199 189 186 185 188	Pass
Jun 29	2:10	JK	WW-022	P79-P81 Vertical Top of Seam	D43	142 140 144 149 131	155 153 152 153 145	159 161 163 164 162	Pass
Jun 30	1:50	DT	WW-026	P84-P86 Vertical Top of Seam	D44	141 149 153 143 153	155 145 148 139 154	171 172 163 168 162	Pass
Jul 1	12:00	JK	WW-022	P86-P89 Vertical Top of Seam	D45	153 142 130 149 139	143 138 128 140 143	175 172 178 173 179	Pass

7.0 PHOTO LOG



Figure 1: GCL Deployed in Advance of Liner



Figure 2: Overall Deployment as of June 29



Figure 3: Repairs to Holes in GCL due to Handling



Figure 4: GCL Deployed in Advance of Liner Deployment



Figure 5: GCL in Anchor Trench



Figure 6: Liner in Anchor Trench



Figure 7: Anchor Trench Excavated in Advance of Deployment



Figure 8: Overall Slope at End of June 30



Figure 9: GCL on Slope in Advance of Liner Deployment



Figure 10: First Slope Length of Liner Deployed on July 1



Figure 11: Subgrade Conditions at the Toe of the Slope in Advance of Liner Deployment



Figure 12: Deployment on Slope as of July 1



Figure 13: Approved Subgrade at the Toe of the Slope



Figure 14: Prepared Subgrade for Liner Deployment



Figure 15: Subgrade at the Toe of the Slope Requiring Preparation prior to GCL Deployment



Figure 16: Geosynthetic Angle Correction Limits (Layfield is filling in the area between liner and furthest GCL prior to liner deployment)



Figure 17: Deployment of GCL on the Slope

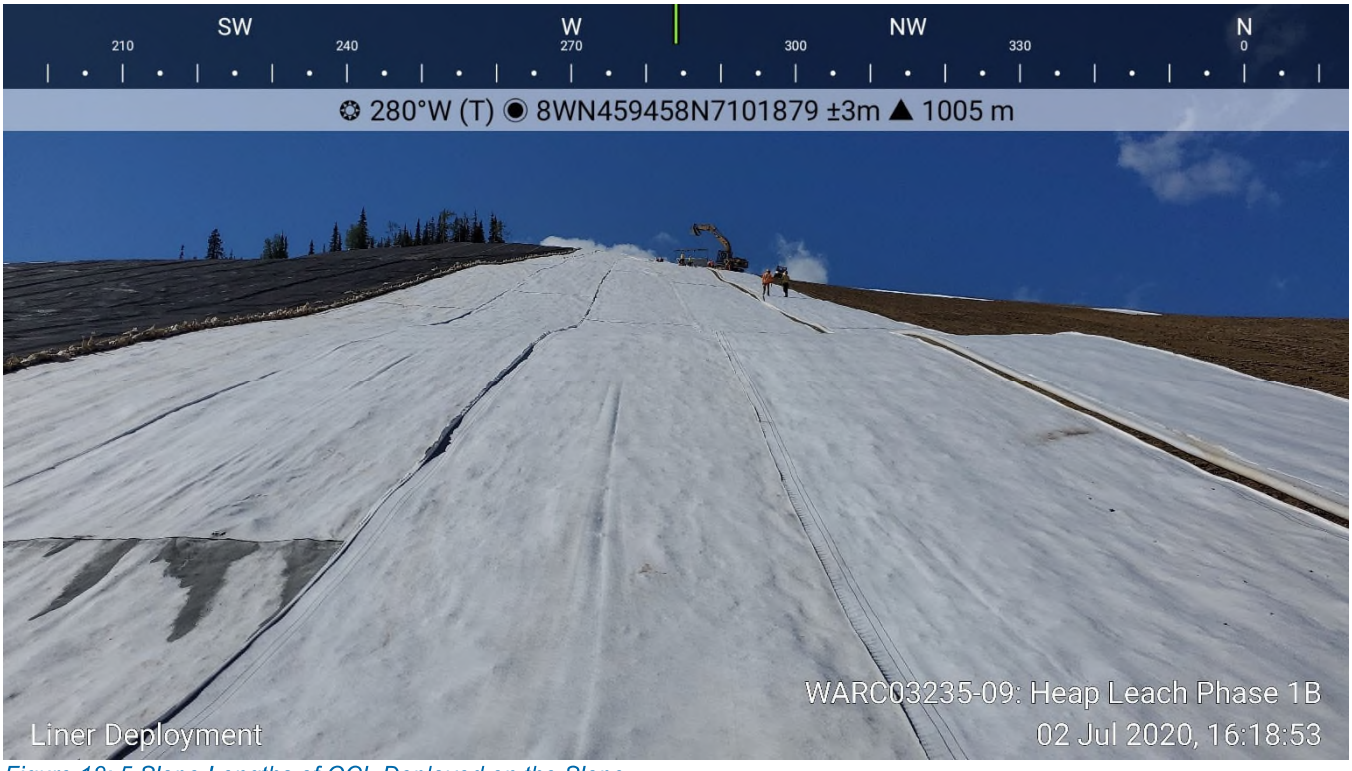


Figure 18: 5 Slope Lengths of GCL Deployed on the Slope



Figure 19: Improperly Spaced Cross Seams on the Slope



Figure 20: Difference in Spacing Between Improperly Spaced Cross Seams



Figure 21: Deployment as of July 2

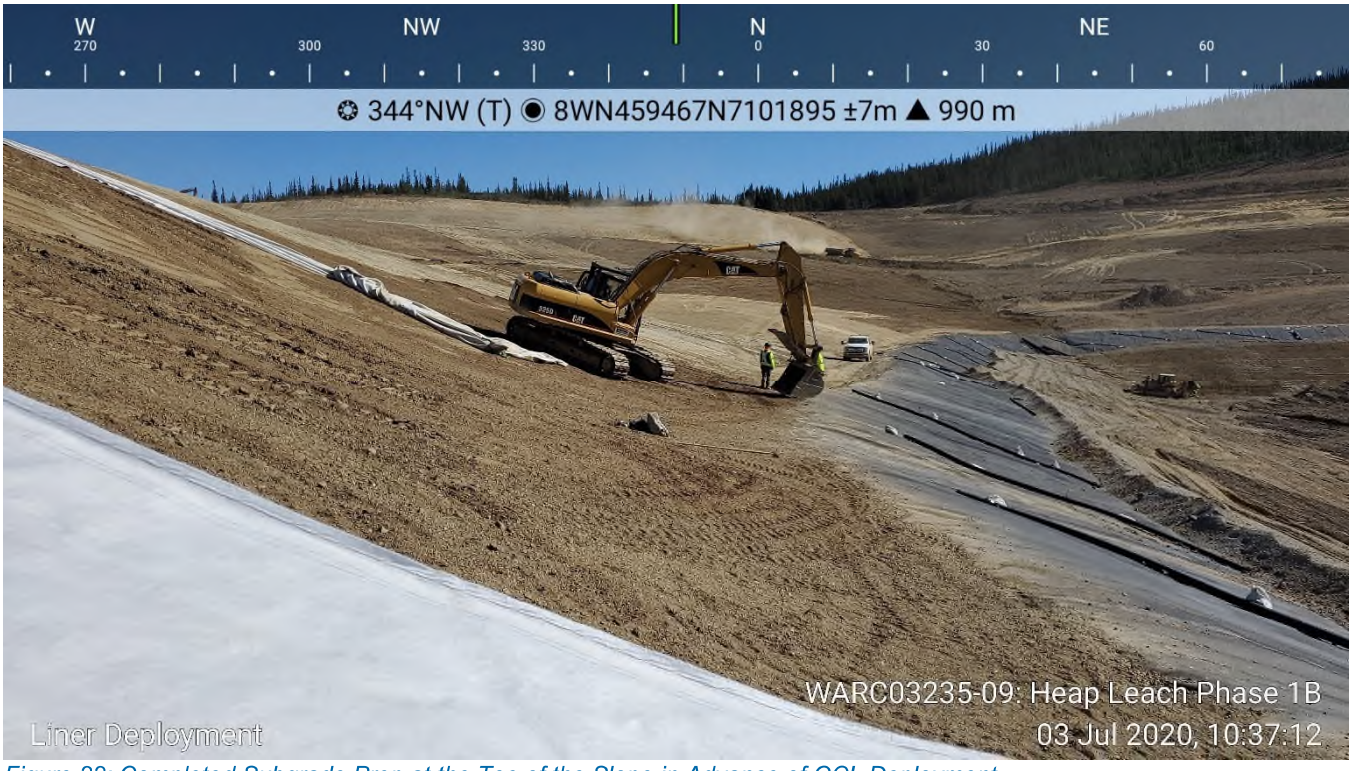


Figure 22: Completed Subgrade Prep at the Toe of the Slope in Advance of GCL Deployment

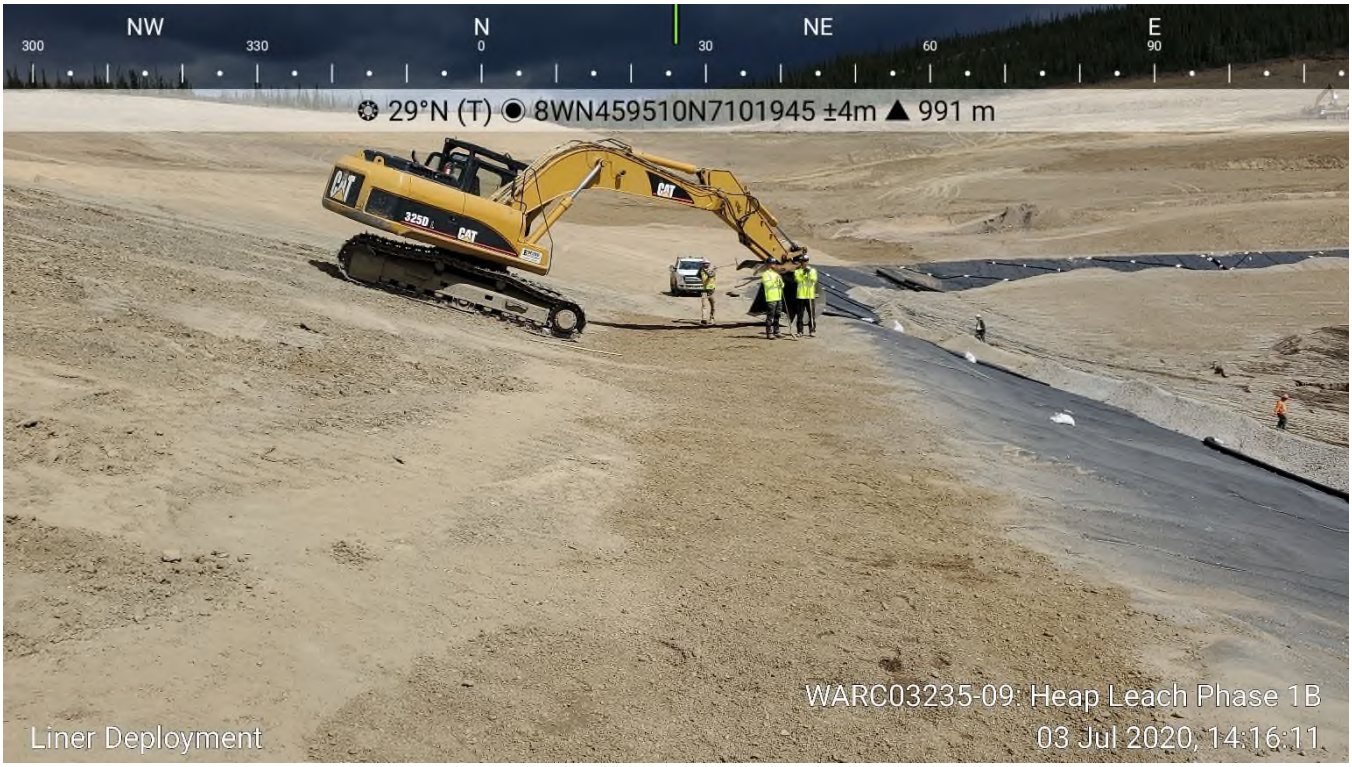


Figure 23: Prepared Subgrade



Figure 24: Deployment as of July 3



Figure 25: Deployment as of July 4



Figure 26: Deployment as of July 5

TETRA TECH

WEEKLY FIELD REPORT

ISSUED FOR USE

Project:	Eagle Gold Heap Leach Phase 1B	**Date:**	July 12, 2020
Location:	Eagle Gold Mine	**Contractor:**	Ewing Transport / Layfield
Client:	Victoria Gold Corp.	**Contractor's Rep:**	Marshall Ewing / Chad Messervey
Contact:	Clint Abel	**Contractor's Email:**	
Weather:	Variable (see daily entries)	**Tetra Tech Representative:**	Adam Mickey/James Buyck
File:	704-ENG.WARC03235-09	**Status:**	Issued for Use

1.0 INTRODUCTION

Tetra Tech Canada Inc. (Tetra Tech) was retained by Victoria Gold Corp. (Victoria Gold) to provide CQA services at the Eagle Gold mine located north of Mayo, Yukon, at Dublin Gulch for the Eagle Gold Heap Leach Phase 1B expansion (Phase 1B). Mr. Adam Mickey, EIT, is Tetra Tech's representative on site till July 8, and Mr. James Buyck is Tetra Tech's representative after July 8.

Forte Dynamics (Forte) out of Fort Collins, Colorado provided the design and specification for Phase 1B, and Forte's representative is Clint Green.

Clint Abel, of JDS Energy & Mining, is Victoria Gold's project manager on site at the Eagle Gold mine.

Ewing Transport (Ewing), based out of Mayo, Yukon, is the construction contractor for Phase 1B.

Layfield Environmental Containment (Layfield) has been retained to provide and install the liner for Phase 1B, and their supervisor on site is Chad Messervey.

The following Field Report outlines Tetra Tech's CQA for the period of July 6, 2020, to July 12, 2020.

2.0 DAILY REPORTS

2.1 Highlights

- Rain delayed liner deployment throughout the week.
- Layfield is placing three panels of GCL for every two panels of 80 mm LLDPE liner.

2.2 July 6, 2020

- Weather: partly cloudy.
- Layfield is continuing to deploy liner over deployed GCL.
  - During the deployment of the first panel, an incident occurred where the 128 m of deployed liner slid down the hill to the toe of the slope.

Tetra Tech Canada Inc.
61 Wasson Place
Whitehorse, YT Y1A 0H7 CANADA
Tel 867.668.3068 Fax 867.668.4349

- Two of Layfield's employees were swept down the hill with the liner, and one of Layfield's employees and one of Ewing's employees sustained minor injuries.
- Deployment was halted for the rest of the day due to the incident.
- Tetra Tech attended the post-incident safety meeting with Layfield and Ewing and provided a witness statement.
- Multiple factors led to the incident, including lack of communication, complacency, and fatigue.
- Layfield will be taking July 7 off to give the crews a rest day.

2.3 July 7, 2020

- Tetra Tech spent part of the rest day working on paperwork and other miscellaneous tasks.
- Tetra Tech attended the weekly progress meeting at 10:30 am.
- James Buyck arrived on site to take over CQA Inspection duties for Adam Mickey

2.4 July 8, 2020

- Weather: mostly cloudy, light afternoon drizzle.
- Layfield and Tetra Tech performed a final inspection on panels P1 through P59.
  - Three areas requiring vacuum testing were identified, and vacuum tested immediately.
  - The area is ready for final sign off to be passed over to the client.
- Layfield repaired the out of spec cross seam by cutting out the liner to a point 10 m away from the adjacent cross seam and replaced with new liner.
- Layfield recovered the liner that slid down the slope on July 6, cutting it into manageable pieces and deploying it on the slope. Chad M. indicated there was no significant damage caused to the liner, and Layfield was able to completely reuse.
- Tetra Tech signed off on Layfield's subgrade acceptance for liner deployed between June 29 and July 5.

2.5 July 9, 2020

- Weather: sun and cloud, light drizzle mid-afternoon.
- No GCL or 80 mm LLDPE liner placed today. Layfield concentrated on completing patch repair and extrude welding bottom section of entire length of panel placed to date to the previous Phase 1B.
- Anchor trench compacted along entire section of liner placed to date.
- Approximately 30 m of anchor trench excavated beyond last panel of liner placed.
- Ewing Transport continued placement and compaction of fill for liner bench

2.6 July 10, 2020

- Weather: sun and cloud, light to medium rain in afternoon.

- Layfield deployed 21 GCL panels and no LLDPE liner – work delayed ~2.5 hours because of rainy and windy conditions.

2.7 July 11, 2020

- Weather: Overcast with rainy periods.
- Steady rain overnight with continued rain in the morning halted work for the day.

2.8 July 12, 2020

- Weather: Sun and cloud with periods of light rain. Little to moderate breeze.
- LLDPE Liner deployment and ground work commenced in the morning after site conditions were assessed by Ewing Transport and Layfield to be acceptable to proceed.
- GCL and LLDPE panels placed in the afternoon. Detail work also performed once GCL and LLDPE placed.
- Ewing completed regrading and static rolling of the next section of subgrade planned for GCL. The entire area had been scoured by recent rains.
- Trenching for anchoring the liners completed, as required.
- A number of failed pressure test were encountered from today's welding. Layfield QC representative investigated and discussed improvements required with the individuals completing the grinding prep work. A demonstration was provided to further improve this process.

3.0 GEOSYNTHETIC ROLL NUMBERS PLACED

Table 1 summarizes the daily geosynthetic roll numbers placed on the slope during liner installation. All panel lengths are approximate, and where 45 degree joints are used, panel length is based from the center of the panel.

Table 1: Geosynthetic Roll Numbers Placed on Slope

Date	GCL Roll Number	LLDPE Liner Roll Number	Panel Number (Length)
July 6	-	-	-
July 7	-	-	-
July 8	-	10700-001 10700-023 10694-019 10700-001 10694-015 10694-013	P108 (39.2 m) P109 (39.4 m) P110 (29.9 m) P111 (39.2 m) P112 (33.8 m), P113 (29.4 m), P114 (19.2 m) P115 (24.9 m), P116 (56.6 m), P117 (27.1 m) ,P118 (13.1 m), P119 (22.8 m), P120 (6.0 m)
July 9	-	-	-

Date	GCL Roll Number	LLDPE Liner Roll Number	Panel Number (Length)
July 10	0242-347526, 0242-347518, 0242-347529, 0242-347521, 0242-347536, 0242-347534, 502344560, 0242-347520, 502347101, 0242-347527, 0242-347530, 0242-347519, 0242-347525, 0242-347515, 502347101, 0242-347530, 502344555, 0242-347523, 502344563, 502344554, 502346997, 502346996	-	-
July 11	-	-	-
July 12	-	10697-006 10694-006 10697-007 10694-031 10700-008 10694-005 10694-031	P121 (116.4 m) P122 (114.1 m), P123 (23.8 m) P124 (127.3 m) P125 (71.1 m) P126 (48.0 m) P127 (128.2 m) P128 (1.0 m), P129 (34.6 m)

4.0 TRIAL SEAM

Table 2 summarizes the weekly trial seam results. For fusion, the apparatus settings are temperature and speed, and for extrusion, the apparatus settings are preheat and barrel temperature. Five tests are performed for each criterion.

Table 2: Trial Seam Results

Date	Time	Fusion or Extrusion	Tech	Apparatus #	Temp or Preheat (°F)	Speed (%) or Barrel Temp (°F)	$Peel_{inside}$ (100 min)	$Peel_{outside}$ (100 min for Fusion 88 min for Extrusion)	Shear (120 min)	Smooth or Textured
Jul 8	9:00	Fusion	JK	WW-023	850	35	173 169 161 160 155	162 138 120 112 160	181 189 194 193 185	Textured
Jul 8	9:00	Fusion	JK	WW-023	850	55	163 162 154 165 155	119 127 139 125 141	174 176 178 181 179	Smooth
Jul 8	13:00	Fusion	JK	WW-022	850	35	152 151 153 167 155	141 139 157 148 152	173 179 185 182 181	Textured

Jul 8	13:00	Fusion	JK	WW-022	850	55	135 136 136 133 145	134 132 132 123 121	161 166 163 165 162	Smooth
Jul 8	13:00	Fusion	JK	WW-026	850	55	145 138 156 146 144	129 129 125 126 127	162 160 159 157 161	Smooth
Jul 8	16:45	Fusion	JK	WW-026	850	55	156 162 153 149 151	155 156 154 147 148	173 173 171 169 170	Smooth
Jul 8	16:45	Fusion	JK	WW-022	850	55	146 134 150 149 149	147 146 142 144 145	156 161 162 165 168	Smooth
Jul 12	7:40	Fusion	JK	WW-022	850	35	141 157 157 139 137	149 152 158 155 148	164 173 171 163 168	Textured
Jul 12	7:40	Fusion	EA	WW-026	850	35	166 152 166 153 152	161 157 166 143 154	177 174 178 185 196	Smooth
Jul 12	7:45	Fusion	JK	WW-022	850	55	142 141 146 129 139	150 147 154 146 148	166 166 173 168 173	Smooth
Jul12	7:45	Fusion	EA	WW-026	850	55	157 146 156 150 147	149 151 151 160 160	183 182 187 185 186	Smooth
Jul 12	12:00	Fusion	EA	WW-026	850	55	145 155 147 139 140	140 153 141 137 136	161 154 164 160 159	Smooth

5.0 NON-DESTRUCTIVE TESTING

Table 3 summarizes the weekly non-destructive pressure testing results.

Table 3: Non-Destructive Testing Results

Date Fused	Date Tested	Time Tested	Seam #	psi Start	psi End	Pass or Fail	Notes
Jun 29	July 8	14:31	P78-P79 Cross	40	40	Pass	
Jun 29	July 8	14:31	P76-P79 Vertical	40	40	Pass	
Jun 29	July 8	14:35	P79-P81 Vertical	40	39	Pass	
Jun 29	July 8	14:35	P78-P81 Vertical	40	40	Pass	
Jun 30	July 8	14:54	P83-P84 Cross	40	39	Pass	
Jun 30	July 8	14:56	P83-P86 Vertical	40	40	Pass	
Jun 30	July 8	14:56	P84-P86 Vertical	40	40	Pass	
Jul 1	July 8	15:17	P88-P89 Cross	40	40	Pass	
Jul 1	July 8	15:38	P91-P92 Cross	40	40	Pass	
Jul 1	July 8	15:18	P89-P91 Vertical	40	40	Pass	
Jul 1	July 8	15:39	P91-P94 Vertical	40	40	Pass	
Jul 8	Jul 10	16:10	P82-P83 Cross	40	40	Pass	
Jul 8	Jul 10	16:10	P80-P82 Vertical	40	38	Pass	
Jul 8	Jul 10	15:36	P87-P85 Cross	40	39	Pass	
Jul 8	Jul 10	15:55	P82-P87 Cross	40	39	Pass	
Jul 8	Jul 10	15:50	P82-P87 Vertical	40	40	Pass	
Jul 8	Jul 10	15:50	P87-P88 Vertical	40	40	Pass	
Jul 8	Jul 10	15:36	P87-P88 Vertical	40	38	Pass	
Jul 8	Jul 10	14:56	P86-P89 Cross	40	40	Pass	
Jul 1	Jul 10	15:02	P89-P92 Vertical	40	40	Pass	
Jul 1	Jul 10	15:02	P92-P94 Vertical	40	40	Pass	
Jul 5	Jul 10	16:50	P102-P104 Cross	40	39	Pass	
Jul 8	Jul 10	16:23	P111-P114 Vertical	40	40	Pass	
Jul 8	Jul 10	16:23	P111-P113 Vertical	40	40	Pass	
Jul 8	Jul 10	16:23	P113-P116 Vertical	40	40	Pass	
Jul 8	Jul 10	16:32	P116-P118 Vertical	40	40	Pass	
Jul 8	Jul 10	16:33	P117-P119 Vertical	40	40	Pass	
Jul 8	Jul 10	16:31	P116-P117 Vertical	40	40	Pass	
Jul 8	Jul 10	16:33	P118-P119 Vertical	40	40	Pass	
Jul 8	Jul 10	16:51	P119-P120 Cross	40	40	Pass	
Jul 8	Jul 10	16:51	P106-P120 Cross	40	40	Pass	
Jul 4	Jul 12	12:42	P94-P96 Vertical	40	40	Pass	
Jul 4	Jul 12	13:28	P98-P98 Cross	40	40	Pass	
Jul 4	Jul 12	12:54	P98-P101 Vertical	40	40	Pass	
Jul 4	Jul 12	12:42	P96-P98 Vertical	40	40	Pass	
Jul 5	Jul 12	13:32	P102-P103 Cross	40	40	Pass	
Jul 5	Jul 12	13:05	P98-P103 Vertical	40	38	Pass	
Jul 5	Jul 12	13:17	P103-P105 Cross	40	40	Pass	
Jul 8	Jul 12	16:23	P113-P114 Cross	40	40	Pass	
Jul 8	Jul 12	16:32	P118-P117 Cross	40	40	Pass	
Jul 8	Jul 12	16:53	P106-P119 Vertical	40	40	Pass	

6.0 DESTRUCTIVE TESTING

Destructive testing was not required this week.

7.0 PHOTO LOG



Figure 1: 128 m of Liner at the Toe of the Slope



Figure 2: Repaired Out of Spec Cross Seam



Figure 3: Creases Requiring Repair



Figure 4: View of recent liner deployed at end of July 8



Figure 5: Geotextile and drain pipe placement within infiltration trench



Figure 6: Anchor trench excavated beyond last liner panel placed to date



Figure 7: Continued placement and compaction of select fill for HLF perimeter berm



Figure 8: Liner deployment as of July 9



Figure 9: Bentonite placement for recently placed GCL.



Figure 10: Heat welding of GCL in progress



Figure 11: Deployment of Liner in progress



Figure 12: Regarding of slope in preparation for rolling and deployment of GLC



Figure 13: Placement of rock fill within anchor trench in progress

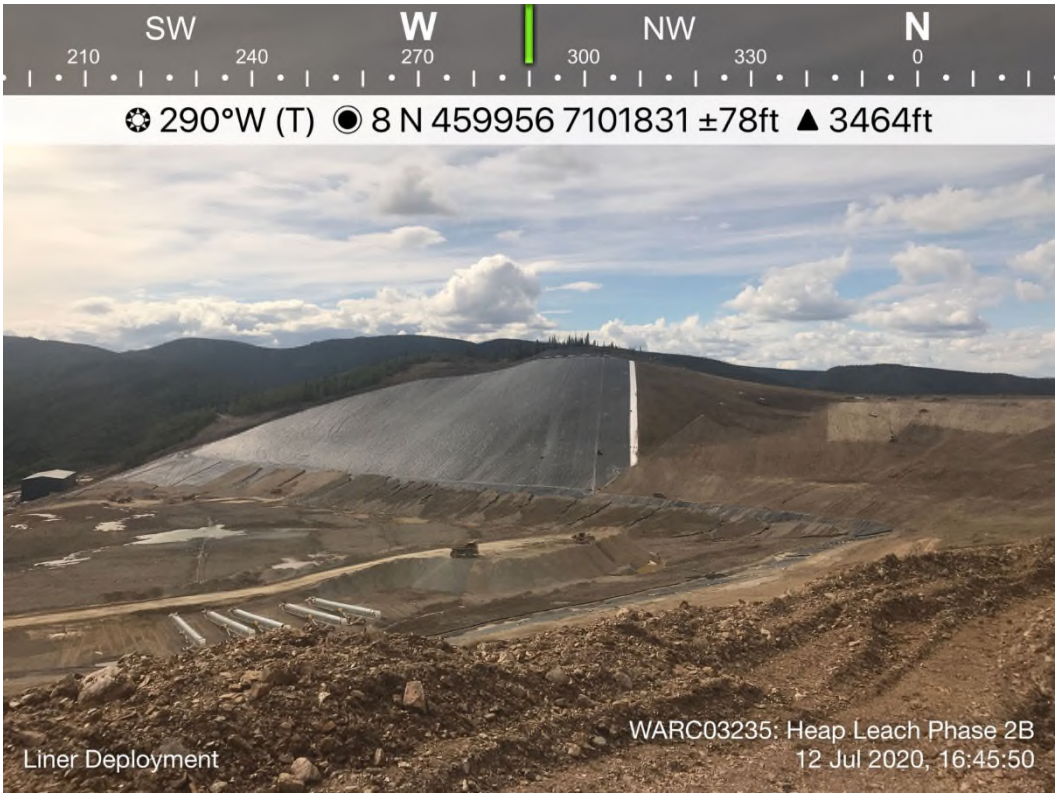


Figure 14: Progress view of liner deployment to date

TETRA TECH

WEEKLY FIELD REPORT

ISSUED FOR USE

Project:	Eagle Gold Heap Leach Phase 1B	**Date:**	July 22, 2020
Location:	Eagle Gold Mine	**Contractor:**	Ewing Transport / Layfield
Client:	Victoria Gold Corp.	**Contractor's Rep:**	Marshall Ewing / Chad Messervey
Contact:	Clint Abel	**Contractor's Email:**	
Weather:	Variable (see daily entries)	**Tetra Tech Representative:**	James Buyck
File:	704-ENG.WARC03235-09	**Status:**	Issued for Use

1.0 INTRODUCTION

Tetra Tech Canada Inc. (Tetra Tech) was retained by Victoria Gold Corp. (Victoria Gold) to provide CQA services at the Eagle Gold mine located north of Mayo, Yukon, at Dublin Gulch for the Eagle Gold Heap Leach Phase 1B expansion (Phase 1B). Mr. James Buyck is Tetra Tech's representative on site.

Forte Dynamics (Forte) out of Fort Collins, Colorado provided the design and specification for Phase 1B, and Forte's representative is Clint Green.

Clint Abel, of JDS Energy & Mining, is Victoria Gold's project manager on site at the Eagle Gold mine.

Ewing Transport (Ewing), based out of Mayo, Yukon, is the construction contractor for Phase 1B.

Layfield Environmental Containment (Layfield) has been retained to provide and install the liner for Phase 1B, and their supervisor on site is Chad Messervey.

The following Field Report outlines Tetra Tech's CQA for the period of July 13, 2020, to July 19, 2020.

2.0 DAILY REPORTS

2.1 Highlights

- Rain and some wind delayed liner deployment throughout the week.
- Layfield is placing three panels of GCL for every two panels of 80 mm LLDPE liner.

2.2 July 13, 2020

Weather: sun and cloud. Light breeze throughout the day.

- Layfield continued placement of GCL (17 rolls) and LLDPE liner (6 panels) with no major issues. Some delay early afternoon due to wind.
- Ewing Transport continued regrading and rolling subgrade ahead of liner deployment. As well, continued sub-excavation and hauling from NE slope. Areas of soft and wet subgrade and organics encountered.

Tetra Tech Canada Inc.
61 Wasson Place
Whitehorse, YT Y1A 0H7 CANADA
Tel 867.668.3068 Fax 867.668.4349

2.2 July 13, 2020

Weather: sun and cloud. Light breeze to light wind throughout the day.

- Continued regrading and rolling of subgrade and noted to be acceptable for liner deployment. Sub-excavation continues along the NE slope.
- Deployment of GCL and liner continued with good progress in the morning and delays in the afternoon due to windy conditions.

2.3 July 14, 2020

Weather: sun and cloud. Light breeze to light wind throughout the day.

- Continued deployment of GCL and Liner with detail work and Qc testing performed by Layfield. Ewing Transport continued removal of material and sloping NE section of HLF.

2.4 July 15, 2020

- Weather: Overcast, rain through the morning and early afternoon.
- Layfield suspended work for the day due to rain. Ewing Transport continued sub-excavation along NE slope.
- Layfield QC performed destruct testing (D58 to D62) with Tetra Tech QA present throughout. All results exceeded minimum specification.

2.5 July 16, 2020

- Weather: Mostly clear in the morning and overcast in the afternoon.
- The subgrade immediately ahead of planned deployment for today observed to be minimally affected by yesterday's rainfall. Only minor raking required to repair some localized areas along with additional rolling with the steel drum vibratory compactor.
- Upon Tetra Tech approval of subgrade and trenching ahead completed, deployment of GCL and Liner commenced in the morning immediately. Sub-excavation continues within the NE slope.

2.6 July 17, 2020

- Weather: Overcast with heavy rain starting at 12:30 pm until 2:00 pm. Work limited to detail work later in the day.
- Minor subgrade prep work required and once completed liner deployment approved by Tetra Tech QC and Layfield reps. GCL was placed at the request of the owner rep but was not yet covered by liner once the rain started. The subgrade and GCL will be evaluated prior to commencing further work.
- Ewing Transport did not perform sub-excavation work today to allow the crew relief from their extended work schedule.
- Additional work required by Ewing liner crew to regrade the next section of subgrade affected by the rainfall.
- GCL and LLDPE were deployed in the a.m. but halted around noon due to rain. Detail work commenced for a short period after rain but once again halted for the day due to further rain.
- Air testing, destructs, and non-destructive testing performed with applicable results to be summarized in tomorrows report submission.

2.7 July 18, 2020

- Weather: Sun, some clouds in the a.m. with drizzle starting around 12:30 pm and heavier with lightning from 1:30 p.m. to 2:00 p.m.
- Rainfall yesterday and overnight caused some minor scouring of the subgrade. The section scheduled for deployment was back-bladed with a dozer and compacted with a smooth drum vibratory compactor, as required.
- The exposed GCL was observed not to be adversely affected by the rain. Approval was granted to Layfield to proceed with LLDPE liner deployment.
- Deployment halted due to rain and lightning from 12:30 p.m. to 2:00 p.m. Deployment of LLDPE re-commenced shortly afterward until about 4:00 p.m. The crew then switched to detail work, testing and clean-up.
- Work suspended for the day due to rain around 5:15 p.m.

2.8 July 19, 2020

- Weather: Sun and some clouds in the a.m. with drizzle starting around.
- Layfield recovery day.
- Ewing Transport continues to sub-excavate and place sand along the NE slope.

3.0 GEOSYNTHETIC ROLL NUMBERS PLACED

Table 1 summarizes the daily geosynthetic roll numbers placed on the slope during liner installation. All panel lengths are approximate, and where 45 degree joints are used, panel length is based from the center of the panel.

Table 1: Geosynthetic Roll Numbers Placed on Slope

Date	GCL Roll Number	LLDPE Liner Roll Number	Panel Number (Length)
Jul 13	502344549, 502347102, 502346939, 502346938, 502347102, 502344544, 502344561, 502344556, 502344557, 502344546, 502344545, 502344005, 502344488, 0242-347537, 0242-347535, 0242-347528. 0242-3475224	10700-008 10694-031 10694-035 10694-035 10694-034 10694-036	P130 (23.0 m) P131 (93.2 m) P132 (82.2 m) P133 (30.4 m) P134 (128.8 m) P135 (28.5 m)
Jul 14	502344021, 502344022, 502344558, 502344552, 502334550, 502344032, 502344011, 502344551, 502344025, 502344127, 502344009, 502344016, 502344023, 502344034, 502344161, 502344033, 502344563, 502344029, 502344547, 502344562, 502344010, 502344030, 502344041	10694-035 10694-036 10693-018 10693-018 10694-030 10693-018 10694-030 10694-022	P136 (24.4 m) P137 (100.0 m) P138 (57.3 m) P139 (65.9 m) P140 (104.2 m) P141 (14.8 m) P142 (23.7 m) P143 (118.8 m)

Date	GCL Roll Number	LLDPE Liner Roll Number	Panel Number (Length)
Jul 15	0242-347626, 502344582, 502344607, 502344657, 502344576, 502344609, 502344664, 502344598	10694-025 10694-026 10694-025 10694-026 10697-005 10697-005 10697-005 10693-014	P144 (117.6 m) P145 (29.4 m) P146 (25.5 m) P147 (99.8 m) P148 (8.2 m) P149 (120.4 m) P150 (11.2 m) P151 (95.0 m)
Jul 16	502344647, 502344596, 502344652, 502344610, 502344645, 502344646, 502344598	10693-012 10694-029 10694-029 10693-012 10693-012 10693-012 10693-012 10693-013 10693-013 10693-013 10693-013 10693-014 10693-012	P152 (56.8 m) P153 (22.8 m) P154 (16.3 m) P155 (50.4 m) P156 (9.8 m) P157 (44.6 m) P158 (7.4 m) P159 (35.0 m) P160 (30.5 m) P161 (19.5 m) P162 (7.6 m) P163 (24.3 m) P164 (69.0 m)
Jul 17	502344606, 502?????, 502344643, 502344027, 502344608, 502344651	-	-
Jul 18	502344663, 502347003, 502347000, 50234490, 502347002, 502344648, 50234720, 502344642, 502344644, 502344662, 502344650	10693-013 10693-008 10693-008 10693-020 10693-020 10693-011 10693-011 10693-003	P165 (51.6 m) P166 (82.6 m) P167 (44.1 m) P168 (87.3 m) P169 (38.6 m) P170 (62.0 m) P171 (65.2 m) P172 (99.8 m)

4.0 TRIAL SEAM

Table 2 summarizes the weekly trial seam results. For fusion, the apparatus settings are temperature and speed, and for extrusion, the apparatus settings are preheat and barrel temperature. Five tests are performed for each criterion.

Table 2: Trial Seam Results

Date	Time	Fusion or Extrusion	Tech	Apparatus #	Temp or Preheat (°F)	Speed (%) or Barrel Temp (°F)	$Peel_{inside}$ (100 min)	$Peel_{outside}$ (100 min for Fusion 88 min for Extrusion)	Shear (120 min)	Smooth or Textured
Jul 13	9:43	Fusion	JK	WW-022	850	35	135 157 156 154 159	158 157 142 147 150	161 160 154 156 159	Textured
Jul 13	9:50	Fusion	EA	WW-026	850	35	146 142 149 148 147	135 162 155 152 155	160 170 168 173 171	Textured
Jul 13	9:56	Fusion	EA	WW-026	850	55	144 147 139 142 140	152 144 146 141 144	150 151 148 151 149	Smooth
Jul 13	10:10	Fusion	JK	WW-022	850	55	153 154 164 159 158	139 136 140 152 144	174 174 169 170 168	Smooth
Jul 13	16:23	Extrusion	GP	EX-35	495	490	N/A	111 122 128 121 113	156 155 148 157 151	N/A
Jul 13	16:23	Extrusion	EA	EX-35	495	490	N/A	136 131 122 121 118	145 141 158 151 149	N/A
Jul 13	17:40	Extrusion	RP	EX-4307	495	490	N/A	92 95 102 109 167	139 130 124 136 144	N/A
Jul 14	10:30	Fusion	EA	WW-026	850	35	150 134 149 161 165	144 164 158 160 143	186 189 184 187 185	Textured

Jul 14	10:30	Fusion	EA	WW-026	850	35	145 151 161 137 147	152 151 150 152 148	173 171 173 172 169	Smooth
Jul 14	10:30	Fusion	EA	WW-022	850	55	153 141 165 155 163	162 155 174 164 159	163 152 175 178 169	Textured
Jul 14	10:30	Fusion	JK	WW-022	850	55	170 170 163 166 164	166 151 159 163 165	167 174 158 155 171	Smooth
Jul 15	7:30	Fusion	EA	WW-026	850	55	149 149 154 143 146	128 127 143 149 137	164 163 171 166 166	Textured
Jul 15	7:30	Fusion	EA	WW-026	850	30	143 140 143 146 145	139 142 146 145 139	164 161 167 164 163	Smooth
Jul 15	7:35	Fusion	JK	WW-022	850	35	141 150 144 141 157	149 150 149 149 146	168 165 173 163 172	Textured
Jul 15	7:35	Fusion	JK	WW-022	850	55	141 150 152 140 145	148 154 140 148 144	169 166 170 171 172	Smooth
Jul 15	12:00	Fusion	EA	WW-026	850	35	136 137 143 134 154	178 152 128 157 139	188 181 179 187 192	Textured
Jul 15	12:00	Fusion	JK	WW-022	850	55	160 157 167 170 171	170 160 153 144 167	184 179 181 178 183	Smooth
Jul 15	13:00	Fusion	JK	WW-020	850	55	143 119 138 130 122	137 136 119 121 127	148 152 151 151 149	Smooth

Jul 16	11:00	Fusion	JK	WW-022	850	35	160 161 147 151 175	145 145 152 156 157	180 187 181 181 179	Smooth
Jul 16	11:00	Fusion	JK	WW-022	850	35	147 152 166 148 148	157 140 133 159 146	177 175 182 179 181	Textured
Jul 16	11:00	Fusion	EA	WW-026	850	55	162 165 158 155 157	149 139 143 161 160	178 179 173 170 168	Smooth
Jul 16	11:00	Fusion	EA	WW-026	850	35	151 172 154 166 142	151 162 158 134 148	174 178 190 186 188	Textured
Jul 16	14:15	Extrusion	EA	04037	495	490	N/A	89 89 112 110 94	144 152 122 142 148	N/A
Jul 16	15:45	Extrusion	RGP	04036	495	490	N/A	112 120 108 110 109	121 138 144 132 129	N/A
Jul 17	14:00	Extrusion	EA	EX-35	495	490	N/A	121 100 115 113 133	143 143 155 149 143	N/A
Jul 18	8:30	Fusion	RW	WW-054	850	35	133 143 142 150 152	141 140 134 138 135	154 169 167 173 170	Textured
Jul 18	9:00	Fusion	JK	WW-022	850	40	138 137 138 146 150	126 126 133 131 128	153 153 151 157 154	Texture
Jul 18	9:00	Fusion	EA	WW-026	850	40	117 124 145 152 133	128 127 147 139 149	151 154 149 167 158	Textured

Jul 18	14:15	Fusion	RW	WW-054	850	35	154 155 153 137 164	136 137 146 157 137	160 175 180 163 176	Textured
Jul 18	14:15	Fusion	EA	WW-026	850	55	148 157 134 156 147	146 156 158 154 153	164 166 166 166 169	Smooth
Jul 18	14:15	Fusion	JK	WW-022	850	55	154 156 145 156 147	154 153 151 151 152	179 176 175 177 178	Smooth

5.0 NON-DESTRUCTIVE TESTING

Table 3 summarizes the weekly non-destructive pressure testing results.

Table 3: Non-Destructive Testing Results

Date Fused	Date Tested	Time Tested	Seam #	psi Start	psi End	Pass or Fail	Notes
Jun 30	Jul 14	8:30	P81-P83 Vertical	40	38	Pass	
Jul 1	Jul 14	9:10	P93-P94 Cross	40	40	Pass	
Jul 4	Jul 14	8:48	P94-P98 Vertical	40	40	Pass	
Jul 4	Jul 14	11:02	P95-P99 Vertical	40	40	Pass	
Jul 5	Jul 14	8:40	P98-P105 Vertical	40	40	Pass	
Jul 8	Jul 14	10:45	P97-P108 Vertical	40	39	Pass	
Jul 8	Jul 14	9:35	P109-P110 Cross	40	38	Pass	
Jul 8	Jul 14	9:35	P97-P109 Vertical	40	40	Pass	
Jul 8	Jul 14	10:35	P109-P112 Vertical	40	40	Pass	
Jul 8	Jul 14	9:35	P97-P110 Vertical	40	40	Pass	
Jul 8	Jul 14	9:40	P110-P112 Vertical	40	40	Pass	
Jul 8	Jul 14	9:40	P107-P112 Vertical	40	40	Pass	
Jul 8	Jul 14	10:00	P112-P115 Vertical	40	40	Pass	
Jul 8	Jul 14	10:00	P107-P115 Vertical	40	39	Pass	
Jul 12	Jul 14	11:02	P95-P121 Vertical	40	39	Pass	
Jul 12	Jul 14	9:20	P122-P125 Vertical	40	39	Pass	
Jul 12	Jul 14	11:33	P128-P128 Cross	40	40	Pass	
Jul 12	Jul 14	11:33	P128-P129 Cross	40	40	Pass	
Jul 12	Jul 14	11:33	P125-P129 Vertical	40	40	Pass	
Jul 13	Jul 14	9:21	P125-P128 Vertical	40	40	Pass	
Jul 13	Jul 14	9:57	P129-P132 Vertical	40	40	Pass	
Jul 12	Jul 17	12:20	P127-P127 Cross	40	40	Pass	
Jul 13	Jul 17	12:20	P126-P131 Vertical	40	40	Pass	
Jul 13	Jul 17	12:20	P126-P130 Vertical	40	40	Pass	
Jul 15	Jul 17	16:52	P146-P147 Cross	40	40	Pass	
Jul 15	Jul 17	13:42	P148-P148 Vertical	40	38	Pass	

Date Fused	Date Tested	Time Tested	Seam #	psi Start	psi End	Pass or Fail	Notes
Jull 15	Jul 17	16:55	P144toP147 Vertical	40	40	Pass	
Jul 15	Jul 17	16:59	P144-P146 Vertical	40	38	Pass	
Jul 15	Jul 17	13:40	P148-P149 Vertical	40	39	Pass	
Jul 15	Jul 17	16:53	P147-P149 Vertical	40	40	Pass	
Jul 15	Jul 17	16:52	P146-P149 Vertical	40	40	Pass	
Jul 15	Jul 17	13:37	P151-P164 Vertical	40	40	Pass	
Jul 15	Jul 17	13:39	P149-P151 Vertical	40	40	Pass	
Jul 15	Jul 17	16:47	P149-P150 Vertical	40	39	Pass	
Jul 16	Jul 17	16:29	P152-P153 Cross	40	40	Pass	
Jul 16	Jul 17	13:36	P164-P153 Vertical	40	40	Pass	
Jul 16	Jul 17	16:29	P164-P152 Vertical	40	40	Pass	
Jul 16	Jul 17	14:07	P154-P155 Cross	40	40	Pass	
Jul 16	Jul 17	14:05	P156-P157 Cross	40	40	Pass	
Jul 16	Jul 17	16:37	P163-P152 Vertical	40	40	Pass	
Jul 16	Jul 17	14:17	P152-P154 Vertical	40	40	Pass	
Jul 16	Jul 17	14:07	P152-P155 Vertical	40	40	Pass	
Jul 16	Jul 17	14:07	P155-P156 Vertical	40	40	Pass	
Jul 16	Jul 17	14:05	P155-P157 Vertical	40	40	Pass	
Jul 16	Jul 17	13:34	P153-P155 Vertical	40	40	Pass	
Jul 16	Jul 17	13:33	P155-P157 Vertical	40	40	Pass	
Jul 16	Jul 17	14:08	P158-P159 Cross	40	40	Pass	
Jul 16	Jul 17	14:00	P157-P158 Vertical	40	40	Pass	
Jul 16	Jul 17	13:31	P157-P159 Vertical	40	40	Pass	
Jul 16	Jul 17	14:15	P159-P160 Vertical	40	40	Pass	
Jul 16	Jul 17	13:15	P161-P162 Vertical	40	40	Pass	
Jul 14	Jul 18	8:02	P137-P137 Cross	40	40	Pass	
Jul 14	Jul 18	9:17	P135-P138 Vertical	40	40	Pass	
Jul 14	Jul 18	8:25	P139-P140 Cross	40	40	Pass	
Jul 14	Jul 18	8:03	P133-P136 Vertical	40	40	Pass	
Jul 14	Jul 18	8:02	P137-P139 Vertical	40	40	Pass	
Jul 14	Jul 18	8:02	P136-P139 Vertical	40	40	Pass	
Jul 14	Jul 18	8:24	P142-P143 Cross	40	40	Pass	
Jul 14	Jul 18	8:00	P139-P140 Vertical	40	40	Pass	
Jul 14	Jul 18	8:59	P140-P143 Vertical	40	40	Pass	
Jul 14	Jul 18	8:00	P139-P142 Vertical	40	40	Pass	
Jul 14	Jul 18	8:25	P139-P143 Vertical	40	40	Pass	
Jul 14	Jul 18	8:59	P140-P143 Vertical	40	39	Pass	
Jul 14	Jul 18	8:59	P140-P143 Vertical	40	40	Pass	
Jul 15	Jul 18	9:01	P147-P149 Vertical	40	40	Pass	

6.0 DESTRUCTIVE TESTING

Table 4 summarizes the weekly destructive testing results. Five tests are performed for each criterion. Tetra Tech QA representative was present during testing.

Table 4: Destructive Testing Results

Date Fused	Time Fused	Tech	Apparatus	Location (UTM is +/- 4 m)	Sample ID	$Peel_{in}$ (100 min)	$Peel_{out}$ (100 min)	Shear (120 min)	Pass or Fail
Jul 4	12:47	EA	WW-026	P94-P96 Vertical Top of Seam	D46	133 136 137 127 120	126 125 128 135 134	155 146 155 154 152	Pass
Jul 4	10:37	EA	WW-026	P99-P95 Vertical Bottom of Seam	D47	139 132 148 148 152	151 151 140 138 129	157 158 154 157 160	Pass
Jul 5	10:37	JK	WW-022	P102-P99 Vertical Bottom of Seam	D48	136 133 133 131 132	143 142 145 142 139	152 149 153 153 155	Pass
Jul 5	11:06	EA	WW-020	P106-P104 Vertical Bottom of Seam	D49	158 153 134 135 138	119 136 161 153 145	160 167 172 170 171	Pass
Jul 5	9:58	JK	WW-022	P104-P102 Vertical Bottom of Seam	D50	129 124 135 131 121	153 149 152 150 149	155 158 159 159 167	Pass
Jul 8	12:24	JK	WW-022	P108-P109 Cross Left Side of Seam	D51	158 148 152 160 145	144 154 141 146 147	178 171 178 155 175	Pass
Jul 8	16:23	JK	WW-022	P113-P116 Vertical Bottom of Seam	D52	146 149 154 142 159	153 162 155 150 143	173 173 172 171 172	Pass
Jul 12	9:08	JK	WW-022	P95-P121 Vertical Bottom of Seam	D53	137 134 136 134 138	136 134 146 142 142	162 164 162 164 165	Pass

Date Fused	Time Fused	Tech	Apparatus	Location (UTM is +/- 4 m)	Sample ID	$Peel_{in}$ (100 min)	$Peel_{out}$ (100 min)	Shear (120 min)	Pass or Fail
Jul 12	8:52	EA	WW-026	P96-P122 Vertical Top of Seam	D54	145	151	162	Pass
						147	146	163	
						138	151	165	
						142	153	166	
						143	149	163	
Jul 8	16:33	JK	WW-022	P118-P119 Vertical Bottom of Seam	D55	144	161	174	Pass
						150	158	173	
						148	158	173	
						149	155	171	
						145	159	173	
Jul 12	10:36	EA	WW-026	P122-P125 Vertical Top of Seam	D56	153	135	161	Pass
						149	135	162	
						141	146	169	
						154	145	162	
						149	139	172	
Jul 12	11:33	EA	WW-026	P125-P129 Vertical Top of Seam	D57	134	147	158	Pass
						128	148	155	
						128	144	161	
						128	150	159	
						139	148	162	
Jul 14	10:33	EA	WW-026	P135-P138 Vertical Top of Seam	D58	150	156	163	Pass
						153	154	165	
						156	157	167	
						157	158	165	
						151	143	166	
Jul 14	11:41	JK	WW-022	P138-P140 Vertical Top of Seam	D59	150	157	172	Pass
						151	155	173	
						151	162	176	
						150	158	175	
						160	154	176	
Jul 15	8:25	EA	WW-026	P143-P145 Vertical Top of Seam	D60	136	157	161	Pass
						150	155	166	
						153	156	163	
						145	157	160	
						142	152	165	
Jul 15	9:08	JK	WW-022	P145-P148 Vertical Top of Seam	D61	147	138	156	Pass
						145	138	153	
						151	135	156	
						147	134	162	
						141	134	164	
Jul 15	12:30	JK	WW-022	P149-P150 Vertical Top of Seam	D62	142	143	155	Pass
						143	145	158	
						147	150	150	
						147	144	159	
						140	136	145	

Date Fused	Time Fused	Tech	Apparatus	Location (UTM is +/- 4 m)	Sample ID	$Peel_{in}$ (100 min)	$Peel_{out}$ (100 min)	Shear (120 min)	Pass or Fail
Jul 4	13:53	JK	WW-022	P93-P97 Vertical Bottom of Seam	D63	139	147	164	Pass
						140	146	164	
						151	148	167	
						127	147	167	
						129	147	171	
Jul 8	10:53	JK	WW-022	P97-P108 Vertical Bottom of Seam	D64	153	158	163	Pass
						152	138	157	
						151	147	164	
						147	136	166	
						148	148	167	
Jul 8	11:11	JK	WW-022	P108-P111 Vertical Bottom of Seam	D65	151	137	169	Pass
						146	148	165	
						135	155	175	
						150	138	159	
						148	138	168	
Jul 13	9:44	JK	WW-022	P131-P130 Vertical Right Side of Seam	D66	155	149	170	Pass
						140	149	171	
						145	145	178	
						159	148	171	
						145	150	176	
Jul 13	14:09	JK	WW-022	P130-P133 Vertical Top of Seam	D67	137	139	154	Pass
						119	127	155	
						122	145	151	
						139	141	151	
						137	129	151	
Jul 14	11:28	JK	WW-022	P139-P142 Vertical Top of Seam	D68	150	153	159	Pass
						149	143	155	
						150	165	159	
						149	143	160	
						150	154	158	
Jul 14	13:35	EA	WW-026	P142-P143 Cross Left Side of Seam	D69	160	157	176	Pass
						164	157	171	
						155	148	179	
						160	158	171	
						163	158	188	
Jul 15	9:11	JK	WW-022	P145-P147 Vertical Top of Seam	D70	153	152	161	Pass
						146	150	161	
						150	160	162	
						142	149	164	
						142	159	165	
Jul 15	10:48	EA	WW-026	P147-P149 Vertical Top of Seam	D71	147	145	167	Pass
						139	145	166	
						143	153	165	
						147	147	166	
						150	147	160	

Date Fused	Time Fused	Tech	Apparatus	Location (UTM is +/- 4 m)	Sample ID	$Peel_{in}$ (100 min)	$Peel_{out}$ (100 min)	Shear (120 min)	Pass or Fail
Jul 16	12:22	EA	WW-026	P152-P154 Vertical Bottom of Seam	D72	150	152	158	Pass
						149	151	157	
						150	156	160	
						152	156	156	
						145	156	158	

6.0 PHOTO LOG



Figure 1: Rolling regraded subgrade in progress within Phase 1B.



Figure 2: Air pressure testing in progress within Phase 1B.

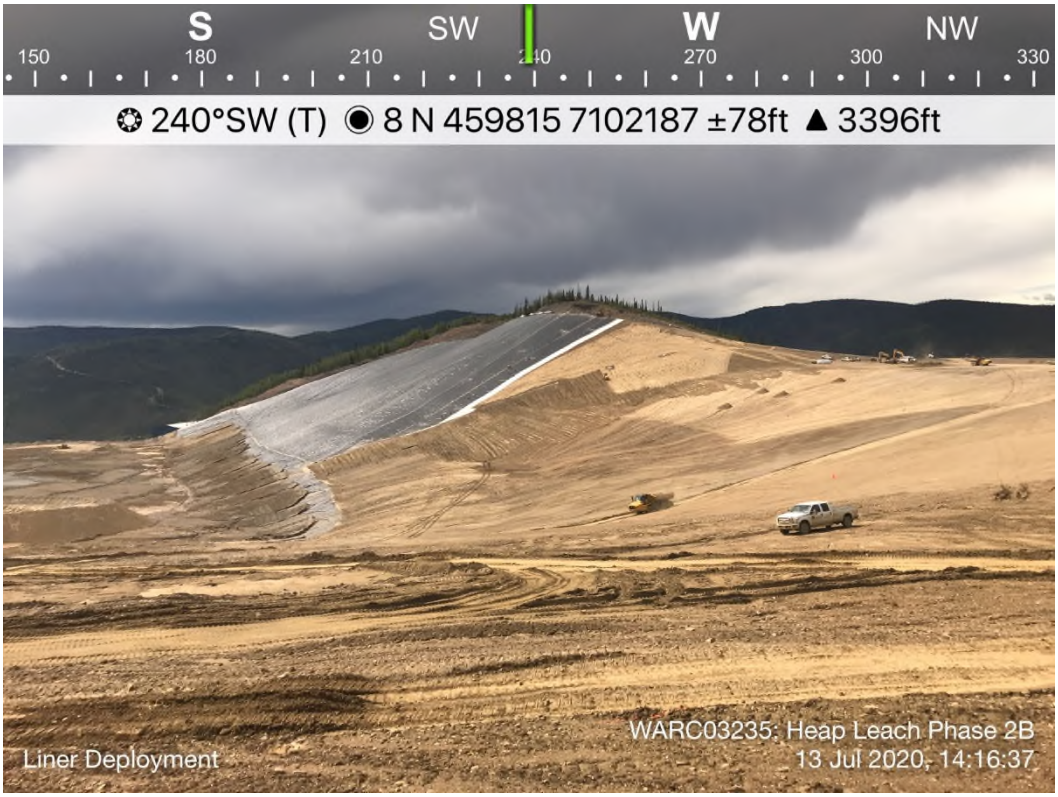


Figure 3: View of deployment, and regarding and rolling of subgrade



Figure 4: Typical scour of subgrade due to rain.



Figure 5: Rolling of subgrade in foreground with GCL deployment in background.



Figure 6: Deployment in progress.

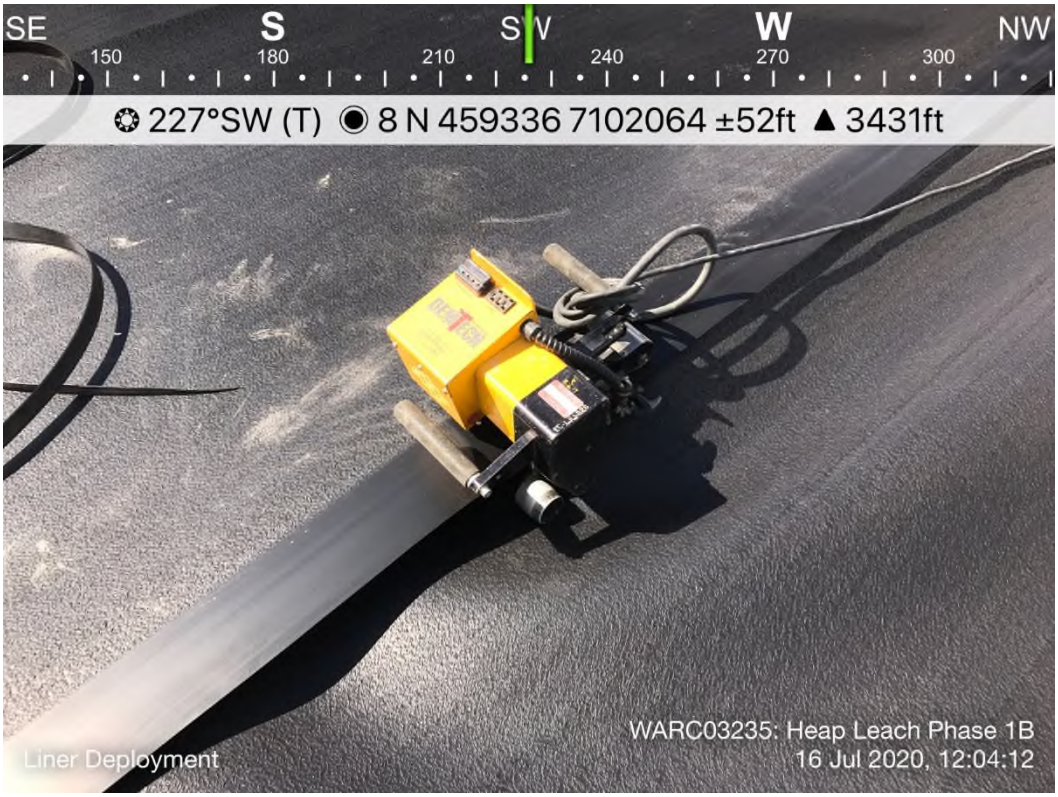


Figure 7: Typical wedge welding in progress.



Figure 8: View of GCL and Liner deployed to date.

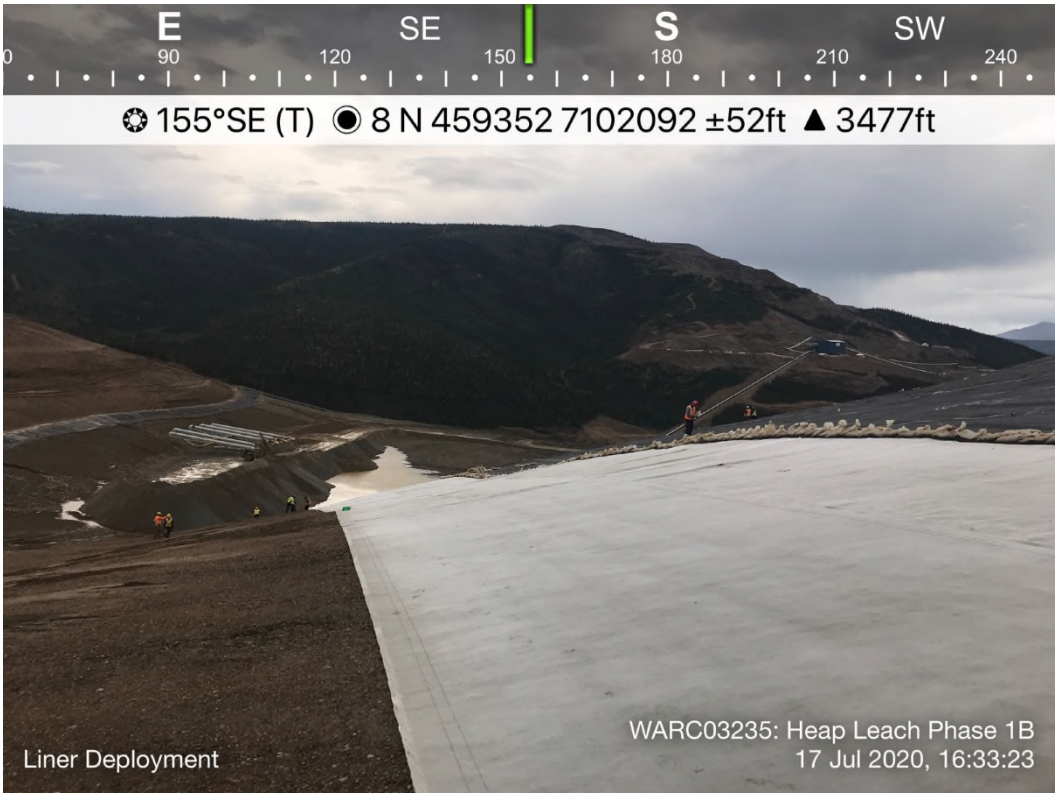


Figure 9: Two sections of GCL placed today.



Figure 10: Repairing scour of subgrade after recent rainfall.



Figure 11: Deployment of LLDPE and reconditioning of subgrade in progress.

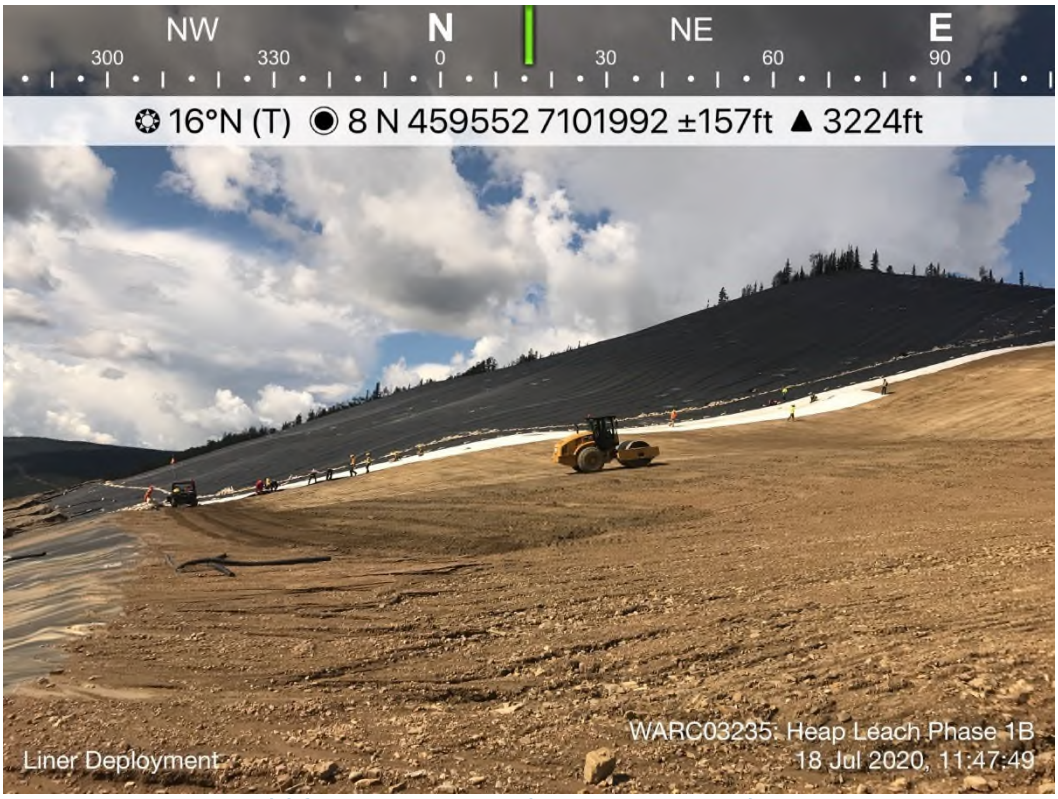


Figure 12: Deployment of GCL and compaction of subgrade at base of slope.

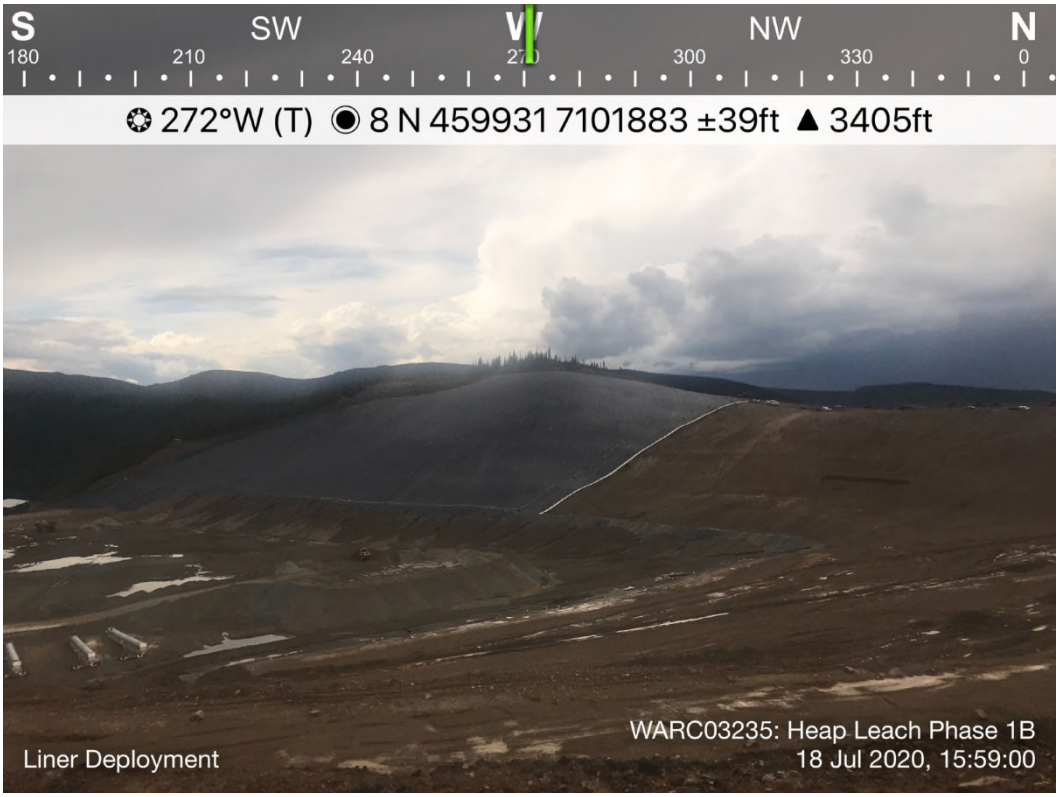


Figure 13: Deployment to date (Panel 172).

TETRA TECH

WEEKLY FIELD REPORT

ISSUED FOR USE

Project:	Eagle Gold Heap Leach Phase 1B	**Date:**	July 26, 2020
Location:	Eagle Gold Mine	**Contractor:**	Ewing Transport / Layfield
Client:	Victoria Gold Corp.	**Contractor's Rep:**	Marshall Ewing / Chad Messervey
Contact:	Clint Abel	**Contractor's Email:**	
Weather:	Variable (see daily entries)	**Tetra Tech Representative:**	James Buyck
File:	704-ENG.WARC03235-09	**Status:**	Issued for Use

1.0 INTRODUCTION

Tetra Tech Canada Inc. (Tetra Tech) was retained by Victoria Gold Corp. (Victoria Gold) to provide CQA services at the Eagle Gold mine located north of Mayo, Yukon, at Dublin Gulch for the Eagle Gold Heap Leach Phase 1B expansion (Phase 1B). Mr. James Buyck is Tetra Tech's representative on site.

Forte Dynamics (Forte) out of Fort Collins, Colorado provided the design and specification for Phase 1B, and Forte's representative is Clint Green.

Clint Abel, of JDS Energy & Mining, is Victoria Gold's project manager on site at the Eagle Gold mine.

Ewing Transport (Ewing), based out of Mayo, Yukon, is the construction contractor for Phase 1B.

Layfield Environmental Containment (Layfield) has been retained to provide and install the liner for Phase 1B, and their supervisor on site is Chad Messervey.

The following Field Report outlines Tetra Tech's CQA for the period of July 20, 2020, to July 26, 2020.

2.0 DAILY REPORTS

2.1 Highlights

- Rain delayed liner deployment throughout the week.
- Layfield is placing three panels of GCL for every two panels of 80 mm LLDPE liner.

2.2 July 20, 2020

- Weather: cloudy, turning to rain by mid-morning
- Layfield deployed two slope lengths of GCL before work halted by rain.
- Four additional destructive samples were obtained by Layfield with extrusion welded repair completed immediately afterward and just prior to rainfall.
- Ewing halted sub-excavation of NE Slope because of wet and slippery haul road. Continued placement and compaction of fill along the west side of the perimeter road.

Tetra Tech Canada Inc.
61 Wasson Place
Whitehorse, YT Y1A 0H7 CANADA
Tel 867.668.3068 Fax 867.668.4349

2.3 July 21, 2020

- Weather: Sunny in a.m., some cloud and rain in the p.m. L 9°C H 17°C
- The GCL placed yesterday prior to rainfall was evaluated and noted to have localized wetted areas estimated to be about 10 % of the total area placed. Select areas were further investigated by cutting through the GCL. The bentonite was noted to be moistened and 'pasty' with the internal fibres connecting the outer layers still intact. There was no noticeable migration of bentonite through the outer layers. Layfield superintendent (Chad M.) proceeded with placement with QA agreement.
- The area of subgrade planned for today's deployment was evaluated and noted to have only some localized minor scour and instability issues - permission granted to Layfield to proceed with deployment.
- Two slope lengths of GCL and slope length of LLDPE Liner deployed in the a.m. Two slope lengths of GCL and one slope length of LLDPE Liner placed in the p.m.
- Layfield also continued obtaining destructs and performing detail work.
- Ewing focused on placement of fill short-hauled from a nearby source to the West Perimeter Berm, as well, continued installation perforated corrugated pipe along Lateral #3.
- Ewing requested review of the sub-grade of the recently excavated Perimeter East Berm. The area observed to design grade, and with the exception of a few localized soft areas and minor clean-up, the majority of the area appears satisfactory -another review will be completed once clean-up has been finalized.

2.4 July 22, 2020

- Weather: Overcast, with rain by mid-morning L 10°C H 12°C
- Layfield deployed one slope length of LLDPE Liner and GCL until work halted around 10:30 a.m. due to rain.
- Work re-commenced after the rain stopped around 12:30 p.m., and two more slope lengths of GCL and one LLDPE Liner were deployed. Prior to deployment of the LLDPE, the GCL was observed to be wet but not adversely affected by the rain – No signs of 'popcorn' effect through liner, or delamination of the internal connective fibers.
- Ewing continued placement and compaction of fill hauled from nearby source to West Perimeter Berm, and install of perforated corrugated pipe along Lateral #3.
- Anchor trench excavated, but rain around 3:15 p.m. halted further deployment.
- Liner deployment halted for rest of the day at 4:00 p.m.

2.5 July 23, 2020

- Weather: Overcast, L 6°C H 15°C
- Regrading and rolling of subgrade required by Ewing prior to GCL deployment. Layfield commenced GCL deployment immediately afterward, around 9:00 a.m.
- Three slope lengths of GCL placed by 1:00 p.m. Deployment of LLDPE Liner commenced around 1:30 p.m.
- Two slope lengths of GCL and one slope length of LLDPE Liner placed in afternoon. No issues of concerns with deployment noted.
- Filled placement and compaction along the West Perimeter Berm completed for now. The area observed stable with little to no deflection under loaded haul truck traffic.

2.6 July 24, 2020

- Weather: Sunny with some cloud, L 6°C H 16°C
- Subgrade observed to be unchanged and acceptable for deployment. Ewing continued reconditioning subgrade further on in preparation for the next few days of deployment.
- Ewing Transport continued installation of drain at Lateral #3.
- Some delays encountered with deployment of LLDPE Liner due to windy conditions around 1:30 p.m. Layfield progressed with deploying GCL instead.
- Layfield deployed six slope lengths of GLC and one of LLDPE Liner. Four slope lengths remained exposed at the end of the day.

2.7 July 25, 2020

- Weather: Overcast, periods of light rain throughout the a.m. to steady rain in p.m. L 8°C H 14°C
- GCL left exposed from previous day's deployment observed wetted from overnight rain adjacent the last LLDPE Liner deployed. This was mainly due to run-off from the LLDPE. The remaining three slope lengths appeared less affected. Layfield indicated the wetted were not an issue, and no hydration had occurred, as confirmed by QA. It was further observed that 'popcorn' effect had not occurred.
- Subgrade observed to be in acceptable condition for GCL deployment when required.
- Three slope lengths of LLDPE placed by 10:30 p.m., totally covering the GCL. With rain forecast, Layfield moved to detail work, exclusively.
- Ewing continued installation of Lateral #3, sloping within NE Slope, and construction of West Perimeter Berm.

2.8 July 26, 2020

- Weather: Overcast, rainy in the p.m. L 7°C H 12°C
- With rain in the forecast for today, Layfield focused on detail work, exclusively.
- Ewing continued with fill placement and compaction of the West Perimeter Berm.
- Layfield suspended work for the day around 1:00 p.m. due to rain.

3.0 GEOSYNTHETIC ROLL NUMBERS PLACED

Table 1 summarizes the daily geosynthetic roll numbers placed on the slope during liner installation. All panel lengths are approximate, and where 45 degree joints are used, panel length is based from the center of the panel.

Table 1: Geosynthetic Roll Numbers Placed on Slope

Date	GCL Roll Number	LLDPE Liner Roll Number	Panel Number (Length)
Jul 19	-	-	-
Jul 20	0242-347635; 0242-347533, 0242-347613, 0242-347619, 0242-347617, 0242-347629		-

Date	GCL Roll Number	LLDPE Liner Roll Number	Panel Number (Length)
Jul 21	502344019, 0242-347558, 347660, 0242-347587, 0242-347599, 0242-347661, 0242-347638, 0242-347585, 0242-347648, 0242-347644, 0242-347645, 0242-347649, 0242-347542, 0242-347643, 0242-347654, 0242-347539, 0242-347541, 0242-347657, 0242-347642,	10693-003 10693-006 10693-006 10693-007 10693-007 10693-016 10693-016 10693-004 10693-004 10697-007	P173 (25.3 m) P174 (56.8 m) P175 (69.9 m) P176 (119.8 m) P177 (6.5 m) P178 (55.7 m) P179 (72.9 m) P180 (50.4 m) P181 (74.5 m) P182 (12.0 m)
Jun 22	0242-347522, 0242-347522, 0242-347646, 0242-347651, 502344658, 502344548, 502347143,	10693-034 10693-015 10693-015 10694-003 10694-003 10693-036 10693-036 10693-009	P183 (128.9 m) P184 (62.4 m) P185 (66.0 m) P186 (15.7 m) P187 (106.4 m) P188 (66.5 m) P189 (61.7 m) P190 (44.2 m)
Jun 23	0242-347637, 0242-347655, 0242-347540, 0242-347641, 0242-347652, 502344133, 502347603, 0242-347559, 0242-347658, 0242-347907, 0242-347779	10693-009 10693-033 10693-032 10697-007 10693-032 10693-035 10693-005	P191 (78.0 m) P192 (128.1 m) P193 (79.6 m) P194 (1.0 m) P195 (50.7 m) P196 (128.5 m) P197 (107.0 m)
Jun 24	0242-347770, 0242-347770, 0242-347627, 0242-347639, 0242-3477908, 0242-347774, 0242-347909, 0242-347857, 0242-347773, 0242-347876, 0242-347612, 0242-347560, 0242-347881, 0242-347769, 0242-347562, 0242-347776, 0242-347778, 0242-347592, 0242-347783, 0242-347784, 0242-347782, 0242-347771, 0242-347772, 0242-347777, 0242-347785, 0242-347770, 0242-347775, 0242-347781, 0242-347581, 0242-347586, 0242-347737, 0242-347905, 0242-347904, 0242-347600, 0242-347591, 0242-347786, , 0242-347877, 502344532, 502344538, 502347669, 502347668, 502344024	10693-005 10693-021 10693-024 10693-027 10693-027 10693-002 10693-031	P198 (18.8 m) P199 (127.0 m) P200 (125.2 m) P201 (16.6 m) P202 (111.4 m) P203 (128.9 m) P204 (47.3 m)

Date	GCL Roll Number	LLDPE Liner Roll Number	Panel Number (Length)
June 25	-	10693-031	P205 (81.2 m)
		10693-028	P206 (126.4 m)
		10693-029	P207 (82.9 m)
		10693-029	P208 (46.8 m)
		10693-030	P209 (129.0 m)
		10693-026	P210 (117.0 m)
		10693-026	P211 (11.9 m)
		10692-026	P212 (128.3 m)
		10692-028	P213 (128.4 m)
		10692-023	P214 (22.2 m)

4.0 TRIAL SEAM

Table 2 summarizes the weekly trial seam results. For fusion, the apparatus settings are temperature and speed, and for extrusion, the apparatus settings are preheat and barrel temperature. Five tests are performed for each criterion.

Table 2: Trial Seam Results

Date	Time	Fusion or Extrusion	Tech	Apparatus #	Temp or Preheat (°F)	Speed (%) or Barrel Temp (°F)	$Peel_{inside}$ (100 min)	$Peel_{outside}$ (100 min for Fusion 88 min for Extrusion)	Shear (120 min)	Smooth or Textured
Jul 20	8:00	Extrusion	EA	04035	500	495	N/A	99	154	N/A
								98	163	
								97	165	
								90	158	
								108	163	
Jul 21	8:00	Fusion	RW	EX-26	850	55	171	166	198	Smooth
							162	136	202	
							161	167	198	
							157	164	197	
							155	168	200	
Jul 21	8:00	Extrusion	EF	04036	500	490	N/A	139	192	N/A
								137	206	
								147	190	
								129	196	
								150	196	
Jul 21	8:00	Fusion	RW	WW-026	850	35	132	131	174	Textured
							123	130	174	
							153	151	176	
							144	148	178	
							126	141	179	
Jul 21	8:00	Fusion	EA	WW-054	850	55	148	146	199	Smooth
							146	133	193	
							156	144	186	
							152	136	197	
							153	153	194	

Date	Time	Fusion or Extrusion	Tech	Apparatus #	Temp or Preheat (ºF)	Speed (%) or Barrel Temp (ºF)	$Peel_{inside}$ (100 min)	$Peel_{outside}$ (100 min for Fusion 88 min for Extrusion)	Shear (120 min)	Smooth or Textured
Jul 21	12:15	Fusion	RW	WW-026	850	35	119	114	134	Textured
							118	124	130	
							114	129	131	
							124	122	138	
							113	119	140	
Jul 21	12:15	Fusion	JK	WW-022	850	55	135	117	150	Smooth
							134	121	144	
							138	119	142	
							139	124	151	
							143	123	148	
Jul 21	12:15	Fusion	RW	WW-026	850	55	117	128	165	Smooth
							120	136	166	
							131	128	166	
							137	121	159	
							123	138	154	
Jul 21	12:15	Extrusion	EF	04036	495	490	N/A	123	141	N/A
								118	152	
								130	157	
								135	154	
								128	161	
Jul 22	8:00	Fusion	RW	WW-026	850	35	148	154	206	Smooth
							150	144	203	
							170	131	188	
							145	120	172	
							152	162	189	
Jul 22	8:00	Fusion	RW	WW-026	850	55	138	145	158	Smooth
							136	169	150	
							140	165	164	
							150	166	160	
							149	158	171	
Jul 22	8:00	Fusion	JK	WW-022	850	55	155	154	179	Smooth
							154	155	178	
							143	167	172	
							161	167	179	
							138	158	182	
Jul 22	13:30	Fusion	RW	WW-026	850	35	134	101	171	Textured
							150	125	178	
							111	123	172	
							154	121	168	
							124	128	171	
Jul 22	13:30	Fusion	RW	WW-026	850	35	140	142	159	Smooth
							143	135	163	
							135	139	164	
							129	149	170	
							132	138	168	

Date	Time	Fusion or Extrusion	Tech	Apparatus #	Temp or Preheat (°F)	Speed (%) or Barrel Temp (°F)	$Peel_{inside}$ (100 min)	$Peel_{outside}$ (100 min for Fusion 88 min for Extrusion)	Shear (120 min)	Smooth or Textured
Jul 22	13:30	Fusion	JK	WW-022	850	55	121 152 119 149 136	127 124 145 136 144	169 170 168 159 172	Smooth
Jul 22	13:30	Fusion	JK	WW-022	850	40	123 132 140 153 139	127 136 132 131 143	167 168 170 171 162	Textured-Smooth
Jul 23	13:30	Fusion	RW	WW-026	850	35	132 131 153 158 142	142 154 144 141 146	187 187 186 191 185	Textured
Jul 23	13:30	Fusion	JK	WW-022	850	55	115 134 155 149 135	124 147 124 146 151	162 172 178 159 163	Smooth
Jul 23	13:30	Fusion	RW	WW-054	850	55	129 168 149 168 127	153 142 163 165 137	159 172 165 162 160	Smooth
Jul 24	8:00	Extrusion	EA	EX-4035	500	495	N/A	99 98 97 90 108	154 163 165 158 163	N/A
Jul 24	8:15	Extrusion	TH	EX-35	490	495	N/A	127 123 138 120 131	155 154 162 155 155	N/A
Jul 24	10:45	Fusion	JK	WW-022	850	35	145 124 161 169 135	166 139 142 161 145	168 159 165 161 173	Textured
Jul 24	10:45	Fusion	JK	WW-022	850	55	130 133 141 140 147	137 144 137 150 145	161 162 159 171 161	Smooth

Date	Time	Fusion or Extrusion	Tech	Apparatus #	Temp or Preheat (°F)	Speed (%) or Barrel Temp (°F)	$Peel_{inside}$ (100 min)	$Peel_{outside}$ (100 min for Fusion 88 min for Extrusion)	Shear (120 min)	Smooth or Textured
Jul 24	10:45	Fusion	RW	WW-026	850	35	151 137 140 139 142	126 152 169 124 152	167 165 171 162 172	Textured
Jul 24	10:45	Fusion	RW	WW-026	850	35	145 164 145 162 151	164 170 169 152 169	161 167 164 165 174	Smooth
Jul 25	8:45	Fusion	JK	WW-022	850	35	143 161 124 162 134	145 174 178 167 161	177 188 180 173 185	Textured
Jul 25	8:45	Fusion	JK	WW-022	850	55	145 154 156 161 143	165 166 157 156 149	175 169 184 175 172	Smooth
Jul 25	8:50	Fusion	RW	WW-026	850	55	153 173 153 161 142	173 159 170 173 134	175 166 174 168 172	Smooth

5.0 NON-DESTRUCTIVE TESTING

Table 3 summarizes the weekly non-destructive pressure testing results.

Table 3: Non-Destructive Testing Results

Date Fused	Date Tested	Time Tested	Seam #	psi Start	psi End	Pass or Fail	Notes
Jul 5	Jul 21	13:03	P102-P105 Vertical	40	40	Pass	
Jul 7	Jul 21	13:06	P109-P111 Vertical	40	39	Pass	
Jul 7	Jul 21	14:50	P141-P142 Cross	40	39	Pass	
Jul 15	Jul 21	14:50	P142-P144 Vertical	40	40	Pass	
Jul 18	Jul 21	14:46	P167-P166 Cross	40	40	Pass	
Jul 18	Jul 21	14:24	P168-P167 Cross	40	40	Pass	
Jul 18	Jul 21	14:02	P168-P162 Vertical	40	40	Pass	
Jul 18	Jul 21	14:58	P168-P161 Vertical	40	40	Pass	
Jul 18	Jul 21	14:09	P168-P160 Vertical	40	40	Pass	
Jul 18	Jul 21	14:11	P168-P159 Vertical	40	40	Pass	
Jul 18	Jul 21	14:11	P168-P158 Vertical	40	40	Pass	
Jul 18	Jul 21	14:20	P168-P156 Vertical	40	40	Pass	

Date Fused	Date Tested	Time Tested	Seam #	psi Start	psi End	Pass or Fail	Notes
Jul 18	Jul 21	14:20	P168-P154 Vertical	40	40	Pass	
Jul 18	Jul 21	14:24	P168-P152 Vertical	40	40	Pass	
Jul 18	Jul 21	14:24	P167-P163 Vertical	40	40	Pass	
Jul 18	Jul 21	15:15	P167-P151 Vertical	40	39	Pass	
Jul 18	Jul 21	14:32	P167-P150 Vertical	40	40	Pass	
Jul 18	Jul 21	14:45	P167-P148 Vertical	40	40	Pass	
Jul 18	Jul 21	14:46	P167-P146 Vertical	40	40	Pass	
Jul 18	Jul 21	14:46	P166-P146 Vertical	40	40	Pass	
Jul 18	Jul 21	14:47	P166-P144 Patch	40	40	Pass	
Jul 18	Jul 21	14:47	P166-P144 Patch	40	40	Pass	
Jul 18	Jul 21	15:02	P166-P141 Vertical	40	40	Pass	
Jul 18	Jul 21	15:03	P171-P170 Cross	40	40	Pass	
Jul 18	Jul 21	15:03	P171-P170 Cross	40	40	Pass	
Jul 18	Jul 21	15:15	P172-P171 Cross	40	39	Pass	
Jul 12	Jul 24	14:17	P122-P125 Vertical	40	39	Pass	Top of Seam to Patch
Jul 13	Jul 25	15:50	P130-P131 Cross	40	40	Pass	
Jul 13	Jul 25	14:28	P131-P132 Cross	40	40	Pass	
Jul 13	Jul 25	14:28	P127-P132 Vertical	40	40	Pass	
Jul 13	Jul 25	14:28	P127-P131 Vertical	40	38	Pass	
Jul 13	Jul 25	14:30	P132-P134 Vertical	40	40	Pass	
Jul 13	Jul 25	14:30	P131-P134 Vertical	40	39	Pass	
Jul 13	Jul 25	15:50	P131-P133 Vertical	40	40	Pass	
Jul 13	Jul 25	15:50	P130-P133 Vertical	40	40	Pass	
Jul 14	Jul 25	14:42	P138-P137 Vertical	40	40	Pass	
Jul 14	Jul 25	14:42	P134-P138 Vertical	40	40	Pass	
Jul 14	Jul 25	14:42	P134-P137 Vertical	40	39	Pass	
Jul 14	Jul 25	14:44	P138-P140 Vertical	40	40	Pass	
Jul 14	Jul 25	14:44	P137-P140 Vertical	40	40	Pass	
Jul 15	Jul 25	14:56	P144-P145 Cross	40	40	Pass	
Jul 15	Jul 25	14:56	P143-P144 Vertical	40	40	Pass	
Jul 15	Jul 25	17:07	P147-P148 Cross	40	40	Pass	
Jul 15	Jul 25	14:58	P145-P147 Vertical	40	40	Pass	
Jul 15	Jul 25	14:29	P151-P163 Vertical	40	40	Pass	
Jul 18	Jul 25	15:55	P165-P166 Cross	40	40	Pass	
Jul 18	Jul 25	15:33	P139-P166 Vertical	40	40	Pass	
Jul 18	Jul 25	15:48	P136-P166 Vertical	40	40	Pass	
Jul 18	Jul 25	15:48	P133-P166 Vertical	40	40	Pass	
Jul 18	Jul 25	15:55	P130-P166 Vertical	40	40	Pass	
Jul 18	Jul 25	15:55	P130-P165 Vertical	40	40	Pass	
Jul 18	Jul 25	16:00	P126-P165 Vertical	40	40	Pass	
Jul 18	Jul 25	16:02	P123-P165 Vertical	40	40	Pass	
Jul 18	Jul 25	16:02	P121-P165 Vertical	40	40	Pass	
Jul 18	Jul 25	15:05	P167-P171 Vertical	40	38	Pass	
Jul 18	Jul 25	15:15	P166-P171 Vertical	40	39	Pass	
Jul 18	Jul 25	15:16	P168-P172 Vertical	40	40	Pass	
Jul 18	Jul 25	15:15	P167-P172 Vertical	40	39	Pass	

6.0 DESTRUCTIVE TESTING

Table 4 summarizes the weekly destructive testing results. Five tests are performed for each criterion.

Table 4: Destructive Testing Results

Date Fused	Time Fused	Tech	Apparatus	Location (UTM is +/- 4 m)	Sample ID	$Peel_{in}$ (100 min)	$Peel_{out}$ (100 min)	Shear (120 min)	Pass or Fail
Jul 23	16:23	RW	WW-026	P193-P197 Vertical Top of Seam	D73	154 152 150 159 167	165 159 159 158 168	167 162 162 163 168	Pass
Jul 23	14:24	JK	WW-022	P190-P193 Vertical Top of Seam	D74	152 163 149 155 161	154 157 150 152 161	172 165 166 168 172	Pass
Jul 23	13:59	RW	WW-026	P190-P186 Vertical Top of Seam	D75	149 155 159 148 157	152 158 153 144 145	168 163 174 172 172	Pass
Jul 23	14:38	RW	WW-26	P187-P191 Vertical Bottom of Seam	D76	147 121 147 156 144	149 149 156 149 150	166 165 173 172 172	Pass
Jul 22	14:00	JK	WW-022	P183-P187 Vertical Bottom of Seam	D77	130 131 122 117 125	157 152 155 156 155	157 157 161 157 153	Pass
Jul 22	9:37	JK	WW-022	P177-P183 Vertical Bottom of Seam	D78	145 143 147 146 158	140 149 154 149 155	161 160 162 158 154	Pass
Jul 21	12:24	RW	WW-026	P177-P178 Cross Left Side of Seam	D79	148 145 160 148 144	153 148 145 161 151	174 170 166 166 173	Pass
Jul 21	15:18	RW	WW-026	P173-P177 Vertical Bottom of Seam	D80	142 141 143 138 142	141 150 146 147 151	170 162 176 177 169	Pass

Date Fused	Time Fused	Tech	Apparatus	Location (UTM is +/- 4 m)	Sample ID	$Peel_{in}$ (100 min)	$Peel_{out}$ (100 min)	Shear (120 min)	Pass or Fail
Jul 21	9:43	RW	WW-026	P173-P174 Cross Left Side of Seam	D81	155	158	157	Pass
						150	154	156	
						149	148	171	
						153	158	168	
						147	153	176	
Jul 21	10:33	RW	WW-026	P169-P173 Vertical Bottom of Seam	D82	153	150	157	Pass
						149	151	155	
						152	151	163	
						149	151	156	
						151	144	160	
Jul 18	14:55	RW	WW-054	P169-P170 Cross	D83	151	157	181	Pass
						148	163	179	
						155	155	177	
						142	147	176	
						146	149	169	
Jul 18	16:08	EA	WW-026	P165-P169 Vertical Top of Seam	D84	146	155	158	Pass
						143	151	157	
						150	156	166	
						154	153	161	
						156	155	162	
Jul 18	16:08	EA	WW-026	P165-P169 Vertical Bottom of Seam	D85	154	157	158	Pass
						139	152	155	
						150	154	161	
						149	153	158	
						143	154	163	
Jul 18	10:39	RW	WW-054	P126-P165 Vertical	D86	147	142	166	Pass
						155	140	165	
						149	169	170	
						106	140	164	
						145	137	172	
Jul 18	14:55	RW	WW-054	P210-P214 Vertical Top of Seam	D87	149	148	162	Pass
						148	149	166	
						148	156	164	
						147	147	169	
						154	147	164	
Jul 25	11:43	JK	WW-022	P207-P210 Vertical Top of Seam	D88	145	150	158	Pass
						144	150	159	
						153	152	161	
						147	149	161	
						152	149	161	
Jul 25	14:00	JK	WW-022	P208-P211 Vertical Bottom of Seam	D89	137	150	166	Pass
						139	158	167	
						140	147	173	
						142	153	172	
						146	153	173	
Jul 25	13:24	JK	WW-022	P205-P208 Vertical Bottom of Seam	D90	142	151	151	Pass
						142	153	151	
						146	151	156	
						138	148	156	
						143	149	152	

Date Fused	Time Fused	Tech	Apparatus	Location (UTM is +/- 4 m)	Sample ID	$Peel_{in}$ (100 min)	$Peel_{out}$ (100 min)	Shear (120 min)	Pass or Fail
Jul 25	10:16	RW	WW-026	P202-P205 Vertical Bottom of Seam	D91	141	153	146	Pass
						138	156	149	
						143	146	148	
						147	144	148	
						142	151	150	
Jul 25	8:50	RW	WW-026	P204-P207 Vertical Top of Seam	D92	145	136	154	Pass
						144	138	145	
						143	135	154	
						145	138	145	
						144	117	158	
Jul 24	13:00	JK	WW-022	P201-P204 Vertical Top of Seam	D93	149	153	162	Pass
						148	150	162	
						150	148	167	
						146	153	169	
						153	150	168	
Jul 24	13:23	RW	WW-026	P198-P202 Vertical Bottom of Seam	D94	149	150	156	Pass
						148	145	148	
						149	150	154	
						150	150	156	
						150	153	153	
Jul 24	11:08	RW	WW-026	P197-P201 Vertical Top of Seam	D95	152	148	160	Pass
						146	137	158	
						152	148	157	
						101	132	153	
						144	144	161	
Jul 24	11:48	JK	WW-022	P195-P198 Vertical Bottom of Seam	D96	144	145	155	Pass
						145	140	155	
						147	151	159	
						141	144	157	
						147	136	159	

7.0 PHOTO LOG



Figure 1: Anchor trench backfilled and compacted



Figure 2: Deploying GCL



Figure 3: Preparing destruct locations for repair.



Figure 4: On-going survey of liner seams by Underhill Geomatics



Figure 5: GCL Cut to evaluate severity of hydration and integrity of GCL exposed to rainfall.



Figure 6: View looking north along the East Perimeter Berm excavated to sub-grade.



Figure 7: Placed and compacted fill along the west perimeter berm.



Figure 8: Placement of fill in progress within NW area of Perimeter Berm.



Figure 9: Subgrade after reconditioning to remove scour prior to placement of the GCL.



Figure 10: Deployed GCL after rain event.



Figure 11: Extent of wetted GCL after rain event.



Figure 12: Trail seam test weld by technician.



Figure 13: Installation of Lateral drain #3 along NE slope in-progress.



Figure 14: Rolling of subgrade prior to placement of GCL.

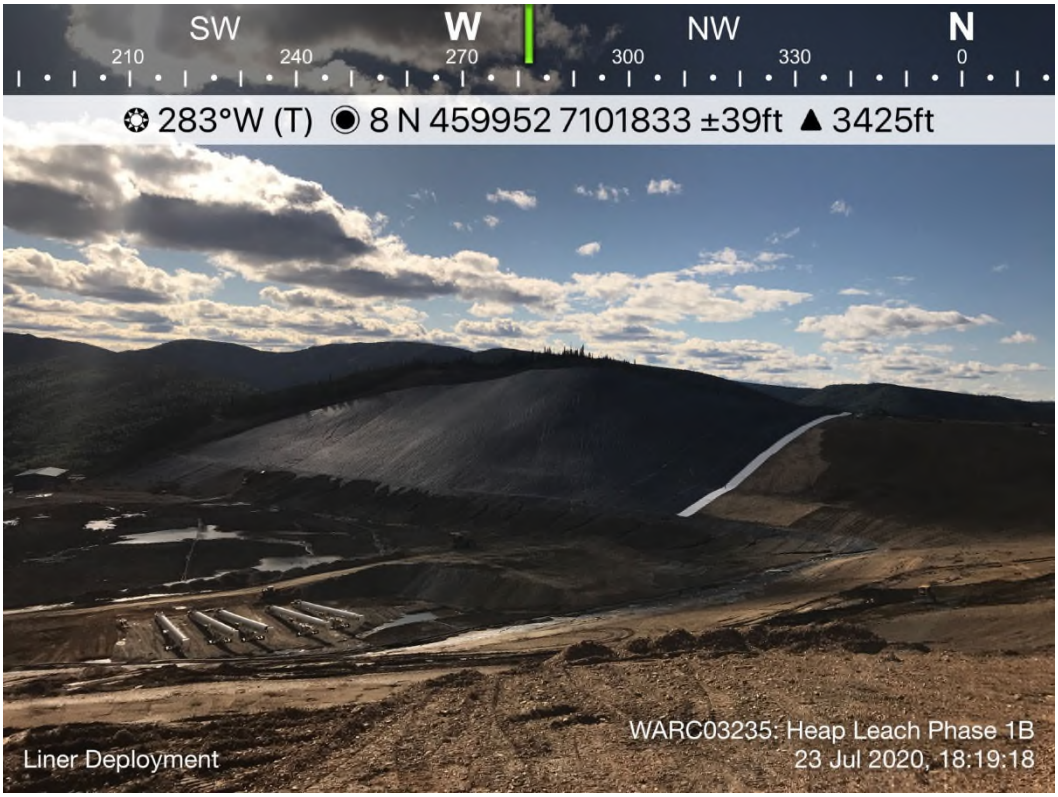


Figure 15: Deployment progress to date.



Figure 16: Extrusion welding of geomembrane panels used to patch destruct locations.

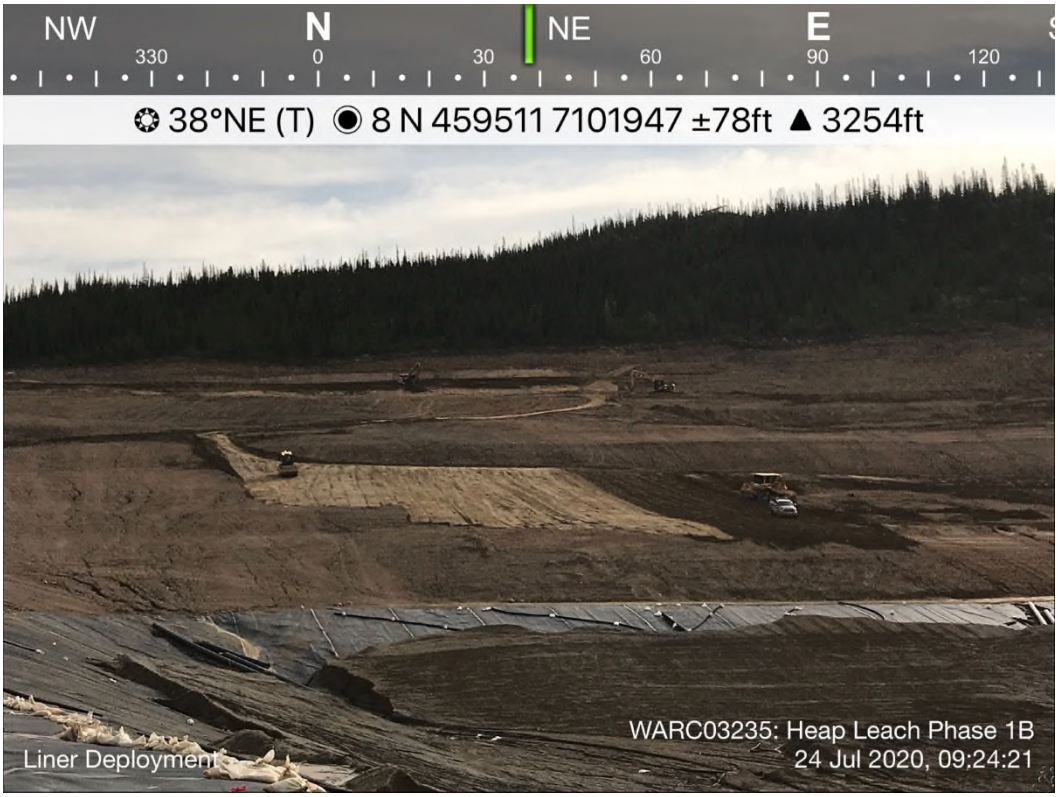


Figure 17: Ewing Transport continued installation at Lateral #3 and subgrade preparation



Figure 18: Extent of wetted GCL from overnight rain.



Figure 19: Extent of wetted GCL.

TETRA TECH

WEEKLY FIELD REPORT

ISSUED FOR USE

Project:	Eagle Gold Heap Leach Phase 1B	**Date:**	August 2, 2020
Location:	Eagle Gold Mine	**Contractor:**	Ewing Transport / Layfield
Client:	Victoria Gold Corp.	**Contractor's Rep:**	Marshall Ewing / Chad Messervey
Contact:	Clint Abel	**Contractor's Email:**	
Weather:	Variable (see daily entries)	**Tetra Tech Representative:**	Adam Mickey
File:	704-ENG.WARC03235-09	**Status:**	Issued for Use

1.0 INTRODUCTION

Tetra Tech Canada Inc. (Tetra Tech) was retained by Victoria Gold Corp. (Victoria Gold) to provide CQA services at the Eagle Gold mine located north of Mayo, Yukon, at Dublin Gulch for the Eagle Gold Heap Leach Phase 1B expansion (Phase 1B). Mr. Adam Mickey, EIT, is Tetra Tech's representative on site.

Forte Dynamics (Forte) out of Fort Collins, Colorado provided the design and specification for Phase 1B, and Forte's representative is Clint Green.

Clint Abel, of JDS Energy & Mining, is Victoria Gold's project manager on site at the Eagle Gold mine.

Ewing Transport (Ewing), based out of Mayo, Yukon, is the construction contractor for Phase 1B.

Layfield Environmental Containment (Layfield) has been retained to provide and install the liner for Phase 1B, and their supervisor on site is Chad Messervey.

The following Field Report outlines Tetra Tech's CQA for the period of July 27, 2020, to August 2, 2020.

2.0 DAILY REPORTS

2.1 Highlights

- Layfield deployed approximately 2,912.5 m of liner this week, covering an area of approximately 19,805 m^2.
- Soft subgrade conditions caused delays to deployment, causing Layfield to change their deployment plan.

2.2 July 27, 2020

- No work performed today due to rain.

2.3 July 28, 2020

- No work performed today due to rain

Tetra Tech Canada Inc.
61 Wasson Place
Whitehorse, YT Y1A 0H7 CANADA
Tel 867.668.3068 Fax 867.668.4349

2.4 July 29, 2020

- Weather: rain in the morning, turning to cloudy in the afternoon.
- See Figures 1 through 9.
- Layfield began work at 12:00 pm due to rain throughout the morning.
  - Layfield performed detail work on deployed liner and completed all detailing for liner deployed up to July 29.
- Tetra Tech conducted a shift change with Adam Mickey arriving back on site.
- Tetra Tech inspected the E4 lateral trench excavation to conduct a testpit log and organics were found at the base of the trench indicating that the soil between the lateral trench and the perimeter road is not the original subgrade
  - Clint Abel was notified but could not inspect immediately. Ewing is continuing to excavate the E4 lateral.
- The rain caused subgrade damage alongside the deployed liner requiring repair before further liner deployment, as well as the areas for further deployment.
  - The subgrade is too saturated to repair today.
    - Ewing to repair the subgrade during nightshift.
  - 2 m deep erosion trenches are present in the subgrade. Tetra Tech and Clint Abel will inspect and determine the best course of action to repair the subgrade at these locations.
    - Ewing will dig out the erosion trenches and backfill with rockfill in 0.9 m lifts, and compact then cap with sand.

2.5 July 30, 2020

- Weather: sunny with smoke in the air, turning to windy in the afternoon.
- See Figures 10 through 15.
- Tetra Tech and Layfield inspected the subgrade prior to the morning safety meeting.
  - The lower quarter of the slope to Phase 1A is still saturated and soft. Pickups leave ruts up to 200 mm deep in areas. Tetra Tech rejected the subgrade for deployment.
    - Ewing is stripping approximately 200 mm of saturated material off then recompacting.
  - Tetra Tech approved the rest of the subgrade for deployment to begin once Ewing proof rolled the slope with a packer.
  - Ewing continued to prep subgrade at the base of the slope and in advance of liner deployment.
    - Tetra Tech approved the subgrade as Ewing completed subgrade prep.
  - Tetra Tech inspected the subgrade at the base of the slope towards the end of the day.
    - Some soft spots were noted, and Ewing is going to scarify them and let them dry out overnight. If they are still soft in the morning, Ewing will excavate the soft spots and place dry material.
- Layfield is deploying GCL and liner on the approved subgrade while Ewing repairs the lower third of subgrade.

- Layfield deployed seven slope lengths of GCL and four slope lengths of liner.

- Layfield's QC is conducting pressure testing of seams.

2.6 July 31, 2020

- Weather: sunny and smoky with a light wind. Wind speed increased throughout the day.
- See Figures 16 through 35.
- Tetra Tech and Ewing inspected the subgrade at the base of the slope prior to the morning safety meeting.
  - Soft spots in the subgrade were found where the subgrade would move underfoot and/or deflection cracks from the packer.
  - Additional soft spots were found when the loader ran over them, causing depressions up to 50 mm deep.
  - Ewing is excavating out the soft spots with an average cut of 300 mm.
    - Additional cuts were required after the packer ran over the subgrade, and the subgrade was proof rolled with a loaded 30-ton rock truck.
  - Tetra Tech contacted Clint Green regarding the soft and yielding subgrade conditions to determine whether there could be some leeway to ensure that liner deployment is not hindered.
    - Based on the pictures that Tetra Tech provided, the saturated and soft subgrade must be excavated and replaced.
    - Tetra Tech informed Ewing of Clint's decision, and Ewing will continue to work on the subgrade as planned
  - Tetra Tech and Ewing agreed that all areas would be proof rolled with a loaded 30-ton rock truck to confirm that the subgrade is competent and ready for liner deployment.
  - Ewing will backfill the subgrade with sand in 300 mm compacted lifts.
    - Sand is too saturated to be used for backfilling. Ewing is blending subgrade materials and recompacting.
  - Ewing proof rolled the subgrade with a 30-ton rock truck in the presence of Tetra Tech.
    - 90% of the subgrade area was competent as identified by minimal to no deflection beneath rock truck tires.
    - Two soft areas were identified through proof rolling, and Ewing will remedy the soft spots prior to final subgrade sign off.
- Layfield is deploying GCL and Liner on the upper two-thirds of the slope.
  - Layfield placed three slope lengths of GCL, then placed liner.
  - The wind picked up in the afternoon, so Layfield continued to deploy GCL and laid out six more slope lengths of GCL.
- Layfield's QC continued to conduct pressure testing of deployed liner and completed pressure testing on liner seams for liner deployed prior to July 26.
- Layfield is conducting detail work on liner deployed yesterday.

- Four destructive samples were obtained from liner deployed yesterday.

2.7 August 1, 2020

- Weather: Sunny with a light wind, turning to cloudy and windy in the afternoon with a period of rain beginning at 5:00 pm
- See Figures 36 through 45.
- Tetra Tech and Ewing inspected the subgrade below the deployed liner on the lower third of the slope.
  - Soft spots identified on July 31 have been fixed.
  - The subgrade requires work to the north of liner deployed, and Ewing is working on the subgrade today.
  - Spots requiring sand were identified, and Ewing will place sand prior to liner deployment.
- Layfield is placing four slope lengths of liner on the upper two-thirds of the slope where GCL was deployed yesterday.
  - Layfield completed liner installation by first break. After break, Layfield moved to the lower third of the slope to tie in deployed liner to Phase 1A.
- After break, Layfield moved the bag line on deployed liner and moved to the bottom two-thirds of the slope to deploy liner.
  - Ewing's labour crew cleaned up the perimeter of the area and raked contours smooth for the tie in to Phase 1A.
  - Layfield and Ewing cleaned off debris from the GCL from the rainfall prior to rolling out GCL.
  - Layfield began deploying the GCL, using the skid steer to roll it out.
  - Layfield deployed nine slope lengths of GCL, then switched to liner and got six slope lengths of liner out.

2.8 August 2, 2020

- Weather: Sunny and windy.
- See Figures 46 through 54.
- Tetra Tech and Ewing inspected the subgrade on the lower third of the slope.
- Ewing is removing approximately 400 mm of subgrade at an identified soft spot with a D7 dozer.
  - Tetra Tech inspected the subgrade prior to rolling with a packer to confirm that the subgrade was firm.
  - Ewing blended the subgrade for smooth transitions and rolled it with a packer.
  - Tetra Tech inspected the subgrade after rolling and approved the subgrade for deployment.
    - Due to the packer's vibration being broken, some cat tracks were left in the subgrade, but the divots were less than 25 mm in depth.
- Ewing continued to fix soft spots in the subgrade, as identified by Tetra Tech.
- The rain from yesterday evening had minimal impact on the prepared subgrade.

  - Layfield used their skid steer to smooth the slope and add sand to erosion areas.
  - Ewing smoothed the subgrade with the packer.
  - Ewing's labourers raked the subgrade smooth at the tie in to the Phase 1A liner as well as cleaned the liner off.
- Ewing is continuing to prep subgrade on the upper two-thirds of the slope in advance of GCL deployment.
- Layfield is deploying GCL and liner to tie in to the deployed liner on the upper two-thirds of the slope.
  - Six slope lengths of GCL and four slope lengths of liner were deployed.
- Layfield is conducting extrusion detail work and pressure testing of liner seams.
- Layfield and Tetra Tech obtained destructs for liner placed up to 12:00 pm on August 2.
- Layfield moved back to the perimeter road and began deploying GCL on the upper two-thirds of the slope.
  - Six slope lengths of GCL were deployed by the end of the day.

3.0 GEOSYNTHETIC ROLL NUMBERS PLACED

Table 1 summarizes the daily geosynthetic roll numbers placed on the slope during liner installation. All panel lengths are approximate, and where 45 degree joints are used, panel length is based from the center of the panel.

Table 1: Geosynthetic Roll Numbers Placed on Slope

Date	GCL Roll Number	LLDPE Liner Roll Number	Panel Number (Length)
July 27	-	-	
July 28	-	-	
July 29	-	-	
July 30	0242-347073, 0242-247767 0242-347766, 0242-347081 0242-247763, 0242-347758 0242-347760, 0242-347872 0242-347074. 0242-347852 0242-347855, 0242-347815 0242-347842, 0242-347849 0242-347844, 0242-347820 0242-347843, 0242-347841 0242-347875, 0242-347901 0242-347805, 0242-347817 0242-347900, 0242-347894 0242-347874, 0242-347854 0242-347827, 0242-347839 0242-347821, 0242-347838 502347679, 502347678	10692-023 10692-027 10692-036 10692-022 10692-024 10692-010 10693-022 10692-021	P215 (100.2 m) P216 (107.7 m), P217 (15.6 m) P218 (125.4 m) P219 (67.3 m), P220 (56.5 m) P221 (125.2 m) P222 (26.6 m), P223 (27.5 m) P224 (126.4 m) P225 (59.0 m)

Date	GCL Roll Number	LLDPE Liner Roll Number	Panel Number (Length)
July 31	0242-347829, 0242-347075 0242-347076, 0242-347833 0242-347822, 0242-347823 0242-347847, 0242-347761 0242-347903, 0242-347824 0242-347850, 0242-347845 0242-347755, 0242-347077 0242-347832, 0242-347808 0242-347741, 0242-347078 0242-347744, 0242-347818 0242-347851, 0242-347813 0242-347846 502347699, 502347511 502347677, 502347680 502347673, 502347697 502347489, 502347853 502347494, 502347688 502347706, 502347675 502347496, 502347700 502347505	10692-021 10692-015 10692-016 10692-033	P226 (66.5 m) P227 (129.4 m) P228 (16.8 m), P229 (112.8 m) P230 (83.1 m)
August 1	0242-347848, 0242-347079 0242-347747, 0242-347879 0242-347080, 0242-347902 0242-347831, 0242-347807 0242-347896, 0242-347547 502347689, 502347506 502347703, 502347691	10692-033 10692-001 10692-025 10692-014 10693-010 10692-007 10693-023 10692-037 10692-005 10693-019 10692-019	P231 (25.2 m) P232 (128.5 m) P233 (59.4 m), P234 (71.2 m) P235 (129.4 m) P236 (13.0 m), P237 (109.8 m) P238 (115.2 m), P239 (26.0 m) P240 (127.3 m) P241 (58.7 m) P242 (77.0 m), P243 (48.4 m) P244 (33.6 m), P245 (77.0 m), P246 (13.3 m) P247 (69.3 m), P248 (57.6 m)

Date	GCL Roll Number	LLDPE Liner Roll Number	Panel Number (Length)
August 2	0242-347895, 0242-347828 0242-347878, 0242-347835 0242-347814, 0242-347756 0242-347809, 0242-347789 0242-347745, 0242-347819 0242-347791, 0242-347746 0242-347764, 0242-347787 0242-347790, 0242-347751 0242-347743, 0242-347880 0242-347765, 0242-347768 0242-347752, 0242-347759 0242-347753, 0242-347806 0242-347830, 0242-347730 0242-347811, 0242-347754 502347491, 502347671 502347674, 502347676 502347667, 502347707 502344525, 502347508 502347682, 502347701 502347705, 502347698 502347704	10693-025 10690-041 10690-040 10692-017	P249 (20.0 m), P250 (77.6 m), P251 (19.5 m) P252 (60.1 m), P253 (63.8 m) P254 (20.8 m), P255 (75.9 m), P256 (20.1 m) P257 (68.8 m)

4.0 TRIAL SEAM

Table 2 summarizes the weekly trial seam results. For fusion, the apparatus settings are temperature and speed, and for extrusion, the apparatus settings are preheat and barrel temperature. Five tests are performed for each criterion.

Table 2: Trial Seam Results

Date	Time	Fusion or Extrusion	Tech	Apparatus #	Temp or Preheat (°F)	Speed (%) or Barrel Temp (°F)	$Peel_{inside}$ (100 min)	$Peel_{outside}$ (100 min for Fusion 88 min for Extrusion)	Shear (120 min)	Smooth or Textured
Jul 29	13:00	Extrusion	RGP	04036	510	495	N/A	135 134 137 139 153	165 167 164 165 162	N/A
Jul 29	13:15	Extrusion	GP	04037	495	490	N/A	171 143 154 155 148	179 177 174 169 178	N/A
Jul 29	13:15	Extrusion	EA	04037	495	490	N/A	137 149 129 136 160	170 162 171 169 178	N/A

Date	Time	Fusion or Extrusion	Tech	Apparatus #	Temp or Preheat (°F)	Speed (%) or Barrel Temp (°F)	$Peel_{inside}$ (100 min)	$Peel_{outside}$ (100 min for Fusion 88 min for Extrusion)	Shear (120 min)	Smooth or Textured
Jul 30	10:30	Fusion	EA	WW-022	850	35	159	165	173	Textured
							158	155	181	
							161	156	18	
							165	177	178	
							127	159	156	
Jul 30	10:35	Fusion	EA	WW-022	850	55	155	138	158	Smooth
							142	140	157	
							147	150	155	
							148	153	160	
							134	133	159	
Jul 30	10:30	Fusion	RP	WW-026	850	35	132	118	163	Textured
							160	132	172	
							142	154	175	
							153	155	172	
							139	124	165	
Jul 30	10:35	Fusion	RP	WW-026	850	55	155	150	169	Smooth
							137	150	164	
							151	150	165	
							142	121	171	
							144	147	165	
Jul 30	16:40	Fusion	EA	WW-022	850	35	127	144	146	Textured
							162	147	172	
							153	130	172	
							160	141	178	
							146	142	172	
Jul 30	16:40	Fusion	RP	WW-026	850	55	136	122	141	Smooth
							133	145	167	
							125	145	150	
							144	142	151	
							134	147	146	
Jul 30	16:40	Fusion	EA	WW-022	850	55	140	133	161	Smooth
							143	158	170	
							138	141	163	
							141	141	162	
							137	149	162	
Jul 30	14:00	Extrusion	RW	EX-035	495	495	N/A	154	168	N/A
								151	165	
								159	175	
								145	168	
								145	182	
Jul 31	12:15	Fusion	EA	WW-022	850	35	114	131	160	Textured
							146	154	175	
							143	111	162	
							143	123	158	
							129	143	173	

Date	Time	Fusion or Extrusion	Tech	Apparatus #	Temp or Preheat (°F)	Speed (%) or Barrel Temp (°F)	$Peel_{inside}$ (100 min)	$Peel_{outside}$ (100 min for Fusion 88 min for Extrusion)	Shear (120 min)	Smooth or Textured
Jul 31	12:15	Fusion	EA	WW-022	850	55	142	141	161	Smooth
							147	137	161	
							133	146	151	
							144	144	164	
							126	141	159	
Jul 31	12:00	Fusion	RP	WW-022	850	55	143	149	148	Smooth
							143	139	163	
							155	150	152	
							149	151	162	
							142	146	156	
Jul 31	8:30	Extrusion	RW	EX-035	495	495	N/A	140	198	N/A
								138	188	
								127	179	
								126	195	
								127	178	
Aug 1	8:00	Fusion	EA	WW-022	850	35	137	155	178	Textured
							162	161	159	
							151	153	181	
							164	153	178	
							146	154	154	
Aug 1	8:00	Fusion	RP	WW-026	850	35	145	142	171	Textured
							142	147	165	
							142	154	159	
							145	151	172	
							128	143	182	
Aug 1	8:15	Fusion	EA	WW-022	850	55	130	140	164	Smooth
							145	143	169	
							144	130	172	
							147	145	169	
							124	144	171	
Aug 1	8:15	Fusion	RP	WW-026	850	55	145	144	165	Smooth
							146	142	163	
							147	127	163	
							150	151	162	
							133	147	168	
Aug 1	8:15	Extrusion	RW	EX-035	495	495	N/A	127	157	N/A
								152	166	
								156	166	
								152	172	
								149	170	
Aug 1	11:00	Fusion	DT	WW-045	850	55	114	128	135	Smooth
							109	129	140	
							117	130	152	
							121	136	156	
							119	134	139	

Date	Time	Fusion or Extrusion	Tech	Apparatus #	Temp or Preheat (°F)	Speed (%) or Barrel Temp (°F)	$Peel_{inside}$ (100 min)	$Peel_{outside}$ (100 min for Fusion 88 min for Extrusion)	Shear (120 min)	Smooth or Textured
Aug 1	14:53	Fusion	EA	WW-022	850	35	141	139	146	Textured
							136	135	158	
							136	135	153	
							129	146	157	
							130	131	159	
Aug 1	15:00	Fusion	RP	WW-026	850	55	135	129	154	Smooth
							147	142	153	
							148	129	145	
							152	144	155	
							138	136	156	
Aug 1	15:01	Fusion	EP	WW-045	850	55	140	137	152	Smooth
							142	137	153	
							141	131	147	
							143	125	155	
							148	128	149	
Aug 1	14:40	Fusion	EA	WW-022	850	55	135	143	151	Smooth
							140	142	162	
							114	125	157	
							145	147	161	
							144	139	160	
Aug 1	14:38	Fusion	RP	WW-026	850	35	163	119	166	Textured
							155	150	157	
							140	147	168	
							139	148	168	
							157	124	164	
Aug 1	14:45	Extrusion	RW	EX-035	495	495	N/A	125	152	N/A
								150	152	
								145	165	
								157	158	
								127	168	
Aug 2	9:00	Fusion	EA	WW-022	850	35	145	161	159	Textured
							144	159	178	
							150	171	175	
							151	157	183	
							145	138	180	
Aug 2	9:00	Fusion	EP	WW-045	850	35	128	141	200	Textured
							132	132	187	
							146	142	176	
							151	138	181	
							159	147	181	
Aug 2	9:00	Fusion	RP	WW-026	850	55	147	153	169	Smooth
							148	156	170	
							146	158	166	
							154	152	163	
							126	147	169	

Date	Time	Fusion or Extrusion	Tech	Apparatus #	Temp or Preheat (°F)	Speed (%) or Barrel Temp (°F)	$Peel_{inside}$ (100 min)	$Peel_{outside}$ (100 min for Fusion 88 min for Extrusion)	Shear (120 min)	Smooth or Textured
Aug 2	9:00	Fusion	EA	WW-022	850	55	144 151 150 145 137	147 148 145 150 146	139 145 153 158 147	Smooth
Aug 2	9:00	Fusion	EP	WW-045	850	55	142 153 146 149 146	160 148 152 159 153	151 163 159 162 161	Smooth
Aug 2	8:45	Extrusion	RW	EX-035	495	495	N/A	142 144 155 162 160	146 147 163 152 174	N/A
Aug 2	12:00	Extrusion	RW	EX-035	495	495	N/A	110 143 113 128 125	154 165 172 166 164	N/A
Aug 2	15:55	Extrusion	RW	O4037	95	495	N/A	134 123 145 126 141	164 169 166 171 156	N/A

5.0 NON-DESTRUCTIVE TESTING

Table 3 summarizes the weekly non-destructive pressure testing results.

Table 3: Non-Destructive Testing Results

Date Fused	Date Tested	Time Tested	Seam #	psi Start	psi End	Pass or Fail	Notes
Jul 21	Jul 29	17:17	P172-P176 Vertical	40	40	Pass	
Jul 21	Jul 29	17:18	P180-P181 Cross	40	40	Pass	
Jul 21	Jul 29	17:18	P176-P182 Vertical	40	40	Pass	
Jul 22	Jul 29	17:21	P185-P186 Cross	40	40	Pass	
Jul 22	Jul 29	17:19	P182-P186 Vertical	40	40	Pass	
Jul 22	Jul 29	17:21	P181-186 Vertical	40	40	Pass	
Jul 22	Jul 29	18:23	P189-P190 Cross	40	40	Pass	
Jul 22	Jul 29	17:22	P186-P190 Vertical	40	40	Pass	
Jul 22	Jul 29	18:23	P185-P190 Vertical	40	40	Pass	
Jul 22	Jul 29	18:23	P185-P189 Vertical	40	39	Pass	
Jul 23	Jul 29	18:24	P189-P193 Vertical	40	40	Pass	
Jul 23	Jul 29	17:40	P193-P197 Vertical	40	40	Pass	

Date Fused	Date Tested	Time Tested	Seam #	psi Start	psi End	Pass or Fail	Notes
Jul 24	Jul 29	17:51	P200-P201 Cross	40	40	Pass	
Jul 24	Jul 29	17:51	P197-P201 Vertical	40	40	Pass	
Jul 24	Jul 29	17:52	P201-P204 Vertical	40	40	Pass	
Jul 25	Jul 29	17:55	P204-P207 Vertical	40	40	Pass	
Jul 25	Jul 29	17:54	P207-P210 Vertical	40	40	Pass	
Jul 25	Jul 29	17:55	P210-P214 Vertical	40	40	Pass	
Jul 21	Jul 30	12:58	P175-P176 Cross	40	40	Pass	
Jul 21	Jul 30	13:41	P171-P175 Vertical	40	40	Pass	
Jul 21	Jul 30	12;58	P171-P176 Vertical	40	40	Pass	
Jul 21	Jul 30	13:44	P179-P180 Cross	40	40	Pass	
Jul 21	Jul 30	13:02	P181-P182 Cross	40	39	Pass	
Jul 21	Jul 30	13:02	P176-P181 Vertical	40	40	Pass	
Jul 21	Jul 30	13:44	P175-P179 Vertical	40	40	Pass	Top of seam to patch
Jul 21	Jul 30	14:04	P175-P179 Vertical	40	40	Pass	Patch to bottom of seam
Jul 21	Jul 30	12:58	P176-P180 Vertical	40	40	Pass	
Jul 21	Jul 30	12:58	P175-P180 Vertical	40	40	Pass	
Jul 22	Jul 30	13:12	P184-P185 Cross	40	40	Pass	
Jul 22	Jul 30	13:53	P183-P184 Cross	40	40	Pass	
Jul 22	Jul 30	13:12	P181-P185 Vertical	40	40	Pass	
Jul 22	Jul 30	13:03	P181-P184 Vertical	40	40	Pass	
Jul 22	Jul 30	13:03	P180-P184 Vertical	40	39	Pass	
Jul 22	Jul 30	13:45	P179-P184 Vertical	40	39	Pass	
Jul 22	Jul 30	14:13	P187-P188 Cross	40	40	Pass	
Jul 22	Jul 30	13:23	P188-P189 Cross	40	40	Pass	
Jul 22	Jul 30	14:13	P183-P187 Vertical	40	40	Pass	Top of seam to patch
Jul 22	Jul 30	13:12	P184-P189 Vertical	40	40	Pass	
Jul 22	Jul 30	13:23	P184-P188 Vertical	40	39	Pass	
Jul 22	Jul 30	13:59	P183-P188 Vertical	40	40	Pass	
Jul 23	Jul 30	14:23	P191-P192 Cross	40	40	Pass	
Jul 23	Jul 30	14:14	P188-P192 Vertical	40	40	Pass	Patch to bottom of seam
Jul 23	Jul 30	14:14	P187-P192 Vertical	40	40	Pass	
Jul 23	Jul 30	8:16	P192-P194 Cross	40	39	Pass	
Jul 23	Jul 30	8:16	P193-P194 Cross	40	40	Pass	
Jul 23	Jul 30	14:23	P187-P191 Vertical	40	40	Pass	Top of seam to patch
Jul 23	Jul 30	14:41	P187-P191 Vertical	40	40	Pass	Patch to bottom of seam
Jul 23	Jul 30	13:24	P189-P192 Vertical	40	40	Pass	
Jul 23	Jul 30	13:24	P188-P192 Vertical	40	40	Pass	Top of seam to patch
Jul 23	Jul 30	14:42	P195-P196 Cross	40	40	Pass	
Jul 23	Jul 30	8:22	P196-P197 Cross	40	40	Pass	
Jul 23	Jul 30	14:24	P192-P196 Vertical	40	40	Pass	
Jul 23	Jul 30	14:24	P191-P196 Vertical	40	40	Pass	
Jul 23	Jul 30	8:16	P192-P197 Vertical	40	40	Pass	
Jul 23	Jul 30	14:42	P191-P195 Vertical	40	40	Pass	
Jul 24	Jul 30	15:00	P198-P199 Cross	40	40	Pass	
Jul 24	Jul 30	8:26	P199-P200 Cross	40	40	Pass	
Jul 24	Jul 30	14:49	P196-P199 Vertical	40	40	Pass	Top of seam to patch
Jul 24	Jul 30	8:22	P197-P200 Vertical	40	40	Pass	
Jul 24	Jul 30	8:22	P196-P200 Vertical	40	39	Pass	

Date Fused	Date Tested	Time Tested	Seam #	psi Start	psi End	Pass or Fail	Notes
Jul 24	Jul 30	14:43	P196-P199 Vertical	40	40	Pass	Patch to bottom of seam
Jul 24	Jul 30	14:43	P195-P199 Vertical	40	40	Pass	
Jul 24	Jul 30	15:00	P195-P198 Vertical	40	40	Pass	
Jul 24	Jul 30	9:33	P202-P203 Cross	40	40	Pass	
Jul 24	Jul 30	8:49	P203-P204 Cross	40	40	Pass	
Jul 24	Jul 30	14:50	P199-P202 Vertical	40	40	Pass	Top of seam to patch
Jul 24	Jul 30	8:49	P200-P204 Vertical	40	40	Pass	
Jul 24	Jul 30	14:50	P199-P202 Vertical	40	40	Pass	Patch to bottom of seam
Jul 24	Jul 30	8:26	P200-P203 Vertical	40	40	Pass	
Jul 24	Jul 30	15:00	P198-P202 Vertical	40	40	Pass	
Jul 24	Jul 30	9:33	P199-P203 Vertical	40	40	Pass	
Jul 25	Jul 30	15:31	P205-P206 Cross	40	40	Pass	
Jul 25	Jul 30	8:59	P206-P207 Cross	40	40	Pass	
Jul 25	Jul 30	8:49	P203-P207 Vertical	40	40	Pass	
Jul 25	Jul 30	8:59	P203-P206 Vertical	40	40	Pass	Top of seam to patch
Jul 25	Jul 30	9:33	P203-P206 Vertical	40	40	Pass	Patch to bottom of seam
Jul 25	Jul 30	15:15	P208-P209 Cross	40	40	Pass	
Jul 25	Jul 30	9:00	P209-P210 Cross	40	40	Pass	
Jul 25	Jul 30	9:42	P212-P213 Cross	40	39	Pass	
Jul 25	Jul 30	9:21	P213-P214 Cross	40	40	Pass	
Jul 25	Jul 30	9:20	P210-P213 Vertical	40	40	Pass	
Jul 25	Jul 30	8:59	P206-P210 Vertical	40	40	Pass	
Jul 25	Jul 30	15:37	P206-P209 Vertical	40	40	Pass	
Jul 25	Jul 30	9:42	P209-P213 Vertical	40	40	Pass	
Jul 25	Jul 30	15:37	P209-P212 Vertical	40	40	Pass	Top of seam to patch
Jul 25	Jul 30	15:16	P205-P209 Vertical	40	40	Pass	
Jul 25	Jul 30	15:16	P205-P208 Vertical	40	40	Pass	
Jul 25	Jul 30	15:15	P209-P212 Vertical	40	40	Pass	Patch to bottom of seam
Jul 25	Jul 30	15:15	P208-P212 Vertical	40	40	Pass	
Jul 18	Jul 31	8:36	P169-P170 Cross	40	40	Pass	
Jul 18	Jul 31	8:48	P166-P170 Vertical	40	40	Pass	
Jul 18	Jul 31	8:37	P165-P170 Vertical	40	40	Pass	
Jul 18	Jul 31	8:37	P165-P169 Vertical	40	40	Pass	
Jul 21	Jul 31	8:55	P174-P175 Cross	40	40	Pass	
Jul 21	Jul 31	8:55	P173-P174 Cross	40	40	Pass	
Jul 21	Jul 31	8:55	P170-P175 Vertical	40	40	Pass	
Jul 21	Jul 31	8:36	P170-P174 Vertical	40	40	Pass	
Jul 21	Jul 31	8:31	P169-P174 Vertical	40	40	Pass	
Jul 21	Jul 31	8:31	P169-P173 Vertical	40	40	Pass	
Jul 21	Jul 31	8:30	P169-P173 Vertical	40	40	Pass	Top of seam to patch
Jul 21	Jul 31	8:11	P177-P178 Cross	40	40	Pass	Patch to bottom of seam
Jul 21	Jul 31	8:09	P178-P179 Cross	40	39	Pass	
Jul 21	Jul 31	8:09	P174-P179 Vertical	40	39	Pass	
Jul 21	Jul 31	8:04	P174-P178 Vertical	40	40	Pass	
Jul 21	Jul 31	8:12	P173-P178 Vertical	40	40	Pass	
Jul 21	Jul 31	8:12	P173-P177 Vertical	40	40	Pass	
Jul 22	Jul 31	8:11	P178-P183 Vertical	40	40	Pass	Patch to bottom of seam
Jul 22	Jul 31	8:11	P177-P183 Vertical	40	40	Pass	

Date Fused	Date Tested	Time Tested	Seam #	psi Start	psi End	Pass or Fail	Notes
Jul 22	Jul 31	7:59	P183-P187 Vertical	40	40	Pass	Patch to bottom of seam
Jul 25	Jul 31	7:59	P202-P205 Vertical	40	40	Pass	
Jul 30	Aug 1	9:52	P215-P216 Cross	40	40	Pass	
Jul 30	Aug 1	15:24	P214-P216 Vertical	40	40	Pass	
Jul 30	Aug 1	15:43	P213-P216 Vertical	40	39	Pass	
Jul 30	Aug 1	9:52	P213-P215 Vertical	40	40	Pass	
Jul 30	Aug 1	9:17	P218-P219 Cross	40	40	Pass	
Jul 30	Aug 1	15:25	P216-P219 Vertical	40	40	Pass	
Jul 30	Aug 1	9:17	P216-P218 Vertical	40	40	Pass	
Jul 30	Aug 1	9:52	P215-P218 Vertical	40	40	Pass	
Jul 30	Aug 1	10:07	P220-P221 Cross	40	40	Pass	
Jul 30	Aug 1	15:42	P221-P222 Cross	40	40	Pass	
Jul 30	Aug 1	15:25	P219-P222 Vertical	40	40	Pass	
Jul 30	Aug 1	15:42	P219-P221 Vertical	40	40	Pass	
Jul 30	Aug 1	9:17	P218-P221 Vertical	40	40	Pass	
Jul 30	Aug 1	9:22	P224-P225 Cross	40	40	Pass	
Jul 30	Aug 1	15:25	P222-P225 Vertical	40	40	Pass	
Jul 30	Aug 1	15:42	P221-P225 Vertical	40	40	Pass	
Jul 30	Aug 1	10:07	P218-P220 Vertical	40	40	Pass	
Jul 30	Aug 1	9:22	P221-P224 Vertical	40	40	Pass	
Jul 30	Aug 1	10:07	P220-P224 Vertical	40	40	Pass	
Jul 31	Aug 1	10:09	P226-P227 Cross	40	40	Pass	
Jul 31	Aug 1	15:27	P227-P228 Cross	40	40	Pass	
Jul 31	Aug 1	15:26	P225-P228 Vertical	40	40	Pass	
Jul 31	Aug 1	9:22	P225-P227 Vertical	40	40	Pass	
Jul 31	Aug 1	9:41	P229-P230 Cross	40	40	Pass	
Jul 31	Aug 1	9:22	P224-P227 Vertical	40	40	Pass	
Jul 31	Aug 1	15:26	P228-P230 Vertical	40	40	Pass	
Jul 31	Aug 1	9:41	P227-P230 Vertical	40	40	Pass	
Jul 31	Aug 1	10:08	P224-P226 Vertical	40	40	Pass	
Jul 31	Aug 1	9:41	P227-P229 Vertical	40	39	Pass	
Aug 1	Aug 1	15:27	P230-P233 Vertical	40	39	Pass	
Aug 1	Aug 1	9:34	P230-P232 Vertical	40	40	Pass	Top of seam to patch
Aug 1	Aug 1	9:41	P230-P232 Vertical	40	40	Pass	Patch to bottom of seam
Aug 1	Aug 1	9:41	P229-P232 Vertical	40	40	Pass	

6.0 DESTRUCTIVE TESTING

While destructive samples were obtained throughout the week, no destructive testing was performed.

7.0 PHOTO LOG



Figure 1: Organics in E4 Lateral



Figure 2: Organics in E4 Lateral



Figure 3: Trees Removed from Organic Layer in E4 Lateral

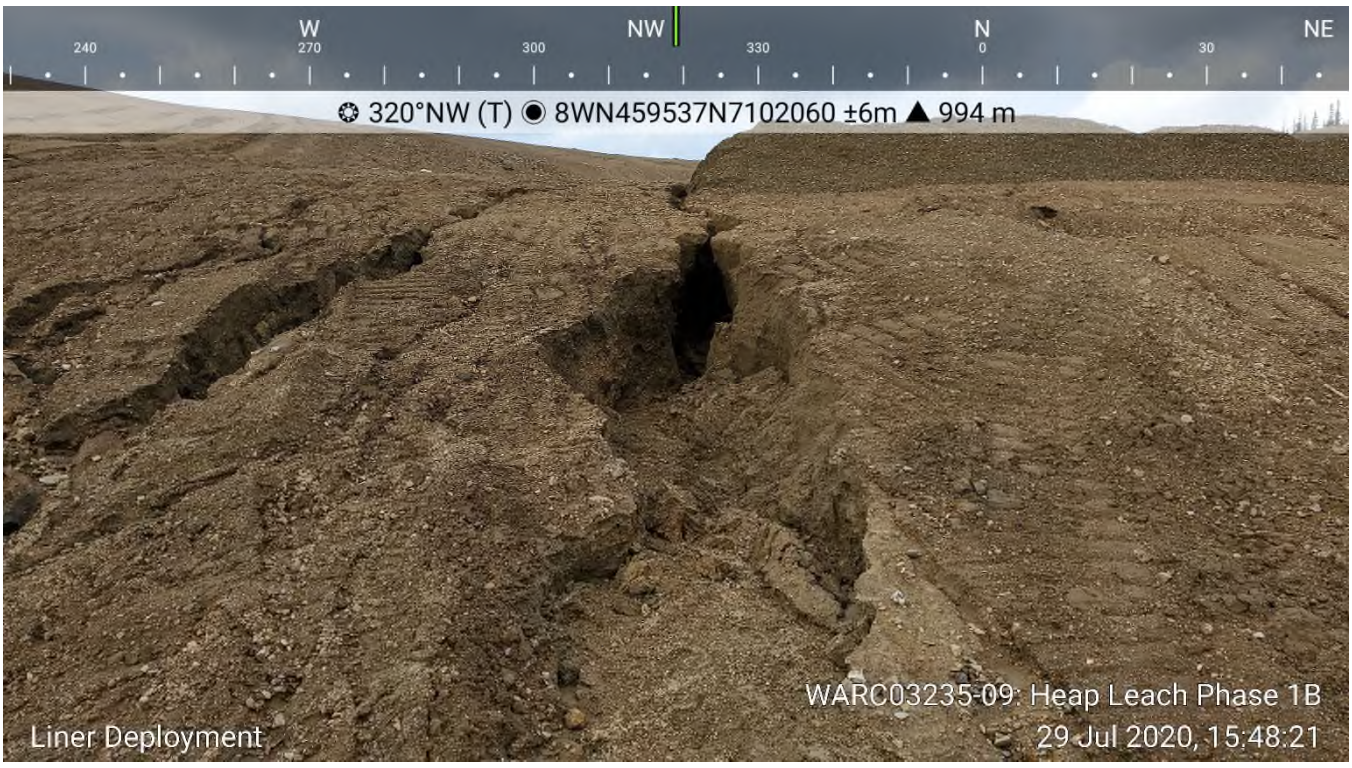


Figure 4: 2 m Deep Trench due to Erosion from Rainfall



Figure 5: Saturated Subgrade from Rainfall



Figure 6: Rilling Erosion from Rainfall



Figure 7: Saturated Base of Slope Requiring Excavation



Figure 8: Erosion along Deployed Liner



Figure 9: Extent of Damaged Subgrade ahead of Liner Deployment



Figure 10: Prepared Subgrade



Figure 11: Subgrade Repaired and Recompacted



Figure 12: Packer Compacting Sand Fill



Figure 13: End of Deployment due to Unprepared Subgrade at Base of Slope

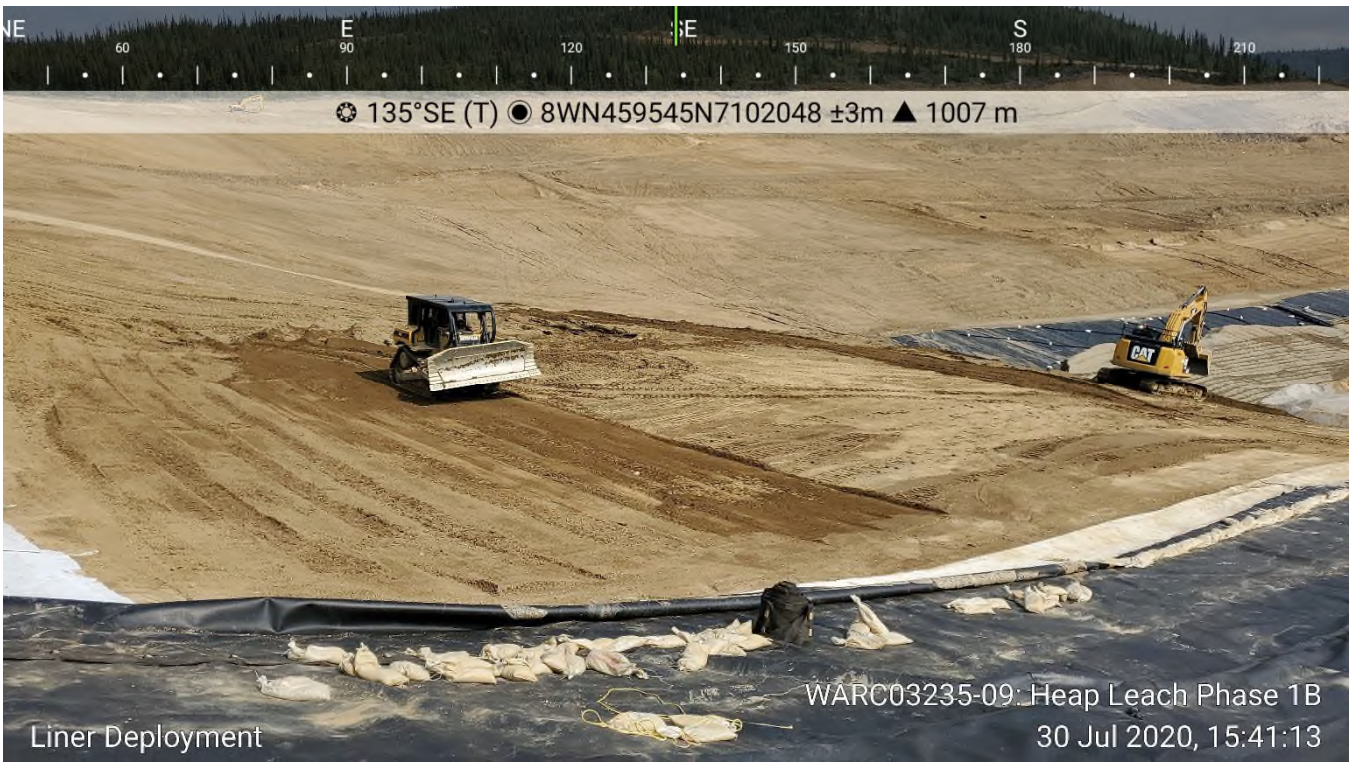


Figure 14: Preparing the Subgrade at the Base of the Slope



Figure 15: Overall Slope as of July 30

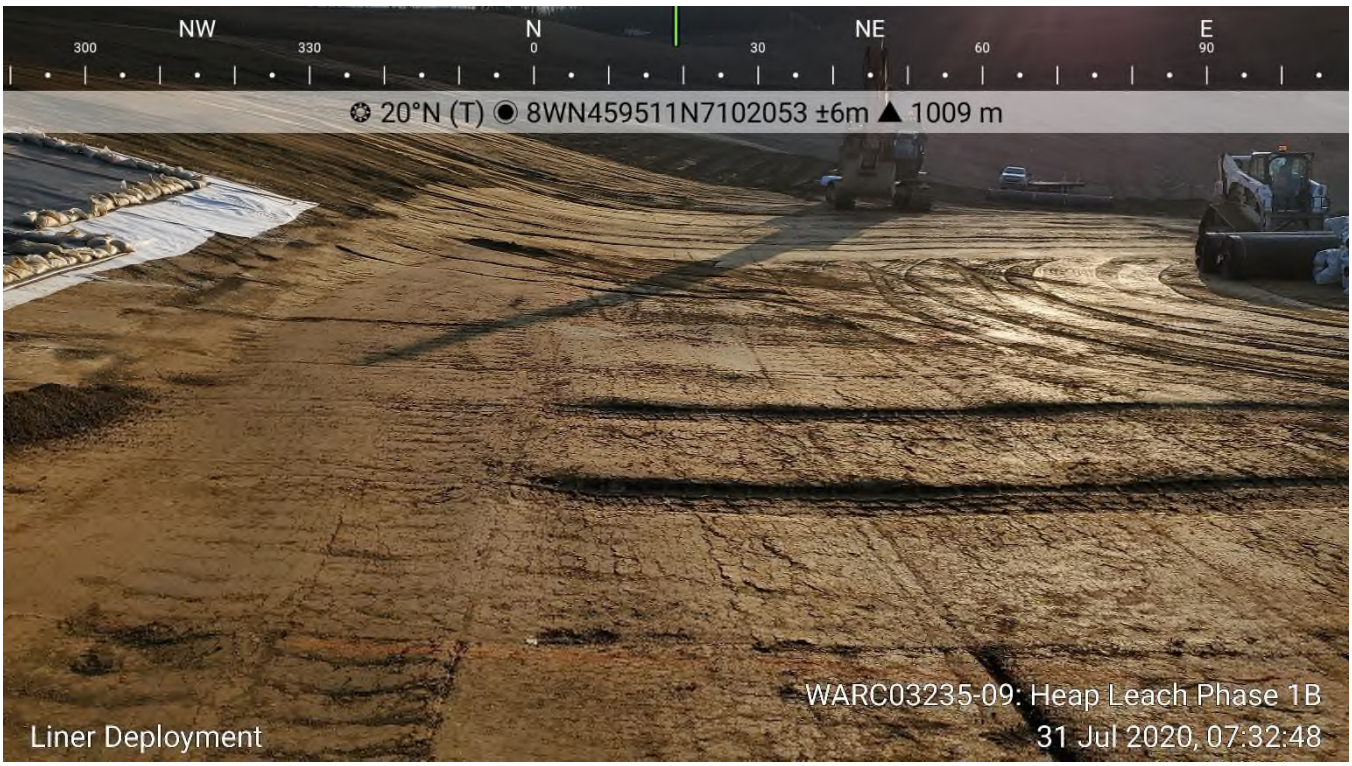


Figure 16: Wheel Ruts in Soft Subgrade from Loader

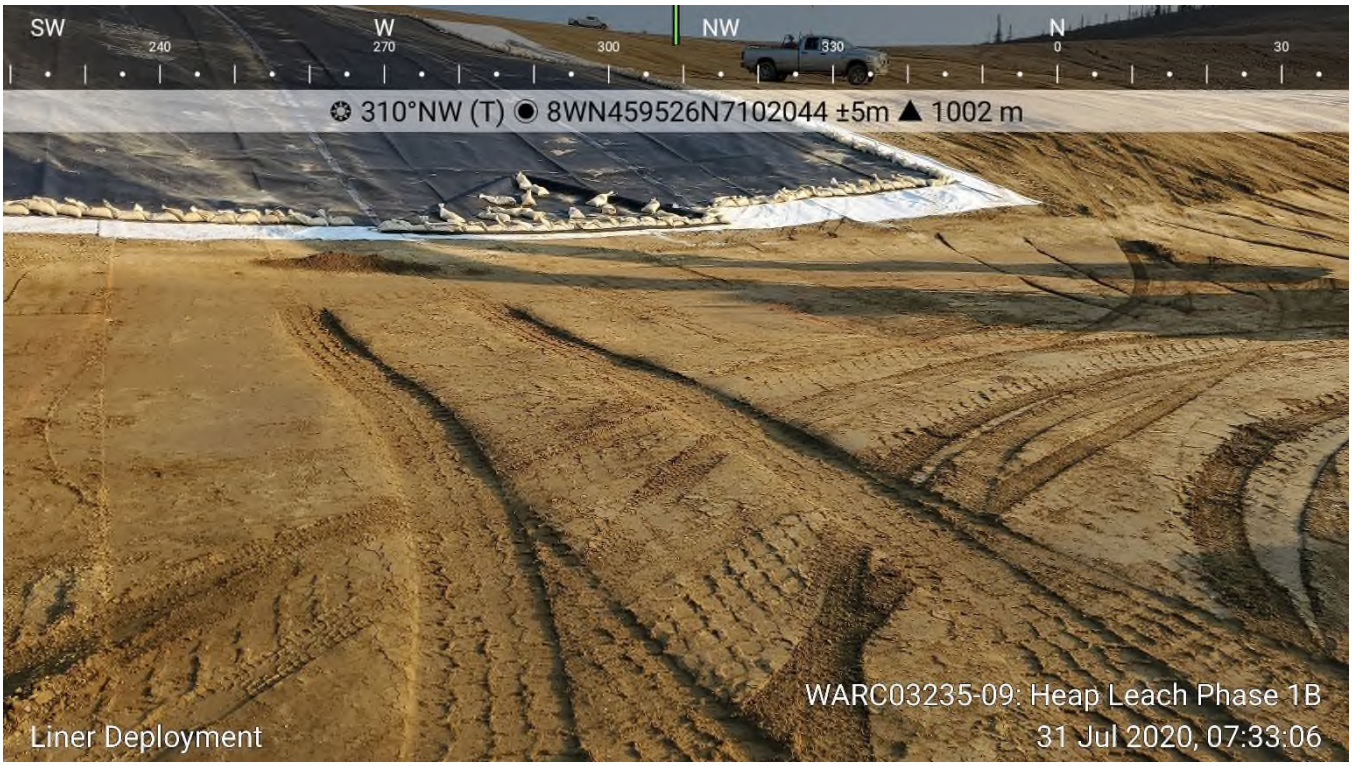


Figure 17: Soft Subgrade Conditions



Figure 18: Excavating Soft Subgrade

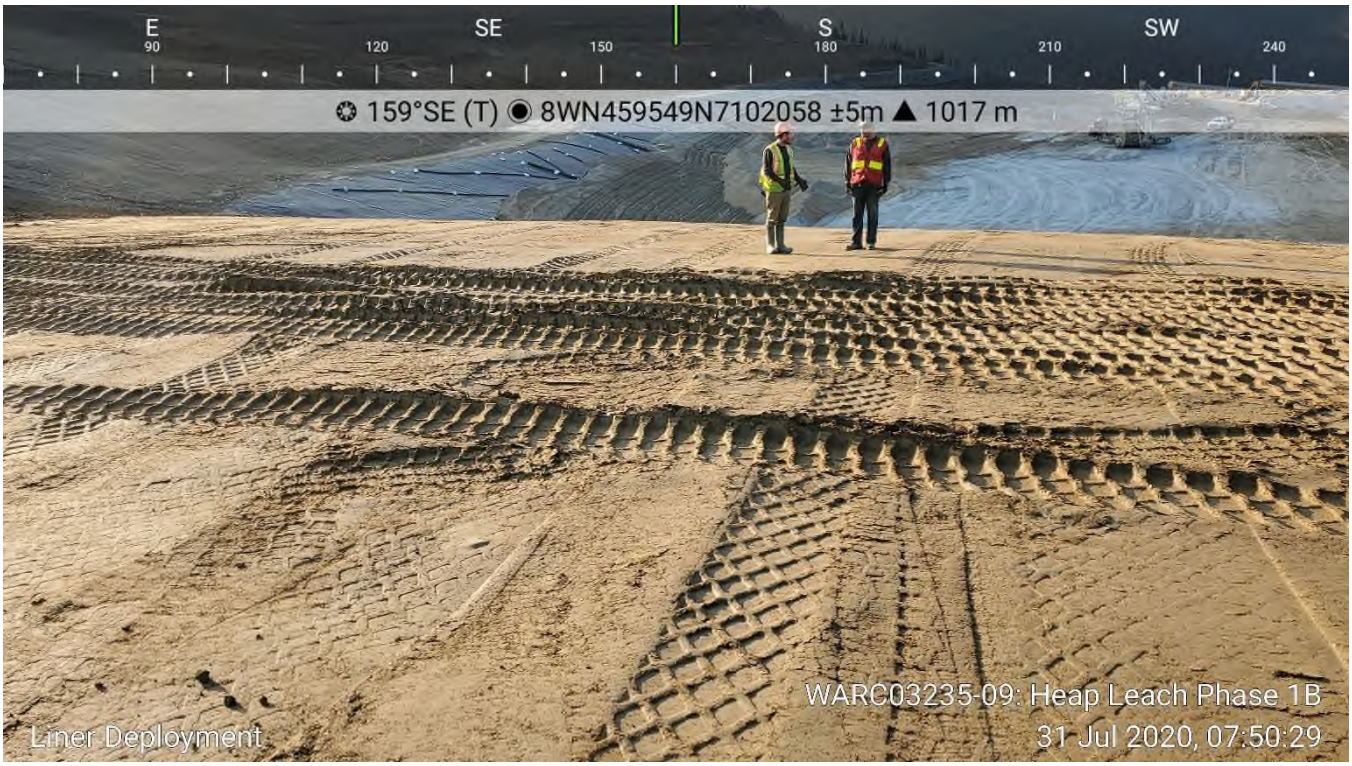


Figure 19: Soft Subgrade Conditions



Figure 20: Competent Subgrade after Proof Roll with 30-ton Rock Truck



Figure 21: Excavating Soft Subgrade Materials



Figure 22: Proof Rolling Excavated Subgrade with 30-Ton Rock Truck



Figure 23: Excavated Soft Spot



Figure 24: Extra Excavation of Soft Subgrade



Figure 25: Sand Backfill after Proof Roll



Figure 26: Repairing Subgrade



Figure 27: Subgrade Repaired prior to Compaction



Figure 28: Proof Rolling Subgrade



Figure 29: Areas Identified by Proof Rolling for Remedial Work



Figure 30: Prepared and Inspected Subgrade



Figure 31: GCL in Advance of Deployment



Figure 32: Repair Patches on GCL

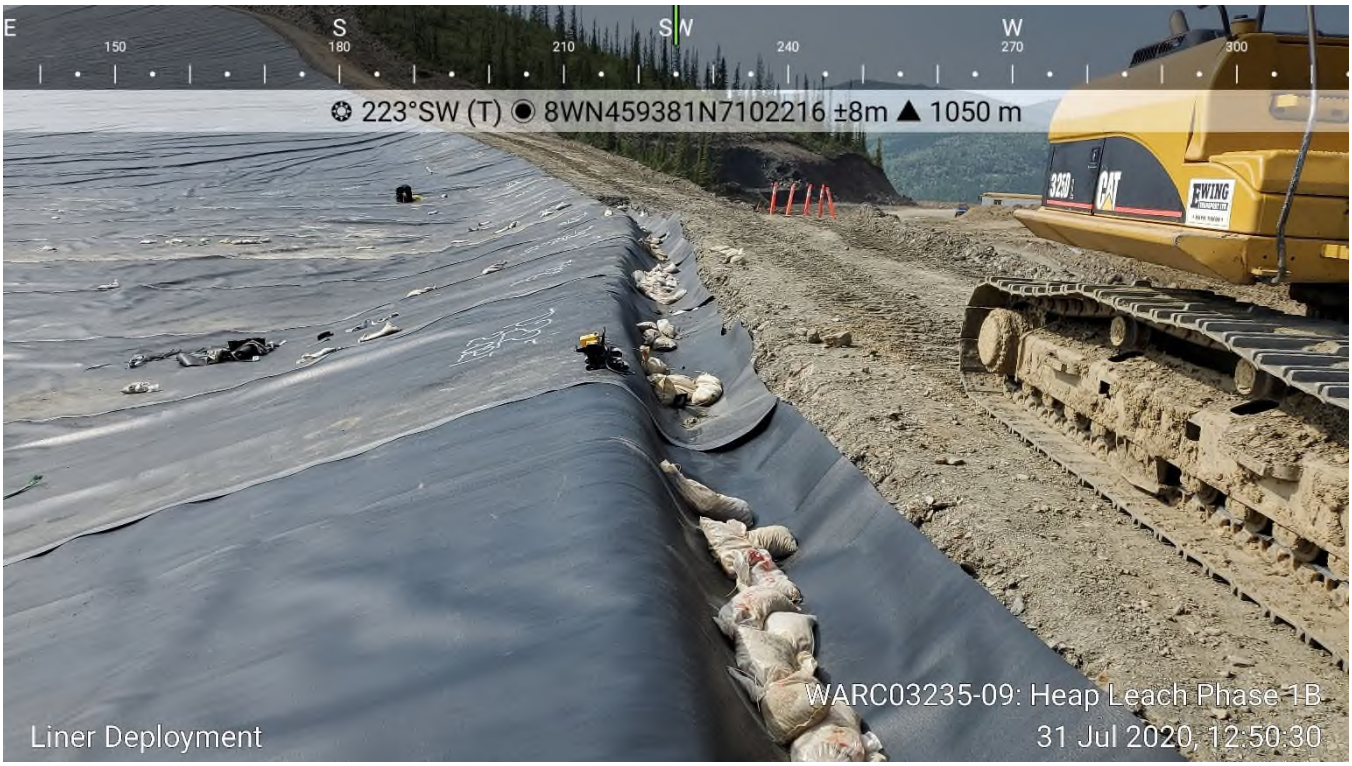


Figure 33: Liner in Anchor Trench



Figure 34: Anchor Trench in Advance of GCL Deployment

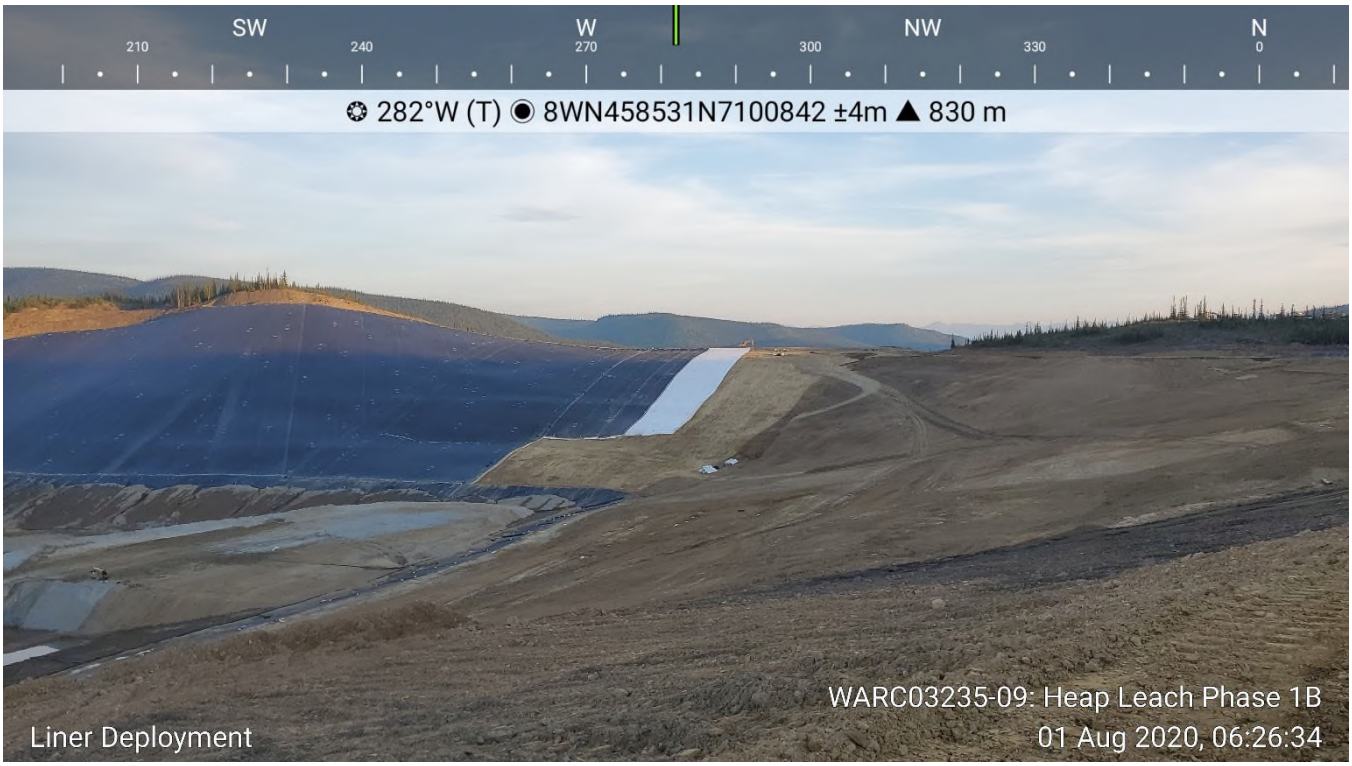


Figure 35: Overall Deployment as of July 31



Figure 36: Prepared Subgrade Ready for Liner Deployment



Figure 37: Subgrade Requiring Minimal Remedial Fills



Figure 38: GCL prior to Liner Deployment



Figure 39: Liner Edge Two Thirds Down Slope



Figure 40: Cleaning GCL in Advance of Liner Deployment



Figure 41: Toe of Slope Prepared for Liner Deployment



Figure 42: GCL Deployed on Lower Third of Slope



Figure 43: Bentonite at GCL Overlap



Figure 44: GCL prior to Liner Deployment

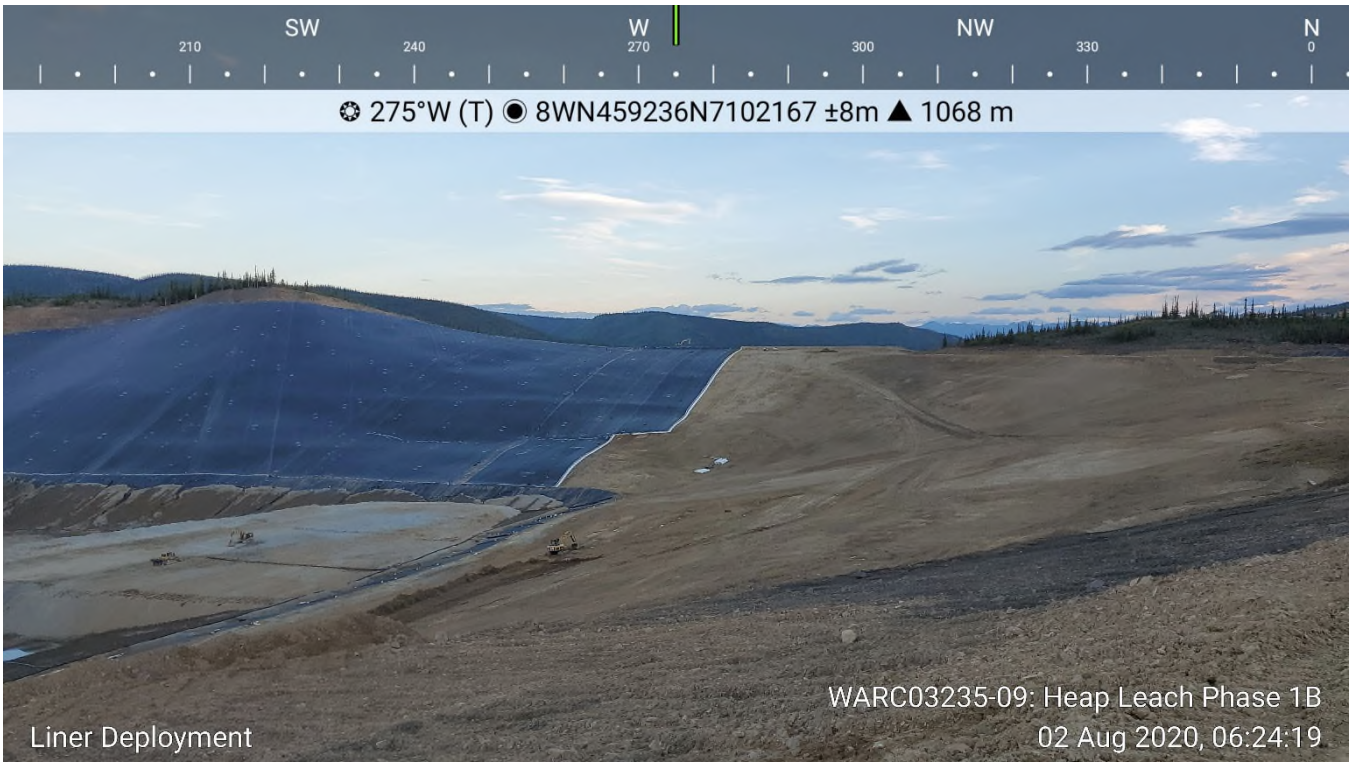


Figure 45: Overall Deployment as of August 1

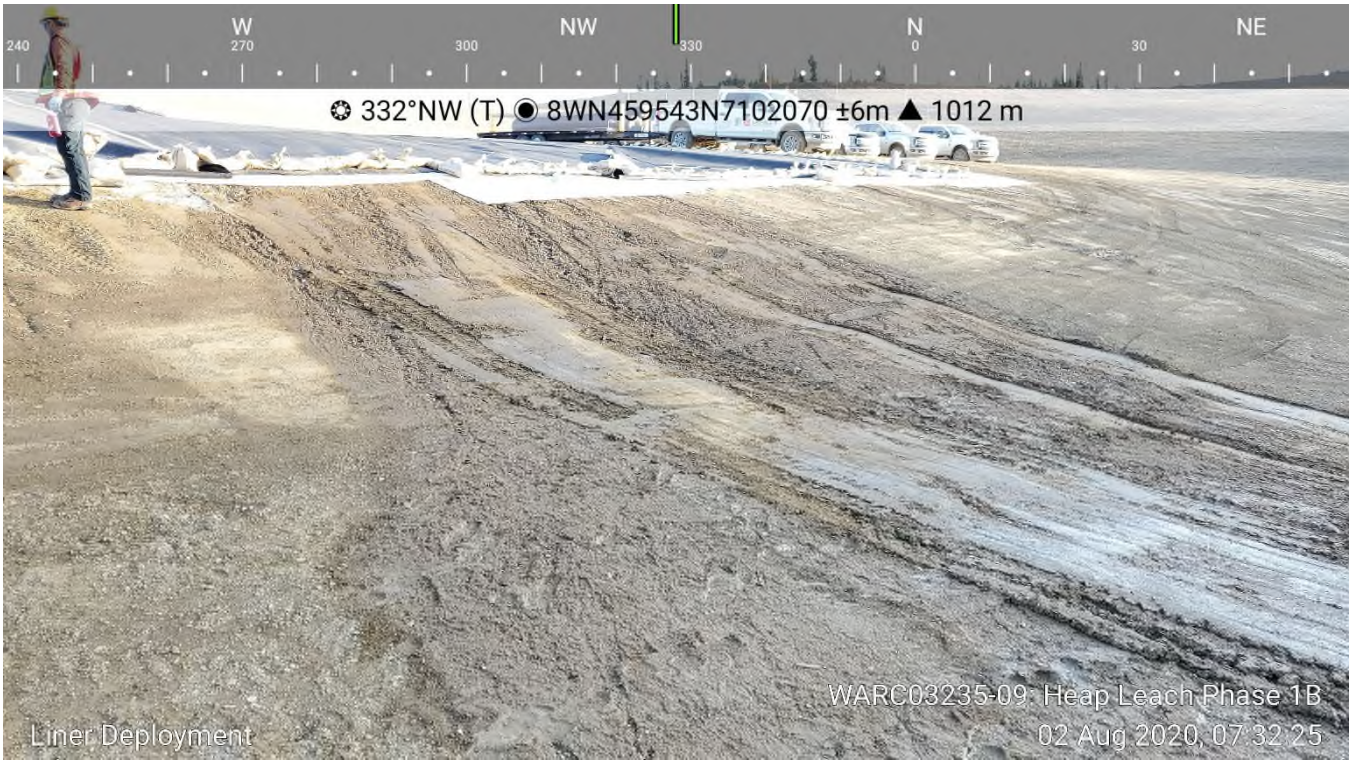


Figure 46: Subgrade after Rainfall on August 1



Figure 47: Smoothed out Subgrade prior to Rolling



Figure 48: Ewing Cleaning Up Toe of Slope



Figure 49: Rolling Subgrade prior to Deployment



Figure 50: Prepared and Inspected Subgrade

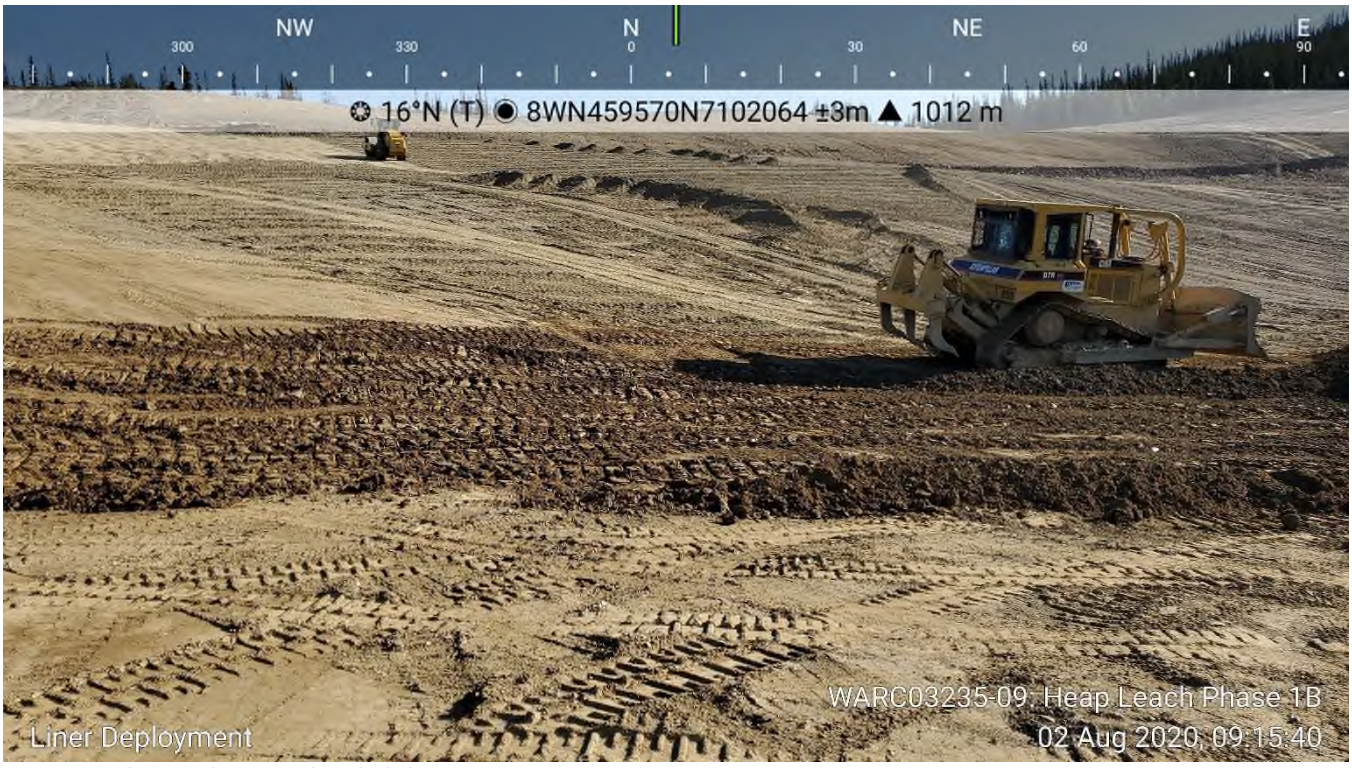


Figure 51: Cutting Out Identified Soft Spot



Figure 52: Prepared and Inspected Subgrade



Figure 53: Deployed GCL



Figure 54: Overall Deployment as of Aug 2

TETRA TECH

WEEKLY FIELD REPORT

ISSUED FOR USE

Project:	Eagle Gold Heap Leach Phase 1B	**Date:**	August 9, 2020
Location:	Eagle Gold Mine	**Contractor:**	Ewing Transport / Layfield
Client:	Victoria Gold Corp.	**Contractor's Rep:**	Marshall Ewing / Chad Messervey
Contact:	Clint Abel	**Contractor's Email:**	
Weather:	Variable (see daily entries)	**Tetra Tech Representative:**	Adam Mickey
File:	704-ENG.WARC03235-09	**Status:**	Issued for Use

1.0 INTRODUCTION

Tetra Tech Canada Inc. (Tetra Tech) was retained by Victoria Gold Corp. (Victoria Gold) to provide CQA services at the Eagle Gold mine located north of Mayo, Yukon, at Dublin Gulch for the Eagle Gold Heap Leach Phase 1B expansion (Phase 1B). Mr. Adam Mickey, EIT, is Tetra Tech's representative on site.

Forte Dynamics (Forte) out of Fort Collins, Colorado provided the design and specification for Phase 1B, and Forte's representative is Clint Green.

Clint Abel, of JDS Energy & Mining, is Victoria Gold's project manager on site at the Eagle Gold mine.

Ewing Transport (Ewing), based out of Mayo, Yukon, is the construction contractor for Phase 1B.

Layfield Environmental Containment (Layfield) has been retained to provide and install the liner for Phase 1B, and their supervisor on site is Chad Messervey.

The following Field Report outlines Tetra Tech's CQA for the period of August 3, 2020, to August 9, 2020.

2.0 DAILY REPORTS

2.1 Highlights

- Layfield deployed approximately 5,589 m of liner covering an area of approximately 38,005 m^2.
- Layfield is placing three panels of GCL for every two panels of 80 mm LLDPE liner.

2.2 August 3, 2020

- Sunny and calm, turning to cloudy with periods of rain in the late afternoon.
- See Figures 1 through 4.
- A heavy rainstorm occurred on the evening of August 2. Therefore, Tetra Tech and Ewing inspected the subgrade prior to deployment.
  - No erosion was noted in the subgrade due to the rain.

Tetra Tech Canada Inc.
61 Wasson Place
Whitehorse, YT Y1A 0H7 CANADA
Tel 867.668.3068 Fax 867.668.4349

  - Ewing is going to roll the subgrade with a packer in advance of GCL deployment today.
- Ewing is working on the subgrade at the top of the slope to cover rocky areas with sand.
- Layfield is covering GCL deployed on August 2 with liner.
  - Layfield checked the GCL for hydration and none of the GCL hydrated.
  - Four slope lengths of liner were deployed and fused.
- Layfield moved to the bottom third of the slope and deployed six slope lengths of GCL and four slope lengths of liner.
- Tetra Tech and Layfield's QC conducted destructive testing for all liner deployed up to August 2.
  - All destructive samples passed testing.
- Layfield is conducting pressure testing on liner deployed up to August 2.
- After liner deployment, Layfield finished the day by doing detail extrusion work and tying in to Phase 1A.

2.3 August 4, 2020

- Weather: mostly sunny and calm, turning to mostly cloudy with periods of rain in the afternoon.
- See Figures 5 through 7.
- Tetra Tech inspected the subgrade conditions for today's deployment and approved the subgrade once Ewing rolled one spot with a packer.
- Tetra Tech discussed with Ewing about sanding rocky areas of the subgrade. Ewing is going to sand areas on nightshift that they will not be able to access once deployment begins on the east perimeter road.
- Layfield is continuing to deploy GCL and liner.
  - Layfield deployed five slope lengths of GCL and three slope lengths of liner.
  - Rain in the afternoon did not inhibit liner deployment.
- Layfield conducted extrusion welding detail work on deployed liner.
- Layfield's QC conducted pressure testing of seams on deployed liner.
  - Layfield noted some seams failed requiring re-blocks at intersections.

2.4 August 5, 2020

- Weather: partly cloudy with scattered rain showers in the afternoon.
- See Figures 8 through 15.
- Tetra Tech inspected the subgrade in advance of today's deployment with Ewing.
  - Nightshift did not get subgrade to spec.
  - Ewing is continuing to place sand on rocky areas and compact today.
  - The packer is rolling the subgrade in advance of deployment.

  - Ewing rock picked the subgrade to remove angular rocks greater than 50 mm that could be plucked out of the subgrade.
- Tetra Tech approved the subgrade for deployment after remedial work had been completed.
- Layfield is continuing deployment today.
  - Layfield placed four slope lengths of GCL and three slope lengths of liner.
- Layfield performed detail extrusion work on deployed liner in the afternoon.
- Additional organics were found in the E4 lateral beyond the limits of excavation of the organics found last week. Ewing is going to step the lateral out to see if they get out of the organics.
- Ewing is going to place sand on rocky areas of the slope on nightshift in advance of liner deployment tomorrow.

2.5 August 6, 2020

- Weather: partly cloudy, turning to cloudy and windy in the afternoon with rain beginning at 4:00 pm.
- See Figures 16 through 33.
- Tetra Tech inspected the subgrade for today's deployment.
  - Rocky areas were identified and covered with sand.
  - Ewing continued to roll the subgrade with a packer.
  - Tetra Tech approved the subgrade for today's deployment.
- Ewing is continuing to work on subgrade prep.
- Ewing was digging anchor trench in advance of deployment and reached the header drain trench by the end of the day.
  - Ewing is raking the edge of the anchor trench to remove rocks.
  - Roots were identified along areas of the anchor trench up to 300 mm in depth.
    - No organic soils were identified, and the roots were cut flush with the anchor trench sidewall.
  - Tetra Tech noted rocky areas along the edge of the anchor trench and directed Ewing to place sand in these areas.
- Layfield and Tetra Tech signed off on subgrade acceptance for liner deployed between July 17 and August 5.
- Layfield is performing detail extrusion work on deployed liner.
- Layfield and Tetra Tech obtained destructive samples for testing.
  - Destructive samples are caught up for deployment up to and including August 5.
- Layfield is beginning deployment along the north perimeter road, which is between the header drain trench and the west perimeter road.
  - Layfield changed the direction of deployment and tied in to liner deployed on Aug 5.
  - Layfield is leaving slack at the tie in to allow for contraction of the liner.

- Ewing is backfilling the anchor trench along the west perimeter road as the liner is beginning to pull out.

2.6 August 7, 2020

- Weather: partly cloudy.
- See Figures 34 through 39.
- Rainfall occurred overnight. Tetra Tech inspected the subgrade in the deployment area, and no damage occurred. Tetra Tech approved the subgrade for liner deployment.
- Ewing is continuing to prepare subgrade for deployment.
- Layfield is continuing to deploy GCL and liner.
  - Layfield performed a correction in deployment angle due to curve in north perimeter road.
- Tetra Tech and Layfield performed testing of destructive samples.
  - All samples passed destructive testing.
  - Destructive testing is caught up for all liner deployed up to and including August 5.

2.7 August 8, 2020

- No work performed today due to rain.

2.8 August 9, 2020

- Weather: mostly cloudy with periods of wind, turning to rain at 6:00 pm.
- See Figures 40 through 43.
- Tetra Tech inspected the subgrade for today's deployment.
  - No erosion of the subgrade from the rain.
  - The subgrade may be too saturated for deployment. Layfield will attempt to deploy, and if it is too saturated, will let the liner dry out and move to detail.
    - Subgrade was not too saturated, and Tetra Tech approved the subgrade for deployment.
- Layfield deployed GCL and liner.
  - Layfield deployed eight runs of liner and fused it by the end of the day.

3.0 GEOSYNTHETIC ROLL NUMBERS PLACED

Table 1 summarizes the daily geosynthetic roll numbers placed on the slope during liner installation. All panel lengths are approximate, and where 45 degree joints are used, panel length is based from the center of the panel.

Table 1: Geosynthetic Roll Numbers Placed on Slope

Date	GCL Roll Number	LLDPE Liner Roll Number	Panel Number (Length)
August 3	0242-347826 502347815, 502347810 502347825, 502344522 502344528, 502344516 502344521	10692-037 10692-029 10692-013 10693-017 10692-031 10692-034 10692-020 10692-002 10692-011 10692-017 10693-001 10692-006	P258 (67.2 m) P259 (128.3 m) P260 (50.4 m), P261 (77.0 m) P262 (128.7 m) P263 (44.0 m), P264 (81.6 m) P265 (128.5 m) P266 (47.8 m), P267 (72.4 m) P268 (128.0 m) P269 (53.0 m) P270 (55.1 m) P271 (51.9 m), P272 (44.2 m), P273 (25.0 m) P274 (16.0 m)
August 4	0242-347742, 0242-347757 5023445211, 502347007 502344507, 502347107 502344514, 502347109 502344524, 502344517 502344523, 502344510 502344583, 502344526 502344534, 502344518 502347135, 502347118 502344529, 502344501 502318995, 502344530 502344537, 502344527 502344536, 502344493 502344487, 502347427 502347025, 502347022 502347111, 502347108 502347016	10692-011 10692-030 10692-009 10690-018 10697-013 10690-020 10692-006 10692-035	P275 (76.1 m) P276 (128.8 m) P277 (97.4 m), P278 (30.0 m) P279 (128.1 m) P280 (125.6 m) P281 (18.6 m), P282 (108.1 m) P283 (109.0 m) P284 (85.6 m)
August 5	502344613, 502344512 502344515, 502344496 502343570, 502344612 502344614, 502344519 502347009, 502344162 502343965, 502344513 502343571, 502347128 502343564, 502343579 502347006, 502347105 502347018, 502347137 502347136, 502347110 502346959, 502344492 502344520, 502347017 502344601	10692-035 10692-012 10692-032 10692-003 10692-004 10690-022 10690-014 10690-021	P285 (41.3 m) P286 (129.9 m) P287 (107.8 m), P289 (12.0 m) P288 (13.5 m), P290 (113.7 m) P291 (118.6 m) P292 (47.5 m), P293 (76.2 m) P294 (129 m) P295 (84.3 m)

Date	GCL Roll Number	LLDPE Liner Roll Number	Panel Number (Length)
August 6	0242-347834 502347121, 502347119 502347119, 502347005 502347004, 502346961 502347012, 502347123 502347115, 502346973 502347106, 502346980 502347011, 502346962 502347124, 502347014 502347020, 502347162 502347013	10692-008 10698-016 10690-033 10690-039 10690-035 10690-032 10690-016	P296 (29.5 m), P297 (16.3 m), P298 (8.5 m), P303 (25.1 m), P304 (27.9 m), P306 (12.4 m) P299 (5.5 m), P300 (9.2 m), P302 (19.8 m) P301 (4.2 m), P310 (38.6 m), P311 (40.3 m), P312 (37.9 m) P305 (35.1 m), P307 (32.2 m), P308 (34.2 m), P309 (36.6 m) P313 (4.6 m), P314 (45.2 m), P315 (47.2 m), P316 (23.3 m) P317 (25.8 m), P318 (52.3 m) P319 (2.0 m)
August 7	502347125, 502346958 502343540, 502343687 502347116, 502347117 502346993, 502346964 502346994, 502347021 502347120, 502347059 502346972, 502346983 502347104, 502346963 502346971, 502347112 502347113, 502347126 502347138, 502346992 502347015, 502346995 502347129, 502347114 502347122	10690-033 10690-032 10690-012 10699-002 10690-019 10690-017 10698-011 10699-004 10699-001	P320 (43.5 m) P321 (12.7 m) P322 (61.0 m), P323 (49.5 m) P324 (16.7 m), P325 (100.9 m) P326 (92.7 m), P327 (14.7 m) P328 (53.4 m), P329 (55.3 m) P330 (33.1 m), P331 (19.7 m), P332 (50.1 m) P333 (56.6 m) P334 (66.3 m) P335 (50.3 m)
August 8	-	-	-
August 9	502347019, 502347024 502343626, 502347008 502343623, 502343627 502343595, 502343683 502344115, 502343647 502344112, 502346960 502344129, 502343619 502346936, 502343636 502343649, 502343682 502343622, 502343638 502343656, 502347060 502346974, 502346978 502343577, 502347055 502346976, 502343559 502343568, 502343592 502346981, 502343593 502346970, 502346979 502346975, 502346977 502346629, 502346991 502343631 0242-347583	10699-001 10699-012 10699-017 10699-003 10699-018 10699-029 10699-030 10699-013 10699-016 10699-031 10699-021	P336 (68.3 m), P338 (8.9 m) P337 (63.5 m), P339 (65.7 m) P340 (66.8 m), P341 (66.8 m) P342 (73.1 m), P343 (51.1 m) P344 (96.4 m), P345 (28.1 m) P346 (125.3 m) P347 (124.2 m) P348 (35.9 m), P349 (87.1 m) P350 (76.5 m), P351 (47.9 m) P352 (128.3 m) P353 (4.7 m)

4.0 TRIAL SEAM

Table 2 summarizes the weekly trial seam results. For fusion, the apparatus settings are temperature and speed, and for extrusion, the apparatus settings are preheat and barrel temperature. Five tests are performed for each criterion.

Table 2: Trial Seam Results

Date	Time	Fusion or Extrusion	Tech	Apparatus #	Temp or Preheat (°F)	Speed (%) or Barrel Temp (°F)	$Peel_{inside}$ (100 min)	$Peel_{outside}$ (100 min for Fusion 88 min for Extrusion)	Shear (120 min)	Smooth or Textured
Aug 3	8:15	Fusion	EA	WW-022	850	35	119 156 144 138 117	155 159 135 171 149	178 179 148 181 179	Textured
Aug 3	8:15	Fusion	EA	WW-022	850	55	154 144 152 159 149	138 148 142 154 139	159 167 160 167 155	Smooth
Aug 3	8:00	Fusion	EP	WW-045	850	55	153 143 146 142 146	150 156 148 152 151	156 171 159 173 160	Smooth
Aug 3	8:05	Fusion	EP	WW-045	850	35	153 153 150 154 156	153 149 162 154 161	155 176 161 178 160	Textured
Aug 3	8:00	Fusion	CC	WW-026	850	55	152 156 146 160 154	134 154 144 157 156	163 167 151 166 157	Smooth
Aug 3	8:00	Fusion	CC	WW-026	850	35	150 158 100 157 130	156 157 140 158 148	173 182 159 174 173	Textured
Aug 3	12:30	Extrusion	RW	04037	495	495	N/A	118 124 103 143 129	148 155 146 167 147	N/A
Aug 3	13:00	Fusion	EA	WW-022	850	35	138 144 137 137 123	132 18 132 140 111	140 150 156 164 137	Textured

Date	Time	Fusion or Extrusion	Tech	Apparatus #	Temp or Preheat (°F)	Speed (%) or Barrel Temp (°F)	$Peel_{inside}$ (100 min)	$Peel_{outside}$ (100 min for Fusion 88 min for Extrusion)	Shear (120 min)	Smooth or Textured
Aug 3	13:00	Fusion	EA	WW-022	850	55	132	129	148	Smooth
							135	141	156	
							129	141	140	
							133	159	156	
							140	129	156	
Aug 3	13:30	Fusion	EP	WW-045	850	35	141	120	144	Textured
							104	154	159	
							128	118	160	
							136	142	163	
							117	136	156	
Aug 3	13:25	Fusion	EP	WW-045	850	55	132	135	152	Smooth
							142	127	141	
							128	134	156	
							135	134	145	
							129	129	158	
Aug 3	13:28	Fusion	CC	WW-026	850	35	160	141	159	Textured
							155	147	162	
							134	137	166	
							129	142	176	
							152	140	158	
Aug 3	13:26	Fusion	CC	WW-026	850	55	133	117	160	Smooth
							143	154	153	
							132	125	161	
							145	149	137	
							140	134	160	
Aug 3	14:30	Extrusion	RW	04037	495	495	N/A	104	142	N/A
								110	147	
								105	145	
								102	158	
								102	147	
Aug 3	17:15	Extrusion	RP	04036	495	495	N/A	127	149	N/A
								138	164	
								128	156	
								147	162	
								141	153	
Aug 4	9:15	Fusion	EA	WW-022	850	35	133	145	172	Textured
							148	160	170	
							132	147	171	
							141	150	170	
							130	158	161	
Aug 4	9:15	Fusion	CC	WW-045	850	55	144	148	157	Smooth
							149	152	158	
							140	155	160	
							148	151	164	
							153	144	159	

Date	Time	Fusion or Extrusion	Tech	Apparatus #	Temp or Preheat (°F)	Speed (%) or Barrel Temp (°F)	$Peel_{inside}$ (100 min)	$Peel_{outside}$ (100 min for Fusion 88 min for Extrusion)	Shear (120 min)	Smooth or Textured
Aug 4	9:15	Fusion	EA	WW-022	850	55	142	135	164	Smooth
							137	140	171	
							153	138	169	
							149	138	172	
							144	135	157	
Aug 4	9:15	Fusion	CC	WW-045	850	35	144	133	157	Textured
							157	147	183	
							157	131	177	
							151	159	174	
							150	129	173	
Aug 4	13:00	Fusion	EA	WW-022	850	55	128	138	147	Smooth
							111	129	135	
							120	135	147	
							130	135	154	
							121	129	139	
Aug 4	13:00	Fusion	EA	WW-022	850	35	138	133	169	Textured
							159	139	162	
							138	150	161	
							164	153	171	
							143	140	160	
Aug 4	14:00	Fusion	CC	WW-045	850	55	126	128	142	Smooth
							124	133	148	
							129	129	149	
							127	137	143	
							133	133	147	
Aug 4	16:45	Fusion	EA	WW-022	850	35	135	127	148	Textured
							129	123	153	
							132	124	165	
							139	133	165	
							143	124	147	
Aug 4	16:45	Fusion	EA	WW-022	850	55	123	118	140	Smooth
							129	125	147	
							129	135	149	
							134	135	150	
							106	133	144	
Aug 5	11:45	Fusion	CC	WW-045	850	35	138	137	149	Textured
							142	136	160	
							138	126	151	
							141	144	166	
							140	143	166	
Aug 5	11:45	Fusion	JC	WW-022	850	35	145	157	152	Textured
							131	147	176	
							141	127	161	
							151	138	179	
							140	158	171	

Date	Time	Fusion or Extrusion	Tech	Apparatus #	Temp or Preheat (°F)	Speed (%) or Barrel Temp (°F)	$Peel_{inside}$ (100 min)	$Peel_{outside}$ (100 min for Fusion 88 min for Extrusion)	Shear (120 min)	Smooth or Textured
Aug 5	11:45	Fusion	CC	WW-045	850	55	127	150	145	Smooth
							139	144	155	
							128	150	150	
							140	147	153	
							137	144	156	
Aug 5	11:45	Fusion	JC	WW-022	850	55	136	141	147	Smooth
							124	147	147	
							130	145	149	
							140	143	152	
							131	144	149	
Aug 5	15:00	Extrusion	TH	04037	495	495	N/A	155	186	N/A
								154	190	
								143	177	
								150	164	
								150	175	
Aug 5	16:00	Fusion	CC	WW-045	850	35	120	139	163	Textured
							129	125	176	
							155	128	171	
							143	153	169	
							147	143	165	
Aug 5	16:00	Fusion	CC	WW-045	850	55	136	138	159	Smooth
							151	141	160	
							138	129	161	
							142	131	158	
							134	127	167	
Aug 5	17:00	Fusion	DT	WW-022	850	55	139	145	177	Smooth
							148	142	177	
							146	148	179	
							151	150	172	
							151	156	171	
Aug 6	9:25	Fusion	CC	WW-045	850	35	123	128	157	Textured
							135	131	177	
							126	154	166	
							146	134	182	
							118	134	164	
Aug 6	9:25	Fusion	CC	WW-045	850	55	144	149	158	Smooth
							155	157	156	
							148	159	153	
							144	153	168	
							150	152	155	
Aug 6	9:25	Fusion	JC	WW-022	850	55	150	142	151	Smooth
							162	141	175	
							166	145	172	
							153	145	181	
							141	144	165	

Date	Time	Fusion or Extrusion	Tech	Apparatus #	Temp or Preheat (°F)	Speed (%) or Barrel Temp (°F)	$Peel_{inside}$ (100 min)	$Peel_{outside}$ (100 min for Fusion 88 min for Extrusion)	Shear (120 min)	Smooth or Textured
Aug 6	12:45	Extrusion	TH	04037	495	495	N/A	105 139 130 131 116	195 155 155 164 165	N/A
Aug 6	12:50	Fusion	DT	WW-026	850	50	114 124 135 130 136	143 120 136 140 135	154 155 159 171 166	Smooth
Aug 6	13:30	Fusion	CC	WW-045	850	35	138 155 150 145 152	125 143 130 141 169	167 170 171 168 172	Textured
Aug 6	13:30	Fusion	CC	WW-045	850	55	133 153 140 133 144	133 131 135 136 143	169 168 171 170 167	Smooth
Aug 6	13:30	Fusion	JC	WW-022	850	55	151 148 131 133 138	144 143 141 141 141	175 174 171 175 172	Smooth
Aug 6	13:30	Extrusion	TH	04037	495	495	N/A	143 142 139 135 125	177 166 164 172 164	N/A
Aug 6	17:15	Extrusion	EA	EX-008	490	495	N/A	133 150 131 150 149	166 171 165 164 168	N/A
Aug 7	9:00	Fusion	JC	WW-022	850	35	156 153 144 157 165	123 157 146 152 133	168 165 179 175 175	Textured
Aug 7	9:00	Fusion	CC	WW-045	850	35	147 148 149 161 132	144 139 162 159 140	160 162 144 177 176	Textured

Date	Time	Fusion or Extrusion	Tech	Apparatus #	Temp or Preheat (°F)	Speed (%) or Barrel Temp (°F)	$Peel_{inside}$ (100 min)	$Peel_{outside}$ (100 min for Fusion 88 min for Extrusion)	Shear (120 min)	Smooth or Textured
Aug 7	9:00	Fusion	CC	WW-045	850	55	143 144 135 137 141	138 151 137 153 140	150 158 149 164 155	Smooth
Aug 7	9:00	Fusion	JC	WW-022	850	35	141 145 143 122 129	144 149 151 141 140	157 166 158 165 159	Smooth
Aug 7	13:30	Fusion	JC	WW-022	850	55	133 130 112 126 137	136 146 130 139 128	149 139 137 146 143	Smooth
Aug 7	13:30	Fusion	CC	WW-045	850	35	148 152 133 142 145	137 133 160 155 145	157 170 175 174 166	Textured
Aug 7	13:30	Fusion	JC	WW-022	850	35	132 142 139 145 146	136 154 153 157 143	173 161 168 174 170	Textured
Aug 7	13:30	Fusion	CC	WW-045	850	55	136 124 135 121 130	124 137 132 129 135	147 138 147 137 142	Smooth
Aug 7	16:00	Fusion	JC	WW-022	850	40	140 149 160 150 143	150 140 157 140 130	162 170 168 174 172	Smooth-Textured
Aug 9	9:00	Fusion	CC	WW-045	850	55	145 143 153 146 139	150 148 143 144 139	172 158 164 157 168	Smooth
Aug 9	9:00	Fusion	JC	WW-022	850	35	141 156 153 145 145	148 165 150 150 153	173 179 174 182 157	Textured

Date	Time	Fusion or Extrusion	Tech	Apparatus #	Temp or Preheat (°F)	Speed (%) or Barrel Temp (°F)	$Peel_{inside}$ (100 min)	$Peel_{outside}$ (100 min for Fusion 88 min for Extrusion)	Shear (120 min)	Smooth or Textured
Aug 9	9:00	Fusion	CC	WW-045	850	35	150	160	177	Textured
							146	158	185	
							154	152	186	
							155	163	181	
							154	140	175	
Aug 9	9:00	Fusion	JC	WW-022	850	55	140	147	164	Smooth
							144	124	165	
							152	137	160	
							146	135	165	
							146	136	155	
Aug 9	13:30	Fusion	JC	WW-022	850	35	130	117	151	Textured
							141	147	156	
							142	122	154	
							148	138	160	
							125	133	162	
Aug 9	13:30	Fusion	JC	WW-022	850	55	126	133	139	Smooth
							127	123	140	
							127	121	140	
							124	125	125	
							121	129	144	
Aug 9	13:30	Fusion	CC	WW-045	850	35	133	151	150	Textured
							147	129	160	
							136	129	160	
							124	140	164	
							131	135	170	
Aug 9	14:30	Fusion	CC	WW-026	850	55	123	130	144	Smooth
							112	135	140	
							114	130	153	
							127	131	150	
							120	130	131	
Aug 9	16:00	Fusion	CC	WW-054	850	52	128	123	143	Smooth
							115	119	140	
							117	127	139	
							114	120	140	
							128	119	141	
Aug 9	16:30	Fusion	CC	WW-054	850	35	139	141	166	Smooth
							147	149	164	
							142	153	150	
							139	144	163	
							138	127	157	

5.0 NON-DESTRUCTIVE TESTING

Table 3 summarizes the weekly non-destructive pressure testing results.

Table 3: Non-Destructive Testing Results

Date Fused	Date Tested	Time Tested	Seam #	psi Start	psi End	Pass or Fail	Notes
Jul 30	Aug 3	13:50	P215-P217 Vertical	40	40	Pass	
Jul 30	Aug 3	13:52	P217-P218 Cross	40	39	Pass	
Jul 30	Aug 3	13:49	P212-P215 Vertical	40	39	Pass	Top of seam to patch
Jul 31	Aug 3	13:49	P212-P215 Vertical	40	40	Pass	Patch to bottom of seam
Jul 30	Aug 3	14:09	P223-P224 Cross	40	39	Pass	
Jul 30	Aug 3	13:52	P217-P220 Vertical	40	40	Pass	
Jul 30	Aug 3	14:07	P220-P223 Vertical	40	40	Pass	
Jul 31	Aug 3	14:09	P223-P226 Vertical	40	40	Pass	
Jul 31	Aug 3	14:27	P226-P229 Vertical	40	40	Pass	
Aug 1	Aug 3	14:32	P231-P232 Cross	40	40	Pass	
Aug 1	Aug 3	14:37	P234-P235 Cross	40	40	Pass	
Aug 1	Aug 3	14:28	P229-P231 Vertical	40	40	Pass	
Aug 1	Aug 3	14:32	P232-P234 Vertical	40	40	Pass	
Aug 1	Aug 3	14:37	P235-P237 Vertical	40	40	Pass	
Aug 1	Aug 3	14:37	P234-P237 Vertical	40	40	Pass	
Aug 1	Aug 3	14:32	P231-P234 Vertical	40	40	Pass	
Aug 1	Aug 3	14:45	P237-P239 Vertical	40	40	Pass	
Aug 1	Aug 3	13:59	P215-P244 Vertical	40	40	Pass	
Aug 1	Aug 3	15:08	P242-P244 Vertical	40	40	Pass	
Aug 1	Aug 3	15:08	P242-P243 Vertical	40	40	Pass	
Aug 1	Aug 3	14:06	P244-P220 Vertical	40	40	Pass	
Aug 1	Aug 3	15:09	P244-P245 Vertical	40	40	Pass	
Aug 1	Aug 3	15:09	P243-P245 Vertical	40	40	Pass	
Aug 1	Aug 3	14:07	P220-P247 Vertical	40	39	Pass	
Aug 1	Aug 3	15:46	P245-P247 Vertical	40	40	Pass	
Aug 1	Aug 3	15:46	P245-P246 Vertical	40	40	Pass	
Aug 1	Aug 3	14:11	P226-P247 Vertical	40	40	Pass	
Aug 1	Aug 3	15:47	P246-P248 Vertical	40	39	Pass	
Aug 2	Aug 3	14:27	P226-P250 Vertical	40	40	Pass	
Aug 2	Aug 3	15:28	P249-P250 Vertical	40	40	Pass	
Aug 2	Aug 3	15:28	P248-P250 Vertical	40	38	Pass	
Aug 2	Aug 3	16:02	P251-P252 Cross	40	40	Pass	
Aug 2	Aug 3	15:36	P253-P254 Cross	40	40	Pass	
Aug 2	Aug 3	14:28	P250-P231 Vertical	40	39	Pass	
Aug 2	Aug 3	14:51	P231-P254 Vertical	40	40	Pass	
Aug 2	Aug 3	15:36	P252-P254 Vertical	40	40	Pass	
Aug 2	Aug 3	15:36	P252-P253 Vertical	40	38	Pass	
Aug 2	Aug 3	16:03	P251-P253 Vertical	40	40	Pass	
Aug 2	Aug 3	14:50	P237-P254 Vertical	40	40	Pass	
Aug 2	Aug 3	15:37	P254-P255 Vertical	40	40	Pass	
Aug 2	Aug 3	15:37	P253-P255 Vertical	40	40	Pass	
Aug 2	Aug 3	14:50	P237-P257 Vertical	40	40	Pass	

Date Fused	Date Tested	Time Tested	Seam #	psi Start	psi End	Pass or Fail	Notes
Aug 2	Aug 3	16:05	P255-P257 Vertical	40	38	Pass	
Aug 2	Aug 3	16:05	P255-P256 Vertical	40	38	Pass	
Aug 3	Aug 4	15:12	P241-P260 Vertical	40	40	Pass	
Aug 3	Aug 4	15:12	P240-P259 Vertical	40	40	Pass	
Aug 3	Aug 4	17:28	P260-P263 Vertical	40	40	Pass	
Aug 3	Aug 4	17:41	P260-P262 Vertical	40	40	Pass	
Aug 3	Aug 4	17:41	P259-P262 Vertical	40	40	Pass	
Aug 3	Aug 4	17:29	P263-P266 Vertical	40	40	Pass	
Aug 3	Aug 4	17:42	P262-P266 Vertical	40	40	Pass	
Aug 3	Aug 4	17:44	P262-P265 Vertical	40	40	Pass	
Aug 3	Aug 4	17:30	P266-P269 Vertical	40	40	Pass	
Aug 3	Aug 4	17:43	P265-P269 Vertical	40	40	Pass	
Jul 22	Aug 6	10:40	P179-P183 Vertical	40	39	Pass	
Jul 22	Aug 6	13:46	P178-P183 Vertical	40	40	Pass	Top of seam to patch
Jul 22	Aug 6	13:46	P178-P183 Vertical	40	40	Pass	Patch to bottom of seam
Jul 23	Aug 6	13:11	P190-P193 Vertical	40	40	Pass	
Jul 25	Aug 6	11:09	P211-P212 Cross	40	40	Pass	
Jul 25	Aug 6	10:43	P202-P206 Vertical	40	40	Pass	Top of seam to patch
Jul 25	Aug 6	10:43	P202-P206 Vertical	40	40	Pass	Patch to bottom of seam
Jul 25	Aug 6	14:51	P208-P211 Vertical	40	40	Pass	
Aug 1	Aug 6	15:17	P237-P238 Cross	40	40	Pass	
Aug 1	Aug 6	15:37	P238-P241 Vertical	40	40	Pass	Top of seam to patch
Aug 1	Aug 6	15:12	P238-P241 Vertical	40	40	Pass	Patch to bottom of seam
Aug 1	Aug 6	15:12	P238-P240 Vertical	40	40	Pass	
Aug 1	Aug 6	15:17	P237-P240 Vertical	40	40	Pass	
Aug 1	Aug 6	11:09	P212-P242 Vertical	40	40	Pass	
Aug 1	Aug 6	11:09	P211-P242 Vertical	40	40	Pass	
Aug 1	Aug 6	11:20	P247-P249 Vertical	40	40	Pass	
Aug 1	Aug 6	11:20	P247-P248 Vertical	40	39	Pass	Top of seam to patch
Aug 1	Aug 6	15:47	P247-P248 Vertical	40	40	Pass	Patch to bottom of seam
Aug 2	Aug 6	13:51	P250-P252 Vertical	40	40	Pass	Top of seam to patch
Aug 2	Aug 6	13:51	P250-P252 Vertical	40	40	Pass	Patch to bottom of seam
Aug 2	Aug 6	11:16	P250-P251 Vertical	40	40	Pass	
Aug 3	Aug 5	13:11	P258-P259 Cross	40	40	Pass	
Aug 3	Aug 5	17:41	P259-P260 Cross	40	40	Pass	
Aug 3	Aug 5	13:12	P2261-P262 Cross	40	40	Pass	
Aug 3	Aug 5	17:42	P262-P263 Cross	40	40	Pass	
Aug 3	Aug 5	13:00	P240-P258 Vertical	40	39	Pass	
Aug 3	Aug 5	13:00	P239-P258 Vertical	40	40	Pass	
Aug 3	Aug 5	17:43	P265-P266 Cross	40	40	Pass	
Aug 3	Aug 5	13:12	P259-P261 Vertical	40	40	Pass	
Aug 3	Aug 5	13:14	P265-P268 Vertical	40	39	Pass	
Aug 3	Aug 5	13:13	P261-P265 Vertical	40	40	Pass	
Aug 3	Aug 6	13:13	P264-P268 Vertical	40	40	Pass	
Aug 1	Aug 3	9:34	P230-P232 Vertical	40	40	Pass	Top of seam to patch
Aug 1	Aug 3	15:01	P235-P236 Cross	40	40	Pass	
Aug 1	Aug 3	14:37	P234-P235 Cross	40	40	Pass	
Aug 3	Aug 4	15:12	P241-P259 Vertical	40	40	Pass	

Date Fused	Date Tested	Time Tested	Seam #	psi Start	psi End	Pass or Fail	Notes
Aug 3	Aug 5	13:13	P264-P265 Cross	40	40	Pass	
Aug 3	Aug 7	14:21	P232-P233 Cross	40	40	Pass	

6.0 DESTRUCTIVE TESTING

Table 4 summarizes the weekly destructive testing results. Five tests are performed for each criterion.

Table 4: Destructive Testing Results

Date Fused	Time Fused	Tech	Apparatus	Location (UTM is +/- 4 m)	Sample ID	$Peel_{in}$ (100 min)	$Peel_{out}$ (100 min)	Shear (120 min)	Pass or Fail
Jul 24	11:01	RW	WW-026	P200-P201 Cross Left Side of Seam	D97	166 134 159 164 142	138 158 154 165 142	156 184 182 186 173	Pass
Jul 30	17:28	RP	WW-026	P219-P222 Vertical Top of Seam	D98	153 151 148 147 146	139 150 137 140 139	165 142 165 141 162	Pass
Jul 30	12:23	EA	WW-022	P216-P219 Vertical Top of Seam	D99	158 162 145 160 138	144 143 149 156 149	146 156 161 164 155	Pass
Jul 30	17:01	EA	WW-022	P220-P221 Cross Left Side of Seam	D100	154 153 170 169 122	137 159 142 147 154	178 180 166 171 168	Pass
Jul 30	18:26	EA	WW-022	P221-P224 Vertical Bottom of Seam	D101	147 138 146 146 146	153 128 143 135 154	156 160 155 163 162	Pass
Jul 30	18:06	EA	WW-022	P222-P225 Vertical Top of Seam	D102	149 160 146 147 147	111 149 118 156 138	156 132 158 147 161	Pass
Jul 31	14:07	RP	WW-026	P224-P226 Vertical Top of Seam	D103	153 140 153 153 156	151 151 154 155 154	150 160 154 149 155	Pass

Date Fused	Time Fused	Tech	Apparatus	Location (UTM is +/- 4 m)	Sample ID	$Peel_{in}$ (100 min)	$Peel_{out}$ (100 min)	Shear (120 min)	Pass or Fail
Jul 31	12:47	EA	WW-022	P226-P227 Cross Left Side of Seam	D104	164	155	186	Pass
						135	152	176	
						157	124	179	
						142	155	177	
						140	151	180	
Jul 31	13:10	RP	WW-026	P225-P228 Vertical Top of Seam	D105	139	156	156	Pass
						160	144	158	
						136	155	161	
						155	143	164	
						156	147	138	
Jul 31	13:43	EA	WW-022	P228-P230 Vertical Top of Seam	D106	142	157	141	Pass
						150	154	162	
						145	149	156	
						153	158	164	
						147	139	144	
Aug 1	8:45	RP	WW-026	P230-P233 Vertical Top of Seam	D107	145	138	163	Pass
						150	160	141	
						151	121	135	
						154	158	145	
						144	141	152	
Aug 1	10:35	EA	WW-022	P233-P236 Vertical Top of Seam	D108	152	150	152	Pass
						154	149	171	
						154	158	157	
						151	144	168	
						150	145	162	
Aug 1	10:48	RP	WW-026	P236-P238 Vertical Top of Seam	D109	156	135	162	Pass
						157	147	165	
						147	156	165	
						153	152	158	
						152	148	165	
Aug 1	11:34	DT	WW-045	P238-P241 Vertical Top of Seam	D110	151	152	150	Pass
						146	155	152	
						150	146	151	
						147	143	160	
						149	148	149	
Aug 1	12:23	EA	WW-022	P242-P243 Vertical Bottom of Seam	D111	145	134	167	Pass
						145	146	158	
						147	133	169	
						143	152	156	
						143	147	164	
Aug 1	16:27	RP	WW-026	P243-P245 Vertical Bottom of Seam	D112	153	158	154	Pass
						155	154	160	
						131	158	153	
						145	142	166	
						150	154	158	
Aug 1	16:55	EA	WW-022	P245-P246 Vertical Bottom of Seam	D113	144	133	156	Pass
						150	137	162	
						142	140	162	
						149	156	161	
						129	146	158	

Date Fused	Time Fused	Tech	Apparatus	Location (UTM is +/- 4 m)	Sample ID	$Peel_{in}$ (100 min)	$Peel_{out}$ (100 min)	Shear (120 min)	Pass or Fail
Aug 2	17:45	EA	WW-022	P248-P250 Vertical Bottom of Seam	D114	153 137 152 134 152	144 152 147 141 153	147 156 153 161 157	Pass
Aug 2	9:47	RP	WW-026	P250-P251 Vertical Bottom of Seam	D115	141 154 142 141 144	144 148 139 147 154	161 137 161 144 154	Pass
Aug 2	10:06	EP	WW-045	P251-P253 Vertical Bottom of Seam	D116	148 138 148 145 149	143 144 139 142 141	144 158 144 151 156	Pass
Aug 2	12:04	EA	WW-022	P253-P255 Vertical Bottom of Seam	D117	114 130 123 128 126	121 136 132 135 125	142 134 140 143 143	Pass
Aug 2	12:58	EP	WW-045	P255-P256 Vertical Bottom of Seam	D118	130 120 127 105 139	130 135 133 134 135	135 145 134 147 144	Pass
Aug 3	8:58	EA	WW-022	P241-P260 Vertical Top of Seam	D119	148 145 159 126 147	149 151 148 154 136	156 162 157 164 157	Pass
Aug 3	9:39	CC	WW-026	P260-P263 Vertical Top of Seam	D120	149 154 158 157 155	153 155 152 156 158	175 161 176 168 177	Pass
Aug 3	11:07	EA	WW-022	P263-P266 Vertical Top of Seam	D121	159 147 150 141 162	152 152 157 156 154	166 173 171 171 166	Pass
Aug 3	11:08	EP	WW-045	P266-P269 Vertical Top of Seam	D122	150 154 154 146 140	145 163 165 146 152	162 164 167 161 171	Pass
Aug 3	14:56	EA	WW-022	P256-P270 Vertical Bottom of Seam	D123	115 132 160 131 151	158 150 157 151 155	173 175 168 171 153	Pass

Date Fused	Time Fused	Tech	Apparatus	Location (UTM is +/- 4 m)	Sample ID	$Peel_{in}$ (100 min)	$Peel_{out}$ (100 min)	Shear (120 min)	Pass or Fail
Aug 4	10:55	CC	WW-045	P269-P277 Vertical Top of Seam	D124	153 163 165 150 152	132 127 144 138 135	168 164 167 157 166	Pass
Aug 3	14:56	CC	WW-026	P270-P271 Vertical Bottom of Seam	D125	148 156 168 150 150	160 152 155 160 164	159 170 148 169 160	Pass
Aug 3	15:12	EA	WW-022	P271-P272 Vertical Bottom of Seam	D126	156 151 161 149 153	158 152 137 147 150	152 172 176 150 174	Pass
Aug 3	15:24	EP	WW-045	P272-P273 Vertical Bottom of Seam	D127	162 147 162 149 156	139 158 148 152 154	164 167 165 169 164	Pass
Aug 4	12:54	CC	WW-045	P273-P275 Vertical Bottom of Seam	D128	150 164 162 146 153	162 164 153 163 148	170 175 182 174 177	Pass
Aug 4	15:00	CC	WW-045	P275-P278 Vertical Bottom of Seam	D129	159 155 155 136 154	148 146 151 155 154	161 160 162 170 166	Pass
Aug 4	18:21	CC	WW-045	P278-P282 Vertical Bottom of Seam	D130	147 139 146 153 146	140 141 138 142 145	168 165 166 164 167	Pass
Aug 4	14:01	EA	WW-022	P277-P281 Vertical Top of Seam	D131	149 156 155 152 156	156 151 155 148 151	149 159 162 165 161	Pass
Aug 4	17:50	EA	WW-022	P281-P284 Vertical Top of Seam	D132	132 125 130 121 125	153 158 146 159 146	162 162 172 170 173	Pass
Aug 5	14:46	CC	WW-045	P282-P285 Vertical Bottom of Seam	D133	134 125 149 126 145	153 149 137 153 154	144 159 139 158 141	Pass

Date Fused	Time Fused	Tech	Apparatus	Location (UTM is +/- 4 m)	Sample ID	$Peel_{in}$ (100 min)	$Peel_{out}$ (100 min)	Shear (120 min)	Pass or Fail
Aug 5	12:55	CC	WW-045	P284-P288 Vertical Top of Seam	D134	131	154	166	Pass
						156	160	160	
						136	158	166	
						148	150	153	
						151	155	163	
Aug 5	12:37	CC	WW-045	P287-P288 Cross Left Side of Seam	D135	167	168	173	Pass
						150	168	193	
						150	165	171	
						161	162	184	
						158	150	172	
Aug 5	14:05	JC	WW-022	P288-P292 Vertical Top of Seam	D136	152	132	159	Pass
						152	143	147	
						149	136	156	
						150	151	150	
						153	131	159	
Aug 5	15:47	JC	WW-022	P285-P289 Vertical Top of Seam	D137	156	155	153	Pass
						155	156	164	
						159	160	153	
						55	156	164	
						155	155	139	
Aug 5	17:16	JC	WW-022	P289-P293 Vertical Top of Seam	D138	139	154	167	Pass
						155	139	158	
						144	143	170	
						158	154	160	
						147	149	171	
Aug 5	16:50	CC	WW-045	P292-P295 Vertical Top of Seam	D139	137	146	146	Pass
						136	142	156	
						139	140	145	
						120	139	155	
						116	144	153	

7.0 PHOTO LOG



Figure 1: Prepared and Inspected Subgrade



Figure 2: Subgrade in Advance of Liner Deployment



Figure 3: Liner Deployed on Lower Third of the Slope



Figure 4: Overall Deployment as of August 3



Figure 5: Deployment and Prepared Subgrade



Figure 6: Preparing Subgrade



Figure 7: Overall Deployment as of August 4



Figure 8: Prepared and Inspected Subgrade

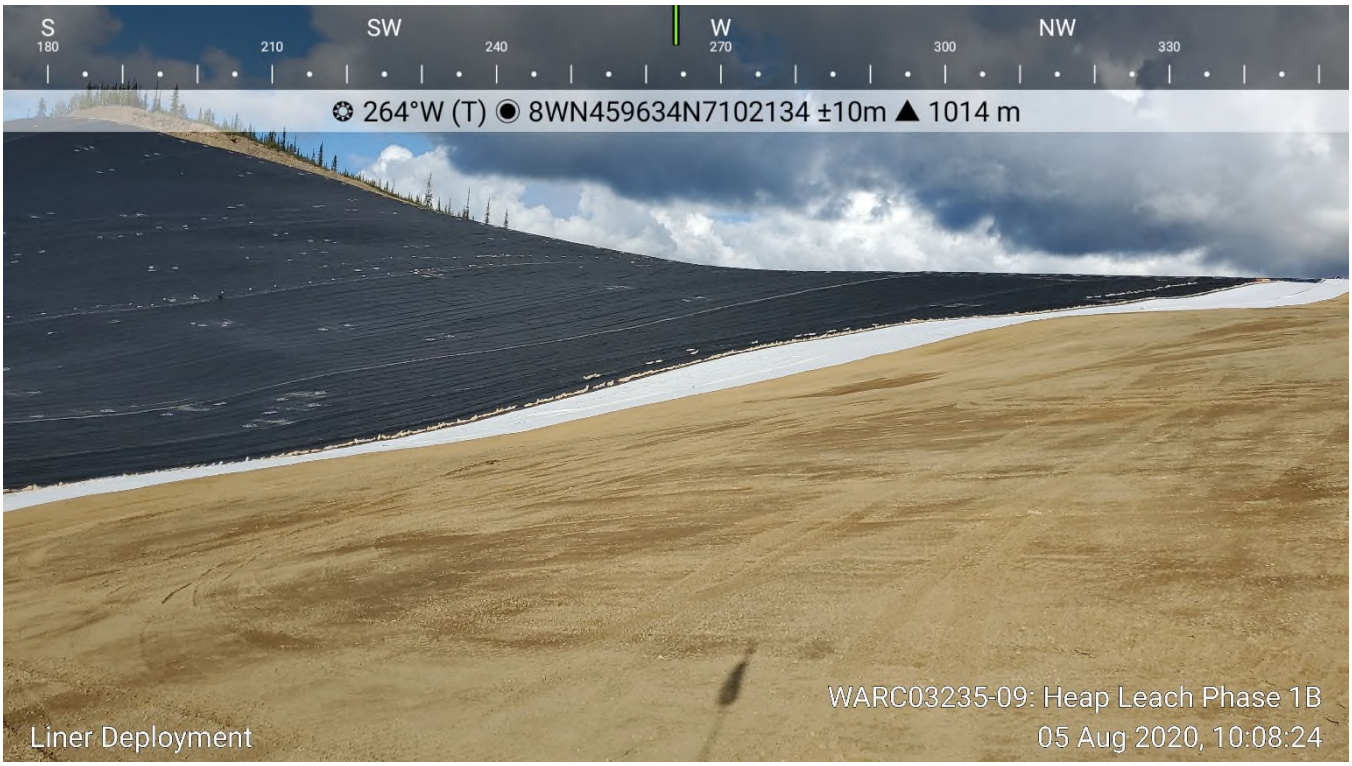


Figure 9: Prepared and Inspected Subgrade

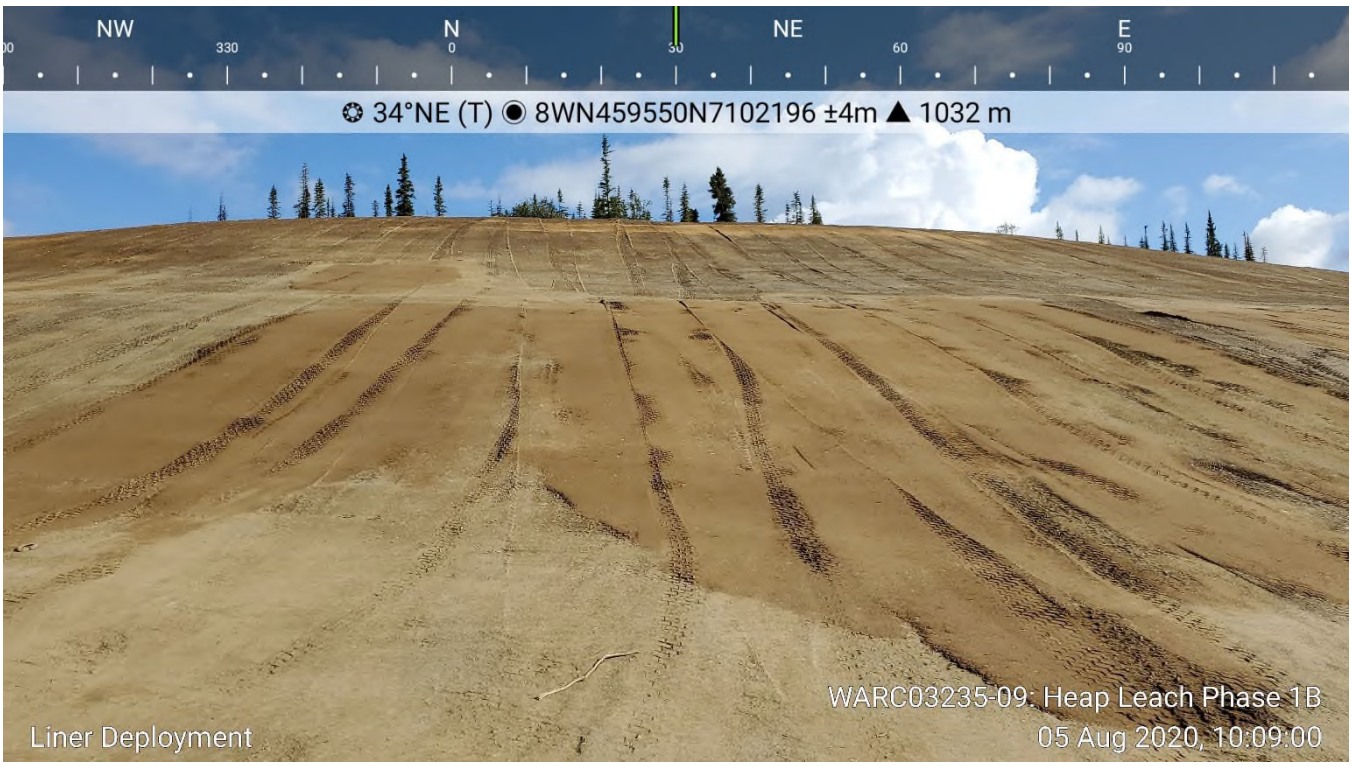


Figure 10: Sand Placed on Rocky Areas of Slope



Figure 11: Compacted Subgrade



Figure 12: Deployed GCL



Figure 13: Anchor Trench Excavation



Figure 14: Anchor Trench Excavation



Figure 15: Overall Deployment as of August 5



Figure 16: Prepared and Inspected Subgrade



Figure 17: Prepared and Inspected Subgrade

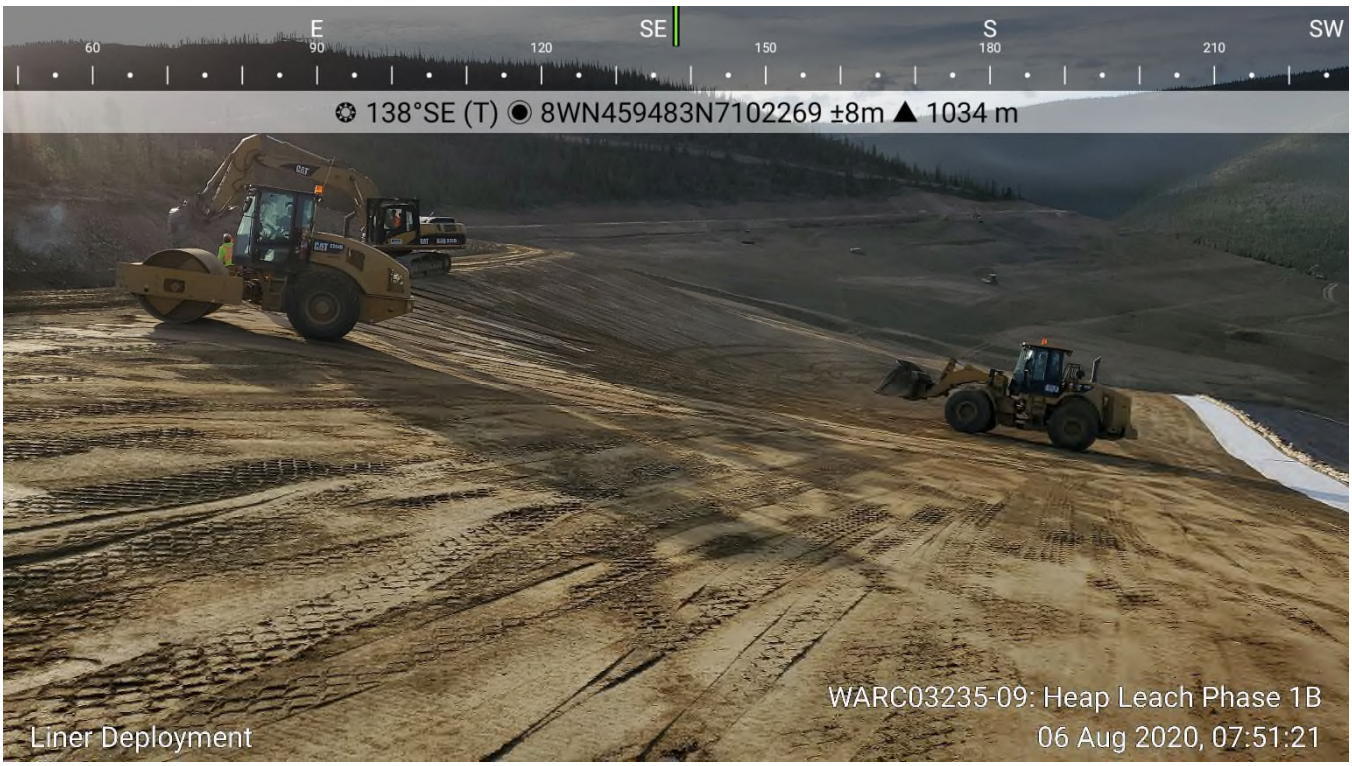


Figure 18: Placing Sand on Rocky Areas of Subgrade

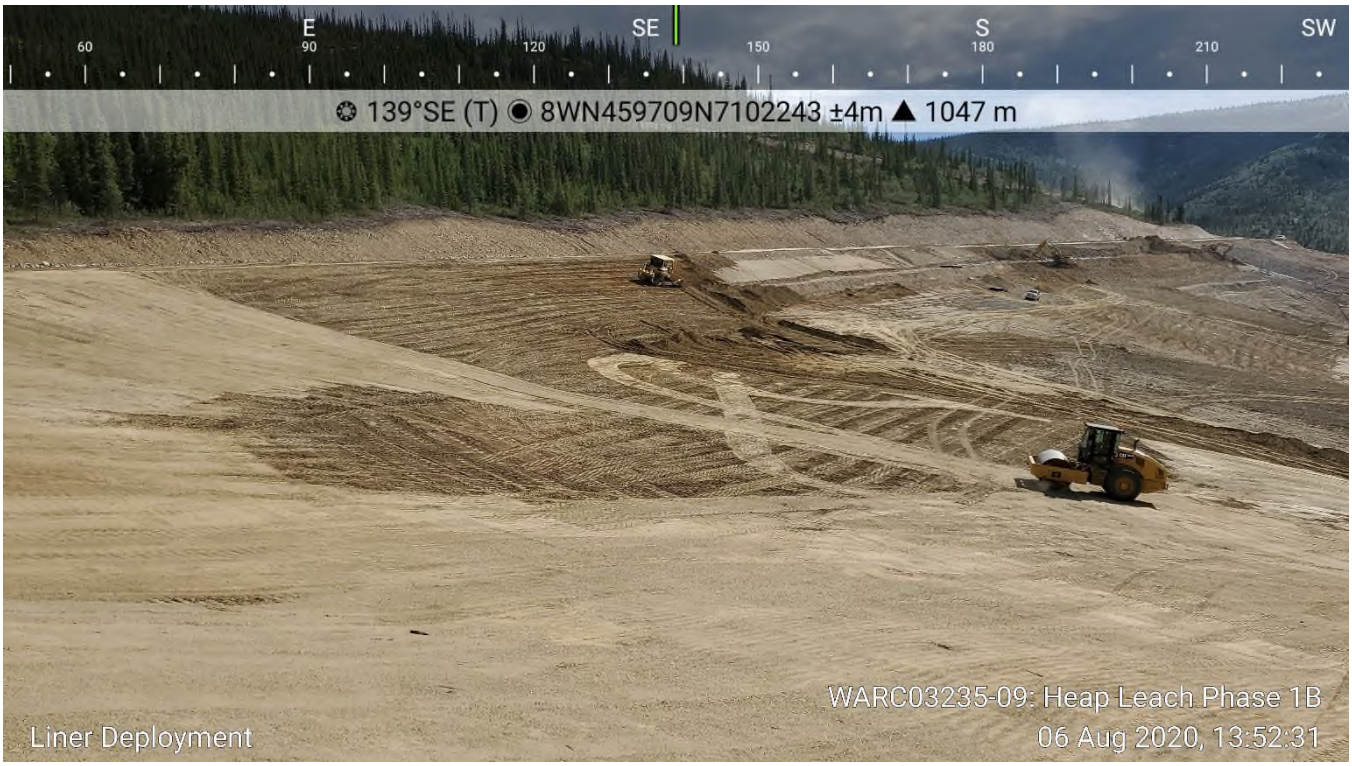


Figure 19: Preparing Subgrade to the East of the Header Drain

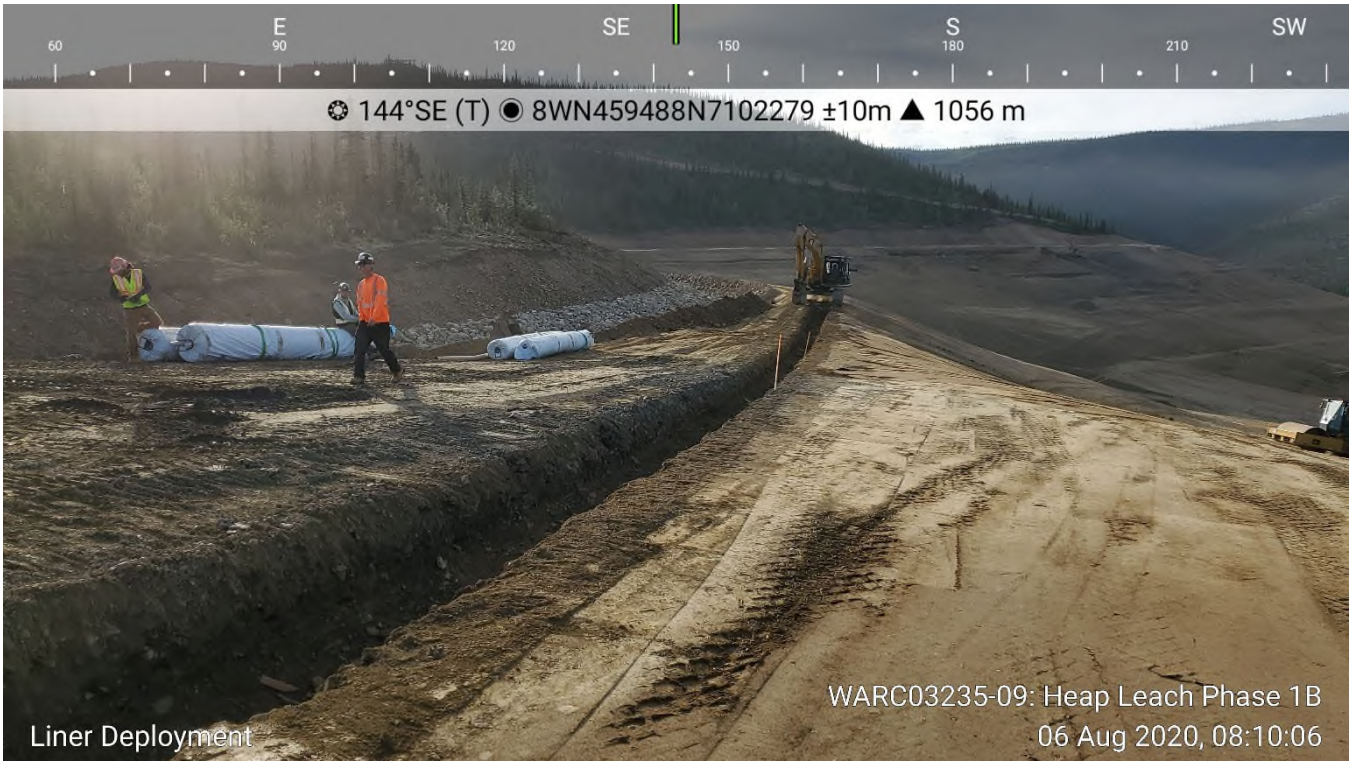


Figure 20: Anchor Trench Excavation

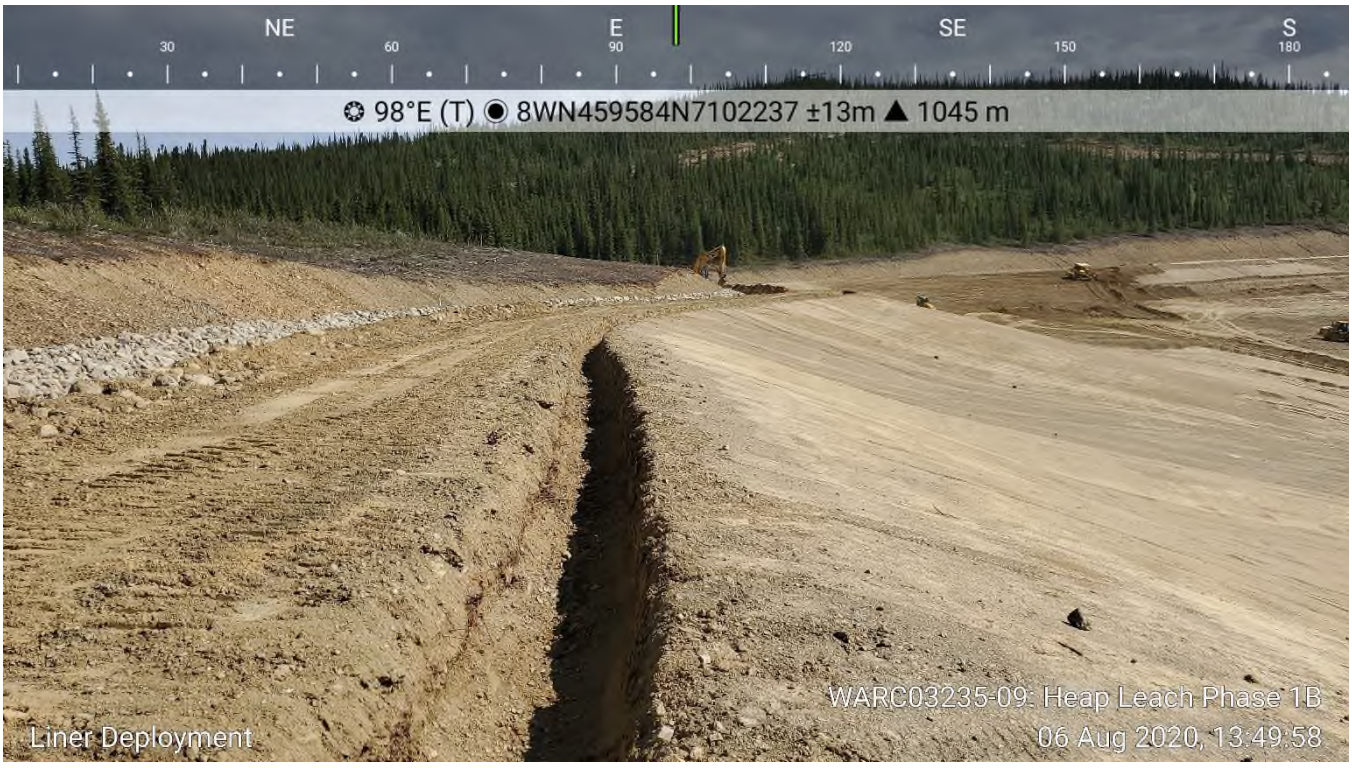


Figure 21: Anchor Trench Excavation



Figure 22: Anchor Trench Excavation



Figure 23: Beginning GCL Deployment in Northwest Corner of Phase 1B



Figure 24: GCL at Northwest Corner of Anchor Trench



Figure 25: GCL at Northwest Corner of Anchor Trench



Figure 26: GCL Deployed in Northwest Corner of Phase 1B



Figure 27: GCL Overlap



Figure 28: GCL in Anchor Trench



Figure 29: Liner Deployment in Northwest Corner

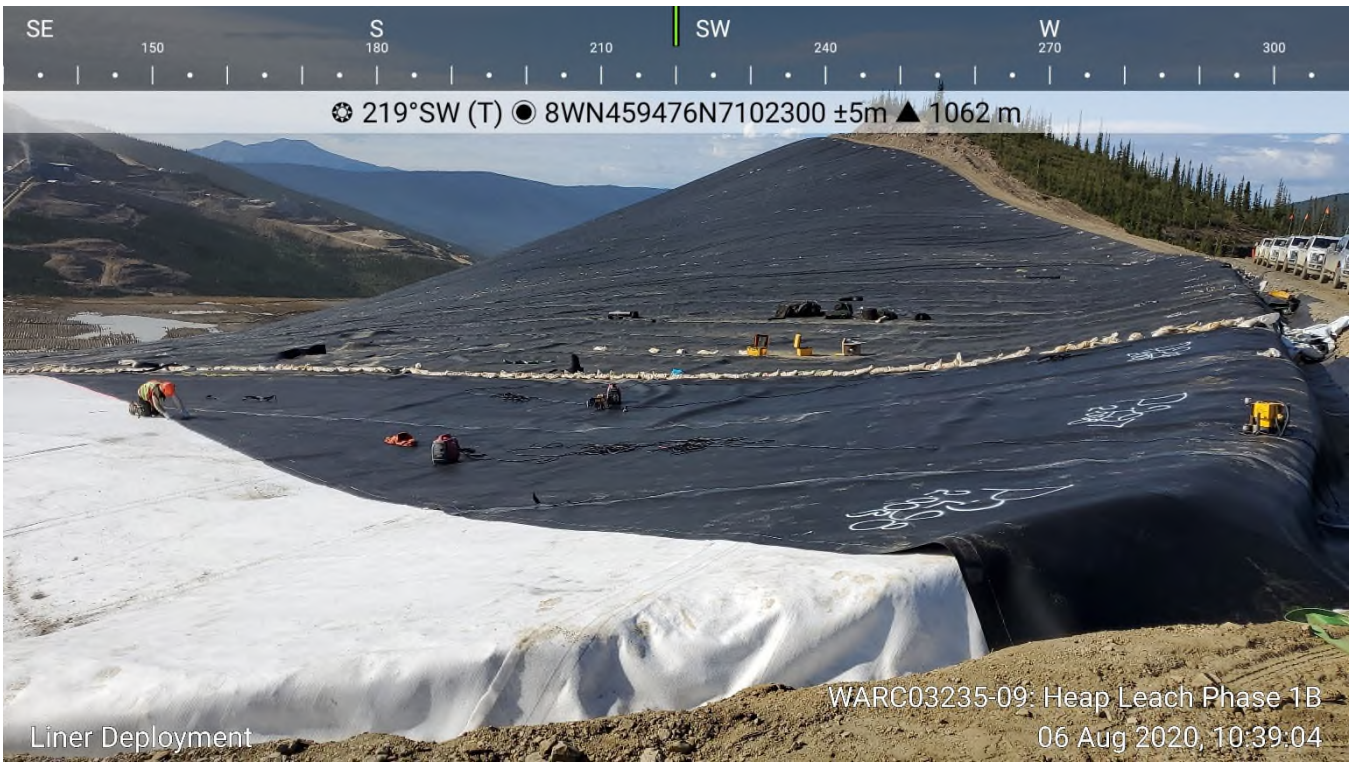


Figure 30: Liner Deployment in Northwest Corner



Figure 31: Liner Deployment from North Perimeter Road



Figure 32: Liner Deployed in Northwest Corner of Phase 1B



Figure 33: Overall Deployment as of August 6



Figure 34: Prepared and Inspected Subgrade for Today's Deployment



Figure 35: Prepared and Inspected Subgrade for Today's Deployment

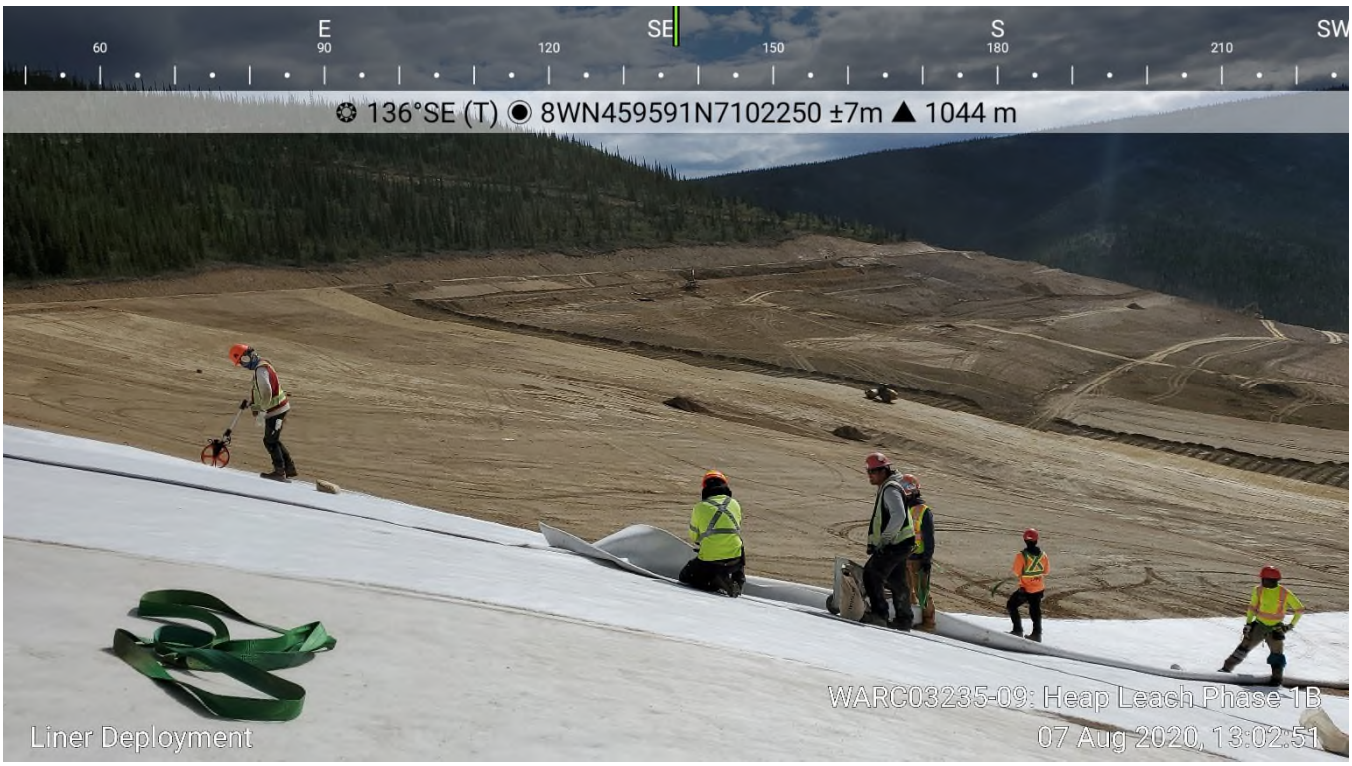


Figure 36: GCL Deployment and Ewing Rolling Prepared Subgrade



Figure 37: Liner Deployment



Figure 38: Angle Correction of Liner



Figure 39: Overall Deployment as of August 7



Figure 40: Prepared and Approved Subgrade for Today's Deployment



Figure 41: Prepared and Approved Subgrade



Figure 42: Subgrade After Pulling GCL Down Slope



Figure 43: Overall Deployment at the End of August 9

TETRA TECH

WEEKLY FIELD REPORT

ISSUED FOR USE

Project:	Eagle Gold Heap Leach Phase 1B	**Date:**	August 16, 2020
Location:	Eagle Gold Mine	**Contractor:**	Ewing Transport / Layfield
Client:	Victoria Gold Corp.	**Contractor's Rep:**	Marshall Ewing / Chad Messervey
Contact:	Clint Abel	**Contractor's Email:**	
Weather:	Variable (see daily entries)	**Tetra Tech Representative:**	Adam Mickey
File:	704-ENG.WARC03235-09	**Status:**	Issued for Use

1.0 INTRODUCTION

Tetra Tech Canada Inc. (Tetra Tech) was retained by Victoria Gold Corp. (Victoria Gold) to provide CQA services at the Eagle Gold mine located north of Mayo, Yukon, at Dublin Gulch for the Eagle Gold Heap Leach Phase 1B expansion (Phase 1B). Mr. Adam Mickey, EIT, is Tetra Tech's representative on site.

Forte Dynamics (Forte) out of Fort Collins, Colorado provided the design and specification for Phase 1B, and Forte's representative is Clint Green.

Clint Abel, of JDS Energy & Mining, is Victoria Gold's project manager on site at the Eagle Gold mine.

Ewing Transport (Ewing), based out of Mayo, Yukon, is the construction contractor for Phase 1B.

Layfield Environmental Containment (Layfield) has been retained to provide and install the liner for Phase 1B, and their supervisor on site is Chad Messervey.

The following Field Report outlines Tetra Tech's CQA for the period of August 10, 2020, to August 16, 2020.

2.0 DAILY REPORTS

2.1 Highlights

- Layfield deployed approximately 2280.9 m of liner covering an area of approximately 15,282 m^2.
- Soft spots in the subgrade associated with the east laterals were found ahead of deployment. Ewing excavated the soft spots and replaced with rock fill to improve the subgrade conditions.
- Layfield is placing three panels of GCL for every two panels of 80 mm LLDPE liner.

2.2 August 10, 2020

- Weather: cloudy, turning to periods of heavy rain in the afternoon.
- See Figures 1 and 2.
- Layfield finished fusion welding seams and completed the work by first break.

Tetra Tech Canada Inc.
61 Wasson Place
Whitehorse, YT Y1A 0H7 CANADA
Tel 867.668.3068 Fax 867.668.4349

- After first break, weather conditions permitted deployment of liner.
  - Tetra Tech inspected the subgrade and found muddy spots as well as erosion of the subgrade from the heavy rain.
    - Tetra Tech deemed the subgrade unacceptable for deployment, requiring time to dry out and repairs.
- Layfield moved to detail extrusion work, vacuum testing, and pressure testing for the rest of the day.

2.3 August 11, 2020

- Weather: mostly sunny.
- See Figures 3 through 6.
- Ewing is repairing subgrade washed out by rain.
  - Ewing completed the repairs at 1:00 pm, and Tetra Tech approved the subgrade for deployment.
- Layfield is performing detail extrusion work, vacuum box testing, and pressure testing of seams.
- After subgrade repairs were completed, Layfield began deploying liner.
  - Layfield deployed three runs of liner.

2.4 August 12, 2020

- Weather: rain in the morning, turning to cloudy with periods of rain in the afternoon.
- Layfield took the morning off due to rain and arrived on site at 12:20 pm to begin work.
- Subgrade conditions are too saturated to deploy liner.
- Layfield is performing detail extrusion work, vacuum box testing, and pressure testing of seams.
  - Layfield qualified the extruders, and then rain began again at 1:00 pm.
  - Layfield left site at 3:00 pm because the periods of rain did not cease.

2.5 August 13, 2020

- Weather: Cloudy and raining, with rain ceasing in the afternoon.
- Ewing is repairing subgrade for deployment.
- Layfield is continuing detail work on deployed liner.
  - Layfield qualified the extruders, and then it began raining.
  - Rain ceased at 1:00 pm, and Layfield began detail work for the rest of the day.
- Tetra Tech and Layfield's QC conducted destructive testing of obtained samples.
  - D155A failed due to peel into the weld. As the sample was obtained from the anchor trench, Layfield will obtain a sample 3 m from the sample location and retest. If the test fails, Layfield will extrude the seam.
    - D155B was obtained 3.0 m down seam from 155A and passed destructive testing. Layfield patched the destruct location and extrusion welded between patches.

2.6 August 14, 2020

- Weather: cloudy with periods of wind.
- See Figures 7 through 14.
- Ewing is repairing subgrade in the northeast corner.
  - Ewing repaired the subgrade along the area prior to deployment by scraping the saturated subgrade and placing sand over rocky areas.
  - Ewing continued to repair the subgrade in the northeast corner throughout the day.
  - Tetra Tech approved the areas for today's deployment.
- Layfield began the day by prepping areas for deployment and continued detail extrusion work, including finishing the tie in to Phase 1A.
  - Layfield deployed three runs of liner prior to 4:00 pm, then bagged off the deployed liner. No further deployment as we're waiting for subgrade to be prepped.
- Layfield continued conducting pressure testing on deployed and detailed liner.
- Layfield obtained destructive samples for testing.

2.7 August 15, 2020

- Weather: mostly cloudy, turning to rain in the later afternoon.
- See Figures 15 through 25.
- Ewing is continuing to prepare subgrade for deployment.
- Tetra Tech approved the subgrade in the northeast corner for deployment.
- Layfield is deploying GCL and liner.
  - Layfield started on the east side of the corner, working towards the deployed liner.
  - Layfield deployed eight runs of liner.
  - Rain shut down deployment at 5:00 pm.

2.8 August 16, 2020

- Weather: cloudy with periods of rain ending at 9:00 am.
- See Figures 26 through 39.
- Ewing is continuing to prepare subgrade in advance of deployment.
  - Tetra Tech noted soft spots along the E4 Lateral.
    - Ewing will excavate out the soft material and replace with rockier material then skim with sand.
  - Tetra Tech inspected the entire subgrade and found many areas that were deficient due to either being soft or yielding when stepped on, organics protruding from the surface, or rocky areas requiring sand cover.

- Soft areas were identified based on cracks left by rolling with a packer, meaning that the ground was deflecting under the weight of the packer.
- Soft areas could also be identified by wheel ruts from pickup traffic.
- Many of the soft spots are associated with the E2, E3, and E4 Lateral Drains.
- After consulting with Clint Green, Tetra Tech informed Ewing that the soft spots would have to be fixed.

- Tetra Tech and Ewing worked together on a cluster of soft spots to determine what remedial works would be required to repair them.
  - Subexcavation of 600 to 700 mm of colluvium, then backfill with rock fill was required to repair the soft spots.
  - Ewing will coat the rock fill with sand prior to deployment.
- Layfield is continuing to fill in the northeast corner with liner.
  - Tetra Tech inspected the subgrade to assess whether yesterday's rain impacted the subgrade. The subgrade was deemed acceptable for deployment.
  - Layfield completed deployment in the northeast corner by 12:30 pm.
  - Layfield finished the day conducting detail work, pressure testing, and cleaning up.

3.0 GEOSYNTHETIC ROLL NUMBERS PLACED

Table 1 summarizes the daily geosynthetic roll numbers placed on the slope during liner installation. All panel lengths are approximate, and where angled joints are used, panel length is based from the center of the panel.

Table 1: Geosynthetic Roll Numbers Placed on Slope

Date	GCL Roll Number	LLDPE Liner Roll Number	Panel Number (Length)
August 10	-	10690-013	P354 (4.7 m)
August 11	502344124, 502347054 502344120, 502344134 502344119, 502347010 502347023, 502344111 502347045, 502347046 502347069, 502346931 502347057, 502346998 502347065, 502343589	10699-021 10699-028 10699-022 10692-006 10699-023	P355 (51.5 m) P356 (52.5 m), P357 (73.2 m) P358 (90.7 m), P359 (36.7 m) P360 (47.3 m) P361 (77 m)
August 12	-	-	-
August 13	-	-	-
August 14	502343597, 502343627 502343635, 502347064 502343624, 502343633 502343596, 502346929 502343625, 502346923 502347072, 502347068 502347062, 502344110 502346999, 502343640	10699-028 10699-023 10699-008 10699-020 10699-010	P362 (4.2 m) P363 (51.0 m) P364 (92.0 m), P365 (34.4 m) P366 (107.1 m), P367 (30.4 m) P368 (118.3 m)

Date	GCL Roll Number	LLDPE Liner Roll Number	Panel Number (Length)
August 15	0242-347582, 0242347602 0242-347596 502346933, 502344122 502344118, 502344116 502344130, 502344136 502344135, 502343634 502346924, 502343609 502347056, 502344114 502343642, 502344121 502346985, 502343640 502343643, 502347067 502343628, 502346934 502346984, 502347051 502347048, 502344131 502347047, 502347070 502347063, 502346926 502344597, 502346932	10699-036 10699-009 10699-033 10699-011 10699-026 10699-024 10699-019 10699-025 10699-015	P369 (123.4 m) P370 (23.0 m), P371 (100.4 m) P372 (39.8 m), P373 (81.7 m) P374 (52.6 m), P375 (71.4 m) P376 (56.8 m), P377 (63.1 m) P378 (58.8 m), P379 (63.7 m) P380 (51.4 m), P381 (71.9 m) P382 (35.3 m), P383 (83.6 m) P384 (15.5 m)
August 16	502343644, 502343606 502343621, 502344604 502344017, 502343605 502347053, 502347048 502247061, 502346990 502344602, 502344611 502344028	10699-015 10699-007 10699-032 10699-007 10699-032 10699-006	P385 (91.2 m), P386 (9.7 m) P387 (73.7 m), P388 (30.5 m) P389 (24.6 m), P390 (14.3 m) P391 (10.7 m), P392 (19.9 m) P393 (11.6 m), P394 (29.6 m), P395 (22.7 m) P396 (5.6 m), P397 (25.7 m), P398 (16.9 m), P399 (11.4 m), P400 (4.6 m), P401 (6.1 m), P402 (8.7 m)

4.0 TRIAL SEAM

Table 2 summarizes the weekly trial seam results. For fusion, the apparatus settings are temperature and speed, and for extrusion, the apparatus settings are preheat and barrel temperature. Five tests are performed for each criterion.

Table 2: Trial Seam Results

Date	Time	Fusion or Extrusion	Tech	Apparatus #	Temp or Preheat (°F)	Speed (%) or Barrel Temp (°F)	$Peel_{inside}$ (100 min)	$Peel_{outside}$ (100 min for Fusion 88 min for Extrusion)	Shear (120 min)	Smooth or Textured
Aug 10	8:00	Fusion	EA	WW-022	850	40	160 153 145 143 144	160 145 152 145 148	164 165 168 170 163	Smooth-Textured

Date	Time	Fusion or Extrusion	Tech	Apparatus #	Temp or Preheat (°F)	Speed (%) or Barrel Temp (°F)	$Peel_{inside}$ (100 min)	$Peel_{outside}$ (100 min for Fusion 88 min for Extrusion)	Shear (120 min)	Smooth or Textured
Aug 10	8:50	Fusion	CC	WW-045	850	55	152 144 133 127 143	130 129 130 132 146	160 169 163 152 153	Smooth
Aug 10	13:00	Extrusion	GP	04037	500	495	N/A	131 109 122 125 127	160 153 153 161 163	N/A
Aug 10	13:00	Extrusion	RP	O4037	500	495	N/A	121 128 137 107 122	155 148 161 158 163	N/A
Aug 10	13:00	Extrusion	RW	EX-35	495	495	N/A	163 140 152 158 149	166 160 166 157 160	N/A
Aug 10	13:00	Extrusion	EA	EX-035	495	495	N/A	117 126 139 131 131	170 168 158 165 166	N/A
Aug 11	8:40	Extrusion	GP	EX-023	495	490	N/A	135 124 131 141 137	156 162 171 178 165	N/A
Aug 11	8:40	Extrusion	RP	EX-023	495	490	N/A	129 129 136 146 132	162 165 172 167 159	N/A
Aug 11	9:00	Extrusion	EA	04037	505	500	N/A	134 114 124 116 118	174 160 186 171 183	N/A
Aug 11	9:00	Extrusion	RW	04037	505	500	N/A	92 103 128 117 128	142 165 182 175 167	N/A

Date	Time	Fusion or Extrusion	Tech	Apparatus #	Temp or Preheat (°F)	Speed (%) or Barrel Temp (°F)	$Peel_{inside}$ (100 min)	$Peel_{outside}$ (100 min for Fusion 88 min for Extrusion)	Shear (120 min)	Smooth or Textured
Aug 11	13:45	Extrusion	RW	04037	500	495	M/A	115 117 115 114 123	143 145 139 140 141	N/A
Aug 11	13:45	Extrusion	EA	04037	500	495	N/A	129 121 123 125 117	142 142 135 151 157	N/A
Aug 11	16:00	Fusion	JK	WW-022	850	35	148 155 151 155 140	156 138 153 150 143	169 175 170 186 171	Textured
Aug 11	16:00	Fusion	JC	WW-045	850	55	142 140 132 145 147	129 119 134 138 139	162 166 160 163 160	Smooth
Aug 11	16:00	Fusion	JK	WW-022	850	55	144 137 122 137 138	131 131 129 128 125	145 153 143 152 142	Smooth
Aug 11	16:00	Fusion	JC	WW-045	850	35	158 159 151 153 155	146 149 140 158 145	176 161 169 154 177	Textured
Aug 11	17:30	Extrusion	EA	04037	500	495	N/A	129 140 128 137 145	128 144 164 164 159	N/A
Aug 11	17:30	Extrusion	RW	04037	500	495	N/A	130 127 135 134 129	151 168 160 172 154	N/A
Aug 13	8:00	Extrusion	GP	04037	500	495	N/A	97 109 100 98 104	166 173 173 167 173	N/A

Date	Time	Fusion or Extrusion	Tech	Apparatus #	Temp or Preheat (°F)	Speed (%) or Barrel Temp (°F)	$Peel_{inside}$ (100 min)	$Peel_{outside}$ (100 min for Fusion 88 min for Extrusion)	Shear (120 min)	Smooth or Textured
Aug 13	8:00	Extrusion	EA	04037	500	495	N/A	121 126 125 102 144	175 162 176 175 173	N/A
Aug 13	8:00	Extrusion	RW	EX-023	495	495	N/A	121 139 123 133 139	171 172 177 157 160	N/A
Aug 13	13:15	Extrusion	GP	04037	500	495	N/A	157 139 128 135 144	185 181 162 184 186	N/A
Aug 13	13:15	Extrusion	RW	EX-023	495	495	N/A	101 107 134 135 119	167 154 147 173 168	N/A
Aug 13	13:15	Extrusion	EA	04037	500	495	N/A	114 103 128 147 122	152 160 161 179 169	N/A
Aug 13	17:00	Extrusion	GP	04037	500	495	N/A	126 123 131 134 127	164 161 159 160 162	N/A
Aug 13	17:00	Extrusion	EA	04037	500	495	N/A	122 124 118 120 126	175 157 163 161 160	N/A
Aug 13	15:20	Extrusion	RW	04037	495	495	N/A	130 131 124 133 138	142 143 150 145 144	N/A
Aug 14	8:15	Extrusion	RW	EX-023	500	495	N/A	100 137 101 144 144	163 162 163 161 164	N/A

Date	Time	Fusion or Extrusion	Tech	Apparatus #	Temp or Preheat (°F)	Speed (%) or Barrel Temp (°F)	$Peel_{inside}$ (100 min)	$Peel_{outside}$ (100 min for Fusion 88 min for Extrusion)	Shear (120 min)	Smooth or Textured
Aug 14	8:15	Extrusion	EA	EX-023	500	495	N/A	103 127 112 120 108	165 170 171 164 172	N/A
Aug 14	12:30	Extrusion	RW	EX-023	500	495	N/A	131 131 129 104 133	172 159 164 164 163	N/A
Aug 14	12:30	Extrusion	EA	EX-023	500	495	N/A	135 135 152 140 130	149 153 161 153 151	N/A
Aug 14	13:00	Fusion	CC	WW-054	850	35	125 136 143 138 128	128 144 129 156 134	157 158 156 154 147	Textured
Aug 14	13:00	Fusion	JK	WW-022	850	55	138 148 142 141 115	142 133 129 136 137	151 147 158 135 151	Smooth
Aug 14	13:00	Fusion	CC	WW-054	850	55	153 147 149 151 145	142 142 141 142 143	153 157 150 157 143	Smooth
Aug 14	13:00	Fusion	JK	WW-022	850	35	140 146 144 147 147	151 154 146 156 147	165 154 165 158 171	Textured
Aug 14	16:45	Extrusion	RW	EX-023	500	495	N/A	110 121 110 115 111	149 171 172 157 167	N/A
Aug 14	16:45	Extrusion	EA	EX-023	500	495	N/A	112 115 110 106 108	150 144 151 164 149	N/A

Date	Time	Fusion or Extrusion	Tech	Apparatus #	Temp or Preheat (°F)	Speed (%) or Barrel Temp (°F)	$Peel_{inside}$ (100 min)	$Peel_{outside}$ (100 min for Fusion 88 min for Extrusion)	Shear (120 min)	Smooth or Textured
Aug 15	11:00	Extrusion	EA	EX-023	500	495	N/A	175 171 129 157 162	185 176 182 193 184	N/A
Aug 15	11:00	Fusion	CC	WW-054	850	55	151 158 153 149 148	166 164 159 160 144	158 161 157 160 174	Smooth
Aug 15	11:00	Fusion	RW	WW-045	850	35	130 138 154 136 157	145 156 156 151 154	159 172 172 172 156	Textured
Aug 15	11:00	Fusion	JK	WW-022	850	55	127 129 130 130 133	142 141 145 142 133	147 148 138 151 150	Smooth
Aug 15	11:00	Fusion	JK	WW-022	850	35	133 114 151 132 156	138 139 142 157 144	170 175 171 171 178	Textured
Aug 15	15:00	Fusion	CC	WW-054	850	55	158 141 142 141 134	136 156 153 148 152	160 165 166 161 161	Smooth
Aug 15	15:00	Fusion	JK	WW-022	850	55	137 142 135 130 129	135 135 141 132 136	147 153 161 154 154	Smooth
Aug 15	15:00	Fusion	RW	WW-045	850	35	161 155 145 142 143	151 139 153 132 137	162 163 165 170 157	Textured
Aug 15	13:00	Extrusion	EA	EX-023	500	495	N/A	129 138 140 132 141	159 179 159 169 168	N/A

Date	Time	Fusion or Extrusion	Tech	Apparatus #	Temp or Preheat (°F)	Speed (%) or Barrel Temp (°F)	$Peel_{inside}$ (100 min)	$Peel_{outside}$ (100 min for Fusion 88 min for Extrusion)	Shear (120 min)	Smooth or Textured
Aug 16	10:30	Fusion	CC	WW-045	850	55	138 143 138 141 136	145 152 142 138 150	152 160 158 163 172	Smooth
Aug 16	10:30	Fusion	GP	WW-054	850	35	130 156 153 161 146	154 151 153 131 132	178 181 181 183 167	Textured
Aug 16	10:30	Fusion	JK	WW-022	850	55	134 132 132 126 130	141 140 140 138 136	161 154 163 155 156	Smooth
Aug 16	10:30	Extrusion	EA	EX-023	500	495	N/A	133 143 148 149 138	175 174 175 167 165	N/A
Aug 16	12:15	Fusion	JC	WW-054	850	55	133 148 137 140 134	140 140 141 137 141	152 154 159 159 157	Smooth
Aug 16	14:00	Fusion	CC	WW-045	850	40	109 121 129 127 129	101 122 127 129 117	148 145 146 146 152	Smooth-Textured
Aug 16	14:00	Fusion	JK	WW-022	850	40	119 116 136 125 125	127 129 128 119 145	155 150 159 158 154	Smooth-Textured
Aug 16	14:30	Extrusion	EA	EX-023	500	495	N/A	129 150 140 137 135	174 175 159 169 167	N/A

5.0 NON-DESTRUCTIVE TESTING

Table 3 summarizes the weekly non-destructive pressure testing results.

Table 3: Non-Destructive Testing Results

Date Fused	Date Tested	Time Tested	Seam #	psi Start	psi End	Pass or Fail	Notes
Aug 1	Aug 11	11:40	P235-P238 Vertical	40	40	Pass	Top of seam to first patch
Aug 1	Aug 11	14:21	P232-P235 Vertical	40	40	Pass	
Aug 1	Aug 11	11:50	P235-P238 Vertical	40	38	Pass	Between patches
Aug 1	Aug 11	10:17	P235-P238 vertical	40	40	Pass	Second patch to bottom of seam
Aug 3	Aug 11	13:19	P268-P269 Cross	40	39	Pass	
Aug 4	Aug 11	13:00	P276-P277 Cross	40	40	Pass	
Aug 4	Aug 11	13:19	P269-P277 Vertical	40	40	Pass	
Aug 4	Aug 11	13:00	P268-P277 Vertical	40	38	Pass	
Aug 4	Aug 11	13:00	P268-P276 Vertical	40	40	Pass	
Aug 4	Aug 11	13:23	P279-P280 Cross	40	39	Pass	
Aug 4	Aug 11	12:36	P280-P281 Cross	40	40	Pass	
Aug 4	Aug 11	12:36	P277-P281 Vertical	40	40	Pass	
Aug 4	Aug 11	12:35	P277-P280 Vertical	40	40	Pass	
Aug 4	Aug 11	12:55	P276-P280 Vertical	40	40	Pass	
Aug 4	Aug 11	12:55	P283-P284 Cross	40	40	Pass	
Aug 4	Aug 11	13:06	P281-P284 Vertical	40	40	Pass	
Aug 4	Aug 11	12:33	P280-P284 Vertical	40	40	Pass	
Aug 4	Aug 11	12:55	P280-P283 Vertical	40	40	Pass	
Aug 5	Aug 11	13:24	P286-P287 Cross	40	40	Pass	
Aug 5	Aug 11	13:01	P287-P288 Cross	40	39	Pass	
Aug 5	Aug 11	13:00	P284-P288 Vertical	40	39	Pass	
Aug 5	Aug 11	12:53	P283-P287 Vertical	40	40	Pass	
Aug 5	Aug 11	12:20	P291-P292 Cross	40	40	Pass	
Aug 5	Aug 11	13:05	P288-P292 Vertical	40	40	Pass	
Aug 5	Aug 11	12:20	P287-P292 Vertical	40	40	Pass	
Aug 5	Aug 11	12:25	P287-P291 Vertical	40	40	Pass	
Aug 5	Aug 11	12:40	P294-P295 Cross	40	40	Pass	
Aug 5	Aug 11	12:12	P292-P295 Vertical	40	40	Pass	
Aug 5	Aug 11	12:15	P291-P295 Vertical	40	40	Pass	Top of seam to patch
Aug 5	Aug 11	12:25	P291-P295 Vertical	40	40	Pass	Patch to bottom of seam
Aug 6	Aug 11	12:11	P295-P296 Vertical	40	39	Pass	
Aug 6	Aug 11	8:02	P296-P297 Vertical	40	40	Pass	
Aug 6	Aug 11	8:15	P297-P298 Vertical	40	40	Pass	
Aug 6	Aug 11	9:16	P308-P309 Vertical	40	40	Pass	
Aug 6	Aug 11	8:44	P307-P308 Vertical	40	40	Pass	
Aug 6	Aug 11	8:29	P305-P306 Cross	40	40	Pass	
Aug 6	Aug 11	8:41	P306-P307 Vertical	40	40	Pass	
Aug 6	Aug 11	8:52	P304-P306 Vertical	40	40	Pass	Top of seam to patch
Aug 6	Aug 11	8:41	P305-P307 Vertical	40	40	Pass	
Aug 6	Aug 11	8:26	P304-P305 Vertical	40	40	Pass	
Aug 6	Aug 11	8:29	P304-P306 vertical	40	40	Pass	Patch to bottom of seam
Aug 6	Aug 11	8:24	P303-P304 Vertical	40	40	Pass	

Date Fused	Date Tested	Time Tested	Seam #	psi Start	psi End	Pass or Fail	Notes
Aug 6	Aug 11	8:18	P300-P301 Cross	40	40	Pass	
Aug 6	Aug 11	8:19	P301-P302 Vertical	40	39	Pass	
Aug 6	Aug 11	7:56	P302-P303 Vertical	40	40	Pass	
Aug 6	Aug 11	8:02	P300-P302 Vertical	40	40	Pass	
Aug 6	Aug 11	8:18	P299-P301 Vertical	40	40	Pass	
Aug 6	Aug 11	8:07	P299-P300 Vertical	40	40	Pass	
Aug 6	Aug 11	15:05	P299-P319 Vertical	40	40	Pass	
Aug 6	Aug 11	9:18	P309-P310 Vertical	40	40	Pass	
Aug 6	Aug 11	14:46	P314-P315 Vertical	40	39	Pass	
Aug 6	Aug 11	9:26	P310-P311 Vertical	40	38	Pass	
Aug 6	Aug 11	10:57	P312-P313 Cross	40	40	Pass	
Aug 6	Aug 11	10:50	P311-P313 Vertical	40	40	Pass	
Aug 6	Aug 11	10:36	P311-P312 Vertical	40	40	Pass	Top of seam to first patch
Aug 6	Aug 11	10:37	P311-P312 Vertical	40	40	Pass	First patch to second patch
Aug 6	Aug 11	10:35	P311-P312 Vertical	40	40	Pass	Second patch to bottom of seam
Aug 6	Aug 11	15:12	P313-P314 Vertical	40	40	Pass	
Aug 6	Aug 11	14:43	P312-P314 Vertical	40	40	Pass	
Aug 6	Aug 11	15:00	P316-P317 Cross	40	40	Pass	
Aug 6	Aug 11	14:59	P315-P317 Vertical	40	39	Pass	
Aug 6	Aug 11	15:05	P298-P319 Tie In	40	40	Pass	
Aug 6	Aug 11	15:00	P317-P318 Vertical	40	37	Pass	
Aug 6	Aug 11	8:15	P298-P299 Tie In	40	38	Pass	
Aug 6	Aug 11	8:02	P297-P300 Tie In	40	40	Pass	
Aug 6	Aug 11	14:58	P315-P316 Vertical	40	40	Pass	
Aug 6	Aug 11	15:00	P296-P302 Tie In	40	40	Pass	
Aug 6	Aug 11	15:00	P316-P318 Vertical	40	40	Pass	
Aug 6	Aug 11	8:07	P297-P299 Tie In	40	40	Pass	
Aug 6	Aug 11	17:30	P294-P318 Tie In	40	40	Pass	
Aug 6	Aug 11	14:58	P294-P216 Tie In	40	40	Pass	
Aug 6	Aug 11	14:58	P294-P315 Tie In	40	39	Pass	
Aug 6	Aug 11	14:43	P294-P314 Tie In	40	40	Pass	
Aug 6	Aug 11	14:43	P294-P312 Tie In	40	40	Pass	
Aug 6	Aug 11	9:32	P294-P311 Tie In	40	40	Pass	
Aug 6	Aug 11	9:18	P295-P310 Tie In	40	40	Pass	
Aug 6	Aug 11	9:18	P295-P309 Tie In	40	40	Pass	
Aug 6	Aug 11	8:44	P295-P308 Tie In	40	40	Pass	
Aug 6	Aug 11	8:44	P295-P307 Tie In	40	40	Pass	
Aug 6	Aug 11	8:26	P295-P305 Tie in	40	40	Pass	
Aug 6	Aug 11	8:24	P295-P304 Tie In	40	40	Pass	
Aug 6	Aug 11	8:24	P295-P303 Tie In	40	40	Pass	
Aug 7	Aug 11	17:04	P320-P321 Cross	40	40	Pass	
Aug 7	Aug 11	17:04	P318-P321 Vertical	40	38	Pass	
Aug 7	Aug 11	17:04	P318-P320 Vertical	40	40	Pass	
Aug 7	Aug 11	17:14	P323-P324 Cross	40	40	Pass	
Aug 7	Aug 11	17:05	P322-P321 Vertical	40	39	Pass	
Aug 7	Aug 11	17:05	P320-P322 Vertical	40	40	Pass	
Aug 7	Aug 11	17:14	P322-P324 Vertical	40	40	Pass	
Aug 7	Aug 11	17:14	P322-P323 Cross	40	40	Pass	

Date Fused	Date Tested	Time Tested	Seam #	psi Start	psi End	Pass or Fail	Notes
Aug 2	Aug 13	17:47	P256-P257 Cross	40	40	Pass	
Aug 3	Aug 13	17:26	P257-P258 Vertical	40	39	Pass	
Aug 3	Aug 13	17:30	P258-P261 Vertical	40	40	Pass	
Aug 3	Aug 13	17:46	P261-P264 Vertical	40	40	Pass	
Aug 3	Aug 13	18:07	P264-P267 Cross	40	40	Pass	
Aug 3	Aug 13	17:25	P258-P270 Cross	40	40	Pass	
Aug 3	Aug 13	17:45	P261-P271 Vertical	40	40	Pass	
Aug 3	Aug 13	17:25	P257-P270 Vertical	40	39	Pass	
Aug 3	Aug 13	18:25	P267-P274 Cross	40	40	Pass	
Aug 3	Aug 13	18:05	P264-P272 Cross	40	40	Pass	
Aug 3	Aug 13	17:47	P256-P270 Vertical	40	40	Pass	
Aug 3	Aug 13	17:31	P261-P270 Vertical	40	40	Pass	
Aug 3	Aug 13	17:31	P270-P271 Vertical	40	40	Pass	
Aug 3	Aug 13	17:45	P264-P271 Vertical	40	40	Pass	
Aug 3	Aug 13	18:40	P273-P274 Cross	40	40	Pass	
Aug 3	Aug 13	18:05	P271-P272 Vertical	40	40	Pass	
Aug 3	Aug 13	18:40	P272-P273 Vertical	40	40	Pass	
Aug 3	Aug 13	18:06	P267-P272 Vertical	40	40	Pass	
Aug 3	Aug 13	18:07	P272-P274 Vertical	40	40	Pass	
Aug 4	Aug 13	16:35	P275-P276 Cross	40	40	Pass	
Aug 4	Aug 13	16:35	P267-P276 Vertical	40	40	Pass	
Aug 4	Aug 13	18:30	P267-P275 Vertical	40	39	Pass	
Aug 4	Aug 13	18:25	P274-P275 Vertical	40	40	Pass	
Aug 4	Aug 13	18:35	P273-P275 Vertical	40	40	Pass	
Aug 4	Aug 13	16:35	P276-P279 Vertical	40	40	Pass	
Aug 4	Aug 13	17:06	P282-P283 Cross	40	38	Pass	
Aug 4	Aug 13	18:45	P279-P282 Vertical	40	40	Pass	Top of seam to patch
Aug 4	Aug 13	16:20	P279-P283 Vertical	40	40	Pass	Top of seam to patch
Aug 4	Aug 13	16:43	P279-P283 Vertical	40	40	Pass	Patch to bottom of seam
Aug 5	Aug 13	14:05	P289-P290 Cross	40	40	Pass	
Aug 5	Aug 13	16:05	P284-P287 Vertical	40	40	Pass	
Aug 5	Aug 13	15:05	P290-P291 Cross	40	40	Pass	
Aug 5	Aug 13	16:10	P283-P286 Vertical	40	40	Pass	
Aug 5	Aug 13	17:06	P282-P286 Vertical	40	40	Pass	
Aug 5	Aug 13	15:07	P286-P291 Vertical	40	40	Pass	
Aug 5	Aug 13	14:00	P289-P293 Vertical	40	40	Pass	
Aug 5	Aug 13	15:05	P290-P294 Vertical	40	40	Pass	
Aug 5	Aug 13	14:05	P290-P293 Vertical	40	39	Pass	
Aug 5	Aug 13	15:05	P291-P294 Vertical	40	38	Pass	
Aug 9	Aug 13	13:25	P336-P338 Vertical	40	40	Pass	
Aug 9	Aug 13	13:35	P338-P341 Vertical	40	40	Pass	
Aug 10	Aug 13	13:42	P293-P345 Tie In	40	40	Pass	
Aug 10	Aug 13	13:40	P293-P343 Tie In	40	40	Pass	
Aug 10	Aug 13	13:40	P293-P341 Tie In	40	38	Pass	
Aug 10	Aug 13	13:24	P293-P338 Tie In	40	39	Pass	
Aug 10	Aug 13	17:38	P294-P323 Tie In	40	40	Pass	
Aug 10	Aug 13	17:38	P294-P322 Tie In	40	40	Pass	
Aug 10	Aug 13	17:31	P294-P320 Tie In	40	40	Pass	

Date Fused	Date Tested	Time Tested	Seam #	psi Start	psi End	Pass or Fail	Notes
Aug 3	Aug 14	14:51	P267-P268 Cross	40	40	Pass	
Aug 4	Aug 14	8:35	P278-P279 Cross	40	40	Pass	
Aug 4	Aug 14	9:05	P275-P279 Vertical	40	40	Pass	Top of seam to patch
Aug 4	Aug 14	8:35	P275-P279 Vertical	40	40	Pass	Patch to bottom of seam
Aug 4	Aug 14	8:35	P275-P278 Vertical	40	40	Pass	
Aug 4	Aug 14	8:37	P278-P282 Vertical	40	40	Pass	
Aug 4	Aug 14	8:37	P279-P282 Vertical	40	40	Pass	Patch to bottom of seam
Aug 5	Aug 14	8:40	P285-P286 Cross	40	40	Pass	
Aug 5	Aug 14	8:40	P282-P285 Vertical	40	40	Pass	
Aug 5	Aug 14	8:50	P286-P290 Vertical	40	40	Pass	
Aug 5	Aug 14	8:40	P285-P290 Vertical	40	40	Pass	
Aug 5	Aug 14	8:43	P293-P294 Cross	40	40	Pass	
Aug 7	Aug 14	9:35	P325-P326 Vertical	40	40	Pass	
Aug 7	Aug 14	9:26	P327-P328 Cross	40	40	Pass	
Aug 7	Aug 14	9:27	P326-P328 Vertical	40	40	Pass	
Aug 7	Aug 14	8:26	P329-P330 Vertical	40	40	Pass	
Aug 7	Aug 14	9:27	P326-P327 Vertical	40	40	Pass	
Aug 7	Aug 14	8:25	P330-P331 Vertical	40	40	Pass	
Aug 7	Aug 14	9:20	P328-P329 Vertical	40	40	Pass	
Aug 7	Aug 14	9:25	P327-P329 Vertical	40	40	Pass	
Aug 7	Aug 14	9:20	P324-P328 Vertical	40	40	Pass	
Aug 7	Aug 14	9:15	P323-P329 Vertical	40	40	Pass	
Aug 7	Aug 14	9:15	P323-P300 Vertical	40	40	Pass	
Aug 7	Aug 14	8:20	P232-P331 Vertical	40	40	Pass	
Aug 7	Aug 14	9:41	P332-P333 Cross	40	40	Pass	
Aug 7	Aug 14	10:10	P334-P335 Cross	40	40	Pass	
Aug 7	Aug 14	9:42	P325-P333 Vertical	40	40	Pass	
Aug 7	Aug 14	10:11	P333-P335 Vertical	40	40	Pass	
Aug 7	Aug 14	9:41	P325-P332 Vertical	40	40	Pass	
Aug 7	Aug 14	9:42	P333-P334 Vertical	40	40	Pass	
Aug 7	Aug 14	9:43	P332-P334 Vertical	40	40	Pass	
Aug 9	Aug 14	10:12	P336-P337 Cross	40	40	Pass	
Aug 9	Aug 14	15:45	P338-P339 Cross	40	39	Pass	
Aug 9	Aug 14	17:05	P339-P340 Cross	40	40	Pass	
Aug 9	Aug 14	10:05	P335-P337 Vertical	40	40	Pass	
Aug 9	Aug 14	15:57	P337-P340 Vertical	40	40	Pass	
Aug 9	Aug 14	10:05	P334-P337 Vertical	40	40	Pass	
Aug 9	Aug 14	17:05	P337-P339 Vertical	40	40	Pass	
Aug 9	Aug 14	10:13	P336-P339 Vertical	40	40	Pass	
Aug 9	Aug 14	10:12	P334-P336 Vertical	40	40	Pass	
Aug 9	Aug 14	17:11	P341-P342 Cross	40	39	Pass	
Aug 9	Aug 14	17:13	P343-P344 Cross	40	40	Pass	
Aug 9	Aug 14	16:02	P342-P344 Vertical	40	40	Pass	
Aug 9	Aug 14	15:58	P340-P342 Vertical	40	40	Pass	
Aug 9	Aug 14	17:05	P339-P342 Vertical	40	40	Pass	
Aug 9	Aug 14	17:11	P341-P344 Vertical	40	40	Pass	
Aug 9	Aug 14	15:43	P339-P341 Vertical	40	40	Pass	
Aug 9	Aug 14	15:21	P341-P343 Vertical	40	40	Pass	

Date Fused	Date Tested	Time Tested	Seam #	psi Start	psi End	Pass or Fail	Notes
Aug 9	Aug 14	15:48	P345-P346 Cross	40	40	Pass	
Aug 9	Aug 14	16:53	P347-P348 Cross	40	40	Pass	
Aug 9	Aug 14	16:03	P344-P346 Vertical	40	40	Pass	
Aug 9	Aug 14	17:13	P343-P346 Vertical	40	39	Pass	
Aug 9	Aug 14	15:22	P343-P345 Vertical	40	40	Pass	
Aug 9	Aug 14	16:03	P346-P348 Vertical	40	40	Pass	
Aug 9	Aug 14	16:53	P346-P347 Vertical	40	40	Pass	
Aug 9	Aug 14	15:22	P345-P347 Vertical	40	40	Pass	
Aug 9	Aug 14	17:35	P349-P350 Cross	40	40	Pass	
Aug 9	Aug 14	16:08	P348-P350 Vertical	40	40	Pass	
Aug 9	Aug 14	16:53	P347-P350 Vertical	40	40	Pass	
Aug 9	Aug 14	17:35	P347-P349 Vertical	40	39	Pass	Top of seam to patch
Aug 9	Aug 14	16:25	P352-P353 Cross	40	40	Pass	
Aug 9	Aug 14	15:24	P347-P349 Vertical	40	40	Pass	Patch to bottom of seam
Aug 9	Aug 14	16:11	P350-P353 Vertical	40	40	Pass	
Aug 9	Aug 14	16:25	P350-P352 Vertical	40	40	Pass	Top of seam to first patch
Aug 9	Aug 14	15:25	P349-P351 Vertical	40	40	Pass	
Aug 9	Aug 14	17:47	P350-P352 Vertical	40	40	Pass	Between patches
Aug 9	Aug 14	17:38	P350-P352 Vertical	40	38	Pass	Second patch to bottom of seam
Aug 10	Aug 14	13:51	P289-P354 Tie In	40	38	Pass	
Aug 10	Aug 14	13:40	P293-P354 Tie In	40	40	Pass	
Aug 10	Aug 14	13:57	P351-P354 Vertical	40	40	Pass	
Aug 10	Aug 14	17:38	P349-P352 Vertical	40	40	Pass	
Aug 10	Aug 14	13:40	P293-P349 Tie In	40	40	Pass	
Aug 10	Aug 14	15:12	P293-P347 Tie In	40	40	Pass	
Aug 10	Aug 14	12:10	P292-P336 Tie In	40	40	Pass	
Aug 10	Aug 14	8:44	P293-P334 Tie In	40	40	Pass	
Aug 10	Aug 14	8:43	P294-P332 Tie In	40	40	Pass	
Aug 10	Aug 14	8:35	P294-P325 Tie In	40	40	Pass	
Aug 10	Aug 14	8:35	P294-P326 Tie In	40	38	Pass	
Aug 10	Aug 14	8:29	P294-P327 Tie In	40	40	Pass	
Aug 10	Aug 14	8:28	P294-P329 Tie In	40	40	Pass	
Aug 10	Aug 14	8:23	P294-P330 Tie In	40	40	Pass	
Aug 10	Aug 14	8:23	P294-P331 Tie In	40	40	Pass	
Aug 11	Aug 14	17:54	P355-P356 Cross	40	40	Pass	
Aug 11	Aug 14	16:20	P357-P358 Cross	40	40	Pass	
Aug 11	Aug 14	17:54	P352-P356 Vertical	40	40	Pass	
Aug 11	Aug 14	17:55	P356-P358 Vertical	40	40	Pass	
Aug 11	Aug 14	17:54	P352-P355 Vertical	40	40	Pass	
Aug 11	Aug 14	18:06	P355-P358 Vertical	40	40	Pass	
Aug 11	Aug 14	16:20	P355-P357 Vertical	40	40	Pass	
Aug 11	Aug 14	18:28	P358-P360 Vertical	40	40	Pass	
Aug 11	Aug 14	18:27	P357-P360 Vertical	40	40	Pass	
Aug 11	Aug 15	13:25	P351-P355 Vertical	40	40	Pass	
Aug 11	Aug 15	13:49	P360-P361 Cross	40	40	Pass	
Aug 11	Aug 15	13:37	P359-P360 Cross	40	39	Pass	
Aug 11	Aug 15	13:49	P358-P361 Vertical	40	40	Pass	
Aug 11	Aug 15	13:37	P357-P359 Vertical	40	40	Pass	

Date Fused	Date Tested	Time Tested	Seam #	psi Start	psi End	Pass or Fail	Notes
Aug 14	Aug 15	13:57	P363-P364 Cross	40	40	Pass	
Aug 14	Aug 15	13:49	P361-P364 Vertical	40	40	Pass	
Aug 14	Aug 15	14:08	P365-P366 Cross	40	40	Pass	
Aug 14	Aug 15	14:05	P360-P364 Vertical	40	40	Pass	
Aug 14	Aug 15	13:57	P363-P366 Vertical	40	40	Pass	
Aug 14	Aug 15	13:37	P360-P363 Vertical	40	40	Pass	
Aug 14	Aug 15	13:57	P364-P366 Vertical	40	40	Pass	
Aug 14	Aug 15	13:37	P359-P363 Vertical	40	40	Pass	
Aug 14	Aug 15	13:39	P359-P362 Vertical	40	40	Pass	
Aug 14	Aug 15	14:08	P365-P368 Vertical	40	40	Pass	
Aug 14	Aug 15	15:37	P366-P368 Vertical	40	40	Pass	Top of seam to patch
Aug 14	Aug 15	15:37	P366-P386 Vertical	40	40	Pass	Patch to bottom of seam
Aug 15	Aug 16	17:11	P369-P370 Cross	40	40	Pass	
Aug 15	Aug 16	16:52	P371-P372 Cross	40	40	Pass	
Aug 15	Aug 16	16:57	P370-P372 Vertical	40	40	Pass	
Aug 15	Aug 16	16:56	P369-P372 Vertical	40	40	Pass	
Aug 15	Aug 16	16:37	P369-P371 Vertical	40	40	Pass	
Aug 15	Aug 16	16:52	P373-P374 Cross	40	40	Pass	
Aug 15	Aug 16	16:55	P372-P374 Vertical	40	40	Pass	
Aug 15	Aug 16	16:53	P375-P376 Cross	40	40	Pass	
Aug 15	Aug 16	16:54	P371-P374 Vertical	40	40	Pass	
Aug 15	Aug 16	16:38	P371-P373 Vertical	40	40	Pass	
Aug 15	Aug 16	17:01	P374-P376 Vertical	40	40	Pass	
Aug 15	Aug 16	17:00	P373-P376 Vertical	40	38	Pass	
Aug 15	Aug 16	16:39	P373-P375 Vertical	40	40	Pass	
Aug 15	Aug 16	16:57	P377-P378 Cross	40	40	Pass	
Aug 15	Aug 16	17:26	P379-P380 Cross	40	40	Pass	
Aug 15	Aug 16	17:23	P376-P378 Vertical	40	39	Pass	
Aug 15	Aug 16	17:24	P378-P380 Vertical	40	40	Pass	
Aug 15	Aug 16	17:24	P378-P379 Vertical	40	40	Pass	
Aug 15	Aug 16	16:51	P377-P379 Vertical	40	40	Pass	
Aug 15	Aug 16	16:50	P375-P377 Vertical	40	40	Pass	
Aug 15	Aug 16	17:37	P381-P382 Cross	40	40	Pass	
Aug 15	Aug 16	17:42	P383-P384 Cross	40	40	Pass	
Aug 15	Aug 16	17:41	P382-P384 Vertical	40	40	Pass	
Aug 15	Aug 16	17:37	P380-P382 Vertical	40	40	Pass	
Aug 15	Aug 16	17:39	P382-P383 Vertical	40	39	Pass	
Aug 15	Aug 16	17:39	P381-P383 Vertical	40	40	Pass	
Aug 15	Aug 16	17:28	P380-P381 Vertical	40	40	Pass	
Aug 15	Aug 16	17:27	P379-P381 Vertical	40	40	Pass	
Aug 16	Aug 16	18:03	P367-P387 Cross	40	40	Pass	

6.0 DESTRUCTIVE TESTING

Table 4 summarizes the weekly destructive testing results. Five tests are performed for each criterion.

Table 4: Destructive Testing Results

Date Fused	Time Fused	Tech	Apparatus	Location (UTM is +/- 4 m)	Sample ID	$Peel_{in}$ (100 min)	$Peel_{out}$ (100 min)	Shear (120 min)	Pass or Fail
Aug 9	12:19	JC	WW-022	P342-P344 Vertical Top of Seam	D140	142 148 137 151 146	153 154 153 137 123	158 162 151 166 155	Pass
Aug 7	17:25	JC	WW-022	P325-P333 Vertical Bottom of Seam	D141	136 144 144 145 144	152 139 144 146 141	160 162 165 162 163	Pass
Aug 7	17:25	JC	WW-022	P325-P333 Vertical Top of Seam	D142	144 140 148 139 148	145 142 147 117 152	143 162 149 162 152	Pass
Aug 9	15:02	JC	WW-022	P343-P345 Vertical Bottom of Seam	D143	137 139 136 127 133	149 143 152 144 133	156 148 160 148 152	Pass
Aug 9	10:49	JC	WW-022	P336-P338 Vertical Top of Seam	D144	152 147 142 154 148	158 151 159 144 163	161 169 164 163 170	Pass
Aug 6	16:07	CC	WW-045	P295-P303 Tie In Bottom of Seam	D145	152 142 148 151 138	143 136 127 133 133	156 156 166 154 157	Pass
Aug 6	14:53	CC	WW-045	P296-P303 Tie In Bottom of Seam	D146	158 164 147 168 161	160 139 152 146 159	161 186 179 192 165	Pass
Aug 9	10:05	JC	WW-022	P337-P340 Vertical Top of Seam	D147	147 132 143 143 131	135 148 148 148 142	145 141 151 145 147	Pass

Date Fused	Time Fused	Tech	Apparatus	Location (UTM is +/- 4 m)	Sample ID	$Peel_{in}$ (100 min)	$Peel_{out}$ (100 min)	Shear (120 min)	Pass or Fail
Aug 9	9:52	JC	WW-022	P338-P339 Cross Left Side of Seam	D148	152 148 151 145 160	143 171 172 143 153	180 177 184 181 162	Pass
Aug 9	18:05	JC	WW-022	P349-P351 Vertical Bottom of Seam	D149	133 130 135 133 127	149 137 117 146 144	156 157 156 152 156	Pass
Aug 10	9:29	EA	WW-022	P293-P347 Tie In Top of Seam	D150	156 156 131 151 138	130 120 138 149 132	155 167 141 169 162	Pass
Aug 9	16:32	JC	WW-022	P345-P347 Vertical Bottom of Seam	D151	141 142 137 136 143	129 149 147 140 134	153 123 144 131 151	Pass
Aug 9	13:09	CC	WW-045	P338-P341 Vertical Bottom of Seam	D152	146 149 134 133 144	141 143 135 140 148	141 159 153 161 143	Pass
Aug 9	12:44	JC	WW-022	P301-P302 Vertical Top of Seam	D153	131 151 152 143 146	134 145 142 122 140	162 156 158 151 158	Pass
Aug 6	12:00	CC	WW-045	P306-P307 Vertical Top of Seam	D154	152 148 131 130 139	124 127 140 105 127	153 162 155 163 158	Pass
Aug 6	14:30	DT	WW-026	P317-P318 Vertical Top of Seam	D155A	138 136 136 140 139	130 141 140 142 145	156 135 149 126 149	Fail
Aug 7	13:56	CC	WW-045	P325-P326 Vertical Bottom of Seam	D156	131 140 130 124 135	119 137 142 128 139	155 164 164 166 154	Pass

Date Fused	Time Fused	Tech	Apparatus	Location (UTM is +/- 4 m)	Sample ID	$Peel_{in}$ (100 min)	$Peel_{out}$ (100 min)	Shear (120 min)	Pass or Fail
Aug 9	17:59	CC	WW-045	P350-P353 Vertical Top of Seam	D157	137 153 143 133 138	131 149 138 143 131	155 143 159 137 151	Pass
Aug 9	12:20	CC	WW-045	P340-P342 Vertical Top of Seam	D158	142 128 139 137 148	137 131 146 121 146	120 153 141 151 137	Pass
Aug 9	10:05	CC	WW-045	P335-P337 Vertical Top of Seam	D159	120 149 146 138 146	141 134 135 152 128	134 146 155 124 129	Pass
Aug 9	14:21	JC	WW-022	P344-P346 Vertical Top of Seam	D160	136 124 123 132 137	145 144 140 143 149	139 155 122 153 140	Pass
Aug 6	14:30	DT	WW-026	P317-P318 Vertical Top of Seam 3.0 m Down Seam from 155A	D155B	135 124 130 127 116	123 135 131 125 128	139 147 120 123 137	Pass

7.0 PHOTO LOG



Figure 1: Upper End of Subgrade



Figure 2: Damaged Subgrade due to Erosion



Figure 3: Detailing Work being Performed on Liner



Figure 4: Prepared and Inspected Subgrade



Figure 5: Deploying GCL



Figure 6: Overall Deployment at the End of August 11



Figure 7: Preparing Subgrade for Deployment

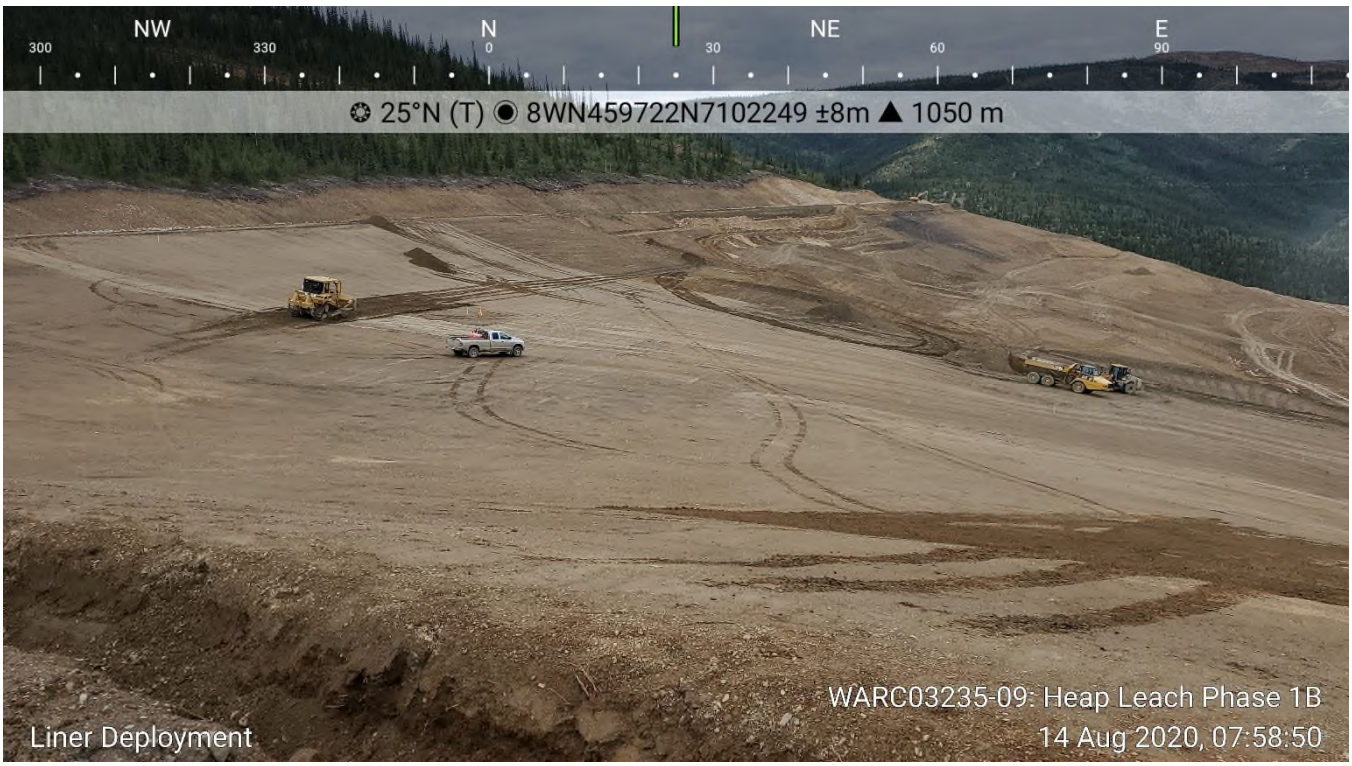


Figure 8: Preparing Subgrade in Northeast Corner



Figure 9: Prepared Subgrade for Deployment



Figure 10: Prepared Subgrade for Deployment



Figure 11: Area Requiring Sand prior to Deployment



Figure 12: Packing Northeast Corner

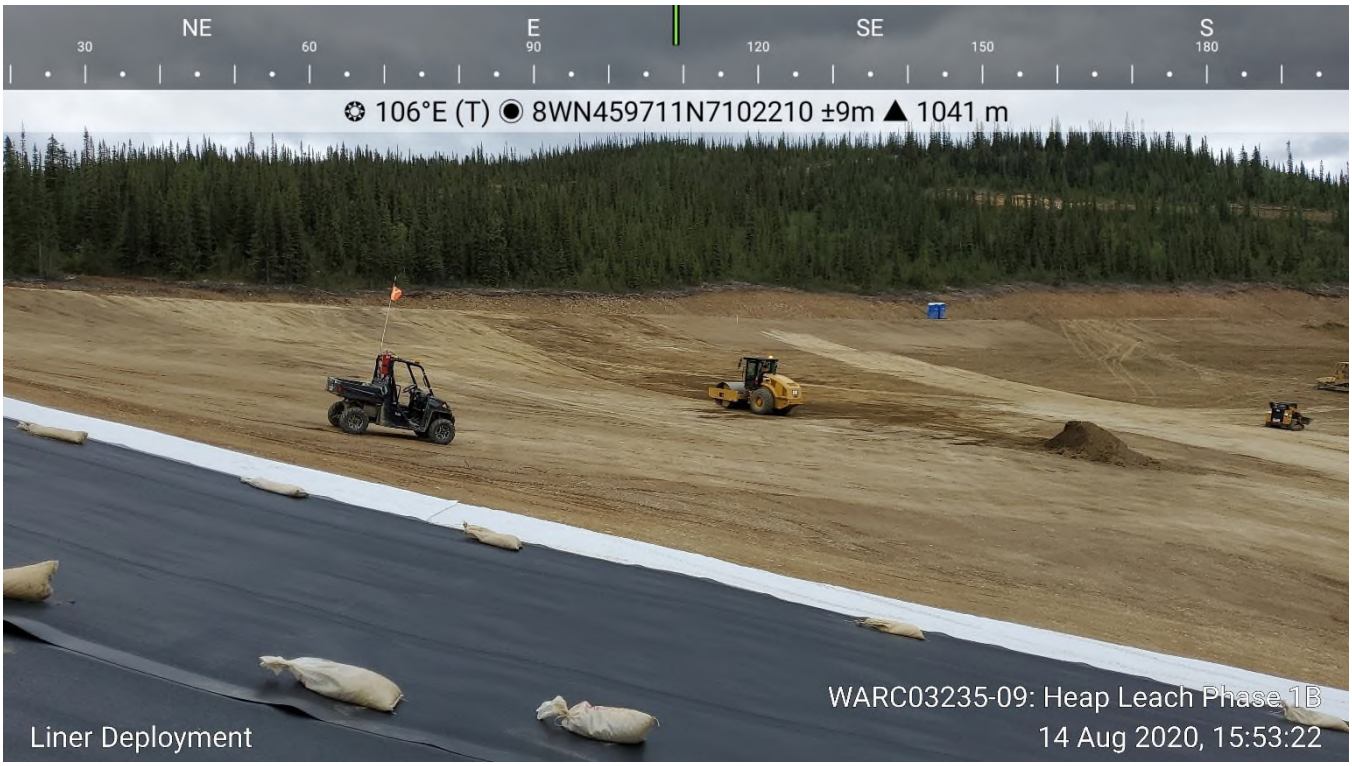


Figure 13: Packing Northeast Corner



Figure 14: Deployed GCL



Figure 15: Overall Deployment as of August 14

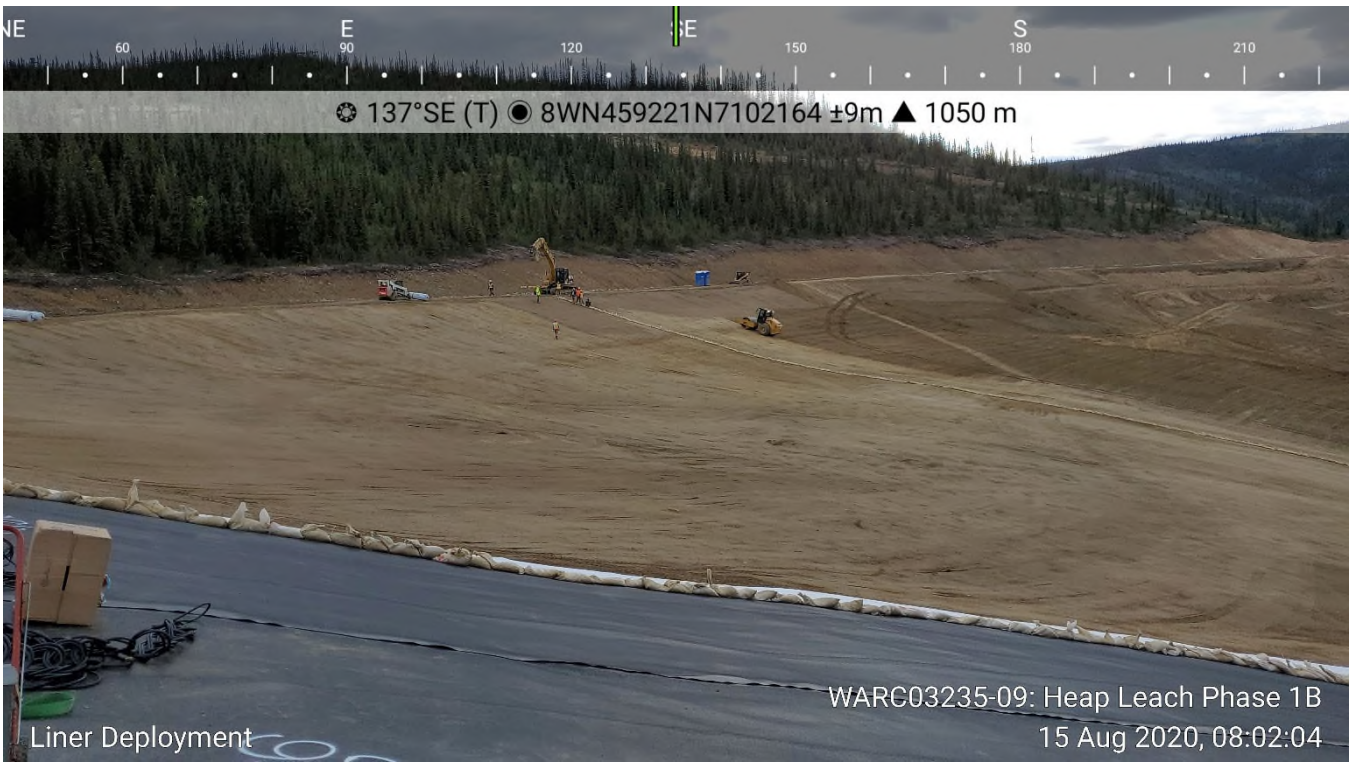


Figure 16: Prepared and Inspected Subgrade



Figure 17: Prepared and Inspected Subgrade



Figure 18: Prepared and Inspected Subgrade



Figure 19: Prepared and Inspected Subgrade



Figure 20: Holes in GCL



Figure 21: Holes in GCL Repaired



Figure 22: GCL Deployed on Slope



Figure 23: GCL Deployed on Slope



Figure 24: Liner Deployed on Slope



Figure 25: Overall Deployment as of August 15



Figure 26: GCL Deployed on Slope



Figure 27: Liner Deployed over GCL

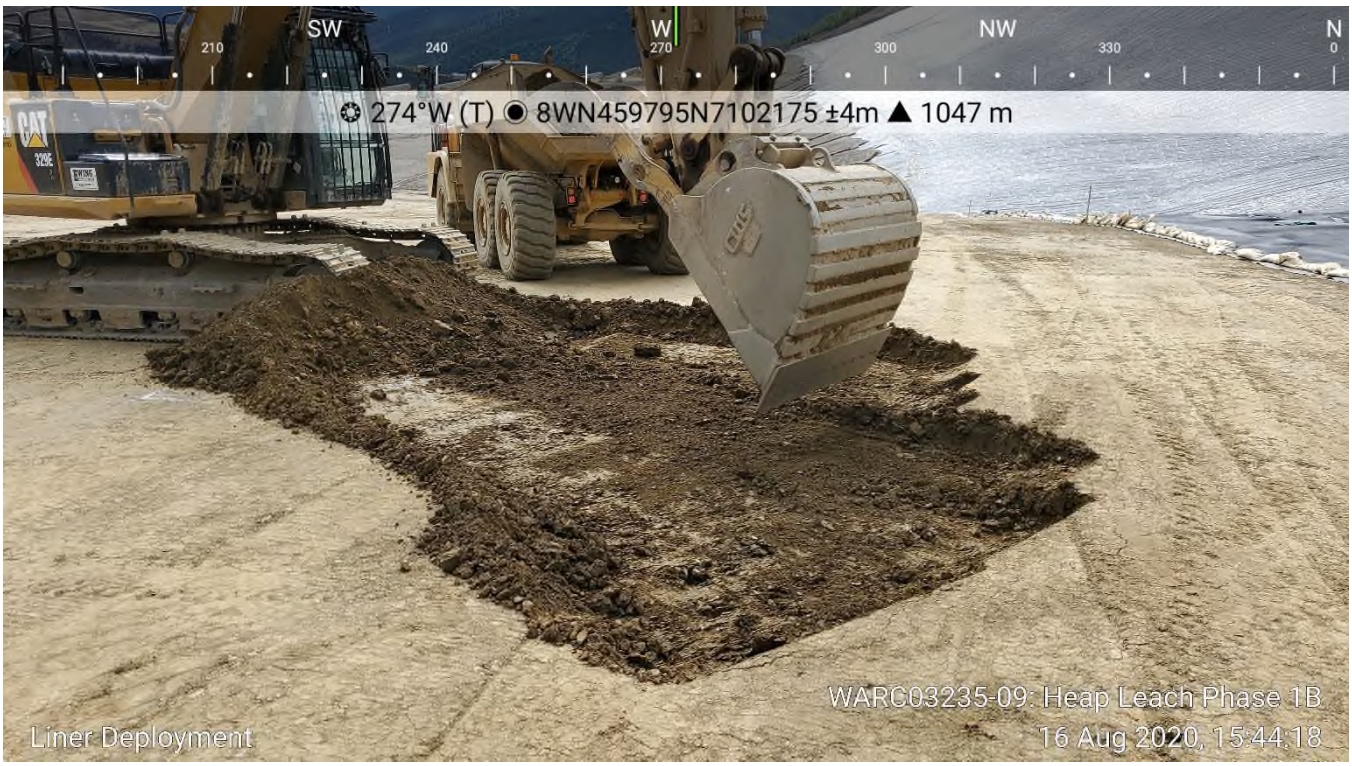


Figure 28: Excavating Subgrade Soft Spot 250 mm



Figure 29: Rolling Excavated Soft Spot



Figure 30: Subgrade after Rolling, Note the Marks Left by the Packer Showing 50 mm of Deflection



Figure 31: Soft Spot after Rolling



Figure 32: Excavating Soft Spot Adjacent to E3 Lateral



Figure 33: Backfilling Soft Spot with Rock Fill



Figure 34: Rock Fill after Compaction, Note the Indents Left by the Packer Drum



Figure 35: Rock Fill after 8 Passes with Packer



Figure 36: Excavating Soft Spot to 700 mm Depth



Figure 37: Soft Spot Excavation



Figure 38: Rock Fill after 2 Passes



Figure 39: Rock Fill During Compaction, Note Minimal Indents by Drum after 2 Passes

TETRA TECH

WEEKLY FIELD REPORT

ISSUED FOR USE

Project:	Eagle Gold Heap Leach Phase 1B	**Date:**	August 23, 2020
Location:	Eagle Gold Mine	**Contractor:**	Ewing Transport / Layfield
Client:	Victoria Gold Corp.	**Contractor's Rep:**	Marshall Ewing / Chad Messervey
Contact:	Clint Abel	**Contractor's Email:**	
Weather:	Variable (see daily entries)	**Tetra Tech Representative:**	Adam Mickey
File:	704-ENG.WARC03235-09	**Status:**	Issued for Use

1.0 INTRODUCTION

Tetra Tech Canada Inc. (Tetra Tech) was retained by Victoria Gold Corp. (Victoria Gold) to provide CQA services at the Eagle Gold mine located north of Mayo, Yukon, at Dublin Gulch for the Eagle Gold Heap Leach Phase 1B expansion (Phase 1B). Mr. Adam Mickey, EIT, is Tetra Tech's representative on site.

Forte Dynamics (Forte) out of Fort Collins, Colorado provided the design and specification for Phase 1B, and Forte's representative is Clint Green.

Clint Abel, of JDS Energy & Mining, is Victoria Gold's project manager on site at the Eagle Gold mine.

Ewing Transport (Ewing), based out of Mayo, Yukon, is the construction contractor for Phase 1B.

Layfield Environmental Containment (Layfield) has been retained to provide and install the liner for Phase 1B, and their supervisor on site is Chad Messervey.

The following Field Report outlines Tetra Tech's CQA for the period of August 17, 2020, to August 23, 2020.

2.0 DAILY REPORTS

2.1 Highlights

- Layfield deployed approximately 6,642.3 m of liner, covering an area of approximately 44,503 m^2.
- Rain delayed liner deployment throughout the week.
- Layfield is placing three panels of GCL for every two panels of 80 mm LLDPE liner.

2.2 August 17, 2020

- Weather: cloudy with sunny periods.
- Tetra Tech and Ewing had a meeting with Matthew Mock, Clint Abel, and Forte at 11 am to discuss the soft spot in the subgrade.
  - Over the laterals, permission was given to excavate them till 10 cm of sand remained over the drain rock and then backfill with rock fill.

Tetra Tech Canada Inc.
61 Wasson Place
Whitehorse, YT Y1A 0H7 CANADA
Tel 867.668.3068 Fax 867.668.4349

  - Areas not in conflict with laterals were to be excavated to competent ground and backfill with rock fill and compacted.

- Ewing conducted a test section over the 4E lateral, and subgrade conditions improved once the rockfill had been placed and compacted.
- After the test section, Ewing began working at the northernmost limit of soft spots along the 4E lateral.
  - Water was encountered during digging, and Ewing quickly backfilled to seal the water up.
  - Tetra Tech informed Clint Green and Clint Abel about the issue.
    - Clint Abel and Clint Green agreed that a sub-lateral should be run between 4E and 3E laterals to capture the water.
  - Ewing continued to work on other soft spots in the subgrade.
- Layfield deployed two slope lengths of liner and one slope length of GCL to complete the tie in seam to the panels deployed in a different direction.
- Layfield conducted pressure testing, vacuum box testing, and extrusion detail work on all deployed liner.
- Tetra Tech and Layfield conducted a walk-off of the deployed liner.
  - Five spots for extrusion and numerous places that required vacuum box testing were identified.
  - 70% of the walk-off was completed by the end of the day, with the rest to be completed on the next workday.
- Tetra Tech and Layfield conducted destructive testing of samples.
  - All samples passed, and destructive testing is caught up to all deployment up to and including August 16 (Panel P402).
- Due to subgrade not being ready for deployment, Layfield will be taking August 18 off.

2.3 August 18, 2020

- No work performed today due to no prepared subgrade.
- Ewing continued to work on subgrade.

2.4 August 19, 2020

- Weather: mostly cloudy.
- Ewing is continuing to work on subgrade in advance of deployment.
  - Ewing is identifying soft spots as they arise and repairing them by excavating the material and replacing it with rock fill.
- Tetra Tech inspected and approved the subgrade in advance of today's deployment.
- Layfield is deploying liner on the prepared subgrade.
  - Layfield deployed nine slope lengths of GCL and four slope lengths of liner by the end of the day.
- Tetra Tech and Layfield's QC finished the walk-off of all liner deployed up to and including August 16 (Panels P92 through P402).

- Some areas require patching and vacuum box testing.
  - All Patching and vacuum box testing was completed by the end of the day.

2.5 August 20, 2020

- Weather: mostly sunny.
- Ewing is continuing to prepare subgrade and excavate soft spots in advance of liner deployment.
  - Soft spots were identified where repairs had been made along the 4E lateral.
    - Clint Abel authorized deployment over the areas.
- Tetra Tech inspected and approved the subgrade in advance of today's deployment.
  - Rocks are continuing to be an issue as they are pulled out of the subgrade by the side by sides. Layfield is picking the larger rocks off the slope as they occur.
- Layfield is continuing to deploy liner.
  - Layfield deployed ten slope runs of GCL and seven slope runs of liner.
  - Layfield had an extruder out on the slope conducting detail work as required.
- Layfield's QC conducted pressure testing of seam as they were ready.
- Tetra Tech and Layfield signed the Certificate of Final Inspection and Acceptance for panels P93 to P402 as well as the Certificate of Inspection of Soil Subgrade Surface for liner panels P295 to P402. All documentation was submitted to Forte, Clint Abel, and Victoria Gold.

2.6 August 21, 2020

- Weather: cloudy with periods of light rain, turning to mostly cloudy in the afternoon.
- Ewing is continuing to prepare subgrade and excavate soft spots in advance of deployment.
  - Deployment is quickly catching up to subgrade preparation.
- Tetra Tech inspected and approved the subgrade in advance of today's deployment.
- Layfield is continuing to deploy liner.
  - Layfield has an extruder at deployment to conduct detail work as required.
  - Layfield deployed three slope lengths of liner by first break. After first break, Layfield could not deploy GCL due to soft spot repairs until 1:00 pm then began at 1:30 pm due to rain. Layfield conducted clean up until they could deploy.
  - Layfield deployed five slope lengths of liner by the end of the day.
- Layfield's QC conducted pressure testing of seams as they were ready.

2.7 August 22, 2020

- Weather: mostly cloudy.
- Ewing is continuing to prepare subgrade in advance of deployment.

  - Small and isolated soft spots still exist in the subgrade, but at Clint Abel's authorization, liner will be deployed over them.

- Tetra Tech inspected and approved the subgrade for today's deployment.
  - Rocks being picked out of the subgrade is continuing to be an ongoing problem. Layfield is picking the rocks in advance of deployment, and Ewing is covering the rocky section as they are identified.
- Layfield is continuing to deploy GCL and liner.
  - Layfield has an extruder at deployment, conducting detail work as required.
  - Layfield deployed five slope runs of liner by 5:00 pm.
  - For the rest of the day, Layfield cleaned up garbage and did miscellaneous tasks.
- Layfield's QC is conducting pressure testing of seams.

2.8 August 23, 2020

- Weather: partly cloudy.
- Ewing is continuing to prepare subgrade in advance of liner deployment.
  - Ewing is sanding rocky areas on the slope.
  - Tetra Tech identified a soft spot requiring repair.
    - Ewing excavated the soft spot and backfilled with rock fill, then coated it with sand.
- Tetra Tech inspected and approved the subgrade for today's deployment.
- Layfield is continuing to deploy liner.
  - Layfield deployed four slope lengths of liner.
    - Layfield finished deploying at 4:30 pm and held off further deployment due to rain in tomorrow's forecast.
  - Rocks in the subgrade are continuing to be an issue.
    - While Ewing is sanding rock fill areas on the slope, the use of side by sides are loosening up the dry subgrade surface and pulling rocks out in areas that have not been sanded.
      - Rocks are being found beneath the GCL, and Layfield is pulling out the rocks larger than 50 mm.
- Layfield's QC conducted pressure testing of fused seams.

3.0 GEOSYNTHETIC ROLL NUMBERS PLACED

Table 1 summarizes the daily geosynthetic roll numbers placed on the slope during liner installation. All panel lengths are approximate, and where angled joints are used, panel length is based from the center of the panel.

Table 1: Geosynthetic Roll Numbers Placed on Slope

Date	GCL Roll Number	LLDPE Liner Roll Number	Panel Number (Length)
August 17	502343993, 502344594 502344654, 502344586 502344653, 502346982 502344675, 502343994 502344020, 502344587 502344605, 502344017 502343605	10699-006 10699-014 10690-030	P403 (37.6 m) P404 (129.4 m) P405 (99.9 m)
August 18	-	-	-
August 19	502346925, 502347071 502344690, 502344712 502344540, 502344699 502347066, 502347050 502346927, 502344592 502343996, 502346935 502347058, 502343995 502344584, 502344579 502344542, 502344693 502344689, 502344580 502344541, 502344543 502346928, 502344535 502344655, 502344656 502344639, 502344600 502344574, 502344674 502344015, 502344570 502344589, 502344649 502344638, 502344687 502344688, 502344677 502344590, 502343998 502344676, 502344640 502344673, 502344683 502344637, 502344575 502344568, 502344569 502344603, 502343992 502344665, 502344668 502344671, 502347052 502344591, 502344571 502344577, 502344578 502344026, 502344595 502344593, 502344031 502344672	10690-030 10690-027 10690-036 10690-026 10699-035 10699-034 10699-005 10699-013 10699-027	P406 (29.9 m) P407 (129.8 m) P408 (105.0 m), P409 (23.7 m) P410 (129.4 m) P411 (111.6 m), P412 (17.2 m) P413 (122.0 m) P414 (119.8 m), P415 (10.0 m) P416 (128.5 m) P417 (127.0 m)

Date	GCL Roll Number	LLDPE Liner Roll Number	Panel Number (Length)
August 20	502344573, 502347510	10696-017	P418 (129.7 m)
	502347509, 502344125	10696-017	P419 (112.0 m)
	502347683, 502347694	10696-003	P420 (8.8 m), P421 (117.5 m)
	502347692, 502347472	10696-016	P422 (121.8 m)
	502347499, 502347473	10690-034	P423 (21.2 m), P424 (107.4 m)
	502347085, 502347084	10696-013	P425 (121.5 m)
	502347469, 502347500	10696-004	P426 (31.6 m), P427 (95.3 m)
	502347480, 502347486	10696-026	P428 (121.7 m)
	502347684, 502347597	10696-036	P429 (43.5 m), P430 (84.0 m)
	502347487, 502347685	10696-027	P431 (121.3 m)
	502347681, 502347687	10696-033	P432 (55.2 m), P433 (75.3 m)
	502344107, 502347690	10696-037	P434 (127.9 m)
	502344113, 502344126	10696-009	P435 (63.4 m), P436 (66.1 m)
	502347471, 502347484	10696-034	P437 (127.9 m)
	502347093, 502344700	10696-007	P438 (1.0 m), P439 (71.5 m)
	502347481, 502347482		
	502344710, 502344696		
	502347488, 502347479		
	502347492, 502347490		
	502347478, 502344583		
	502343888, 502343891		
	502347475, 502347693		
	502347485, 502347094		
August 21	502347477, 502344695	10696-007	P440 (57.5 m)
	502347702, 502347696	10696-012	P441 (128.2 m)
	502347483, 502347467	10696-021	P442 (73.2 m), P443 (51.9 m)
	502347476, 502344036	10696-011	P444 (128.7 m)
	502344711, 502344066	10696-035	P445 (78.3 m), P446 (49.0 m)
	502344719, 502344013	10690-003	P447 (128.9 m)
	502344035, 502344012	10696-030	P448 (81.0 m), P449 (45.6 m)
	502344038, 502344070	10696-014	P450 (129.1 m)
	502344059, 502346408	10696-015	P451 (84.2 m), P452 (42.1 m)
	502344039, 502344014	10695-011	P453 (129.3 m)
	502347695, 502347470	10696-020	P454 (87.5 m)
	502344713, 502344617		
	502343907, 20032412		
	502344618, 502344152		
	502344172, 502347512		
	502347503, 502343909		
	502344069, 502343902		
	502344071, 502347474		
	502344073, 502347686		
	502344040, 502344037		

Date	GCL Roll Number	LLDPE Liner Roll Number	Panel Number (Length)
August 22	502343885, 502344166 502344165, 502343899 502344153, 502344170 502344635, 502343894 502344623, 502343908 502347502, 502344622 502343892, 502344175 502343934, 502344171 502343950, 502344168 502343900, 502347497 502344624, 502343910 502344174, 502343951 502344167, 502343929 502344169, 502343893 502343906, 502347569 502344065, 502344063 502344061	10696-020 10696-019 10696-025 10696-022 10696-024 10696-023 10695-014 10695-019 10695-016 10695-020 10695-027 10695-017	P455 (42.1 m) P456 (126.7 m) P457 (92.0 m), P458 (37.8 m) P459 (127.0 m) P460 (85.8 m), P461 (40.6 m) P462 (127.0 m) P463 (82.4 m), P464 (45.6 m) P465 (128.2 m) P466 (73.4 m), P467 (50.9 m) P468 (127.4 m) P469 (1.7 m) P470 (67.2 m)
August 23	0242-347565, 0242-347576 0242-347620, 0242-347571 502343887, 502343928 502344062, 502344047 522344084, 502344098 502344090, 502347504 502344634, 502344060 502344058, 502344628 502344097, 502344068 502344631, 502344076 502344103, 502344075 502344619, 502344632 502343939, 502344085 502343933, 502343651 502343960, 502343652 502344620, 502347493 502347507	10695-017 10695-013 10695-003 10695-022 10695-018 10695-029 10695-027 10695-026 10695-023	P471 (56.3 m) P472 (126.4 m) P473 (53.7 m). P474 (59.5 m) P475 (128.2 m) P476 (48.7 m), P477 (64.3 m) P478 (128.4 m) P479 (43.7 m), P480 (69.3 m) P481 (126.4 m) P482 (40.7 m)

4.0 TRIAL SEAM

Table 2 summarizes the weekly trial seam results. For fusion, the apparatus settings are temperature and speed, and for extrusion, the apparatus settings are preheat and barrel temperature. Five tests are performed for each criterion.

Table 2: Trial Seam Results

Date	Time	Fusion or Extrusion	Tech	Apparatus #	Temp or Preheat (°F)	Speed (%) or Barrel Temp (°F)	$Peel_{inside}$ (100 min)	$Peel_{outside}$ (100 min for Fusion 88 min for Extrusion)	Shear (120 min)	Smooth or Textured
Aug 17	8:50	Extrusion	EA	04037	500	495	N/A	94 90 104 116 119	166 162 173 176 171	N/A
Aug 17	12:30	Fusion	JC	WW-022	850	50	142 138 129 133 114	116 122 130 136 136	145 152 148 154 151	Smooth
Aug 17	12:30	Fusion	JC	WW-022	850	35	140 142 130 146 140	148 141 136 143 142	156 166 165 172 167	Textured
Aug 17	12:35	Fusion	JC	WW-022	850	40	123 129 145 142 148	119 119 147 143 133	140 155 142 143 156	Smooth-Textured
Aug 17	12:50	Fusion	JK	WW-054	850	55	126 134 129 134 127	120 128 122 133 123	144 145 144 149 143	Smooth
Aug 17	14:00	Extrusion	EA	04037	500	495	N/A	131 132 115 125 134	157 163 165 160 160	N/A
Aug 19	8:30	Extrusion	EA	04037	500	495	N/A	109 127 140 149 138	169 170 175 178 176	N/A
Aug 19	10:30	Fusion	CC	WW-026	850	35	137 139 141 142 134	135 141 148 146 144	165 173 167 168 155	Textured

Date	Time	Fusion or Extrusion	Tech	Apparatus #	Temp or Preheat (°F)	Speed (%) or Barrel Temp (°F)	$Peel_{inside}$ (100 min)	$Peel_{outside}$ (100 min for Fusion 88 min for Extrusion)	Shear (120 min)	Smooth or Textured
Aug 19	10:30	Fusion	JK	WW-022	850	55	146	142	158	Smooth
							147	160	169	
							149	154	162	
							144	159	167	
							129	147	166	
Aug 19	10:30	Fusion	JC	WW-045	850	55	141	141	158	Smooth
							135	142	162	
							145	131	158	
							138	147	160	
							147	152	158	
Aug 19	12:30	Extrusion	EA	04037	500	495	N/A	125	141	N/A
								125	146	
								126	148	
								137	151	
								132	167	
Aug 19	14:35	Fusion	CC	WW-026	850	35	122	127	129	Textured
							129	121	161	
							125	126	147	
							130	133	146	
							128	124	127	
Aug 19	14:30	Fusion	JC	WW-045	850	55	118	130	142	Smooth
							120	119	132	
							124	115	134	
							113	123	129	
							134	131	141	
Aug 19	14:30	Fusion	JK	WW-022	850	55	132	130	136	Smooth
							128	130	144	
							135	130	144	
							146	135	129	
							140	129	138	
Aug 19	16:35	Extrusion	EA	04037	500	495	N/A	134	148	N/A
								129	147	
								134	151	
								128	154	
								131	159	
Aug 20	8:30	Fusion	JK	WW-022	850	55	137	127	142	Smooth
							140	149	151	
							131	129	142	
							126	134	155	
							134	141	144	
Aug 20	8:30	Fusion	CC	WW-045	850	55	129	136	157	Smooth
							132	142	143	
							117	104	155	
							134	125	142	
							134	140	143	

Date	Time	Fusion or Extrusion	Tech	Apparatus #	Temp or Preheat (°F)	Speed (%) or Barrel Temp (°F)	$Peel_{inside}$ (100 min)	$Peel_{outside}$ (100 min for Fusion 88 min for Extrusion)	Shear (120 min)	Smooth or Textured
Aug 20	8:50	Fusion	JC	WW-026	850	35	136	148	162	Textured
							134	148	171	
							130	150	155	
							132	146	178	
							145	145	172	
Aug 20	12:30	Fusion	JC	WW-026	850	35	140	144	165	Textured
							150	145	169	
							155	155	159	
							151	147	171	
							142	136	161	
Aug 20	12:30	Fusion	JC	WW-026	850	55	127	127	140	Smooth
							128	126	137	
							122	127	140	
							128	135	141	
							125	126	136	
Aug 20	12:30	Extrusion	RW	04037	500	495	N/A	134	153	N/A
								134	158	
								109	150	
								101	160	
								107	147	
Aug 20	12:45	Fusion	CC	WW-045	850	55	120	133	131	Smooth
							129	125	137	
							132	130	135	
							122	115	143	
							128	122	135	
Aug 20	14:20	Fusion	JK	WW-022	850	55	124	126	142	Smooth
							131	133	144	
							125	130	142	
							135	137	144	
							131	126	144	
Aug 20	14:40	Fusion	JK	WW-022	850	35	140	115	152	Textured
							151	147	161	
							143	147	160	
							140	143	163	
							150	136	162	
Aug 20	16:00	Extrusion	RW	04037	500	495	N/A	134	145	N/A
								132	140	
								133	135	
								110	139	
								115	129	
Aug 21	8:00	Extrusion	EA	04037	500	495	N/A	115	141	N/A
								104	143	
								120	143	
								139	150	
								115	152	

Date	Time	Fusion or Extrusion	Tech	Apparatus #	Temp or Preheat (°F)	Speed (%) or Barrel Temp (°F)	$Peel_{inside}$ (100 min)	$Peel_{outside}$ (100 min for Fusion 88 min for Extrusion)	Shear (120 min)	Smooth or Textured
Aug 21	9:15	Fusion	JK	WW-022	850	35	143	149	160	Textured
							141	144	166	
							148	122	163	
							143	147	166	
							141	137	167	
Aug 21	9:15	Fusion	CC	WW-045	850	55	149	149	164	Smooth
							140	138	161	
							144	149	161	
							135	133	153	
							155	144	160	
Aug 21	9:15	Fusion	JC	WW-026	850	35	125	114	171	Textured
							136	136	184	
							156	147	176	
							152	148	171	
							152	121	161	
Aug 21	9:15	Fusion	CC	WW-045	850	35	147	150	160	Textured
							142	142	133	
							135	110	157	
							143	126	146	
							140	156	170	
Aug 21	9:15	Fusion	JK	WW-022	850	55	140	125	145	Smooth
							139	130	148	
							141	129	146	
							142	141	148	
							132	143	146	
Aug 21	9:15	Fusion	JC	WW-026	850	55	146	135	151	Smooth
							129	132	144	
							132	135	152	
							137	136	146	
							139	135	156	
Aug 21	15:00	Extrusion	EA	04037	500	495	N/A	154	120	N/A
								133	175	
								106	176	
								139	183	
								140	158	
Aug 21	15:00	Fusion	JK	WW-022	850	35	158	136	157	Textured
							119	148	161	
							146	147	156	
							148	142	166	
							131	146	160	
Aug 21	15:00	Fusion	CC	WW-045	850	55	120	133	153	Smooth
							140	140	161	
							155	147	156	
							141	145	161	
							122	125	158	

Date	Time	Fusion or Extrusion	Tech	Apparatus #	Temp or Preheat (°F)	Speed (%) or Barrel Temp (°F)	$Peel_{inside}$ (100 min)	$Peel_{outside}$ (100 min for Fusion 88 min for Extrusion)	Shear (120 min)	Smooth or Textured
Aug 21	15:00	Fusion	JC	WW-026	850	55	140	132	150	Smooth
							132	139	155	
							138	132	139	
							134	143	164	
							125	129	146	
Aug 21	15:00	Fusion	JC	WW-026	850	35	125	131	155	Textured
							139	149	159	
							117	132	147	
							146	137	163	
							153	145	150	
Aug 21	15:00	Fusion	CC	WW-045	850	35	144	131	161	Textured
							144	155	160	
							146	147	154	
							109	142	163	
							140	141	152	
Aug 21	15:00	Fusion	JK	WW-022	850	55	117	130	139	Smooth
							120	137	142	
							130	143	137	
							127	137	147	
							113	130	120	
Aug 22	8:30	Extrusion	EA	EX-35	500	495	N/A	103	152	N/A
								104	152	
								121	151	
								105	153	
								106	148	
Aug 22	9:30	Fusion	JK	WW-022	850	35	143	134	177	Textured
							135	137	180	
							145	164	181	
							145	137	180	
							144	146	173	
Aug 22	9:30	Fusion	JC	WW-045	850	55	140	115	157	Smooth
							136	115	151	
							136	128	153	
							134	126	149	
							134	129	156	
Aug 22	9:30	Fusion	JK	WW-022	850	55	132	140	157	Smooth
							141	126	147	
							133	123	154	
							130	132	154	
							141	124	155	
Aug 22	9:30	Fusion	JC	WW-045	850	35	124	154	171	Textured
							154	147	178	
							154	146	171	
							143	139	177	
							161	142	169	

Date	Time	Fusion or Extrusion	Tech	Apparatus #	Temp or Preheat (°F)	Speed (%) or Barrel Temp (°F)	$Peel_{inside}$ (100 min)	$Peel_{outside}$ (100 min for Fusion 88 min for Extrusion)	Shear (120 min)	Smooth or Textured
Aug 22	9:45	Fusion	CC	WW-026	850	35	141 130 145 149 147	148 144 138 145 133	177 182 166 153 165	Textured
Aug 22	12:30	Extrusion	EA	EX-35	500	495	N/A	140 141 145 146 151	171 139 161 157 161	N/A
Aug 22	13:00	Fusion	CC	WW-026	850	55	129 134 125 126 131	127 129 128 125 132	136 144 134 144 144	Smooth
Aug 22	13:00	Fusion	JK	WW-054	850	55	112 110 119 120 123	124 122 126 124 117	144 144 143 146 142	Smooth
Aug 22	13:30	Fusion	JK	WW-054	850	35	132 132 136 132 136	138 136 138 137 131	158 159 145 155 159	Textured
Aug 22	13:30	Fusion	CC	WW-026	850	35	142 148 129 128 128	148 152 139 139 140	145 161 152 159 160	Textured
Aug 22	13:30	Fusion	JC	WW-045	850	35	150 139 136 154 141	117 131 129 145 128	151 158 152 162 154	Textured
Aug 22	13:30	Fusion	JC	WW-045	850	55	139 150 137 134 141	136 142 145 142 142	160 144 148 145 151	Smooth
Aug 22	16:05	Extrusion	EA	EX-35	500	495	N/A	114 116 120 117 122	135 143 145 146 136	N/A

Date	Time	Fusion or Extrusion	Tech	Apparatus #	Temp or Preheat (°F)	Speed (%) or Barrel Temp (°F)	$Peel_{inside}$ (100 min)	$Peel_{outside}$ (100 min for Fusion 88 min for Extrusion)	Shear (120 min)	Smooth or Textured
Aug 23	10:15	Fusion	CC	WW-026	850	35	148	141	174	Textured
							140	145	175	
							163	122	164	
							151	146	176	
							122	140	171	
Aug 23	10:15	Fusion	JC	WW-045	850	55	127	118	138	Smooth
							114	127	141	
							119	129	135	
							126	129	142	
							128	127	139	
Aug 23	10:15	Fusion	RW	WW-054	850	55	141	133	140	Smooth
							126	134	134	
							135	131	143	
							126	129	141	
							130	126	140	
Aug 23	10:15	Fusion	CC	WW-026	850	55	141	139	150	Smooth
							150	140	143	
							149	139	147	
							141	145	147	
							139	144	146	
Aug 23	10:15	Fusion	RW	WW-054	850	35	137	150	172	Textured
							142	147	159	
							160	149	156	
							150	126	158	
							140	135	152	
Aug 23	10:15	Fusion	JC	WW-045	850	35	149	145	152	Textured
							142	145	161	
							125	130	150	
							144	139	165	
							143	149	164	
Aug 23	15:00	Fusion	JC	WW-045	850	35	144	160	183	Textured
							143	150	172	
							153	135	176	
							137	163	179	
							152	152	177	
Aug 23	15:00	Fusion	CC	WW-026	850	55	147	145	158	Smooth
							142	137	159	
							144	142	160	
							138	120	159	
							143	146	161	
Aug 23	15:00	Fusion	CC	WW-026	850	35	142	148	151	Textured
							158	166	153	
							140	140	170	
							136	155	171	
							146	161	153	

Date	Time	Fusion or Extrusion	Tech	Apparatus #	Temp or Preheat (°F)	Speed (%) or Barrel Temp (°F)	$Peel_{inside}$ (100 min)	$Peel_{outside}$ (100 min for Fusion 88 min for Extrusion)	Shear (120 min)	Smooth or Textured
Aug 23	15:00	Fusion	JC	WW-045	850	55	149	144	172	Smooth
							151	149	152	
							140	149	161	
							132	132	156	
							144	145	159	

5.0 NON-DESTRUCTIVE TESTING

Table 3 summarizes the weekly non-destructive pressure testing results.

Table 3: Non-Destructive Testing Results

Date Fused	Date Tested	Time Tested	Seam #	psi Start	psi End	Pass or Fail	Notes
Aug 9	Aug 17	13:23	P351-P352 Cross	40	40	Pass	
Aug 14	Aug 17	8:39	P367-P368 Cross	40	40	Pass	
Aug 5	Aug 19	17:13	P285-P389 Vertical	40	40	Pass	
Aug 10	Aug 19	17:14	P389-P351 Tie In	40	40	Pass	
Aug 14	Aug 19	17:58	P363-P365 Vertical	40	40	Pass	
Aug 14	Aug 19	17:58	P362-P362 Cross	40	40	Pass	
Aug 14	Aug 19	18:00	P365-P367 Vertical	40	40	Pass	
Aug 16	Aug 16	18:00	P384-P385 Vertical	40	40	Pass	
Aug 16	Aug 16	18:01	P383-P385 Vertical	40	40	Pass	
Aug 16	Aug 16	18:29	P394-P395 Cross	40	40	Pass	
Aug 16	Aug 16	18:03	P385-P387 Vertical	40	40	Pass	
Aug 16	Aug 16	18:35	P394-P396 Vertical	40	40	Pass	
Aug 16	Aug 16	18:29	P392-P394 Vertical	40	40	Pass	
Aug 16	Aug 16	18:22	P395-P397 Vertical	40	40	Pass	
Aug 16	Aug 16	18:16	P398-P399 Vertical	40	40	Pass	
Aug 16	Aug 16	18:21	P397-P398 Vertical	40	40	Pass	
Aug 16	Aug 16	18:03	P385-P386 Vertical	40	40	Pass	
Aug 16	Aug 16	18:22	P400-P401 Vertical	40	40	Pass	
Aug 16	Aug 16	18:15	P399-P401 Tie In	40	40	Pass	
Aug 16	Aug 16	18:22	P399-P400 Tie In	40	40	Pass	
Aug 16	Aug 16	18:15	P387-P402 Tie In	40	38	Pass	
Aug 16	Aug 16	18:15	P387-P399 Tie In	40	40	Pass	
Aug 16	Aug 16	18:16	P387-P398 Tie In	40	40	Pass	
Aug 16	Aug 16	18:23	P387-P397 Tie In	40	38	Pass	
Aug 16	Aug 16	18:23	P387-P395 Tie In	40	40	Pass	
Aug 16	Aug 16	18:29	P387-P394 Tie In	40	39	Pass	
Aug 16	Aug 17	8:07	P390-P391 Vertical	40	40	Pass	
Aug 16	Aug 17	7:58	P390-P389 Vertical	40	40	Pass	
Aug 16	Aug 17	7:46	P388-P389 Vertical	40	40	Pass	
Aug 16	Aug 17	7:41	P392-P388 Vertical	40	40	Pass	
Aug 16	Aug 17	7:41	P388-P393 Vertical	40	40	Pass	

Date Fused	Date Tested	Time Tested	Seam #	psi Start	psi End	Pass or Fail	Notes
Aug 16	Aug 17	8:17	P396-P397 Vertical	40	40	Pass	
Aug 16	Aug 17	7:40	P393-P394 Vertical	40	40	Pass	
Aug 16	Aug 17	7:44	P387-P388 Tie In	40	40	Pass	
Aug 16	Aug 17	7:44	P387-P389 Tie In	40	40	Pass	
Aug 16	Aug 17	7:57	P387-P390 Tie In	40	40	Pass	
Aug 16	Aug 17	7:57	P386-P391 Tie In	40	40	Pass	
Aug 16	Aug 17	8:07	P368-P388 Tie In	40	40	Pass	
Aug 16	Aug 17	7:55	P368-P389 Tie In	40	40	Pass	
Aug 16	Aug 17	7:55	P368-P390 Tie In	40	40	Pass	
Aug 16	Aug 17	8:08	P368-P391 Tie In	40	40	Pass	
Aug 16	Aug 17	8:09	P368-P386 Tie In	40	40	Pass	
Aug 16	Aug 17	8:20	P368-P385 Tie In	40	40	Pass	
Aug 16	Aug 17	8:19	P368-P383 Tie In	40	40	Pass	
Aug 16	Aug 17	8:23	P368-P381 Tie In	40	40	Pass	
Aug 16	Aug 17	8:24	P368-P379 Tie In	40	40	Pass	
Aug 16	Aug 17	9:19	P368-P377 Tie In	40	40	Pass	Top of seam to repair
Aug 16	Aug 17	9:21	P368-P377 Tie In	40	40	Pass	Repair to bottom of seam
Aug 16	Aug 17	9:27	P368-P375 Tie In	40	40	Pass	
Aug 16	Aug 17	8:34	P368-P375 Tie In	40	40	Pass	
Aug 16	Aug 17	8:36	P368-P373 Tie In	40	40	Pass	
Aug 16	Aug 17	8:39	P368-P371 Tie In	40	39	Pass	
Aug 16	Aug 17	8:39	P367-P371 Tie In	40	40	Pass	
Aug 16	Aug 17	8:47	P367-P369 Tie In	40	40	Pass	
Aug 17	Aug 19	17:22	P370-P405 Vertical	40	40	Pass	
Aug 17	Aug 19	17:22	P369-P405 Vertical	40	40	Pass	Top of seam to patch
Aug 17	Aug 19	17:36	P369-P405 Vertical	40	40	Pass	Patch to bottom of seam
Aug 17	Aug 19	17:36	P369-P404 Vertical	40	40	Pass	
Aug 17	Aug 19	17:54	P367-P404 Tie In	40	40	Pass	
Aug 17	Aug 19	17:54	P365-P404 Tie In	40	40	Pass	
Aug 17	Aug 19	17:56	P362-P404 Tie In	40	40	Pass	
Aug 17	Aug 19	17:56	P359-P404 Tie In	40	40	Pass	
Aug 17	Aug 19	18:05	P357-P404 Tie In	40	40	Pass	
Aug 17	Aug 19	18:05	P355-P404 Tie In	40	40	Pass	
Aug 17	Aug 19	18:07	P351-P404 Tie In	40	40	Pass	
Aug 17	Aug 19	18:06	P354-P404 Tie In	40	40	Pass	
Aug 17	Aug 19	17:23	P285-P404 Tie In	40	40	Pass	
Aug 17	Aug 19	17:23	P282-P404 Tie In	40	40	Pass	
Aug 17	Aug 19	17:29	P287-P403 Tie In	40	40	Pass	
Aug 17	Aug 19	17:32	P275-P403 Tie In	40	40	Pass	
Aug 17	Aug 19	17:32	P273-P403 Tie In	40	38	Pass	
Aug 17	Aug 19	17:45	P272-P403 Tie In	40	39	Pass	
Aug 17	Aug 19	17:45	P271-P403 Tie In	40	40	Pass	
Aug 17	Aug 19	17:46	P270-P403 Tie In	40	40	Pass	
Aug 19	Aug 20	17:37	P404-P405 Cross	40	40	Pass	
Aug 19	Aug 20	17:29	P403-P404 Cross	40	39	Pass	
Aug 19	Aug 20	17:05	P406-P407 Cross	40	40	Pass	
Aug 19	Aug 20	15:13	P407-P408 Cross	40	40	Pass	
Aug 19	Aug 20	17:06	P409-P410 Cross	40	40	Pass	

Date Fused	Date Tested	Time Tested	Seam #	psi Start	psi End	Pass or Fail	Notes
Aug 19	Aug 20	15:40	P410-P411 Cross	40	40	Pass	
Aug 19	Aug 20	17:08	P412-P413 Cross	40	40	Pass	
Aug 19	Aug 20	15:42	P413-P414 Cross	40	40	Pass	
Aug 19	Aug 20	17:09	P415-P416 Cross	40	40	Pass	
Aug 19	Aug 20	16:10	P416-P417 Cross	40	40	Pass	
Aug 19	Aug 20	16:51	P403-P407 Vertical	40	40	Pass	
Aug 19	Aug 20	16:46	P404-P407 Vertical	40	40	Pass	
Aug 19	Aug 20	15:13	P404-P408 Vertical	40	39	Pass	
Aug 19	Aug 20	15:32	P405-P408 Vertical	40	39	Pass	
Aug 19	Aug 20	17:05	P406-P410 Vertical	40	40	Pass	
Aug 19	Aug 20	16:47	P407-P410 Vertical	40	38	Pass	Top of seam to patch
Aug 19	Aug 20	17:00	P407-P410 Vertical	40	40	Pass	Patch to bottom of seam
Aug 19	Aug 20	15:40	P407-P411 Vertical	40	40	Pass	
Aug 19	Aug 20	17:06	P409-P413 Vertical	40	40	Pass	
Aug 19	Aug 20	16:48	P410-P413 Vertical	40	40	Pass	Top of seam to patch
Aug 19	Aug 20	16:02	P410-P413 Vertical	40	40	Pass	Patch to bottom of seam
Aug 19	Aug 20	15:41	P410-P414 Vertical	40	40	Pass	
Aug 19	Aug 20	15:28	P411-P414 Vertical	40	40	Pass	
Aug 19	Aug 20	17:08	P412-P416 Vertical	40	39	Pass	
Aug 19	Aug 20	16:49	P413-P416 Vertical	40	40	Pass	
Aug 19	Aug 20	16:03	P413-P417 Vertical	40	40	Pass	
Aug 19	Aug 21	15:24	P408-P411 Vertical	40	40	Pass	
Aug 19	Aug 21	15:22	P414-P417 Vertical	40	40	Pass	Top of seam to patch
Aug 19	Aug 21	15:22	P414-P417 Vertical	40	40	Pass	Patch to bottom of seam
Aug 20	Aug 21	16:44	P418-P419 Cross	40	40	Pass	
Aug 20	Aug 21	15:53	P419-P420 Cross	40	40	Pass	
Aug 20	Aug 21	16:45	P421-P422 Cross	40	40	Pass	
Aug 20	Aug 21	15:54	P422-P423 Cross	40	40	Pass	
Aug 20	Aug 21	16:46	P424-P425 Cross	40	40	Pass	
Aug 20	Aug 21	16:56	P427-P428 Cross	40	40	Pass	RHS to patch
Aug 20	Aug 21	16:55	P427-P428 Cross	40	40	Pass	Patch to LHS
Aug 20	Aug 21	15:56	P428-P429 Cross	40	40	Pass	
Aug 20	Aug 21	16:56	P430-P431 Cross	40	40	Pass	
Aug 20	Aug 21	16:12	P431-P432 Cross	40	40	Pass	
Aug 20	Aug 21	16:57	P433-P434 Cross	40	40	Pass	
Aug 20	Aug 21	16:14	P434-P435 Cross	40	40	Pass	
Aug 20	Aug 21	17:08	P436-P437 Cross	40	40	Pass	
Aug 20	Aug 21	15:37	P417-P420 Vertical	40	39	Pass	
Aug 20	Aug 21	17:28	P417-P419 Vertical	40	40	Pass	
Aug 20	Aug 21	16:44	P416-P419 Vertical	40	39	Pass	
Aug 20	Aug 21	15:38	P420-P423 Vertical	40	40	Pass	
Aug 20	Aug 21	15;53	P419-P423 Vertical	40	40	Pass	
Aug 20	Aug 21	17:29	P419-P422 Vertical	40	40	Pass	
Aug 20	Aug 21	16:45	P418-P422 Vertical	40	40	Pass	
Aug 20	Aug 21	15;39	P423-P426 Vertical	40	40	Pass	
Aug 20	Aug 21	15:54	P422-P426 Vertical	40	40	Pass	
Aug 20	Aug 21	17:30	P422-P425 Vertical	40	40	Pass	
Aug 20	Aug 21	16:46	P421-P425 Vertical	40	40	Pass	

Date Fused	Date Tested	Time Tested	Seam #	psi Start	psi End	Pass or Fail	Notes
Aug 20	Aug 21	15:40	P426-P429 vertical	40	40	Pass	
Aug 20	Aug 21	15:55	P425-P429 Vertical	40	40	Pass	
Aug 20	Aug 21	16:55	P424-P428 Vertical	40	40	Pass	
Aug 20	Aug 21	15:41	P429-P432 Vertical	40	40	Pass	
Aug 20	Aug 21	16:10	P428-P432 Vertical	40	40	Pass	
Aug 20	Aug 21	16:56	P427-P431 Vertical	40	39	Pass	
Aug 20	Aug 21	15:42	P432-P435 Vertical	40	40	Pass	
Aug 20	Aug 21	16:12	P431-P435 Vertical	40	40	Pass	
Aug 20	Aug 21	17:40	P431-P434 Vertical	40	40	Pass	
Aug 20	Aug 21	16:57	P430-P434 Vertical	40	40	Pass	
Aug 20	Aug 21	16:24	P435-P439 Vertical	40	38	Pass	
Aug 20	Aug 21	16:14	P434-P439 Vertical	40	40	Pass	
Aug 20	Aug 21	17:44	P434-P437 Vertical	40	39	Pass	
Aug 20	Aug 21	17:08	P433-P437 Vertical	40	39	Pass	
Aug 20	Aug 22	15:13	P425-P426 Cross	40	40	Pass	Right side to patch
Aug 20	Aug 22	15:13	P425-P426 Cross	40	40	Pass	Patch to left side
Aug 20	Aug 22	15:22	P437-P438 Cross	40	40	Pass	
Aug 20	Aug 22	15:22	P438-P439 Cross	40	40	Pass	
Aug 20	Aug 22	15:20	P425-P428 Vertical	40	40	Pass	
Aug 20	Aug 22	15:21	P428-P431 Vertical	40	40	Pass	
Aug 21	Aug 22	17:12	P440-P441 Cross	40	40	Pass	
Aug 21	Aug 22	15:51	P441-P442 Cross	40	40	Pass	
Aug 21	Aug 22	17:18	P443-P444 Cross	40	40	Pass	Right side to patch
Aug 21	Aug 22	17:22	P443-P444 Cross	40	38	Pass	Patch to left side
Aug 21	Aug 22	15:52	P444-P445 Cross	40	40	Pass	
Aug 21	Aug 22	15:53	P447-P448 Cross	40	40	Pass	
Aug 21	Aug 22	16:02	P450-P451 Cross	40	40	Pass	
Aug 21	Aug 22	16:03	P453-P454 Cross	40	40	Pass	
Aug 21	Aug 22	16:48	P439-P442 Vertical	40	40	Pass	
Aug 21	Aug 22	15:51	P437-P442 Vertical	40	40	Pass	
Aug 21	Aug 22	17:12	P436-P441 Vertical	40	40	Pass	
Aug 21	Aug 22	16:32	P442-P445 Vertical	40	40	Pass	
Aug 21	Aug 22	15:52	P441-P445 Vertical	40	38	Pass	
Aug 21	Aug 22	17:18	P440-P444 Vertical	40	40	Pass	
Aug 21	Aug 22	16:31	P445-P448 Vertical	40	40	Pass	Patch to bottom of seam
Aug 21	Aug 22	15:53	P444-P448 Vertical	40	40	Pass	
Aug 21	Aug 22	17:22	P443-P447 Vertical	40	40	Pass	
Aug 21	Aug 22	16:30	P448-P451 Vertical	40	40	Pass	
Aug 21	Aug 22	16:02	P447-P451 Vertical	40	40	Pass	
Aug 21	Aug 22	16:29	P451-P454 Vertical	40	40	Pass	
Aug 21	Aug 22	16:03	P450-P454 Vertical	40	40	Pass	
Aug 22	Aug 22	16:28	P454-P457 Vertical	40	40	Pass	
Aug 22	Aug 22	16:05	P453-P457 Vertical	40	40	Pass	
Aug 19	Aug 23	13:29	P403-P406 Vertical	40	40	Pass	
Aug 19	Aug 23	13;38	P406-P409 Vertical	40	39	Pass	
Aug 19	Aug 23	13:37	P409-P412 Vertical	40	40	Pass	
Aug 19	Aug 23	13:36	P412-P415 Vertical	40	40	Pass	
Aug 20	Aug 23	13:35	P415-P418 Vertical	40	40	Pass	

Date Fused	Date Tested	Time Tested	Seam #	psi Start	psi End	Pass or Fail	Notes
Aug 20	Aug 23	13:12	P418-P421 Vertical	40	40	Pass	
Aug 20	Aug 23	13:16	P421-P424 Vertical	40	39	Pass	
Aug 20	Aug 23	12:46	P424-P427 Vertical	40	40	Pass	
Aug 20	Aug 23	12:45	P427-P430 Vertical	40	40	Pass	
Aug 20	Aug 23	12:44	P430-P433 Vertical	40	40	Pass	
Aug 20	Aug 23	12:43	P433-P436 Vertical	40	40	Pass	
Aug 21	Aug 23	11:46	P446-P447 Cross	40	40	Pass	
Aug 21	Aug 23	11:47	P449-P450 Cross	40	40	Pass	
Aug 21	Aug 23	11:48	P452-P453 Cross	40	40	Pass	
Aug 21	Aug 23	12:42	P436-P440 Vertical	40	38	Pass	
Aug 21	Aug 23	12:41	P440-P443 Vertical	40	39	Pass	
Aug 21	Aug 23	12:28	P443-P446 Vertical	40	40	Pass	
Aug 21	Aug 23	11:40	P446-P450 Vertical	40	40	Pass	
Aug 21	Aug 23	12:27	P446-P449 Vertical	40	40	Pass	
Aug 21	Aug 23	11:47	P449-P453 Vertical	40	40	Pass	
Aug 21	Aug 23	12:26	P449-P452 Vertical	40	40	Pass	
Aug 22	Aug 23	12:05	P455-P456 Cross	40	39	Pass	
Aug 22	Aug 23	12:06	P458-P459 Cross	40	40	Pass	
Aug 22	Aug 23	11:48	P452-P456 Vertical	40	40	Pass	
Aug 22	Aug 23	12:25	P452-P455 Vertical	40	40	Pass	
Aug 22	Aug 23	12:05	P455-P459 Vertical	40	40	Pass	
Aug 22	Aug 23	12:24	P455-P458 Vertical	40	40	Pass	
Aug 22	Aug 23	12:06	P459-P461 Vertical	40	40	Pass	
Aug 22	Aug 23	12:06	P459-P461 Vertical	40	40	Pass	
Aug 22	Aug 23	11:09	P462-P464 Vertical	40	38	Pass	
Aug 22	Aug 23	12:23	P461-P464 Vertical	40	40	Pass	

6.0 DESTRUCTIVE TESTING

Table 4 summarizes the weekly destructive testing results. Five tests are performed for each criterion.

Table 4: Destructive Testing Results

Date Fused	Time Fused	Tech	Apparatus	Location (UTM is +/- 4 m)	Sample ID	$Peel_{in}$ (100 min)	$Peel_{out}$ (100 min)	Shear (120 min)	Pass or Fail
Aug 16	13:19	JC	WW-054	P398-P399 Vertical Bottom of Seam	D161	132 138 139 147 146	143 134 136 146 135	151 159 163 162 150	Pass
Aug 15	15:26	CC	WW-054	P375-P377 Vertical Bottom of Seam	D162	137 137 141 143 139	142 140 136 141 142	153 147 159 149 152	Pass
Aug 15	17:57	JK	WW-022	P379-P381 Vertical Bottom of Seam	D163	145 155 145 141 143	137 139 139 139 142	152 162 156 160 155	Pass
Aug 16	11:58	CC	WW-054	P390-P391 Vertical Bottom of Seam	D164	134 144 136 132 131	148 132 140 148 135	156 158 161 159 159	Pass
Aug 11	18:16	JC	WW-045	P358-P361 Vertical Bottom of Seam	D165	140 134 140 136 147	137 141 138 144 144	145 158 156 159 146	Pass
Aug 16	15:07	CC	WW-045	P386-P391 Tie In Bottom of Seam	D166	150 143 142 142 147	136 137 136 133 135	156 147 153 159 154	Pass
Aug 15	17:15	RW	WW-045	P381-P382 Cross Right Side of Seam	D167	157 157 145 138 160	150 144 157 148 157	160 175 186 184 170	Pass
Aug 14	15:22	CC	WW-054	P365-P367 Vertical Top of Seam	D168	129 138 127 127 125	138 140 132 138 132	163 159 160 156 157	Pass

Date Fused	Time Fused	Tech	Apparatus	Location (UTM is +/- 4 m)	Sample ID	$Peel_{in}$ (100 min)	$Peel_{out}$ (100 min)	Shear (120 min)	Pass or Fail
Aug 14	15:16	CC	WW-054	P367-P368 Cross Left Side of Seam	D169	161 161 163 145 163	163 145 160 152 164	176 175 169 166 181	Pass
Aug 14	14:17	JK	WW-022	P364-P366 Vertical Top of Seam	D170	138 132 130 147 134	136 140 137 135 133	161 149 157 152 160	Pass
Aug 14	13:37	CC	WW-054	P361-P364 Vertical Top of Seam	D171	144 131 138 139 141	141 124 140 133 128	140 156 150 156 152	Pass
Aug 16	13:22	JK	WW-022	P385-P386 Vertical Bottom of Seam	D172	123 134 127 132 128	137 137 134 137 144	149 150 152 151 151	Pass
Aug 16	12:09	JK	WW-022	P383-P385 Vertical Bottom of Seam	D173	139 133 140 153 140	131 139 138 135 141	144 151 145 155 147	Pass
Aug 16	12:32	JC	WW-054	P388-P392 Vertical Bottom of Seam	D174	145 142 149 142 145	136 129 127 131 127	150 142 149 143 147	Pass
Aug 15	13:16	CC	WW-054	P371-P373 Vertical Bottom of Seam	D175	135 141 140 129 140	139 120 137 134 145	144 146 145 151 147	Pass
Aug 16	12:36	CC	WW-054	P394-P395 Vertical Bottom of Seam	D176	136 133 133 145 133	141 132 137 141 132	150 146 149 143 148	Pass
Aug 16	16:36	JK	WW-022	P367-P369 Tie In Bottom of Seam	D177	153 151 144 147 147	148 143 139 148 142	147 154 149 158 133	Pass

7.0 PHOTO LOG



Figure 1: Backfilled Soft Spot Ready for Liner Deployment



Figure 2: Backfilled Soft Spot



Figure 3: Excavating Soft Soil over 4E Lateral



Figure 4: 4E Lateral Soft Spot Excavation



Figure 5: Backfilled 4E Lateral Soft Spot



Figure 6: Water Coming Out of Excavated Soft Spot Below 4E Lateral



Figure 7: Liner Deployment



Figure 8: GCL Deployed on Slope



Figure 9: Deploying GCL on Slope



Figure 10: Overall Deployment at the End of August 19



Figure 11: Prepared Subgrade for Liner Deployment



Figure 12: Prepared and Inspected Subgrade



Figure 13: Soft Spot in Subgrade



Figure 14: Soft Spot in Subgrade along 4E Lateral



Figure 15: Applying Bentonite to GCL Seam



Figure 16: Liner Deployed on Slope



Figure 17: Wrinkles in Fused Liner Seam



Figure 18: Overall Deployment as of August 20

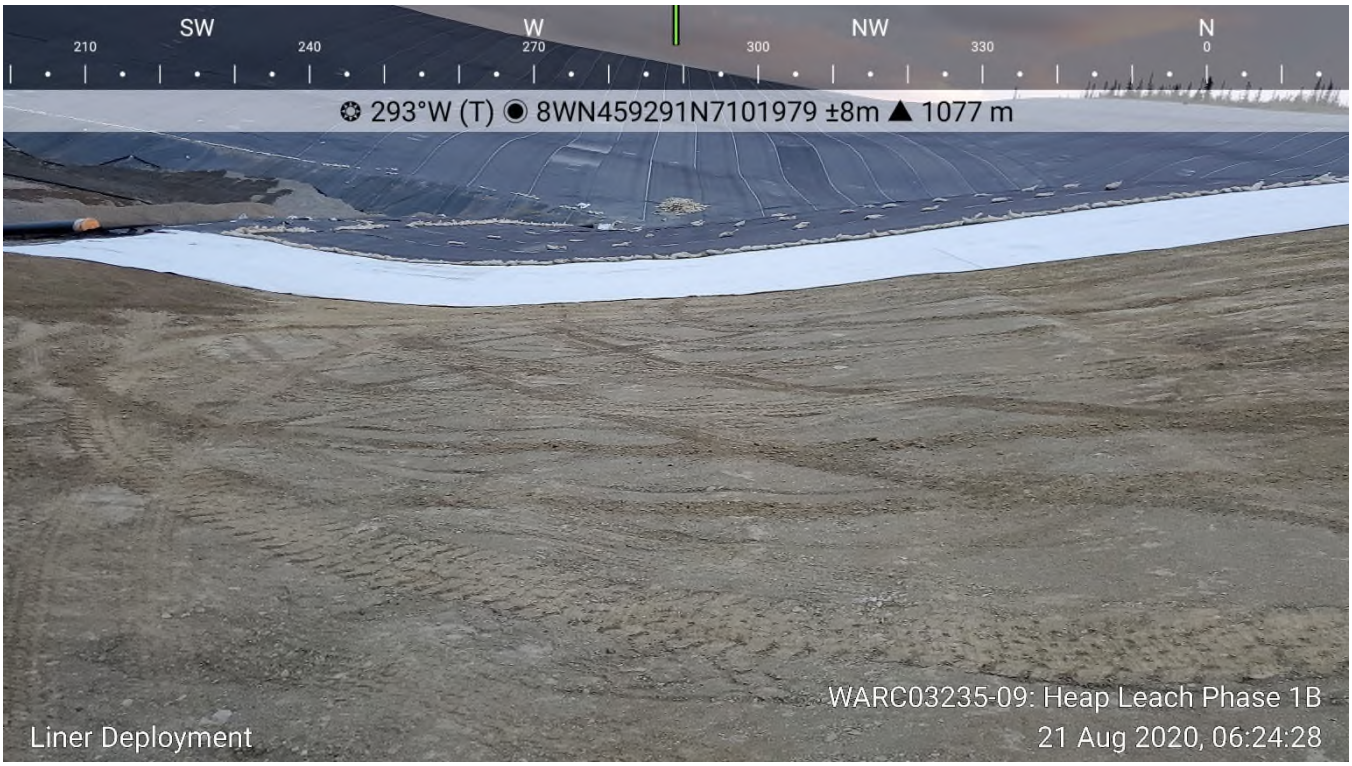


Figure 19: Prepared and Inspected Subgrade



Figure 20: Prepared and Inspected Subgrade

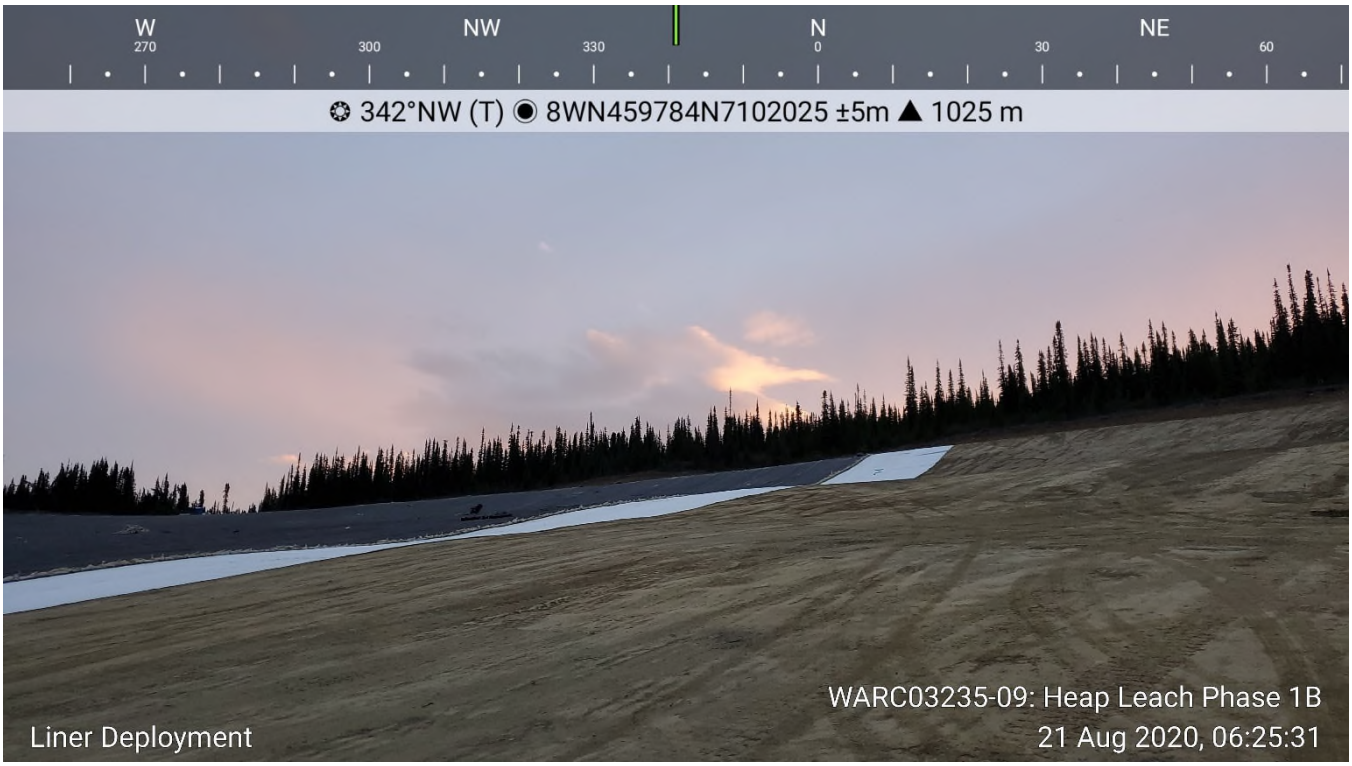


Figure 21: Prepared and Inspected Subgrade



Figure 22: Liner Deployed on Slope



Figure 23: Overall Deployment as of August 21



Figure 24: Prepared and Inspected Subgrade



Figure 25: Prepared and Inspected Subgrade



Figure 26: Prepared and Inspected Subgrade



Figure 27: Overall Deployment as of August 22



Figure 28: Inspected and Approved Subgrade



Figure 29: Inspected and Approved Subgrade



Figure 30: Inspected and Approved Subgrade



Figure 31: Soft Spots in Subgrade

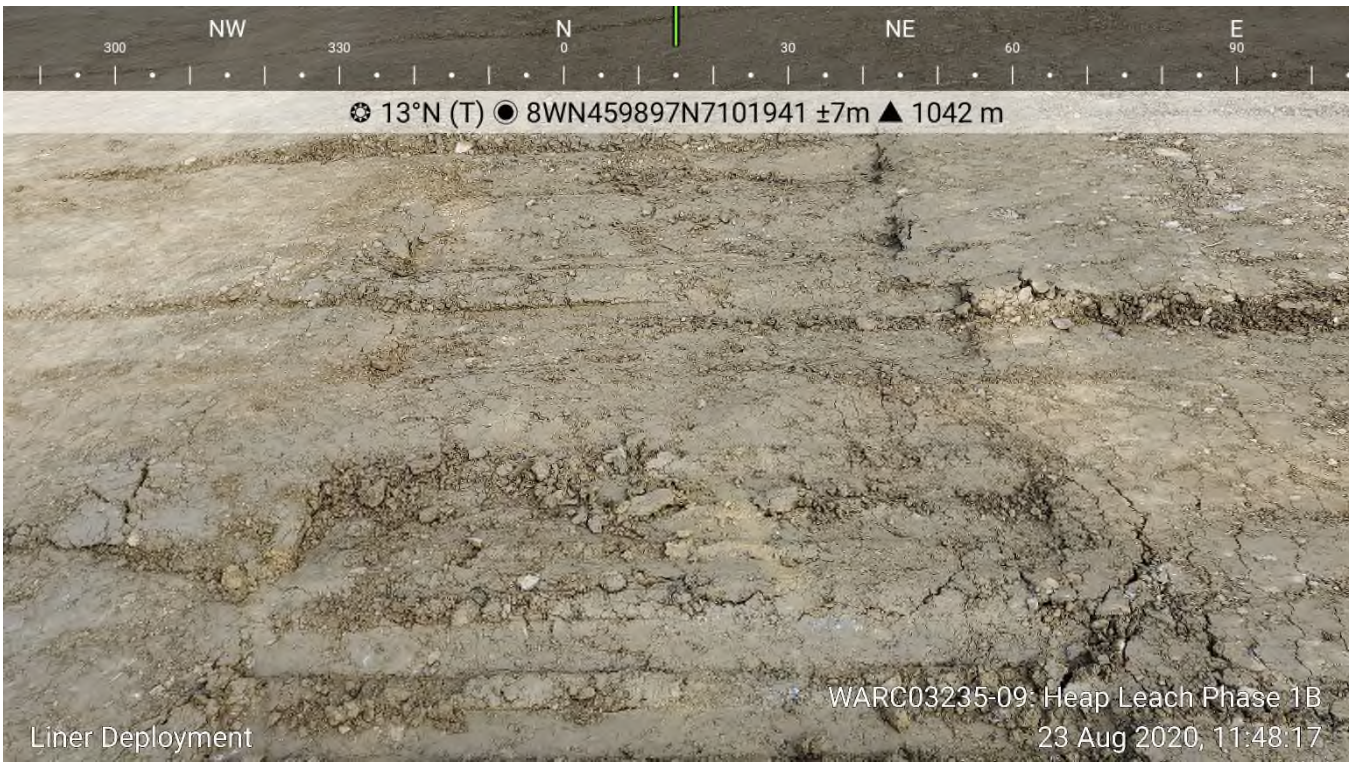


Figure 32: Soft Spots in Subgrade



Figure 33: Excavating Soft Spot below 3E Lateral



Figure 34: GCL Deployment



Figure 35: Rocks Pulled from Beneath GCL



Figure 36: Rocks Pulled from Beneath GCL



Figure 37: Rocks Pulled out of Subgrade by Side by Side



Figure 38: Overall Deployment as of August 23

TETRA TECH

WEEKLY FIELD REPORT

ISSUED FOR USE

Project:	Eagle Gold Heap Leach Phase 1B	**Date:**	August 30, 2020
Location:	Eagle Gold Mine	**Contractor:**	Ewing Transport / Layfield
Client:	Victoria Gold Corp.	**Contractor's Rep:**	Marshall Ewing / Chad Messervey
Contact:	Clint Abel	**Contractor's Email:**	
Weather:	Variable (see daily entries)	**Tetra Tech Representative:**	Adam Mickey
File:	704-ENG.WARC03235-09	**Status:**	Issued for Use

1.0 INTRODUCTION

Tetra Tech Canada Inc. (Tetra Tech) was retained by Victoria Gold Corp. (Victoria Gold) to provide CQA services at the Eagle Gold mine located north of Mayo, Yukon, at Dublin Gulch for the Eagle Gold Heap Leach Phase 1B expansion (Phase 1B). Mr. Adam Mickey, EIT, is Tetra Tech's representative on site.

Forte Dynamics (Forte) out of Fort Collins, Colorado provided the design and specification for Phase 1B, and Forte's representative is Clint Green.

Clint Abel, of JDS Energy & Mining, is Victoria Gold's project manager on site at the Eagle Gold mine.

Ewing Transport (Ewing), based out of Mayo, Yukon, is the construction contractor for Phase 1B.

Layfield Environmental Containment (Layfield) has been retained to provide and install the liner for Phase 1B, and their supervisor on site is Chad Messervey.

The following Field Report outlines Tetra Tech's CQA for the period of August 24, 2020, to August 30, 2020.

2.0 DAILY REPORTS

2.1 Highlights

- The total length of liner deployed this week was approximately 3,167.9 m for a total area covered of approximately 21,225 m^2.
- Layfield is placing three panels of GCL for every two panels of 80 mm LLDPE liner.

2.2 August 24, 2020

- Weather: cloudy with periods of rain throughout the day.
- Ewing is continuing to prepare subgrade and excavate soft spots.
- Tetra Tech inspected and approved the subgrade for today's deployment.
  - Rocks pulling out of the subgrade are an ongoing issue.

Tetra Tech Canada Inc.
61 Wasson Place
Whitehorse, YT Y1A 0H7 CANADA
Tel 867.668.3068 Fax 867.668.4349

- Layfield is continuing to deploy liner.
  - Due to rain in the forecast, Layfield is deploying enough GCL for one liner panel at a time.
  - Deployment was delayed from 9:00 am to 11:30 am due to rain.
  - After three slope lengths of liner had been deployed, rain began prior to having the third slope run fused.
  - Rain halted deployment at 3:00 pm for the rest of the day.
- Tetra Tech and Layfield's QC conducted destructive testing on obtained samples.
  - One destructive sample failed testing due to excessive peel into the weld, which was the P273-P403 tie in seam.
    - The seam will be extruded, and samples will be obtained from panels above and below the failed seam.

2.3 August 25, 2020

- No work performed today due to rain.

2.4 August 26, 2020

- No work performed today due to rain.

2.5 August 27, 2020

- Weather: partly cloudy with an early morning rainstorm prior to shift.
- Subgrade conditions are too saturated to deploy liner and subgrade requires work to repair damage from rain.
  - Erosion has damaged the subgrade extensively requiring sanding of the slope to fill in ruts.
  - At the bottom of the slope at Phase 1A, the subgrade is saturated, and the saturated materials will have to be cut out prior to deployment.
  - Ewing is repairing the subgrade along the GCL where erosion left ruts up to 250 mm deep.
- Layfield is performing detail work and clean up.
  - Layfield has three extruders working today.
    - One extruder is performing detail work on deployed liner.
    - One extruder is doing tie in to Phase 1A.
    - One extruder is doing patches where destructive samples have been obtained.
  - Layfield is vacuum testing all detail work performed to date.
- Tetra Tech and Layfield's QC finished destructive testing for liner deployed up to, and including, August 22.
  - For the failed destruct, samples were obtained from the P272-P403 and P275-P403 tie in seams. The samples passed destructive testing, so Layfield extruded the P273-P403 seam.
- Due to the rain, seams along the leading edge of GCL filled with mud.
  - Clint Green said it was ok to clean the mud out and continue deployment if the GCL was not hydrated.

- Layfield checked the GCL for hydration, and the fibers were intact.

2.6 August 28, 2020

- Weather: partly cloudy.
- Ewing is continuing to repair the subgrade damaged by rain.
  - The loader is back blading the subgrade and the packer is recompacting.
  - The skid steer is covering rocky areas with sand as required.
- Layfield is continuing to deploy liner.
  - Layfield cleaned the leading edge of the GCL and cleaned the mud out of the seams.
  - At 9:00 am, Layfield began deploying liner once Tetra Tech inspected and approved the subgrade.
  - Layfield deployed four slope runs of liner by the end of the day.

2.7 August 29, 2020

- Weather: mostly sunny.
- Heavy rain overnight cause minimal erosion to the subgrade, but a wet spot exists at the base of the slope at Phase 1A.
  - Ewing is going to clean the saturated soils out of the area and replace with drier material.
- Ewing is continuing to work on subgrade in advance of liner deployment.
  - Due to rain in the forecast, Ewing is going to limit the amount of prepared subgrade exposed to the weather.
- Layfield is continuing to deploy liner.
  - Layfield is performing a correction to the deployment angle today.
    - To ensure the correction is filled in by the end of the day, Layfield is correcting to a point halfway down the slope. Once the corner is filled in, they will continue deploying to the south.
  - Tetra Tech inspected the prepared subgrade and approved it for deployment after the packer rolled some loose areas where the skid steer placed cover sand over rocky areas.
    - The subgrade to the south of the correction is too saturated to continue deployment.
      - The packer can not roll the slope to tighten it up and pound in loose rocks, and the subgrade materials are sticking to the drum while rolling the subgrade.
  - Due to subgrade conditions, upon completion of deployment at 1:00 pm, Layfield is performing detail extrusion work.
    - If the subgrade dries out enough by mid-afternoon, Layfield will continue to deploy GCL.
    - The subgrade was dry enough by 2:00 pm to begin rolling with a packer, and Layfield began deployment at 4:00, getting out one slope run of liner to tie into the existing deployed liner.
- Concerns were raised whether there was enough GCL on site to finish the slope as the overall slope area is greater than the original design.

  - Survey picked up the slope and estimated that the remaining slope area to be covered is 46,300 m^2 to 48,000 m^2. There are 279 rolls of GCL on site, which should cover an area of approximately 51,500 m^2. The 279 rolls include the rolls at Victoria Gold's Laydown area from the previous year.
    - There are more rolls at Victoria Gold's laydown, but they do not have their protective wrapping on them, so they could be compromised due to hydration.
- Tetra Tech and Layfield's QC conducted destructive testing of liner seam samples.
  - All destructive testing has been performed on all liner deployed to the end of the day on August 24.

2.8 August 30, 2020

- Weather: mostly cloudy with periods of light rain.
- Ewing is continuing to prepare subgrade in advance of deployment.
  - Due to heavy rain in the forecast for the next five days beginning Monday, Ewing is going to ensure the subgrade drains with no spots where water can collect.
    - Ewing will establish drainage ditches to protect the deployed liner from washouts, if required.
- Tetra Tech inspected the prepared subgrade and approved it for today's deployment.
- Layfield is continuing to deploy liner.
  - Layfield deployed liner till 4:00 pm.
    - Deployment was halted due to rain on the horizon. Due to rain in the forecast, Layfield did not want to have any GCL exposed because of not being able to get it covered today.
    - Layfield spent the rest of the day ensuring that the deployed liner is protected from rain and wind.
- Due to the five days of rain in the forecast, Victoria Gold authorized personnel associated with liner deployment to take the days off in Whitehorse.
  - The crews will leave once the rain begins in case more deployment can occur prior to leaving.
  - For Tetra Tech and Layfield, the crew will likely return to site once the subgrade repairs begin because Layfield is caught up on detail work.

3.0 GEOSYNTHETIC ROLL NUMBERS PLACED

Table 1 summarizes the daily geosynthetic roll numbers placed on the slope during liner installation. All panel lengths are approximate, and where angled joints are used, panel length is based from the center of the panel.

Table 1: Geosynthetic Roll Numbers Placed on Slope

Date	GCL Roll Number	LLDPE Liner Roll Number	Panel Number (Length)
August 24	502344053, 502344079 502344104, 502344044 502344072, 502344101 502344052, 502344078 502344629, 502344080 502344102, 502344088 502344042. 502344099 502343970, 502344089 502344043, 502344636 502344045, 502344621	10695-023 10695-006 10695-012 10695-025 10695-035 10695-032 10695-021	P483 (76.1 m) P484 (127.6 m) P485 (32.7 m), P486 (82.5 m) P487 (127.9 m) P488 (25.0 m), P489 (92.6 m) P490 (131.5 m) P491 (14.8 m)
August 25	-	-	-
August 26	-	-	-
August 27	-	-	-
August 28	0242-347563, 0242347633 0242-347553, 0242-347552 0242-347578, 0242-347636 0242-347882, 0242-347837 0242-347624, 0242-347622 0242-347570, 0242-347621 0242-347623, 0242-347579 0242-347640, 0242-347836 0242-347572 502347501, 502344087 502343889, 502343890 502343938, 502344625 502344083, 502344074 502344082, 502344630 502347495, 502344128 502344100, 502344145 502344077	10695-021 10695-031 10695- 10695-033 10695-028 10695-007 10695-034 10695-024	P492 (113.6 m) P493 (128.3 m) P494 (128.3 m) P495 (113.6 m), P496 (19.2 m) P497 (126.8 m) P498 (0.3 m), P499 (92.1 m) P500 (36.2 m) P501 (128.1 m) P502 (73.0 m)
August 29	0242-347574, 0242-347593 502344721, 502344049 502344051, 502344086 502344096, 502344056 502344140, 502344132 502344149, 502344141 502344164, 502344143 502344048, 502344137 502344147, 502344150 502344138, 502344081 502344155, 502344146 502344144, 502344148	10695-002 10695-008 10695-009 10695-030 10695-024 10695-015 10695-002 10695-004	P503 (9.1 m), P504 (15.5 m) P505 (7.5 m), P506 (20.2 m) P507 (35.3 m), P509 (37.6 m) P511 (12.1 m) P508 (14.1 m), P510 (14.1 m) P512 (13.0 m), P517 (26.3 m) P515 (8.8 m), P518 (52.1 m) P516 (68.1 m), P519 (59.0 m) P520 (103.7 m) P521 (22.7 m)

Date	GCL Roll Number	LLDPE Liner Roll Number	Panel Number (Length)
August 30	0242-347632, 0242-347554 0242-347589, 0242-347575 0242-347549, 0242-347577 0242-347548, 0242-347584 0242-347588, 0242-347631 0242-347590 502344067, 502344046 502344050, 502344064 502343962, 502344057 502344055, 502344698 502347498, 502344105 502344007, 502344627 502344002, 502344633 502344626, 502344006 502344018, 502344001 502344000	10695-004 10695-005 10695-010 10695-001 10698-004 10697-036 10698-024 10698-015	P522 (6.9 m), P523 (103.6 m) P524 (23.6 m), P525 (96.1 m), P527 (6.1 m) P526 (49.0 m), P528 (77.7 m) P529 (73.3 m), P530 (45.8 m), P532 (11.0 m) P531 (122.4 m), P533 (3.8 m) P534 (128.8 m) P535 (40.5 m), P536 (76.8 m) P537 (113.1 m)

4.0 TRIAL SEAM

Table 2 summarizes the weekly trial seam results. For fusion, the apparatus settings are temperature and speed, and for extrusion, the apparatus settings are preheat and barrel temperature. Five tests are performed for each criterion.

Table 2: Trial Seam Results

Date	Time	Fusion or Extrusion	Tech	Apparatus #	Temp or Preheat (°F)	Speed (%) or Barrel Temp (°F)	$Peel_{inside}$ (100 min)	$Peel_{outside}$ (100 min for Fusion 88 min for Extrusion)	Shear (120 min)	Smooth or Textured
Aug 24	8:00	Fusion	CC	WW-026	850	35	139 141 142 148 140	131 159 142 152 150	149 168 174 172 183	Textured
Aug 24	8:00	Fusion	JC	WW-045	850	55	150 155 143 150 140	148 150 143 153 160	148 157 153 160 154	Smooth
Aug 24	8:00	Fusion	JK	WW-054	850	55	134 134 134 145 136	133 133 136 131 143	161 149 162 156 161	Smooth
Aug 24	8:00	Extrusion	EA	04037	500	495	N/A	112 111 137 127 106	161 166 167 164 167	N/A

Date	Time	Fusion or Extrusion	Tech	Apparatus #	Temp or Preheat (°F)	Speed (%) or Barrel Temp (°F)	$Peel_{inside}$ (100 min)	$Peel_{outside}$ (100 min for Fusion 88 min for Extrusion)	Shear (120 min)	Smooth or Textured
Aug 24	8:30	Fusion	JK	WW-054	850	35	149	148	176	Textured
							154	150	155	
							149	144	180	
							157	152	182	
							153	155	177	
Aug 24	8:30	Fusion	JC	WW-045	850	35	138	131	165	Textured
							153	145	159	
							146	142	165	
							160	156	178	
							141	130	178	
Aug 24	8:30	Fusion	CC	WW-026	850	55	148	155	153	Smooth
							154	156	156	
							133	149	169	
							151	150	154	
							141	151	151	
Aug 24	12:15	Fusion	JK	WW-054	850	35	138	146	168	Textured
							151	134	180	
							123	135	177	
							142	143	162	
							122	147	171	
Aug 24	12:15	Fusion	JC	WW-045	850	35	142	134	168	Textured
							139	124	173	
							154	148	156	
							153	143	166	
							141	153	162	
Aug 24	12:15	Fusion	CC	WW-026	850	55	116	142	146	Smooth
							134	129	135	
							119	122	145	
							122	133	144	
							124	125	146	
Aug 24	12:15	Fusion	JK	WW-054	850	55	135	133	138	Smooth
							135	127	143	
							130	129	141	
							129	109	141	
							133	127	141	
Aug 24	12:15	Fusion	JC	WW-045	850	55	131	108	143	Smooth
							122	132	148	
							110	122	144	
							124	132	150	
							128	133	141	
Aug 27	9:30	Extrusion	EA	04037	505	500	N/A	118	154	N/A
								130	166	
								126	168	
								132	160	
								116	163	

Date	Time	Fusion or Extrusion	Tech	Apparatus #	Temp or Preheat (°F)	Speed (%) or Barrel Temp (°F)	$Peel_{inside}$ (100 min)	$Peel_{outside}$ (100 min for Fusion 88 min for Extrusion)	Shear (120 min)	Smooth or Textured
Aug 27	9:30	Extrusion	RW	EX-008	495	495	N/A	110 97 96 98 105	154 141 162 163 157	N/A
Aug 27	12:00	Extrusion	GP	EX-35	500	495	N/A	156 158 148 146 137	180 172 184 176 183	N/A
Aug 27	13:30	Extrusion	EA	04037	505	500	N/A	120 121 134 121 130	165 159 159 159 161	N/A
Aug 27	15:00	Extrusion	RW	EX-008	495	495	N/A	123 129 121 129 130	146 142 148 151 149	N/A
Aug 27	16:20	Extrusion	GP	EX-35	500	495	N/A	131 129 149 135 146	162 167 167 163 161	N/A
Aug 27	17:00	Extrusion	EA	04037	505	500	N/A	115 123 119 123 121	130 148 130 142 126	N/A
Aug 28	12:15	Fusion	CC	WW-045	850	35	128 161 126 157 140	137 165 156 162 150	169 187 184 184 177	Textured
Aug 28	12:15	Fusion	JC	WW-054	850	55	130 141 126 134 147	133 132 145 131 145	155 152 155 151 160	Smooth
Aug 28	12:15	Fusion	JK	WW-022	850	55	112 132 140 123 140	135 138 136 130 143	158 143 156 148 157	Smooth

Date	Time	Fusion or Extrusion	Tech	Apparatus #	Temp or Preheat (°F)	Speed (%) or Barrel Temp (°F)	$Peel_{inside}$ (100 min)	$Peel_{outside}$ (100 min for Fusion 88 min for Extrusion)	Shear (120 min)	Smooth or Textured
Aug 28	12:15	Fusion	JC	WW-054	850	35	149	164	169	Textured
							149	159	182	
							159	145	185	
							141	155	176	
							144	151	164	
Aug 28	12:15	Fusion	CC	WW-045	850	55	150	150	176	Smooth
							150	155	144	
							144	142	172	
							146	156	162	
							148	156	167	
Aug 28	12:15	Fusion	JK	WW-022	850	35	158	152	167	Textured
							148	161	167	
							152	128	174	
							164	152	185	
							137	164	166	
Aug 28	16:30	Fusion	JK	WW-022	850	35	143	161	176	Textured
							129	154	178	
							134	156	184	
							150	160	178	
							144	152	169	
Aug 28	16:30	Fusion	JC	WW-045	850	55	136	135	157	Smooth
							120	130	152	
							126	130	154	
							127	142	152	
							140	126	151	
Aug 28	16:30	Fusion	JC	WW-045	850	35	158	161	180	Textured
							156	129	189	
							160	147	167	
							161	162	183	
							156	159	180	
Aug 28	16:30	Fusion	JK	WW-022	850	55	114	135	153	Smooth
							129	127	153	
							132	134	125	
							127	131	129	
							130	132	148	
Aug 28	16:30	Fusion	CC	WW-026	850	35	162	130	165	Textured
							160	152	179	
							142	153	169	
							178	127	169	
							111	160	170	
Aug 28	16:30	Fusion	CC	WW-026	850	55	108	138	153	Smooth
							123	138	146	
							129	130	150	
							127	135	149	
							129	129	157	

Date	Time	Fusion or Extrusion	Tech	Apparatus #	Temp or Preheat (°F)	Speed (%) or Barrel Temp (°F)	$Peel_{inside}$ (100 min)	$Peel_{outside}$ (100 min for Fusion 88 min for Extrusion)	Shear (120 min)	Smooth or Textured
Aug 29	12:00	Fusion	JK	WW-022	850	35	165	168	162	Textured
							153	153	180	
							159	153	170	
							157	159	170	
							163	167	184	
Aug 29	12:00	Fusion	JC	WW-045	850	35	149	147	178	Textured
							147	179	172	
							151	154	181	
							159	155	176	
							159	161	161	
Aug 29	12:00	Fusion	CC	WW-026	850	35	137	144	169	Textured
							158	135	172	
							147	160	174	
							154	154	169	
							154	156	170	
Aug 29	12:00	Fusion	JK	WW-022	850	55	159	141	156	Smooth
							140	141	136	
							143	137	142	
							143	140	148	
							142	146	150	
Aug 29	12:00	Fusion	JC	WW-045	850	55	129	143	145	Smooth
							133	142	148	
							130	130	149	
							130	142	144	
							133	128	143	
Aug 29	12:00	Fusion	CC	WW-026	850	55	130	136	151	Smooth
							130	141	138	
							131	142	138	
							127	132	143	
							128	128	140	
Aug 29	15:00	Extrusion	EA	04037	500	495	N/A	125	154	N/A
								144	167	
								150	165	
								140	177	
								145	166	
Aug 29	15:00	Extrusion	RW	EX-025	500	495	N/A	136	157	N/A
								147	163	
								164	150	
								143	165	
								140	160	
Aug 29	15:00	Extrusion	RCL	EX-035	500	495	N/A	129	161	N/A
								146	159	
								136	161	
								149	156	
								147	162	

Date	Time	Fusion or Extrusion	Tech	Apparatus #	Temp or Preheat (°F)	Speed (%) or Barrel Temp (°F)	$Peel_{inside}$ (100 min)	$Peel_{outside}$ (100 min for Fusion 88 min for Extrusion)	Shear (120 min)	Smooth or Textured
Aug 29	17:15	Fusion	JC	WW-045	850	40	130 133 147 135 137	134 141 139 131 133	156 159 138 139 141	Smooth-Textured
Aug 29	17:15	Fusion	JK	WW-022	850	35	135 129 133 153 142	135 139 142 140 151	156 155 161 169 184	Textured
Aug 29	17:15	Fusion	JK	WW-022	850	55	135 121 129 131 128	136 142 141 137 142	161 154 160 165 168	Smooth
Aug 30	8:15	Extrusion	EA	04037	505	500	N/A	126 132 106 112 149	157 142 140 165 155	N/A
Aug 30	9:20	Fusion	DT	WW-022	850	35	163 163 150 153 149	155 144 163 158 138	167 170 166 173 176	Textured
Aug 30	9:20	Fusion	CC	WW-026	850	35	129 145 137 147 159	155 149 148 148 139	159 171 155 161 170	Textured
Aug 30	9:20	Fusion	JC	WW-045	850	35	138 148 126 148 137	149 134 144 160 154	163 173 159 168 154	Textured
Aug 30	9:20	Fusion	JC	WW-045	850	55	148 148 145 151 148	150 148 148 152 151	160 146 160 151 154	Smooth
Aug 30	9:20	Fusion	CC	WW-026	850	55	151 147 151 146 151	143 148 143 140 147	162 146 143 154 147	Smooth

Date	Time	Fusion or Extrusion	Tech	Apparatus #	Temp or Preheat (°F)	Speed (%) or Barrel Temp (°F)	$Peel_{inside}$ (100 min)	$Peel_{outside}$ (100 min for Fusion 88 min for Extrusion)	Shear (120 min)	Smooth or Textured
Aug 30	12:30	Fusion	DT	WW-022	850	35	158	153	168	Textured
							154	140	189	
							142	110	173	
							149	128	168	
							140	129	173	
Aug 30	12:30	Fusion	JC	WW-045	850	35	150	150	179	Textured
							115	151	151	
							136	141	139	
							148	135	153	
							150	129	163	
Aug 30	12:30	Fusion	CC	WW-026	850	35	155	154	164	Textured
							135	152	163	
							158	136	166	
							149	147	171	
							151	147	177	
Aug 30	12:30	Fusion	DT	WW-022	850	55	147	155	165	Smooth
							149	150	146	
							139	150	173	
							133	151	162	
							146	146	154	
Aug 30	12:30	Fusion	JC	WW-045	850	55	151	154	160	Smooth
							136	155	160	
							148	147	162	
							156	147	163	
							148	155	165	
Aug 30	12:30	Fusion	CC	WW-026	850	55	136	155	168	Smooth
							130	156	158	
							139	147	157	
							150	147	152	
							146	155	161	
Aug 30	16:30	Fusion	JK	WW-022	850	40	150	157	165	Smooth-Textured
							143	153	165	
							154	163	167	
							151	150	164	
							153	161	162	

5.0 NON-DESTRUCTIVE TESTING

Table 3 summarizes the weekly non-destructive pressure testing results.

Table 3: Non-Destructive Testing Results

Date Fused	Date Tested	Time Tested	Seam #	psi Start	psi End	Pass or Fail	Notes
Aug 21	Aug 27	18:11	P437-P441 Vertical	40	40	Pass	
Aug 21	Aug 27	18:12	P441-P444 Vertical	40	39	Pass	
Aug 21	Aug 27	18:13	P444-P447 Vertical	40	40	Pass	
Aug 21	Aug 27	18:14	P447-P450 Vertical	40	40	Pass	Top of seam to patch
Aug 21	Aug 27	18:15	P447-P450 Vertical	40	40	Pass	Patch to bottom of seam
Aug 21	Aug 27	18:16	P450-P453 Vertical	40	40	Pass	
Aug 22	Aug 27	16:00	P456-P457 Cross	40	40	Pass	
Aug 22	Aug 27	16:03	P462-P463 Cross	40	40	Pass	
Aug 20	Aug 28	10:35	P416-P418 Vertical	40	39	Pass	
Aug 22	Aug 28	11:07	P461-P462 Cross	40	40	Pass	
Aug 22	Aug 28	11:36	P464-P465 Cross	40	40	Pass	
Aug 22	Aug 28	16:17	P465-P466 Cross	40	40	Pass	
Aug 22	Aug 28	11:17	P467-P468 Cross	40	40	Pass	
Aug 22	Aug 28	16:22	P468-P469 Cross	40	40	Pass	
Aug 22	Aug 28	16:22	P469-P470 Cross	40	40	Pass	
Aug 22	Aug 28	14:37	P453-P456 Vertical	40	39	Pass	
Aug 22	Aug 28	16:00	P456-P460 Vertical	40	40	Pass	
Aug 22	Aug 28	14:39	P456-P459 Vertical	40	40	Pass	
Aug 22	Aug 28	16:01	P460-P462 Vertical	40	40	Pass	
Aug 22	Aug 28	14:40	P459-P462 Vertical	40	40	Pass	
Aug 22	Aug 28	16:03	P463-P465 Vertical	40	40	Pass	
Aug 22	Aug 28	14:41	P462-P465 Vertical	40	40	Pass	
Aug 22	Aug 28	16:17	P466-P468 Vertical	40	40	Pass	
Aug 22	Aug 28	14:42	P465-P468 Vertical	40	40	Pass	
Aug 22	Aug 28	11:36	P465-P467 Vertical	40	40	Pass	
Aug 22	Aug 28	13:44	P464-P467 Vertical	40	40	Pass	
Aug 23	Aug 28	16:22	P470-P472 Vertical	40	40	Pass	
Aug 23	Aug 28	14:23	P468-P472 Vertical	40	39	Pass	
Aug 23	Aug 28	11:17	P468-P471 Vertical	40	40	Pass	
Aug 23	Aug 28	13:45	P467-P471 Vertical	40	40	Pass	
Aug 23	Aug 28	16:33	P473-P475 Vertical	40	40	Pass	
Aug 23	Aug 28	15:01	P472-P475 Vertical	40	39	Pass	
Aug 23	Aug 28	13:46	P471-P474 Vertical	40	39	Pass	
Aug 23	Aug 28	16:34	P476-P478 Vertical	40	38	Pass	
Aug 23	Aug 28	15:02	P475-P478 Vertical	40	40	Pass	
Aug 23	Aug 28	11:48	P475-P477 Vertical	40	40	Pass	
Aug 23	Aug 28	13:48	P474-P477 Vertical	40	40	Pass	
Aug 23	Aug 28	15:03	P478-P480 Vertical	40	40	Pass	Top of seam to patch
Aug 23	Aug 28	13:50	P477-P480 Vertical	40	40	Pass	
Aug 23	Aug 28	15:04	P481-P484 Vertical	40	40	Pass	Top of seam to patch
Aug 23	Aug 28	11:50	P481-P483 Vertical	40	40	Pass	
Aug 23	Aug 28	13:54	P480-P483 Vertical	40	40	Pass	

Date Fused	Date Tested	Time Tested	Seam #	psi Start	psi End	Pass or Fail	Notes
Aug 24	Aug 28	12:16	P484-P486 Vertical	40	39	Pass	
Aug 24	Aug 28	14:22	P483-P486 Vertical	40	40	Pass	
Aug 24	Aug 28	12:18	P487-P489 Vertical	40	40	Pass	
Aug 24	Aug 28	11:50	P483-P484 Cross	40	40	Pass	
Aug 24	Aug 28	12:16	P486-P487 Cross	40	40	Pass	
Aug 22	Aug 29	1526	P457-P460 Vertical	40	40	Pass	
Aug 22	Aug 29	1527	P460-P463 Vertical	40	40	Pass	
Aug 22	Aug 29	1528	P463-P466 Vertical	40	40	Pass	
Aug 22	Aug 29	1529	P466-P470 Vertical	40	40	Pass	
Aug 23	Aug 29	1530	P470-P473 Vertical	40	40	Pass	
Aug 23	Aug 29	1531	P473-P476 Vertical	40	40	Pass	
Aug 23	Aug 29	1545	P476-P479 Vertical	40	38	Pass	
Aug 23	Aug 29	1615	P479-P482 Vertical	40	39	Pass	Bottom of seam to patch
Aug 23	Aug 29	1546	P479-P482 Vertical	40	40	Pass	Patch to top of seam
Aug 23	Aug 29	1635	P479-P481 Vertical	40	40	Pass	
Aug 23	Aug 29	1618	P478-P481 Vertical	40	40	Pass	Bottom of seam to patch
Aug 23	Aug 29	1538	P482-P485 Vertical	40	40	Pass	
Aug 23	Aug 29	1647	P482-P484 Vertical	40	39	Pass	
Aug 23	Aug 29	1612	P481-P484 Vertical	40	40	Pass	Bottom of seam to patch
Aug 24	Aug 29	1545	P485-P488 Vertical	40	40	Pass	
Aug 24	Aug 29	1649	P485-P487 Vertical	40	40	Pass	
Aug 24	Aug 29	1702	P484-P487 Vertical	40	40	Pass	Top of seam to patch
Aug 24	Aug 29	1702	P484-P487 Vertical	40	40	Pass	Between patches
Aug 24	Aug 29	1505	P484-P487 Vertical	40	40	Pass	Patch to bottom of seam
Aug 24	Aug 29	1546	P488-P491 Vertical	40	40	Pass	
Aug 24	Aug 29	1650	P488-P490 Vertical	40	40	Pass	
Aug 24	Aug 29	1506	P487-P490 Vertical	40	40	Pass	Bottom of seam to patch
Aug 24	Aug 29	1701	P487-P490 Vertical	40	40	Pass	Between patches
Aug 24	Aug 29	1655	P487-P490 Vertical	40	40	Pass	Patch to top of seam
Aug 24	Aug 29	1647	P484-P485 Cross	40	40	Pass	
Aug 24	Aug 29	1649	P487-P488 Cross	40	40	Pass	

6.0 DESTRUCTIVE TESTING

Table 4 summarizes the weekly destructive testing results. Five tests are performed for each criterion.

Table 4: Destructive Testing Results

Date Fused	Time Fused	Tech	Apparatus	Location (UTM is +/- 4 m)	Sample ID	$Peel_{in}$ (100 min)	$Peel_{out}$ (100 min)	Shear (120 min)	Pass or Fail
Aug 17	15:45	JK	WW-054	P273-P403 Tie In Top of Seam	D178A	141 131 126 124	129 124 124 130		Fail
Aug 17	15:45	JK	WW-054	P272-P403 Tie In	D178B	147 154 128 134 145	146 132 150 125 136	152 153 158 157 157	Pass
Aug 17	15:45	JK	WW-054	P275-P403 Tie In	D178C	156 153 151 152 134	157 137 138 146 135	156 154 155 151 145	Pass
Aug 21	17:57	CC	WW-045	P451-P454 Vertical Top of Seam	D179	130 128 148 132 131	122 131 131 129 128	145 150 144 151 145	Pass
Aug 22	15:45	JC	WW-045	P458-P461 Vertical Bottom of Seam	D180	143 144 151 133 142	140 144 144 143 145	164 164 163 146 164	Pass
Aug 22	16:24	JK	WW-054	P461-P464 Vertical Bottom of Seam	D181	149 150 148 145 137	137 153 150 139 149	152 154 155 157 157	Pass
Aug 22	18:33	JK	WW-054	P464-P467 Vertical Bottom of Seam	D182	155 151 157 159 160	134 157 147 157 155	158 159 162 153 162	Pass
Aug 19	16:24	JK	WW-045	P414-P417 Vertical Top of Seam	D183	145 141 138 145 142	141 146 145 147 145	152 153 149 153 152	Pass

Date Fused	Time Fused	Tech	Apparatus	Location (UTM is +/- 4 m)	Sample ID	$Peel_{in}$ (100 min)	$Peel_{out}$ (100 min)	Shear (120 min)	Pass or Fail
Aug 19	12:33	JC	WW-045	P408-P411 Vertical Top of Seam	D184	135 137 121 138 138	143 136 134 143 137	139 152 149 151 151	Pass
Aug 22	10:02	JK	WW-022	P454-P457 Vertical Top of Seam	D185	137 133 151 150 143	143 145 150 142 149	145 149 153 158 156	Pass
Aug 21	16:35	JK	WW-022	P448-P451 Vertical Top of Seam	D186	146 150 149 147 141	151 141 134 142 140	161 155 159 159 160	Pass
Aug 19	11:00	JK	WW-022	P405-P408 Vertical Top of Seam	D187	131 135 141 128 132	137 133 145 140 136	135 145 128 145 142	Pass
Aug 17	14:00	JK	WW-054	P370-P405 Vertical Top of Seam	D188	146 134 146 137 144	135 151 135 132 125	151 150 155 146 153	Pass
Aug 20	9:34	JK	WW-022	P417-P420 Vertical Top of Seam	D189	132 129 128 133 110	149 147 152 149 140	155 155 145 146 155	Pass
Aug 21	10:06	JK	WW-022	P439-P442 Vertical Top of Seam	D190	152 134 144 140 150	147 137 148 148 146	152 157 162 159 160	Pass
Aug 20	16:48	CC	WW-045	P435-P439 Vertical Top of Seam	D191	134 134 135 125 129	128 136 142 136 139	149 152 154 154 154	Pass
Aug 21	11:16	JK	WW-022	P436-P440 Vertical Bottom of Seam	D192	128 129 127 129 104	124 140 134 147 132	156 144 142 140 145	Pass

Date Fused	Time Fused	Tech	Apparatus	Location (UTM is +/- 4 m)	Sample ID	$Peel_{in}$ (100 min)	$Peel_{out}$ (100 min)	Shear (120 min)	Pass or Fail
Aug 20	17:39	CC	WW-045	P433-P436 Vertical Bottom of Seam	D193	144 143 141 133 134	125 131 133 139 133	142 154 154 150 148	Pass
Aug 20	14:50	JC	WW-026	P427-P430 Vertical Bottom of Seam	D194	148 153 145 151 141	150 137 143 149 127	170 144 171 157 168	Pass
Aug 21	18:09	JC	WW-026	P449-P452 Vertical Bottom of Seam	D195	133 143 140 140 136	143 142 139 139 137	149 150 148 153 146	Pass
Aug 20	13:47	JC	WW-026	P429-P432 Vertical Top of Seam	D196	139 146 156 145 123	151 142 148 141 144	158 155 159 156 159	Pass
Aug 21	12:30	CC	WW-045	P442-P445 Vertical Top of Seam	D197	127 128 127 128 129	142 146 132 133 118	151 148 154 153 146	Pass
Aug 21	17:48	JK	WW-022	P446-P449 Vertical Bottom of Seam	D198	138 141 136 142 129	141 129 142 142 156	162 155 163 137 163	Pass
Aug 19	15:45	JK	WW-022	P411-P414 Vertical Top of Seam	D199	146 142 133 130 133	133 127 136 128 134	144 151 147 151 132	Pass
Aug 20	13:17	CC	WW-045	P426-P429 Vertical Top of Seam	D200	139 147 136 148 144	133 145 143 136 146	158 143 159 151 160	Pass
Aug 19	12:22	JK	WW-022	P403-P406 Vertical Bottom of Seam	D201	116 123 120 125 118	132 137 126 138 138	146 155 148 156 150	Pass

Date Fused	Time Fused	Tech	Apparatus	Location (UTM is +/- 4 m)	Sample ID	$Peel_{in}$ (100 min)	$Peel_{out}$ (100 min)	Shear (120 min)	Pass or Fail
Aug 22	11:16	JK	WW-022	P452-P455 Vertical Bottom of Seam	D202	124 135 128 127 135	132 142 135 134 134	148 144 149 138 148	Pass
Aug 19	16:40	JK	WW-022	P409-P412 Vertical Bottom of Seam	D203	120 119 112 116 119	143 132 139 130 141	140 157 137 153 144	Pass
Aug 20	14:28	CC	WW-045	P424-P427 Vertical Bottom of Seam	D204	128 130 119 130 125	118 135 136 138 142	150 146 149 134 149	Pass
Aug 21	13:55	CC	WW-045	P440-P443 Vertical Bottom of Seam	D205	152 146 148 144 147	138 138 134 139 137	148 155 131 157 144	Pass
Aug 20	13:12	JK	WW-022	P421-P424 Vertical Bottom of Seam	D206	150 150 149 146 151	130 143 137 140 137	149 137 149 132 147	Pass
Aug 20	10:40	CC	WW-045	P418-P421 Vertical Bottom of Seam	D207	147 149 146 142 146	146 137 147 119 145	136 151 143 148 146	Pass
Aug 19	17:30	JC	WW-045	P412-P415 Vertical Bottom of Seam	D208	128 129 123 132 135	130 139 143 133 127	147 143 150 139 148	Pass
Aug 22	11:58	JC	WW-026	P455-P458 Vertical Bottom of Seam	D209	132 131 128 130 114	129 128 131 130 131	135 144 135 143 140	Pass
Aug 20	9:30	JC	WW-045	P422-P423 Cross Right Side of Seam	D210	133 123 151 146 146	135 147 136 148 141	163 170 167 170 164	Pass

Date Fused	Time Fused	Tech	Apparatus	Location (UTM is +/- 4 m)	Sample ID	$Peel_{in}$ (100 min)	$Peel_{out}$ (100 min)	Shear (120 min)	Pass or Fail
Aug 20	12:16	JK	WW-022	P423-P426 Vertical Bottom of Seam	D211	135 134 137 130 138	138 137 115 135 134	139 146 148 146 145	Pass
Aug 21	13:55	CC	WW-045	P443-P446 Vertical Top of Seam	D212	129 129 130 129 129	141 133 137 135 136	137 142 139 140 139	Pass
Aug 21	11:02	JC	WW-026	P446-P447 Cross Left Side of Seam	D213	150 149 146 155 145	162 144 156 163 145	162 165 166 152 163	Pass
Aug 20	14:28	CC	WW-045	P424-P427 Vertical 50 m from Top of Seam	D214	133 131 132 132 125	140 141 139 138 143	149 144 147 150 150	Pass
Aug 19	11:28	CC	WW-022	P409-P410 Cross Left Side of Seam	D215	148 151 168 146 143	154 161 143 141 161	153 170 164 157 168	Pass
Aug 19	14:07	JC	WW-045	P406-P409 Vertical Top of Seam	D216	137 132 116 119 128	134 135 131 138 137	138 144 138 140 138	Pass
Aug 23	11:07	RW	WW-054	P470-P473 Vertical Top of Seam	D217	150 147 122 141 142	142 151 153 154 152	158 159 164 160 154	Pass
Aug 23	14:03	JC	WW-045	P471-P474 Vertical Bottom of Seam	D218	150 132 155 154 153	158 139 157 147 155	160 161 157 169 156	Pass
Aug 23	12:36	JC	WW-045	P473-P476 Vertical Top of Seam	D219	144 139 151 149 142	154 132 139 153 150	160 159 156 157 157	Pass

Date Fused	Time Fused	Tech	Apparatus	Location (UTM is +/- 4 m)	Sample ID	$Peel_{in}$ (100 min)	$Peel_{out}$ (100 min)	Shear (120 min)	Pass or Fail
Aug 23	15:12	RW	WW-054	P474-P477 Vertical Bottom of Seam	D220	159 160 159 156 157	157 158 151 149 157	159 165 157 158 161	Pass
Aug 23	16:29	CC	WW-026	P477-P480 Vertical Bottom of Seam	D221	142 153 152 152 150	163 156 163 164 154	160 165 164 158 164	Pass
Aug 23	17:28	CC	WW-026	P479-P482 Vertical Top of Seam	D222	143 146 145 142 145	152 147 149 145 149	160 160 154 170 165	Pass
Aug 24	14:12	JK	WW-054	P486-P489 Vertical Bottom of Seam	D223	154 131 154 156 162	152 149 146 148 156	148 143 153 150 150	Pass
Aug 24	13:16	CC	WW-026	P485-P488 Vertical Top of Seam	D224	141 145 140 137 128	145 146 142 152 142	163 163 167 167 160	Pass
Aug 24	12:58	JC	WW-045	P483-P486 Vertical Bottom of Seam	D225	155 151 149 149 164	150 144 118 143 149	162 160 161 153 157	Pass
Aug 23	9:23	JC	WW-045	P482-P485 Vertical Top of Seam	D226	149 150 150 134 153	150 136 146 150 148	149 159 158 161 149	Pass
Aug 23	8:50	JK	WW-054	P480-P483 Vertical Bottom of Seam	D227	154 152 152 152 126	150 151 138 148 145	158 142 157 141 153	Pass

7.0 PHOTO LOG



Figure 1: Subgrade after Rainfall



Figure 2: Subgrade Erosion



Figure 3: Subgrade Erosion



Figure 4: Erosion along GCL

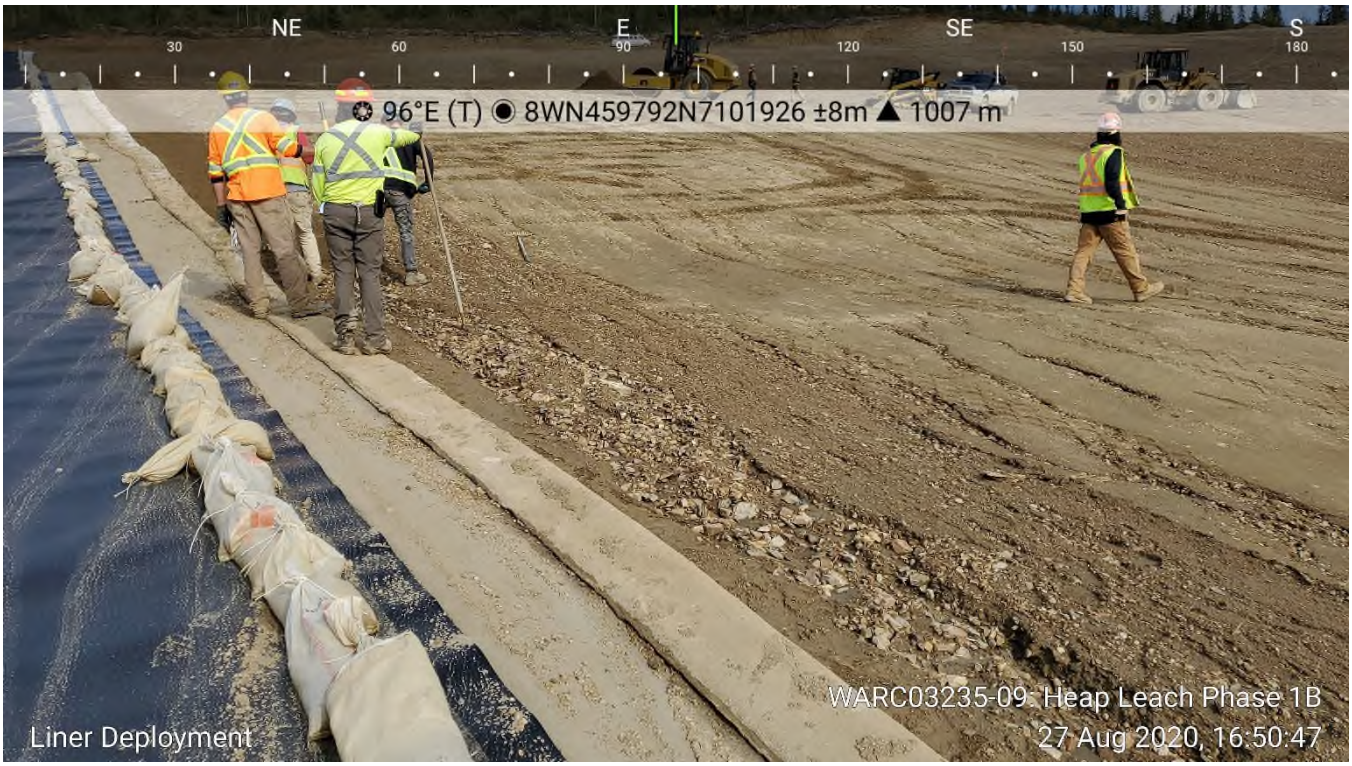


Figure 5: Erosion along GCL



Figure 6: Subgrade after Compaction



Figure 7: Hydrated Bentonite at GCL Seam



Figure 8: Hydrated Bentonite at GCL Seam



Figure 9: Hydrated Bentonite at GCL Seam



Figure 10: Removing Saturated Material from 1A Anchor Trench Area



Figure 11: 1A Anchor Trench Area after Removal of Saturated Material

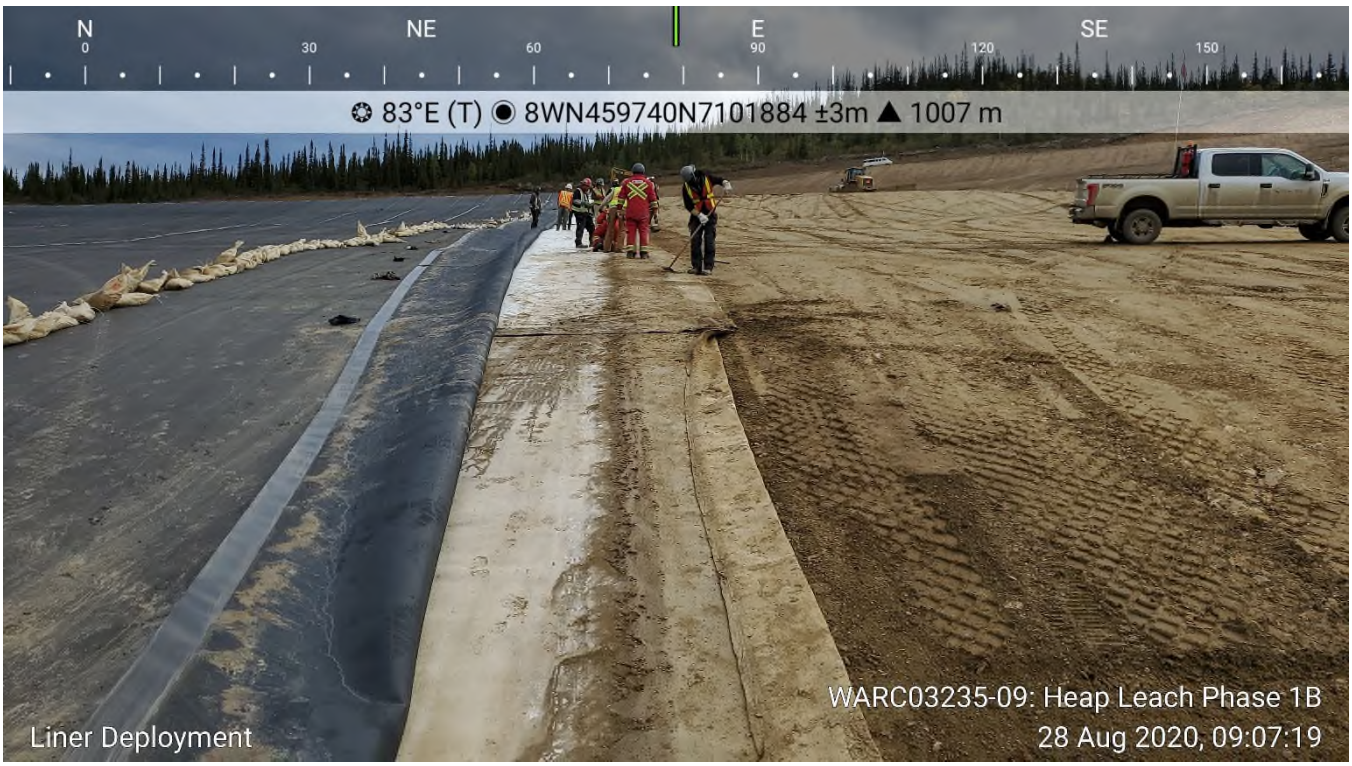


Figure 12: Cleaning GCL



Figure 13: Prepared and Inspected Subgrade



Figure 14: Prepared and Inspected Subgrade



Figure 15: Ewing Working on Preparing Subgrade



Figure 16: Deploying Liner



Figure 17: Overall Deployment as of August 28



Figure 18: Prepared and Inspected Subgrade



Figure 19: Prepared and Inspected Subgrade



Figure 20: Saturated Subgrade



Figure 21: Saturated Subgrade



Figure 22: Subgrade after Compaction



Figure 23: GCL Deployed for Correction



Figure 24: GCL Deployed for Correction



Figure 25: Overall Deployment as of August 29



Figure 26: Prepared and Inspected Subgrade



Figure 27: Deploying GCL



Figure 28: Overall Deployment as of August 30

TETRA TECH

WEEKLY FIELD REPORT

ISSUED FOR USE

Project:	Eagle Gold Heap Leach Phase 1B	**Date:**	September 6, 2020
Location:	Eagle Gold Mine	**Contractor:**	Ewing Transport / Layfield
Client:	Victoria Gold Corp.	**Contractor's Rep:**	Marshall Ewing / Chad Messervey
Contact:	Clint Abel	**Contractor's Email:**	
Weather:	Variable (see daily entries)	**Tetra Tech Representative:**	Adam Mickey
File:	704-ENG.WARC03235-09	**Status:**	Issued for Use

1.0 INTRODUCTION

Tetra Tech Canada Inc. (Tetra Tech) was retained by Victoria Gold Corp. (Victoria Gold) to provide CQA services at the Eagle Gold mine located north of Mayo, Yukon, at Dublin Gulch for the Eagle Gold Heap Leach Phase 1B expansion (Phase 1B). Mr. Adam Mickey, EIT, is Tetra Tech's representative on site.

Forte Dynamics (Forte) out of Fort Collins, Colorado provided the design and specification for Phase 1B, and Forte's representative is Clint Green.

Clint Abel, of JDS Energy & Mining, is Victoria Gold's project manager on site at the Eagle Gold mine.

Ewing Transport (Ewing), based out of Mayo, Yukon, is the construction contractor for Phase 1B.

Layfield Environmental Containment (Layfield) has been retained to provide and install the liner for Phase 1B, and their supervisor on site is Chad Messervey.

The following Field Report outlines Tetra Tech's CQA for the period of August 31, 2020, to September 6, 2020.

2.0 DAILY REPORTS

2.1 Highlights

- Rain delayed liner deployment throughout the week.
- The entire liner crew left site from August 31 to September 4 due to weather.
- The total length of deployed liner this wee was approximately 619.2 m, covering a slope area of approximately 4,148 m^2.
- Layfield is placing three panels of GCL for every two panels of 80 mm LLDPE liner.

2.2 August 31, 2020

- Weather: raining.
- Tetra Tech and Ewing labourers returned to Whitehorse for days off.

Tetra Tech Canada Inc.
61 Wasson Place
Whitehorse, YT Y1A 0H7 CANADA
Tel 867.668.3068 Fax 867.668.4349

2.3 September 1, 2020

- Layfield returned to Whitehorse for days off.

2.4 September 2, 2020

- Days off.

2.5 September 3, 2020

- Days off.

2.6 September 4, 2020

- Layfield and Ewing returned to site.

2.7 September 5, 2020

- Weather: raining, turning to periods of rain in the afternoon.
- No work performed today due to weather conditions and saturated subgrade.
- Tetra Tech retuned to site.

2.8 September 6, 2020

- Weather: mostly cloudy.
- Ewing is preparing the subgrade for deployment by removing saturated areas, recompacting, and sanding rocky areas.
- Layfield is conducting detail work and pressure testing while the subgrade is being prepared.
- Ewing had enough subgrade prepared at 12:00 pm to begin deployment.
  - Tetra Tech inspected and approved the subgrade for deployment.
    - Some minor surficial soft spots exist less than 100 mm in thickness, but they are not wet.
  - Layfield began deploying liner once the subgrade had been inspected.
    - Layfield deployed three slope runs of liner by the end of the day.
- Layfield conducted pressure testing of deployed liner.
- Layfield obtained destructive samples for all liner deployed up to, and including, August 30 at Tetra Tech's direction.

3.0 GEOSYNTHETIC ROLL NUMBERS PLACED

Table 1 summarizes the daily geosynthetic roll numbers placed on the slope during liner installation. All panel lengths are approximate, and where angled joints are used, panel length is based from the center of the panel.

Table 1: Geosynthetic Roll Numbers Placed on Slope

Date	GCL Roll Number	LLDPE Liner Roll Number	Panel Number (Length)
August 31	-	-	-
September 1	-	-	-
September 2	-	-	-
September 3	-	-	-
September 4	-	-	-
September 5	-	-	-
September 6	0242-347710, 0242-347709 0242-347708, 0242-347573 0242-347711, 0242-347712 0242-347721, 0242-347662 0242-347716, 0242-347720 0242-347663, 0242-347714 0242-347664, 0242-347850 0242-347566, 0242-347555 0242-347625, 0242-347665 0242-347567, 0242-347718 0242-347568, 0242-347564 0242-347717 502343575, 502343574 502347719, 502343581	10698-015 10968-014 10697-030 10697-022 10697-028 10697-025	P538 (7.2 m), P541 (3.2 m) P539 (127.1 m) P540 (66.4 m), P542 (60.1 m) P543 (128.0 m) P544 (19.7 m), P545 (102.4 m) P546 (105.1 m)

4.0 TRIAL SEAM

Table 2 summarizes the weekly trial seam results. For fusion, the apparatus settings are temperature and speed, and for extrusion, the apparatus settings are preheat and barrel temperature. Five tests are performed for each criterion.

Table 2: Trial Seam Results

Date	Time	Fusion or Extrusion	Tech	Apparatus #	Temp or Preheat (°F)	Speed (%) or Barrel Temp (°F)	$Peel_{inside}$ (100 min)	$Peel_{outside}$ (100 min for Fusion 88 min for Extrusion)	Shear (120 min)	Smooth or Textured
Sep 6	9:00	Extrusion	RW	EX-023	500	495	N/A	159 155 147 159 147	183 166 170 176 176	N/A

Date	Time	Fusion or Extrusion	Tech	Apparatus #	Temp or Preheat (°F)	Speed (%) or Barrel Temp (°F)	$Peel_{inside}$ (100 min)	$Peel_{outside}$ (100 min for Fusion 88 min for Extrusion)	Shear (120 min)	Smooth or Textured
Sep 6	9:00	Extrusion	JL	04037	505	500	N/A	120 112 117 114 136	188 166 180 169 172	N/A
Sep 6	9:00	Extrusion	GP	EX-023	500	495	N/A	144 142 150 134 134	157 170 176 171 171	N/A
Sep 6	14:45	Fusion	JK	WW-022	850	35	155 136 157 162 159	133 154 160 162 153	168 175 173 183 178	Textured
Sep 6	14:45	Fusion	EA	WW-045	850	35	142 145 148 143 141	153 159 162 152 138	171 172 171 171 177	Textured
Sep 6	14:45	Fusion	DT	WW-026	850	55	146 146 141 146 143	141 143 142 139 150	148 156 166 161 170	Smooth
Sep 6	14:45	Fusion	JK	WW-022	850	55	140 157 139 145 143	137 138 135 143 139	170 151 152 155 155	Smooth
Sep 6	14:45	Fusion	EA	WW-045	850	55	124 128 132 126 137	144 138 144 145 144	154 155 152 153 151	Smooth

5.0 NON-DESTRUCTIVE TESTING

Non-destructive testing was not performed this week.

6.0 DESTRUCTIVE TESTING

Destructive testing was not performed this week.

7.0 PHOTO LOG



Figure 1: Subgrade after Rainfall

TETRA TECH

WEEKLY FIELD REPORT

ISSUED FOR USE

Project:	Eagle Gold Heap Leach Phase 1B	**Date:**	September 13, 2020
Location:	Eagle Gold Mine	**Contractor:**	Ewing Transport / Layfield
Client:	Victoria Gold Corp.	**Contractor's Rep:**	Marshall Ewing / Chad Messervey
Contact:	Clint Abel	**Contractor's Email:**	
Weather:	Variable (see daily entries)	**Tetra Tech Representative:**	Adam Mickey
File:	704-ENG.WARC03235-09	**Status:**	Issued for Use

1.0 INTRODUCTION

Tetra Tech Canada Inc. (Tetra Tech) was retained by Victoria Gold Corp. (Victoria Gold) to provide CQA services at the Eagle Gold mine located north of Mayo, Yukon, at Dublin Gulch for the Eagle Gold Heap Leach Phase 1B expansion (Phase 1B). Mr. Adam Mickey, EIT, is Tetra Tech's representative on site.

Forte Dynamics (Forte) out of Fort Collins, Colorado provided the design and specification for Phase 1B, and Forte's representative is Clint Green.

Clint Abel, of JDS Energy & Mining, is Victoria Gold's project manager on site at the Eagle Gold mine.

Ewing Transport (Ewing), based out of Mayo, Yukon, is the construction contractor for Phase 1B.

Layfield Environmental Containment (Layfield) has been retained to provide and install the liner for Phase 1B, and their supervisor on site is Chad Messervey.

The following Field Report outlines Tetra Tech's CQA for the period of September 7, 2020, to September 13, 2020.

2.0 DAILY REPORTS

2.1 Highlights

- Layfield deployed approximately 4,942.8 m of liner covering an approximate area of 33,117 m^2.
- Rain delayed liner deployment throughout the week.
- Layfield is placing three panels of GCL for every two panels of 80 mm LLDPE liner.

2.2 September 7, 2020

- Weather: cloudy and windy with periods of rain, turning to cloudy at 10:00 am.
- Ewing in continuing to prepare subgrade in advance of deployment.
  - Rain in the morning halted subgrade preparation.
    - Ewing is waiting for the subgrade to dry prior to continuing preparation.

Tetra Tech Canada Inc.
61 Wasson Place
Whitehorse, YT Y1A 0H7 CANADA
Tel 867.668.3068 Fax 867.668.4349

        - Tetra Tech and Ewing inspected the subgrade at noon. The subgrade is too saturated to get the packer on it and prepare more subgrade.
    - Ewing was able to begin prepping subgrade around 3:00 pm. Soft spots were found, and they were excavated out, filled with rock fill, and compacted and covered with sand.
- Tetra Tech inspected and approved the subgrade for today's deployment.
- Layfield is continuing to deploy liner.
    - Rain delayed deployment from 7:45 am till 8:30 am.
    - Layfield deployed and fused two slope runs of liner by 1:30 pm. As there was no prepared subgrade, Layfield moved over to conducting detail work.
- Tetra Tech and Layfield conducted destructive testing on samples obtained from the liner.
    - All destructive testing is caught up for all liner deployed up to and including August 30.
    - The P526-P529 vertical seam destructive sample failed testing due to excessive peel into the weld. Layfield will obtain a new sample 3 m down seam from the original test location.
    - The P500-P532 tie in seam marginally passed testing. Tetra Tech requested that Layfield extrusion weld the seam, but no further destructive testing is required.

2.3 September 8, 2020

- Weather: cloudy.
- Ewing is continuing to prepare subgrade for deployment.
    - Tetra Tech and Ewing identified soft spots requiring subex and replacement with rock fill.
        - Ewing worked on the soft spots throughout the day.
- Layfield is continuing to deploy liner.
    - Layfield deployed four slope runs of liner by 4:00 pm.
    - Layfield could not deploy any more liner as there was no more prepared subgrade to deploy on.

2.4 September 9, 2020

- Weather: partly cloudy.
- Ewing is continuing to prepare subgrade for deployment.
    - Nightshift removed excess subgrade soils from the slope and dug up the E3 lateral, which had to be repaired.
    - Soft spots are continuing to be excavated and repaired as identified.
    - Tetra Tech identified soft spots at the toe of the slope where 1B meets 1A. Tetra Tech worked with Ewing to remove the soft soil to ready the area for deployment.
- Layfield is continuing to deploy liner.

- Layfield deployed four slope runs of liner and two additional GCL beyond the deployed liner by the end of the day.

2.5 September 10, 2020

- Weather: sunny, turning to cloudy with a period of rain in the afternoon.
- Ewing is continuing to prepare subgrade in advance of deployment.
  - Heavy rainfall from yesterday evening saturated the subgrade too much to compact it.
    - Ewing is attempting to repair the subgrade to allow for deployment.
  - Tetra Tech informed Ewing that the subgrade at the toe of the slope would have to be excavated due to soft conditions. No fill is required; the soft subgrade can be excavated and reshaped.
- Tetra Tech inspected the subgrade first thing and determined that it was too saturated to deploy.
  - Tetra Tech inspected the subgrade at 12:00 pm and authorized deployment of GCL.
- Layfield is continuing to deploy liner.
  - Layfield deployed one slope length of liner and then had to wait to continue deployment until the subgrade was prepared.
  - Layfield was authorized to deploy liner at noon.
  - Layfield deployed three slope runs of liner by 4:00 pm and finished the day by continuing to deploy GCL. Only two slope runs of GCL could be deployed before they were out of prepared subgrade to deploy on.
- After laying the first slope run of liner, Tetra Tech and Layfield walked off all of the deployed liner laid from last walk off to August 30.

2.6 September 11, 2020

- Weather: partly cloudy.
- Ewing is continuing to prepare subgrade in advance of deployment.
  - The skid steer is covering any rocky areas with sand.
  - The packer is rolling the subgrade.
  - By the end of the day, all sloping of the subgrade was complete, and the remainder of work required is rolling the subgrade with a packer and sanding rocky areas.
- Tetra Tech inspected and approved the prepared subgrade for today's deployment.
  - Tetra Tech had to inspect and approve the subgrade as it was prepared.
- Layfield is continuing to deploy liner.
  - Layfield deployed two slope runs of liner.
  - Due to wind in the afternoon, Layfield continued to deploy GCL for the rest of the day.
- Layfield began working down the perimeter road from Phase 1B perimeter road to the Phase 1A perimeter road.

- Layfield's QC conducted pressure testing of deployed liner seams.

2.7 September 12, 2020

- Weather: mostly sunny.
- Ewing is continuing to perform finish work on the subgrade.
  - The skid steer is sanding rocky areas and removing soft spots at the toe of the slope.
  - The packer is packing rough areas and sanded areas.
- Tetra Tech inspected and approved the subgrade for deployment.
  - Soft spots were identified at the toe of the slope, which the skid steer removed.
- Layfield is continuing to deploy liner.
  - Below freezing temperatures last night resulted in frost on the liner. Layfield could not deploy liner due to slippery conditions, so began the day by deploying GCL.
  - Once the liner had warmed up, Layfield began deploying liner over top of the GCL.
  - Layfield deployed four slope runs of liner and finished the day by deploying one slope run of GCL.
- Layfield conducted pressure testing of fused seams.
- ODF placement damaged the signed off liner on nightshift, so Layfield had to send an extrusion team to repair it in the afternoon.

2.8 September 13, 2020

- Weather: sunny, turning to partly cloudy in the afternoon.
- Ewing is continuing to perform finish work on the subgrade in advance of liner deployment.
- Tetra Tech inspected and approved the subgrade for deployment as required.
- Layfield is continuing to deploy liner.
  - Layfield deployed seven slope runs of liner.
  - One small corner remains to be covered. Deployment will be complete tomorrow.
- Tetra Tech and Layfield's QC conducted destructive testing of deployed liner samples.
  - One sample failed due to peel into the weld. The samples were D251A of panels P559-P562.
    - Tetra Tech was informed that this seam had been extrusion welded, so to confirm, a destructive sample was obtained from panels P559-P561 for testing.

3.0 GEOSYNTHETIC ROLL NUMBERS PLACED

Table 1 summarizes the daily geosynthetic roll numbers placed on the slope during liner installation. All panel lengths are approximate, and where angled joints are used, panel length is based from the center of the panel.

Table 1: Geosynthetic Roll Numbers Placed on Slope

Date	GCL Roll Number	LLDPE Liner Roll Number	Panel Number (Length)
September 7	0242-347713, 0242-347551 502343944, 502343914 502343912, 502343922 502343923, 502343916 502343917, 502343915	10697-025 10697-026 10697-031 10697-034 10697-008	P547 (19.8 m) P548 (128.0 m) P549 (63.0 m), P550 (60.9 m) P551 (127.3 m) P552 (21.5 m)
September 8	502343558, 502343641 502343654, 502343547 502343556, 502343573 502343982, 502343913 502343943, 502343918 502343984, 502343987 502343549, 502343557 502343551, 502343567 502343565, 502343981 502343542, 502343986 502343566, 502343974 502343921, 502343930 502343991	10697-008 10697-033 10697-009 10697-032 10697-019 10697-020 10606-002 10697-017	P553 (103.8 m) P554 (101.5 m), P555 (24.3 m) P556 (128.0 m) P557 (52.4 m), P558 (75.2 m) P559 (128.7 m) P560 (126.6 m) P561 (74.2 m) P562 (3.5 m)
September 9	502343911, 502343580 502343932, 502343919 502343931, 502343920 502343569, 502343973 502343576, 502343563 502343572, 502343550 502343562, 502343976 502343978, 502343544 502343975, 502343983 502343655, 502343977 502343952, 502343541 502343653, 502343985 502343988, 502343989 502343552, 502343990 502343548, 502343553 502343979, 502343992 502343554, 502343639	10697-017 10697-016 10697-018 10698-030 10697-015 10698-027 10698-033	P563 (125.2 m) P564 (79.6 m), P565 (45.1 m) P566 (128.4 m) P567 (35.9 m), P568 (89.9 m) P569 (123.1 m) P570 (129.4 m) P571 (88.1 m)
September 10	0242-247715, 0242-347562 0242-347883, 0242-347634 0242-347550 502343967, 502343971 502343955, 502343650 502343959, 502343667 502343659, 502343668 502343658, 502343632	10968-033 10698-031 10698-029 10698-032 10698-034 10698-017	P572 (38.5 m) P573 (127.8 m) P574 (54.8 m), P575 (70.8 m) P576 (128.0 m) P577 (24.7 m), P578 (98.7 m) P579 (128.0 m) P580 (3.3 m)

Date	GCL Roll Number	LLDPE Liner Roll Number	Panel Number (Length)
September 11	502343678, 502343645	10698-017	P581 (120.7 m)
	502343608, 502343702	10698-018	P582 (110.0 m), P583 (14.8 m)
	502343603, 502343582	10698-036	P584 (128.1 m)
	502343675, 502343648	10698-002	P585 (80.0 m)
	502343602, 502343699		
	502343674, 502343700		
	502343584, 502343583		
	502343698, 502343686		
	502343620, 502343673		
	502343613, 502343657		
	502343630, 502343676		
	502343685, 502343660		
	502343665, 502343661		
	502343614, 502343607		
	502343591, 502343604		
	502343646, 502343601		
	502343681, 502343701		
September 12	502343666, 502343594	10698-002	P586 (38.8 m)
	502343677, 502343672	10698-008	P587 (72.5 m), P588 (52.0 m)
	502343669, 502343954	10698-001	P589 (53.4 m), P590 (68.5 m)
	502343545, 502343543	10698-019	P591 (127.7 m)
	502343618, 502343663	10698-023	P592 (12.4 m), P593 (109.1 m)
	502343587, 502343600	10698-022	P594 (89.0 m), P595 (30.4 m), P598 (3.5 m)
		10698-025	P596 (127.1 m)
		10698-026	P597 (26.7 m)
September 13	502343598, 502343617	10698-026	P599 (97.5 m)
	502343590, 502343664	10698-021	P600 (74.2 m), P601 (44.4 m)
	502343599, 502343694	10698-012	P602 (117.4 m), P603 (3.3 m)
	502343692, 502343684	10698-007	P604 (94.3 m)
	502343588, 502343688	10698-020	P605 (53.8 m), P606 (60.6 m)
	502343689, 502343671	10698-003	P607 (70.3 m), P608 (44.9 m)
	502343611, 502343616	10698-010	P609 (71.6 m), P610 (45.3 m)
	502343695, 502343697	10698-028	P611 (57.1 m), P612 (59.6 m)
	502343696, 502343679	10698-006	P613 (25.8 m)
	502343612, 502343693		
	502343690, 502343680		
	502343610, 502343703		

4.0 TRIAL SEAM

Table 2 summarizes the weekly trial seam results. For fusion, the apparatus settings are temperature and speed, and for extrusion, the apparatus settings are preheat and barrel temperature. Five tests are performed for each criterion.

Table 2: Trial Seam Results

Date	Time	Fusion or Extrusion	Tech	Apparatus #	Temp or Preheat (°F)	Speed (%) or Barrel Temp (°F)	$Peel_{inside}$ (100 min)	$Peel_{outside}$ (100 min for Fusion 88 min for Extrusion)	Shear (120 min)	Smooth or Textured
Sep 7	10:30	Fusion	EA	WW-045	850	35	149 157 162 144 146	159 147 151 149 139	173 171 183 176 176	Textured
Sep 7	10:30	Fusion	DT	WW-054	850	35	148 158 134 160 168	143 157 159 160 144	172 175 170 172 176	Textured
Sep 7	10:30	Fusion	JK	WW-022	850	35	150 148 160 157 157	142 164 154 157 156	178 172 175 172 177	Textured
Sep 7	10:30	Fusion	EA	WW-045	850	55	143 146 138 147 144	138 137 139 139 141	169 171 171 171 166	Smooth
Sep 7	10:30	Fusion	DT	WW-054	850	55	157 149 154 158 148	142 142 143 143 140	171 167 167 167 167	Smooth
Sep 7	10:30	Fusion	JK	WW-022	850	55	143 147 135 141 137	148 150 147 147 130	158 159 157 159 159	Smooth
Sep 7	15:00	Extrusion	JL	04037	500	500	N/A	121 119 118 132 120	159 142 149 153 164	N/A
Sep 7	15:00	Extrusion	RW	EX-023	500	495	N/A	135 147 124 129 132	168 154 164 170 167	N/A

Date	Time	Fusion or Extrusion	Tech	Apparatus #	Temp or Preheat (°F)	Speed (%) or Barrel Temp (°F)	$Peel_{inside}$ (100 min)	$Peel_{outside}$ (100 min for Fusion 88 min for Extrusion)	Shear (120 min)	Smooth or Textured
Sept 8	8:40	Fusion	EA	WW-045	850	35	133	140	166	Textured
							157	145	167	
							152	161	165	
							150	149	182	
							149	151	162	
Sept 8	8:40	Fusion	JK	WW-022	850	35	155	151	173	Textured
							173	154	175	
							178	154	178	
							160	161	167	
							143	142	184	
Sept 8	8:40	Fusion	EA	WW-045	850	55	145	146	163	Smooth
							144	152	166	
							140	157	169	
							145	151	169	
							137	152	164	
Sept 8	8:40	Fusion	JK	WW-022	850	55	161	150	167	Smooth
							166	136	167	
							137	150	166	
							145	142	170	
							137	143	169	
Sept 8	8:40	Fusion	JL	WW-054	850	55	137	143	169	Smooth
							147	153	163	
							147	143	161	
							142	148	164	
							149	143	162	
Sept 8	13:00	Fusion	EA	WW-045	850	35	152	147	170	Textured
							132	156	173	
							163	122	170	
							155	153	173	
							138	155	179	
Sept 8	13:00	Fusion	JL	WW-054	850	35	126	153	168	Textured
							143	144	174	
							152	144	175	
							148	149	166	
							151	120	158	
Sept 8	13:00	Fusion	EA	WW-045	850	55	149	143	161	Smooth
							148	139	160	
							145	147	162	
							139	135	160	
							138	145	158	
Sept 8	13:00	Fusion	JK	WW-022	850	55	130	146	148	Smooth
							136	146	162	
							139	137	160	
							126	144	161	
							130	131	161	

Date	Time	Fusion or Extrusion	Tech	Apparatus #	Temp or Preheat (°F)	Speed (%) or Barrel Temp (°F)	$Peel_{inside}$ (100 min)	$Peel_{outside}$ (100 min for Fusion 88 min for Extrusion)	Shear (120 min)	Smooth or Textured
Sept 8	13:00	Fusion	JL	WW-054	850	55	150	141	160	Smooth
							142	138	160	
							147	138	160	
							146	138	149	
							145	140	162	
Sep 9	8:15	Extrusion	JL	EX-008	500	500	N/A	104	162	N/A
								105	168	
								106	167	
								103	159	
								101	163	
Sep 9	9:00	Fusion	EA	WW-045	850	35	147	140	171	Textured
							142	147	173	
							131	147	178	
							125	147	180	
							146	145	174	
Sep 9	9:00	Fusion	RGP	WW-054	850	35	145	116	169	Textured
							162	150	172	
							164	142	172	
							152	146	172	
							169	139	169	
Sep 9	9:00	Fusion	JK	WW-022	850	35	155	152	172	Textured
							139	128	167	
							142	150	169	
							149	124	164	
							154	120	171	
Sep 9	9:00	Fusion	EA	WW-045	850	55	119	139	155	Smooth
							130	146	148	
							131	142	142	
							134	146	146	
							126	145	145	
Sep 9	9:00	Fusion	RGP	WW-054	850	55	131	142	124	Smooth
							136	140	139	
							140	142	130	
							124	136	133	
							129	136	120	
Sep 9	9:00	Fusion	JK	WW-022	850	55	124	138	135	Smooth
							139	139	132	
							130	142	141	
							133	138	142	
							120	140	141	
Sep 9	13:00	Fusion	EA	WW-045	850	35	146	132	173	Textured
							140	141	170	
							132	149	170	
							149	131	173	
							142	136	170	

Date	Time	Fusion or Extrusion	Tech	Apparatus #	Temp or Preheat (°F)	Speed (%) or Barrel Temp (°F)	$Peel_{inside}$ (100 min)	$Peel_{outside}$ (100 min for Fusion 88 min for Extrusion)	Shear (120 min)	Smooth or Textured
Sep 9	13:00	Fusion	RGP	WW-054	850	35	155	141	169	Textured
							154	149	152	
							160	138	162	
							144	147	153	
							146	142	173	
Sep 9	13:00	Fusion	JK	WW-022	850	35	156	122	159	Textured
							148	149	166	
							152	129	156	
							140	147	171	
							125	141	155	
Sep 9	13:00	Fusion	EA	WW-045	850	55	137	139	155	Smooth
							128	136	149	
							138	135	153	
							136	133	151	
							139	139	157	
Sep 9	13:00	Fusion	RGP	WW-054	850	55	134	137	152	Smooth
							126	129	153	
							136	137	156	
							143	119	156	
							129	136	154	
Sep 9	13:00	Fusion	JK	WW-022	850	55	123	146	156	Smooth
							136	148	145	
							151	129	155	
							141	144	157	
							158	146	156	
Sep 9	12:30	Extrusion	JL	EX-008	500	500	N/A	144	155	N/A
								138	155	
								111	153	
								126	159	
								136	164	
Sep 10	10:45	Fusion	JK	WW-022	850	35	151	115	171	Textured
							161	148	172	
							160	128	174	
							161	144	176	
							150	154	174	
Sep 10	10:45	Fusion	RGP	WW-054	850	35	158	157	174	Textured
							153	151	185	
							159	156	166	
							157	162	157	
							155	146	177	
Sep 10	10:45	Fusion	EA	WW-026	850	55	158	145	155	Smooth
							152	139	147	
							144	117	157	
							153	147	160	
							150	125	157	

Date	Time	Fusion or Extrusion	Tech	Apparatus #	Temp or Preheat (°F)	Speed (%) or Barrel Temp (°F)	$Peel_{inside}$ (100 min)	$Peel_{outside}$ (100 min for Fusion 88 min for Extrusion)	Shear (120 min)	Smooth or Textured
Sep 10	10:45	Fusion	JK	WW-022	850	55	143	147	166	Smooth
							145	140	164	
							142	142	165	
							146	159	164	
							148	139	165	
Sep 10	10:45	Fusion	RGP	WW-045	850	55	153	148	156	Smooth
							126	146	157	
							135	149	159	
							141	148	158	
							125	132	155	
Sep 10	17:30	Fusion	JK	WW-022	850	35	147	147	151	Textured
							151	158	141	
							161	160	161	
							144	133	167	
							157	154	177	
Sep 10	17:30	Fusion	EA	WW-026	850	55	142	139	166	Smooth
							140	145	166	
							137	143	161	
							135	145	167	
							139	151	162	
Sep 10	17:30	Fusion	RGP	WW-054	850	55	153	132	163	Smooth
							136	146	164	
							144	143	164	
							146	146	164	
							145	144	172	
Sep 10	17:30	Fusion	JK	WW-022	850	55	142	139	159	Smooth
							137	155	163	
							149	152	157	
							143	155	163	
							142	151	161	
Sep 10	17:30	Fusion	RGP	WW-054	850	35	169	126	177	Textured
							147	150	173	
							155	168	185	
							153	142	162	
							130	153	184	
Sep 11	10:15	Extrusion	JL	EX-008	500	500	N/A	101	175	N/A
								99	157	
								99	179	
								107	172	
								110	172	
Sep 11	11:00	Fusion	JK	WW-022	850	35	165	156	157	Textured
							143	154	159	
							153	141	163	
							149	151	161	
							133	155	155	

Date	Time	Fusion or Extrusion	Tech	Apparatus #	Temp or Preheat (°F)	Speed (%) or Barrel Temp (°F)	$Peel_{inside}$ (100 min)	$Peel_{outside}$ (100 min for Fusion 88 min for Extrusion)	Shear (120 min)	Smooth or Textured
Sep 11	11:00	Fusion	JK	WW-022	850	55	122	151	162	Smooth
							130	152	151	
							138	152	174	
							129	143	163	
							136	152	165	
Sep 11	11:00	Fusion	DT	WW-054	850	35	119	137	158	Textured
							142	153	165	
							159	137	166	
							151	151	166	
							151	154	159	
Sep 11	11:00	Fusion	DT	WW-054	850	55	140	142	153	Smooth
							145	147	151	
							132	152	151	
							146	136	153	
							142	147	153	
Sep 11	11:00	Fusion	EA	WW-026	850	35	150	150	161	Textured
							141	163	157	
							143	148	172	
							141	159	165	
							160	148	166	
Sep 11	11:00	Fusion	EA	WW-026	850	55	145	139	147	Smooth
							131	142	149	
							136	147	152	
							136	145	151	
							134	152	146	
Sep 11	14:00	Extrusion	JL	EX-008	500	500	N/A	111	166	N/A
								129	144	
								106	139	
								103	145	
								125	161	
Sep 12	10:20	Fusion	JK	WW-022	850	35	153	161	211	Textured
							147	127	198	
							161	161	198	
							146	160	205	
							162	141	204	
Sep 12	10:20	Fusion	EA	WW-026	850	35	154	133	174	Textured
							145	131	147	
							158	135	173	
							122	140	173	
							142	145	174	
Sep 12	10:20	Fusion	DT	WW-054	850	55	146	144	161	Smooth
							147	136	163	
							146	126	163	
							142	136	161	
							150	154	148	

Date	Time	Fusion or Extrusion	Tech	Apparatus #	Temp or Preheat (°F)	Speed (%) or Barrel Temp (°F)	$Peel_{inside}$ (100 min)	$Peel_{outside}$ (100 min for Fusion 88 min for Extrusion)	Shear (120 min)	Smooth or Textured
Sep 12	10:20	Fusion	JK	WW-022	850	55	141	143	161	Smooth
							143	143	160	
							142	140	160	
							137	132	162	
							142	143	161	
Sep 12	10:20	Fusion	EA	WW-026	850	55	142	132	153	Smooth
							133	143	162	
							139	139	157	
							138	146	159	
							113	138	157	
Sep 12	10:20	Fusion	DT	WW-054	850	35	123	139	162	Textured
							148	159	173	
							137	121	179	
							154	155	176	
							163	149	177	
Sep 12	13:40	Extrusion	JL	EX-008	500	500	N/A	124	166	N/A
								122	156	
								130	160	
								108	153	
								118	146	
Sep 12	14:30	Fusion	JK	WW-022	850	35	155	149	159	Textured
							150	151	169	
							159	162	169	
							151	143	163	
							152	150	165	
Sep 12	14:30	Fusion	JK	WW-022	850	55	136	129	150	Smooth
							131	140	154	
							149	128	152	
							145	144	149	
							134	140	156	
Sep 12	14:30	Fusion	DT	WW-054	850	35	126	150	161	Textured
							151	140	170	
							143	138	171	
							153	139	170	
							149	152	169	
Sep 12	14:30	Fusion	DT	WW-054	850	55	145	143	154	Smooth
							149	146	157	
							139	139	153	
							141	138	145	
							136	141	154	
Sep 12	14:30	Fusion	EA	WW-026	850	35	139	136	163	Textured
							145	131	165	
							150	152	172	
							112	132	160	
							154	128	127	

Date	Time	Fusion or Extrusion	Tech	Apparatus #	Temp or Preheat (°F)	Speed (%) or Barrel Temp (°F)	$Peel_{inside}$ (100 min)	$Peel_{outside}$ (100 min for Fusion 88 min for Extrusion)	Shear (120 min)	Smooth or Textured
Sep 12	14:30	Fusion	EA	WW-026	850	55	137	152	158	Smooth
							129	153	156	
							112	151	157	
							158	107	155	
							151	138	161	
Sep 13	10:15	Extrusion	JL	EX-008	500	500	N/A	117	179	N/A
								147	165	
								166	151	
								145	153	
								118	170	
Sep 13	10:30	Fusion	JK	WW-022	850	35	142	129	173	Textured
							162	151	177	
							151	121	171	
							150	160	174	
							142	161	170	
Sep 13	10:30	Fusion	EA	WW-026	850	35	153	160	184	Textured
							168	170	191	
							159	164	179	
							152	131	175	
							155	166	188	
Sep 13	10:30	Fusion	DT	WW-054	850	55	151	156	163	Smooth
							133	145	163	
							143	146	162	
							133	144	165	
							142	155	164	
Sep 13	10:30	Fusion	JK	WW-022	850	55	143	157	165	Smooth
							150	128	161	
							148	140	164	
							147	142	163	
							145	145	162	
Sep 13	10:30	Fusion	EA	WW-026	850	55	136	159	156	Smooth
							148	147	160	
							147	154	163	
							145	143	164	
							136	141	159	
Sep 13	10:30	Fusion	DT	WW-054	850	35	141	119	188	Textured
							150	159	183	
							147	149	193	
							165	171	186	
							156	162	187	
Sep 13	14:30	Fusion	JK	WW-022	850	35	119	160	167	Textured
							156	153	181	
							147	145	168	
							154	140	178	
							153	127	178	

Date	Time	Fusion or Extrusion	Tech	Apparatus #	Temp or Preheat (°F)	Speed (%) or Barrel Temp (°F)	$Peel_{inside}$ (100 min)	$Peel_{outside}$ (100 min for Fusion 88 min for Extrusion)	Shear (120 min)	Smooth or Textured
Sep 13	14:30	Fusion	EA	WW-026	850	35	159 155 142 146 147	136 135 142 152 160	165 172 164 173 169	Textured
Sep 13	14:30	Fusion	DT	WW-054	850	55	150 143 146 142 146	147 144 154 137 160	165 164 148 167 168	Smooth
Sep 13	14:30	Fusion	JK	WW-022	850	55	150 146 141 150 144	149 142 144 142 151	163 164 165 164 163	Smooth
Sep 13	14:30	Fusion	EA	WW-026	850	55	133 147 141 135 147	143 147 152 142 146	158 159 159 159 159	Smooth
Sep 13	14:30	Fusion	DT	WW-054	850	35	146 155 156 143 145	147 150 160 131 136	168 173 171 170 174	Textured
Sep 13	15:00	Extrusion	JL	EX-008	500	500	N/A	135 110 109 121 101	142 139 146 141 141	N/A

5.0 NON-DESTRUCTIVE TESTING

Table 3 summarizes the weekly non-destructive pressure testing results.

Table 3: Non-Destructive Testing Results

Date Fused	Date Tested	Time Tested	Seam #	psi Start	psi End	Pass or Fail	Notes
Aug 28	Aug 29	10:29	P498-P499 Cross	40	40	Pass	
Aug 28	Aug 29	10:25	P497-P498 Cross	40	40	Pass	
Aug 28	Aug 29	16:09	P496-P497 Cross	40	40	Pass	
Aug 29	Aug 30	17:18	P508-P509 Cross	40	40	Pass	
Aug 29	Aug 30	17:20	P509-P510 Vertical	40	40	Pass	
Aug 29	Aug 30	17:28	P512-P514 Vertical	40	40	Pass	
Aug 29	Aug 30	17:21	P508-P510 Vertical	40	40	Pass	

Date Fused	Date Tested	Time Tested	Seam #	psi Start	psi End	Pass or Fail	Notes
Aug 29	Aug 30	17:28	P510-P512 Vertical	40	40	Pass	
Aug 29	Aug 30	17:17	P507-P508 Vertical	40	40	Pass	
Aug 29	Aug 30	17:26	P501-P514 Tie In	40	40	Pass	
Aug 29	Aug 30	17:28	P501-P512 Tie In	40	40	Pass	
Aug 29	Aug 30	17:25	P501-P510 Tie In	40	39	Pass	
Aug 29	Aug 30	17:25	P502-P510 Tie In	40	40	Pass	
Aug 29	Aug 30	17:17	P502-P508 Tie In	40	40	Pass	
Aug 24	Sep 7	15:31	P489-P490 Cross	40	40	Pass	
Aug 24	Sep 7	15:12	P486-P489 Vertical	40	40	Pass	
Aug 28	Sep 7	15:09	P492-P493 Cross	40	40	Pass	
Aug 28	Sep 7	9:26	P493-P495 Vertical	40	40	Pass	
Aug 28	Sep 7	9:26	P493-P494 Vertical	40	40	Pass	
Aug 28	Sep 7	9:11	P492-P494 Vertical	40	40	Pass	
Aug 28	Sep 7	10:37	P495-P499 Vertical	40	40	Pass	Top of seam to patch
Aug 28	Sep 7	10:27	P495-P499 Vertical	40	40	Pass	Patch to bottom of seam
Aug 28	Sep 7	15:37	P500-P501 Vertical	40	39	Pass	
Aug 28	Sep 7	15:37	P497-P500 Vertical	40	40	Pass	
Aug 28	Sep 7	15:37	P497-P501 Vertical	40	40	Pass	
Aug 28	Sep 7	10:24	P495-P497 Vertical	40	40	Pass	
Aug 28	Sep 7	9:26	P494-P497 Vertical	40	40	Pass	
Aug 29	Sep 7	8:31	P510-P511 Cross	40	40	Pass	
Aug 29	Sep 7	8:46	P515-P516 Cross	40	38	Pass	
Aug 29	Sep 7	8:33	P512-P513 Cross	40	40	Pass	
Aug 29	Sep 7	8:54	P515-P518 Vertical	40	40	Pass	
Aug 29	Sep 7	8:34	P513-P514 Vertical	40	40	Pass	
Aug 29	Sep 7	8:21	P505-P506 Cross	40	40	Pass	
Aug 29	Sep 7	8:32	P511-P513 Vertical	40	40	Pass	
Aug 29	Sep 7	8:33	P510-P513 Vertical	40	40	Pass	
Aug 29	Sep 7	8:31	P509-P511 Vertical	40	40	Pass	
Aug 29	Sep 7	8:20	P506-P507 Vertical	40	40	Pass	
Aug 29	Sep 7	8:22	P504-P506 Vertical	40	40	Pass	
Aug 29	Sep 7	8:54	P501-P515 Tie In	40	40	Pass	
Aug 24	Sep 8	14:48	P490-P491 Cross	40	40	Pass	
Aug 28	Sep 8	14:48	P491-P493 Vertical	40	39	Pass	
Aug 28	Sep 8	14:48	P490-P493 Vertical	40	40	Pass	
Aug 28	Sep 8	15:18	P494-P495 Cross	40	40	Pass	
Aug 28	Sep 8	15:17	P501-P502 Cross	40	38	Pass	
Aug 28	Sep 8	16:02	P496-P500 Vertical	40	40	Pass	
Aug 28	Sep 8	15:17	P499-P501 Vertical	40	40	Pass	
Aug 28	Sep 8	16:09	P494-P496 Vertical	40	40	Pass	
Aug 28	Sep 8	15:17	P499-P502 Vertical	40	40	Pass	
Aug 29	Sep 8	17:40	P514-P516 Vertical	40	40	Pass	
Aug 29	Sep 8	17:39	P516-P518 Vertical	40	40	Pass	
Aug 29	Sep 8	17:28	P501-P518 Tie In	40	40	Pass	
Aug 29	Sep 8	17:28	P518-P520 Vertical	40	40	Pass	
Aug 30	Sep 8	17:26	P520-P523 Vertical	40	40	Pass	
Aug 30	Sep 8	16:59	P525-P528 Vertical	40	40	Pass	Top of seam to patch
Aug 30	Sep 8	17:09	P525-P528 Vertical	40	40	Pass	Patch to bottom of seam

Date Fused	Date Tested	Time Tested	Seam #	psi Start	psi End	Pass or Fail	Notes
Aug 30	Sep 8	17:17	P523-P525 Vertical	40	40	Pass	
Aug 30	Sep 8	17:17	P522-P523 Cross	40	40	Pass	
Aug 30	Sep 8	16:59	P527-P528 Cross	40	40	Pass	
Aug 30	Sep 8	17:16	P522-P525 Vertical	40	40	Pass	
Aug 30	Sep 8	16:57	P528-P530 Vertical	40	40	Pass	
Aug 30	Sep 8	16:56	P527-P530 Vertical	40	40	Pass	
Aug 30	Sep 8	16:42	P532-P533 Cross	40	40	Pass	
Aug 30	Sep 8	16:45	P533-P534 Cross	40	40	Pass	
Aug 30	Sep 8	16:45	P534-P536 Vertical	40	40	Pass	
Aug 30	Sep 8	16:45	P533-P536 Vertical	40	40	Pass	
Aug 30	Sep 8	16:28	P532-P536 Vertical	40	40	Pass	
Aug 30	Sep 8	16:46	P530-P534 Vertical	40	40	Pass	
Aug 30	Sep 8	16:42	P530-P533 Vertical	40	39	Pass	
Aug 30	Sep 8	16:22	P500-P536 Tie In	40	40	Pass	
Aug 30	Sep 8	16:34	P501-P532 Tie In	40	40	Pass	
Aug 30	Sep 8	16:56	P501-P530 Tie In	40	40	Pass	
Aug 30	Sep 8	16:56	P501-P527 Tie In	40	40	Pass	
Aug 30	Sep 8	17:16	P501-P525 Tie In	40	40	Pass	
Aug 30	Sep 8	17:16	P501-P522 Tie In	40	40	Pass	
Aug 30	Sep 8	17:26	P501-P520 Tie In	40	40	Pass	
Sep 6	Sep 8	16:20	P538-P539 Cross	40	40	Pass	
Sep 6	Sep 8	16:04	P541-P542 Cross	40	40	Pass	
Sep 6	Sep 8	16:20	P536-P539 Vertical	40	40	Pass	
Sep 6	Sep 8	16:20	P539-P542 Vertical	40	40	Pass	
Sep 6	Sep 8	16:06	P538-P542 Vertical	40	40	Pass	
Sep 6	Sep 8	16:06	P500-P541 Tie In	40	40	Pass	
Sep 6	Sep 8	16:06	P500-P538 Tie In	40	40	Pass	
Sep 6	Sep 8	16:04	P542-P545 Vertical	40	40	Pass	
Sep 6	Sep 8	16:04	P541-P545 Vertical	40	40	Pass	
Aug 29	Sep 11	13:25	P516-P517 Cross	40	40	Pass	
Aug 29	Sep 11	13:06	P518-P519 Cross	40	40	Pass	
Aug 29	Sep 11	11:35	P517-P519 Vertical	40	40	Pass	
Aug 29	Sep 11	11:34	P514-P517 Vertical	40	40	Pass	
Aug 29	Sep 11	13:04	P516-P519 Vertical	40	40	Pass	
Aug 29	Sep 11	11:33	P507-P509 Vertical	40	40	Pass	
Aug 29	Sep 11	11:15	P503-P504 Vertical	40	40	Pass	
Aug 29	Sep 11	11:18	P505-P507 Vertical	40	39	Pass	
Aug 29	Sep 11	11:18	P502-P507 Tie In	40	40	Pass	
Aug 29	Sep 11	11:18	P502-P505 Tie In	40	40	Pass	
Aug 29	Sep 11	13:01	P520-P521 Cross	40	40	Pass	
Aug 29	Sep 11	11:15	P502-P504 Vertical	40	40	Pass	
Aug 29	Sep 11	11:36	P519-P521 Vertical	40	40	Pass	
Aug 29	Sep 11	11:15	P502-P503 Vertical	40	39	Pass	
Aug 29	Sep 11	13:01	P519-P520 Vertical	40	40	Pass	
Aug 30	Sep 11	13:03	P523-P524 Cross	40	40	Pass	
Aug 30	Sep 11	13:32	P525-P526 Cross	40	40	Pass	
Aug 30	Sep 11	11:37	P521-P524 Vertical	40	40	Pass	
Aug 30	Sep 11	11:39	P524-P526 Vertical	40	40	Pass	

Date Fused	Date Tested	Time Tested	Seam #	psi Start	psi End	Pass or Fail	Notes
Aug 30	Sep 11	13:03	P523-P526 Vertical	40	40	Pass	
Aug 30	Sep 11	13:35	P528-P529 Cross	40	39	Pass	
Aug 30	Sep 11	13:38	P525-P529 Vertical	40	38	Pass	Top of seam to patch
Aug 30	Sep 11	13:32	P525-P529 Vertical	40	40	Pass	Patch to bottom of seam
Aug 30	Sep 11	11:40	P526-P529 Vertical	40	40	Pass	Bottom of seam to patch
Aug 30	Sep 11	11:39	P526-P529 Vertical	40	40	Pass	Patch to top of seam
Aug 30	Sep 11	14:06	P530-P531 Cross	40	40	Pass	
Aug 30	Sep 11	12:05	P529-P531 Vertical	40	40	Pass	
Aug 30	Sep 11	14:06	P528-P531 Vertical	40	40	Pass	
Aug 30	Sep 11	14:16	P534-P537 Vertical	40	40	Pass	Top of seam to patch
Aug 30	Sep 11	14:16	P534-P537 Vertical	40	40	Pass	Patch to bottom of seam
Aug 30	Sep 11	14:54	P534-P535 Cross	40	40	Pass	
Aug 30	Sep 11	14:06	P531-P534 Vertical	40	40	Pass	
Aug 30	Sep 11	12:07	P535-P537 Vertical	40	40	Pass	
Aug 30	Sep 11	14:15	P536-P537 Cross	40	40	Pass	
Sep 6	Sep 11	14:49	P539-P540 Cross	40	40	Pass	
Sep 6	Sep 11	15:06	P543-P544 Cross	40	40	Pass	
Sep 6	Sep 11	12:09	P537-P540 Vertical	40	39	Pass	
Sep 6	Sep 11	12:10	P540-P544 Vertical	40	40	Pass	
Sep 6	Sep 11	15:33	P542-P543 Cross	40	40	Pass	
Sep 6	Sep 11	14:49	P540-P543 Vertical	40	40	Pass	
Sep 6	Sep 11	14:28	P537-P539 Vertical	40	40	Pass	Top of seam to patch
Sep 6	Sep 11	14:24	P537-P539 Vertical	40	40	Pass	Patch to bottom of seam
Sep 6	Sep 11	14:34	P539-P543 Vertical	40	40	Pass	Top of seam to first patch
Sep 6	Sep 11	14:34	P539-P543 Vertical	40	40	Pass	Between patches
Sep 6	Sep 11	14:35	P539-P543 Vertical	40	40	Pass	Second patch to bottom of seam
Sep 6	Sep 11	15:21	P545-P546 Cross	40	40	Pass	
Sep 6	Sep 11	12:11	P544-P546 Vertical	40	40	Pass	
Sep 6	Sep 11	15:21	P543-P545 Vertical	40	40	Pass	
Sep 6	Sep 11	15:06	P543-P546 Vertical	40	40	Pass	
Sep 7	Sep 12	1649	P547-P548 Cross	40	39	Pass	
Sep 7	Sep 12	1650	P545-P547 Vertical	40	40	Pass	
Sep 7	Sep 12	1452	P548-P549 Cross	40	40	Pass	
Sep 7	Sep 12	1508	P546-P549 Vertical	40	40	Pass	
Sep 7	Sep 12	1522	P545-P548 Vertical	40	40	Pass	
Sep 7	Sep 12	1453	P546-P548 Vertical	40	40	Pass	
Sep 7	Sep 12	1231	P551-P552 Cross	40	40	Pass	
Sep 7	Sep 12	1649	P547-P550 Vertical	40	40	Pass	
Sep 7	Sep 12	1452	P549-P551 Vertical	40	40	Pass	
Sep 7	Sep 12	1231	P549-P552 Vertical	40	40	Pass	
Sep 7	Sep 12	1506	P548-P551 Vertical	40	39	Pass	Bottom of seam to patch
Sep 8	Sep 12	1435	P553-P554 Cross	40	40	Pass	
Sep 8	Sep 12	1232	P552-P554 Vertical	40	40	Pass	
Sep 8	Sep 12	1436	P551-P554 Vertical	40	40	Pass	
Sep 8	Sep 12	1301	P562-P564 Vertical	40	40	Pass	
Sep 8	Sep 12	1301	P561-P564 Vertical	40	40	Pass	
Sep 8	Sep 12	1635	P555-P556 Cross	40	39	Pass	
Sep 8	Sep 12	1521	P560-P563 Vertical	40	39	Pass	

Date Fused	Date Tested	Time Tested	Seam #	psi Start	psi End	Pass or Fail	Notes
Sep 8	Sep 12	1234	P556-P557 Cross	40	40	Pass	
Sep 8	Sep 12	1257	P554-P557 Vertical	40	40	Pass	Top of seam to patch
Sep 8	Sep 12	1435	P553-P556 Vertical	40	40	Pass	
Sep 8	Sep 12	1234	P554-P557 Vertical	40	38	Pass	Top of seam to patch
Sep 8	Sep 12	1435	P554-P556 vertical	40	40	Pass	
Sep 8	Sep 12	1637	P553-P555 Vertical	40	40	Pass	
Sep 8	Sep 12	1512	P558-P559 Cross	40	39	Pass	
Sep 8	Sep 12	1512	P556-P558 Vertical	40	40	Pass	
Sep 8	Sep 12	1235	P557-P559 Vertical	40	40	Pass	
Sep 8	Sep 12	1635	P555-P558 Vertical	40	40	Pass	
Sep 8	Sep 12	1512	P556-P559 Vertical	40	40	Pass	
Sep 8	Sep 12	1513	P558-P560 Vertical	40	40	Pass	
Sep 8	Sep 12	1408	P560-P561 Cross	40	40	Pass	
Sep 8	Sep 12	1300	P561-P562 Cross	40	39	Pass	
Sep 8	Sep 12	1300	P559-P561 vertical	40	40	Pass	
Sep 8	Sep 12	1408	P559-P560 Vertical	40	40	Pass	
Sep 9	Sep 12	1406	P563-P564 Cross	40	40	Pass	
Sep 9	Sep 12	1620	P565-P566 Cross	40	40	Pass	
Sep 9	Sep 12	1527	P563-P566 Vertical	40	40	Pass	Patch to bottom of seam
Sep 9	Sep 12	1521	P560-P563 Vertical	40	39	Pass	Patch to bottom of seam
Sep 9	Sep 12	1312	P566-P567 Cross	40	40	Pass	
Sep 9	Sep 12	1621	P563-P565 Vertical	40	40	Pass	
Sep 9	Sep 12	1312	P564-P567 Vertical	40	39	Pass	
Sep 9	Sep 12	1406	P564-P566 Vertical	40	40	Pass	
Sep 9	Sep 12	1406	P563-P566 Vertical	40	40	Pass	Top of seam to patch
Sep 9	Sep 12	1313	P567-P569 Vertical	40	40	Pass	
Sep 9	Sep 12	1532	P566-P569 Vertical	40	40	Pass	
Sep 9	Sep 12	1532	P566-P568 Vertical	40	40	Pass	
Sep 9	Sep 12	1620	P565-P568 Vertical	40	40	Pass	
Sep 10	Sep 12	1330	P571-P574 Vertical	40	40	Pass	
Sep 10	Sep 12	1353	P573-P574 Cross	40	40	Pass	
Sep 10	Sep 12	1614	P572-P573 Cross	40	40	Pass	
Sep 10	Sep 12	1615	P570-P572 Vertical	40	40	Pass	
Sep 10	Sep 12	1333	P576-P577 Cross	40	40	Pass	
Sep 10	Sep 12	1602	P575-P576 Cross	40	40	Pass	
Sep 10	Sep 12	1603	P573-P575 Vertical	40	38	Pass	
Sep 10	Sep 12	1333	P574-P577 Vertical	40	38	Pass	
Sep 10	Sep 12	1333	P574-P576 Vertical	40	40	Pass	
Sep 10	Sep 12	1614	P572-P575 Vertical	40	40	Pass	
Sep 10	Sep 12	1354	P573-P576 Vertical	40	40	Pass	
Sep 10	Sep 12	1544	P578-P579 Cross	40	40	Pass	

6.0 DESTRUCTIVE TESTING

Table 4 summarizes the weekly destructive testing results. Five tests are performed for each criterion.

Table 4: Destructive Testing Results

Date Fused	Time Fused	Tech	Apparatus	Location (UTM is +/- 4 m)	Sample ID	$Peel_{in}$ (100 min)	$Peel_{out}$ (100 min)	Shear (120 min)	Pass or Fail
Aug 29	18:06	JC	WW-045	P502-P503 Tie In Top of Seam	D228	145 145 150 153 153	160 153 157 162 133	173 175 174 175 172	Pass
Aug 30	9:53	JC	WW-045	P521-P524 Vertical Top of Seam	D229	152 149 152 156 157	146 156 145 150 139	160 158 162 160 161	Pass
Aug 28	17:30	CC	WW-026	P496-P500 Vertical Top of Seam	D230	156 154 155 152 155	156 150 155 155 154	159 162 166 168 166	Pass
Aug 28	17:22	CC	WW-026	P496-P497 Cross Right Side of Seam	D231	129 136 169 148 154	163 144 167 141 145	178 175 174 180 172	Pass
Aug 30	16:46	JK	WW-045	P500-P532 Tie In Bottom of Seam	D232	137 142 154 159 150	160 152 161 163 156	168 168 153 169 157	Pass
Aug 30	15:41	DT	WW-022	P532-P536 Vertical Bottom of Seam	D233	157 156 156 155 162	158 152 153 145 143	163 164 164 152 156	Pass
Aug 28	13:10	JK	WW-022	P491-P493 Vertical Top of Seam	D234	148 148 140 144 155	138 152 154 151 155	140 163 165 163 151	Pass
Aug 28	18:12	CC	WW-045	P499-P502 Vertical Top of Seam	D235	157 154 145 155 147	153 155 156 149 145	161 160 161 159 158	Pass

Date Fused	Time Fused	Tech	Apparatus	Location (UTM is +/- 4 m)	Sample ID	$Peel_{in}$ (100 min)	$Peel_{out}$ (100 min)	Shear (120 min)	Pass or Fail
Aug 28	17:05	JC	WW-054	P495-P499 Vertical Top of Seam	D236	150 124 146 148 144	158 138 151 148 146	165 165 170 166 170	Pass
Aug 28	13:34	JC	WW-054	P493-P495 Vertical Top of Seam	D237	167 153 167 155 153	157 154 155 151 142	164 164 164 161 166	Pass
Aug 30	11:11	CC	WW-026	P526-P529 Vertical Top of Seam	D238A	147 147 146 145 150	134 147 149 146 151	166 163 168 169 164	Pass
Aug 30	12:45	DT	WW-022	P529-P531 Vertical Top of Seam	D239	165 158 167 153 161	160 137 152 145 154	171 167 168 170 165	Pass
Aug 30	14:57	CC	WW-026	P531-P535 Vertical Top of Seam	D240	142 142 141 144 133	134 148 137 136 138	164 161 165 164 161	Pass
Aug 30	15:19	JC	WW-045	P535-P537 Vertical Top of Seam	D241	138 123 145 136 141	140 139 122 142 121	159 159 159 155 156	Pass
Aug 30	10:03	CC	WW-026	P524-P526 Vertical Top of Seam	D242	144 137 146 133 143	150 147 136 134 139	150 164 150 171 157	Pass
Aug 29	13:41	CC	WW-026	P509-P511 Vertical Top of Seam	D243	152 147 132 144 139	144 155 147 151 142	162 152 160 148 155	Pass
Aug 29	12:38	JC	WW-045	P517-P519 Vertical Top of Seam	D244	147 150 153 130 153	156 150 156 144 153	144 154 158 159 144	Pass

Date Fused	Time Fused	Tech	Apparatus	Location (UTM is +/- 4 m)	Sample ID	$Peel_{in}$ (100 min)	$Peel_{out}$ (100 min)	Shear (120 min)	Pass or Fail
Aug 29	18:02	JK	WW-022	P519-P521 Vertical Top of Seam	D245	153 143 151 151 157	154 129 114 148 130	161 156 165 161 165	Pass
Aug 29	14:23	JC	WW-045	P504-P506 Vertical Top of Seam	D246	141 129 145 140 148	148 141 148 148 147	162 169 168 173 163	Pass
Aug 29	13:28	JK	WW-022	P513-P514 Vertical Top of Seam	D247	134 151 147 141 153	157 145 151 152 139	159 151 149 139 151	Pass
Aug 30	11:11	CC	WW-026	P526-P529 Vertical 3 m Down Seam of D238A	D238B	167 156 153 150 136	151 162 152 161 155	161 159 162 165 168	Pass
Sep 6	16:20	DT	WW-026	P539-P542 Vertical Bottom of Seam	D248	137 144 140 157 146	137 126 145 150 148	162 162 163 163 164	Pass
Sep 6	15:33	EA	WW-045	P538-P539 Cross Right Side of Seam	D249	143 136 147 143 151	143 138 148 150 145	179 174 170 165 172	Pass
Sep 7	13:18	JK	WW-022	P549-P552 Vertical Top of Seam	D250	141 144 135 154 142	145 147 145 144 134	165 163 163 156 161	Pass
Sep 8	16:50	JL	WW-054	P559-P562 Vertical Top of Seam	D251A	154 143 151	141 138 144		Fail
Sep 8	9:45	RGP	WW-054	P562-P564 Vertical Top of Seam	D252	151 143 156 143 148	144 145 149 138 131	157 163 164 164 148	Pass
Sep 8	9:25	EA	WW-045	P550-P553 Vertical Bottom of Seam	D253	149 151 151 149 138	134 133 144 135 138	155 155 154 154 155	Pass

Date Fused	Time Fused	Tech	Apparatus	Location (UTM is +/- 4 m)	Sample ID	$Peel_{in}$ (100 min)	$Peel_{out}$ (100 min)	Shear (120 min)	Pass or Fail
Sep 8	16:26	JK	WW-022	P558-P560 Vertical Bottom of Seam	D254	140 147 143 129 128	141 142 116 122 129	150 157 159 159 160	Pass
Sep 10	14:04	JK	WW-022	P572-P575 Vertical Bottom of Seam	D255	144 143 145 142 142	144 140 140 141 145	162 148 163 164 162	Pass
Sep 11	13:43	DT	WW-054	P581-P583 Vertical Bottom of Seam	D256	146 134 137 137 142	145 144 142 137 139	156 157 154 159 158	Pass
Sep 11	12:37	EA	WW-026	P578-P581 Vertical Bottom of Seam	D257	142 141 145 141 144	136 137 101 135 140	159 158 158 156 156	Pass
Sep 10	18:09	JK	WW-022	P575-P578 Vertical Bottom of Seam	D258	122 136 137 137 140	148 133 139 137 142	151 154 155 159 152	Pass
Sep 10	11:03	RGP	WW-054	P571-P574 Vertical Top of Seam	D259	146 151 149 153 147	131 147 142 146 134	158 147 158 152 154	Pass
Sep 8	11:13	EA	WW-045	P553-P555 Vertical Bottom of Seam	D260	139 141 135 140 142	146 133 133 133 142	154 157 154 157 156	Pass
Sep 8	14:01	EA	WW-045	P555-P558 Vertical Bottom of Seam	D261	143 142 142 145 127	143 147 141 138 142	163 161 164 146 163	Pass
Sep 8	10:28	RGP	WW-054	P560-P563 Vertical Bottom of Seam	D262	155 144 149 142 155	139 146 142 145 141	156 160 159 163 160	Pass

Date Fused	Time Fused	Tech	Apparatus	Location (UTM is +/- 4 m)	Sample ID	$Peel_{in}$ (100 min)	$Peel_{out}$ (100 min)	Shear (120 min)	Pass or Fail
Sep 10	13:54	RGP	WW-054	P574-P577 Vertical Top of Seam	D263	146 147 135 121 144	123 142 140 137 140	167 165 166 130 166	Pass
Sep 9	13:04	RGP	WW-054	P567-P569 Vertical Top of Seam	D264	154 149 138 147 143	139 130 143 126 144	167 166 166 165 156	Pass
Sep 10	12:04	RGP	WW-054	P570-P572 Vertical Bottom of Seam	D265	150 141 144 151 149	146 148 141 150 136	165 160 157 158 158	Pass
Sep 9	10:44	JK	WW-022	P564-P567 Vertical Top of Seam	D266	153 150 150 149 146	155 142 146 148 152	158 164 162 166 160	Pass
Sep 7	12:50	JL	WW-054	P547-P550 Vertical Bottom of Seam	D267	149 140 140 138 142	145 143 139 145 145	161 159 160 154 156	Pass
Sep 9	14:42	EA	WW-045	P568-P570 Vertical Bottom of Seam	D268	145 141 155 144 150	143 152 138 126 128	163 162 144 156 153	Pass
Sep 8	14:00	JK	WW-022	P557-P559 Vertical Top of Seam	D269	151 144 146 150 144	112 146 137 134 139	162 164 166 165 166	Pass
Sep 10	18:02	RGP	WW-054	P577-P580 Vertical Top of Seam	D270	149 148 141 153 146	152 150 152 141 141	163 156 159 167 166	Pass
Sep 9	13:57	EA	WW-045	P565-P568 Vertical Bottom of Seam	D271	136 143 145 147 140	145 133 147 146 138	165 158 164 133 162	Pass

7.0 PHOTO LOG



Figure 1: Excavating Soft Spots in Subgrade



Figure 2: Overall Deployment as of September 7



Figure 3: Prepared and Inspected Subgrade



Figure 4: Prepared and Inspected Subgrade



Figure 5: Overall Deployment as of September 8



Figure 6: Inspected and Approved Subgrade



Figure 7: Inspected and Approved Subgrade



Figure 8: Inspected and Approved Subgrade



Figure 9: Overall Deployment as of September 9



Figure 10: Inspected and Approved Subgrade



Figure 11: Inspected and Approved Subgrade



Figure 12: Subgrade Conditions too Wet to Deploy

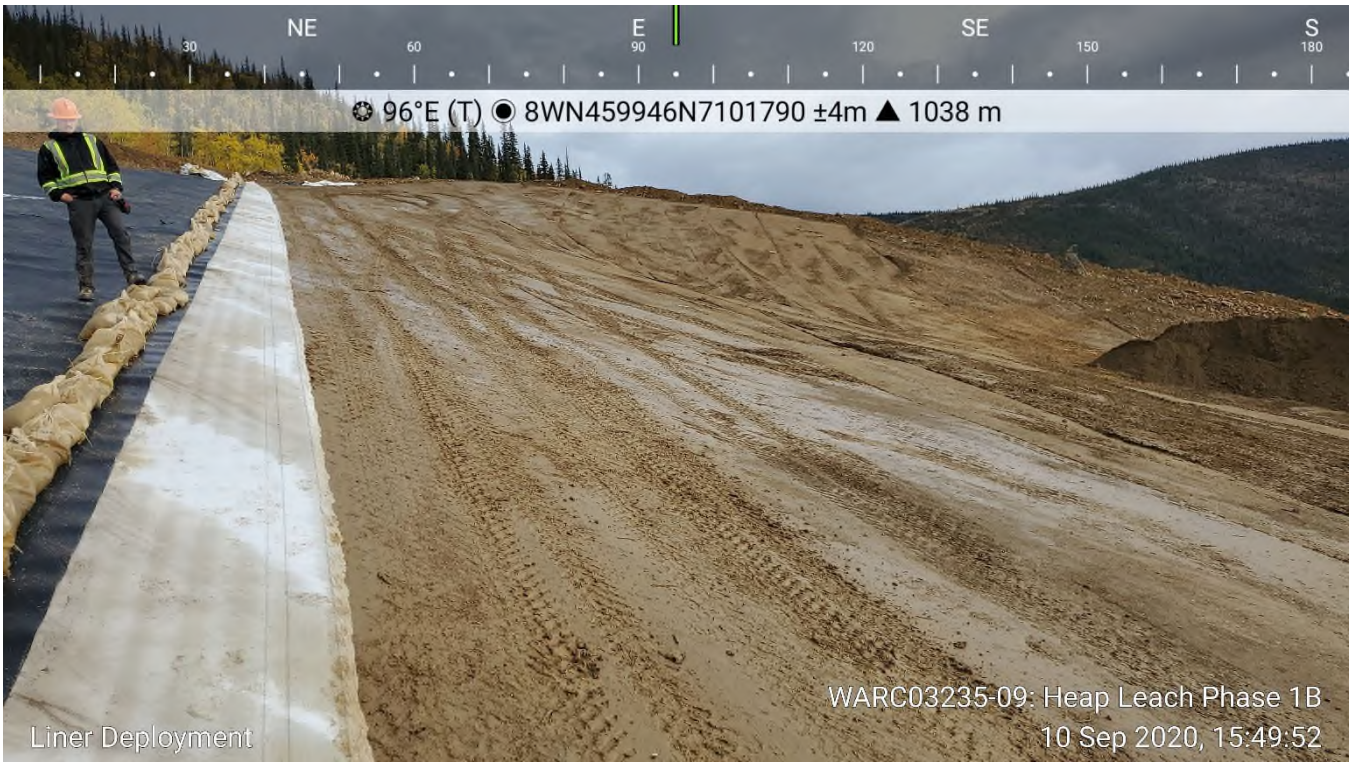


Figure 13: Subgrade Conditions too Wet to Deploy

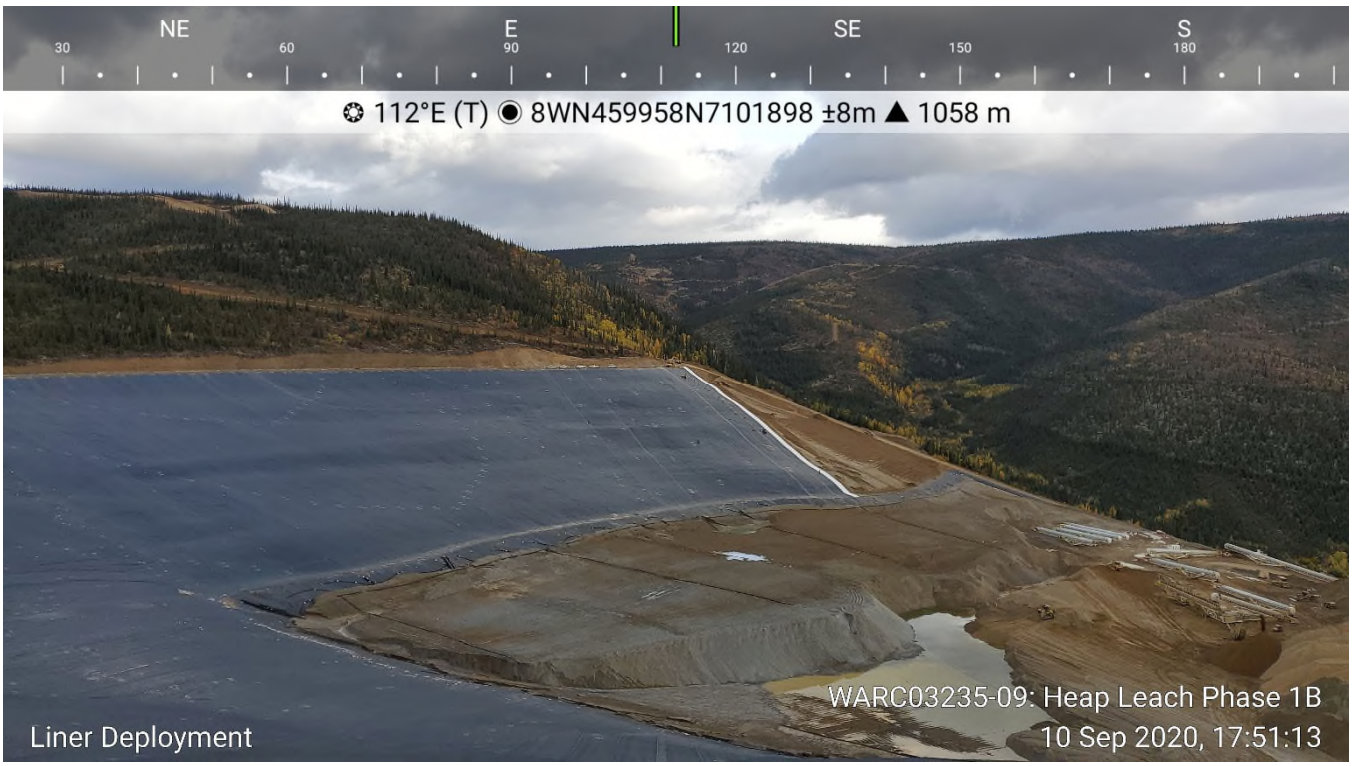


Figure 14: Overall Deployment as of September 10



Figure 15: Prepared Subgrade



Figure 16: Inspected and Approved Subgrade

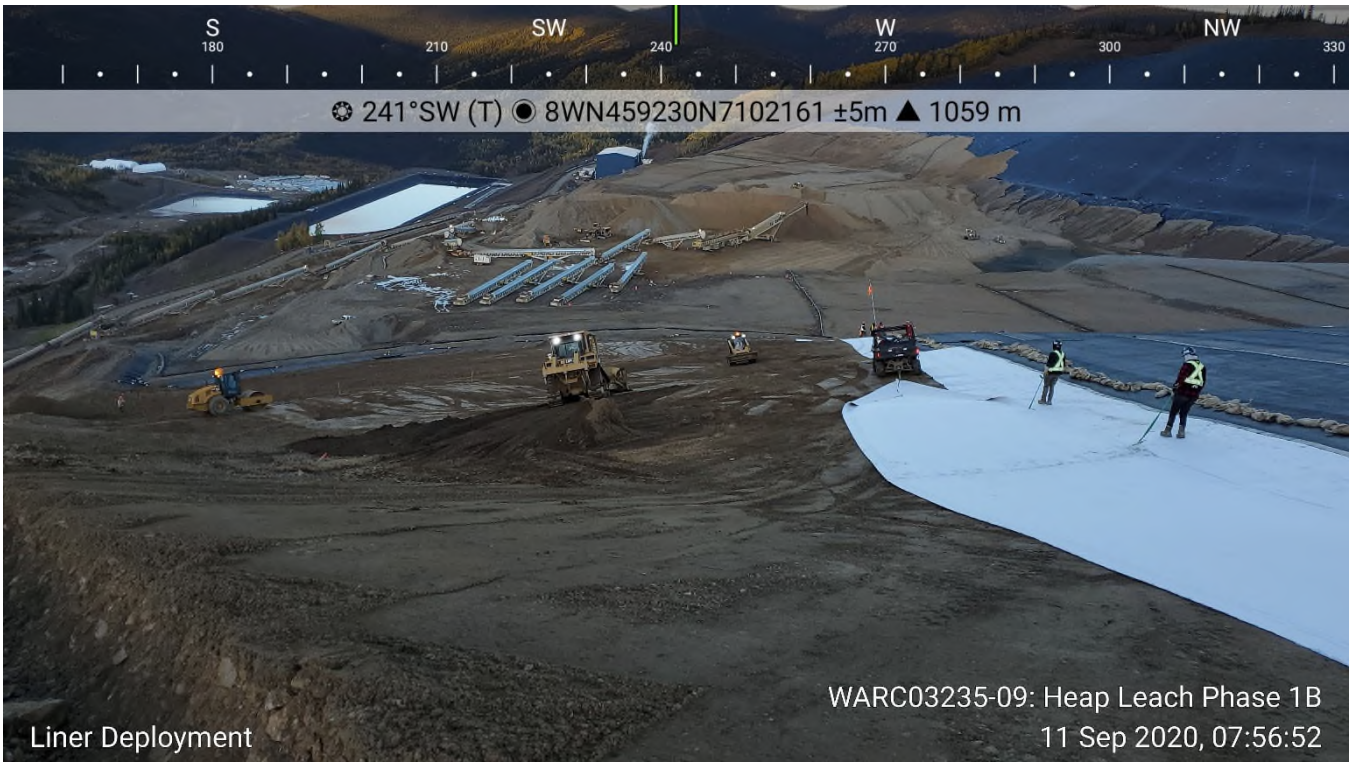


Figure 17: Prepared Subgrade at Anchor Trench

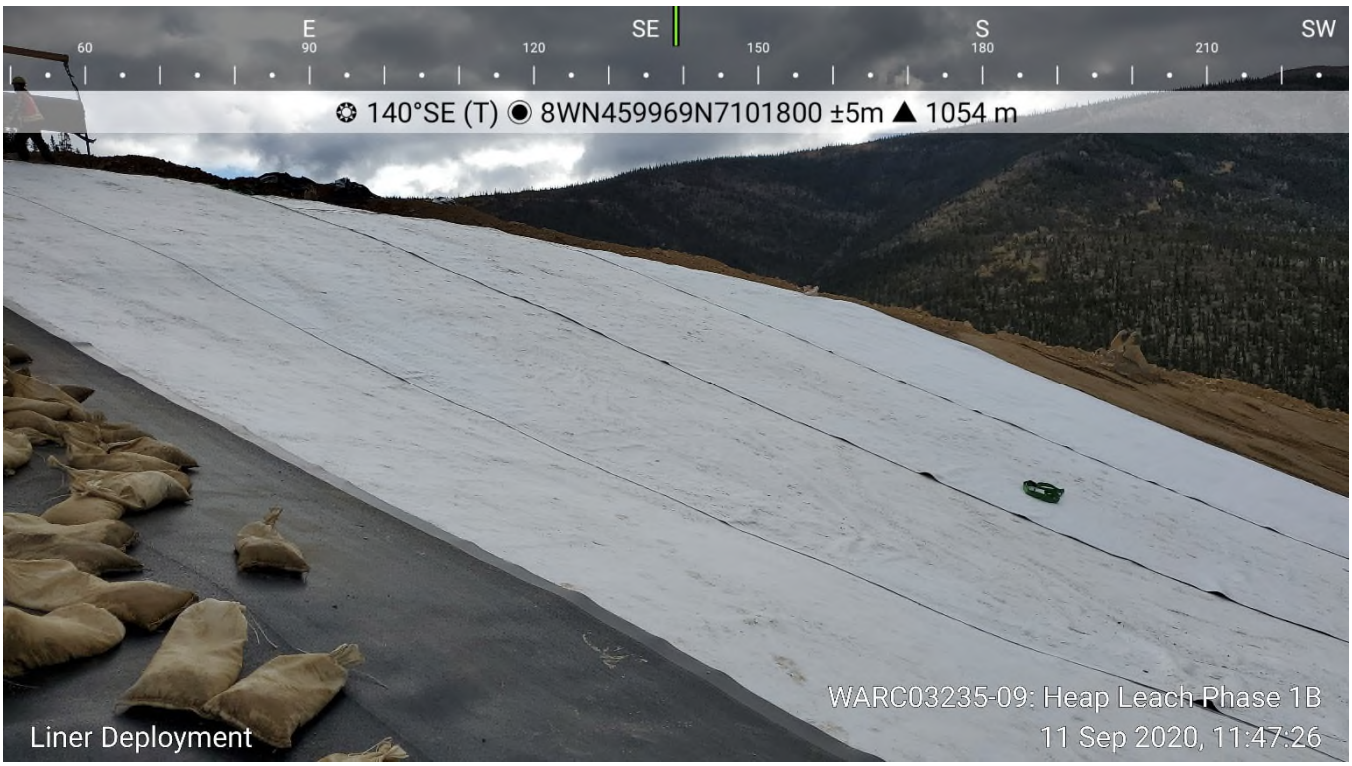


Figure 18: GCL Deployed on Slope



Figure 19: GCL and Liner Deployed on Slope



Figure 20: Liner in Anchor Trench at Corner Leading Down to Phase 1A



Figure 21: Overall Deployment as of September 11



Figure 22: Prepared Subgrade



Figure 23: Phase 1A Tie In Area Requiring Shaping



Figure 24: Rocky Areas along Phase 1A Requiring Removal



Figure 25: Prepared Subgrade Requiring Additional Rolling



Figure 26: Prepared Subgrade Requiring Spot Sanding

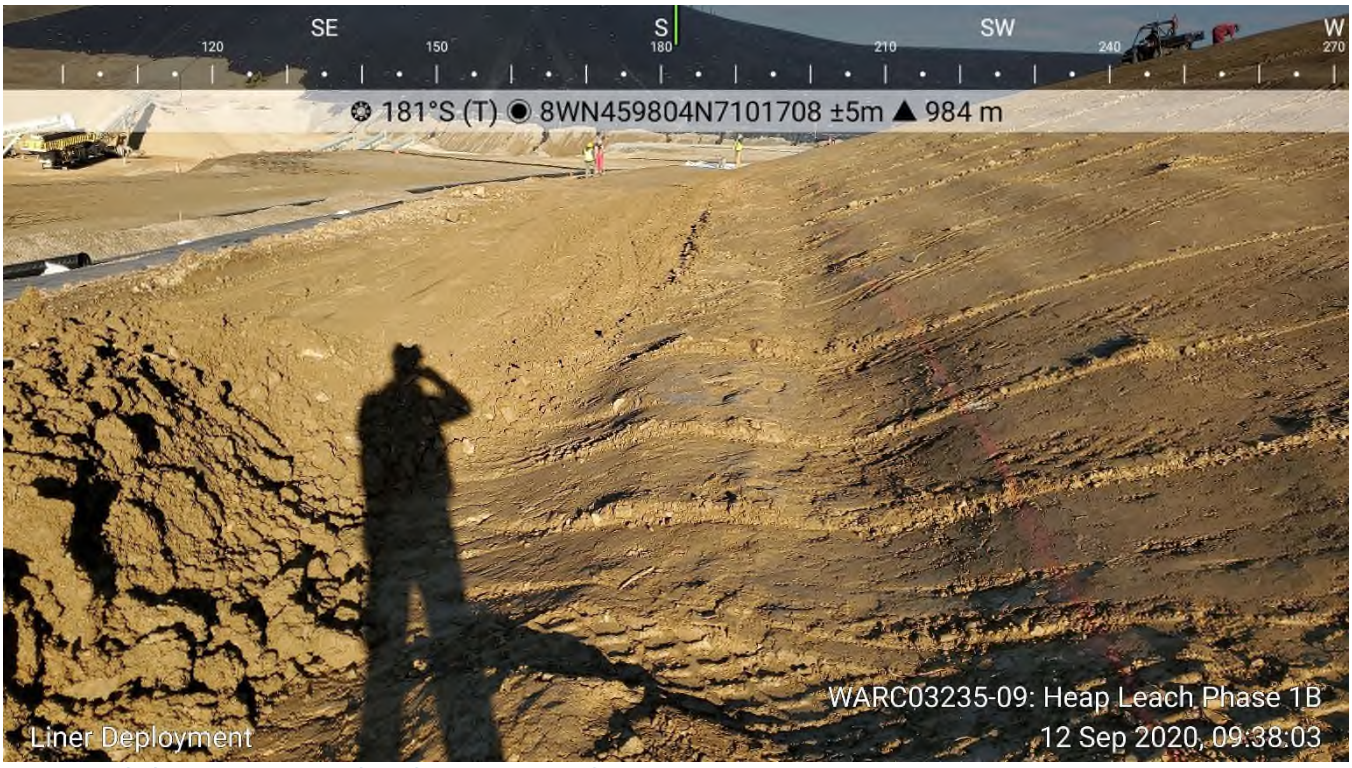


Figure 27: Soft Area at the Toe of the Slope Requiring Subex

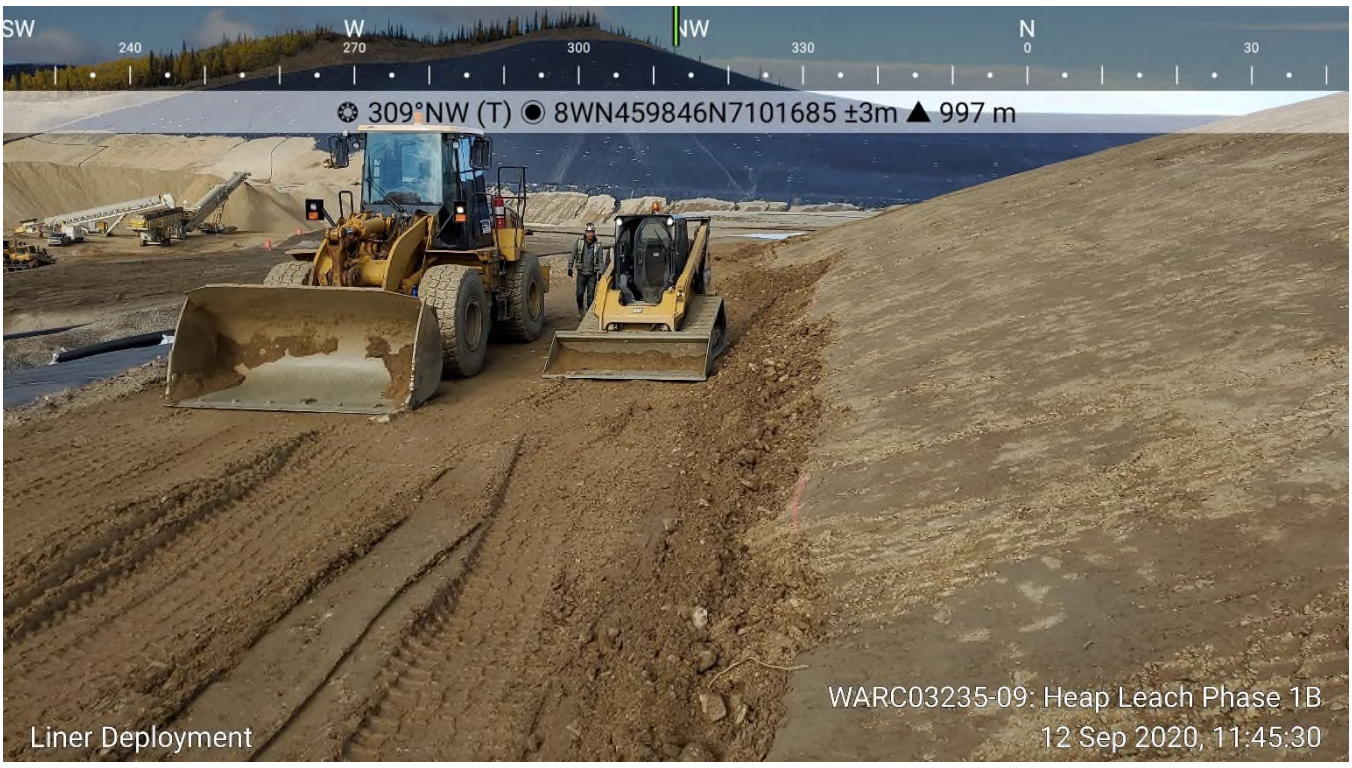


Figure 28: Soft Area Subexcavated



Figure 29: Soft Area Re-Sloped after Subex

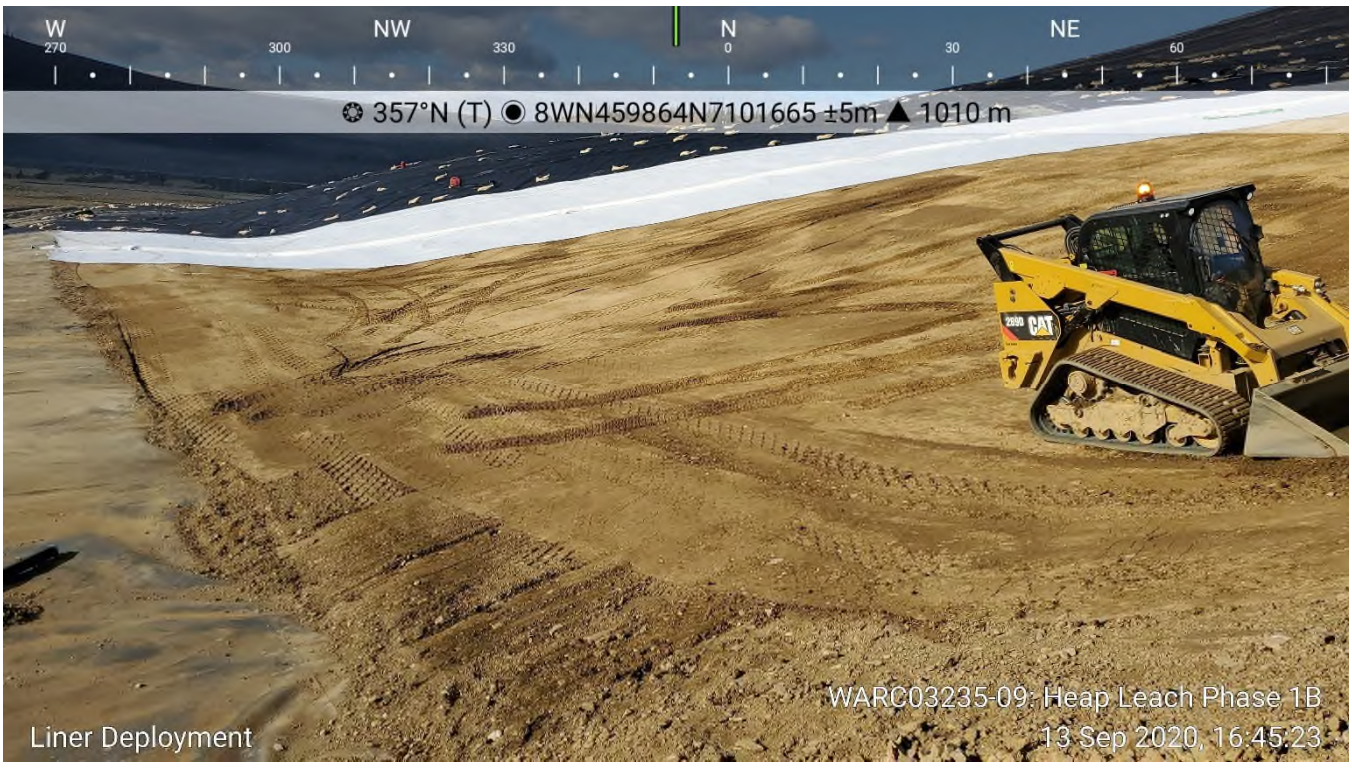


Figure 30: Prepared Subgrade



Figure 31: Overall Deployment as of September 13

TETRA TECH

WEEKLY FIELD REPORT

ISSUED FOR USE

Project:	Eagle Gold Heap Leach Phase 1B	**Date:**	September 16, 2020
Location:	Eagle Gold Mine	**Contractor:**	Ewing Transport / Layfield
Client:	Victoria Gold Corp.	**Contractor's Rep:**	Marshall Ewing / Chad Messervey
Contact:	Clint Abel	**Contractor's Email:**	
Weather:	Variable (see daily entries)	**Tetra Tech Representative:**	Adam Mickey
File:	704-ENG.WARC03235-09	**Status:**	Issued for Use

1.0 INTRODUCTION

Tetra Tech Canada Inc. (Tetra Tech) was retained by Victoria Gold Corp. (Victoria Gold) to provide CQA services at the Eagle Gold mine located north of Mayo, Yukon, at Dublin Gulch for the Eagle Gold Heap Leach Phase 1B expansion (Phase 1B). Mr. Adam Mickey, EIT, is Tetra Tech's representative on site.

Forte Dynamics (Forte) out of Fort Collins, Colorado provided the design and specification for Phase 1B, and Forte's representative is Clint Green.

Clint Abel, of JDS Energy & Mining, is Victoria Gold's project manager on site at the Eagle Gold mine.

Ewing Transport (Ewing), based out of Mayo, Yukon, is the construction contractor for Phase 1B.

Layfield Environmental Containment (Layfield) has been retained to provide and install the liner for Phase 1B, and their supervisor on site is Chad Messervey.

The following Field Report outlines Tetra Tech's CQA for the period of September 14, 2020, to September 16, 2020.

2.0 DAILY REPORTS

2.1 Highlights

- Layfield deployed a total of approximately 110.3 m of liner covering an approximate area of 739 m^2.
- The Phase 1B project was completed this week.
- Layfield is placing three panels of GCL for every two panels of 80 mm LLDPE liner.

2.2 September 14, 2020

- Weather: cloudy.
- Ewing finished preparing the subgrade is the southeast corner to tie Phase 1B into Phase 1A at the anchor trench.
- Layfield deployed four slope runs of liner and finished all deployment for Phase 1B.

Tetra Tech Canada Inc.
61 Wasson Place
Whitehorse, YT Y1A 0H7 CANADA
Tel 867.668.3068 Fax 867.668.4349

- After liner deployment, Layfield put three extrusion teams out on the slope to detail all remaining deployed liner as well as to tie Phase 1B into Phase 1A at the Phase 1A anchor trench.
- Layfield and Tetra Tech obtained the remaining destructive samples from the deployed liner and conducted destructive testing.
  - All samples passed destructive testing, including D151B.
- Layfield's QC conducted pressure testing of deployed liner seams.
- Ewing labourers are cleaning up all the garbage around Phase 1B.

2.3 September 15, 2020

- Weather: cloudy.
- Layfield completed all detail work for Phase 1B, including extrusion welding, pressure testing, and vacuum boxing.
- Tetra Tech and Layfield walked-off the liner deployed since the last walk-off. Seven vacuum testes were missed.
  - After the vacuum testing was completed, Tetra Tech signed the final Certificate of Acceptance for both the liner and subgrade and provided them to Forte and Victoria Gold.

2.4 September 16, 2020

- Tetra Tech demobilized to Whitehorse. The liner destructive testing archives have been returned to Tetra Tech's Whitehorse office for storage.

3.0 GEOSYNTHETIC ROLL NUMBERS PLACED

Table 1 summarizes the daily geosynthetic roll numbers placed on the slope during liner installation. All panel lengths are approximate, and where angled joints are used, panel length is based from the center of the panel.

Table 1: Geosynthetic Roll Numbers Placed on Slope

Date	GCL Roll Number	LLDPE Liner Roll Number	Panel Number (Length)
September 14	502343546, 502343586 502343585, 502343662 502343691	10698-006 10698-013	P615 (17.2 m) P616 (30.3 m), P617 (30.1 m), P618 (29.1 m), P619 (3.6 m)

4.0 TRIAL SEAM

Table 2 summarizes the weekly trial seam results. For fusion, the apparatus settings are temperature and speed, and for extrusion, the apparatus settings are preheat and barrel temperature. Five tests are performed for each criterion.

Table 2: Trial Seam Results

Date	Time	Fusion or Extrusion	Tech	Apparatus #	Temp or Preheat (°F)	Speed (%) or Barrel Temp (°F)	$Peel_{inside}$ (100 min)	$Peel_{outside}$ (100 min for Fusion 88 min for Extrusion)	Shear (120 min)	Smooth or Textured
Sep 14	9:40	Fusion	JK	WW-022	850	35	149	163	197	Textured
							144	157	202	
							168	127	196	
							131	172	201	
							149	162	196	
Sep 14	9:40	Fusion	DT	WW-054	850	55	150	149	168	Smooth
							144	149	165	
							150	147	167	
							153	147	168	
							146	136	167	
Sep 14	9:40	Fusion	EA	WW-026	850	55	146	150	166	Smooth
							149	149	166	
							142	142	166	
							133	146	169	
							141	141	167	
Sep 14	9:40	Fusion	JK	WW-022	850	55	155	129	166	Smooth
							146	141	166	
							144	141	167	
							154	141	164	
							146	141	166	
Sep 14	9:40	Extrusion	JL	EX-008	500	500	N/A	130	141	N/A
								133	168	
								136	168	
								132	165	
								124	165	
Sep 14	9:40	Fusion	DT	WW-054	850	35	159	154	178	Textured
							177	169	183	
							169	173	191	
							154	161	186	
							141	180	185	
Sep 14	9:40	Fusion	EA	WW-026	850	35	163	171	193	Textured
							159	163	183	
							169	156	174	
							160	171	198	
							159	159	191	
Sep 14	13:00	Extrusion	EC	EX-035	500	495	N/A	115	156	N/A
								117	149	
								120	148	
								121	152	
								119	154	
Sep 14	12:40	Extrusion	GP	EX-023	500	495	N/A	147	172	N/A
								157	164	
								147	171	
								167	177	
								155	176	

Date	Time	Fusion or Extrusion	Tech	Apparatus #	Temp or Preheat (°F)	Speed (%) or Barrel Temp (°F)	$Peel_{inside}$ (100 min)	$Peel_{outside}$ (100 min for Fusion 88 min for Extrusion)	Shear (120 min)	Smooth or Textured
Sep 14	14:00	Extrusion	JL	EX-008	500	500	N/A	143 151 148 145 126	140 179 159 177 172	N/A
Sep 14	16:30	Extrusion	GP	EX-023	500	495	N/A	142 131 145 141 137	158 159 161 158 158	N/A
Sep 14	17:10	Extrusion	RL	EX-035	500	495	N/A	112 127 131 128 132	157 161 163 159 160	N/A
Sep 15	8:00	Extrusion	JL	EX-008	500	500	N/A	138 139 162 159 150	172 167 182 167 169	N/A
Sep 15	8:00	Extrusion	GP	EX-035	500	495	N/A	100 128 130 138 100	164 162 159 156 167	N/A

5.0 NON-DESTRUCTIVE TESTING

Table 3 summarizes the weekly non-destructive pressure testing results.

Table 3: Non-Destructive Testing Results

Date Fused	Date Tested	Time Tested	Seam #	psi Start	psi End	Pass or Fail	Notes
Sep 7	Sep 14	1248	P550-P551 Cross	40	40	Pass	
Sep 7	Sep 14	1249	P548-P550 Vertical	40	40	Pass	
Sep 7	Sep 14	1249	P548-P551 Vertical	40	40	Pass	Top of seam to patch
Sep 8	Sep 14	1248	P551-P553 Vertical	40	40	Pass	
Sep 8	Sep 14	1248	P550-P553 Vertical	40	40	Pass	
Sep 9	Sep 14	1224	P568-P569 Cross	40	40	Pass	
Sep 9	Sep 14	1221	P570-P571 Cross	40	40	Pass	
Sep 9	Sep 14	1221	P569-P571 Vertical	40	40	Pass	
Sep 9	Sep 14	1224	P568-P570 Vertical	40	40	Pass	
Sep 9	Sep 14	1221	P569-P570 Vertical	40	39	Pass	
Sep 10	Sep 14	1222	P571-P573 Vertical	40	39	Pass	
Sep 10	Sep 14	1222	P570-P573 Vertical	40	40	Pass	

Date Fused	Date Tested	Time Tested	Seam #	psi Start	psi End	Pass or Fail	Notes
Sep 10	Sep 14	1640	P579-P580 Cross	40	40	Pass	
Sep 10	Sep 14	1602	P575-P578 Vertical	40	40	Pass	
Sep 10	Sep 14	1333	P576-P579 Vertical	40	40	Pass	
Sep 10	Sep 14	1544	P576-P578 Vertical	40	40	Pass	
Sep 11	Sep 14	1745	P581-P582 Cross	40	40	Pass	
Sep 11	Sep 14	1642	P582-P582 Vertical	40	39	Pass	
Sep 11	Sep 14	1545	P579-P581 Vertical	40	40	Pass	
Sep 11	Sep 14	1640	P580-P582 Vertical	40	40	Pass	
Sep 11	Sep 14	1640	P579-P582 Vertical	40	40	Pass	Top of seam to patch
Sep 11	Sep 14	1642	P579-P582 Vertical	40	40	Pass	Patch to bottom of seam
Sep 11	Sep 14	1545	P578-P581 Vertical	40	39	Pass	
Sep 11	Sep 14	1650	P584-P585 Cross	40	40	Pass	
Sep 11	Sep 14	1650	P582-P585 Vertical	40	40	Pass	
Sep 11	Sep 14	1745	P582-P584 Vertical	40	40	Pass	
Sep 11	Sep 14	1334	P577-P579 Cross	40	40	Pass	
Sep 12	Sep 14	1758	P587-P588 Cross	40	40	Pass	
Sep 12	Sep 14	1758	P584-P587 Vertical	40	40	Pass	
Sep 12	Sep 14	1651	P588-P589 Cross	40	40	Pass	
Sep 12	Sep 14	1651	P585-P589 Vertical	40	40	Pass	
Sep 12	Sep 14	1650	P585-P588 Vertical	40	40	Pass	
Sep 12	Sep 14	1758	P584-P588 Vertical	40	40	Pass	
Sep 12	Sep 14	1711	P591-P592 Cross	40	40	Pass	
Sep 12	Sep 14	1759	P587-P591 Vertical	40	40	Pass	
Sep 12	Sep 14	1711	P589-P592 Vertical	40	40	Pass	
Sep 12	Sep 14	1759	P588-P591 Vertical	40	40	Pass	
Sep 12	Sep 14	1711	P589-P591 Vertical	40	40	Pass	Top of seam to patch
Sep 12	Sep 14	1653	P589-P591 Vertical	40	40	Pass	Patch to bottom of seam
Sep 12	Sep 14	1811	P593-P594 Cross	40	40	Pass	
Sep 12	Sep 14	1812	P591-P593 Vertical	40	40	Pass	
Sep 12	Sep 14	1712	P592-P594 Vertical	40	40	Pass	
Sep 12	Sep 14	1712	P591-P594 Vertical	40	40	Pass	
Sep 12	Sep 14	1811	P593-P596 Vertical	40	38	Pass	
Sep 12	Sep 14	1724	P596-P597 Cross	40	39	Pass	
Sep 12	Sep 14	1722	P597-P598 Cross	40	40	Pass	
Sep 12	Sep 14	1722	P594-P598 Vertical	40	40	Pass	
Sep 12	Sep 14	1722	P594-P597 Vertical	40	40	Pass	
Sep 12	Sep 14	1811	P594-P596 Vertical	40	40	Pass	
Sep 13	Sep 14	1826	P599-P600 Cross	40	40	Pass	
Sep 13	Sep 14	1723	P597-P600 Vertical	40	40	Pass	
Sep 13	Sep 14	1826	P596-P600 Vertical	40	40	Pass	
Sep 13	Sep 14	1826	P596-P599 Vertical	40	39	Pass	
Sep 11	Sep 15	1232	P583-P584 Cross	40	40	Pass	
Sep 11	Sep 15	1243	P581-P584 Vertical	40	40	Pass	Top of seam to patch
Sep 11	Sep 15	1232	P581-P584 Vertical	40	40	Pass	Patch to bottom of seam
Sep 11	Sep 15	1232	P581-P583 Vertical	40	40	Pass	
Sep 12	Sep 15	1250	P586-P587 Cross	40	40	Pass	
Sep 12	Sep 15	1233	P584-P586 Vertical	40	40	Pass	
Sep 12	Sep 15	1233	P583-P586 Vertical	40	40	Pass	

Date Fused	Date Tested	Time Tested	Seam #	psi Start	psi End	Pass or Fail	Notes
Sep 12	Sep 15	1302	P590-P591 Cross	40	40	Pass	
Sep 12	Sep 15	1250	P587-P590 Vertical	40	40	Pass	
Sep 12	Sep 15	1250	P586-P590 Vertical	40	40	Pass	
Sep 12	Sep 15	1302	P590-P593 Vertical	40	40	Pass	
Sep 12	Sep 15	1303	P595-P596 Cross	40	40	Pass	
Sep 12	Sep 15	1724	P593-P595 Vertical	40	39	Pass	
Sep 13	Sep 15	1124	P597-P600 Vertical	40	40	Pass	Patch to bottom of seam
Sep 13	Sep 15	1303	P595-P599 Vertical	40	40	Pass	
Sep 13	Sep 15	1314	P601-P602 Cross	40	40	Pass	
Sep 13	Sep 15	1126	P600-P602 Vertical	40	40	Pass	
Sep 13	Sep 15	1222	P603-P604 Cross	40	40	Pass	
Sep 13	Sep 15	1128	P604-P605 Cross	40	40	Pass	
Sep 13	Sep 15	1314	P599-P601 Vertical	40	40	Pass	
Sep 13	Sep 15	1126	P599-P602 Vertical	40	40	Pass	
Sep 13	Sep 15	1128	P602-P605 Vertical	40	40	Pass	
Sep 13	Sep 15	1315	P601-P604 Vertical	40	40	Pass	
Sep 13	Sep 15	1128	P602-P604 Vertical	40	40	Pass	
Sep 13	Sep 15	1222	P601-P603 Vertical	40	40	Pass	
Sep 13	Sep 15	1131	P606-P607 Cross	40	40	Pass	
Sep 13	Sep 15	1130	P604-P606 Vertical	40	40	Pass	
Sep 13	Sep 15	1129	P605-P607 Vertical	40	40	Pass	
Sep 13	Sep 15	1129	P604-P607 Vertical	40	40	Pass	
Sep 13	Sep 15	1150	P608-P609 Vertical	40	40	Pass	
Sep 13	Sep 15	1131	P607-P609 Vertical	40	40	Pass	
Sep 13	Sep 15	1146	P606-P608 vertical	40	40	Pass	
Sep 13	Sep 15	1131	P606-P609 Vertical	40	40	Pass	
Sep 13	Sep 15	1156	P610-P611 Cross	40	40	Pass	
Sep 13	Sep 15	1153	P609-P611 Vertical	40	39	Pass	
Sep 13	Sep 15	1202	P612-P623 Cross	40	40	Pass	
Sep 13	Sep 15	1150	P609-P610 Vertical	40	40	Pass	
Sep 13	Sep 15	1150	P608-P610 Vertical	40	40	Pass	
Sep 13	Sep 15	1201	P611-P613 Vertical	40	40	Pass	
Sep 13	Sep 15	1156	P611-P612 Vertical	40	40	Pass	
Sep 13	Sep 15	1156	P610-P612 Vertical	40	40	Pass	
Sep 14	Sep 15	1202	P613-P614 Vertical	40	39	Pass	
Sep 14	Sep 15	1208	P615-P616 Cross	40	40	Pass	
Sep 14	Sep 15	1202	P612-P614 Vertical	40	40	Pass	
Sep 14	Sep 15	1208	P614-P616 Vertical	40	40	Pass	
Sep 14	Sep 15	1208	P614-P615 Vertical	40	39	Pass	
Sep 14	Sep 15	1209	P616-P617 Vertical	40	40	Pass	
Sep 14	Sep 15	1211	P618-P619 Vertical	40	40	Pass	
Sep 14	Sep 15	1209	P615-P617 Vertical	40	40	Pass	
Sep 14	Sep 15	1210	P617-P618 Vertical	40	40	Pass	

6.0 DESTRUCTIVE TESTING

Table 4 summarizes the weekly destructive testing results. Five tests are performed for each criterion.

Table 4: Destructive Testing Results

Date Fused	Time Fused	Tech	Apparatus	Location (UTM is +/- 4 m)	Sample ID	$Peel_{in}$ (100 min)	$Peel_{out}$ (100 min)	Shear (120 min)	Pass or Fail
Sep 8	16:50	JL	WW-054	P559-P561 Vertical 16 m from D251A Top of Seam	D251B	154 158 152 153 153	150 130 147 147 145	158 155 158 158 157	Pass
Sep 8	16:40	JL	WW-054	P561-P562 Cross Left Side of Seam	D272	158 153 154 160 171	151 141 142 119 155	177 166 176 163 171	Pass
Sep 14	11:07	EA	WW-026	P618-P619 Vertical Bottom of Seam	D273	143 133 142 146 147	141 142 142 141 141	157 159 153 160 132	Pass
Sep 14	10:54	EA	WW-026	P614-P615 Vertical Bottom of Seam	D274	151 142 142 142 151	131 135 143 152 143	164 154 156 163 166	Pass
Sep 13	17:23	DT	WW-054	P609-P611 Vertical Top of Seam	D275	151 149 141 147 150	153 141 143 143 134	156 161 157 162 161	Pass
Sep 12	16:56	DT	WW-054	P594-P598 Vertical Top of Seam	D276	137 142 134 152 144	141 141 140 143 136	156 157 157 153 156	Pass
Sep 12	14:30	JK	WW-022	P592-P594 Vertical Top of Seam	D277	145 148 139 141 143	150 148 143 145 139	148 158 160 159 142	Pass
Sep 11	13:31	JK	WW-022	P582-P585 Vertical Top of Seam	D278	147 147 153 141 138	138 146 135 142 145	165 160 164 159 163	Pass
Sep 7	13:18	JK	WW-022	P549-P552 Vertical Top of Seam	D279	146 138 136 128 137	142 141 139 150 139	159 155 161 164 161	Pass

Date Fused	Time Fused	Tech	Apparatus	Location (UTM is +/- 4 m)	Sample ID	$Peel_{in}$ (100 min)	$Peel_{out}$ (100 min)	Shear (120 min)	Pass or Fail
Sep 12	11:48	DT	WW-054	P585-P589 Vertical Top of Seam	D280	156 159 147 146 150	156 145 153 153 151	169 157 171 159 170	Pass
Sep 13	12:16	DT	WW-054	P597-P600 Vertical Top of Seam	D281	141 150 153 146 146	138 142 142 130 136	159 162 159 163 162	Pass
Sep 13	13:04	DT	WW-054	P600-P602 Vertical Top of Seam	D282	144 136 139 138 142	140 148 152 142 148	157 159 160 130 161	Pass
Sep 13	13:34	EA	WW-026	P602-P605 Vertical Top of Seam	D283	149 142 152 149 148	145 144 135 136 138	153 149 153 152 153	Pass
Sep 13	16:17	EA	WW-026	P607-P609 Vertical Top of Seam	D284	145 141 145 143 147	154 139 139 148 142	164 157 163 155 157	Pass
Sep 13	15:03	DT	WW-054	P605-P607 Vertical Top of Seam	D285	140 149 141 140 156	149 142 147 126 116	156 162 157 158 154	Pass
Sep 12	13:22	JK	WW-022	P589-P592 Vertical Top of Seam	D286	151 150 137 148 145	152 130 132 149 137	164 159 163 162 143	Pass
Sep 13	13:09	JK	WW-022	P603-P604 Cross Left Side of Seam	D287	136 157 133 151 148	128 153 149 156 139	164 169 160 167 158	Pass

7.0 PHOTO LOG



Figure 1: Prepared Subgrade at Southeast Corner of Phase 1B



Figure 2: Prepared Subgrade at Southeast Corner of Phase 1B



Figure 3: GCL on Prepared Subgrade at Southeast Corner



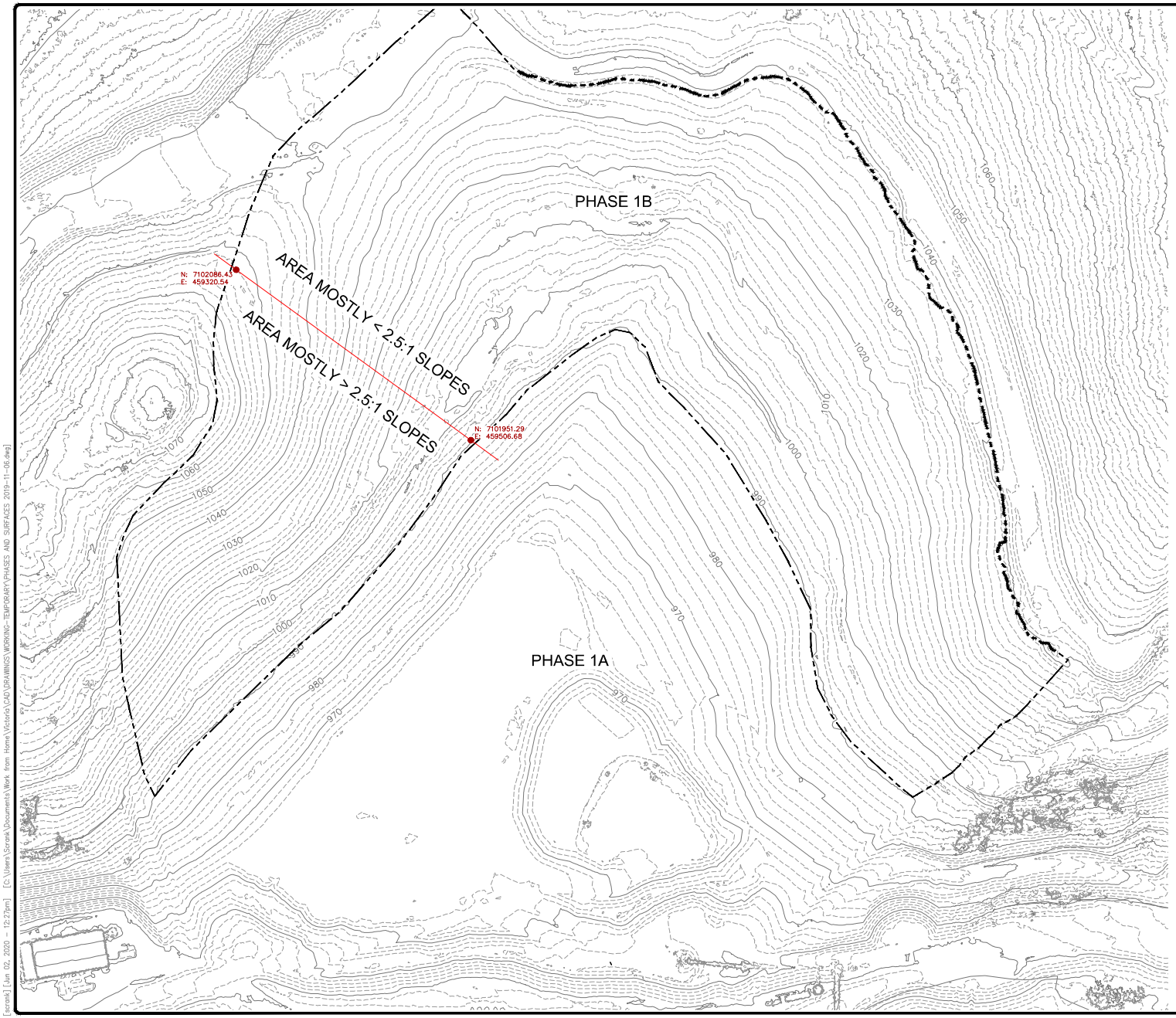
Figure 4: Overall Deployment as of September 14



Figure 5: Completed East Side of Phase 1B

APPENDIX C

SUPPORTING DOCUMENTATION OF VARIANCES FROM DESIGN



90 0 90

(In Meters)
1 cm = 30 M
(1 : 3,000)

N

LEGEND

EXISTING GROUND CONTOURS

SURVEY LINE

ISSUE	DATE	Description	DRAWN	CHKD	APPD
A	06/2020	DRAFT	SMC	CJS	CJS

COORD. SYSTEM: NAD 83 UTM ZONE 8

INFORMATION SHOWN IS SUBJECT TO CHANGE. NOT FOR CONSTRUCTION.

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FD PROJECT NO: 109005

PREPARED BY:

FORTE DYNAMICS
3003 E. HARMONY ROAD, SUITE 320
FORT COLLINS, CO 80528

VICTORIA EAGLE GOLD, HLF PHASE 1B

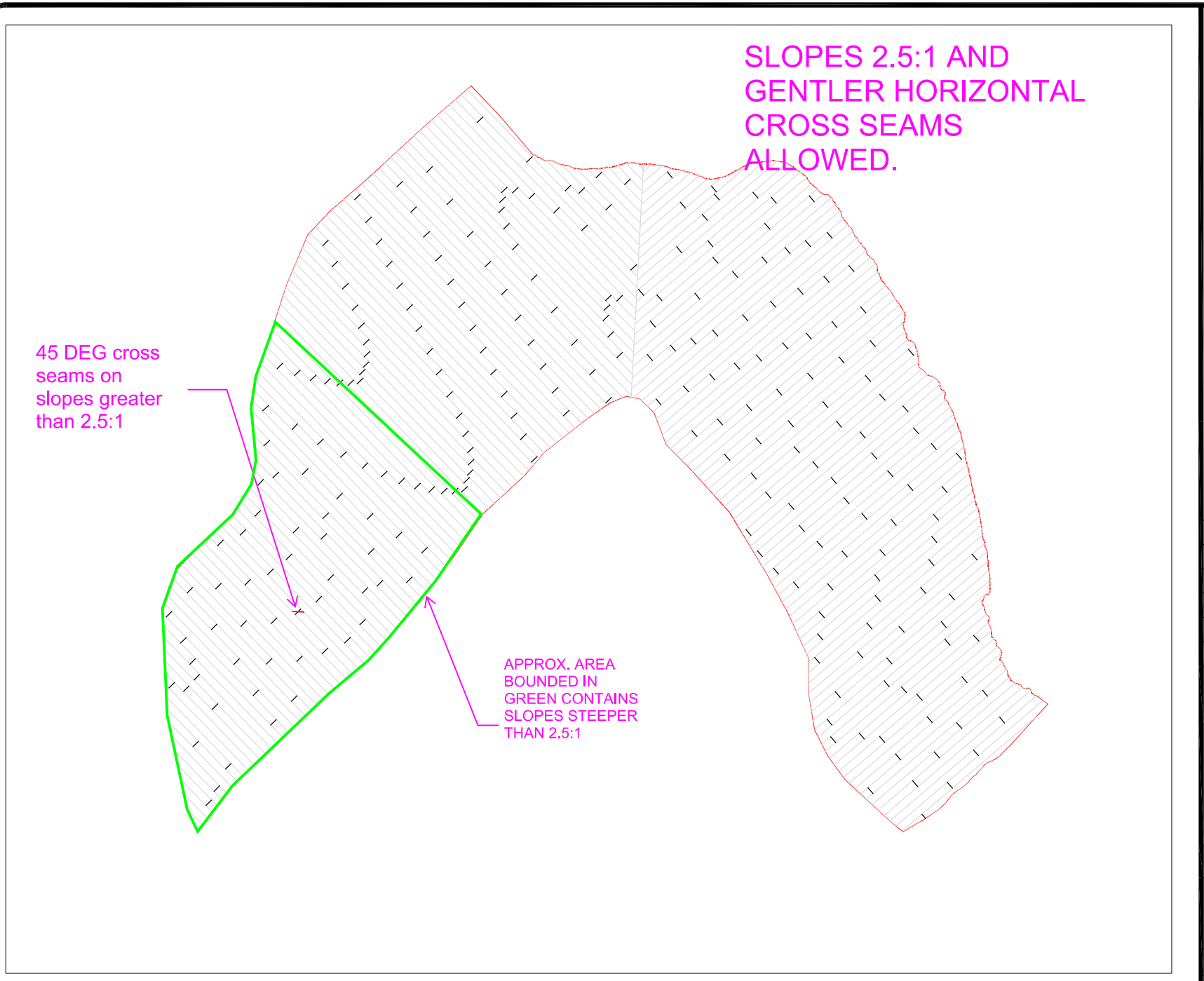
MAY 07, 2020 SURVEY SLOPE PITCH DESIGNATION

YUKON, CANADA

DRAWING NUMBER:

EXH-F006

[scronk] [Jun 02, 2020 - 12:27pm] [C:\Users\Scronk\Documents\Work from Home\Victoria\CAD\DRAWINGS\WORKING - TEMPORARY\PHASES AND SURFACES 2019-11-06.dwg]



NOTES

Panel Layout is conceptual only, and subject to change due to field conditions and on site supervisor's discretion

REV.	RECORD OF CHANGES	DATE	BY

LAYFIELD

PH IB CONCEPTUAL LAYOUT
EL4280

VICTORIA GOLD
YUKON

DWG. NUMBER

Quote No.	Project No. CT001401
DWG : 1 OF 1	SCALE : N.T.S.
DWN: MJ / CHKD: JW	APP'D:
DATE: 05/28/20	REVISION: A

REQUEST FOR INFORMATION

JDS RFI:	**VITGOLD-RFI-003**
Contractor RFI:	
Site Location: EAGLEGOLD	
Date Submitted: June 3, 2020	

Subject: Horizontal seams on slopes greater than 2.5:1	**Project Zone/Area: Heap Leach Phase 1B**
Contractor: JDS/Ewing	**Station/Location:**
Attention: Clint Green	**Discipline: Civil**

REQUEST

Related Drawings: Conceptual Panel Layout Ph 1B-FORTE DYNAMICS-6-11-20.pdf	**Other Related Documents:** **Technical Specifications – Geosynthetics** **3.1.7.1 Placement**

Information Request/Description of Issue:

Requesting additional information on the requirement to connect the liner end seams at 45 degrees. Will the liner on slopes greater than 2.5H:1V require a 45 degree angle connection as listed in the Technical Specifications?

Proposed Corrective Action

There were no 45° angle end seams utilized in Phase 1A, but this could've been due to the length of the material deployed. All horizontal seams have to be staggered to ensure good material is welded on both side of each end seam.

Type of Change:	☐	Owner Change	☒	Clarification/Info	☒	Field Change
	☐	Vendor Change	☐	Design Change	☐	Other

Cost Impact:	
Schedule Impact:	

Requested by: Clint Abel		**June 3, 2020**
Name	Signature	Date

RESPONSE

☐	Approved	☒	Approved as noted	☐	Rejected as noted

Response:

Liner already deployed and welded at 45-degree angled seams shall remain in area delineated in green on the attached exhibit already lined with LLDPE.

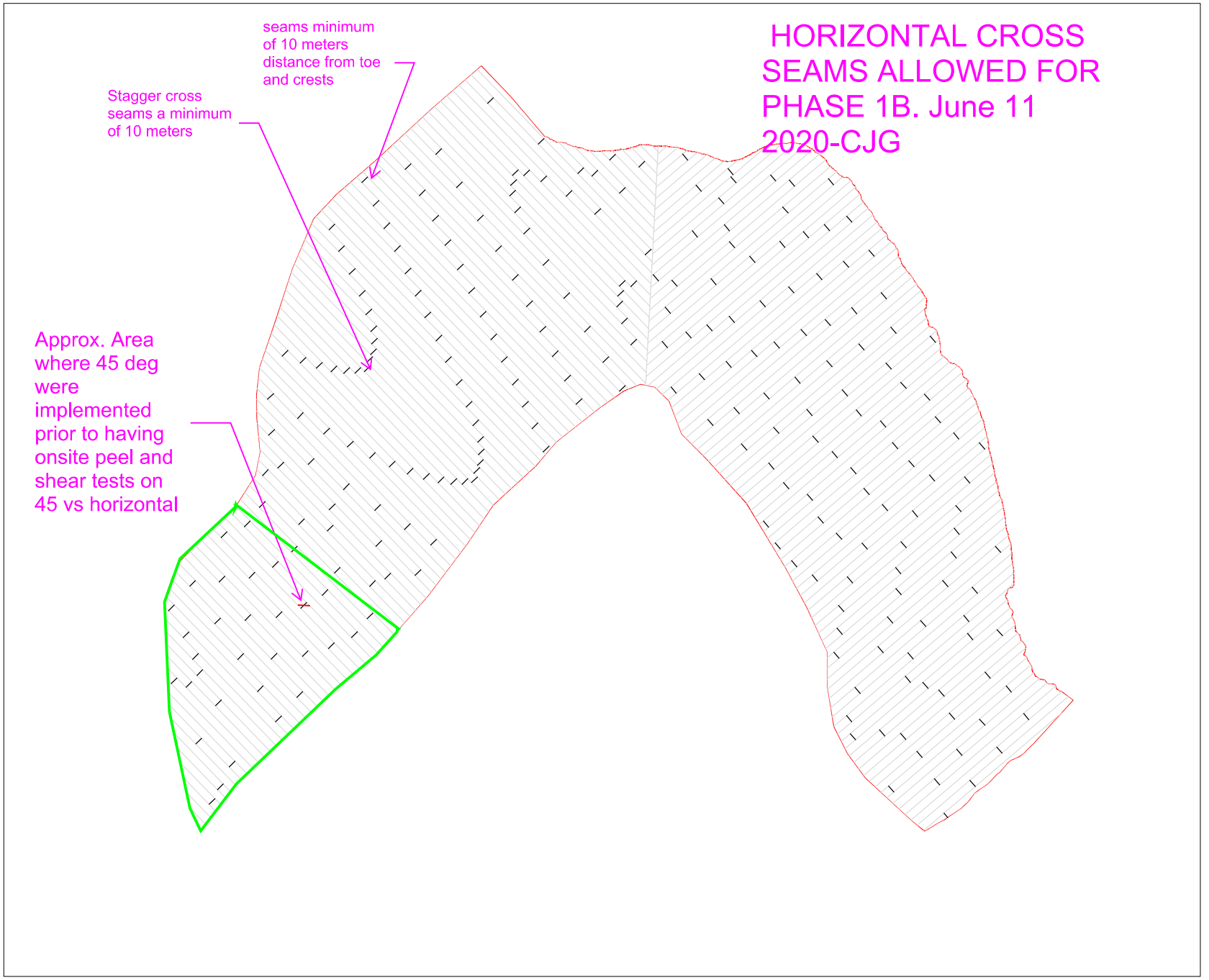
Based on the on-site 45-degree seam vs. horizontal seam destructive testing (peel & shear) results, horizontal seams shall be allowed on the side slopes for remainder of un-lined areas within Phase 1B footprint. Given the following conditions are met:

- **Horizontal seams must be staggered at least 10m apart at different elevations across the slope**
- **No Horizontal seams shall be within 10m of the toe or crest of a slope**
- **Upper geomembrane panel must be shingled over the lower geomembrane when placing horizontal seam on side slope**

Answered by: 

Name Clint Green	Signature	Date 6/11/2020

Note: Response to this RFI does not constitute authorization to perform a change to any Contract. The Requestor may proceed with the response only on the basis that the Requestor agrees that it is not a contract change. If the Requestor believes that the response does constitute a contract change, the Requestor shall immediately notify JDS. Work undertaken without JDS written authorization is at the Contractor's risk and expense.



NOTES

Panel Layout is conceptual only, and subject to change due to field conditions and on site supervisor's discretion

REV.	RECORD OF CHANGES	DATE	BY

LAYFIELD

PH IB CONCEPTUAL LAYOUT
EL4280

VICTORIA GOLD
YUKON

DWG. NUMBER	
Quote No.	Project No. CT001401
DWG : 1 OF 1	SCALE : N.T.S.
DWN: MJ	CHKD: JW APP'D:
DATE: 05/28/20	REVISION: A

TETRA TECH

REQUEST FOR INFORMATION

ISSUED FOR USE

Request for Information #1

Project Name:	Eagle Gold Heap Leach Expansion Phase 1B	**Date:**	June 6, 2020
Location:	Eagle Gold Mine	**Page:**	1 of 3
Date of RFI:	June 6, 2020	**File:**	704-ENG.WARC03235-09

1.0 INTRODUCTION

Tetra Tech Canada Inc (Tetra Tech) is contracted by Victoria Gold Corp. (Victoria Gold) to provide CQA services for liner placement for the Eagle Gold Heap Leach Expansion Phase 1B. The following RFI outlines Tetra Tech's request for guidance from Forte Dynamics (Forte), who is the Engineer of Record (EOR) for the heap leach expansion, regarding the subgrade and ongoing issues with rocks lodging between the subgrade soils and liner during deployment. Layfield Environmental Containment (Layfield), who is installing the liner, is also seeking guidance on the acceptability of rocks between the subgrade and deployed liner.

2.0 BACKGROUND

Currently, Layfield is deploying liner on the westernmost portion of Phase 1B, which is the steepest portion of the heap leach facility and will be herein noted as the west side. The subgrade on the west side of the heap leach facility consists of either colluvium or degraded bedrock that has been ripped with a dozer and bladed to form a continuous slope with relatively gentle transitions (3:1 or less) across the slope but is steeper than 2:1 downslope. Once the slope has been contoured with a dozer, a packer is run over the slope to smooth out the surface in preparation for liner deployment. In advance of liner deployment, Tetra Tech and Layfield conduct a subgrade inspection prior to ensure that a smooth surface free of protruding rocks or other deleterious conditions that may cause failure to the liner is present. After compaction, the subgrade meets the aforementioned conditions.

Layfield is deploying the GCL, which lies beneath the liner on top of the subgrade, via a spreader bar suspended by an excavator. Typically, Layfield would pull the liner down the slope using a side by side, but the steepness of the slope requires deployment using an excavator to pull the GCL. Tetra Tech has noted that the subgrade disturbs easily, which loosens the surface up. Also, the excavator used for deployment causes subgrade disturbance. Due to the GCL sliding along the slope, rocks are pulled out of the subgrade and are lodged between the GCL and the subgrade, causing protrusions in the GCL. Tetra Tech has noted that this occurs both in disturbed and undisturbed areas. Tetra Tech had requested that Layfield remove the rocks once the GCL is deployed, but there are too many to remove and would require hundreds of cuts in the GCL to remove every noticeable protrusion. Other deployment options have been discussed, and some have been tried, but all other deployment options have been deemed too unsafe or would require significant work stoppages to work and will also be slower methods of deployment with no guarantee of working across the entire slope.

Due to the challenging subgrade conditions and Layfield expressing concern for the installed liner, a meeting was held between Forte, Tetra Tech, Victoria Gold, and Layfield to discuss options to continue to move forward with the challenging subgrade conditions. A test strip was suggested and agreed upon by all parties to test the impact of rocks beneath the liner.

Tetra Tech Canada Inc.
61 Wasson Place
Whitehorse, YT Y1A 0H7 CANADA
Tel 867.668.3068 Fax 867.668.4349

3.0 ROCK PROTRUSION TEST STRIP

Tetra Tech, Forte, and Layfield discussed a test strip method that would help do determine the puncture resistance by rocks on the liner system. The following section details the results of the test strip.

Adam Mickey, EIT, is Tetra Tech's representative on site. Mr. Mickey suggested a test strip that would test conditions that would represent extreme cases of rocks beneath the liner system. It was suggested that the following conditions would be tested:

- The test strip would be the complete liner system of GCL and 80 mm LLDPE liner;
- The test strip would be conducted on a flat, well-compacted subgrade;
- Angular rocks of varying sizes would be placed on top of the subgrade and beneath the liner system in test sections ranging from only rocks less than 50 mm in size to large rocks up to 200 mm in size; and
- A fully loaded 30-ton rock truck would run over the LLDPE liner without any soil on the surface of the liner to protect it.

Tetra Tech set up the test strip with Layfield present and conducted the testing. During testing, the liner was at a temperature of 21°C. The liner test sections were run over three times by the fully loaded rock truck. A fourth test was conducted where the rock truck tire was placed on the largest, most protruding rock, and the rock truck turned left, and right overtop of the rock. No rock penetrated the liner at any stage of the testing. The GCL did not puncture, except for the at the rock where the rock truck twisted back and forth on. It was noted that the rocks were driven into the subgrade during testing. Once testing was completed, two coupons were cut out of the liner at the most significant rock protrusions and tested in the liner seam testing apparatus by Layfield with Tetra Tech present. The results are presented below in Table 1.

Table 1: Liner Protrusion Shear Testing

Test ID	Coupon 1 Shear	Coupon 2 Shear
PT1	189	170
PT2	191	228
PT3	159	134
PT4	204	205

Except for PT3, all values were similar to shear values exhibited by new LLDPE liner. PT3 was cut from the protrusion area where the rock truck twisted back and forth over. Note that the shear values are still above the required shear value of 120 for a fusion weld.

Photos have been provided to Forte is a separate document that shows the liner test at all stages of testing. Tetra Tech has retained the liner for further inspection if necessary.

4.0 REQUEST FOR GUIDANCE

Based on the protrusion test and the subgrade conditions present on the steep slopes, Tetra Tech is requesting guidance on the following:

- What is an acceptable amount, and size, of rocks between the GCL and the subgrade with the understanding that it is not possible to eliminate all rock between the subgrade and the GCL, GCL placement causes rocks to be plucked out of the subgrade, deployment using an excavator causes damage to the subgrade, and that

subgrade conditions get rockier as deployment moves towards the header trench from the southernmost limit of the west side of the Phase 1B;

- Guidance on sand placement in exceptional rocky areas of the subgrade to limit the plucking of rocks by GCL placement including thickness and compaction requirements; and
- What are Tetra Tech's and Layfield's responsibilities regarding the subgrade moving forward?

Respectfully submitted,

Adam Mickey, M.Eng., EIT

Tetra Tech CQA Representative

APPENDIX D

TESTPIT LOGS FOR FOUNDATION IMPROVEMENT PLAN

TERMS USED ON BOREHOLE LOGS

TERMS DESCRIBING CONSISTENCY OR CONDITION

COARSE GRAINED SOILS (major portion retained on 0.075mm sieve): Includes (1) clean gravels and sands, and (2) silty or clayey gravels and sands. Condition is rated according to relative density, as inferred from laboratory or in situ tests.

DESCRIPTIVE TERM	RELATIVE DENSITY	N (blows per 0.3m)
Very Loose	0 TO 20%	0 to 4
Loose	20 TO 40%	4 to 10
Compact	40 TO 75%	10 to 30
Dense	75 TO 90%	30 to 50
Very Dense	90 TO 100%	greater than 50

The number of blows, N, on a 51mm O.D. split spoon sampler of a 63.5kg weight falling 0.76m, required to drive the sampler a distance of 0.3m from 0.15m to 0.45m.

FINE GRAINED SOILS (major portion passing 0.075mm sieve): Includes (1) inorganic and organic silts and clays, (2) gravelly, sandy, or silty clays, and (3) clayey silts. Consistency is rated according to shearing strength, as estimated from laboratory or in situ tests.

DESCRIPTIVE TERM	UNCONFINED COMPRESSIVE STRENGTH (KPA)
Very Soft	Less than 25
Soft	25 to 50
Firm	50 to 100
Stiff	100 to 200
Very Stiff	200 to 400
Hard	Greater than 400

NOTE: Slickensided and fissured clays may have lower unconfined compressive strengths than shown above, because of planes of weakness or cracks in the soil.

GENERAL DESCRIPTIVE TERMS

Slickensided - having inclined planes of weakness that are slick and glossy in appearance.
Fissured - containing shrinkage cracks, frequently filled with fine sand or silt; usually more or less vertical.
Laminated - composed of thin layers of varying colour and texture.
Interbedded - composed of alternate layers of different soil types.
Calcareous - containing appreciable quantities of calcium carbonate.;
Well graded - having wide range in grain sizes and substantial amounts of intermediate particle sizes.
Poorly graded - predominantly of one grain size, or having a range of sizes with some intermediate size missing.

Data presented hereon is for the sole use of the stipulated client. Tetra Tech EBA is not responsible, nor can be held liable, for use made of this report by any other party, with or without the knowledge of EBA. The testing services reported herein have been performed to recognized industry standards, unless noted. No other warranty is made. These data do not include or represent any interpretation or opinion of specification compliance or material suitability. Should engineering interpretation be required, EBA will provide it upon written request.

MODIFIED UNIFIED SOIL CLASSIFICATION

MAJOR DIVISION			GROUP SYMBOL	TYPICAL DESCRIPTION	LABORATORY CLASSIFICATION CRITERIA	
COARSE - GRAINED SOILS More than 50% retained on No. 75 µm sieve*	GRAVELS 50% or more of coarse fraction retained on No. 4 sieve	CLEAN GRAVELS	GW	Well-graded gravels and gravel-sand mixtures, little or no fines	Classification on basis of percentage of fines GW, GP, SW, SP GM, GC, SM, SC Borderline classification requiring use of dual symbols Less than 5% pass 75 µm sieve More than 12% pass 75 µm sieve 5% to 12% pass 75 µm sieve	$C_U = D_{60} / D_{10}$ Greater than 4 $C_C = \frac{(D_{30})^2}{D_{10} \times D_{60}}$ Between 1 and 3
			GP	Poorly-graded gravels and gravel-sand mixtures, little or no fines		Not meeting both criteria for GW
		GRAVELS WITH FINES	GM	Silty gravels, gravel-sand-silt mixtures		Atterberg limits plot below 'A' line or plasticity index less than 4 — Atterberg limits plotting in hatched area are borderline classifications requiring use of dual symbols
			GC	Clayey gravels, gravel-sand-clay mixtures		Atterberg limits plot above 'A' line and plasticity index greater than 7
	SANDS More than 50% of coarse fraction passes No. 4 sieve	CLEAN SANDS	SW	Well-graded sands and gravelly sands, little or no fines		$C_U = D_{60} / D_{10}$ Greater than 6 $C_C = \frac{(D_{30})^2}{D_{10} \times D_{60}}$ Between 1 and 3
			SP	Poorly-graded sands and gravelly sands, little or no fines		Not meeting both criteria for SW
		SANDS WITH FINES	SM	Silty sands, sand-silt mixtures		Atterberg limits plot above 'A' line and plasticity index less than 4 — Atterberg limits plotting in hatched area are borderline classifications requiring use of dual symbols
			SC	Clayey sands, sand-clay mixtures		Atterberg limits plot above 'A' line and plasticity index greater than 7
FINE-GRAINED SOILS (by behavior) 50% or more passes 75 µm sieve*	SILTS Liquid limit <50		ML	Inorganic silts, very fine sands, rock flour, silty or clayey fine sands of slight plasticity	PLASTICITY CHART For classification of fine-grained soils and fine fraction of coarse-grained soils Equation of 'A' line: PI = 0.73(LL-20) PLASTICITY INDEX LIQUID LIMIT CH 'A' line CL CI MH or OH CL-ML ML or OL	
	SILTS Liquid limit >50		MH	Inorganic silts, micaceous or diatomaceous fine sands or silts, elastic silts		
	CLAYS Above "A" line on plasticity chart negligible organic content Liquid limit <30		CL	Inorganic clays of low plasticity, gravelly clays, sandy clays, silty clays, lean clays		
	CLAYS Liquid limit 30-50		CI	Inorganic clay of medium plasticity, silty clays		
	CLAYS Liquid limit >50		CH	Inorganic clay of high plasticity, fat clays		
	ORGANIC SILTS AND CLAYS Liquid limit <50		OL	Organic silts and organic silty clays of low plasticity		
	ORGANIC SILTS AND CLAYS Liquid limit >50		OH	Organic clays of medium to high plasticity		
HIGHLY ORGANIC SOILS			PT	Peat, muck and other highly organic soils		

* Based on the material passing the 75 mm sieve

† ASTM Designation D 2487, for identification procedure see D 2488 USC as modified by PFRA

GROUND ICE DESCRIPTION

ICE NOT VISIBLE

GROUP SYMBOL	SYMBOL	SUBGROUP DESCRIPTION	
N	Nf	Poorly-bonded or friable	
	Nbn	No excess ice, well-bonded	
	Nbe	Excess ice, well-bonded	

VISIBLE ICE LESS THAN 50% BY VOLUME

GROUP SYMBOL	SYMBOL	SUBGROUP DESCRIPTION	
V	Vx	Individual ice crystals or inclusions	
	Vc	Ice coatings on particles	
	Vr	Random or irregularly oriented ice formations	
	Vs	Stratified or distinctly oriented ice formations	

VISIBLE ICE GREATER THAN 50% BY VOLUME

ICE	ICE + Soil Type	Ice with soil inclusions	
	ICE	Ice without soil inclusions (greater than 25 mm thick	

NOTES:

1. Dual symbols are used to indicate borderline or mixed ice classifications.
2. Visual estimates of ice contents indicated on borehole logs ± 5%
3. This system of ground ice description has been modified from NRC Technical Memo 79, Guide to the Field Description of Permafrost for Engineering Purposes.

LEGEND: Soil ☐ Ice ■

TETRA TECH

BOREHOLE KEYSHEET

Water Level Measurement

 Measured in standpipe, piezometer or well

 Inferred

Sample Types

 A-Casing

 Core

 Disturbed, Bag, Grab

 HQ Core

 Jar

 Jar and Bag

 75 mm SPT

 No Recovery

 Split Spoon/SPT

 Tube

 CRREL Core

Backfill Materials

 Asphalt

 Bentonite

 Cement/ Grout

 Drill Cuttings

 Grout

 Gravel

 Sand

 Slough

 Topsoil Backfill

Lithology - Graphical Legend[1]

 Asphalt

 Bedrock

 Cobbles/Boulders

 Clay

 Coal

 Concrete

 Fill

 Gravel

 Limestone

 Mudstone

 Organics

 Peat

 Sand

 Sandstone

 Shale

 Silt

 Siltstone

 Conglomerate

 Topsoil

 Till

1. The graphical legend is an approximation and for visual representation only. Soil strata may comprise a combination of the basic symbols shown above. Particle sizes are not drawn to scale

TETRA TECH

Testpit No: **TT-TP20-01**

Project: Heap Leach Facility Phase 1B	Project No: ENG.WARC03235-09
Location: Victoria Gold - Eagle Gold Project	Ground Elev: 995.91 m
Eagle Gold Mine, Yukon	UTM: 459645 E; 7102065 N; Z 8

Depth (m)	Method	Soil Description	Ground Ice Description	Moisture Content (%)	Plastic Limit / Moisture Content / Liquid Limit (20 40 60 80)	Elevation (m)
0						
1	Excavated	GRAVEL (COLLUVIUM) - sandy, some silt, light brown, fine to coarse sand, angular to subangular gravel to 150 mm diameter	Seasonally frozen			995
2		END OF TESTPIT (2.0 metres) Note: Testpit logging performed in underdrain header trench that was excavated prior to logging				994
3						993
4						992
5						991
6						990
7						989
7.5						

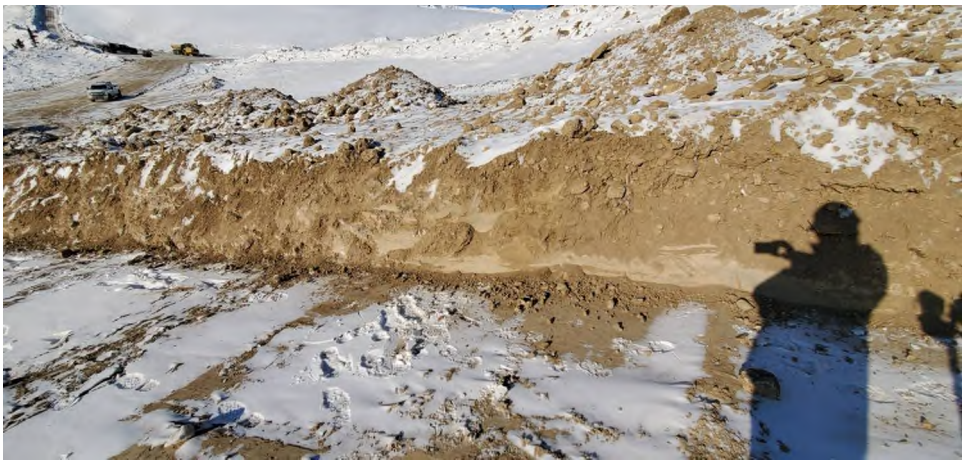


Contractor: Ewing	Completion Depth: 2 m
Drilling Rig Type: CAT 336 Excavator	Start Date: 2020 March 12
Logged By: AMM	Completion Date: 2020 March 12
Reviewed By: CC	Page 1 of 1

Testpit No: **TT-TP20-02**

Project: Heap Leach Facility Phase 1B	Project No: ENG.WARC03235-09
Location: Victoria Gold - Eagle Gold Project	Ground Elev: 1007.84 m
Eagle Gold Mine, Yukon	UTM: 459672 E; 7102115 N; Z 8

Depth (m)	Method	Soil Description	Ground Ice Description	Moisture Content (%)	Plastic Limit / Moisture Content / Liquid Limit (20 40 60 80)	Elevation (m)
0	Excavated	GRAVEL (COLLUVIUM) - sandy, some silt, light brown, fine to coarse sand, angular to subangular gravel to 150 mm diameter	Seasonally frozen			1007
1		SAND - silty, trace gravel, light brown, fine to coarse sand				
		END OF TESTPIT (1.0 metre) Note: Testpit logging performed in underdrain header trench that was excavated prior to logging				1006
2						
						1005
3						
						1004
4						
						1003
5						
						1002
6						
						1001
7						
7.5						



Contractor: Ewing	Completion Depth: 1 m
Drilling Rig Type: CAT 336 Excavator	Start Date: 2020 March 12
Logged By: AMM	Completion Date: 2020 March 12
Reviewed By: CC	Page 1 of 1

Testpit No: **TT-TP20-03**

Victoria GOLD CORP

Project: Heap Leach Facility Phase 1B	Project No: ENG.WARC03235-09
Location: Victoria Gold - Eagle Gold Project	Ground Elev: 1021.6 m
Eagle Gold Mine, Yukon	UTM: 459694 E; 7102165 N; Z 8

Depth (m)	Method	Soil Description	Ground Ice Description	Moisture Content (%)	Plastic Limit / Moisture Content / Liquid Limit (20 40 60 80)	Elevation (m)
0						
	Excavated	ORGANICS - woody debris, (100 mm thick)	Seasonally frozen			
		GRAVEL (COLLUVIUM) - sandy, some silt, light brown, fine to coarse sand, angular to subangular gravel to 150 mm diameter				
1		SAND - silty, trace gravel, light brown, fine to coarse sand				1021
		END OF TESTPIT (1.4 metres) Note: Testpit logging performed in underdrain header trench that was excavated prior to logging				1020
2						1019
3						1018
4						1017
5						1016
6						1015
7						
7.5						



TETRA TECH

Contractor: Ewing	Completion Depth: 1.4 m
Drilling Rig Type: CAT 336 Excavator	Start Date: 2020 March 12
Logged By: AMM	Completion Date: 2020 March 12
Reviewed By: CC	Page 1 of 1

Testpit No: **TT-TP20-04**

Project: Heap Leach Facility Phase 1B	Project No: ENG.WARC03235-09
Location: Victoria Gold - Eagle Gold Project	Ground Elev: 1034.79 m
Eagle Gold Mine, Yukon	UTM: 459726 E; 7102216 N; Z 8

Depth (m)	Method	Soil Description	Ground Ice Description	Moisture Content (%)	Plastic Limit / Moisture Content / Liquid Limit (20 40 60 80)	Elevation (m)
0						
1	Excavated	GRAVEL (COLLUVIUM) - sandy, some silt, light brown, fine to coarse sand, angular to subangular gravel to 150 mm diameter	Seasonally frozen			1034
		SAND - silty, trace gravel, light brown, fine to coarse sand				
2		END OF TESTPIT (1.5 metres) Note: Testpit logging performed in underdrain header trench that was excavated prior to logging				1033
3						1032
4						1031
5						1030
6						1029
7						1028
7.5						



TETRA TECH

Contractor: Ewing	Completion Depth: 1.5 m
Drilling Rig Type: CAT 336 Excavator	Start Date: 2020 March 12
Logged By: AMM	Completion Date: 2020 March 12
Reviewed By: CC	Page 1 of 1

Testpit No: **TT-TP20-05**

Victoria GOLD CORP

Project: Heap Leach Facility Phase 1B	Project No: ENG.WARC03235-09
Location: Eagle Gold Mine	
Dublin Gulch, Yukon	UTM: 459770 E; 7101931 N; Z 8

Depth (m)	Method	Soil Description	Ground Ice Description	Moisture Content (%)	Plastic Limit / Moisture Content / Liquid Limit (20 40 60 80)	Depth (ft)
0						0
1	Excavated	GRAVEL (COLLUVIUM) - sandy, some silt, light brown, fine to coarse sand, angular to subangular gravel to 150 mm diameter	Unfrozen			1–6
2		END OF TESTPIT (2.0 metres) Note: Testpit logging occurred in E1 lateral drain and was logged to the top of the sand above drain pipe E1 lateral was excavated prior to logging				7
3						8–12
4						13–16
5						17–20
6						21–23
7						24
7.5						25



TETRA TECH

Contractor: Ewing	Completion Depth: 2 m
Drilling Rig Type:	Start Date: 2020 July 2
Logged By: AMM	Completion Date: 2020 July 2
Reviewed By: CC	Page 1 of 1

Testpit No: **TT-TP20-06**

Victoria GOLD CORP

Project: Heap Leach Facility Phase 1B	Project No: ENG.WARC03235-09
Location: Eagle Gold Mine	
Dublin Gulch, Yukon	UTM: 459664 E; 7102046 N; Z 8

Depth (m)	Method	Soil Description	Ground Ice Description	Moisture Content (%)	Plastic Limit / Moisture Content / Liquid Limit (20 40 60 80)	Depth (ft)
0						0
	Excavated	GRAVEL (COLLUVIUM) - sandy, some silt, light brown grey, fine to coarse sand, angular to subangular gravel to 300 mm diameter	Unfrozen			1–3
1		END OF TESTPIT (1.0 metre) Note: Testpit logging occurred in E1 lateral drain and was logged to the top of the rock fill E1 lateral was excavated prior to logging				4–5
2						6–8
3						9–11
4						12–14
5						15–17
6						18–20
7						21–23
7.5						24–25



TETRA TECH

Contractor: Ewing	Completion Depth: 1 m
Drilling Rig Type:	Start Date: 2020 July 2
Logged By: AMM	Completion Date: 2020 July 2
Reviewed By: CC	Page 1 of 1

Testpit No: **TT-TP20-07**

Victoria GOLD CORP

Project: Heap Leach Facility Phase 1B	Project No: ENG.WARC03235-09
Location: Eagle Gold Mine	
Dublin Gulch, Yukon	UTM: 459874 E; 7102007 N; Z 8

Depth (m)	Method	Soil Description	Ground Ice Description	Moisture Content (%)	Plastic Limit / Moisture Content / Liquid Limit (20 40 60 80)	Depth (ft)
0						0
1	Excavated	GRAVEL (COLLUVIUM) - sandy, some silt, light brown grey, fine to coarse sand, angular to subangular gravel to 300 mm diameter	Unfrozen			1–5
2		END OF TESTPIT (1.5 metres) Note: Testpit logging occurred in E3 lateral drain E3 lateral was excavated prior to logging				6–10
3						11–15
4						16–20
5						21–24
6						25
7						
7.5						



TETRA TECH

Contractor: Ewing	Completion Depth: 1.5 m
Drilling Rig Type:	Start Date: 2020 July 2
Logged By: AMM	Completion Date: 2020 July 2
Reviewed By: CC	Page 1 of 1

Testpit No: **TT-TP20-08**

Victoria GOLD CORP

Project: Heap Leach Facility Phase 1B	Project No: ENG.WARC03235-09
Location: Eagle Gold Mine	
Dublin Gulch, Yukon	UTM: 459907 E; 7101922 N; Z 8

Depth (m)	Method	Soil Description	Ground Ice Description	Moisture Content (%)	Plastic Limit / Moisture Content / Liquid Limit (20 40 60 80)	Depth (ft)
0						0
1	Excavated	FRACTURED BEDROCK AND GRAVEL (COLLUVIUM) - sandy, some silt, light brown, fine to coarse sand, angular to subangular gravel to 300 mm diameter	Unfrozen			1–4
2		END OF TESTPIT (1.3 metres) Note: Testpit logging occurred in E3 lateral drain E3 lateral was excavated prior to logging				5–13
3						10–13
4						13–16
5						16–19
6						19–22
7						22–24
7.5						25



TETRA TECH

Contractor: Ewing	Completion Depth: 1.3 m
Drilling Rig Type:	Start Date: 2020 July 6
Logged By: AMM	Completion Date: 2020 July 6
Reviewed By: CC	Page 1 of 1

Testpit No: **TT-TP20-09**

Victoria GOLD CORP

Project: Heap Leach Facility Phase 1B	Project No: ENG.WARC03235-09
Location: Eagle Gold Mine	
Dublin Gulch, Yukon	UTM: 459921 E; 7101818 N; Z 8

Depth (m)	Method	Soil Description	Ground Ice Description	Moisture Content (%)	Plastic Limit / Moisture Content / Liquid Limit (20 40 60 80)	Depth (ft)
0						0
	Excavated	GRAVEL (COLLUVIUM) - sandy, some silt, light brown, fine to coarse sand, angular to subangular gravel to 300 mm diameter	Unfrozen			1
1		BEDROCK - fractured				2 3
		END OF TESTPIT (1.1 metres) Note: Testpit logging occurred in E3 lateral drain E3 lateral was excavated prior to logging				4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24
2 3 4 5 6 7 7.5						25



TETRA TECH

Contractor: Ewing	Completion Depth: 1.1 m
Drilling Rig Type:	Start Date: 2020 July 8
Logged By: AMM	Completion Date: 2020 July 8
Reviewed By: CC	Page 1 of 1

Testpit No: **TT-TP20-10**

Project: Heap Leach Facility Phase 1B	Project No: ENG.WARC03235-09
Location: Eagle Gold Mine	
Dublin Gulch, Yukon	UTM: 459885 E; 7102067 N; Z 8

Depth (m)	Method	Soil Description	Ground Ice Description	Moisture Content (%)	Plastic Limit / Moisture Content / Liquid Limit (20 40 60 80)	Depth (ft)
0						0
1	Excavated	GRAVEL (COLLUVIUM) - sandy, some silt, light brown, fine to coarse sand, angular to subangular gravel to 300 mm diameter, (300 mm thick) BEDROCK - moderately fractured, fairly competent	Unfrozen			1
2		END OF TESTPIT (1.2 metres)				2
3						3
4						4
5						5
6						6
7						7
7.5						8
						9
						10
						11
						12
						13
						14
						15
						16
						17
						18
						19
						20
						21
						22
						23
						24
						25

Contractor: Ewing	Completion Depth: 1.2 m
Drilling Rig Type:	Start Date: 2020 July 27
Logged By: JB	Completion Date: 2020 July 27
Reviewed By: CC	Page 1 of 1

Testpit No: **TT-TP20-11**

Project: Heap Leach Facility Phase 1B	Project No: ENG.WARC03235-09
Location: Eagle Gold Mine	
Dublin Gulch, Yukon	UTM: 459907 E; 7102013 N; Z 8

Depth (m)	Method	Soil Description	Ground Ice Description	Moisture Content (%)	Plastic Limit / Moisture Content / Liquid Limit (20 40 60 80)	Depth (ft)
0						0
1	Excavated	GRAVEL (COLLUVIUM) - sandy, some silt, light brown, fine to coarse sand, angular to subangular gravel to 300 mm diameter	Unfrozen			1–3
		ORGANICS - roots				4–7
2		GRAVEL (COLLUVIUM) - sandy, some silt, light brown, fine to coarse sand, angular to subangular gravel to 300 mm diameter				8–10
3						11–13
4						14–16
5		BEDROCK - moderately fractured				17–20
6						21
7		END OF TESTPIT (6.5 metres) Note: Testpit logging occurred in E4 lateral drain E4 lateral was excavated prior to logging				22–24
7.5						25



Contractor: Ewing	Completion Depth: 6.5 m
Drilling Rig Type:	Start Date: 2020 August 1
Logged By: AMM	Completion Date: 2020 August 1
Reviewed By: CC	Page 1 of 1

Testpit No: **TT-TP20-12**

Project: Heap Leach Facility Phase 1B	Project No: ENG.WARC03235-09
Location: Eagle Gold Mine	
Dublin Gulch, Yukon	UTM: 459930 E; 7101947 N; Z 8

Depth (m)	Method	Soil Description	Ground Ice Description	Moisture Content (%)	Plastic Limit / Moisture Content / Liquid Limit (20 40 60 80)	Depth (ft)
0						0
0 – 1	Excavated	GRAVEL (COLLUVIUM) - sandy, some silt, light brown, fine to coarse sand, angular to subangular gravel to 300 mm diameter	Unfrozen			1 – 3
1 – 2		ORGANICS - roots				3 – 7
2 – 3		GRAVEL (COLLUVIUM) - sandy, some silt, light brown, fine to coarse sand, angular to subangular gravel to 300 mm diameter				7 – 10
3 – 4		BEDROCK - moderately fractured				10 – 13
4 – 5		END OF TESTPIT (4.2 metres) Note: Testpit logging occurred in E4 lateral drain E4 lateral was excavated prior to logging				13 – 14
5 – 6						14 – 20
6 – 7						20 – 23
7 – 7.5						23 – 25



Contractor: Ewing	Completion Depth: 4.2 m
Drilling Rig Type:	Start Date: 2020 August 1
Logged By: AMM	Completion Date: 2020 August 1
Reviewed By: CC	Page 1 of 1

Testpit No: **TT-TP20-13**

Victoria GOLD CORP

Project: Heap Leach Facility Phase 1B	Project No: ENG.WARC03235-09
Location: Eagle Gold Mine	
Dublin Gulch, Yukon	UTM: 459963 E; 7101799 N; Z 8

Depth (m)	Method	Soil Description	Ground Ice Description	Moisture Content (%)	Plastic Limit / Moisture Content / Liquid Limit (20 40 60 80)	Depth (ft)
0						0
	Excavated	GRAVEL (COLLUVIUM) - sandy, some silt, light brown, fine to coarse sand, angular to subangular gravel to 300 mm diameter	Unfrozen			
1		BEDROCK - moderately fractured				1–6
2		END OF TESTPIT (6.5 metres) Note: Testpit logging occurred in E4 lateral drain E4 lateral was excavated prior to logging				7
3–7						8–23
7.5						24–25



TETRA TECH

Contractor: Ewing	Completion Depth: 2 m
Drilling Rig Type:	Start Date: 2020 August 10
Logged By: AMM	Completion Date: 2020 August 10
Reviewed By: CC	Page 1 of 1

APPENDIX E

COMPACTION TESTING RESULTS

COMPACTION DENSITY TEST SUMMARY REPORT

ASTM Designation D6938

Project: Heap Leach Facility Phase 1B
CQA Foundation Preparation
Project No.: 704-ENG.WARC03235-09
Client: Victoria Gold Corp.
Attention: Matthew Mock
Contractor: Ewing Transport Ltd

Test Apparatus: _____ **Troxler No:** 67062
Specified Compaction: 95 % Std. Proctor Max. Dry Density
Specified Moisture (MC): As below
Temperature **Air:** _____ °C **Soil:** _____ °C
Date Tested: As Below **By:** AMM
Construction Period: _____

Soil Description: SILT, gravelly with some sand (2180kg/m³@8%)
Colluvium (2280kg/m³@8%)

Date yyyy/mm/dd	Test No. / Probe (mm)	Location:	Depth to Grade (m)	Dry Density (kg/m³)	MC %	Max. Dry Density	Opt. MC %	Comp % SPD
2020/05/21	1 / 300	W2 lateral drain, 459235 E 7101777 N	1.0	2119	4.7	2180	8.0	**97.2**
	2 / 300	W2 lateral drain, 459250 E 7101798 N	1.5	2084	6.2	2180	8.0	**95.6**
	3 / 300	W2 lateral drain, 459303 E 7101847 N	0.8	2084	4.9	2180	8.0	**95.6**
	4 / 300	W2 lateral drain, 459393 E 7101915 N	0.8	2105	5.1	2180	8.0	**96.6**
2020/05/22	5 / 300	W2 lateral drain, 459412 E 7101965 N	0.5	2085	6.0	2180	8.0	**95.6**
	6 / 300	W2 lateral drain, 459386 E 7101911 N	0.2	2248	5.6	2280	8.0	**98.6**
	7 / 300	W2 lateral drain, 459338 E 710862 N	0.3	2083	5.9	2180	8.0	**95.6**
	8 / 300	W2 lateral drain, 459270 E 7101827 N	0.4	2082	2.3	2180	8.0	**95.5**
	9 / 300	W2 lateral drain, 459224 E 7101783 N	0.9	2133	4.4	2180	8.0	**97.8**
	10 / 300	W2 lateral drain, 459417 E 7101968 N	0.4	2197	6.3	2280	8.0	**96.4**
	11 / 300	W2 lateral drain, 459374 E 7101892 N	0.4	2086	7.4	2180	8.0	**95.7**
	12 / 300	W2 lateral drain, 459308 E 7101858 N	0.7	2229	4.9	2280	8.0	**97.8**

Remarks: _____

Copies: Provided to Clint Abel

Reviewed By: _____ E.I.T.

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TETRA TECH

COMPACTION DENSITY TEST SUMMARY REPORT

ASTM Designation D6938

Project: Heap Leach Facility Phase 1B
CQA Foundation Preparation
Project No.: 704-ENG.WARC03235-09
Client: Victoria Gold Corp.
Attention: Matthew Mock
Contractor: Ewing Transport Ltd

Test Apparatus: _____ **Troxler No:** 67062
Specified Compaction: 95 % Std. Proctor Max. Dry Density
Specified Moisture (MC): As below
Temperature **Air:** _____ °C **Soil:** _____ °C
Date Tested: As Below **By:** AMM
Construction Period: _____

Soil Description: SILT, gravelly with some sand (2180kg/m³@8%)
Colluvium (2280kg/m³@8%)

Date yyyy/mm/dd	Test No. / Probe (mm)	Location:	Depth to Grade (m)	Dry Density (kg/m³)	MC %	Max. Dry Density	Opt. MC %	Comp % SPD
2020/05/23	13 / 300	W2 lateral drain, 459308 E 7101858 N	0.7	2229	4.9	2280	8.0	**97.8**
	14 / 300	W2 lateral drain, 459229 E 7101773 N	1.2	2098	5.1	2180	8.0	**96.2**
	15 / 300	W2 lateral drain, 459299 E 7101848 N	0.0	2102	4.6	2180	8.0	**96.4**
	16 / 300	W2 lateral drain, 459256 E 7101808 N	0.5	2081	9.0	2180	8.0	**95.5**
	17 / 300	W2 lateral drain, 459231 E 7101777 N	0.5	2142	6.4	2180	8.0	**98.3**
	18 / 300	W1 lateral drain, 459467 E 7101945 N	0.3	2082	7.2	2180	8.0	**95.5**
	19 / 300	W1 lateral drain, 459430 E 7101899 N	0.3	2081	7.2	2180	8.0	**95.5**
	20 / 300	W1 lateral drain, 459380 E 7101840 N	1.2	2112	6.7	2180	8.0	**96.9**
	21 / 300	W1 lateral drain, 459320 E 7101793 N	1.5	2092	5.5	2180	8.0	**96.0**
	22 / 300	W1 lateral drain, 459267 E 7101734 W	2.0	2101	7.3	2180	8.0	**96.4**
	23 / 300	W2 lateral drain, 459374 E 7101883 N	0.0	2126	5.2	2180	8.0	**97.5**
	24 / 300	W2 lateral drain, 459325 E 7101853 N	0.0	2110	6.0	2180	8.0	**96.8**

Remarks:

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TETRA TECH

COMPACTION DENSITY TEST SUMMARY REPORT

ASTM Designation D6938

Project: Heap Leach Facility Phase 1B
CQA Foundation Preparation
Project No.: 704-ENG.WARC03235-09
Client: Victoria Gold Corp.
Attention: Matthew Mock
Contractor: Ewing Transport Ltd

Test Apparatus: **Troxler No:** 67062
Specified Compaction: 95 % Std. Proctor Max. Dry Density
Specified Moisture (MC): As below
Temperature **Air:** °C **Soil:** °C
Date Tested: As Below **By:** AMM
Construction Period:

Soil Description: SILT, gravelly with some sand (2180kg/m³@8%)
Colluvium (2280kg/m³@8%)

Date yyyy/mm/dd	Test No. / Probe (mm)	Location:	Depth to Grade (m)	Dry Density (kg/m³)	MC %	Max. Dry Density	Opt. MC %	Comp % SPD
2020/05/23	25 / 300	W2 lateral drain, 459274 E 7101827 N	0.0	2266	2.3	2280	8.0	**99.4**
	26 / 300	W2 lateral drain, 459237 E 7101787 N	0.3	2237	8.7	2280	8.0	**98.1**
2020/05/24	27 / 300	W2 lateral drain, 459260 E 7101821 N	0.0	2119	5.6	2180	8.0	**97.2**
	28 / 300	W1 lateral drain, 459369 E 7101823 N	0.5	2092	5.8	2180	8.0	**96.0**
	29 / 300	W1 lateral drain, 459330 E 7101801 N	1.1	2163	4.9	2180	8.0	**99.2**
	30 / 300	W1 lateral drain, 459298 E 7101763 N	2.0	2124	6.1	2180	8.0	**97.4**
	31 / 300	W1 lateral drain, 459251 E 7101712 N	1.6	2124	6.4	2180	8.0	**97.4**
	32 / 300	W1 lateral drain, 459438 E 7101907 N	0.0	2083	7.8	2180	8.0	**95.6**
	33 / 300	W1 lateral drain, 459400 E 7101861 N	1.0	2221	5.9	2280	8.0	**97.4**
	34 / 300	W1 lateral drain, 459357 E 7101822 N	0.5	2085	6.5	2180	8.0	**95.6**
	35 / 300	W1 lateral drain, 459303 E 7101777 N	0.9	2116	5.6	2180	8.0	**97.1**
	36 / 300	W1 lateral drain, 459256 E 7101716 N	1.2	2073	7.7	2180	8.0	**95.1**

Remarks:

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TETRA TECH

COMPACTION DENSITY TEST SUMMARY REPORT

ASTM Designation D6938

Project: Heap Leach Facility Phase 1B
CQA Foundation Preparation
Project No.: 704-ENG.WARC03235-09
Client: Victoria Gold Corp.
Attention: Matthew Mock
Contractor: Ewing Transport Ltd

Test Apparatus: _____ **Troxler No:** 67062
Specified Compaction: 95 % Std. Proctor Max. Dry Density
Specified Moisture (MC): As below
Temperature **Air:** _____ °C **Soil:** _____ °C
Date Tested: As Below **By:** AMM
Construction Period: _____

Soil Description: SILT, gravelly with some sand (2180kg/m³@8%)
Colluvium (2280kg/m³@8%)

Date yyyy/mm/dd	Test No. / Probe (mm)	Location:	Depth to Grade (m)	Dry Density (kg/m³)	MC %	Max. Dry Density	Opt. MC %	Comp % SPD
2020/05/25	37 / 300	W1 lateral drain, 459421 E 7101888 N	0.0	2099	6.3	2180	8.0	**96.3**
	38 / 300	W1 lateral drain, 459384 E 7101842 N	0.0	2183	5.8	2280	8.0	**95.7**
	39 / 300	W1 lateral drain, 459297 E 7101777 N	0.2	2079	6.7	2180	8.0	**95.4**
	40 / 300	W1 lateral drain, 459254 E 7101721 N	0.5	2073	5.9	2180	8.0	**95.1**
	41 / 300	W1 lateral drain, 459415 E 7101874 N	0.4	2150	5.7	2180	8.0	**98.6**
	42 / 300	W1 lateral drain, 459371 E 7101826 N	0.3	2197	5.3	2197	8.0	**100.0**
	43 / 300	W1 lateral drain, 459308 E 7101786 N	0.0	2080	7.0	2080	8.0	**100.0**
	44 / 300	W1 lateral drain, 459267 E 7101735 N	0.0	2094	7.3	2180	8.0	**96.1**
2020/05/26	45 / 300	W1 lateral drain, 459417 E 7101870 N	0.0	2106	7.8	2180	8.0	**96.6**
2020/05/29	46 / 300	459379 E 7102196 W	3.8	2155	7.1	2180	8.0	**98.9**
2020/05/30	47 / 300	459374 E 7102198 N	1.7	2197	6.3	2180	8.0	**100.8**
	48 / 300	459374 E 7102193 N	1.4	2157	6.8	2180	8.0	**98.9**

Remarks: _____

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Reviewed By: _____ E.I.T.

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TETRA TECH

COMPACTION DENSITY TEST SUMMARY REPORT

ASTM Designation D6938

Project: Heap Leach Facility Phase 1B
CQA Foundation Preparation
Project No.: 704-ENG.WARC03235-09
Client: Victoria Gold Corp.
Attention: Matthew Mock
Contractor: Ewing Transport Ltd

Test Apparatus: _____ **Troxler No:** 67062
Specified Compaction: 95 % Std. Proctor Max. Dry Density
Specified Moisture (MC): As below
Temperature **Air:** _____ °C **Soil:** _____ °C
Date Tested: As Below **By:** AMM
Construction Period: _____

Soil Description: SILT, gravelly with some sand (2180kg/m³@8%)
Colluvium (2280kg/m³@8%)

Date yyyy/mm/dd	Test No. / Probe (mm)	Location:	Depth to Grade (m)	Dry Density (kg/m³)	MC %	Max. Dry Density	Opt. MC %	Comp % SPD
2020/05/30	49 / 300	459364 E 7102493 W	1.4	2092	7.6	2180	8.0	**96.0**
	50 / 300	459372 E 7102194 W	1.1	2142	7.6	2180	8.0	**98.3**
2020/05/31	51 / 300	459310 E 7102197 W	0.3	2144	5.3	2180	8.0	**98.3**
	52 / 300	459325 E 7102160 W	0.0	2100	5.5	2180	8.0	**96.3**
2020/06/15	53 / 300	Perimeter Road, 459325 E 7102160 N	4.4	2176	6.8	2180	8.0	**99.8**
	54 / 300	Perimeter Road, 459338 E 7102164 N	4.0	2174	6.6	2180	8.0	**99.7**
2020/07/19	55 / 300	Perimeter Road, 459332 E 7102156 N	1.8	2132	7.8	2180	8.0	**97.8**
	56 / 300	Perimeter Road, 459326 E 7102129 N	0.3	2153	5.5	2180	8.0	**98.8**
2020/07/03	57 / 300	Perimeter Road, 459383 E 7102224 N	2.1	2158	4.5	2180	8.0	**99.0**
	58 / 300	Perimeter Road, 459443 E 7102269 N	2.1	2123	7.0	2180	8.0	**97.4**
2020/07/04	69 / 300	Perimeter Road, 459392 E 7102232 N	1.5	2126	5.9	2180	8.0	**97.5**
2020/07/05	60 / 300	Perimeter Road, 459387 E 7102203 N	1.0	2115	5.6	2180	8.0	**97.0**

Remarks:

Copies: Provided to Clint Abel

Reviewed By: _____ E.I.T.

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TETRA TECH

APPENDIX F

LAYFIELD'S QC PACKAGE

LAYFIELD
Canada

Project Completion QA/QC Package
for

Victoria Gold Corp.

Eagle Gold Heap Leach Pad
Phase 1B

Dublin Gulch, YK

Supply and Install of EL4280, NWL60 GCL

Prepared By: Jason Wheeler

Reviewed By: Jon Feenstra

Date Revised: October 1, 2020

Layfield Canada Ltd.

Table of Contents

for

Victoria Gold

Eagle Gold Heap Leach Pad
Phase 1B

Dublin Gulch, YK

EL6280

1)	Certificate of Inspection of Soil Subgrade Surface	7 pgs.
2)	Geomembrane Deployment Log	68 pgs.
3)	Geomembrane Seam & Test Log	113 pgs.
4)	Geomembrane Detail & Test Log	117 pgs.
5)	Geomembrane Destruct Log	37 pgs.
6)	As-built	1 pg.
7)	Certificate of Final Inspection and Acceptance	4 pgs.

Supporting Documents

1)	Geosynthetics Inventory Log	93 pgs.
2)	Geomembrane Mill Certificates	52 pgs.
3)	GCL Mill Certificates	168 pgs.
4)	Installation Warranty	1 pg.

EL4280

LAYFIELD
ENVIRONMENTAL CONTAINMENT

CERTIFICATE OF FINAL INSPECTION AND ACCEPTANCE

PROJECT NAME: Heap Leach Pad, Phase 1-B
PROJECT NUMBER: CT001401 **DATE:** July 9 2020
OWNER: Victoria Gold.
LOCATION: Eagle Gold Mine, YT

Scope of Installation(s): **THE WORK**
Area/Layer: Primary Area Inspected: ☑ Partial or ☐ Complete
Dimensions: Panels 1-59. Layfield has completed work on Panels 1-59. The area has had Final inspection and can now be turned over to Client

Part 1 – LAYFIELD CANADA LTD.

I, Chad Messervey, a duly appointed representative of Layfield Canada Ltd. (Layfield), have visually observed the installations (as outlined above), and have found the Work to be complete and free of defects and declare that the Work was completed in accordance with the project specifications, Layfield's QC program and the terms and conditions of the contract.

Layfield Representative:
Name: Chad Messervey
Title: Project Supervisor
Date: July 9 2020 **Signature:**

Part 2 – OWNER (or Representative)

I, JAMES BUYCK, a duly appointed representative of TETRA TECH, do hereby take over and accept the installation(s) described above, and confirm that the work has been completed in accordance with the project specifications and the terms of the conditions of the contract.

I have evaluated and measured the work together with the Layfield representative, and agree that the measurements shown are both true and correct, and that the installation has met our approval.

Owners Representative:
Name: JAMES BUYCK
Title: GEOTECHNICAL TECHNICIAN
Company: TETRA TECH
Date: JULY 9, 2020 **Signature:**

Comments: NONE

LAYFIELD
ENVIRONMENTAL CONTAINMENT

CERTIFICATE OF FINAL INSPECTION AND ACCEPTANCE

PROJECT NAME: Heap leach Pad, Phase 1-B
PROJECT NUMBER: CT001401 **DATE:** July 17, 2020
OWNER: Victoria Gold
LOCATION: Eagle Gold Mine, YT

Scope of Installation(s): **THE WORK**
Area/Layer: Primary Area Inspected: ☑ Partial or ☐ Complete
Dimensions: Panels 92-59, Layfield has completed work & tested Panels 92-59, The area has had final inspection and can now be turned over to the client.

Part 1 – LAYFIELD CANADA LTD.

I, Thomas Howald, a duly appointed representative of Layfield Canada Ltd. (Layfield), have visually observed the installations (as outlined above), and have found the Work to be complete and free of defects and declare that the Work was completed in accordance with the project specifications, Layfield's QC program and the terms and conditions of the contract.

Layfield Representative:
Name: Thomas Howald
Title: QC
Date: July 17, 2020 **Signature:**

Part 2 – OWNER (or Representative)

I, JAMES BUYCK, a duly appointed representative of TETRA TECH, do hereby take over and accept the installation(s) described above, and confirm that the work has been completed in accordance with the project specifications and the terms of the conditions of the contract.

I have evaluated and measured the work together with the Layfield representative, and agree that the measurements shown are both true and correct, and that the installation has met our approval.

Owners Representative:
Name: JAMES BUYCK
Title: GEOTECHNICAL TECHNICIAN
Company: TETRA TECH
Date: JULY 17, 2020 **Signature:**

Comments: NONE

LAYFIELD
ENVIRONMENTAL CONTAINMENT

CERTIFICATE OF FINAL INSPECTION AND ACCEPTANCE

PROJECT NAME: Victoria Gold Heap Leach Pad Phase 1B
PROJECT NUMBER: CT00140 **DATE:** 08/20/2020
OWNER: Victoria Gold.
LOCATION: Eagle Gold Mine YT

Scope of Installation(s): **THE WORK**
Area/Layer: Primary Area Inspected: ☑ Partial or ☐ Complete
Dimensions: Layfield has completed the installation of the GCL and liner Panels 93 → 402. The liner has had a final walk off inspection completed. Any deficiencies found have been Repaired. Layfield has completed work in this area

Part 1 – LAYFIELD CANADA LTD.

I, Chad Messervey, a duly appointed representative of Layfield Canada Ltd. (Layfield), have visually observed the installations (as outlined above), and have found the Work to be complete and free of defects and declare that the Work was completed in accordance with the project specifications, Layfield's QC program and the terms and conditions of the contract.

Layfield Representative:
Name: Chad Messervey
Title: Project Supervisor
Date: 08/20/2020 **Signature:**

Part 2 – OWNER (or Representative)

I, Adam Mickey, a duly appointed representative of Tetra Tech, do hereby take over and accept the installation(s) described above, and confirm that the work has been completed in accordance with the project specifications and the terms of the conditions of the contract.

I have evaluated and measured the work together with the Layfield representative, and agree that the measurements shown are both true and correct, and that the installation has met our approval.

Owners Representative:
Name: Adam Mickey
Title: CQA Inspector
Company: Tetra Tech Canada Inc.
Date: Aug 20, 2020 **Signature:**

Comments: Approximately 127,876 m²

LAYFIELD
ENVIRONMENTAL CONTAINMENT

CERTIFICATE OF FINAL INSPECTION AND ACCEPTANCE

PROJECT NAME: Victoria Gold Heap leach Pad Phase 1-B
PROJECT NUMBER: CTO01401 **DATE:**
OWNER: Victoria Gold
LOCATION: Eagle Gold mine Y.T.

Scope of Installation(s): **THE WORK**
Area/Layer: Primary Area Inspected: ☐ Partial or ☑ Complete
Dimensions: Layfield has completed the installation of the GCL & Liner, Panels 403-619. The liner has had a final walk off inspection. Completed any deficienies found & have repaired all damage. Layfield has completed this Job.

Part 1 – LAYFIELD CANADA LTD.

I, Thomas Howald, a duly appointed representative of Layfield Canada Ltd. (Layfield), have visually observed the installations (as outlined above), and have found the Work to be complete and free of defects and declare that the Work was completed in accordance with the project specifications, Layfield's QC program and the terms and conditions of the contract.

Layfield Representative:
Name: Thomas Howald
Title: QC
Date: Sept 15 2020 **Signature:**

Part 2 – OWNER (or Representative)

I, Adam Mickey, a duly appointed representative of Tetra Tech Canada Inc. _____, do hereby take over and accept the installation(s) described above, and confirm that the work has been completed in accordance with the project specifications and the terms of the conditions of the contract.

I have evaluated and measured the work together with the Layfield representative, and agree that the measurements shown are both true and correct, and that the installation has met our approval.

Owners Representative:
Name: Adam Mickey
Title: CQA Inspector
Company: Tetra Tech Canada Inc.
Date: September 15, 2020 **Signature:**

Comments:

LAYFIELD
ENVIRONMENTAL CONTAINMENT

CERTIFICATE OF INSPECTION OF SOIL SUBGRADE SURFACE

PROJECT NAME: Heap leach Pad Phase 1, B
PROJECT NUMBER: CT001401
OWNER/CONTRACTOR: Victoria Gold
LOCATION: Eagle gold Mine

I, the undersigned, a duly appointed representative of Layfield Canada Ltd. (Layfield), have visually observed the soil subgrade surface described below, and:

- ☐ *found it to be an acceptable surface on which to install geomembrane; OR*
- ☐ *found it to be an Unacceptable surface on which to install geomembrane*

Area Inspected (☐ Partial or ☑ Complete): _____
Dimensions of Subgrade Inspection: 9000 m^2 shape of a triangle.
Anchor Trench Dimensions: 1X1m
Comments: _____

This certification is based on observations of the surface of the subgrade only. No subterranean inspections or tests have been performed by Layfield and Layfield makes no representations or warranties regarding conditions which may exist below the surface of the subgrade. Layfield accepts no responsibility for conformance of the subgrade to this project's specifications.

The soil subgrade inspected on this date refers to its present condition. Any changes in the subgrade condition that result from the effects of inclement weather and/or other forces beyond the control of Layfield and remedial work to correct the resulting deficiencies, will be the direct responsibility of the General Contractor.

LAYFIELD REPRESENTATIVE:

Date: May 30 2020
Signature: [signature]
Name: Thomas Howald
Title: QC

OWNERS REPRESENTATIVE:

I, the undersigned, a duly appointed representative of the Owner, hereby understand the soil subgrade surface inspection described above and authorize Layfield to proceed with deployment of geosynthetics on the subgrade provided.

Date: may 30/2020
Signature: [signature]
Name: Adam Mickey
Title: CQA
Company: Tetra Tech

LAYFIELD
ENVIRONMENTAL CONTAINMENT

CERTIFICATE OF INSPECTION OF SOIL SUBGRADE SURFACE

PROJECT NAME: Heap leach Pad Phase 1, B
PROJECT NUMBER: CT001401
OWNER/CONTRACTOR: Victoria gold
LOCATION: Eagle gold mine

I, the undersigned, a duly appointed representative of Layfield Canada Ltd. (Layfield), have visually observed the soil subgrade surface described below, and:

- ☑ *found it to be an acceptable surface on which to install geomembrane; OR*
- ☐ *found it to be an Unacceptable surface on which to install geomembrane*

Area Inspected (☐ Partial or ☑ Complete):
Dimensions of Subgrade Inspection: 19624.12 m^2
Anchor Trench Dimensions: 1X1m
Comments: Dimensions cover panels 37 to 74. last row of panels deployed June 28, 2020

This certification is based on observations of the surface of the subgrade only. No subterranean inspections or tests have been performed by Layfield and Layfield makes no representations or warranties regarding conditions which may exist below the surface of the subgrade. Layfield accepts no responsibility for conformance of the subgrade to this project's specifications.

The soil subgrade inspected on this date refers to its present condition. Any changes in the subgrade condition that result from the effects of inclement weather and/or other forces beyond the control of Layfield and remedial work to correct the resulting deficiencies, will be the direct responsibility of the General Contractor.

LAYFIELD REPRESENTATIVE:

Date: June 30, 2020
Signature:
Name: Thomas Howald
Title: QC

OWNERS REPRESENTATIVE:

I, the undersigned, a duly appointed representative of the Owner, hereby understand the soil subgrade surface inspection described above and authorize Layfield to proceed with deployment of geosynthetics on the subgrade provided.

Date: June 30, 2020
Signature:
Name: Adam Mickey
Title: EIT
Company: Tetra Tech Canada Inc.

LAYFIELD
ENVIRONMENTAL CONTAINMENT

CERTIFICATE OF INSPECTION OF SOIL SUBGRADE SURFACE

PROJECT NAME: Heap leech Pad, Phase 1, B
PROJECT NUMBER: cf001401
OWNER/CONTRACTOR: victoria gold
LOCATION: Eagle gold mine

I, the undersigned, a duly appointed representative of Layfield Canada Ltd. (Layfield), have visually observed the soil subgrade surface described below, and:

☑ *found it to be an acceptable surface on which to install geomembrane; OR*

☐ *found it to be an Unacceptable surface on which to install geomembrane*

Area Inspected (☐ Partial or ☑ Complete):
Dimensions of Subgrade Inspection: 18619.56m²
Anchor Trench Dimensions: 1X1
Comments: Dimensions cover panels P-75 to P95. Panel 95 deployed June 4

This certification is based on observations of the surface of the subgrade only. No subterranean inspections or tests have been performed by Layfield and Layfield makes no representations or warranties regarding conditions which may exist below the surface of the subgrade. Layfield accepts no responsibility for conformance of the subgrade to this project's specifications.

The soil subgrade inspected on this date refers to its present condition. Any changes in the subgrade condition that result from the effects of inclement weather and/or other forces beyond the control of Layfield and remedial work to correct the resulting deficiencies, will be the direct responsibility of the General Contractor.

LAYFIELD REPRESENTATIVE:

Date: July 8th 2020
Signature:
Name: Thomas Howald
Title: QC

OWNERS REPRESENTATIVE:

I, the undersigned, a duly appointed representative of the Owner, hereby understand the soil subgrade surface inspection described above and authorize Layfield to proceed with deployment of geosynthetics on the subgrade provided.

Date: July 8, 2020
Signature:
Name: Adam Mickey
Title: EIT
Company: Tetra Tech Canada Inc.

LAYFIELD
ENVIRONMENTAL CONTAINMENT

CERTIFICATE OF INSPECTION OF SOIL SUBGRADE SURFACE

PROJECT NAME: Heap leach Pad, Phase 1-B
PROJECT NUMBER: CT001401
OWNER/CONTRACTOR: victoria Gold
LOCATION: Eagle gold mine, YT

I, the undersigned, a duly appointed representative of Layfield Canada Ltd. (Layfield), have visually observed the soil subgrade surface described below, and:

- ☑ *found it to be an acceptable surface on which to install geomembrane; OR*
- ☐ *found it to be an Unacceptable surface on which to install geomembrane*

Area Inspected (☐Partial or ☑Complete):
Dimensions of Subgrade Inspection: 26545.47m²
Anchor Trench Dimensions: 1X1
Comments: Dimensions cover panels 96-164. Panel 164 deployed July 16th

This certification is based on observations of the surface of the subgrade only. No subterranean inspections or tests have been performed by Layfield and Layfield makes no representations or warranties regarding conditions which may exist below the surface of the subgrade. Layfield accepts no responsibility for conformance of the subgrade to this project's specifications.

The soil subgrade inspected on this date refers to its present condition. Any changes in the subgrade condition that result from the effects of inclement weather and/or other forces beyond the control of Layfield and remedial work to correct the resulting deficiencies, will be the direct responsibility of the General Contractor.

LAYFIELD REPRESENTATIVE:

Date: July 17, 2020
Signature:
Name: Thomas Howald
Title: QC

OWNERS REPRESENTATIVE:

I, the undersigned, a duly appointed representative of the Owner, hereby understand the soil subgrade surface inspection described above and authorize Layfield to proceed with deployment of geosynthetics on the subgrade provided.

Date: JULY 17, 2020
Signature:
Name: JAMES BRYCK
Title: GEOTECHNICAL TECHNICIAN
Company: TETRA TECH.

LAYFIELD
ENVIRONMENTAL CONTAINMENT

CERTIFICATE OF INSPECTION OF SOIL SUBGRADE SURFACE

PROJECT NAME: Heap Leech Pad, Phase 1-B
PROJECT NUMBER: CT001401
OWNER/CONTRACTOR: Victoria Gold
LOCATION: Eagle gold Mine, YT

I, the undersigned, a duly appointed representative of Layfield Canada Ltd. (Layfield), have visually observed the soil subgrade surface described below, and:

- ☐ *found it to be an acceptable surface on which to install geomembrane; OR*
- ☐ *found it to be an Unacceptable surface on which to install geomembrane*

Area Inspected (☐Partial or ☑Complete):
Dimensions of Subgrade Inspection: 64,920 m^2
Anchor Trench Dimensions: 1X1
Comments: Dimensions cover panels 165 - 295 panel 295 deployed Aug 5, 2020.

This certification is based on observations of the surface of the subgrade only. No subterranean inspections or tests have been performed by Layfield and Layfield makes no representations or warranties regarding conditions which may exist below the surface of the subgrade. Layfield accepts no responsibility for conformance of the subgrade to this project's specifications.

The soil subgrade inspected on this date refers to its present condition. Any changes in the subgrade condition that result from the effects of inclement weather and/or other forces beyond the control of Layfield and remedial work to correct the resulting deficiencies, will be the direct responsibility of the General Contractor.

LAYFIELD REPRESENTATIVE:

Date: Aug 6, 2020
Signature:
Name: Thomas Howald
Title: QC

OWNERS REPRESENTATIVE:

I, the undersigned, a duly appointed representative of the Owner, hereby understand the soil subgrade surface inspection described above and authorize Layfield to proceed with deployment of geosynthetics on the subgrade provided.

Date: Aug 6, 2020
Signature:
Name: Adam Mickey
Title: CQA Inspector
Company: Tetra Tech Canada Inc.

LAYFIELD
ENVIRONMENTAL CONTAINMENT

CERTIFICATE OF INSPECTION OF SOIL SUBGRADE SURFACE

PROJECT NAME: Heap leach Pad, Phase 1-B
PROJECT NUMBER: CT001401
OWNER/CONTRACTOR: Victoria Gold
LOCATION: Eagle mine, Y.T.

I, the undersigned, a duly appointed representative of Layfield Canada Ltd. (Layfield), have visually observed the soil subgrade surface described below, and:

- ☑ *found it to be an acceptable surface on which to install geomembrane; OR*
- ☐ *found it to be an Unacceptable surface on which to install geomembrane*

Area Inspected (☐Partial or ☑Complete):
Dimensions of Subgrade Inspection: 35488.52 m^2
Anchor Trench Dimensions: 1X1
Comments: Dimensions cover panels 295-402.

This certification is based on observations of the surface of the subgrade only. No subterranean inspections or tests have been performed by Layfield and Layfield makes no representations or warranties regarding conditions which may exist below the surface of the subgrade. Layfield accepts no responsibility for conformance of the subgrade to this project's specifications.

The soil subgrade inspected on this date refers to its present condition. Any changes in the subgrade condition that result from the effects of inclement weather and/or other forces beyond the control of Layfield and remedial work to correct the resulting deficiencies, will be the direct responsibility of the General Contractor.

LAYFIELD REPRESENTATIVE:

Date: Aug 20, 2020
Signature:
Name: Thomas Howald
Title: QC tech

OWNERS REPRESENTATIVE:

I, the undersigned, a duly appointed representative of the Owner, hereby understand the soil subgrade surface inspection described above and authorize Layfield to proceed with deployment of geosynthetics on the subgrade provided.

Date: Aug 20, 2020
Signature:
Name: Adam Mickey
Title: CQA Inspector
Company: Tetra Tech Inc.

LAYFIELD
ENVIRONMENTAL CONTAINMENT

CERTIFICATE OF INSPECTION OF SOIL SUBGRADE SURFACE

PROJECT NAME: Heap leach Pad, Phase 1-B
PROJECT NUMBER: CT001401
OWNER/CONTRACTOR: Victoria Gold
LOCATION: Eagle mine, Y.T.

I, the undersigned, a duly appointed representative of Layfield Canada Ltd. (Layfield), have visually observed the soil subgrade surface described below, and:

- ☑ *found it to be an acceptable surface on which to install geomembrane; OR*
- ☐ *found it to be an Unacceptable surface on which to install geomembrane*

Area Inspected (☐Partial or ☑Complete): Pond complete.
Dimensions of Subgrade Inspection: 107800 m²
Anchor Trench Dimensions: 1X1
Comments: Dimensions cover panels 403-619. Pond is complete.

This certification is based on observations of the surface of the subgrade only. No subterranean inspections or tests have been performed by Layfield and Layfield makes no representations or warranties regarding conditions which may exist below the surface of the subgrade. Layfield accepts no responsibility for conformance of the subgrade to this project's specifications.

The soil subgrade inspected on this date refers to its present condition. Any changes in the subgrade condition that result from the effects of inclement weather and/or other forces beyond the control of Layfield and remedial work to correct the resulting deficiencies, will be the direct responsibility of the General Contractor.

LAYFIELD REPRESENTATIVE:

Date: Sept 15 2020
Signature:
Name: Thomas Howald
Title: QC

OWNERS REPRESENTATIVE:

I, the undersigned, a duly appointed representative of the Owner, hereby understand the soil subgrade surface inspection described above and authorize Layfield to proceed with deployment of geosynthetics on the subgrade provided.

Date: September 15, 2020
Signature:
Name: Adam Mickey
Title: CQA Inspector
Company: Tetra Tech Canada Inc

GEOMEMBRANE DEPLOYMENT LOG

PROJECT NUMBER CT001401
PROJECT TITLE Victoria Gold Heap Leach Pad Phase 1B
AREA / LAYER Primary
DEPLOYMENT DATE 2020/06/02

PANEL NUMBER	ROLL NUMBER	LENGTH (m)	WIDTH (m)	AIR TEMP °C	PANEL CONDITION	CHECKED BY	SUBGRADE CONDITION
1	E0010694-012	128	6.8	15	Good	TH	Good
2	E0010694-017	40.2	6.8	15	Good	TH	Good
3	E0010694-017	88.6	6.8	15	Good	TH	Good
4	E0010694-007	74.2	6.8	15	Good	TH	Good

TOTAL PAGE AREA 2250.8 m²

QC TECH Thomas Howald
SUPERVISOR Chad Messervey
SUBMISSION DATE 2020/01/05
SHEET NUMBER 1 of 68

GEOMEMBRANE DEPLOYMENT LOG

PROJECT NUMBER CT001401
PROJECT TITLE Victoria Gold Heap Leach Pad Phase 1B
AREA / LAYER Primary
DEPLOYMENT DATE 2020/06/04

PANEL NUMBER	ROLL NUMBER	LENGTH (m)	WIDTH (m)	AIR TEMP °C	PANEL CONDITION	CHECKED BY	SUBGRADE CONDITION
5	E0010694-007	51.1	6.8	15	Good	TH	Good
6	E0010694-024	107.4	6.8	15	Good	TH	Good
7	E0010694-024	11.5	6.8	15	Good	TH	Good
8	E0010694-008	128	6.8	15	Good	TH	Good
9	E0010694-016	10.2	6.8	15	Good	TH	Good

TOTAL PAGE AREA 2095.76 m²

QC TECH Thomas Howald
SUPERVISOR Chad Messervey
SUBMISSION DATE 2020/01/05
SHEET NUMBER 2 of 68

GEOMEMBRANE DEPLOYMENT LOG

PROJECT NUMBER CT001401
PROJECT TITLE Victoria Gold Heap Leach Pad Phase 1B
AREA / LAYER Primary
DEPLOYMENT DATE 2020/06/05

PANEL NUMBER	ROLL NUMBER	LENGTH (m)	WIDTH (m)	AIR TEMP °C	PANEL CONDITION	CHECKED BY	SUBGRADE CONDITION
10	E0010694-016	110.8	6.8	20	Good	TH	Good
11	E0010694-019	32.8	6.8	20	Good	TH	Good
12	E0010694-019	90	6.8	20	Good	TH	Good
13	E0010694-033	46.8	6.8	20	Good	TH	Good
14	E0010694-033	76	6.8	20	Good	TH	Good
15	E0010694-020	57.1	6.8	20	Good	TH	Good

TOTAL PAGE AREA 2811.8 m²

QC TECH Thomas Howald
SUPERVISOR Chad Messervey
SUBMISSION DATE 2020/01/05
SHEET NUMBER 3 of 68

GEOMEMBRANE DEPLOYMENT LOG

PROJECT NUMBER CT001401
PROJECT TITLE Victoria Gold Heap Leach Pad Phase 1B
AREA / LAYER Primary
DEPLOYMENT DATE 2020/06/06

PANEL NUMBER	ROLL NUMBER	LENGTH (m)	WIDTH (m)	AIR TEMP °C	PANEL CONDITION	CHECKED BY	SUBGRADE CONDITION
16	E0010694-020	65.7	6.8	15	Good	TH	Good
17	E0010694-021	60.6	6.8	15	Good	TH	Good
18	E0010694-021	60.5	6.8	15	Good	TH	Good
19	E0010694-004	57.7	6.8	15	Good	TH	Good
20	E0010694-004	64.2	6.8	15	Good	TH	Good
21	E0010694-023	48.5	6.8	15	Good	TH	Good

TOTAL PAGE AREA 2428.96 m²

QC TECH Thomas Howald
SUPERVISOR Chad Messervey
SUBMISSION DATE 2020/01/05
SHEET NUMBER 4 of 68

GEOMEMBRANE DEPLOYMENT LOG

PROJECT NUMBER CT001401
PROJECT TITLE Victoria Gold Heap Leach Pad Phase 1B
AREA / LAYER Primary
DEPLOYMENT DATE 2020/06/07

PANEL NUMBER	ROLL NUMBER	LENGTH (m)	WIDTH (m)	AIR TEMP °C	PANEL CONDITION	CHECKED BY	SUBGRADE CONDITION
22	E0010694-023	73.6	6.8	15	Good	TH	Good
23	E0010694-010	32	6.8	15	Good	TH	Good
24	E0010694-010	90.1	6.8	15	Good	TH	Good
25	E0010694-023	3	3	15	Good	TH	Good
26	E0010694-031	86.2	6.8	20	Good	TH	Good
27	E0010694-031	35.3	6.8	20	Good	TH	Good
28	E0010694-018	35.4	6.8	20	Good	TH	Good

TOTAL PAGE AREA 2406.68 m²

QC TECH Thomas Howald
SUPERVISOR Chad Messervey
SUBMISSION DATE 2020/01/05
SHEET NUMBER 5 of 68

GEOMEMBRANE DEPLOYMENT LOG

PROJECT NUMBER CT001401
PROJECT TITLE Victoria Gold Heap Leach Pad Phase 1B
AREA / LAYER Primary
DEPLOYMENT DATE 2020/06/10

PANEL NUMBER	ROLL NUMBER	LENGTH (m)	WIDTH (m)	AIR TEMP °C	PANEL CONDITION	CHECKED BY	SUBGRADE CONDITION
29	E0010694-018	70.3	6.8	20	Good	TH	Good
30	E0010694-028	56.8	6.8	20	Good	TH	Good
31	E0010694-028	47.6	6.8	20	Good	TH	Good
32	E0010694-009	17.4	6.8	20	Good	TH	Good
33	E0010694-028	29.1	6.8	20	Good	TH	Good
34	E0010694-018	19.9	6.8	20	Good	TH	Good
35	E0010694-018	17.6	6.8	20	Good	TH	Good
36	E0010694-018	6.6	2	20	Good	TH	Good

TOTAL PAGE AREA 1772.36 m²

QC TECH Thomas Howald
SUPERVISOR Chad Messervey
SUBMISSION DATE 2020/01/05
SHEET NUMBER 6 of 68

GEOMEMBRANE DEPLOYMENT LOG

PROJECT NUMBER CT001401
PROJECT TITLE Victoria Gold Heap Leach Pad Phase 1B
AREA / LAYER Primary
DEPLOYMENT DATE 2020/06/14

PANEL NUMBER	ROLL NUMBER	LENGTH (m)	WIDTH (m)	AIR TEMP °C	PANEL CONDITION	CHECKED BY	SUBGRADE CONDITION
37	E0010694-009	73.3	6.8	20	Good	TH	Good
38	E0010694-027	98.8	6.8	20	Good	TH	Good
39	E0010694-009	21.6	1	20	Good	TH	Good
40	E0010694-027	25.1	6.8	20	Good	TH	Good
41	E0010694-011	125.8	6.8	20	Good	TH	Good
42	E0010694-001	22.6	6.8	20	Good	TH	Good

TOTAL PAGE AREA 2371.68 m²

QC TECH Thomas Howald
SUPERVISOR Chad Messervey
SUBMISSION DATE 2020/01/05
SHEET NUMBER 7 of 68

GEOMEMBRANE DEPLOYMENT LOG

PROJECT NUMBER CT001401
PROJECT TITLE Victoria Gold Heap Leach Pad Phase 1B
AREA / LAYER Primary
DEPLOYMENT DATE 2020/06/15

PANEL NUMBER	ROLL NUMBER	LENGTH (m)	WIDTH (m)	AIR TEMP °C	PANEL CONDITION	CHECKED BY	SUBGRADE CONDITION
43	E0010694-001	102.3	6.8	20	Good	TH	Good
44	E0010697-011	78.8	6.8	20	Good	TH	Good
45	E0010697-011	50.8	6.8	20	Good	TH	Good
46	E0010697-012	124.6	6.8	20	Good	TH	Good
47	E0010696-006	14.9	6.8	20	Good	TH	Good

TOTAL PAGE AREA 2525.52 m²

QC TECH Thomas Howald
SUPERVISOR Chad Messervey
SUBMISSION DATE 2020/01/05
SHEET NUMBER 8 of 68

GEOMEMBRANE DEPLOYMENT LOG

PROJECT NUMBER CT001401
PROJECT TITLE Victoria Gold Heap Leach Pad Phase 1B
AREA / LAYER Primary
DEPLOYMENT DATE 2020/06/16

PANEL NUMBER	ROLL NUMBER	LENGTH (m)	WIDTH (m)	AIR TEMP °C	PANEL CONDITION	CHECKED BY	SUBGRADE CONDITION
48	E0010696-006	114	6.8	20	Good	TH	Good
49	E0010697-014	74.4	6.8	20	Good	TH	Good

TOTAL PAGE AREA 1281.12 m²

QC TECH Thomas Howald
SUPERVISOR Chad Messervey
SUBMISSION DATE 2020/01/05
SHEET NUMBER 9 of 68

GEOMEMBRANE DEPLOYMENT LOG

PROJECT NUMBER CT001401
PROJECT TITLE Victoria Gold Heap Leach Pad Phase 1B
AREA / LAYER Primary
DEPLOYMENT DATE 2020/06/18

PANEL NUMBER	ROLL NUMBER	LENGTH (m)	WIDTH (m)	AIR TEMP °C	PANEL CONDITION	CHECKED BY	SUBGRADE CONDITION
50	E0010697-014	52.7	6.8	20	Good	TH	Good
51	E0010696-005	129	6.8	20	Good	TH	Good
52	E0010696-028	12	6.8	20	Good	TH	Good
53	E0010696-028	116.7	6.8	20	Good	TH	Good
54	E0010696-010	78	6.8	20	Good	TH	Good
55	E0010696-010	49.1	6.8	20	Good	TH	Good
56	E0010696-029	128.4	6.8	20	Good	TH	Good
57	E0010696-032	18	6.8	20	Good	TH	Good
58	E0010696-032	107.4	6.8	20	Good	TH	Good
59	E0010696-031	89	6.8	20	Good	TH	Good

TOTAL PAGE AREA 5306.04 m²

QC TECH Thomas Howald
SUPERVISOR Chad Messervey
SUBMISSION DATE 2020/01/05
SHEET NUMBER 10 of 68

GEOMEMBRANE DEPLOYMENT LOG

PROJECT NUMBER CT001401
PROJECT TITLE Victoria Gold Heap Leach Pad Phase 1B
AREA / LAYER Primary
DEPLOYMENT DATE 2020/06/19

PANEL NUMBER	ROLL NUMBER	LENGTH (m)	WIDTH (m)	AIR TEMP °C	PANEL CONDITION	CHECKED BY	SUBGRADE CONDITION
60	E0010696-031	36.3	6.8	15	Good	TH	Good
61	E0010696-018	128	6.8	15	Good	TH	Good
62	E0010697-002	39	6.8	15	Good	TH	Good

TOTAL PAGE AREA 1382.44 m²

QC TECH Thomas Howald
SUPERVISOR Chad Messervey
SUBMISSION DATE 2020/01/05
SHEET NUMBER 11 of 68

GEOMEMBRANE DEPLOYMENT LOG

PROJECT NUMBER CT001401
PROJECT TITLE Victoria Gold Heap Leach Pad Phase 1B
AREA / LAYER Primary
DEPLOYMENT DATE 2020/06/26

PANEL NUMBER	ROLL NUMBER	LENGTH (m)	WIDTH (m)	AIR TEMP °C	PANEL CONDITION	CHECKED BY	SUBGRADE CONDITION
63	E0010697-002	93.6	6.8	15	Good	TH	Good
64	E0010700-029	104.7	6.8	15	Good	TH	Good

TOTAL PAGE AREA 1348.44 m²

QC TECH Thomas Howald
SUPERVISOR Chad Messervey
SUBMISSION DATE 2020/01/05
SHEET NUMBER 12 of 68

GEOMEMBRANE DEPLOYMENT LOG

PROJECT NUMBER CT001401
PROJECT TITLE Victoria Gold Heap Leach Pad Phase 1B
AREA / LAYER Primary
DEPLOYMENT DATE 2020/06/27

PANEL NUMBER	ROLL NUMBER	LENGTH (m)	WIDTH (m)	AIR TEMP °C	PANEL CONDITION	CHECKED BY	SUBGRADE CONDITION
65	E0010700-029	23	6.8	10	Good	TH	Good
66	E0010700-037	125.7	6.8	10	Good	TH	Good
67	E0010700-010	48.3	6.8	10	Good	TH	Good
68	E0010700-010	74.7	6.8	10	Good	TH	Good
69	E0010700-025	122.3	6.8	10	Good	TH	Good
70	E0010700-028	125.9	6.8	10	Good	TH	Good
71	E0010700-024	71.1	6.8	10	Good	TH	Good

TOTAL PAGE AREA 4018.8 m²

QC TECH Thomas Howald
SUPERVISOR Chad Messervey
SUBMISSION DATE 2020/01/05
SHEET NUMBER 13 of 68

GEOMEMBRANE DEPLOYMENT LOG

PROJECT NUMBER CT001401
PROJECT TITLE Victoria Gold Heap Leach Pad Phase 1B
AREA / LAYER Primary
DEPLOYMENT DATE 2020/06/28

PANEL NUMBER	ROLL NUMBER	LENGTH (m)	WIDTH (m)	AIR TEMP °C	PANEL CONDITION	CHECKED BY	SUBGRADE CONDITION
72	E0010700-024	56.8	6.8	10	Good	TH	Good
73	E0010700-001	111.4	6.8	10	Good	TH	Good
74	E0010700-004	17.8	6.8	10	Good	TH	Good
75	E0010700-004	111.8	6.8	10	Good	TH	Good
76	E0010700-038	74.2	6.8	10	Good	TH	Good

TOTAL PAGE AREA 2529.6 m²

QC TECH Thomas Howald
SUPERVISOR Chad Messervey
SUBMISSION DATE 2020/01/05
SHEET NUMBER 14 of 68

GEOMEMBRANE DEPLOYMENT LOG

PROJECT NUMBER CT001401
PROJECT TITLE Victoria Gold Heap Leach Pad Phase 1B
AREA / LAYER Primary
DEPLOYMENT DATE 2020/06/29

PANEL NUMBER	ROLL NUMBER	LENGTH (m)	WIDTH (m)	AIR TEMP °C	PANEL CONDITION	CHECKED BY	SUBGRADE CONDITION
77	E0010700-038	35	6.8	10	Good	TH	Good
78	E0010700-023	112.4	6.8	10	Good	TH	Good
79	E0010700-002	38.6	6.8	10	Good	TH	Good
80	E0010700-002	82.4	6.8	10	Good	TH	Good
81	E0010700-031	104.6	6.8	10	Good	TH	Good

TOTAL PAGE AREA 2536.4 m²

QC TECH Thomas Howald
SUPERVISOR Chad Messervey
SUBMISSION DATE 2020/01/05
SHEET NUMBER 15 of 68

GEOMEMBRANE DEPLOYMENT LOG

PROJECT NUMBER CT001401
PROJECT TITLE Victoria Gold Heap Leach Pad Phase 1B
AREA / LAYER Primary
DEPLOYMENT DATE 2020/06/30

PANEL NUMBER	ROLL NUMBER	LENGTH (m)	WIDTH (m)	AIR TEMP °C	PANEL CONDITION	CHECKED BY	SUBGRADE CONDITION
82	E0010700-031	13.4	6.8	10	Good	TH	Good
83	E0010700-009	120.7	6.8	10	Good	TH	Good
84	E0010700-007	60.5	6.8	10	Good	TH	Good
85	E0010700-007	54.5	6.8	10	Good	TH	Good
86	E0010700-005	127.9	6.8	10	Good	TH	Good

TOTAL PAGE AREA 2563.6 m²

QC TECH Thomas Howald
SUPERVISOR Chad Messervey
SUBMISSION DATE 2020/01/05
SHEET NUMBER 16 of 68

GEOMEMBRANE DEPLOYMENT LOG

PROJECT NUMBER CT001401
PROJECT TITLE Victoria Gold Heap Leach Pad Phase 1B
AREA / LAYER Primary
DEPLOYMENT DATE 2020/07/01

PANEL NUMBER	ROLL NUMBER	LENGTH (m)	WIDTH (m)	AIR TEMP °C	PANEL CONDITION	CHECKED BY	SUBGRADE CONDITION
87	E0010700-011	26	6.8	10	Good	TH	Good
88	E0010700-011	104.5	6.8	10	Good	TH	Good
89	E0010697-010	91.8	6.8	10	Good	TH	Good
90	E0010697-010	35.4	6.8	10	Good	TH	Good
91	E0010700-006	128.5	6.8	10	Good	TH	Good
92	E0010700-016	42.1	6.8	10	Good	TH	Good
93	E0010700-016	82.3	6.8	10	Good	TH	Good
94	E0010700-015	123.7	6.8	10	Good	TH	Good

TOTAL PAGE AREA 4313.24 m²

QC TECH Thomas Howald
SUPERVISOR Chad Messervey
SUBMISSION DATE 2020/01/05
SHEET NUMBER 17 of 68

GEOMEMBRANE DEPLOYMENT LOG

PROJECT NUMBER CT001401
PROJECT TITLE Victoria Gold Heap Leach Pad Phase 1B
AREA / LAYER Primary
DEPLOYMENT DATE 2020/07/04

PANEL NUMBER	ROLL NUMBER	LENGTH (m)	WIDTH (m)	AIR TEMP °C	PANEL CONDITION	CHECKED BY	SUBGRADE CONDITION
95	E0010697-001	123.3	6.8	10	Good	TH	Good
96	E0010697-021	97.9	6.8	10	Good	TH	Good
97	E0010697-029	128.4	6.8	10	Good	TH	Good
98	E0010697-004	73.3	6.8	10	Good	TH	Good
99	E0010697-004	50.6	6.8	10	Good	TH	Good
100	E0010697-003	129.4	6.8	10	Good	TH	Good
101	E0010697-021	12.1	4.5	10	Good	TH	Good

TOTAL PAGE AREA 4154.17 m²

QC TECH Thomas Howald
SUPERVISOR Chad Messervey
SUBMISSION DATE 2020/01/05
SHEET NUMBER 18 of 68

GEOMEMBRANE DEPLOYMENT LOG

PROJECT NUMBER CT001401
PROJECT TITLE Victoria Gold Heap Leach Pad Phase 1B
AREA / LAYER Primary
DEPLOYMENT DATE 2020/07/05

PANEL NUMBER	ROLL NUMBER	LENGTH (m)	WIDTH (m)	AIR TEMP °C	PANEL CONDITION	CHECKED BY	SUBGRADE CONDITION
102	E0010697-024	126.5	6.8	10	Good	TH	Good
103	E0010697-035	50.5	6.8	10	Good	TH	Good
104	E0010697-035	79.5	6.8	10	Good	TH	Good
105	E0010697-027	73	6.8	10	Good	TH	Good
106	E0010697-027	47.7	6.8	10	Good	TH	Good
107	E0010697-023	86	6.8	10	Good	TH	Good

TOTAL PAGE AREA 3149.76 m²

QC TECH Thomas Howald
SUPERVISOR Chad Messervey
SUBMISSION DATE 2020/01/05
SHEET NUMBER 19 of 68

GEOMEMBRANE DEPLOYMENT LOG

PROJECT NUMBER CT001401
PROJECT TITLE Victoria Gold Heap Leach Pad Phase 1B
AREA / LAYER Primary
DEPLOYMENT DATE 2020/07/08

PANEL NUMBER	ROLL NUMBER	LENGTH (m)	WIDTH (m)	AIR TEMP °C	PANEL CONDITION	CHECKED BY	SUBGRADE CONDITION
108	E0010697-001	39.22	6.8	10	Good	TH	Good
109	E0010697-023	39.4	6.8	10	Good	TH	Good
110	E0010694-015	29.9	6.8	10	Good	TH	Good
111	E0010697-001	58.4	6.8	10	Good	TH	Good
112	E0010694-015	33.8	6.8	10	Good	TH	Good
113	E0010694-015	29.4	6.8	10	Good	TH	Good
114	E0010694-015	19.2	6.8	10	Good	TH	Good
115	E0010694-013	24.9	6.8	10	Good	TH	Good
116	E0010694-013	56.6	6.8	10	Good	TH	Good
117	E0010694-013	27.1	6.8	10	Good	TH	Good
118	E0010694-013	13.1	6.8	10	Good	TH	Good
119	E0010694-013	22.8	6.8	10	Good	TH	Good
120	E0010694-013	6	2	10	Good	TH	Good

TOTAL PAGE AREA 2689.98 m²

QC TECH Thomas Howald
SUPERVISOR Chad Messervey
SUBMISSION DATE 2020/01/05
SHEET NUMBER 20 of 68

GEOMEMBRANE DEPLOYMENT LOG

PROJECT NUMBER CT001401
PROJECT TITLE Victoria Gold Heap Leach Pad Phase 1B
AREA / LAYER Primary
DEPLOYMENT DATE 2020/07/12

PANEL NUMBER	ROLL NUMBER	LENGTH (m)	WIDTH (m)	AIR TEMP °C	PANEL CONDITION	CHECKED BY	SUBGRADE CONDITION
121	E0010697-006	116.4	6.8	10	Good	TH	Good
122	E0010694-006	114.1	6.8	10	Good	TH	Good
123	E0010697-006	23.8	6.8	10	Good	TH	Good
124	E0010697-007	127.3	6.8	10	Good	TH	Good
125	E0010694-031	71.1	6.8	10	Good	TH	Good
126	E0010700-008	48	6.8	10	Good	TH	Good
127	E0010694-005	128.2	6.8	10	Good	TH	Good
128	E0010694-032	1	6.8	10	Good	TH	Good
129	E0010694-032	34.6	6.8	10	Good	TH	Good

TOTAL PAGE AREA 4518.6 m²

QC TECH Thomas Howald
SUPERVISOR Chad Messervey
SUBMISSION DATE 2020/01/05
SHEET NUMBER 21 of 68

GEOMEMBRANE DEPLOYMENT LOG

PROJECT NUMBER CT001401
PROJECT TITLE Victoria Gold Heap Leach Pad Phase 1B
AREA / LAYER Primary
DEPLOYMENT DATE 2020/07/13

PANEL NUMBER	ROLL NUMBER	LENGTH (m)	WIDTH (m)	AIR TEMP °C	PANEL CONDITION	CHECKED BY	SUBGRADE CONDITION
130	E0010700-008	23	6.8	10	Good	TH	Good
131	E0010694-032	93.2	6.8	10	Good	TH	Good
132	E0010694-035	82.2	6.8	10	Good	TH	Good
133	E0010694-035	30.4	6.8	10	Good	TH	Good
134	E0010694-034	128.8	6.8	10	Good	TH	Good
135	E0010694-036	28.5	6.8	10	Good	TH	Good

TOTAL PAGE AREA 2625.48 m²

QC TECH Thomas Howald
SUPERVISOR Chad Messervey
SUBMISSION DATE 2020/01/05
SHEET NUMBER 22 of 68

GEOMEMBRANE DEPLOYMENT LOG

PROJECT NUMBER CT001401
PROJECT TITLE Victoria Gold Heap Leach Pad Phase 1B
AREA / LAYER Primary
DEPLOYMENT DATE 2020/07/14

PANEL NUMBER	ROLL NUMBER	LENGTH (m)	WIDTH (m)	AIR TEMP °C	PANEL CONDITION	CHECKED BY	SUBGRADE CONDITION
136	E0010694-035	24.4	6.8	10	Good	TH	Good
137	E0010694-036	100	6.8	10	Good	TH	Good
138	E0010693-018	57.3	6.8	10	Good	TH	Good
139	E0010693-018	65.9	6.8	10	Good	TH	Good
140	E0010694-030	104.2	6.8	10	Good	TH	Good
141	E0010693-018	14.8	6.8	10	Good	TH	Good
142	E0010694-030	23.7	6.8	10	Good	TH	Good
143	E0010694-022	118.8	6.8	10	Good	TH	Good

TOTAL PAGE AREA 3461.88 m²

QC TECH Thomas Howald
SUPERVISOR Chad Messervey
SUBMISSION DATE 2020/01/05
SHEET NUMBER 23 of 68

GEOMEMBRANE DEPLOYMENT LOG

PROJECT NUMBER CT001401
PROJECT TITLE Victoria Gold Heap Leach Pad Phase 1B
AREA / LAYER Primary
DEPLOYMENT DATE 2020/07/15

PANEL NUMBER	ROLL NUMBER	LENGTH (m)	WIDTH (m)	AIR TEMP °C	PANEL CONDITION	CHECKED BY	SUBGRADE CONDITION
144	E0010694-025	117.6	6.8	10	Good	TH	Good
145	E0010694-026	29.4	6.8	10	Good	TH	Good
146	E0010694-025	25.5	6.8	10	Good	TH	Good
147	E0010694-026	99.8	6.8	10	Good	TH	Good
148	E0010697-005	8.2	6.8	10	Good	TH	Good
149	E0010697-005	120.1	6.8	10	Good	TH	Good
150	E0010697-005	10.7	6.8	10	Good	TH	Good
151	E0010693-014	95	6.8	10	Good	TH	Good

TOTAL PAGE AREA 3442.84 m²

QC TECH Thomas Howald
SUPERVISOR Chad Messervey
SUBMISSION DATE 2020/01/05
SHEET NUMBER 24 of 68

GEOMEMBRANE DEPLOYMENT LOG

PROJECT NUMBER CT001401
PROJECT TITLE Victoria Gold Heap Leach Pad Phase 1B
AREA / LAYER Primary
DEPLOYMENT DATE 2020/07/16

PANEL NUMBER	ROLL NUMBER	LENGTH (m)	WIDTH (m)	AIR TEMP °C	PANEL CONDITION	CHECKED BY	SUBGRADE CONDITION
152	E0010693-012	45.2	6.8	10	Good	TH	Good
153	E0010694-029	22.8	6.8	10	Good	TH	Good
154	E0010694-029	16.3	6.8	10	Good	TH	Good
155	E0010693-012	50.4	6.8	10	Good	TH	Good
156	E0010693-012	9.8	6	10	Good	TH	Good
157	E0010693-012	44.6	6.8	10	Good	TH	Good
158	E0010693-012	7.4	5.6	10	Good	TH	Good
159	E0010693-013	35	6.8	10	Good	TH	Good
160	E0010693-013	30.5	6.8	10	Good	TH	Good
161	E0010693-013	19.5	6.8	10	Good	TH	Good
162	E0010693-013	7.6	3	10	Good	TH	Good
163	E0010693-014	24.3	6.8	10	Good	TH	Good
164	E0010693-012	69	6.8	10	Good	TH	Good

TOTAL PAGE AREA 2554.72 m²

QC TECH Thomas Howald
SUPERVISOR Chad Messervey
SUBMISSION DATE 2020/01/05
SHEET NUMBER 25 of 68

GEOMEMBRANE DEPLOYMENT LOG

PROJECT NUMBER CT001401
PROJECT TITLE Victoria Gold Heap Leach Pad Phase 1B
AREA / LAYER Primary
DEPLOYMENT DATE 2020/07/18

PANEL NUMBER	ROLL NUMBER	LENGTH (m)	WIDTH (m)	AIR TEMP °C	PANEL CONDITION	CHECKED BY	SUBGRADE CONDITION
165	E0010693-013	51.6	6.8	10	Good	TH	Good
166	E0010693-008	82.6	6.8	10	Good	TH	Good
167	E0010693-008	44.1	6.8	10	Good	TH	Good
168	E0010693-020	87.3	6.8	10	Good	TH	Good
169	E0010693-020	38.6	6.8	10	Good	TH	Good
170	E0010693-011	62	6.8	10	Good	TH	Good
171	E0010693-011	65.2	6.8	10	Good	TH	Good
172	E0010693-003	99.8	6.8	10	Good	TH	Good

TOTAL PAGE AREA 3612.16 m²

QC TECH Thomas Howald
SUPERVISOR Chad Messervey
SUBMISSION DATE 2020/01/05
SHEET NUMBER 26 of 68

GEOMEMBRANE DEPLOYMENT LOG

PROJECT NUMBER CT001401
PROJECT TITLE Victoria Gold Heap Leach Pad Phase 1B
AREA / LAYER Primary
DEPLOYMENT DATE 2020/07/21

PANEL NUMBER	ROLL NUMBER	LENGTH (m)	WIDTH (m)	AIR TEMP °C	PANEL CONDITION	CHECKED BY	SUBGRADE CONDITION
173	E0010693-003	25.3	6.8	20	Good	TH	Good
174	E0010693-006	56.8	6.8	20	Good	TH	Good
175	E0010693-006	69.9	6.8	20	Good	TH	Good
176	E0010693-007	120.8	6.8	20	Good	TH	Good
177	E0010693-007	6.5	6.8	20	Good	TH	Good
178	E0010693-016	55.7	6.8	20	Good	TH	Good
179	E0010693-016	72.9	6.8	20	Good	TH	Good
180	E0010693-004	50.4	6.8	20	Good	TH	Good
181	E0010693-004	74.5	6.8	20	Good	TH	Good
182	E0010697-007	13	6.8	20	Good	TH	Good

TOTAL PAGE AREA 3711.44 m²

QC TECH Thomas Howald
SUPERVISOR Chad Messervey
SUBMISSION DATE 2020/01/05
SHEET NUMBER 27 of 68

GEOMEMBRANE DEPLOYMENT LOG

PROJECT NUMBER CT001401
PROJECT TITLE Victoria Gold Heap Leach Pad Phase 1B
AREA / LAYER Primary
DEPLOYMENT DATE 2020/07/22

PANEL NUMBER	ROLL NUMBER	LENGTH (m)	WIDTH (m)	AIR TEMP °C	PANEL CONDITION	CHECKED BY	SUBGRADE CONDITION
183	E0010693-034	128.9	6.8	20	Good	TH	Good
184	E0010693-015	62.4	6.8	20	Good	TH	Good
185	E0010693-015	66	6.8	20	Good	TH	Good
186	E0010694-003	15.7	6.8	20	Good	TH	Good
187	E0010694-003	106.4	6.8	20	Good	TH	Good
188	E0010693-036	66.5	6.8	20	Good	TH	Good
189	E0010693-036	61.7	6.8	20	Good	TH	Good
190	E0010693-009	44.2	6.8	20	Good	TH	Good

TOTAL PAGE AREA 3752.24 m²

QC TECH Thomas Howald
SUPERVISOR Chad Messervey
SUBMISSION DATE 2020/01/05
SHEET NUMBER 28 of 68

GEOMEMBRANE DEPLOYMENT LOG

PROJECT NUMBER CT001401
PROJECT TITLE Victoria Gold Heap Leach Pad Phase 1B
AREA / LAYER Primary
DEPLOYMENT DATE 2020/07/23

PANEL NUMBER	ROLL NUMBER	LENGTH (m)	WIDTH (m)	AIR TEMP °C	PANEL CONDITION	CHECKED BY	SUBGRADE CONDITION
191	E0010693-009	78	6.8	20	Good	TH	Good
192	E0010693-033	128.1	6.8	20	Good	TH	Good
193	E0010693-032	79.6	6.8	20	Good	TH	Good
194	E0010697-007	1	6.8	20	Good	TH	Good
195	E0010693-032	50.7	6.8	20	Good	TH	Good
196	E0010693-035	128.5	6.8	20	Good	TH	Good
197	E0010693-005	107	6.8	20	Good	TH	Good

TOTAL PAGE AREA 3895.72 m²

QC TECH Thomas Howald
SUPERVISOR Chad Messervey
SUBMISSION DATE 2020/01/05
SHEET NUMBER 29 of 68

GEOMEMBRANE DEPLOYMENT LOG

PROJECT NUMBER CT001401
PROJECT TITLE Victoria Gold Heap Leach Pad Phase 1B
AREA / LAYER Primary
DEPLOYMENT DATE 2020/07/24

PANEL NUMBER	ROLL NUMBER	LENGTH (m)	WIDTH (m)	AIR TEMP °C	PANEL CONDITION	CHECKED BY	SUBGRADE CONDITION
198	E0010693-005	18.8	6.8	20	Good	TH	Good
199	E0010693-021	127	6.8	20	Good	TH	Good
200	E0010693-024	125.2	6.8	20	Good	TH	Good
201	E0010693-027	16.6	6.8	20	Good	TH	Good
202	E0010693-027	111.4	6.8	20	Good	TH	Good
203	E0010693-002	128.9	6.8	20	Good	TH	Good
204	E0010693-031	47.3	6.8	20	Good	TH	Good

TOTAL PAGE AREA 3911.36 m²

QC TECH Thomas Howald
SUPERVISOR Chad Messervey
SUBMISSION DATE 2020/01/05
SHEET NUMBER 30 of 68

GEOMEMBRANE DEPLOYMENT LOG

PROJECT NUMBER CT001401
PROJECT TITLE Victoria Gold Heap Leach Pad Phase 1B
AREA / LAYER Primary
DEPLOYMENT DATE 2020/07/25

PANEL NUMBER	ROLL NUMBER	LENGTH (m)	WIDTH (m)	AIR TEMP °C	PANEL CONDITION	CHECKED BY	SUBGRADE CONDITION
205	E0010693-031	81.2	6.8	20	Good	TH	Good
206	E0010693-028	126.4	6.8	20	Good	TH	Good
207	E0010693-029	82.9	6.8	20	Good	TH	Good
208	E0010693-029	46.8	6.8	20	Good	TH	Good
209	E0010693-030	129	6.8	20	Good	TH	Good
210	E0010693-026	117	6.8	20	Good	TH	Good
211	E0010693-026	11.9	6.8	20	Good	TH	Good
212	E0010692-026	128.3	6.8	20	Good	TH	Good
213	E0010692-028	128.4	6.8	20	Good	TH	Good
214	E0010692-023	22.2	6.8	20	Good	TH	Good

TOTAL PAGE AREA 5943.88 m²

QC TECH Thomas Howald
SUPERVISOR Chad Messervey
SUBMISSION DATE 2020/01/05
SHEET NUMBER 31 of 68

GEOMEMBRANE DEPLOYMENT LOG

PROJECT NUMBER CT001401
PROJECT TITLE Victoria Gold Heap Leach Pad Phase 1B
AREA / LAYER Primary
DEPLOYMENT DATE 2020/07/30

PANEL NUMBER	ROLL NUMBER	LENGTH (m)	WIDTH (m)	AIR TEMP °C	PANEL CONDITION	CHECKED BY	SUBGRADE CONDITION
215	E0010692-023	100.2	6.8	20	Good	TH	Good
216	E0010692-027	107.7	6.8	20	Good	TH	Good
217	E0010692-027	15.6	6.8	20	Good	TH	Good
218	E0010692-036	125.4	6.8	20	Good	TH	Good
219	E0010692-022	67.3	6.8	20	Good	TH	Good
220	E0010692-022	56.5	6.8	20	Good	TH	Good
221	E0010692-024	125.2	6.8	20	Good	TH	Good
222	E0010692-010	26.6	6.8	20	Good	TH	Good
223	E0010692-010	27.5	6.8	20	Good	TH	Good
224	E0010693-022	126.4	6.8	20	Good	TH	Good
225	E0010692-021	59	6.8	20	Good	TH	Good

TOTAL PAGE AREA 5694.32 m²

QC TECH Thomas Howald
SUPERVISOR Chad Messervey
SUBMISSION DATE 2020/01/05
SHEET NUMBER 32 of 68

GEOMEMBRANE DEPLOYMENT LOG

PROJECT NUMBER CT001401
PROJECT TITLE Victoria Gold Heap Leach Pad Phase 1B
AREA / LAYER Primary
DEPLOYMENT DATE 2020/07/31

PANEL NUMBER	ROLL NUMBER	LENGTH (m)	WIDTH (m)	AIR TEMP °C	PANEL CONDITION	CHECKED BY	SUBGRADE CONDITION
226	E0010692-021	66.5	6.8	20	Good	TH	Good
227	E0010692-015	129.4	6.8	20	Good	TH	Good
228	E0010692-016	16.8	6.8	20	Good	TH	Good
229	E0010692-016	112.8	6.8	20	Good	TH	Good
230	E0010692-033	83.1	6.8	20	Good	TH	Good

TOTAL PAGE AREA 2778.48 m²

QC TECH Thomas Howald
SUPERVISOR Chad Messervey
SUBMISSION DATE 2020/01/05
SHEET NUMBER 33 of 68

GEOMEMBRANE DEPLOYMENT LOG

PROJECT NUMBER CT001401
PROJECT TITLE Victoria Gold Heap Leach Pad Phase 1B
AREA / LAYER Primary
DEPLOYMENT DATE 2020/08/01

PANEL NUMBER	ROLL NUMBER	LENGTH (m)	WIDTH (m)	AIR TEMP °C	PANEL CONDITION	CHECKED BY	SUBGRADE CONDITION
231	E0010692-033	25.2	6.8	20	Good	TH	Good
232	E0010692-001	128.5	6.8	20	Good	TH	Good
233	E0010692-025	59.4	6.8	20	Good	TH	Good
234	E0010692-025	71.2	6.8	20	Good	TH	Good
235	E0010692-014	129.4	6.8	20	Good	TH	Good
236	E0010693-010	13	6.8	20	Good	TH	Good
237	E0010693-010	109.8	6.8	20	Good	TH	Good
238	E0010692-007	115.2	6.8	20	Good	TH	Good
239	E0010692-007	26	6.8	20	Good	TH	Good
240	E0010693-023	127.3	6.8	20	Good	TH	Good
241	E0010692-037	58.7	6.8	20	Good	TH	Good
242	E0010692-005	77	6.8	20	Good	TH	Good
243	E0010692-005	48.4	6.8	20	Good	TH	Good
244	E0010693-019	33.6	6.8	20	Good	TH	Good
245	E0010693-019	77	6.8	20	Good	TH	Good
246	E0010693-019	13.3	6.8	20	Good	TH	Good
247	E0010692-019	69.3	6.8	20	Good	TH	Good
248	E0010692-019	57.6	6.8	20	Good	TH	Good
249	E0010693-025	20	6.8	20	Good	TH	Good

TOTAL PAGE AREA 8567.32 m²

QC TECH Thomas Howald
SUPERVISOR Chad Messervey
SUBMISSION DATE 2020/01/05
SHEET NUMBER 34 of 68

GEOMEMBRANE DEPLOYMENT LOG

PROJECT NUMBER CT001401
PROJECT TITLE Victoria Gold Heap Leach Pad Phase 1B
AREA / LAYER Primary
DEPLOYMENT DATE 2020/08/02

PANEL NUMBER	ROLL NUMBER	LENGTH (m)	WIDTH (m)	AIR TEMP °C	PANEL CONDITION	CHECKED BY	SUBGRADE CONDITION
250	E0010693-025	77.6	6.8	20	Good	TH	Good
251	E0010693-025	19.5	6.8	20	Good	TH	Good
252	E0010700-008	60.1	6.8	20	Good	TH	Good
253	E0010694-029	63.8	6.8	20	Good	TH	Good
254	E0010700-036	20.8	6.8	20	Good	TH	Good
255	E0010699-005	75.9	6.8	20	Good	TH	Good
256	E0010699-032	24.4	6.8	20	Good	TH	Good
257	E0010692-017	68.8	6.8	20	Good	TH	Good

TOTAL PAGE AREA 2794.12 m²

QC TECH Thomas Howald
SUPERVISOR Chad Messervey
SUBMISSION DATE 2020/01/05
SHEET NUMBER 35 of 68

GEOMEMBRANE DEPLOYMENT LOG

PROJECT NUMBER CT001401
PROJECT TITLE Victoria Gold Heap Leach Pad Phase 1B
AREA / LAYER Primary
DEPLOYMENT DATE 2020/08/03

PANEL NUMBER	ROLL NUMBER	LENGTH (m)	WIDTH (m)	AIR TEMP °C	PANEL CONDITION	CHECKED BY	SUBGRADE CONDITION
258	E0010692-037	67.2	6.8	20	Good	TH	Good
259	E0010692-029	128.3	6.8	20	Good	TH	Good
260	E0010692-013	50.4	6.8	20	Good	TH	Good
261	E0010692-013	77	6.8	20	Good	TH	Good
262	E0010693-017	128.7	6.8	20	Good	TH	Good
263	E0010692-031	44	6.8	20	Good	TH	Good
264	E0010692-031	81.6	6.8	20	Good	TH	Good
265	E0010692-034	128.5	6.8	20	Good	TH	Good
266	E0010692-020	47.8	6.8	20	Good	TH	Good
267	E0010692-020	72.4	6.8	20	Good	TH	Good
268	E0010692-002	128	6.8	20	Good	TH	Good
269	E0010692-011	53	6.8	20	Good	TH	Good
270	E0010692-017	55.1	6.8	20	Good	TH	Good
271	E0010693-001	51.9	6.8	20	Good	TH	Good
272	E0010693-001	44.2	6.8	20	Good	TH	Good
273	E0010693-001	25	6.8	20	Good	TH	Good
274	E0010692-006	16	6.8	20	Good	TH	Good

TOTAL PAGE AREA 8153.88 m²

QC TECH Thomas Howald
SUPERVISOR Chad Messervey
SUBMISSION DATE 2020/01/05
SHEET NUMBER 36 of 68

GEOMEMBRANE DEPLOYMENT LOG

PROJECT NUMBER CT001401
PROJECT TITLE Victoria Gold Heap Leach Pad Phase 1B
AREA / LAYER Primary
DEPLOYMENT DATE 2020/08/04

PANEL NUMBER	ROLL NUMBER	LENGTH (m)	WIDTH (m)	AIR TEMP °C	PANEL CONDITION	CHECKED BY	SUBGRADE CONDITION
275	E0010692-011	76.1	6.8	20	Good	TH	Good
276	E0010692-030	128.8	6.8	20	Good	TH	Good
277	E0010692-009	97.4	6.8	20	Good	TH	Good
278	E0010692-009	30	6.8	20	Good	TH	Good
279	E0010700-018	128.1	6.8	20	Good	TH	Good
280	E0010697-013	125.6	6.8	20	Good	TH	Good
281	E0010700-020	18.6	6.8	20	Good	TH	Good
282	E0010700-020	108.1	6.8	20	Good	TH	Good
283	E0010692-006	109	6.8	20	Good	TH	Good
284	E0010692-035	85.6	6.8	20	Good	TH	Good

TOTAL PAGE AREA 6169.64 m²

QC TECH Thomas Howald
SUPERVISOR Chad Messervey
SUBMISSION DATE 2020/01/05
SHEET NUMBER 37 of 68

GEOMEMBRANE DEPLOYMENT LOG

PROJECT NUMBER CT001401
PROJECT TITLE Victoria Gold Heap Leach Pad Phase 1B
AREA / LAYER Primary
DEPLOYMENT DATE 2020/08/05

PANEL NUMBER	ROLL NUMBER	LENGTH (m)	WIDTH (m)	AIR TEMP °C	PANEL CONDITION	CHECKED BY	SUBGRADE CONDITION
285	E0010692-035	41.3	6.8	20	Good	TH	Good
286	E0010692-012	129.9	6.8	20	Good	TH	Good
287	E0010692-032	107.8	6.8	20	Good	TH	Good
288	E0010692-003	13.5	6.8	20	Good	TH	Good
289	E0010692-032	12	6.8	20	Good	TH	Good
290	E0010692-003	113.7	6.8	20	Good	TH	Good
291	E0010692-004	118.6	6.8	20	Good	TH	Good
292	E0010700-022	47.5	6.8	20	Good	TH	Good
293	E0010700-022	76.2	6.8	20	Good	TH	Good
294	E0010700-014	129	6.8	20	Good	TH	Good
295	E0010700-021	84.3	6.8	20	Good	TH	Good

TOTAL PAGE AREA 5941.84 m²

QC TECH Thomas Howald
SUPERVISOR Chad Messervey
SUBMISSION DATE 2020/01/05
SHEET NUMBER 38 of 68

GEOMEMBRANE DEPLOYMENT LOG

PROJECT NUMBER CT001401
PROJECT TITLE Victoria Gold Heap Leach Pad Phase 1B
AREA / LAYER Primary
DEPLOYMENT DATE 2020/08/06

PANEL NUMBER	ROLL NUMBER	LENGTH (m)	WIDTH (m)	AIR TEMP °C	PANEL CONDITION	CHECKED BY	SUBGRADE CONDITION
296	E0010692-008	36.3	6.8	20	Good	TH	Good
297	E0010692-008	22.7	6.8	20	Good	TH	Good
298	E0010692-008	9.8	3	20	Good	TH	Good
299	E0010698-007	8.9	6.8	20	Good	TH	Good
300	E0010698-007	12.9	6.8	20	Good	TH	Good
301	E0010694-002	4.8	6.8	20	Good	TH	Good
302	E0010698-007	23.2	6.8	20	Good	TH	Good
303	E0010692-008	27	6.8	20	Good	TH	Good
304	E0010692-008	28.7	6.8	20	Good	TH	Good
305	E0010694-015	18.9	6.8	20	Good	TH	Good
306	E0010692-008	12.5	6.8	20	Good	TH	Good
307	E0010700-016	33	6.8	20	Good	TH	Good
308	E0010700-035	35.4	6.8	20	Good	TH	Good
309	E0010692-008	37.8	6.8	20	Good	TH	Good
310	E0010696-021	39.4	6.8	20	Good	TH	Good
311	E0010694-002	41.3	6.8	20	Good	TH	Good
312	E0010694-002	39.2	6.8	20	Good	TH	Good
313	E0010700-035	4.7	6.8	20	Good	TH	Good
314	E0010700-035	46.6	6.8	20	Good	TH	Good
315	E0010700-035	47.8	6.8	20	Good	TH	Good

TOTAL PAGE AREA 3572.88 m²

QC TECH Thomas Howald
SUPERVISOR Chad Messervey
SUBMISSION DATE 2020/01/05
SHEET NUMBER 39 of 68

GEOMEMBRANE DEPLOYMENT LOG

PROJECT NUMBER CT001401
PROJECT TITLE Victoria Gold Heap Leach Pad Phase 1B
AREA / LAYER Primary
DEPLOYMENT DATE 2020/08/06

PANEL NUMBER	ROLL NUMBER	LENGTH (m)	WIDTH (m)	AIR TEMP °C	PANEL CONDITION	CHECKED BY	SUBGRADE CONDITION
316	E0010700-035	24.7	6.8	20	Good	TH	Good
317	E0010696-021	25.8	6.8	20	Good	TH	Good
318	E0010696-021	54.2	6.8	20	Good	TH	Good
319	E0010698-015	2	1	20	Good	TH	Good

TOTAL PAGE AREA 713.96 m²

QC TECH Thomas Howald
SUPERVISOR Chad Messervey
SUBMISSION DATE 2020/01/05
SHEET NUMBER 40 of 68

GEOMEMBRANE DEPLOYMENT LOG

PROJECT NUMBER CT001401
PROJECT TITLE Victoria Gold Heap Leach Pad Phase 1B
AREA / LAYER Primary
DEPLOYMENT DATE 2020/08/07

PANEL NUMBER	ROLL NUMBER	LENGTH (m)	WIDTH (m)	AIR TEMP °C	PANEL CONDITION	CHECKED BY	SUBGRADE CONDITION
320	E0010694-002	44.9	6.8	20	Good	TH	Good
321	E0010696-021	13.5	6.8	20	Good	TH	Good
322	E0010700-012	63.6	6.8	20	Good	TH	Good
323	E0010700-012	50.8	6.8	20	Good	TH	Good
324	E0010699-002	18.1	6.8	20	Good	TH	Good
325	E0010699-002	105.2	6.8	20	Good	TH	Good
326	E0010700-019	96.5	6.8	20	Good	TH	Good
327	E0010700-019	27.4	6.8	20	Good	TH	Good
328	E0010700-017	61.5	6.8	20	Good	TH	Good
329	E0010700-017	66.4	6.8	20	Good	TH	Good
330	E0010698-011	44.2	6.8	20	Good	TH	Good
331	E0010698-011	22	6.8	20	Good	TH	Good
332	E0010698-011	51.2	6.8	20	Good	TH	Good
333	E0010699-004	57.1	6.8	20	Good	TH	Good
334	E0010699-004	73.1	6.8	20	Good	TH	Good
335	E0010699-001	52	6.8	20	Good	TH	Good

TOTAL PAGE AREA 5763 m²

QC TECH Thomas Howald
SUPERVISOR Chad Messervey
SUBMISSION DATE 2020/01/05
SHEET NUMBER 41 of 68

GEOMEMBRANE DEPLOYMENT LOG

PROJECT NUMBER CT001401
PROJECT TITLE Victoria Gold Heap Leach Pad Phase 1B
AREA / LAYER Primary
DEPLOYMENT DATE 2020/08/09

PANEL NUMBER	ROLL NUMBER	LENGTH (m)	WIDTH (m)	AIR TEMP °C	PANEL CONDITION	CHECKED BY	SUBGRADE CONDITION
336	E0010699-001	71.9	6.8	20	Good	TH	Good
337	E0010699-012	66.1	6.8	20	Good	TH	Good
338	E0010699-001	11.9	6.8	20	Good	TH	Good
339	E0010699-012	65.7	6.8	20	Good	TH	Good
340	E0010699-017	62.1	6.8	20	Good	TH	Good
341	E0010699-017	69.6	6.8	20	Good	TH	Good
342	E0010699-003	73.2	6.8	20	Good	TH	Good
343	E0010699-003	53.7	6.8	20	Good	TH	Good
344	E0010699-018	96.9	6.8	20	Good	TH	Good
345	E0010699-018	31.1	6.8	20	Good	TH	Good
346	E0010699-029	125.7	6.8	20	Good	TH	Good
347	E0010699-030	127.7	6.8	20	Good	TH	Good
348	E0010700-013	35.4	6.8	20	Good	TH	Good
349	E0010700-013	92.1	6.8	20	Good	TH	Good
350	E0010699-016	77.5	6.8	20	Good	TH	Good
351	E0010699-016	47.9	6.8	20	Good	TH	Good
352	E0010699-031	128.3	6.8	20	Good	TH	Good
353	E0010699-021	5.8	6.8	20	Good	TH	Good

TOTAL PAGE AREA 8449.68 m²

QC TECH Thomas Howald
SUPERVISOR Chad Messervey
SUBMISSION DATE 2020/01/05
SHEET NUMBER 42 of 68

GEOMEMBRANE DEPLOYMENT LOG

PROJECT NUMBER CT001401
PROJECT TITLE Victoria Gold Heap Leach Pad Phase 1B
AREA / LAYER Primary
DEPLOYMENT DATE 2020/08/10

PANEL NUMBER	ROLL NUMBER	LENGTH (m)	WIDTH (m)	AIR TEMP °C	PANEL CONDITION	CHECKED BY	SUBGRADE CONDITION
354	E0010700-013	5.9	3.5	20	Good	TH	Good

TOTAL PAGE AREA 20.65 m²

QC TECH Thomas Howald
SUPERVISOR Chad Messervey
SUBMISSION DATE 2020/01/05
SHEET NUMBER 43 of 68

GEOMEMBRANE DEPLOYMENT LOG

PROJECT NUMBER CT001401
PROJECT TITLE Victoria Gold Heap Leach Pad Phase 1B
AREA / LAYER Primary
DEPLOYMENT DATE 2020/08/11

PANEL NUMBER	ROLL NUMBER	LENGTH (m)	WIDTH (m)	AIR TEMP °C	PANEL CONDITION	CHECKED BY	SUBGRADE CONDITION
355	E0010699-021	120.2	6.8	20	Good	TH	Good
356	E0010699-028	53	6.8	20	Good	TH	Good
357	E0010699-028	75.5	6.8	20	Good	TH	Good
358	E0010699-022	91.2	6.8	20	Good	TH	Good
359	E0010699-022	37.4	6.8	20	Good	TH	Good
360	E0010692-006	47.3	6.8	20	Good	TH	Good
361	E0010699-023	77.5	6.8	20	Good	TH	Good

TOTAL PAGE AREA 3414.28 m²

QC TECH Thomas Howald
SUPERVISOR Chad Messervey
SUBMISSION DATE 2020/01/05
SHEET NUMBER 44 of 68

GEOMEMBRANE DEPLOYMENT LOG

PROJECT NUMBER CT001401
PROJECT TITLE Victoria Gold Heap Leach Pad Phase 1B
AREA / LAYER Primary
DEPLOYMENT DATE 2020/08/14

PANEL NUMBER	ROLL NUMBER	LENGTH (m)	WIDTH (m)	AIR TEMP °C	PANEL CONDITION	CHECKED BY	SUBGRADE CONDITION
362	E0010699-028	4.2	6.8	20	Good	TH	Good
363	E0010699-023	51	6.8	20	Good	TH	Good
364	E0010699-008	92	6.8	20	Good	TH	Good
365	E0010699-008	36.4	6.8	20	Good	TH	Good
366	E0010699-020	107.6	6.8	20	Good	TH	Good
367	E0010699-020	32.4	6.8	20	Good	TH	Good
368	E0010699-010	119.8	6.8	20	Good	TH	Good

TOTAL PAGE AREA 3015.12 m²

QC TECH Thomas Howald
SUPERVISOR Chad Messervey
SUBMISSION DATE 2020/01/05
SHEET NUMBER 45 of 68

GEOMEMBRANE DEPLOYMENT LOG

PROJECT NUMBER CT001401
PROJECT TITLE Victoria Gold Heap Leach Pad Phase 1B
AREA / LAYER Primary
DEPLOYMENT DATE 2020/08/15

PANEL NUMBER	ROLL NUMBER	LENGTH (m)	WIDTH (m)	AIR TEMP °C	PANEL CONDITION	CHECKED BY	SUBGRADE CONDITION
369	E0010699-036	126.6	6.8	20	Good	TH	Good
370	E0010699-009	23	6.8	20	Good	TH	Good
371	E0010699-009	103.5	6.8	20	Good	TH	Good
372	E0010699-033	39.8	6.8	20	Good	TH	Good
373	E0010699-033	84.9	6.8	20	Good	TH	Good
374	E0010699-011	52.6	6.8	20	Good	TH	Good
375	E0010699-011	74.6	6.8	20	Good	TH	Good
376	E0010699-026	56.9	6.8	20	Good	TH	Good
377	E0010699-026	66.3	6.8	20	Good	TH	Good
378	E0010699-024	59	6.8	20	Good	TH	Good
379	E0010699-024	66.9	6.8	20	Good	TH	Good
380	E0010699-019	51.7	6.8	20	Good	TH	Good
381	E0010699-019	75.4	6.8	20	Good	TH	Good
382	E0010699-025	36.4	6.8	20	Good	TH	Good
383	E0010699-025	86.8	6.8	20	Good	TH	Good
384	E0010699-015	16.2	6.8	20	Good	TH	Good

TOTAL PAGE AREA 6940.08 m²

QC TECH Thomas Howald
SUPERVISOR Chad Messervey
SUBMISSION DATE 2020/01/05
SHEET NUMBER 46 of 68

GEOMEMBRANE DEPLOYMENT LOG

PROJECT NUMBER CT001401
PROJECT TITLE Victoria Gold Heap Leach Pad Phase 1B
AREA / LAYER Primary
DEPLOYMENT DATE 2020/08/16

PANEL NUMBER	ROLL NUMBER	LENGTH (m)	WIDTH (m)	AIR TEMP °C	PANEL CONDITION	CHECKED BY	SUBGRADE CONDITION
385	E0010699-015	95.3	6.8	20	Good	TH	Good
386	E0010699-015	13.1	6.8	20	Good	TH	Good
387	E0010699-007	74	6.8	20	Good	TH	Good
388	E0010699-007	31.4	6.8	20	Good	TH	Good
389	E0010699-032	29.7	6.8	20	Good	TH	Good
390	E0010699-032	19.5	6.1	20	Good	TH	Good
391	E0010699-007	12.3	6.4	20	Good	TH	Good
392	E0010699-007	19.7	6.8	20	Good	TH	Good
393	E0010699-032	11.7	6.8	20	Good	TH	Good
394	E0010699-032	29.8	6.8	20	Good	TH	Good
395	E0010699-032	23.4	6.8	20	Good	TH	Good
396	E0010699-006	6.1	6.8	20	Good	TH	Good
397	E0010699-006	27.2	6.8	20	Good	TH	Good
398	E0010699-006	24.3	6.8	20	Good	TH	Good
399	E0010699-006	13.2	6.8	20	Good	TH	Good
400	E0010699-006	5.2	3	20	Good	TH	Good
401	E0010699-006	8.2	6.8	20	Good	TH	Good
402	E0010699-006	9.2	2.5	20	Good	TH	Good

TOTAL PAGE AREA 3004.55 m²

QC TECH Thomas Howald
SUPERVISOR Chad Messervey
SUBMISSION DATE 2020/01/05
SHEET NUMBER 47 of 68

GEOMEMBRANE DEPLOYMENT LOG

PROJECT NUMBER CT001401
PROJECT TITLE Victoria Gold Heap Leach Pad Phase 1B
AREA / LAYER Primary
DEPLOYMENT DATE 2020/08/17

PANEL NUMBER	ROLL NUMBER	LENGTH (m)	WIDTH (m)	AIR TEMP °C	PANEL CONDITION	CHECKED BY	SUBGRADE CONDITION
403	E0010699-006	39.4	6.8	20	Good	TH	Good
404	E0010699-014	129.4	6.8	20	Good	TH	Good
405	E0010700-030	99.9	6.8	20	Good	TH	Good

TOTAL PAGE AREA 1827.16 m²

QC TECH Thomas Howald
SUPERVISOR Chad Messervey
SUBMISSION DATE 2020/01/05
SHEET NUMBER 48 of 68

GEOMEMBRANE DEPLOYMENT LOG

PROJECT NUMBER CT001401
PROJECT TITLE Victoria Gold Heap Leach Pad Phase 1B
AREA / LAYER Primary
DEPLOYMENT DATE 2020/08/19

PANEL NUMBER	ROLL NUMBER	LENGTH (m)	WIDTH (m)	AIR TEMP °C	PANEL CONDITION	CHECKED BY	SUBGRADE CONDITION
406	E0010697-001	29.9	6.8	20	Good	TH	Good
407	E0010700-027	129.8	6.8	20	Good	TH	Good
408	E0010700-036	105	6.8	20	Good	TH	Good
409	E0010700-036	23.7	6.8	20	Good	TH	Good
410	E0010700-026	129.4	6.8	20	Good	TH	Good
411	E0010699-035	111.6	6.8	20	Good	TH	Good
412	E0010699-035	17.2	6.8	20	Good	TH	Good
413	E0010699-034	122	6.8	20	Good	TH	Good
414	E0010699-005	119.8	6.8	20	Good	TH	Good
415	E0010699-005	10	6.8	20	Good	TH	Good
416	E0010699-013	128.5	6.8	20	Good	TH	Good
417	E0010699-027	127	6.8	20	Good	TH	Good

TOTAL PAGE AREA 7166.52 m²

QC TECH Thomas Howald
SUPERVISOR Chad Messervey
SUBMISSION DATE 2020/01/05
SHEET NUMBER 49 of 68

GEOMEMBRANE DEPLOYMENT LOG

PROJECT NUMBER CT001401
PROJECT TITLE Victoria Gold Heap Leach Pad Phase 1B
AREA / LAYER Primary
DEPLOYMENT DATE 2020/08/20

PANEL NUMBER	ROLL NUMBER	LENGTH (m)	WIDTH (m)	AIR TEMP °C	PANEL CONDITION	CHECKED BY	SUBGRADE CONDITION
418	E0010696-001	129.7	6.8	20	Good	TH	Good
419	E0010696-017	122	6.8	20	Good	TH	Good
420	E0010696-003	8.8	6.8	20	Good	TH	Good
421	E0010696-003	117.5	6.8	20	Good	TH	Good
422	E0010696-016	121.8	6.8	20	Good	TH	Good
423	E0010700-034	21.2	6.8	20	Good	TH	Good
424	E0010700-034	107.4	6.8	20	Good	TH	Good
425	E0010696-013	121.5	6.8	20	Good	TH	Good
426	E0010696-004	31.6	6.8	20	Good	TH	Good
427	E0010696-004	95.3	6.8	20	Good	TH	Good
428	E0010696-026	121.7	6.8	20	Good	TH	Good
429	E0010696-036	43.5	6.8	20	Good	TH	Good
430	E0010696-036	84	6.8	20	Good	TH	Good
431	E0010696-027	121.3	6.8	20	Good	TH	Good
432	E0010696-033	55.2	6.8	20	Good	TH	Good
433	E0010696-033	75.2	6.8	20	Good	TH	Good
434	E0010696-037	127.9	6.8	20	Good	TH	Good
435	E0010696-009	63.4	6.8	20	Good	TH	Good
436	E0010696-009	66.1	6.8	20	Good	TH	Good
437	E0010696-034	127.9	6.8	20	Good	TH	Good

TOTAL PAGE AREA 11988.4 m²

QC TECH Thomas Howald
SUPERVISOR Chad Messervey
SUBMISSION DATE 2020/01/05
SHEET NUMBER 50 of 68

GEOMEMBRANE DEPLOYMENT LOG

PROJECT NUMBER CT001401
PROJECT TITLE Victoria Gold Heap Leach Pad Phase 1B
AREA / LAYER Primary
DEPLOYMENT DATE 2020/08/20

PANEL NUMBER	ROLL NUMBER	LENGTH (m)	WIDTH (m)	AIR TEMP °C	PANEL CONDITION	CHECKED BY	SUBGRADE CONDITION
438	E0010696-007	1	6.8	20	Good	TH	Good
439	E0010696-007	71.5	6.8	20	Good	TH	Good

TOTAL PAGE AREA 493 m²

QC TECH Thomas Howald
SUPERVISOR Chad Messervey
SUBMISSION DATE 2020/01/05
SHEET NUMBER 51 of 68

GEOMEMBRANE DEPLOYMENT LOG

PROJECT NUMBER CT001401
PROJECT TITLE Victoria Gold Heap Leach Pad Phase 1B
AREA / LAYER Primary
DEPLOYMENT DATE 2020/08/21

PANEL NUMBER	ROLL NUMBER	LENGTH (m)	WIDTH (m)	AIR TEMP °C	PANEL CONDITION	CHECKED BY	SUBGRADE CONDITION
440	E0010696-007	57.5	6.8	20	Good	TH	Good
441	E0010696-012	128.2	6.8	20	Good	TH	Good
442	E0010696-021	73.2	6.8	20	Good	TH	Good
443	E0010696-021	51.9	6.8	20	Good	TH	Good
444	E0010696-011	128.7	6.8	20	Good	TH	Good
445	E0010696-035	78.3	6.8	20	Good	TH	Good
446	E0010696-035	49	6.8	20	Good	TH	Good
447	E0010700-003	128.9	6.8	20	Good	TH	Good
448	E0010696-030	81	6.8	20	Good	TH	Good
449	E0010696-030	45.6	6.8	20	Good	TH	Good
450	E0010696-014	129.1	6.8	20	Good	TH	Good
451	E0010696-015	84.2	6.8	20	Good	TH	Good
452	E0010696-015	42.1	6.8	20	Good	TH	Good
453	E0010695-011	129.3	6.8	20	Good	TH	Good
454	E0010696-020	87.5	6.8	20	Good	TH	Good

TOTAL PAGE AREA 8802.6 m²

QC TECH Thomas Howald
SUPERVISOR Chad Messervey
SUBMISSION DATE 2020/01/05
SHEET NUMBER 52 of 68

GEOMEMBRANE DEPLOYMENT LOG

PROJECT NUMBER CT001401
PROJECT TITLE Victoria Gold Heap Leach Pad Phase 1B
AREA / LAYER Primary
DEPLOYMENT DATE 2020/08/22

PANEL NUMBER	ROLL NUMBER	LENGTH (m)	WIDTH (m)	AIR TEMP °C	PANEL CONDITION	CHECKED BY	SUBGRADE CONDITION
455	E0010696-020	42.1	6.8	20	Good	TH	Good
456	E0010696-019	126.7	6.8	20	Good	TH	Good
457	E0010696-025	92	6.8	20	Good	TH	Good
458	E0010696-025	37.8	6.8	20	Good	TH	Good
459	E0010696-022	127	6.8	20	Good	TH	Good
460	E0010696-024	85.8	6.8	20	Good	TH	Good
461	E0010696-024	40.6	6.8	20	Good	TH	Good
462	E0010696-023	127	6.8	20	Good	TH	Good
463	E0010695-014	82.4	6.8	20	Good	TH	Good
464	E0010695-014	45.6	6.8	20	Good	TH	Good
465	E0010695-019	128.2	6.8	20	Good	TH	Good
466	E0010695-016	73.4	6.8	20	Good	TH	Good
467	E0010695-016	50.9	6.8	20	Good	TH	Good
468	E0010695-020	127.4	6.8	20	Good	TH	Good
469	E0010695-027	1.7	6.8	20	Good	TH	Good
470	E0010695-017	67.2	6.8	20	Good	TH	Good

TOTAL PAGE AREA 8539.44 m²

QC TECH Thomas Howald
SUPERVISOR Chad Messervey
SUBMISSION DATE 2020/01/05
SHEET NUMBER 53 of 68

GEOMEMBRANE DEPLOYMENT LOG

PROJECT NUMBER CT001401
PROJECT TITLE Victoria Gold Heap Leach Pad Phase 1B
AREA / LAYER Primary
DEPLOYMENT DATE 2020/08/23

PANEL NUMBER	ROLL NUMBER	LENGTH (m)	WIDTH (m)	AIR TEMP °C	PANEL CONDITION	CHECKED BY	SUBGRADE CONDITION
471	E0010695-017	56.3	6.8	20	Good	TH	Good
472	E0010695-013	126.4	6.8	20	Good	TH	Good
473	E0010695-003	53.7	6.8	20	Good	TH	Good
474	E0010695-003	59.5	6.8	20	Good	TH	Good
475	E0010695-022	128.2	6.8	20	Good	TH	Good
476	E0010695-018	48.7	6.8	20	Good	TH	Good
477	E0010695-018	64.3	6.8	20	Good	TH	Good
478	E0010695-029	128.4	6.8	20	Good	TH	Good
479	E0010695-027	43.7	6.8	20	Good	TH	Good
480	E0010695-027	69.3	6.8	20	Good	TH	Good
481	E0010695-026	126.4	6.8	20	Good	TH	Good
482	E0010695-023	40.7	6.8	20	Good	TH	Good

TOTAL PAGE AREA 6430.08 m²

QC TECH Thomas Howald
SUPERVISOR Chad Messervey
SUBMISSION DATE 2020/01/05
SHEET NUMBER 54 of 68

GEOMEMBRANE DEPLOYMENT LOG

PROJECT NUMBER CT001401
PROJECT TITLE Victoria Gold Heap Leach Pad Phase 1B
AREA / LAYER Primary
DEPLOYMENT DATE 2020/08/24

PANEL NUMBER	ROLL NUMBER	LENGTH (m)	WIDTH (m)	AIR TEMP °C	PANEL CONDITION	CHECKED BY	SUBGRADE CONDITION
483	E0010695-023	76.1	6.8	20	Good	TH	Good
484	E0010695-006	127.6	6.8	20	Good	TH	Good
485	E0010695-012	32.7	6.8	20	Good	TH	Good
486	E0010695-012	82.5	6.8	20	Good	TH	Good
487	E0010695-025	127.9	6.8	20	Good	TH	Good
488	E0010695-035	25	6.8	20	Good	TH	Good
489	E0010695-035	92.6	6.8	20	Good	TH	Good
490	E0010695-032	131.5	6.8	20	Good	TH	Good
491	E0010695-021	14.8	6.8	20	Good	TH	Good

TOTAL PAGE AREA 4832.76 m²

QC TECH Thomas Howald
SUPERVISOR Chad Messervey
SUBMISSION DATE 2020/01/05
SHEET NUMBER 55 of 68

GEOMEMBRANE DEPLOYMENT LOG

PROJECT NUMBER CT001401
PROJECT TITLE Victoria Gold Heap Leach Pad Phase 1B
AREA / LAYER Primary
DEPLOYMENT DATE 2020/08/28

PANEL NUMBER	ROLL NUMBER	LENGTH (m)	WIDTH (m)	AIR TEMP °C	PANEL CONDITION	CHECKED BY	SUBGRADE CONDITION
492	E0010695-021	113.6	6.8	20	Good	TH	Good
493	E0010695-031	128.3	6.8	20	Good	TH	Good
494	E0010695-036	128.3	6.8	20	Good	TH	Good
495	E0010695-033	113.6	6.8	20	Good	TH	Good
496	E0010695-033	19.2	6.8	20	Good	TH	Good
497	E0010695-028	126.8	6.8	20	Good	TH	Good
498	E0010695-007	0.3	6.8	20	Good	TH	Good
499	E0010695-007	92.1	6.8	20	Good	TH	Good
500	E0010695-007	36.2	6.8	20	Good	TH	Good
501	E0010695-034	128.1	6.8	20	Good	TH	Good
502	E0010695-024	73	6.8	20	Good	TH	Good

TOTAL PAGE AREA 6524.6 m²

QC TECH Thomas Howald
SUPERVISOR Chad Messervey
SUBMISSION DATE 2020/01/05
SHEET NUMBER 56 of 68

GEOMEMBRANE DEPLOYMENT LOG

PROJECT NUMBER CT001401
PROJECT TITLE Victoria Gold Heap Leach Pad Phase 1B
AREA / LAYER Primary
DEPLOYMENT DATE 2020/08/29

PANEL NUMBER	ROLL NUMBER	LENGTH (m)	WIDTH (m)	AIR TEMP °C	PANEL CONDITION	CHECKED BY	SUBGRADE CONDITION
503	E0010695-002	9.1	6.8	20	Good	TH	Good
504	E0010695-002	21.8	6.8	20	Good	TH	Good
505	E0010695-008	13.5	6.8	20	Good	TH	Good
506	E0010695-008	20.2	6.8	20	Good	TH	Good
507	E0010695-008	37.2	6.8	20	Good	TH	Good
508	E0010695-009	19.5	6.8	20	Good	TH	Good
509	E0010695-008	38	6.8	20	Good	TH	Good
510	E0010695-009	19.5	6.8	20	Good	TH	Good
511	E0010695-008	12.1	6.8	20	Good	TH	Good
512	E0010695-030	18.5	6.8	20	Good	TH	Good
513	E0010695-009	60.7	6.8	20	Good	TH	Good
514	E0010695-030	92	6.8	20	Good	TH	Good
515	E0010695-024	8.8	6.8	20	Good	TH	Good
516	E0010695-015	68.1	6.8	20	Good	TH	Good
517	E0010695-030	26.3	6.8	20	Good	TH	Good
518	E0010695-024	57.5	6.8	20	Good	TH	Good
519	E0010695-015	59	6.8	20	Good	TH	Good
520	E0010695-002	103.7	6.8	20	Good	TH	Good
521	E0010695-004	23.4	6.8	20	Good	TH	Good

TOTAL PAGE AREA 4820.52 m²

QC TECH Thomas Howald
SUPERVISOR Chad Messervey
SUBMISSION DATE 2020/01/05
SHEET NUMBER 57 of 68

GEOMEMBRANE DEPLOYMENT LOG

PROJECT NUMBER CT001401
PROJECT TITLE Victoria Gold Heap Leach Pad Phase 1B
AREA / LAYER Primary
DEPLOYMENT DATE 2020/08/30

PANEL NUMBER	ROLL NUMBER	LENGTH (m)	WIDTH (m)	AIR TEMP °C	PANEL CONDITION	CHECKED BY	SUBGRADE CONDITION
522	E0010695-004	12.1	6.8	20	Good	TH	Good
523	E0010695-004	103.6	6.8	20	Good	TH	Good
524	E0010695-005	23.9	6.8	20	Good	TH	Good
525	E0010695-005	101.2	6.8	20	Good	TH	Good
526	E0010695-010	49.5	6.8	20	Good	TH	Good
527	E0010695-005	10.9	6.8	20	Good	TH	Good
528	E0010695-010	77.7	6.8	20	Good	TH	Good
529	E0010695-001	73.6	6.8	20	Good	TH	Good
530	E0010695-001	50.9	6.8	20	Good	TH	Good
531	E0010698-004	122.6	6.8	20	Good	TH	Good
532	E0010695-001	11	6.8	20	Good	TH	Good
533	E0010698-004	3.8	6.8	20	Good	TH	Good
534	E0010697-036	128.9	6.8	20	Good	TH	Good
535	E0010698-024	40.8	6.8	20	Good	TH	Good
536	E0010698-024	82	6.8	20	Good	TH	Good
537	E0010698-015	113.5	6.8	20	Good	TH	Good

TOTAL PAGE AREA 6840.8 m²

QC TECH Thomas Howald
SUPERVISOR Chad Messervey
SUBMISSION DATE 2020/01/05
SHEET NUMBER 58 of 68

GEOMEMBRANE DEPLOYMENT LOG

PROJECT NUMBER CT001401
PROJECT TITLE Victoria Gold Heap Leach Pad Phase 1B
AREA / LAYER Primary
DEPLOYMENT DATE 2020/09/06

PANEL NUMBER	ROLL NUMBER	LENGTH (m)	WIDTH (m)	AIR TEMP °C	PANEL CONDITION	CHECKED BY	SUBGRADE CONDITION
538	E0010698-015	12.5	6.8	20	Good	TH	Good
539	E0010698-014	127.1	6.8	20	Good	TH	Good
540	E0010697-030	66.4	6.8	20	Good	TH	Good
541	E0010698-015	6.3	6.8	20	Good	TH	Good
542	E0010697-030	60.1	6.8	20	Good	TH	Good
543	E0010697-022	128	6.8	20	Good	TH	Good
544	E0010697-028	19.7	6.8	20	Good	TH	Good
545	E0010697-028	102.4	6.8	20	Good	TH	Good
546	E0010697-025	105.1	6.8	20	Good	TH	Good

TOTAL PAGE AREA 4267.68 m²

QC TECH Thomas Howald
SUPERVISOR Chad Messervey
SUBMISSION DATE 2020/01/05
SHEET NUMBER 59 of 68

GEOMEMBRANE DEPLOYMENT LOG

PROJECT NUMBER CT001401
PROJECT TITLE Victoria Gold Heap Leach Pad Phase 1B
AREA / LAYER Primary
DEPLOYMENT DATE 2020/09/07

PANEL NUMBER	ROLL NUMBER	LENGTH (m)	WIDTH (m)	AIR TEMP °C	PANEL CONDITION	CHECKED BY	SUBGRADE CONDITION
547	E0010697-025	21	6.8	20	Good	TH	Good
548	E0010697-026	128	6.8	20	Good	TH	Good
549	E0010697-031	63.1	6.8	20	Good	TH	Good
550	E0010697-031	60.9	6.8	20	Good	TH	Good
551	E0010697-034	127.3	6.8	20	Good	TH	Good
552	E0010697-008	21.5	6.8	20	Good	TH	Good

TOTAL PAGE AREA 2868.24 m²

QC TECH Thomas Howald
SUPERVISOR Chad Messervey
SUBMISSION DATE 2020/01/05
SHEET NUMBER 60 of 68

GEOMEMBRANE DEPLOYMENT LOG

PROJECT NUMBER CT001401
PROJECT TITLE Victoria Gold Heap Leach Pad Phase 1B
AREA / LAYER Primary
DEPLOYMENT DATE 2020/09/08

PANEL NUMBER	ROLL NUMBER	LENGTH (m)	WIDTH (m)	AIR TEMP °C	PANEL CONDITION	CHECKED BY	SUBGRADE CONDITION
553	E0010697-008	103.8	6.8	20	Good	TH	Good
554	E0010697-033	101.5	6.8	20	Good	TH	Good
555	E0010697-033	25.4	6.8	20	Good	TH	Good
556	E0010697-009	128	6.8	20	Good	TH	Good
557	E0010697-032	52.8	6.8	20	Good	TH	Good
558	E0010697-032	75.2	6.8	20	Good	TH	Good
559	E0010697-019	128.9	6.8	20	Good	TH	Good
560	E0010697-020	126.6	6.8	20	Good	TH	Good
561	E0010696-002	74.2	6.8	20	Good	TH	Good
562	E0010697-017	4	6.8	20	Good	TH	Good

TOTAL PAGE AREA 5578.72 m²

QC TECH Thomas Howald
SUPERVISOR Chad Messervey
SUBMISSION DATE 2020/01/05
SHEET NUMBER 61 of 68

GEOMEMBRANE DEPLOYMENT LOG

PROJECT NUMBER CT001401
PROJECT TITLE Victoria Gold Heap Leach Pad Phase 1B
AREA / LAYER Primary
DEPLOYMENT DATE 2020/09/09

PANEL NUMBER	ROLL NUMBER	LENGTH (m)	WIDTH (m)	AIR TEMP °C	PANEL CONDITION	CHECKED BY	SUBGRADE CONDITION
563	E0010697-017	125.2	6.8	20	Good	TH	Good
564	E0010697-016	79.6	6.8	20	Good	TH	Good
565	E0010697-016	45.1	6.8	20	Good	TH	Good
566	E0010697-018	128.4	6.8	20	Good	TH	Good
567	E0010698-030	37.7	6.8	20	Good	TH	Good
568	E0010698-030	90.3	6.8	20	Good	TH	Good
569	E0010697-015	124.6	6.8	20	Good	TH	Good
570	E0010698-027	129.8	6.8	20	Good	TH	Good
571	E0010698-033	90.3	6.8	20	Good	TH	Good

TOTAL PAGE AREA 5786.8 m²

QC TECH Thomas Howald
SUPERVISOR Chad Messervey
SUBMISSION DATE 2020/01/05
SHEET NUMBER 62 of 68

GEOMEMBRANE DEPLOYMENT LOG

PROJECT NUMBER CT001401
PROJECT TITLE Victoria Gold Heap Leach Pad Phase 1B
AREA / LAYER Primary
DEPLOYMENT DATE 2020/09/10

PANEL NUMBER	ROLL NUMBER	LENGTH (m)	WIDTH (m)	AIR TEMP °C	PANEL CONDITION	CHECKED BY	SUBGRADE CONDITION
572	E0010698-033	38.5	6.8	20	Good	TH	Good
573	E0010698-031	127.8	6.8	20	Good	TH	Good
574	E0010698-029	55.8	6.8	20	Good	TH	Good
575	E0010698-029	70.9	6.8	20	Good	TH	Good
576	E0010698-032	128	6.8	20	Good	TH	Good
577	E0010698-035	26.2	6.8	20	Good	TH	Good
578	E0010698-035	99.2	6.8	20	Good	TH	Good
579	E0010698-034	130.8	6.8	20	Good	TH	Good
580	E0010698-017	4	6.8	20	Good	TH	Good

TOTAL PAGE AREA 4632.16 m²

QC TECH Thomas Howald
SUPERVISOR Chad Messervey
SUBMISSION DATE 2020/01/05
SHEET NUMBER 63 of 68

GEOMEMBRANE DEPLOYMENT LOG

PROJECT NUMBER CT001401
PROJECT TITLE Victoria Gold Heap Leach Pad Phase 1B
AREA / LAYER Primary
DEPLOYMENT DATE 2020/09/11

PANEL NUMBER	ROLL NUMBER	LENGTH (m)	WIDTH (m)	AIR TEMP °C	PANEL CONDITION	CHECKED BY	SUBGRADE CONDITION
581	E0010698-017	120.7	6.8	20	Good	TH	Good
582	E0010698-018	112.3	6.8	20	Good	TH	Good
583	E0010698-018	15.3	6.8	20	Good	TH	Good
584	E0010698-036	128.1	6.8	20	Good	TH	Good
585	E0010698-002	84.1	6.8	20	Good	TH	Good

TOTAL PAGE AREA 3131.4 m²

QC TECH Thomas Howald
SUPERVISOR Chad Messervey
SUBMISSION DATE 2020/01/05
SHEET NUMBER 64 of 68

GEOMEMBRANE DEPLOYMENT LOG

PROJECT NUMBER CT001401
PROJECT TITLE Victoria Gold Heap Leach Pad Phase 1B
AREA / LAYER Primary
DEPLOYMENT DATE 2020/09/12

PANEL NUMBER	ROLL NUMBER	LENGTH (m)	WIDTH (m)	AIR TEMP °C	PANEL CONDITION	CHECKED BY	SUBGRADE CONDITION
586	E0010698-002	39.2	6.8	20	Good	TH	Good
587	E0010698-008	72.5	6.8	20	Good	TH	Good
588	E0010698-008	52	6.8	20	Good	TH	Good
589	E0010698-001	57.1	6.8	20	Good	TH	Good
590	E0010698-001	69	6.8	20	Good	TH	Good
591	E0010698-019	127.7	6.8	20	Good	TH	Good
592	E0010698-023	16.1	6.8	20	Good	TH	Good
593	E0010698-023	110.9	6.8	20	Good	TH	Good
594	E0010698-022	93.5	6.8	20	Good	TH	Good
595	E0010698-022	30.9	6.8	20	Good	TH	Good
596	E0010698-025	127.1	6.8	20	Good	TH	Good
597	E0010698-026	26.7	6.8	20	Good	TH	Good
598	E0010698-022	7	5.7	20	Good	TH	Good

TOTAL PAGE AREA 5634.26 m²

QC TECH Thomas Howald
SUPERVISOR Chad Messervey
SUBMISSION DATE 2020/01/05
SHEET NUMBER 65 of 68

GEOMEMBRANE DEPLOYMENT LOG

PROJECT NUMBER CT001401
PROJECT TITLE Victoria Gold Heap Leach Pad Phase 1B
AREA / LAYER Primary
DEPLOYMENT DATE 2020/09/13

PANEL NUMBER	ROLL NUMBER	LENGTH (m)	WIDTH (m)	AIR TEMP °C	PANEL CONDITION	CHECKED BY	SUBGRADE CONDITION
600	E0010698-021	78.7	6.8	20	Good	TH	Good
601	E0010698-021	45	6.8	20	Good	TH	Good
602	E0010698-012	121.6	6.8	20	Good	TH	Good
603	E0010698-012	6.6	6.8	20	Good	TH	Good
604	E0010698-007	98.5	6.8	20	Good	TH	Good
605	E0010698-020	58.5	6.8	20	Good	TH	Good
606	E0010698-020	63.8	6.8	20	Good	TH	Good
607	E0010698-003	75.5	6.8	20	Good	TH	Good
608	E0010698-003	45.9	6.8	20	Good	TH	Good
609	E0010698-010	76.5	6.8	20	Good	TH	Good
610	E0010698-010	48.2	6.8	20	Good	TH	Good
611	E0010698-028	62.5	6.8	20	Good	TH	Good
612	E0010698-028	62.4	6.8	20	Good	TH	Good
613	E0010698-006	31.7	6.8	20	Good	TH	Good

TOTAL PAGE AREA 5952.72 m²

QC TECH Thomas Howald
SUPERVISOR Chad Messervey
SUBMISSION DATE 2020/01/05
SHEET NUMBER 66 of 68

GEOMEMBRANE DEPLOYMENT LOG

PROJECT NUMBER CT001401
PROJECT TITLE Victoria Gold Heap Leach Pad Phase 1B
AREA / LAYER Primary
DEPLOYMENT DATE 2020/09/14

PANEL NUMBER	ROLL NUMBER	LENGTH (m)	WIDTH (m)	AIR TEMP °C	PANEL CONDITION	CHECKED BY	SUBGRADE CONDITION
614	E0010698-006	76.5	6.8	20	Good	TH	Good
615	E0010698-006	20.8	6.8	20	Good	TH	Good
616	E0010698-013	37.1	6.8	20	Good	TH	Good
617	E0010698-013	37.3	6.8	20	Good	TH	Good
618	E0010698-013	22.9	6.8	20	Good	TH	Good
619	E0010698-013	6.2	3	20	Good	TH	Good

TOTAL PAGE AREA 1341.88 m²

QC TECH Thomas Howald
SUPERVISOR Chad Messervey
SUBMISSION DATE 2020/01/05
SHEET NUMBER 67 of 68

GEOMEMBRANE DEPLOYMENT LOG

PROJECT NUMBER CT001401
PROJECT TITLE Victoria Gold Heap Leach Pad Phase 1B
AREA / LAYER Primary
DEPLOYMENT DATE 2020/09/15

PANEL NUMBER	ROLL NUMBER	LENGTH (m)	WIDTH (m)	AIR TEMP °C	PANEL CONDITION	CHECKED BY	SUBGRADE CONDITION
599	E0010698-026	98.2	6.8	20	Good	TH	Good

TOTAL PAGE AREA 667.76 m²

QC TECH Thomas Howald
SUPERVISOR Chad Messervey
SUBMISSION DATE 2020/01/05
SHEET NUMBER 68 of 68

GEOMEMBRANE SEAM & TEST LOG

PROJECT NUMBER CT001401 | AREA / LAYER Primary
PROJECT TITLE Victoria Gold Heap Leach Pad Phase 1B | SEAM DATE 2020/06/02

TRIAL SEAMS

#	MACHINE NUMBER	TIME	TECH	AIR TEMP °C	SPEED	TEMP/ SETTING	INSIDE PEEL (PPI)					OUTSIDE PEEL (PPI)					SHEAR (PPI)					CHK'D BY	LINER TO LINER TYPE AND REMARKS
1	WW-54	1020	EP	15	55.0%	454°C	141	153	155	150	159	159	160	141	165	157	171	179	171	169	178	TH	SS
2	WW-19	1115	DT	15	45.0%	454°C	154	146	155	149	156	110	156	151	157	148	180	177	185	193	182	TH	TT
3	WW-54	1415	EP	15	50.0%	454°C	165	155	147	146	154	167	154	143	155	157	175	177	177	174	171	TH	SS

WELD SEAMS

PANEL NUMBERS	SEAM SECTION FROM	SEAM SECTION TO	START TIME	AIR TEMP °C	WELD TECH	MACHINE NUMBER	WELD LENGTH	DESTRUCT NUMBER	QC TEST METH.	QC TEST DATE Y-M-D	AIR PRESSURE TEST (PSI) TIME START	TIME END	PRESSURE START	PRESSURE END	VERIFY PASS	VERIFY QC TECH
1 / 2	EEOS	WEOS	1131	15	DT	WW-19	6.7		AP+PS	6/2/2020	1137	1142	40	40	Pass	TH
3 / 4	EEOS	WEOS	1445	15	DT	WW-19	6.7		AP+PS	6/2/2020	1510	1515	40	40	Pass	TH
2 / 4	NEOS	SEOS	1450	15	EP	WW-54	36.2		AP+PS	6/20/2020	742	747	40	39	Pass	TH
1 / 4	NEOS	3G	1507	15	EP	WW-54	8.0		AP+PS	6/12/2020	910	915	40	38	Pass	TH
1 / 4	3G	2S	1507	15	EP	WW-54	23.4		AP+PS	6/12/2020	905	910	40	40	Pass	TH
1 / 4	2S	SEOS	1507	15	EP	WW-54	8.0		AP+PS	6/12/2020	905	910	40	40	Pass	TH
1 / 3	NEOS	2N	1526	15	EP	WW-54	18.2		AP+PS	6/12/2020	900	905	40	40	Pass	TH
1 / 3	2N	4H	1526	15	EP	WW-54	42.5		AP+PS	6/12/2020	929	934	40	38	Pass	TH
1 / 3	4H	SEOS	1526	15	EP	WW-54	26.6		AP+PS	6/20/2020	827	832	40	40	Pass	TH
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PAGE TOTAL							176.3									

TEST METHOD
AL - AIR LANCE
AP - AIR PRESSURE
PS - POINT STRESS
ST - SPARK TEST
VB - EXTRUDED & VAC BOX

REMARKS:

QC TECH: Thomas Howald
SUPERVISOR: Chad Messervey
SUBMISSION DATE: 2020/01/05
SHEET NUMBER: 1 of 113

GEOMEMBRANE SEAM & TEST LOG

PROJECT NUMBER CT001401 | AREA / LAYER Primary
PROJECT TITLE Victoria Gold Heap Leach Pad Phase 1B | SEAM DATE 2020/06/04

TRIAL SEAMS

#	MACHINE NUMBER	TIME	TECH	AIR TEMP °C	SPEED	TEMP/ SETTING	INSIDE PEEL (PPI)					OUTSIDE PEEL (PPI)					SHEAR (PPI)					CHK'D BY	LINER TO LINER TYPE AND REMARKS
1	WW-54	845	EP	5	45.0%	454°C	146	159	159	163	151	160	163	154	159	156	184	181	184	178	158	TH	SS
2	WW-19	900	DT	5	40.0%	454°C	148	131	173	149	113	153	172	162	163	109	185	187	196	198	200	TH	TT
3	WW-54	1245	EP	15	45.0%	454°C	162	164	157	157	160	155	159	150	158	155	169	172	173	174	171	TH	SS
4	WW-19	1250	DT	15	40.0%	454°C	157	143	159	130	157	161	160	152	153	142	180	174	179	187	186	TH	TT

WELD SEAMS

PANEL NUMBERS	SEAM SECTION FROM	SEAM SECTION TO	START TIME	AIR TEMP °C	WELD TECH	MACHINE NUMBER	WELD LENGTH	DESTRUCT NUMBER	QC TEST METH.	QC TEST DATE Y-M-D	AIR PRESSURE TEST (PSI) TIME START	TIME END	PRESSURE START	PRESSURE END	VERIFY PASS	VERIFY QC TECH
4 / 6	NEOS	SEOS	1022	15	EP	WW-54	70.2		AP+PS	6/11/2020	928	933	40	40	Pass	TH
5 / 6	EEOS	WEOS	1030	15	DT	WW-19	9.9		AP+PS	6/12/2020	934	939	40	37	Pass	TH
3 / 6	NEOS	SEOS	1100	15	EP	WW-54	38.5		AP+PS	6/12/2020	900	905	40	40	Pass	TH
3 / 5	NEOS	SEOS	1122	15	EP	WW-54	50.1	DS-2	AP+PS	6/12/2020	930	935	40	40	Pass	TH
7 / 8	EEOS	WEOS	1256	15	DT	WW-19	6.8		AP+PS	6/2/2020	1338	1343	40	39	Pass	TH
8 / 9	EEOS	WEOS	1329	15	DT	WW-19	9.9		AP+PS	6/11/2020	1148	1153	40	39	Pass	TH
6 / 9	NEOS	SEOS	1336	15	EP	WW-54	10.2		AP+PS	6/11/2020	941	946	40	39	Pass	TH
6 / 8	NEOS	SEOS	1344	15	EP	WW-54	128.0		AP+PS	6/11/2020	1148	1153	40	39	Pass	TH
5 / 8	NEOS	SEOS	1440	15	EP	WW-54	32.5		AP+PS	6/12/2020	952	957	40	40	Pass	TH
5 / 7	NEOS	SEOS	1500	15	EP	WW-54	11.5	DS-3	AP+PS	6/12/2020	1138	1143	40	40	Pass	TH
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PAGE TOTAL							367.6									

TEST METHOD
AL - AIR LANCE
AP - AIR PRESSURE
PS - POINT STRESS
ST - SPARK TEST
VB - EXTRUDED & VAC BOX

REMARKS:

QC TECH Thomas Howald
SUPERVISOR Chad Messervey
SUBMISSION DATE 2020/01/05
SHEET NUMBER 2 of 113

GEOMEMBRANE SEAM & TEST LOG

PROJECT NUMBER CT001401 | AREA / LAYER Primary
PROJECT TITLE Victoria Gold Heap Leach Pad Phase 1B | SEAM DATE 2020/06/05

TRIAL SEAMS

#	MACHINE NUMBER	TIME	TECH	AIR TEMP °C	SPEED	TEMP/ SETTING	INSIDE PEEL (PPI)					OUTSIDE PEEL (PPI)					SHEAR (PPI)					CHK'D BY	LINER TO LINER TYPE AND REMARKS
1	WW-19	745	DT	15	45.0%	454°C	140	149	156	141	157	155	148	158	149	155	198	187	196	179	177	TH	TT
2	WW-19	750	DT	15	50.0%	454°C	154	164	157	152	156	155	161	164	163	158	173	170	171	169	166	TH	SS
3	WW-54	750	EP	15	50.0%	454°C	157	157	161	158	158	164	162	159	163	161	178	176	177	177	177	TH	SS
4	WW-54	1650	EP	20	50.0%	454°C	146	140	144	148	144	150	153	151	153	150	171	174	179	173	172	TH	SS
5	WW-19	1700	DT	20	45.0%	454°C	158	155	156	157	160	157	158	157	153	157	173	171	177	177	176	TH	TT
6	WW-19	1730	DT	20	50.0%	454°C	115	107	127	116	128	124	129	128	118	128	168	163	170	161	179	TH	SS

WELD SEAMS

PANEL NUMBERS	SEAM SECTION FROM	SEAM SECTION TO	START TIME	AIR TEMP °C	WELD TECH	MACHINE NUMBER	WELD LENGTH	DESTRUCT NUMBER	QC TEST METH.	QC TEST DATE Y-M-D	AIR PRESSURE TEST (PSI) TIME START	TIME END	PRESSURE START	PRESSURE END	VERIFY PASS	VERIFY QC TECH
10 / 11	EEOS	WEOS	820	20	DT	WW-19	9.9		AP+PS	6/11/2020	1136	1341	40	38	Pass	TH
9 / 11	NEOS	SEOS	850	15	EP	WW-54	10.2		AP+PS	6/11/2020	929	934	40	40	Pass	TH
8 / 11	NEOS	SEOS	857	15	EP	WW-54	22.5		AP+PS	6/11/2020	1145	1150	40	40	Pass	TH
8 / 10	NEOS	SEOS	907	15	EP	WW-54	105.0	DS-4	AP+PS	6/11/2020	1145	1150	40	40	Pass	TH
12 / 13	EEOS	4P	908	20	DT	WW-19	3.0	DS-5	AP+PS	6/11/2020	1105	1110	40	39	Pass	TH
12 / 13	4P	WEOS	908	20	DT	WW-19	3.7	DS-5	AP+PS	6/11/2020	1105	1110	40	39	Pass	TH
11 / 13	NEOS	SEOS	925	15	DT	WW-19	32.8		AP+PS	6/20/2020	751	756	40	38	Pass	TH
10 / 13	NEOS	3P	936	15	DT	WW-19	6.0		AP+PS	6/11/2020	1134	1139	40	37	Pass	TH
10 / 13	3P	SEOS	958	15	DT	WW-19	8.0		AP+PS	6/11/2020	1125	1130	40	38	Pass	TH
10 / 12	NEOS	SEOS	1000	15	DT	WW-19	90.0		AP+PS	6/11/2020	1105	1110	40	38	Pass	TH
7 / 10	NEOS	SEOS	1000	15	EP	WW-54	11.5		AP+PS	6/12/2020	1136	1141	40	40	Pass	TH
14 / 15	EEOS	WEOS	1752	20	DT	WW-19	9.9		AP+PS	6/11/2020	1001	1006	40	37	Pass	TH
13 / 15	NEOS	SEOS	1755	15	EP	WW-54	46.8		AP+PS	6/11/2020	934	939	40	39	Pass	TH
12 / 15	NEOS	SEOS	1818	15	EP	WW-54	7.6		AP+PS	6/11/2020	1100	1105	40	40	Pass	TH
12 / 14	NEOS	3A	1822	15	EP	WW-54	13.4	DS-6	AP+PS	6/11/2020	1100	1105	40	40	Pass	TH
12 / 14	3A	SEOS	1822	15	EP	WW-54	62.6	DS-6	AP+PS	6/12/2020	1053	1058	40	38	Pass	TH
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						PAGE TOTAL	442.9									

TEST METHOD
AL - AIR LANCE | ST - SPARK TEST
AP - AIR PRESSURE | VB - EXTRUDED & VAC BOX
PS - POINT STRESS

REMARKS:

QC TECH: Thomas Howald
SUPERVISOR: Chad Messervey
SUBMISSION DATE: 2020/01/05
SHEET NUMBER: 3 of 113

GEOMEMBRANE SEAM & TEST LOG

PROJECT NUMBER CT001401 | AREA / LAYER Primary
PROJECT TITLE Victoria Gold Heap Leach Pad Phase 1B | SEAM DATE 2020/06/06

TRIAL SEAMS

#	MACHINE NUMBER	TIME	TECH	AIR TEMP °C	SPEED	TEMP/ SETTING	INSIDE PEEL (PPI)					OUTSIDE PEEL (PPI)					SHEAR (PPI)					CHK'D BY	LINER TO LINER TYPE AND REMARKS
1	WW-19	815	DT	15	40.0%	454°C	144	144	156	175	175	145	151	165	173	158	197	192	199	198	195	TH	TT
2	WW-19	840	DT	15	50.0%	454°C	130	123	131	131	135	141	143	143	142	137	165	166	174	170	167	TH	SS
3	WW-22	930	EP	15	60.0%	454°C	120	117	130	132	128	146	145	146	151	151	153	163	168	179	173	TH	SS
4	WW-22	1310	EP	15	60.0%	454°C	149	144	148	147	145	148	147	148	145	149	167	168	169	174	173	TH	TT
5	WW-19	1315	DT	15	40.0%	454°C	147	142	158	142	139	142	149	161	145	144	182	183	178	178	199	TH	TT
6	WW-22	1315	EP	15	40.0%	454°C	154	154	155	134	152	161	137	168	147	146	174	184	180	178	174	TH	SS

WELD SEAMS

PANEL NUMBERS	SEAM SECTION FROM	SEAM SECTION TO	START TIME	AIR TEMP °C	WELD TECH	MACHINE NUMBER	WELD LENGTH	DESTRUCT NUMBER	QC TEST METH.	QC TEST DATE Y-M-D	AIR PRESSURE TEST (PSI) TIME START	TIME END	PRESSURE START	PRESSURE END	VERIFY PASS	VERIFY QC TECH
16 / 17	EEOS	WEOS	929	15	DT	WW-19	9.9		AP+PS	6/11/2020	1003	1008	40	39	Pass	TH
15 / 17	NEOS	SEOS	941	15	EP	WW-22	57.1		AP+PS	6/11/2020	934	939	40	40	Pass	TH
14 / 17	NEOS	SEOS	958	15	EP	WW-22	3.5		AP+PS	6/12/2020	1001	1006	40	37	Pass	TH
14 / 16	NEOS	3B	1000	15	EP	WW-22	28.7	DS-7	AP+PS	6/12/2020	1003	1008	40	40	Pass	TH
14 / 16	3B	SEOS	1010	15	EP	WW-22	37.0	DS-7	AP+PS	6/12/2020	1133	1138	40	39	Pass	TH
21 / 23	NEOS	SEOS	1235	15	EP	WW-22	32.0		AP+PS	6/11/2020	936	941	40	40	Pass	TH
21 / 22	NEOS	SEOS	1250	15	EP	WW-22	16.4		AP+PS	6/11/2020	1012	1017	40	40	Pass	TH
20 / 22	NEOS	SEOS	1251	15	EP	WW-22	57.2		AP+PS	6/11/2020	1015	1020	40	38	Pass	TH
18 / 19	EEOS	WEOS	1348	15	DT	WW-19	9.9		AP+PS	6/11/2020	1019	1024	40	39	Pass	TH
17 / 19	NEOS	SEOS	1405	15	EP	WW-22	55.9		AP+PS	6/11/2020	935	940	40	39	Pass	TH
23 / 24	NEOS	SEOS	1406	20	DT	WW-19	3.0		AP+PS	6/12/2020	1014	1019	40	39	Pass	TH
23 / 25	NEOS	SEOS	1410	20	DT	WW-19	26.3		AP+PS	6/20/2020	800	805	40	37	Pass	TH
22 / 25	NEOS	SEOS	1420	20	DT	WW-19	63.8		AP+PS	6/12/2020	1030	1035	40	38	Pass	TH
17 / 18	NEOS	SEOS	1424	15	EP	WW-22	3.6		AP+PS	6/11/2020	1038	1043	40	40	Pass	TH
16 / 18	NEOS	SEOS	1426	15	EP	WW-22	59.9	DS-8	AP+PS	6/12/2020	1038	1043	40	40	Pass	TH
25 / 26	NEOS	SEOS	1602	20	EP	WW-22	86.2		AP+PS	6/12/2020	1038	1043	40	40	Pass	TH
20 / 21	EEOS	WEOS	1639	15	DT	WW-19	9.9		AP+PS	6/12/2020	1015	1020	40	39	Pass	TH
19 / 21	NEOS	SEOS	1655	15	EP	WW-22	48.5		AP+PS	6/11/2020	936	941	40	40	Pass	TH
19 / 20	NEOS	SEOS	1711	15	EP	WW-22	9.2		AP+PS	6/11/2020	1019	1024	40	38	Pass	TH
18 / 20	NEOS	SEOS	1714	15	EP	WW-22	55.0	DS-9	AP+PS	6/11/2020	1019	1024	40	40	Pass	TH
						PAGE TOTAL	673.0									

TEST METHOD
AL - AIR LANCE | ST - SPARK TEST
AP - AIR PRESSURE | VB - EXTRUDED & VAC BOX
PS - POINT STRESS

REMARKS:

QC TECH: Thomas Howald
SUPERVISOR: Chad Messervey
SUBMISSION DATE: 2020/01/05
SHEET NUMBER: 4 of 113

GEOMEMBRANE SEAM & TEST LOG

PROJECT NUMBER CT001401 | AREA / LAYER Primary
PROJECT TITLE Victoria Gold Heap Leach Pad Phase 1B | SEAM DATE 2020/06/06

TRIAL SEAMS

#	MACHINE NUMBER	TIME	TECH	AIR TEMP °C	SPEED	TEMP/ SETTING	INSIDE PEEL (PPI)					OUTSIDE PEEL (PPI)					SHEAR (PPI)					CHK'D BY	LINER TO LINER TYPE AND REMARKS
7	WW-19	1320	DT	15	50.0%	454°C	149	155	156	154	153	158	154	164	159	153	179	166	170	171	169	TH	SS

WELD SEAMS

PANEL NUMBERS	SEAM SECTION FROM	SEAM SECTION TO	START TIME	AIR TEMP °C	WELD TECH	MACHINE NUMBER	WELD LENGTH	DESTRUCT NUMBER	QC TEST METH.	QC TEST DATE Y-M-D	AIR PRESSURE TEST (PSI) TIME START	TIME END	PRESSURE START	PRESSURE END	VERIFY PASS	VERIFY QC TECH
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TEST METHOD

AL - AIR LANCE	ST - SPARK TEST
AP - AIR PRESSURE	VB - EXTRUDED & VAC BOX
PS - POINT STRESS	

REMARKS:

QC TECH Thomas Howald
SUPERVISOR Chad Messervey
SUBMISSION DATE 2020/01/05
SHEET NUMBER 5 of 113

GEOMEMBRANE SEAM & TEST LOG

PROJECT NUMBER CT001401 | AREA / LAYER Primary
PROJECT TITLE Victoria Gold Heap Leach Pad Phase 1B | SEAM DATE 2020/06/07

TRIAL SEAMS

#	MACHINE NUMBER	TIME	TECH	AIR TEMP °C	SPEED	TEMP/ SETTING	INSIDE PEEL (PPI)					OUTSIDE PEEL (PPI)					SHEAR (PPI)					CHK'D BY	LINER TO LINER TYPE AND REMARKS
1	WW-22	900	EP	10	55.0%	454°C	149	137	138	139	146	156	149	153	155	158	170	172	173	170	174	TH	SS
2	WW-19	920	DT	10	40.0%	454°C	163	165	153	157	152	144	164	155	145	150	172	175	169	180	175	TH	TT
3	WW-19	1330	DT	15	50.0%	454°C	141	138	142	132	138	156	145	152	154	158	162	164	160	164	170	TH	TT
4	WW-19	1335	DT	15	40.0%	454°C	153	161	157	148	148	153	157	143	152	136	180	181	182	177	182	TH	TT
5	WW-22	1337	EP	15	55.0%	454°C	149	125	147	145	143	149	150	150	152	146	172	173	174	173	166	TH	TT

WELD SEAMS

PANEL NUMBERS	SEAM SECTION FROM	SEAM SECTION TO	START TIME	AIR TEMP °C	WELD TECH	MACHINE NUMBER	WELD LENGTH	DESTRUCT NUMBER	QC TEST METH.	QC TEST DATE Y-M-D	AIR PRESSURE TEST (PSI) TIME START	TIME END	PRESSURE START	PRESSURE END	VERIFY PASS	VERIFY QC TECH
22 / 23	EEOS	WEOS	1220	15	DT	WW-19	9.9		AP+PS	6/12/2020	1023	1028	40	40	Pass	TH
24 / 25	EEOS	WEOS	1300	15	DT	WW-19	9.9		AP+PS	6/12/2020	1014	1019	40	40	Pass	TH
27 / 28	EEOS	WEOS	1700	15	DT	WW-19	9.9		AP+PS	6/12/2020	1121	1126	40	40	Pass	TH
26 / 28	NEOS	SEOS	1710	20	EP	WW-22	35.4		AP+PS	6/12/2020	1040	1045	40	39	Pass	TH
26 / 27	NEOS	SEOS	1736	20	EP	WW-22	42.1	DS-13	AP+PS	6/12/2020	1125	1130	40	40	Pass	TH
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PAGE TOTAL							107.2									

TEST METHOD
AL - AIR LANCE
AP - AIR PRESSURE
PS - POINT STRESS
ST - SPARK TEST
VB - EXTRUDED & VAC BOX

REMARKS:

QC TECH Thomas Howald
SUPERVISOR Chad Messervey
SUBMISSION DATE 2020/01/05
SHEET NUMBER 6 of 113

GEOMEMBRANE SEAM & TEST LOG

PROJECT NUMBER CT001401 | AREA / LAYER Primary
PROJECT TITLE Victoria Gold Heap Leach Pad Phase 1B | SEAM DATE 2020/06/10

TRIAL SEAMS

#	MACHINE NUMBER	TIME	TECH	AIR TEMP °C	SPEED	TEMP/ SETTING	INSIDE PEEL (PPI)					OUTSIDE PEEL (PPI)					SHEAR (PPI)					CHK'D BY	LINER TO LINER TYPE AND REMARKS
1	WW-22	730	EP	15	55.0%	454°C	150	160	155	155	146	141	132	144	133	155	177	170	179	174	179	TH	TT
2	WW-26	805	DT	15	50.0%	454°C	147	146	145	148	150	150	148	150	141	151	177	171	180	177	166	TH	TT
3	WW-26	815	DT	15	38.0%	454°C	144	149	146	120	166	156	152	151	152	176	162	161	176	185	188	TH	TT
4	WW-22	1125	EP	15	55.0%	454°C	151	133	141	143	141	141	140	137	137	137	157	152	160	159	158	TH	TT

WELD SEAMS

PANEL NUMBERS	SEAM SECTION FROM	SEAM SECTION TO	START TIME	AIR TEMP °C	WELD TECH	MACHINE NUMBER	WELD LENGTH	DESTRUCT NUMBER	QC TEST METH.	QC TEST DATE Y-M-D	AIR PRESSURE TEST (PSI) TIME START	TIME END	PRESSURE START	PRESSURE END	VERIFY PASS	VERIFY QC TECH
28 / 29	NEOS	SEOS	830	15	EP	WW-22	35.0		AP+PS	6/12/2020	1142	1147	40	40	Pass	TH
27 / 29	NEOS	SEOS	845	15	EP	WW-22	35.3		AP+PS	6/20/2020	816	821	40	40	Pass	TH
29 / 30	NEOS	SEOS	950	15	EP	WW-22	56.8	DS-12	AP+PS	6/12/2020	1043	1048	40	39	Pass	TH
30 / 31	NEOS	SEOS	1009	15	DT	WW-26	47.6		AP+PS	6/12/2020	1045	1050	40	40	Pass	TH
32 / 34	EEOS	WEOS	1104	15	DT	WW-26	9.9	DS-10	AP+PS	6/12/2020	1107	1112	40	40	Pass	TH
31 / 32	NEOS	SEOS	1111	15	DT	WW-26	17.4		AP+PS	6/12/2020	1046	1051	40	39	Pass	TH
31 / 34	NEOS	SEOS	1120	15	DT	WW-26	19.9	DS-11	AP+PS	6/20/2020	810	815	40	40	Pass	TH
32 / 33	NEOS	SEOS	1135	15	DT	WW-26	16.8		AP+PS	6/12/2020	1054	1059	40	40	Pass	TH
33 / 34	NEOS	SEOS	1141	15	DT	WW-26	12.3		AP+PS	6/12/2020	1107	1112	40	40	Pass	TH
33 / 35	NEOS	SEOS	1146	15	DT	WW-26	17.6		AP+PS	6/12/2020	1056	1101	40	39	Pass	TH
35 / 36	NEOS	SEOS	1157	15	EP	WW-22	6.6		AP+PS	6/12/2020	1058	1103	40	40	Pass	TH
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PAGE TOTAL							275.2									

TEST METHOD
AL - AIR LANCE
AP - AIR PRESSURE
PS - POINT STRESS
ST - SPARK TEST
VB - EXTRUDED & VAC BOX

REMARKS:

QC TECH Thomas Howald
SUPERVISOR Chad Messervey
SUBMISSION DATE 2020/01/05
SHEET NUMBER 7 of 113

GEOMEMBRANE SEAM & TEST LOG

PROJECT NUMBER CT001401 | AREA / LAYER Primary
PROJECT TITLE Victoria Gold Heap Leach Pad Phase 1B | SEAM DATE 2020/06/14

TRIAL SEAMS

#	MACHINE NUMBER	TIME	TECH	AIR TEMP °C	SPEED	TEMP/ SETTING	INSIDE PEEL (PPI)					OUTSIDE PEEL (PPI)					SHEAR (PPI)					CHK'D BY	LINER TO LINER TYPE AND REMARKS
1	WW-26	1230	DT	20	50.0%	454°C	156	147	148	149	151	151	152	152	149	150	159	156	162	161	161	TH	SS
2	WW-26	1230	DT	20	38.0%	454°C	158	157	149	141	144	160	147	152	164	155	190	178	187	182	194	TH	TT
3	WW-22	1230	EP	20	50.0%	454°C	156	146	159	150	149	139	134	135	127	143	164	158	171	168	166	TH	TS
4	WW-22	1230	EP	20	55.0%	454°C	144	145	148	145	146	150	147	145	144	138	164	161	167	164	160	TH	SS
5	WW-22	1600	EP	20	55.0%	454°C	137	138	143	138	135	135	135	140	133	139	159	151	157	136	143	TH	SS
6	WW-22	1605	EP	20	40.0%	454°C	146	142	145	140	137	142	144	149	131	141	166	172	177	167	173	TH	TT

WELD SEAMS

PANEL NUMBERS	SEAM SECTION FROM	SEAM SECTION TO	START TIME	AIR TEMP °C	WELD TECH	MACHINE NUMBER	WELD LENGTH	DESTRUCT NUMBER	QC TEST METH.	QC TEST DATE Y-M-D	AIR PRESSURE TEST (PSI) TIME START	TIME END	PRESSURE START	PRESSURE END	VERIFY PASS	VERIFY QC TECH
2 / 38	NEOS	SEOS	1231	15	DT	WW-26	18.6		AP+PS	6/25/2020	1022	1027	40	40	Pass	TH
37 / 38	EEOS	WEOS	1440	15	DT	WW-26	6.8		AP+PS	6/25/2020	1046	1051	40	40	Pass	TH
38 / 39	NEOS	SEOS	1505	15	EP	WW-22	21.6		AP+PS	6/25/2020	845	850	40	40	Pass	TH
2 / 39	NEOS	SEOS	1515	15	DT	WW-26	21.0		AP+PS	6/25/2020	846	851	40	36	Pass	TH
1 / 38	NEOS	SEOS	1533	15	DT	WW-26	54.7		AP+PS	6/25/2020	1022	1027	40	40	Pass	TH
1 / 37	NEOS	6S	1557	15	DT	WW-26	20.7	DS-14 & 14B	AP+PS	6/25/2020	1046	1051	40	40	Pass	TH
1 / 37	6S	6T	1607	15	DT	WW-26	35.0	DS-14 & 14B	AP+PS	6/25/2020	1051	1056	40	39	Pass	TH
1 / 37	6T	7A	1625	15	DT	WW-26	11.8	DS-14 & 14B	AP+PS	6/26/2020	920	925	40	40	Pass	TH
40 / 41	EEOS	WEOS	1630	15	EP	WW-22	6.8		AP+PS	6/25/2020	1102	1107	40	37	Pass	TH
41 / 42	EEOS	WEOS	1725	15	DT	WW-26	6.8		AP+PS	6/25/2020	850	855	40	40	Pass	TH
38 / 42	NEOS	SEOS	1738	15	EP	WW-22	21.2		AP+PS	6/25/2020	850	855	40	40	Pass	TH
38 / 41	NEOS	SEOS	1746	15	EP	WW-22	77.6		AP+PS	6/25/2020	850	855	40	40	Pass	TH
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PAGE TOTAL							302.6									

TEST METHOD
AL - AIR LANCE | ST - SPARK TEST
AP - AIR PRESSURE | VB - EXTRUDED & VAC BOX
PS - POINT STRESS

REMARKS:

QC TECH: Thomas Howald
SUPERVISOR: Chad Messervey
SUBMISSION DATE: 2020/01/05
SHEET NUMBER: 8 of 113

GEOMEMBRANE SEAM & TEST LOG

PROJECT NUMBER CT001401 | AREA / LAYER Primary
PROJECT TITLE Victoria Gold Heap Leach Pad Phase 1B | SEAM DATE 2020/06/14

TRIAL SEAMS

#	MACHINE NUMBER	TIME	TECH	AIR TEMP °C	SPEED	TEMP/ SETTING	INSIDE PEEL (PPI)					OUTSIDE PEEL (PPI)					SHEAR (PPI)					CHK'D BY	LINER TO LINER TYPE AND REMARKS
7	WW-26	1635	DT	20	38.0%	454°C	130	150	146	138	169	152	161	160	154	163	173	170	172	175	176	TH	TT
8	WW-26	1639	DT	20	53.0%	454°C	128	141	139	135	142	143	145	147	147	143	154	152	156	152	154	TH	SS

WELD SEAMS

PANEL NUMBERS	SEAM SECTION FROM	SEAM SECTION TO	START TIME	AIR TEMP °C	WELD TECH	MACHINE NUMBER	WELD LENGTH	DESTRUCT NUMBER	QC TEST METH.	QC TEST DATE Y-M-D	AIR PRESSURE TEST (PSI) TIME START	TIME END	PRESSURE START	PRESSURE END	VERIFY PASS	VERIFY QC TECH
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TEST METHOD

AL - AIR LANCE	ST - SPARK TEST
AP - AIR PRESSURE	VB - EXTRUDED & VAC BOX
PS - POINT STRESS	

REMARKS:

QC TECH: Thomas Howald
SUPERVISOR: Chad Messervey
SUBMISSION DATE: 2020/01/05
SHEET NUMBER: 9 of 113

GEOMEMBRANE SEAM & TEST LOG

PROJECT NUMBER CT001401 | AREA / LAYER Primary
PROJECT TITLE Victoria Gold Heap Leach Pad Phase 1B | SEAM DATE 2020/06/15

TRIAL SEAMS

#	MACHINE NUMBER	TIME	TECH	AIR TEMP °C	SPEED	TEMP/ SETTING	INSIDE PEEL (PPI)					OUTSIDE PEEL (PPI)					SHEAR (PPI)					CHK'D BY	LINER TO LINER TYPE AND REMARKS
1	WW-22	1115	EP	15	55.0%	454°C	126	132	129	150	149	154	152	154	158	149	165	165	164	170	161	TH	SS
2	WW-26	1120	DT	15	35.0%	454°C	178	158	150	152	160	149	150	145	157	148	183	172	189	182	190	TH	TT

WELD SEAMS

PANEL NUMBERS	SEAM SECTION FROM	SEAM SECTION TO	START TIME	AIR TEMP °C	WELD TECH	MACHINE NUMBER	WELD LENGTH	DESTRUCT NUMBER	QC TEST METH.	QC TEST DATE Y-M-D	AIR PRESSURE TEST (PSI) TIME START	TIME END	PRESSURE START	PRESSURE END	VERIFY PASS	VERIFY QC TECH
43 / 44	EEOS	WEOS	1213	15	DT	WW-26	6.8	DS-23	AP+PS	6/25/2020	1016	1021	40	40	Pass	TH
42 / 44	NEOS	SEOS	1241	15	EP	WW-22	22.6		AP+PS	6/25/2020	853	858	40	40	Pass	TH
41 / 44	NEOS	SEOS	1250	15	EP	WW-22	51.3	DS-24	AP+PS	6/25/2020	853	858	40	40	Pass	TH
45 / 46	EEOS	WEOS	1257	15	DT	WW-26	6.8	DS-20	AP+PS	6/25/2020	1110	1115	40	38	Pass	TH
41 / 43	NEOS	6Q	1307	15	EP	WW-22	77.2		AP+PS	6/25/2020	1018	1023	40	40	Pass	TH
41 / 43	6Q	SEOS	1335	15	EP	WW-22	77.2		AP+PS	6/26/2020	905	910	40	40	Pass	TH
40 / 43	NEOS	SEOS	1338	15	EP	WW-22	25.1	DS-16	AP+PS	6/25/2020	1105	1110	40	37	Pass	TH
46 / 47	EEOS	WEOS	1345	15	DT	WW-26	6.8		AP+PS	6/25/2020	914	919	40	40	Pass	TH
43 / 45	SEOS	NEOS	1355	20	EP	WW-22	50.8		AP+PS	6/25/2020	1110	1115	40	39	Pass	TH
43 / 46	SEOS	NEOS	1414	20	EP	WW-22	56.7		AP+PS	6/25/2020	1016	1021	40	40	Pass	TH
44 / 46	SEOS	NEOS	1434	20	EP	WW-22	67.9		AP+PS	6/25/2020	903	908	40	40	Pass	TH
44 / 47	SEOS	NEOS	1457	20	EP	WW-22	10.9		AP+PS	6/25/2020	903	908	40	40	Pass	TH
37 / 41	NEOS	SEOS	1500	15	EP	WW-22	48.2		AP+PS	6/25/2020	1048	1053	40	40	Pass	TH
37 / 40	NEOS	SEOS	1514	15	EP	WW-22	25.1	DS-15	AP+PS	6/25/2020	1102	1107	40	40	Pass	TH
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PAGE TOTAL 533.4

TEST METHOD
AL - AIR LANCE | ST - SPARK TEST
AP - AIR PRESSURE | VB - EXTRUDED & VAC BOX
PS - POINT STRESS

REMARKS:

QC TECH Thomas Howald
SUPERVISOR Chad Messervey
SUBMISSION DATE 2020/01/05
SHEET NUMBER 10 of 113

GEOMEMBRANE SEAM & TEST LOG

PROJECT NUMBER CT001401 | AREA / LAYER Primary
PROJECT TITLE Victoria Gold Heap Leach Pad Phase 1B | SEAM DATE 2020/06/16

TRIAL SEAMS

#	MACHINE NUMBER	TIME	TECH	AIR TEMP °C	SPEED	TEMP/ SETTING	INSIDE PEEL (PPI)					OUTSIDE PEEL (PPI)					SHEAR (PPI)					CHK'D BY	LINER TO LINER TYPE AND REMARKS
1	WW-22	835	EP	15	55.0%	454°C	147	146	150	143	147	153	137	146	136	147	170	168	178	179	179	TH	SS
2	WW-26	845	DT	15	35.0%	454°C	142	152	152	163	164	155	158	146	163	158	183	178	175	178	185	TH	TT
3	WW-26	900	DT	15	50.0%	454°C	158	153	157	147	154	162	147	160	159	155	167	163	171	170	165	TH	SS

WELD SEAMS

PANEL NUMBERS	SEAM SECTION FROM	SEAM SECTION TO	START TIME	AIR TEMP °C	WELD TECH	MACHINE NUMBER	WELD LENGTH	DESTRUCT NUMBER	QC TEST METH.	QC TEST DATE Y-M-D	AIR PRESSURE TEST (PSI) TIME START	TIME END	PRESSURE START	PRESSURE END	VERIFY PASS	VERIFY QC TECH
48 / 49	EEOS	WEOS	953	15	DT	WW-26	6.8		AP+PS	6/25/2020	1001	1006	40	40	Pass	TH
47 / 49	NEOS	SEOS	1000	15	EP	WW-22	14.9		AP+PS	6/25/2020	905	910	40	40	Pass	TH
46 / 48	NEOS	SEOS	1002	15	DT	WW-26	63.2		AP+PS	6/25/2020	1004	1009	40	40	Pass	TH
46 / 49	NEOS	SEOS	1006	15	EP	WW-22	58.5		AP+PS	6/25/2020	916	921	40	38	Pass	TH
45 / 48	NEOS	SEOS	1027	15	EP	WW-22	50.8	DS-17	AP+PS	6/25/2020	1111	1116	40	39	Pass	TH
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PAGE TOTAL							194.2									

TEST METHOD
AL - AIR LANCE
AP - AIR PRESSURE
PS - POINT STRESS
ST - SPARK TEST
VB - EXTRUDED & VAC BOX

REMARKS:

QC TECH Thomas Howald
SUPERVISOR Chad Messervey
SUBMISSION DATE 2020/01/05
SHEET NUMBER 11 of 113

GEOMEMBRANE SEAM & TEST LOG

PROJECT NUMBER CT001401 | AREA / LAYER Primary
PROJECT TITLE Victoria Gold Heap Leach Pad Phase 1B | SEAM DATE 2020/06/18

TRIAL SEAMS

#	MACHINE NUMBER	TIME	TECH	AIR TEMP °C	SPEED	TEMP/ SETTING	INSIDE PEEL (PPI)					OUTSIDE PEEL (PPI)					SHEAR (PPI)					CHK'D BY	LINER TO LINER TYPE AND REMARKS
1	WW-22	745	EP	15	55.0%	454°C	132	125	122	150	132	159	152	155	157	155	167	161	167	161	166	TH	SS
2	WW-26	750	DT	15	35.0%	454°C	156	162	153	169	162	170	161	164	150	160	178	169	182	185	174	TH	TT
3	WW-20	955	DT	15	55.0%	454°C	123	120	124	122	126	133	129	147	134	129	160	153	156	155	152	TH	SS
4	WW-26	1200	DT	15	35.0%	454°C	156	147	155	149	152	145	147	159	147	148	166	173	170	166	166	TH	TT
5	WW-22	1200	EP	15	55.0%	454°C	134	140	138	139	138	138	135	135	132	135	153	147	152	149	151	TH	SS
6	WW-26	1645	DT	15	50.0%	454°C	144	146	143	142	138	142	148	155	143	146	168	166	173	168	167	TH	SS

WELD SEAMS

PANEL NUMBERS	SEAM SECTION FROM	SEAM SECTION TO	START TIME	AIR TEMP °C	WELD TECH	MACHINE NUMBER	WELD LENGTH	DESTRUCT NUMBER	QC TEST METH.	QC TEST DATE Y-M-D	AIR PRESSURE TEST (PSI) TIME START	TIME END	PRESSURE START	PRESSURE END	VERIFY PASS	VERIFY QC TECH
50 / 51	EEOS	WEOS	914	15	DT	WW-26	6.8		AP+PS	6/25/2020	1113	1118	40	40	Pass	TH
49 / 52	NEOS	SEOS	936	15	EP	WW-22	11.5		AP+PS	6/25/2020	909	914	40	40	Pass	TH
49 / 51	NEOS	SEOS	940	15	EP	WW-22	62.9		AP+PS	6/25/2020	909	914	40	40	Pass	TH
51 / 52	EEOS	WEOS	943	15	DT	WW-26	6.8		AP+PS	6/25/2020	941	946	40	39	Pass	TH
48 / 51	NEOS	SEOS	1002	15	EP	WW-22	61.3	DS-22	AP+PS	6/25/2020	1001	1006	40	39	Pass	TH
48 / 50	NEOS	SEOS	1026	15	EP	WW-22	52.7		AP+PS	6/25/2020	1113	1118	40	39	Pass	TH
53 / 54	EEOS	WEOS	1027	15	DT	WW-26	6.8		AP+PS	6/25/2020	957	1002	40	40	Pass	TH
52 / 54	NEOS	SEOS	1039	15	DT	WW-20	12.0		AP+PS	6/25/2020	927	932	40	40	Pass	TH
51 / 54	NEOS	7C	1042	15	DT	WW-20	46.4		AP+PS	6/26/2020	1000	1005	40	40	Pass	TH
51 / 54	7C	SEOS	1120	15	EA	WW-22	18.6		AP+PS	7/1/2020	801	806	40	37	Pass	TH
51 / 53	NEOS	SEOS	1124	15	EP	WW-22	64.0		AP+PS	6/25/2020	959	1004	40	40	Pass	TH
50 / 53	NEOS	SEOS	1144	15	EP	WW-22	52.7	DS-21	AP+PS	6/25/2020	1115	1120	40	40	Pass	TH
56 / 57	EEOS	WEOS	1149	15	DT	WW-26	6.8		AP+PS	6/25/2020	932	937	40	40	Pass	TH
55 / 56	EEOS	WEOS	1222	15	DT	WW-26	6.8		AP+PS	6/26/2020	847	852	40	40	Pass	TH
54 / 57	NEOS	SEOS	1248	15	EP	WW-22	17.6		AP+PS	6/25/2020	932	937	40	37	Pass	TH
54 / 56	NEOS	SEOS	1253	15	EP	WW-22	60.4	DS-25	AP+PS	6/25/2020	932	937	40	40	Pass	TH
53 / 56	NEOS	SEOS	1314	15	EP	WW-22	68.0		AP+PS	6/25/2020	957	1002	40	40	Pass	TH
53 / 55	NEOS	SEOS	1337	15	EP	WW-22	49.1	DS-18	AP+PS	6/25/2020	1116	1121	40	40	Pass	TH
55 / 58	SEOS	NEOS	1350	15	EP	WW-22	49.1	DS-19	AP+PS	6/26/2020	855	900	40	40	Pass	TH
56 / 58	SEOS	NEOS	1651	15	DT	WW-26	58.3		AP+PS	6/26/2020	826	831	40	40	Pass	TH
						PAGE TOTAL	718.6									

TEST METHOD
AL - AIR LANCE | ST - SPARK TEST
AP - AIR PRESSURE | VB - EXTRUDED & VAC BOX
PS - POINT STRESS

REMARKS:

QC TECH: Thomas Howald
SUPERVISOR: Chad Messervey
SUBMISSION DATE: 2020/01/05
SHEET NUMBER: 12 of 113

GEOMEMBRANE SEAM & TEST LOG

PROJECT NUMBER CT001401 | AREA / LAYER Primary
PROJECT TITLE Victoria Gold Heap Leach Pad Phase 1B | SEAM DATE 2020/06/18

TRIAL SEAMS

#	MACHINE NUMBER	TIME	TECH	AIR TEMP °C	SPEED	TEMP/ SETTING	INSIDE PEEL (PPI)					OUTSIDE PEEL (PPI)					SHEAR (PPI)					CHK'D BY	LINER TO LINER TYPE AND REMARKS

WELD SEAMS

PANEL NUMBERS	SEAM SECTION FROM	SEAM SECTION TO	START TIME	AIR TEMP °C	WELD TECH	MACHINE NUMBER	WELD LENGTH	DESTRUCT NUMBER	QC TEST METH.	QC TEST DATE Y-M-D	AIR PRESSURE TEST (PSI) TIME START	TIME END	PRESSURE START	PRESSURE END	VERIFY PASS	VERIFY QC TECH
56 / 59	SEOS	NEOS	1700	15	DT	WW-26	71.0		AP+PS	6/26/2020	826	831	40	40	Pass	TH
57 / 59	SEOS	NEOS	1735	15	DT	WW-26	18.0		AP+PS	6/25/2020	947	952	40	36	Pass	TH
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PAGE TOTAL							89.0									

TEST METHOD
AL - AIR LANCE
AP - AIR PRESSURE
PS - POINT STRESS
ST - SPARK TEST
VB - EXTRUDED & VAC BOX

REMARKS:

QC TECH Thomas Howald
SUPERVISOR Chad Messervey
SUBMISSION DATE 2020/01/05
SHEET NUMBER 13 of 113

GEOMEMBRANE SEAM & TEST LOG

PROJECT NUMBER CT001401 | AREA / LAYER Primary
PROJECT TITLE Victoria Gold Heap Leach Pad Phase 1B | SEAM DATE 2020/06/20

TRIAL SEAMS

#	MACHINE NUMBER	TIME	TECH	AIR TEMP °C	SPEED	TEMP/ SETTING	INSIDE PEEL (PPI)					OUTSIDE PEEL (PPI)					SHEAR (PPI)					CHK'D BY	LINER TO LINER TYPE AND REMARKS
1	WW-26	915	DT	15	35.0%	454°C	145	128	153	153	155	146	137	147	133	149	166	167	166	170	161	TH	TT
2	WW-26	930	DT	15	55.0%	454°C	137	131	150	134	141	155	148	161	149	145	169	162	177	169	171	TH	SS
3	WW-22	1015	GP	15	55.0%	454°C	120	124	128	127	132	117	105	129	127	132	155	147	180	155	160	TH	SS

WELD SEAMS

PANEL NUMBERS	SEAM SECTION FROM	SEAM SECTION TO	START TIME	AIR TEMP °C	WELD TECH	MACHINE NUMBER	WELD LENGTH	DESTRUCT NUMBER	QC TEST METH.	QC TEST DATE Y-M-D	AIR PRESSURE TEST (PSI) TIME START	TIME END	PRESSURE START	PRESSURE END	VERIFY PASS	VERIFY QC TECH
61 / 62	EEOS	WEOS	1010	15	DT	WW-26	6.8		AP+PS	7/1/2020	814	819	40	40	Pass	TH
59 / 62	NEOS	SEOS	1028	15	GP	WW-22	40.0		AP+PS	7/1/2020	809	814	40	37	Pass	TH
60 / 61	EEOS	WEOS	1030	15	DT	WW-26	6.8		AP+PS	7/1/2020	1145	1150	40	39	Pass	TH
59 / 61	NEOS	SEOS	1038	15	GP	WW-22	56.2		AP+PS	7/1/2020	1028	1033	40	39	Pass	TH
60 / 58	9N	SEOS	1049	15	DT	WW-26	30.3	DS-26	AP+PS	7/1/2020	1140	1445	40	40	Pass	TH
60 / 58	NEOS	9N	1055	15	DT	WW-22	6.0	DS-26	AP+PS	7/1/2020	1143	1148	40	38	Pass	TH
58 / 61	NEOS	9C	1105	15	GP	WW-22	47.7		AP+PS	7/1/2020	1200	1205	40	40	Pass	TH
58 / 61	9C	SEOS	1113	15	DT	WW-26	24.1		AP+PS	7/1/2020	1145	1150	40	38	Pass	TH
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PAGE TOTAL							217.9									

TEST METHOD
AL - AIR LANCE | ST - SPARK TEST
AP - AIR PRESSURE | VB - EXTRUDED & VAC BOX
PS - POINT STRESS

REMARKS:

QC TECH: Thomas Howald
SUPERVISOR: Chad Messervey
SUBMISSION DATE: 2020/01/05
SHEET NUMBER: 14 of 113

GEOMEMBRANE SEAM & TEST LOG

PROJECT NUMBER CT001401 | AREA / LAYER Primary
PROJECT TITLE Victoria Gold Heap Leach Pad Phase 1B | SEAM DATE 2020/06/26

TRIAL SEAMS

#	MACHINE NUMBER	TIME	TECH	AIR TEMP °C	SPEED	TEMP/ SETTING	INSIDE PEEL (PPI)					OUTSIDE PEEL (PPI)					SHEAR (PPI)					CHK'D BY	LINER TO LINER TYPE AND REMARKS
1	WW-26	1250	DT	15	35.0%	454°C	141	147	162	129	148	155	142	151	153	156	204	171	179	162	197	TH	TT
2	WW-22	1250	EP	15	55.0%	454°C	147	145	149	135	130	153	152	156	146	148	161	161	165	165	148	TH	SS
3	WW-26	1255	DT	15	55.0%	454°C	147	140	143	149	140	148	143	152	150	149	163	159	164	164	165	TH	SS

WELD SEAMS

PANEL NUMBERS	SEAM SECTION FROM	SEAM SECTION TO	START TIME	AIR TEMP °C	WELD TECH	MACHINE NUMBER	WELD LENGTH	DESTRUCT NUMBER	QC TEST METH.	QC TEST DATE Y-M-D	AIR PRESSURE TEST (PSI) TIME START	TIME END	PRESSURE START	PRESSURE END	VERIFY PASS	VERIFY QC TECH
63 / 64	EEOS	WEOS	1445	15	DT	WW-26	6.8		AP+PS	7/1/2020	915	920	40	40	Pass	TH
61 / 63	NEOS	9H	1453	15	DT	WW-26	41.3		AP+PS	7/1/2020	1202	1207	40	40	Pass	TH
61 / 64	10T	NEOS	1454	15	EP	WW-22	42.7		AP+PS	7/4/2020	1742	1748	40	40	Pass	TH
61 / 64	SEOS	10T	1454	15	EP	WW-22	22.0		AP+PS	7/4/2020	1742	1753	40	40	Pass	TH
60 / 63	SEOS	NEOS	1520	15	DT	WW-26	36.5	DS-27	AP+PS	7/1/2020	1155	1200	40	37	Pass	TH
62 / 64	NEOS	SEOS	1524	15	EP	WW-22	40.0		AP+PS	7/1/2020	814	819	40	40	Pass	TH
61 / 63	SEOS	9H	1540	15	DT	WW-26	16.0		AP+PS	7/1/2020	1150	1155	40	40	Pass	TH
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PAGE TOTAL							205.3									

TEST METHOD

AL - AIR LANCE	ST - SPARK TEST
AP - AIR PRESSURE	VB - EXTRUDED & VAC BOX
PS - POINT STRESS	

REMARKS:

QC TECH: Thomas Howald
SUPERVISOR: Chad Messervey
SUBMISSION DATE: 2020/01/05
SHEET NUMBER: 15 of 113

GEOMEMBRANE SEAM & TEST LOG

PROJECT NUMBER CT001401 | AREA / LAYER Primary
PROJECT TITLE Victoria Gold Heap Leach Pad Phase 1B | SEAM DATE 2020/06/27

TRIAL SEAMS

#	MACHINE NUMBER	TIME	TECH	AIR TEMP °C	SPEED	TEMP/ SETTING	INSIDE PEEL (PPI)					OUTSIDE PEEL (PPI)					SHEAR (PPI)					CHK'D BY	LINER TO LINER TYPE AND REMARKS
1	WW-26	730	DT	6	35.0%	454°C	153	155	150	147	154	156	156	162	157	139	185	178	198	181	204	TH	TT
2	WW-22	730	JK	6	55.0%	454°C	141	143	145	144	142	144	157	148	146	146	166	164	179	176	168	TH	SS
3	WW-26	740	DT	6	55.0%	454°C	154	141	143	144	151	155	155	153	159	170	165	159	166	169	170	TH	SS
4	WW-22	1250	JK	10	55.0%	454°C	150	156	146	153	148	154	149	162	159	151	171	164	165	167	171	TH	SS
5	WW-26	1253	DT	10	34.0%	454°C	144	143	136	136	150	154	135	151	155	167	172	167	170	176	171	TH	TT
6	WW-26	1255	DT	10	55.0%	454°C	141	150	147	146	149	151	150	153	149	146	168	161	172	166	159	TH	SS

WELD SEAMS

PANEL NUMBERS	SEAM SECTION FROM	SEAM SECTION TO	START TIME	AIR TEMP °C	WELD TECH	MACHINE NUMBER	WELD LENGTH	DESTRUCT NUMBER	QC TEST METH.	QC TEST DATE Y-M-D	AIR PRESSURE TEST (PSI) TIME START	TIME END	PRESSURE START	PRESSURE END	VERIFY PASS	VERIFY QC TECH
63 / 65	SEOS	NEOS	910	10	JK	WW-22	23.0	DS-30	AP+PS	7/1/2020	1225	1230	40	40	Pass	TH
63 / 66	SEOS	NEOS	919	10	JK	WW-22	70.7	DS-28	AP+PS	7/1/2020	1226	1231	40	40	Pass	TH
64 / 67	SEOS	NEOS	921	10	DT	WW-26	48.3		AP+PS	7/1/2020	825	830	40	40	Pass	TH
64 / 66	SEOS	NEOS	949	10	JK	WW-22	58.1		AP+PS	7/1/2020	914	919	40	39	Pass	TH
67 / 69	NEOS	SEOS	1350	10	JK	WW-22	48.3		AP+PS	7/1/2020	938	943	40	40	Pass	TH
66 / 68	NEOS	SEOS	1400	10	DT	WW-26	51.7		AP+PS	7/1/2020	1227	1232	40	37	Pass	TH
66 / 69	NEOS	SEOS	1407	10	JK	WW-22	74.0		AP+PS	7/1/2020	945	950	40	40	Pass	TH
65 / 68	NEOS	SEOS	1420	10	DT	WW-26	23.0		AP+PS	7/1/2020	1228	1233	40	40	Pass	TH
70 / 71	EEOS	WEOS	1640	10	DT	WW-26	6.8		AP+PS	7/1/2020	846	851	40	40	Pass	TH
69 / 71	NEOS	SEOS	1715	10	DT	WW-22	71.1	DS-33	AP+PS	7/1/2020	849	854	40	40	Pass	TH
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PAGE TOTAL							475.0									

TEST METHOD
AL - AIR LANCE
AP - AIR PRESSURE
PS - POINT STRESS
ST - SPARK TEST
VB - EXTRUDED & VAC BOX

REMARKS:

QC TECH Thomas Howald
SUPERVISOR Chad Messervey
SUBMISSION DATE 2020/01/05
SHEET NUMBER 16 of 113

GEOMEMBRANE SEAM & TEST LOG

PROJECT NUMBER CT001401 | AREA / LAYER Primary
PROJECT TITLE Victoria Gold Heap Leach Pad Phase 1B | SEAM DATE 2020/06/27

TRIAL SEAMS

#	MACHINE NUMBER	TIME	TECH	AIR TEMP °C	SPEED	TEMP/ SETTING	INSIDE PEEL (PPI)					OUTSIDE PEEL (PPI)					SHEAR (PPI)					CHK'D BY	LINER TO LINER TYPE AND REMARKS
7	WW-22	1640	JK	10	55.0%	454°C	126	143	140	142	130	130	125	130	122	131	149	145	151	152	153	TH	SS
8	WW-26	1645	DT	10	55.0%	454°C	150	128	146	141	142	132	142	142	140	143	149	151	160	152	158	TH	TT

WELD SEAMS

PANEL NUMBERS	SEAM SECTION FROM	SEAM SECTION TO	START TIME	AIR TEMP °C	WELD TECH	MACHINE NUMBER	WELD LENGTH	DESTRUCT NUMBER	QC TEST METH.	QC TEST DATE Y-M-D	AIR PRESSURE TEST (PSI) TIME START	TIME END	PRESSURE START	PRESSURE END	VERIFY PASS	VERIFY QC TECH
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TEST METHOD

AL - AIR LANCE	ST - SPARK TEST
AP - AIR PRESSURE	VB - EXTRUDED & VAC BOX
PS - POINT STRESS	

REMARKS:

QC TECH: Thomas Howald
SUPERVISOR: Chad Messervey
SUBMISSION DATE: 2020/01/05
SHEET NUMBER: 17 of 113

GEOMEMBRANE SEAM & TEST LOG

PROJECT NUMBER: CT001401 | AREA / LAYER: Primary
PROJECT TITLE: Victoria Gold Heap Leach Pad Phase 1B | SEAM DATE: 2020/06/28

TRIAL SEAMS

#	MACHINE NUMBER	TIME	TECH	AIR TEMP °C	SPEED	TEMP/ SETTING	INSIDE PEEL (PPI)					OUTSIDE PEEL (PPI)					SHEAR (PPI)					CHK'D BY	LINER TO LINER TYPE AND REMARKS
1	WW-22	1140	JK	10	55.0%	454°C	130	131	136	143	127	130	133	150	136	145	154	152	153	148	149	TH	SS
2	WW-26	1150	DT	10	35.0%	454°C	135	137	138	150	148	156	150	148	137	144	169	161	170	163	165	TH	TT
3	WW-26	1155	DT	10	55.0%	454°C	129	122	129	132	124	133	127	131	130	130	143	138	139	151	149	TH	SS

WELD SEAMS

PANEL NUMBERS	SEAM SECTION FROM	SEAM SECTION TO	START TIME	AIR TEMP °C	WELD TECH	MACHINE NUMBER	WELD LENGTH	DESTRUCT NUMBER	QC TEST METH.	QC TEST DATE Y-M-D	AIR PRESSURE TEST (PSI) TIME START	TIME END	PRESSURE START	PRESSURE END	VERIFY PASS	VERIFY QC TECH
72 / 73	EEOS	WEOS	1245	10	DT	WW-26	6.8		AP+PS	7/4/2020	1646	1651	40	40	Pass	TH
73 / 74	EEOS	WEOS	1300	10	DT	WW-26	6.8	DS-34	AP+PS	7/1/2020	957	1002	40	38	Pass	TH
71 / 74	NEOS	SEOS	1300	10	JK	WW-22	17.8		AP+PS	7/1/2020	956	1001	40	39	Pass	TH
71 / 73	NEOS	SEOS	1306	10	JK	WW-22	53.3		AP+PS	7/1/2020	846	851	40	40	Pass	TH
70 / 73	NEOS	SEOS	1324	10	JK	WW-22	58.1		AP+PS	7/4/2020	1642	1647	40	40	Pass	TH
70 / 72	NEOS	SEOS	1351	10	JK	WW-22	56.8	DS-32	AP+PS	7/4/2020	1642	1647	40	40	Pass	TH
74 / 76	NEOS	SEOS	1530	10	JK	WW-22	17.8	DS-35	AP+PS	7/1/2020	958	1003	40	40	Pass	TH
73 / 76	NEOS	SEOS	1535	10	JK	WW-22	56.4		AP+PS	7/4/2020	1719	1724	40	40	Pass	TH
73 / 75	NEOS	SEOS	1535	10	DT	WW-26	55.0		AP+PS	7/4/2020	1646	1651	40	40	Pass	TH
72 / 75	NEOS	SEOS	1554	10	DT	WW-26	56.8		AP+PS	7/4/2020	1646	1651	40	39	Pass	TH
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PAGE TOTAL							385.6									

TEST METHOD
AL - AIR LANCE
AP - AIR PRESSURE
PS - POINT STRESS
ST - SPARK TEST
VB - EXTRUDED & VAC BOX

REMARKS:

QC TECH: Thomas Howald
SUPERVISOR: Chad Messervey
SUBMISSION DATE: 2020/01/05
SHEET NUMBER: 18 of 113

GEOMEMBRANE SEAM & TEST LOG

PROJECT NUMBER CT001401 | AREA / LAYER Primary
PROJECT TITLE Victoria Gold Heap Leach Pad Phase 1B | SEAM DATE 2020/06/29

TRIAL SEAMS

#	MACHINE NUMBER	TIME	TECH	AIR TEMP °C	SPEED	TEMP/ SETTING	INSIDE PEEL (PPI)					OUTSIDE PEEL (PPI)					SHEAR (PPI)					CHK'D BY	LINER TO LINER TYPE AND REMARKS
1	WW-26	900	DT	10	35.0%	454°C	164	168	155	169	149	159	157	151	150	151	183	177	169	176	182	TH	TT
2	WW-22	900	JK	10	55.0%	454°C	143	139	148	152	131	135	143	122	119	136	163	172	165	154	158	TH	SS
3	WW-26	900	DT	10	55.0%	454°C	149	133	156	133	149	148	141	147	147	145	161	164	154	146	165	TH	SS
4	WW-22	1300	JK	10	35.0%	454°C	140	145	147	140	141	150	152	150	134	139	168	182	185	169	169	TH	TT
5	WW-26	1330	DT	10	35.0%	454°C	158	144	145	139	153	150	135	151	148	147	159	167	164	176	170	TH	TT
6	WW-22	1330	JK	10	55.0%	454°C	134	129	122	146	115	154	151	150	150	150	174	174	172	175	161	TH	SS

WELD SEAMS

PANEL NUMBERS	SEAM SECTION FROM	SEAM SECTION TO	START TIME	AIR TEMP °C	WELD TECH	MACHINE NUMBER	WELD LENGTH	DESTRUCT NUMBER	QC TEST METH.	QC TEST DATE Y-M-D	AIR PRESSURE TEST (PSI) TIME START	TIME END	PRESSURE START	PRESSURE END	VERIFY PASS	VERIFY QC TECH
77 / 78	EEOS	WEOS	957	10	DT	WW-26	6.8		AP+PS	7/4/2020	1639	1644	40	40	Pass	TH
78 / 79	EEOS	WEOS	1025	10	DT	WW-26	6.8		AP+PS	7/8/2020	1431	1436	40	40	Pass	TH
76 / 79	NEOS	SEOS	1047	10	JK	WW-22	38.6		AP+PS	7/8/2020	1431	1436	40	40	Pass	TH
76 / 78	NEOS	SEOS	1105	10	JK	WW-22	35.6		AP+PS	7/4/2020	1715	1720	40	40	Pass	TH
75 / 78	NEOS	SEOS	1121	10	JK	WW-22	76.8		AP+PS	7/4/2020	1639	1644	40	40	Pass	TH
75 / 77	NEOS	SEOS	1147	10	JK	WW-22	35.0		AP+PS	7/4/2020	1640	1645	40	40	Pass	TH
80 / 81	EEOS	WEOS	1348	10	DT	WW-26	6.8		AP+PS	7/4/2020	1604	1609	40	40	Pass	TH
79 / 81	NEOS	SEOS	1410	10	JK	WW-22	38.6	DS-43	AP+PS	7/8/2020	1435	1440	40	39	Pass	TH
78 / 81	11N	SEOS	1414	10	DT	WW-26	24.0		AP+PS	7/4/2020	1605	1610	40	38	Pass	TH
78 / 81	NEOS	11N	1424	10	JK	WW-22	42.0		AP+PS	7/8/2020	1435	1440	40	40	Pass	TH
78 / 80	NEOS	SEOS	1426	10	DT	WW-26	47.4		AP+PS	7/4/2020	1605	1610	40	40	Pass	TH
77 / 80	NEOS	SEOS	1451	10	DT	WW-26	35.0		AP+PS	7/4/2020	1639	1644	40	40	Pass	TH
75 / 76	EEOS	WEOS	1530	10	DT	WW-26	6.8		AP+PS	7/4/2020	1530	1535	40	40	Pass	TH
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PAGE TOTAL 400.2

TEST METHOD
AL - AIR LANCE | ST - SPARK TEST
AP - AIR PRESSURE | VB - EXTRUDED & VAC BOX
PS - POINT STRESS

REMARKS:

QC TECH Thomas Howald
SUPERVISOR Chad Messervey
SUBMISSION DATE 2020/01/05
SHEET NUMBER 19 of 113

GEOMEMBRANE SEAM & TEST LOG

PROJECT NUMBER CT001401 | AREA / LAYER Primary
PROJECT TITLE Victoria Gold Heap Leach Pad Phase 1B | SEAM DATE 2020/06/29

TRIAL SEAMS

#	MACHINE NUMBER	TIME	TECH	AIR TEMP °C	SPEED	TEMP/ SETTING	INSIDE PEEL (PPI)					OUTSIDE PEEL (PPI)					SHEAR (PPI)					CHK'D BY	LINER TO LINER TYPE AND REMARKS
7	WW-26	1335	DT	10	55.0%	454°C	144	144	139	138	146	155	147	154	154	151	160	166	168	167	165	TH	SS

WELD SEAMS

PANEL NUMBERS	SEAM SECTION FROM	SEAM SECTION TO	START TIME	AIR TEMP °C	WELD TECH	MACHINE NUMBER	WELD LENGTH	DESTRUCT NUMBER	QC TEST METH.	QC TEST DATE Y-M-D	AIR PRESSURE TEST (PSI) TIME START	TIME END	PRESSURE START	PRESSURE END	VERIFY PASS	VERIFY QC TECH
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PAGE TOTAL																

TEST METHOD

AL - AIR LANCE	ST - SPARK TEST
AP - AIR PRESSURE	VB - EXTRUDED & VAC BOX
PS - POINT STRESS	

REMARKS:

QC TECH Thomas Howald
SUPERVISOR Chad Messervey
SUBMISSION DATE 2020/01/05
SHEET NUMBER 20 of 113

GEOMEMBRANE SEAM & TEST LOG

PROJECT NUMBER CT001401 | AREA / LAYER Primary
PROJECT TITLE Victoria Gold Heap Leach Pad Phase 1B | SEAM DATE 2020/06/30

TRIAL SEAMS

#	MACHINE NUMBER	TIME	TECH	AIR TEMP °C	SPEED	TEMP/ SETTING	INSIDE PEEL (PPI)					OUTSIDE PEEL (PPI)					SHEAR (PPI)					CHK'D BY	LINER TO LINER TYPE AND REMARKS
1	WW-26	840	DT	10	35.0%	454°C	174	168	169	174	173	159	154	171	173	167	183	185	180	181	184	TH	TT
2	WW-22	940	JK	10	55.0%	454°C	140	164	158	152	141	134	142	149	140	143	162	164	165	169	167	TH	SS
3	WW-26	940	DT	10	55.0%	454°C	156	154	158	161	157	150	151	147	146	151	176	175	180	180	181	TH	SS
4	WW-22	1340	JK	10	55.0%	454°C	142	161	159	158	151	136	145	147	141	144	154	160	161	165	160	TH	SS
5	WW-26	1340	DT	10	55.0%	454°C	157	156	157	160	161	149	152	148	149	150	177	174	179	180	182	TH	SS
6	WW-26	1340	DT	10	35.0%	454°C	173	171	170	169	175	160	162	170	174	168	180	187	183	181	185	TH	TT

WELD SEAMS

PANEL NUMBERS	SEAM SECTION FROM	SEAM SECTION TO	START TIME	AIR TEMP °C	WELD TECH	MACHINE NUMBER	WELD LENGTH	DESTRUCT NUMBER	QC TEST METH.	QC TEST DATE Y-M-D	AIR PRESSURE TEST (PSI) TIME START	TIME END	PRESSURE START	PRESSURE END	VERIFY PASS	VERIFY QC TECH
83 / 84	EEOS	WEOS	1040	10	DT	WW-26	6.8		AP+PS	7/8/2020	1454	1459	40	39	Pass	TH
81 / 84	NEOS	SEOS	1100	10	JK	WW-22	60.5		AP+PS	7/8/2020	1454	1459	40	40	Pass	TH
81 / 83	NEOS	SEOS	1120	10	JK	WW-22	53.0		AP+PS	7/14/2020	830	835	40	38	Pass	TH
80 / 83	NEOS	SEOS	1138	10	JK	WW-22	67.7		AP+PS	7/4/2020	1603	1608	40	39	Pass	TH
85 / 86	EEOS	WEOS	1217	10	JK	WW-22	6.8		AP+PS	7/4/2020	1521	1526	40	39	Pass	TH
83 / 85	SEOS	NEOS	1350	10	JK	WW-22	53.5		AP+PS	7/4/2020	1522	1527	40	39	Pass	TH
83 / 86	11H	NEOS	1350	10	DT	WW-26	21.3		AP+PS	7/8/2020	1456	1501	40	40	Pass	TH
84 / 86	SEOS	NEOS	1400	10	DT	WW-26	60.5	DS-44	AP+PS	7/8/2020	1456	1501	40	40	Pass	TH
83 / 86	SEOS	11H	1420	10	JK	WW-22	46.1		AP+PS	7/4/2020	1522	1527	40	40	Pass	TH
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PAGE TOTAL							376.2									

TEST METHOD
AL - AIR LANCE | ST - SPARK TEST
AP - AIR PRESSURE | VB - EXTRUDED & VAC BOX
PS - POINT STRESS

REMARKS:

QC TECH: Thomas Howald
SUPERVISOR: Chad Messervey
SUBMISSION DATE: 2020/01/05
SHEET NUMBER: 21 of 113

GEOMEMBRANE SEAM & TEST LOG

PROJECT NUMBER CT001401 | AREA / LAYER Primary
PROJECT TITLE Victoria Gold Heap Leach Pad Phase 1B | SEAM DATE 2020/07/01

TRIAL SEAMS

#	MACHINE NUMBER	TIME	TECH	AIR TEMP °C	SPEED	TEMP/ SETTING	INSIDE PEEL (PPI)					OUTSIDE PEEL (PPI)					SHEAR (PPI)					CHK'D BY	LINER TO LINER TYPE AND REMARKS
1	WW-26	1100	EA	10	35.0%	454°C	135	129	137	134	134	135	139	135	151	138	161	170	170	169	171	TH	TT
2	WW-26	1100	EA	10	55.0%	454°C	125	135	129	132	131	128	127	132	129	128	149	148	152	148	145	TH	SS
3	WW-22	1100	JK	10	55.0%	454°C	111	123	127	134	118	118	117	119	121	122	142	139	129	130	135	TH	SS
4	WW-26	1600	EA	10	35.0%	454°C	146	119	147	120	159	141	131	141	155	158	184	126	157	185	174	TH	TT
5	WW-26	1600	EA	10	55.0%	454°C	129	134	132	136	137	135	131	137	125	132	153	155	145	145	152	TH	SS
6	WW-22	1600	JK	10	55.0%	454°C	142	136	135	133	131	131	130	132	139	129	146	145	150	150	148	TH	SS

WELD SEAMS

PANEL NUMBERS	SEAM SECTION FROM	SEAM SECTION TO	START TIME	AIR TEMP °C	WELD TECH	MACHINE NUMBER	WELD LENGTH	DESTRUCT NUMBER	QC TEST METH.	QC TEST DATE Y-M-D	AIR PRESSURE TEST (PSI) TIME START	TIME END	PRESSURE START	PRESSURE END	VERIFY PASS	VERIFY QC TECH
88 / 89	EEOS	WEOS	1108	10	DT	WW-26	6.8		AP+PS	7/8/2020	1517	1522	40	40	Pass	TH
85 / 88	SEOS	NEOS	1200	10	EA	WW-26	54.5		AP+PS	7/4/2020	1521	1526	40	40	Pass	TH
86 / 89	SEOS	NEOS	1200	10	JK	WW-22	91.8	DS-45	AP+PS	7/10/2020	1456	1501	40	40	Pass	TH
86 / 88	SEOS	NEOS	1225	10	EA	WW-26	37.6		AP+PS	7/4/2020	1521	1526	40	40	Pass	TH
90 / 91	EEOS	WEOS	1309	10	DT	WW-26	6.8		AP+PS	7/4/2020	1504	1509	40	40	Pass	TH
91 / 92	EEOS	WEOS	1338	10	EA	WW-26	6.8		AP+PS	7/8/2020	1538	1543	40	40	Pass	TH
89 / 92	NEOS	SEOS	1400	10	EA	WW-26	42.1		AP+PS	7/10/2020	1502	1507	40	40	Pass	TH
88 / 90	SEOS	NEOS	1403	10	JK	WW-22	35.4	DS-37	AP+PS	7/4/2020	1503	1508	40	40	Pass	TH
89 / 91	NEOS	SEOS	1412	10	EA	WW-26	50.6		AP+PS	7/8/2020	1518	1523	40	40	Pass	TH
88 / 91	SEOS	NEOS	1417	10	JK	WW-22	77.9		AP+PS	7/4/2020	1504	1509	40	39	Pass	TH
93 / 94	EEOS	WEOS	1650	10	EA	WW-26	6.8		AP+PS	7/14/2020	910	915	40	40	Pass	TH
90 / 93	SEOS	NEOS	1727	10	JK	WW-22	35.4	DS-36	AP+PS	7/4/2020	1505	1510	40	40	Pass	TH
91 / 93	SEOS	NEOS	1742	10	JK	WW-22	46.9		AP+PS	7/4/2020	1505	1510	40	40	Pass	TH
91 / 94	SEOS	NEOS	1757	10	JK	WW-22	81.6		AP+PS	7/8/2020	1539	1544	40	40	Pass	TH
92 / 94	SEOS	NEOS	1833	10	JK	WW-22	42.1		AP+PS	7/10/2020	1502	1507	40	40	Pass	TH
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PAGE TOTAL							623.1									

TEST METHOD
AL - AIR LANCE | ST - SPARK TEST
AP - AIR PRESSURE | VB - EXTRUDED & VAC BOX
PS - POINT STRESS

REMARKS:

QC TECH: Thomas Howald
SUPERVISOR: Chad Messervey
SUBMISSION DATE: 2020/01/05
SHEET NUMBER: 22 of 113

GEOMEMBRANE SEAM & TEST LOG

PROJECT NUMBER CT001401 | AREA / LAYER Primary
PROJECT TITLE Victoria Gold Heap Leach Pad Phase 1B | SEAM DATE 2020/07/04

TRIAL SEAMS

#	MACHINE NUMBER	TIME	TECH	AIR TEMP °C	SPEED	TEMP/ SETTING	INSIDE PEEL (PPI)					OUTSIDE PEEL (PPI)					SHEAR (PPI)					CHK'D BY	LINER TO LINER TYPE AND REMARKS
1	WW-26	1030	EA	10	35.0%	454°C	137	135	155	142	147	151	133	137	134	143	138	140	141	144	139	TH	TT
2	WW-26	1030	EA	10	55.0%	454°C	120	123	125	125	124	123	133	132	131	130	140	142	148	139	143	TH	SS
3	WW-22	1030	JK	10	55.0%	454°C	132	131	133	127	138	129	132	125	128	132	150	155	153	163	158	TH	SS
4	WW-26	1430	EA	10	35.0%	454°C	125	147	132	125	128	142	144	139	140	136	153	155	152	149	148	TH	TT
5	WW-26	1430	EA	10	55.0%	454°C	125	117	115	115	126	114	123	116	121	120	127	125	138	131	133	TH	SS

WELD SEAMS

PANEL NUMBERS	SEAM SECTION FROM	SEAM SECTION TO	START TIME	AIR TEMP °C	WELD TECH	MACHINE NUMBER	WELD LENGTH	DESTRUCT NUMBER	QC TEST METH.	QC TEST DATE Y-M-D	AIR PRESSURE TEST (PSI) TIME START	TIME END	PRESSURE START	PRESSURE END	VERIFY PASS	VERIFY QC TECH
95 / 96	EEOS	WEOS	1040	10	EA	WW-26	6.8		AP+PS	7/13/2020	851	856	40	40	Pass	TH
94 / 96	SEOS	NEOS	1100	10	EA	WW-26	10.0	DS-46	AP+PS	7/12/2020	1242	1247	40	40	Pass	TH
97 / 98	EEOS	WEOS	1300	10	EA	WW-26	6.8		AP+PS	7/12/2020	1328	1333	40	40	Pass	TH
94 / 98	NEOS	SEOS	1300	10	JK	WW-22	73.3		AP+PS	7/14/2020	848	853	40	40	Pass	TH
94 / 97	NEOS	15B	1338	10	JK	WW-22	23.2		AP+PS	7/13/2020	817	822	40	40	Pass	TH
94 / 97	15B	SEOS	1343	10	JK	WW-22	23.2		AP+PS	7/17/2020	1052	1057	40	40	Pass	TH
93 / 97	NEOS	SEOS	1353	10	JK	WW-22	82.0	DS-63	AP+PS	7/17/2020	1133	1138	40	39	Pass	TH
100 / 101	EEOS	WEOS	1440	10	EA	WW-26	4.5		AP+PS	7/13/2020	750	755	40	40	Pass	TH
98 / 101	NEOS	SEOS	1450	10	EA	WW-26	12.8		AP+PS	7/12/2020	1254	1259	40	40	Pass	TH
98 / 100	NEOS	SEOS	1455	10	EA	WW-26	6.3		AP+PS	7/13/2020	750	755	40	40	Pass	TH
96 / 98	NEOS	13R	1500	10	EA	WW-26	19.1		AP+PS	7/12/2020	1242	1247	40	40	Pass	TH
96 / 101	NEOS	SEOS	1511	10	EA	WW-26	12.1		AP+PS	7/13/2020	750	755	40	40	Pass	TH
96 / 100	NEOS	SEOS	1516	10	EA	WW-26	56.7		AP+PS	7/13/2020	851	856	40	40	Pass	TH
95 / 100	NEOS	SEOS	1536	10	EA	WW-26	72.7		AP+PS	7/13/2020	851	856	40	40	Pass	TH
95 / 99	NEOS	15J	1602	10	EA	WW-26	13.6	DS-47	AP+PS	7/13/2020	1037	1042	40	38	Pass	TH
95 / 99	15J	SEOS	1610	10	EA	WW-26	37.0	DS-47	AP+PS	7/14/2020	1102	1107	40	40	Pass	TH
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PAGE TOTAL 460.1

TEST METHOD
AL - AIR LANCE | ST - SPARK TEST
AP - AIR PRESSURE | VB - EXTRUDED & VAC BOX
PS - POINT STRESS

REMARKS:

QC TECH Thomas Howald
SUPERVISOR Chad Messervey
SUBMISSION DATE 2020/01/05
SHEET NUMBER 23 of 113

GEOMEMBRANE SEAM & TEST LOG

PROJECT NUMBER CT001401 | AREA / LAYER Primary
PROJECT TITLE Victoria Gold Heap Leach Pad Phase 1B | SEAM DATE 2020/07/05

TRIAL SEAMS

#	MACHINE NUMBER	TIME	TECH	AIR TEMP °C	SPEED	TEMP/ SETTING	INSIDE PEEL (PPI)					OUTSIDE PEEL (PPI)					SHEAR (PPI)					CHK'D BY	LINER TO LINER TYPE AND REMARKS
1	WW-26	800	EA	10	35.0%	454°C	131	160	133	139	141	156	140	159	152	148	165	169	182	180	175	TH	TT
2	WW-26	800	EA	10	55.0%	454°C	160	166	161	159	165	141	121	121	124	136	173	174	176	175	171	TH	SS
3	WW-22	800	JK	10	55.0%	454°C	153	148	145	120	142	117	118	143	145	146	153	144	176	151	152	TH	SS
4	WW-22	1200	JK	10	55.0%	454°C	148	149	141	138	140	119	121	142	147	140	151	145	178	150	151	TH	SS
5	WW-20	1200	EA	10	35.0%	454°C	135	131	132	165	136	129	136	145	137	142	162	158	159	149	151	TH	TT
6	WW-20	1200	EA	10	55.0%	454°C	137	137	140	141	143	126	128	133	131	129	156	151	154	148	151	TH	SS

WELD SEAMS

PANEL NUMBERS	SEAM SECTION FROM	SEAM SECTION TO	START TIME	AIR TEMP °C	WELD TECH	MACHINE NUMBER	WELD LENGTH	DESTRUCT NUMBER	QC TEST METH.	QC TEST DATE Y-M-D	AIR PRESSURE TEST (PSI) TIME START	TIME END	PRESSURE START	PRESSURE END	VERIFY PASS	VERIFY QC TECH
102 / 103	EEOS	WEOS	833	10	EA	WW-26	6.8		AP+PS	7/12/2020	1332	1337	40	40	Pass	TH
100 / 103	NEOS	SEOS	836	10	JK	WW-22	50.5		AP+PS	7/13/2020	1305	1310	40	40	Pass	TH
98 / 103	NEOS	SEOS	841	10	EA	WW-26	19.0		AP+PS	7/12/2020	1305	1310	40	38	Pass	TH
100 / 102	NEOS	SEOS	851	10	JK	WW-22	76.9		AP+PS	7/13/2020	1050	1055	40	40	Pass	TH
99 / 102	NEOS	SEOS	918	10	JK	WW-22	49.6	DS-48	AP+PS	7/13/2020	1037	1042	40	40	Pass	TH
104 / 105	EEOS	WEOS	935	10	EA	WW-26	6.8		AP+PS	7/17/2020	1150	1155	40	39	Pass	TH
98 / 105	NEOS	SEOS	945	10	EA	WW-26	18.4		AP+PS	7/14/2020	840	845	40	40	Pass	TH
102 / 104	SEOS	13C	958	10	JK	WW-22	7.0	DS-50	AP+PS	7/10/2020	1650	1655	40	39	Pass	TH
102 / 104	13C	NEOS	1000	10	JK	WW-22	72.5	DS-50	AP+PS	7/17/2020	1150	1155	40	40	Pass	TH
102 / 105	SEOS	16B	1003	10	EA	WW-26	10.0		AP+PS	7/21/2020	1302	1307	40	40	Pass	TH
102 / 105	16B	NEOS	1010	10	JK	WW-22	36.1		AP+PS	7/24/2020	1400	1405	40	40	Pass	TH
103 / 105	SEOS	13L	1029	10	EA	WW-26	20.9		AP+PS	7/13/2020	827	833	40	40	Pass	TH
103 / 105	13L	NEOS	1035	10	EA	WW-26	6.0		AP+PS	7/12/2020	1317	1322	40	40	Pass	TH
97 / 107	NEOS	SEOS	1303	10	EA	WW-20	19.0		AP+PS	7/13/2020	803	808	40	39	Pass	TH
105 / 107	NEOS	SEOS	1307	10	JK	WW-22	56.1		AP+PS	7/17/2020	1041	1046	40	40	Pass	TH
104 / 107	NEOS	SEOS	1328	10	JK	WW-22	29.9		AP+PS	7/17/2020	1150	1555	40	40	Pass	TH
99 / 100	EEOS	WEOS	1342	10	EA	WW-20	6.8		AP+PS	7/17/2020	1200	1205	40	40	Pass	TH
104 / 106	NEOS	SEOS	1420	10	EA	WW-20	47.7	DS-49	AP+PS	7/13/2020	1106	1111	40	39	Pass	TH
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PAGE TOTAL 540.0

TEST METHOD
AL - AIR LANCE | ST - SPARK TEST
AP - AIR PRESSURE | VB - EXTRUDED & VAC BOX
PS - POINT STRESS

REMARKS:

QC TECH Thomas Howald
SUPERVISOR Chad Messervey
SUBMISSION DATE 2020/01/05
SHEET NUMBER 24 of 113

GEOMEMBRANE SEAM & TEST LOG

PROJECT NUMBER CT001401 | AREA / LAYER Primary
PROJECT TITLE Victoria Gold Heap Leach Pad Phase 1B | SEAM DATE 2020/07/08

TRIAL SEAMS

#	MACHINE NUMBER	TIME	TECH	AIR TEMP °C	SPEED	TEMP/ SETTING	INSIDE PEEL (PPI)					OUTSIDE PEEL (PPI)					SHEAR (PPI)					CHK'D BY	LINER TO LINER TYPE AND REMARKS
1	WW-22	900	JK	10	35.0%	454°C	173	169	161	160	155	162	138	120	112	160	181	189	194	193	185	TH	TT
2	WW-22	900	JK	10	55.0%	454°C	163	162	154	165	155	119	127	139	125	141	174	176	178	181	179	TH	SS
3	WW-26	1200	EA	10	55.0%	454°C	145	138	156	146	144	129	129	125	126	127	162	160	159	157	161	TH	SS
4	WW-22	1300	JK	10	35.0%	454°C	152	151	153	167	155	141	139	157	148	152	173	179	185	182	181	TH	TT
5	WW-22	1300	JK	10	55.0%	454°C	135	136	136	133	145	134	132	132	123	121	161	166	163	165	162	TH	SS
6	WW-26	1645	EA	10	55.0%	454°C	156	162	153	149	151	155	156	154	147	148	173	173	171	169	170	TH	SS

WELD SEAMS

PANEL NUMBERS	SEAM SECTION FROM	SEAM SECTION TO	START TIME	AIR TEMP °C	WELD TECH	MACHINE NUMBER	WELD LENGTH	DESTRUCT NUMBER	QC TEST METH.	QC TEST DATE Y-M-D	AIR PRESSURE TEST (PSI) TIME START	TIME END	PRESSURE START	PRESSURE END	VERIFY PASS	VERIFY QC TECH
87 / 88	SEOS	10N	948	10	JK	WW-22	11.6	DS-39	AP+PS	7/10/2020	1550	1555	40	40	Pass	TH
82 / 87	SEOS	10O	1008	10	JK	WW-22	8.0	DS-38	AP+PS	7/10/2020	1555	1600	40	39	Pass	TH
97 / 108	SEOS	NEOS	1053	10	JK	WW-22	39.2	DS-64	AP+PS	7/14/2020	1045	1050	40	39	Pass	TH
108 / 111	SEOS	NEOS	1111	10	JK	WW-22	39.2	DS-65	AP+PS	7/17/2020	1121	1126	40	40	Pass	TH
82 / 83	EEOS	WEOS	1140	10	DT	WW-22	6.8	DS-41	AP+PS	7/10/2020	1610	1615	40	40	Pass	TH
87 / 85	EEOS	WEOS	1140	10	JK	WW-22	6.8	DS-42	AP+PS	7/10/2020	1536	1541	40	39	Pass	TH
82 / 87	10O	NEOS	1146	10	DT	WW-22	12.4	DS-38	AP+PS	7/10/2020	1550	1555	40	40	Pass	TH
87 / 88	10N	NEOS	1155	10	EA	WW-22	12.4	DS-39	AP+PS	7/10/2020	1536	1541	40	38	Pass	TH
80 / 82	NEOS	SEOS	1203	10	JK	WW-22	13.4	DS-40	AP+PS	7/10/2020	1610	1615	40	38	Pass	TH
108 / 109	WEOS	EEOS	1224	10	JK	WW-22	6.8	DS-51	AP+PS	7/17/2020	1121	1126	40	40	Pass	TH
106 / 107	EEOS	WEOS	1245	10	EA	WW-26	6.8		AP+PS	7/13/2020	1106	1111	40	40	Pass	TH
109 / 110	WEOS	EEOS	1248	10	JK	WW-22	6.8		AP+PS	7/14/2020	935	940	40	38	Pass	TH
107 / 110	WEOS	EEOS	1314	10	JK	WW-22	18.2		AP+PS	7/17/2020	1044	1049	40	40	Pass	TH
111 / 112	WEOS	EEOS	1332	10	JK	WW-22	6.8		AP+PS	7/13/2020	1142	1147	40	38	Pass	TH
97 / 109	SEOS	NEOS	1339	10	JK	WW-22	39.4		AP+PS	7/14/2020	935	940	40	40	Pass	TH
109 / 111	SEOS	14S	1343	10	EA	WW-26	10.2		AP+PS	7/21/2020	1306	1311	40	39	Pass	TH
109 / 111	14S	NEOS	1349	10	EA	WW-26	9.0		AP+PS	7/13/2020	1142	1147	40	40	Pass	TH
109 / 112	SEOS	NEOS	1351	10	EA	WW-26	20.4		AP+PS	7/14/2020	1035	1040	40	40	Pass	TH
97 / 110	SEOS	NEOS	1355	10	JK	WW-22	29.9		AP+PS	7/14/2020	935	940	40	40	Pass	TH
110 / 112	SEOS	NEOS	1359	10	EA	WW-26	13.4		AP+PS	7/14/2020	940	945	40	40	Pass	TH
						PAGE TOTAL	317.5									

TEST METHOD
AL - AIR LANCE | ST - SPARK TEST
AP - AIR PRESSURE | VB - EXTRUDED & VAC BOX
PS - POINT STRESS

REMARKS:

QC TECH: Thomas Howald
SUPERVISOR: Chad Messervey
SUBMISSION DATE: 2020/01/05
SHEET NUMBER: 25 of 113

GEOMEMBRANE SEAM & TEST LOG

PROJECT NUMBER CT001401 | AREA / LAYER Primary
PROJECT TITLE Victoria Gold Heap Leach Pad Phase 1B | SEAM DATE 2020/07/08

TRIAL SEAMS

#	MACHINE NUMBER	TIME	TECH	AIR TEMP °C	SPEED	TEMP/ SETTING	INSIDE PEEL (PPI)					OUTSIDE PEEL (PPI)					SHEAR (PPI)					CHK'D BY	LINER TO LINER TYPE AND REMARKS
7	WW-22	1645	JK	10	55.0%	454°C	146	134	150	149	149	147	146	142	144	145	156	161	162	165	168	TH	SS

WELD SEAMS

PANEL NUMBERS	SEAM SECTION FROM	SEAM SECTION TO	START TIME	AIR TEMP °C	WELD TECH	MACHINE NUMBER	WELD LENGTH	DESTRUCT NUMBER	QC TEST METH.	QC TEST DATE Y-M-D	AIR PRESSURE TEST (PSI) TIME START	TIME END	PRESSURE START	PRESSURE END	VERIFY PASS	VERIFY QC TECH
107 / 112	WEOS	EEOS	1408	10	JK	WW-22	18.8		AP+PS	7/14/2020	940	945	40	40	Pass	TH
113 / 114	WEOS	EEOS	1503	10	JK	WW-22	6.8		AP+PS	7/12/2020	1623	1628	40	40	Pass	TH
114 / 115	WEOS	EEOS	1527	10	JK	WW-22	6.8		AP+PS	7/13/2020	1128	1133	40	40	Pass	TH
112 / 115	NEOS	SEOS	1530	10	EA	WW-26	15.4		AP+PS	7/14/2020	1000	1005	40	40	Pass	TH
111 / 115	NEOS	SEOS	1537	10	EA	WW-26	9.5		AP+PS	7/13/2020	1129	1134	40	40	Pass	TH
111 / 114	NEOS	SEOS	1541	10	EA	WW-26	19.2		AP+PS	7/10/2020	1623	1628	40	40	Pass	TH
111 / 113	NEOS	SEOS	1548	10	EA	WW-26	29.4		AP+PS	7/10/2020	1623	1628	40	40	Pass	TH
115 / 116	NEOS	SEOS	1600	10	JK	WW-22	8.4		AP+PS	7/13/2020	1128	1133	40	40	Pass	TH
114 / 116	NEOS	SEOS	1605	10	JK	WW-22	19.2		AP+PS	7/13/2020	1128	1133	40	39	Pass	TH
113 / 116	NEOS	SEOS	1613	10	JK	WW-22	28.8	DS-52	AP+PS	7/10/2020	1623	1628	40	40	Pass	TH
118 / 117	WEOS	EEOS	1711	10	JK	WW-22	6.8		AP+PS	7/12/2020	1632	1637	40	39	Pass	TH
116 / 118	SEOS	NEOS	1720	10	EA	WW-26	13.1		AP+PS	7/10/2020	1632	1637	40	40	Pass	TH
117 / 119	NEOS	SEOS	1723	10	JK	WW-22	11.0		AP+PS	7/10/2020	1633	1638	40	40	Pass	TH
116 / 117	SEOS	12P	1726	10	EA	WW-26	10.6		AP+PS	7/10/2020	1631	1636	40	40	Pass	TH
118 / 119	NEOS	SEOS	1729	10	JK	WW-22	13.5	DS-55	AP+PS	7/10/2020	1633	1638	40	40	Pass	TH
119 / 120	SEOS	NEOS	1732	10	JK	WW-22	6.0		AP+PS	7/10/2020	1651	1656	40	40	Pass	TH
116 / 117	NEOS	12P	1733	10	EA	WW-26	16.5		AP+PS	7/13/2020	1108	1113	40	40	Pass	TH
107 / 115	WEOS	EEOS	1737	10	JK	WW-22	18.2		AP+PS	7/14/2020	1000	1005	40	39	Pass	TH
107 / 116	WEOS	EEOS	1753	10	JK	WW-22	12.7		AP+PS	7/13/2020	1109	1114	40	40	Pass	TH
106 / 116	WEOS	EEOS	1759	10	JK	WW-22	5.0		AP+PS	7/13/2020	1108	1113	40	39	Pass	TH
						PAGE TOTAL	275.7									

TEST METHOD
AL - AIR LANCE | ST - SPARK TEST
AP - AIR PRESSURE | VB - EXTRUDED & VAC BOX
PS - POINT STRESS

REMARKS:

QC TECH: Thomas Howald
SUPERVISOR: Chad Messervey
SUBMISSION DATE: 2020/01/05
SHEET NUMBER: 26 of 113

GEOMEMBRANE SEAM & TEST LOG

PROJECT NUMBER CT001401 | AREA / LAYER Primary
PROJECT TITLE Victoria Gold Heap Leach Pad Phase 1B | SEAM DATE 2020/07/08

TRIAL SEAMS

#	MACHINE NUMBER	TIME	TECH	AIR TEMP °C	SPEED	TEMP/ SETTING	INSIDE PEEL (PPI)					OUTSIDE PEEL (PPI)					SHEAR (PPI)					CHK'D BY	LINER TO LINER TYPE AND REMARKS

WELD SEAMS

PANEL NUMBERS		SEAM SECTION FROM	SEAM SECTION TO	START TIME	AIR TEMP °C	WELD TECH	MACHINE NUMBER	WELD LENGTH	DESTRUCT NUMBER	QC TEST METH.	QC TEST DATE Y-M-D	AIR PRESSURE TEST (PSI) TIME START	TIME END	PRESSURE START	PRESSURE END	VERIFY PASS	VERIFY QC TECH
106	117	WEOS	EEOS	1803	10	JK	WW-22	17.9		AP+PS	7/13/2020	1108	1113	40	40	Pass	TH
106	119	WEOS	EEOS	1811	10	JK	WW-22	17.1		AP+PS	7/12/2020	1653	1658	40	40	Pass	TH
106	120	WEOS	EEOS	1819	10	JK	WW-22	6.0		AP+PS	7/10/2020	1651	1656	40	40	Pass	TH

GEOMEMBRANE SEAM & TEST LOG

PROJECT NUMBER CT001401 | AREA / LAYER Primary
PROJECT TITLE Victoria Gold Heap Leach Pad Phase 1B | SEAM DATE 2020/07/12

TRIAL SEAMS

#	MACHINE NUMBER	TIME	TECH	AIR TEMP °C	SPEED	TEMP/ SETTING	INSIDE PEEL (PPI)					OUTSIDE PEEL (PPI)					SHEAR (PPI)					CHK'D BY	LINER TO LINER TYPE AND REMARKS
1	WW-26	740	EA	10	35.0%	454°C	166	152	166	153	152	161	157	166	143	154	177	174	178	185	196	TH	TT
2	WW-26	745	EA	10	55.0%	454°C	157	146	156	150	147	149	151	151	160	160	183	182	187	185	186	TH	SS
3	WW-22	830	JK	10	35.0%	454°C	141	157	157	139	137	149	152	158	155	148	164	173	171	163	168	TH	TT
4	WW-22	830	JK	10	55.0%	454°C	142	141	146	129	139	150	147	154	146	148	166	166	173	168	173	TH	SS
5	WW-26	1200	EA	10	55.0%	454°C	145	155	147	139	140	140	133	141	137	136	161	159	164	160	159	TH	SS

WELD SEAMS

PANEL NUMBERS	SEAM SECTION FROM	SEAM SECTION TO	START TIME	AIR TEMP °C	WELD TECH	MACHINE NUMBER	WELD LENGTH	DESTRUCT NUMBER	QC TEST METH.	QC TEST DATE Y-M-D	AIR PRESSURE TEST (PSI) TIME START	TIME END	PRESSURE START	PRESSURE END	VERIFY PASS	VERIFY QC TECH
96 / 122	NEOS	SEOS	858	10	EA	WW-26	97.7	DS-54	AP+PS	7/13/2020	852	857	40	39	Pass	TH
95 / 121	NEOS	SEOS	908	10	JK	WW-22	116.4	DS-53	AP+PS	7/14/2020	1102	1107	40	39	Pass	TH
95 / 122	NEOS	SEOS	935	10	EA	WW-26	15.2		AP+PS	7/13/2020	852	857	40	39	Pass	TH
124 / 125	EEOS	WEOS	1009	10	EA	WW-26	6.8		AP+PS	7/13/2020	920	925	40	40	Pass	TH
121 / 124	NEOS	SEOS	1011	10	JK	WW-22	83.3		AP+PS	7/13/2020	947	952	40	39	Pass	TH
122 / 125	NEOS	17E	1020	10	EA	WW-26	35.1	DS-56	AP+PS	7/24/2020	1417	1422	40	39	Pass	TH
122 / 125	17E	SEOS	1036	10	EA	WW-26	35.0	DS-56	AP+PS	7/14/2020	920	925	40	39	Pass	TH
121 / 123	NEOS	SEOS	1040	10	JK	WW-22	23.8		AP+PS	7/13/2020	1011	1016	40	37	Pass	TH
122 / 124	NEOS	SEOS	1047	10	EA	WW-26	44.0		AP+PS	7/13/2020	909	914	40	40	Pass	TH
126 / 127	EEOS	WEOS	1134	10	JK	WW-22	6.8		AP+PS	7/17/2020	1220	1225	40	40	Pass	TH
124 / 127	14E	SEOS	1135	10	JK	WW-22	46.7		AP+PS	7/13/2020	944	949	40	40	Pass	TH
127 / 128	EEOS	WEOS	1135	10	EA	WW-26	6.8		AP+PS	7/14/2020	1133	1138	40	40	Pass	TH
124 / 126	NEOS	SEOS	1139	10	JK	WW-22	36.6		AP+PS	7/13/2020	1010	1015	40	37	Pass	TH
128 / 129	EEOS	WEOS	1200	10	EA	WW-26	6.8		AP+PS	7/14/2020	1133	1138	40	40	Pass	TH
123 / 126	NEOS	SEOS	1218	10	JK	WW-22	11.4		AP+PS	7/13/2020	1010	1015	40	39	Pass	TH
125 / 129	NEOS	SEOS	1237	10	EA	WW-26	33.6	DS-57	AP+PS	7/14/2020	1133	1138	40	40	Pass	TH
125 / 128	NEOS	SEOS	1249	10	EA	WW-26	1.0		AP+PS	7/13/2020	921	926	40	40	Pass	TH
125 / 127	NEOS	SEOS	1250	10	EA	WW-26	36.5		AP+PS	7/13/2020	921	926	40	40	Pass	TH
124 / 127	NEOS	14E	1302	10	EA	WW-26	45.0		AP+PS	7/13/2020	927	932	40	40	Pass	TH
123 / 124	EEOS	WEOS	1345	10	EA	WW-26	6.8		AP+PS	7/13/2020	1005	1010	40	40	Pass	TH
						PAGE TOTAL	695.3									

TEST METHOD

AL - AIR LANCE	ST - SPARK TEST
AP - AIR PRESSURE	VB - EXTRUDED
PS - POINT STRESS	& VAC BOX

REMARKS:

QC TECH: Thomas Howald
SUPERVISOR: Chad Messervey
SUBMISSION DATE: 2020/01/05
SHEET NUMBER: 28 of 113

GEOMEMBRANE SEAM & TEST LOG

PROJECT NUMBER CT001401 | AREA / LAYER Primary
PROJECT TITLE Victoria Gold Heap Leach Pad Phase 1B | SEAM DATE 2020/07/13

TRIAL SEAMS

#	MACHINE NUMBER	TIME	TECH	AIR TEMP °C	SPEED	TEMP/ SETTING	INSIDE PEEL (PPI)					OUTSIDE PEEL (PPI)					SHEAR (PPI)					CHK'D BY	LINER TO LINER TYPE AND REMARKS
1	WW-22	943	JK	10	35.0%	454°C	135	157	156	154	159	158	157	142	147	150	161	160	154	156	159	TH	TT
2	WW-26	950	EA	10	35.0%	454°C	146	142	149	148	147	135	162	155	152	155	160	170	168	173	171	TH	TT
3	WW-26	956	EA	10	55.0%	454°C	144	147	139	142	140	152	144	146	141	144	150	151	148	151	149	TH	SS
4	WW-22	1010	JK	10	55.0%	454°C	153	154	164	159	158	139	136	140	152	144	174	174	169	170	168	TH	SS

WELD SEAMS

PANEL NUMBERS	SEAM SECTION FROM	SEAM SECTION TO	START TIME	AIR TEMP °C	WELD TECH	MACHINE NUMBER	WELD LENGTH	DESTRUCT NUMBER	QC TEST METH.	QC TEST DATE Y-M-D	AIR PRESSURE TEST (PSI) TIME START	TIME END	PRESSURE START	PRESSURE END	VERIFY PASS	VERIFY QC TECH
130 / 131	EEOS	WEOS	944	10	JK	WW-22	6.8	DS-66	AP+PS	7/25/2020	1550	1555	40	40	Pass	TH
129 / 132	NEOS	SEOS	957	10	EA	WW-26	34.6		AP+PS	7/14/2020	1133	1138	40	40	Pass	TH
131 / 132	EEOS	WEOS	1006	10	JK	WW-22	6.8		AP+PS	7/25/2020	1428	1433	40	40	Pass	TH
127 / 132	NEOS	SEOS	1010	10	EA	WW-26	45.6		AP+PS	7/25/2020	1428	1433	40	40	Pass	TH
127 / 131	NEOS	SEOS	1014	10	JK	WW-22	82.6		AP+PS	7/25/2020	1428	1433	40	38	Pass	TH
126 / 131	NEOS	SEOS	1042	10	JK	WW-22	10.6		AP+PS	7/17/2020	1220	1225	40	40	Pass	TH
126 / 130	NEOS	SEOS	1045	10	JK	WW-22	23.0		AP+PS	7/17/2020	1220	1225	40	40	Pass	TH
134 / 135	EEOS	WEOS	1335	10	EA	WW-26	6.8		AP+PS	7/18/2020	917	922	40	40	Pass	TH
132 / 135	NEOS	SEOS	1340	10	EA	WW-26	27.5		AP+PS	7/18/2020	917	922	40	40	Pass	TH
132 / 134	NEOS	SEOS	1355	10	EA	WW-26	56.7		AP+PS	7/25/2020	1430	1435	40	40	Pass	TH
131 / 134	NEOS	SEOS	1356	10	JK	WW-22	72.1		AP+PS	7/25/2020	1430	1435	40	39	Pass	TH
131 / 133	NEOS	SEOS	1402	10	JK	WW-22	18.7		AP+PS	7/25/2020	1550	1555	40	40	Pass	TH
130 / 133	NEOS	SEOS	1409	10	JK	WW-22	11.7	DS-67	AP+PS	7/25/2020	1550	1555	40	40	Pass	TH
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PAGE TOTAL 403.5

TEST METHOD
AL - AIR LANCE | ST - SPARK TEST
AP - AIR PRESSURE | VB - EXTRUDED & VAC BOX
PS - POINT STRESS

REMARKS:

QC TECH Thomas Howald
SUPERVISOR Chad Messervey
SUBMISSION DATE 2020/01/05
SHEET NUMBER 29 of 113

GEOMEMBRANE SEAM & TEST LOG

PROJECT NUMBER CT001401 | AREA / LAYER Primary
PROJECT TITLE Victoria Gold Heap Leach Pad Phase 1B | SEAM DATE 2020/07/14

TRIAL SEAMS

#	MACHINE NUMBER	TIME	TECH	AIR TEMP °C	SPEED	TEMP/ SETTING	INSIDE PEEL (PPI)					OUTSIDE PEEL (PPI)					SHEAR (PPI)					CHK'D BY	LINER TO LINER TYPE AND REMARKS
1	WW-26	1030	EA	10	35.0%	454°C	150	134	149	161	165	144	164	158	160	143	186	189	184	187	185	TH	TT
2	WW-26	1030	EA	10	55.0%	454°C	145	151	161	137	147	152	151	150	152	148	173	171	173	172	169	TH	SS
3	WW-22	1030	JK	10	35.0%	454°C	153	141	165	155	163	162	155	174	164	159	163	152	175	178	169	TH	TT
4	WW-22	1030	JK	10	55.0%	454°C	170	170	163	166	164	166	151	159	163	165	167	174	158	155	171	TH	SS

WELD SEAMS

PANEL NUMBERS	SEAM SECTION FROM	SEAM SECTION TO	START TIME	AIR TEMP °C	WELD TECH	MACHINE NUMBER	WELD LENGTH	DESTRUCT NUMBER	QC TEST METH.	QC TEST DATE Y-M-D	AIR PRESSURE TEST (PSI) TIME START	TIME END	PRESSURE START	PRESSURE END	VERIFY PASS	VERIFY QC TECH
136 / 137	EEOS	SEOS	1030	10	JK	WW-22	6.8		AP+PS	7/18/2020	802	807	40	40	Pass	TH
135 / 138	NEOS	SEOS	1033	10	EA	WW-26	32.2	DS-58	AP+PS	7/18/2020	917	922	40	40	Pass	TH
138 / 137	EEOS	SEOS	1036	10	JK	WW-22	6.8		AP+PS	7/25/2020	1442	1447	40	40	Pass	TH
134 / 138	NEOS	SEOS	1041	10	EA	WW-26	25.1		AP+PS	7/25/2020	1442	1447	40	40	Pass	TH
134 / 137	NEOS	SEOS	1054	10	EA	WW-26	100.0		AP+PS	7/25/2020	1442	1447	40	39	Pass	TH
139 / 140	EEOS	SEOS	1128	10	JK	WW-22	6.8		AP+PS	7/18/2020	825	830	40	40	Pass	TH
134 / 136	NEOS	SEOS	1130	10	EA	WW-26	5.7		AP+PS	7/18/2020	803	808	40	40	Pass	TH
133 / 136	NEOS	SEOS	1132	10	EA	WW-26	18.7		AP+PS	7/18/2020	803	808	40	40	Pass	TH
138 / 140	NEOS	SEOS	1141	10	JK	WW-22	57.3	DS-59	AP+PS	7/25/2020	1444	1449	40	40	Pass	TH
137 / 140	NEOS	SEOS	1200	10	JK	WW-22	46.9		AP+PS	7/25/2020	1444	1449	40	40	Pass	TH
137 / 139	NEOS	SEOS	1216	10	JK	WW-22	53.1		AP+PS	7/18/2020	802	807	40	40	Pass	TH
136 / 139	NEOS	SEOS	1233	10	JK	WW-22	12.8		AP+PS	7/18/2020	802	807	40	40	Pass	TH
142 / 143	EEOS	SEOS	1335	10	EA	WW-26	6.8	DS-69	AP+PS	7/18/2020	824	829	40	40	Pass	TH
141 / 142	EEOS	SEOS	1352	10	EA	WW-26	6.8		AP+PS	7/21/2020	1450	1455	40	39	Pass	TH
139 / 141	SEOS	NEOS	1359	10	EA	WW-26	14.8		AP+PS	7/18/2020	800	805	40	40	Pass	TH
140 / 143	17G	17H	1400	10	JK	WW-22	30.1		AP+PS	7/18/2020	859	904	40	40	Pass	TH
139 / 142	SEOS	NEOS	1405	10	EA	WW-26	23.7	DS-68	AP+PS	7/18/2020	800	805	40	40	Pass	TH
139 / 143	SEOS	NEOS	1414	10	EA	WW-26	14.6		AP+PS	7/18/2020	825	830	40	40	Pass	TH
140 / 143	17H	NEOS	1414	10	JK	WW-22	42.3		AP+PS	7/18/2020	859	904	40	39	Pass	TH
140 / 143	SEOS	17G	1426	10	EA	WW-26	32.1		AP+PS	7/18/2020	859	904	40	40	Pass	TH
						PAGE TOTAL	543.4									

TEST METHOD
AL - AIR LANCE
AP - AIR PRESSURE
PS - POINT STRESS
ST - SPARK TEST
VB - EXTRUDED & VAC BOX

REMARKS:

QC TECH Thomas Howald
SUPERVISOR Chad Messervey
SUBMISSION DATE 2020/01/05
SHEET NUMBER 30 of 113

GEOMEMBRANE SEAM & TEST LOG

PROJECT NUMBER CT001401 | AREA / LAYER Primary
PROJECT TITLE Victoria Gold Heap Leach Pad Phase 1B | SEAM DATE 2020/07/15

TRIAL SEAMS

#	MACHINE NUMBER	TIME	TECH	AIR TEMP °C	SPEED	TEMP/ SETTING	INSIDE PEEL (PPI)					OUTSIDE PEEL (PPI)					SHEAR (PPI)					CHK'D BY	LINER TO LINER TYPE AND REMARKS
1	WW-26	730	EA	10	35.0%	454°C	149	149	154	143	146	128	127	143	149	137	164	163	171	166	166	TH	TT
2	WW-26	730	EA	10	55.0%	454°C	143	140	143	146	145	139	142	146	145	139	164	161	167	164	163	TH	SS
3	WW-22	735	JK	10	35.0%	454°C	141	150	144	141	157	149	150	149	149	146	168	165	173	163	172	TH	TT
4	WW-22	735	JK	10	55.0%	454°C	141	150	152	140	145	148	154	140	148	144	169	166	170	171	172	TH	SS
5	WW-26	1200	EA	15	35.0%	454°C	136	137	143	134	154	178	152	128	157	139	188	181	179	187	191	TH	TT
6	WW-22	1200	JK	15	55.0%	454°C	160	157	167	170	171	170	160	153	144	167	184	179	181	178	183	TH	SS

WELD SEAMS

PANEL NUMBERS	SEAM SECTION FROM	SEAM SECTION TO	START TIME	AIR TEMP °C	WELD TECH	MACHINE NUMBER	WELD LENGTH	DESTRUCT NUMBER	QC TEST METH.	QC TEST DATE Y-M-D	AIR PRESSURE TEST (PSI) TIME START	TIME END	PRESSURE START	PRESSURE END	VERIFY PASS	VERIFY QC TECH
144 / 145	EEOS	WEOS	815	10	EA	WW-26	6.8		AP+PS	7/25/2020	1456	1501	40	40	Pass	TH
143 / 145	NEOS	SEOS	825	15	EA	WW-26	29.4	DS-60	AP+PS	7/5/2020	1707	1712	40	39	Pass	TH
143 / 144	NEOS	SEOS	837	15	EA	WW-26	91.7		AP+PS	7/25/2020	1456	1501	40	40	Pass	TH
146 / 147	EEOS	WEOS	847	10	JK	WW-22	6.8		AP+PS	7/17/2020	1652	1657	40	40	Pass	TH
147 / 148	EEOS	WEOS	900	10	JK	WW-22	6.8		AP+PS	7/25/2020	1707	1712	40	40	Pass	TH
145 / 148	NEOS	SEOS	908	15	JK	WW-22	8.2	DS-61	AP+PS	7/17/2020	1342	1347	40	38	Pass	TH
145 / 147	NEOS	SEOS	911	15	JK	WW-22	21.2	DS-70	AP+PS	7/25/2020	1458	1503	40	40	Pass	TH
144 / 147	NEOS	SEOS	918	15	JK	WW-22	78.6		AP+PS	7/17/2020	1655	1700	40	40	Pass	TH
142 / 144	NEOS	SEOS	924	15	EA	WW-26	23.7		AP+PS	7/21/2020	1450	1455	40	40	Pass	TH
144 / 146	NEOS	SEOS	944	15	JK	WW-22	25.5		AP+PS	7/17/2020	1659	1704	40	38	Pass	TH
148 / 149	NEOS	SEOS	1019	15	EA	WW-26	8.2		AP+PS	7/17/2020	1340	1345	40	39	Pass	TH
147 / 149	NEOS	17K	1022	15	EA	WW-26	43.6	DS-71	AP+PS	7/18/2020	901	906	40	40	Pass	TH
147 / 149	17K	SEOS	1048	15	EA	WW-26	55.9	DS-71	AP+PS	7/17/2020	1653	1658	40	40	Pass	TH
146 / 149	NEOS	SEOS	1101	15	EA	WW-26	12.4		AP+PS	7/17/2020	1652	1657	40	40	Pass	TH
151 / 164	NEOS	SEOS	1127	15	JK	WW-22	68.0		AP+PS	7/17/2020	1337	1342	40	40	Pass	TH
151 / 163	NEOS	SEOS	1205	15	JK	WW-22	24.3		AP+PS	7/25/2020	1429	1434	40	40	Pass	TH
149 / 151	NEOS	SEOS	1208	15	JK	WW-22	95.0		AP+PS	7/17/2020	1339	1344	40	40	Pass	TH
150 / 151	EEOS	WEOS	1215	10	EA	WW-26	6.8		AP+PS	7/21/2020	1432	1437	40	40	Pass	TH
149 / 150	NEOS	SEOS	1230	15	JK	WW-22	10.7	DS-62	AP+PS	7/17/2020	1647	1652	40	39	Pass	TH
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						PAGE TOTAL	623.6									

TEST METHOD

AL - AIR LANCE	ST - SPARK TEST
AP - AIR PRESSURE	VB - EXTRUDED & VAC BOX
PS - POINT STRESS	

REMARKS:

QC TECH: Thomas Howald
SUPERVISOR: Chad Messervey
SUBMISSION DATE: 2020/01/05
SHEET NUMBER: 31 of 113

GEOMEMBRANE SEAM & TEST LOG

PROJECT NUMBER CT001401 | AREA / LAYER Primary
PROJECT TITLE Victoria Gold Heap Leach Pad Phase 1B | SEAM DATE 2020/07/15

TRIAL SEAMS

#	MACHINE NUMBER	TIME	TECH	AIR TEMP °C	SPEED	TEMP/ SETTING	INSIDE PEEL (PPI)					OUTSIDE PEEL (PPI)					SHEAR (PPI)					CHK'D BY	LINER TO LINER TYPE AND REMARKS
7	WW-20	1300	JK	15	55.0%	454°C	143	119	138	130	122	137	136	119	121	127	148	152	151	151	149	TH	SS

WELD SEAMS

PANEL NUMBERS	SEAM SECTION FROM	SEAM SECTION TO	START TIME	AIR TEMP °C	WELD TECH	MACHINE NUMBER	WELD LENGTH	DESTRUCT NUMBER	QC TEST METH.	QC TEST DATE Y-M-D	AIR PRESSURE TEST (PSI) TIME START	TIME END	PRESSURE START	PRESSURE END	VERIFY PASS	VERIFY QC TECH
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TEST METHOD

AL - AIR LANCE	ST - SPARK TEST
AP - AIR PRESSURE	VB - EXTRUDED & VAC BOX
PS - POINT STRESS	

REMARKS:

QC TECH: Thomas Howald
SUPERVISOR: Chad Messervey
SUBMISSION DATE: 2020/01/05
SHEET NUMBER: 32 of 113

GEOMEMBRANE SEAM & TEST LOG

PROJECT NUMBER CT001401 | AREA / LAYER Primary
PROJECT TITLE Victoria Gold Heap Leach Pad Phase 1B | SEAM DATE 2020/07/16

TRIAL SEAMS

#	MACHINE NUMBER	TIME	TECH	AIR TEMP °C	SPEED	TEMP/ SETTING	INSIDE PEEL (PPI)					OUTSIDE PEEL (PPI)					SHEAR (PPI)					CHK'D BY	LINER TO LINER TYPE AND REMARKS
1	WW-22	1100	JK	15	55.0%	454°C	160	160	147	151	175	145	145	152	156	157	180	187	181	181	179	TH	SS
2	WW-22	1100	JK	15	35.0%	454°C	147	152	166	148	148	157	140	133	159	146	177	175	182	179	181	TH	TT
3	WW-26	1100	EA	15	55.0%	454°C	162	165	158	155	157	149	139	143	161	160	178	179	173	170	168	TH	SS
4	WW-26	1100	EA	15	35.0%	454°C	151	172	154	166	142	151	162	158	134	148	174	178	190	186	188	TH	TT
5	WW-20	1300	JK	15	55.0%	454°C	131	135	146	132	133	142	135	140	132	139	155	161	154	155	155	TH	SS

WELD SEAMS

PANEL NUMBERS	SEAM SECTION FROM	SEAM SECTION TO	START TIME	AIR TEMP °C	WELD TECH	MACHINE NUMBER	WELD LENGTH	DESTRUCT NUMBER	QC TEST METH.	QC TEST DATE Y-M-D	AIR PRESSURE TEST (PSI) TIME START	TIME END	PRESSURE START	PRESSURE END	VERIFY PASS	VERIFY QC TECH
152 / 153	EEOS	WEOS	1143	15	EA	WW-26	6.8		AP+PS	7/17/2020	1629	1634	40	40	Pass	TH
164 / 153	NEOS	SEOS	1151	15	EA	WW-26	22.8		AP+PS	7/17/2020	1336	1341	40	40	Pass	TH
164 / 152	NEOS	SEOS	1159	15	EA	WW-26	45.2		AP+PS	7/17/2020	1629	1634	40	40	Pass	TH
154 / 155	EEOS	WEOS	1204	15	JK	WW-22	6.8		AP+PS	7/17/2020	1407	1412	40	40	Pass	TH
156 / 157	EEOS	WEOS	1210	15	JK	WW-22	6.8		AP+PS	7/17/2020	1405	1410	40	40	Pass	TH
163 / 152	NEOS	SEOS	1216	15	EA	WW-26	11.6		AP+PS	7/17/2020	1637	1642	40	40	Pass	TH
152 / 154	SEOS	NEOS	1222	15	EA	WW-26	16.3	DS-72	AP+PS	7/17/2020	1417	1422	40	40	Pass	TH
154 / 156	SEOS	NEOS	1226	15	JK	WW-22	5.0		AP+PS	7/17/2020	1625	1630	40	40	Pass	TH
152 / 155	SEOS	NEOS	1229	15	EA	WW-26	28.6		AP+PS	7/17/2020	1407	1412	40	40	Pass	TH
155 / 156	SEOS	NEOS	1229	15	JK	WW-22	4.8		AP+PS	7/17/2020	1407	1412	40	40	Pass	TH
155 / 157	SEOS	NEOS	1231	15	JK	WW-22	19.8		AP+PS	7/17/2020	1405	1410	40	40	Pass	TH
153 / 155	SEOS	NEOS	1240	15	EA	WW-26	21.8		AP+PS	7/17/2020	1334	1339	40	40	Pass	TH
155 / 157	SEOS	NEOS	1240	15	JK	WW-22	24.8		AP+PS	7/17/2020	1333	1338	40	39	Pass	TH
158 / 159	EEOS	WEOS	1300	15	JK	WW-22	5.6		AP+PS	7/17/2020	1408	1413	40	40	Pass	TH
157 / 158	SEOS	NEOS	1307	15	EA	WW-26	7.4		AP+PS	7/17/2020	1400	1405	40	40	Pass	TH
157 / 159	SEOS	NEOS	1310	15	EA	WW-26	35.0		AP+PS	7/17/2020	1331	1336	40	40	Pass	TH
159 / 160	SEOS	NEOS	1321	15	JK	WW-20	11.4		AP+PS	7/17/2020	1415	1420	40	40	Pass	TH
160 / 161	SEOS	NEOS	1325	15	EA	WW-26	19.5		AP+PS	7/21/2020	1403	1408	40	39	Pass	TH
159 / 160	SEOS	NEOS	1329	15	JK	WW-20	19.1		AP+PS	7/21/2020	1409	1414	40	40	Pass	TH
161 / 162	SEOS	NEOS	1334	15	EA	WW-26	7.6		AP+PS	7/17/2020	1315	1325	40	40	Pass	TH
						PAGE TOTAL	326.7									

TEST METHOD
AL - AIR LANCE | ST - SPARK TEST
AP - AIR PRESSURE | VB - EXTRUDED & VAC BOX
PS - POINT STRESS

REMARKS:

QC TECH: Thomas Howald
SUPERVISOR: Chad Messervey
SUBMISSION DATE: 2020/01/05
SHEET NUMBER: 33 of 113

GEOMEMBRANE SEAM & TEST LOG

PROJECT NUMBER CT001401 | AREA / LAYER Primary
PROJECT TITLE Victoria Gold Heap Leach Pad Phase 1B | SEAM DATE 2020/07/18

TRIAL SEAMS

#	MACHINE NUMBER	TIME	TECH	AIR TEMP °C	SPEED	TEMP/ SETTING	INSIDE PEEL (PPI)					OUTSIDE PEEL (PPI)					SHEAR (PPI)					CHK'D BY	LINER TO LINER TYPE AND REMARKS
1	WW-54	830	RW	15	35.0%	454°C	133	143	142	150	152	141	140	134	138	135	154	169	167	173	170	TH	TT
2	WW-22	900	JK	15	40.0%	454°C	138	137	138	146	150	126	126	133	131	128	153	153	151	157	154	TH	TS
3	WW-26	900	EA	15	40.0%	454°C	117	124	145	152	133	128	127	147	139	143	151	154	149	167	158	TH	TS
4	WW-54	1415	RW	15	35.0%	454°C	154	155	153	137	164	136	137	146	157	137	160	175	180	163	176	TH	TT
5	WW-26	1415	EA	15	55.0%	454°C	148	157	134	156	147	146	156	158	154	153	164	166	166	166	169	TH	SS
6	WW-22	1415	JK	15	55.0%	454°C	154	156	145	156	147	154	153	151	151	152	179	176	175	177	178	TH	SS

WELD SEAMS

PANEL NUMBERS	SEAM SECTION FROM	SEAM SECTION TO	START TIME	AIR TEMP °C	WELD TECH	MACHINE NUMBER	WELD LENGTH	DESTRUCT NUMBER	QC TEST METH.	QC TEST DATE Y-M-D	AIR PRESSURE TEST (PSI) TIME START	TIME END	PRESSURE START	PRESSURE END	VERIFY PASS	VERIFY QC TECH
166 / 165	EEOS	WEOS	900	15	RW	WW-54	6.8		AP+PS	7/25/2020	1555	1600	40	40	Pass	TH
167 / 166	EEOS	WEOS	920	15	RW	WW-54	6.8		AP+PS	7/21/2020	1446	1451	40	40	Pass	TH
168 / 167	EEOS	WEOS	950	15	RW	WW-54	6.8		AP+PS	7/21/2020	1424	1429	40	40	Pass	TH
168 / 162	NEOS	SEOS	958	15	JK	WW-22	7.2		AP+PS	7/21/2020	1402	1407	40	40	Pass	TH
168 / 161	NEOS	SEOS	1000	15	JK	WW-22	12.4		AP+PS	7/21/2020	1458	1503	40	40	Pass	TH
168 / 160	NEOS	SEOS	1006	15	JK	WW-22	12.4		AP+PS	7/21/2020	1409	1414	40	40	Pass	TH
166 / 139	NEOS	SEOS	1009	15	RW	WW-54	13.5		AP+PS	7/25/2020	1533	1538	40	40	Pass	TH
168 / 159	NEOS	SEOS	1012	15	JK	WW-22	4.9		AP+PS	7/21/2020	1411	1416	40	40	Pass	TH
168 / 158	NEOS	SEOS	1014	15	JK	WW-22	7.8		AP+PS	7/21/2020	1411	1416	40	40	Pass	TH
166 / 136	NEOS	SEOS	1018	15	RW	WW-54	13.5		AP+PS	7/25/2020	1548	1553	40	40	Pass	TH
168 / 156	NEOS	SEOS	1019	15	JK	WW-22	11.2		AP+PS	7/21/2020	1420	1425	40	40	Pass	TH
168 / 154	NEOS	SEOS	1025	15	JK	WW-22	13.4		AP+PS	7/21/2020	1420	1425	40	40	Pass	TH
166 / 133	NEOS	SEOS	1025	15	RW	WW-54	13.4		AP+PS	7/25/2020	1548	1553	40	40	Pass	TH
168 / 152	NEOS	SEOS	1032	15	JK	WW-22	13.6		AP+PS	7/21/2020	1424	1429	40	40	Pass	TH
166 / 130	NEOS	SEOS	1032	15	RW	WW-54	3.4		AP+PS	7/25/2020	1555	1600	40	40	Pass	TH
165 / 130	NEOS	SEOS	1035	15	RW	WW-54	10.6		AP+PS	7/25/2020	1555	1600	40	40	Pass	TH
167 / 163	NEOS	SEOS	1039	15	JK	WW-22	12.6		AP+PS	7/21/2020	1424	1429	40	40	Pass	TH
165 / 126	NEOS	SEOS	1039	15	RW	WW-54	13.9	DS-86	AP+PS	7/25/2020	1600	1605	40	40	Pass	TH
167 / 151	NEOS	SEOS	1045	15	JK	WW-22	2.1		AP+PS	7/21/2020	1515	1520	40	39	Pass	TH
165 / 123	NEOS	SEOS	1047	15	RW	WW-54	14.0		AP+PS	7/25/2020	1602	1607	40	40	Pass	TH
						PAGE TOTAL	200.3									

TEST METHOD
AL - AIR LANCE | ST - SPARK TEST
AP - AIR PRESSURE | VB - EXTRUDED & VAC BOX
PS - POINT STRESS

REMARKS:

QC TECH: Thomas Howald
SUPERVISOR: Chad Messervey
SUBMISSION DATE: 2020/01/05
SHEET NUMBER: 34 of 113

GEOMEMBRANE SEAM & TEST LOG

PROJECT NUMBER CT001401 | AREA / LAYER Primary
PROJECT TITLE Victoria Gold Heap Leach Pad Phase 1B | SEAM DATE 2020/07/18

TRIAL SEAMS

#	MACHINE NUMBER	TIME	TECH	AIR TEMP °C	SPEED	TEMP/ SETTING	INSIDE PEEL (PPI)					OUTSIDE PEEL (PPI)					SHEAR (PPI)					CHK'D BY	LINER TO LINER TYPE AND REMARKS

WELD SEAMS

PANEL NUMBERS	SEAM SECTION FROM	SEAM SECTION TO	START TIME	AIR TEMP °C	WELD TECH	MACHINE NUMBER	WELD LENGTH	DESTRUCT NUMBER	QC TEST METH.	QC TEST DATE Y-M-D	AIR PRESSURE TEST (PSI) TIME START	TIME END	PRESSURE START	PRESSURE END	VERIFY PASS	VERIFY QC TECH
167 / 150	NEOS	SEOS	1048	15	JK	WW-22	11.8		AP+PS	7/21/2020	1432	1437	40	40	Pass	TH
167 / 149	NEOS	SEOS	1052	15	JK	WW-22	13.8		AP+PS	7/21/2020	1445	1450	40	40	Pass	TH
165 / 121	NEOS	SEOS	1054	15	RW	WW-54	12.8		AP+PS	7/25/2020	1602	1607	40	40	Pass	TH
167 / 146	NEOS	SEOS	1100	15	JK	WW-22	4.0		AP+PS	7/21/2020	1446	1451	40	40	Pass	TH
166 / 146	NEOS	SEOS	1101	15	JK	WW-22	10.1		AP+PS	7/21/2020	1446	1451	40	40	Pass	TH
166 / 144	NEOS	18O	1106	15	JK	WW-22	7.3		AP+PS	7/21/2020	1447	1452	40	40	Pass	TH
166 / 144	18O	SEOS	1109	15	JK	WW-22	7.1		AP+PS	7/21/2020	1447	1452	40	40	Pass	TH
166 / 141	NEOS	18Q	1113	15	JK	WW-22	7.2		AP+PS	7/21/2020	1502	1507	40	40	Pass	TH
170 / 169	EEOS	WEOS	1455	15	RW	WW-54	6.8	DS-83	AP+PS	7/31/2020	836	841	40	40	Pass	TH
171 / 170	EEOS	WEOS	1516	15	RW	WW-54	6.8		AP+PS	7/21/2020	1503	1508	40	40	Pass	TH
167 / 171	NEOS	SEOS	1520	15	EA	WW-26	31.6		AP+PS	7/25/2020	1505	1510	40	38	Pass	TH
166 / 171	NEOS	SEOS	1533	15	EA	WW-26	33.6		AP+PS	7/25/2020	1515	1520	40	39	Pass	TH
172 / 171	EEOS	WEOS	1535	15	RW	WW-54	6.8		AP+PS	7/21/2020	1515	1520	40	39	Pass	TH
168 / 172	NEOS	SEOS	1535	15	JK	WW-22	87.3		AP+PS	7/25/2020	1516	1521	40	40	Pass	TH
166 / 170	NEOS	SEOS	1544	15	EA	WW-26	49.0		AP+PS	7/31/2020	848	853	40	40	Pass	TH
165 / 170	NEOS	SEOS	1604	15	EA	WW-26	13.0		AP+PS	7/31/2020	837	842	40	40	Pass	TH
167 / 172	NEOS	SEOS	1608	15	JK	WW-22	12.5		AP+PS	7/25/2020	1515	1520	40	39	Pass	TH
165 / 169	NEOS	SEOS	1608	15	EA	WW-26	38.6	DS-84 & 85	AP+PS	7/31/2020	837	842	40	40	Pass	TH
/																
/																
						PAGE TOTAL	360.1									

TEST METHOD

AL - AIR LANCE	ST - SPARK TEST
AP - AIR PRESSURE	VB - EXTRUDED & VAC BOX
PS - POINT STRESS	

REMARKS:

QC TECH: Thomas Howald
SUPERVISOR: Chad Messervey
SUBMISSION DATE: 2020/01/05
SHEET NUMBER: 35 of 113

GEOMEMBRANE SEAM & TEST LOG

PROJECT NUMBER CT001401 | AREA / LAYER Primary
PROJECT TITLE Victoria Gold Heap Leach Pad Phase 1B | SEAM DATE 2020/07/21

TRIAL SEAMS

#	MACHINE NUMBER	TIME	TECH	AIR TEMP °C	SPEED	TEMP/ SETTING	INSIDE PEEL (PPI)					OUTSIDE PEEL (PPI)					SHEAR (PPI)					CHK'D BY	LINER TO LINER TYPE AND REMARKS
1	WW-26	800	RW	15	55.0%	454°C	171	162	161	157	155	166	136	167	164	168	198	202	198	197	200	TH	SS
2	WW-26	800	RW	15	35.0%	454°C	132	123	153	144	126	131	130	151	148	141	174	174	176	178	179	TH	TT
3	WW-22	800	EA	15	55.0%	454°C	148	146	156	152	153	146	133	144	136	153	199	193	186	197	194	TH	SS
4	WW-26	1215	RW	15	35.0%	454°C	119	118	114	124	113	114	124	129	122	119	134	130	131	138	140	TH	TT
5	WW-26	1215	RW	15	55.0%	454°C	117	120	131	137	123	128	136	128	121	138	165	166	166	159	154	TH	SS
6	WW-22	1215	JK	15	55.0%	454°C	135	134	138	139	143	117	121	119	124	123	150	144	142	157	148	TH	SS

WELD SEAMS

PANEL NUMBERS	SEAM SECTION FROM	SEAM SECTION TO	START TIME	AIR TEMP °C	WELD TECH	MACHINE NUMBER	WELD LENGTH	DESTRUCT NUMBER	QC TEST METH.	QC TEST DATE Y-M-D	AIR PRESSURE TEST (PSI) TIME START	TIME END	PRESSURE START	PRESSURE END	VERIFY PASS	VERIFY QC TECH
175 / 174	EEOS	WEOS	903	20	RW	WW-26	6.8		AP+PS	7/31/2020	855	900	40	40	Pass	TH
172 / 176	NEOS	SEOS	939	20	JK	WW-22	105.2		AP+PS	7/29/2020	1717	1722	40	40	Pass	TH
176 / 175	EEOS	WEOS	943	20	RW	WW-26	6.8		AP+PS	7/30/2020	1258	1303	40	40	Pass	TH
174 / 173	EEOS	WEOS	943	20	RW	WW-26	6.8	DS-81	AP+PS	7/31/2020	855	900	40	40	Pass	TH
171 / 175	NEOS	SEOS	944	20	RW	WW-26	50.6		AP+PS	7/30/2020	1341	1346	40	40	Pass	TH
170 / 175	NEOS	SEOS	1004	20	RW	WW-26	19.3		AP+PS	7/31/2020	855	900	40	40	Pass	TH
170 / 174	NEOS	SEOS	1011	20	RW	WW-26	42.8		AP+PS	7/31/2020	836	841	40	40	Pass	TH
171 / 176	NEOS	SEOS	1017	20	JK	WW-22	14.6		AP+PS	7/30/2020	1258	1303	40	40	Pass	TH
169 / 174	NEOS	SEOS	1028	20	RW	WW-26	13.6		AP+PS	7/31/2020	831	836	40	40	Pass	TH
169 / 173	NEOS	20A	1033	20	RW	WW-26	8.3	DS-82	AP+PS	7/31/2020	831	836	40	40	Pass	TH
169 / 173	20A	SEOS	1037	20	RW	WW-26	17.0	DS-82	AP+PS	7/31/2020	830	835	40	40	Pass	TH
178 / 177	EEOS	WEOS	1224	20	RW	WW-26	6.8	DS-79	AP+PS	7/31/2020	811	816	40	40	Pass	TH
179 / 178	EEOS	WEOS	1311	20	RW	WW-26	6.8		AP+PS	7/31/2020	809	814	40	39	Pass	TH
180 / 179	EEOS	WEOS	1329	20	RW	WW-26	6.8		AP+PS	7/30/2020	1344	1349	40	40	Pass	TH
182 / 181	EEOS	WEOS	1352	20	RW	WW-26	6.8		AP+PS	7/30/2020	1302	1307	40	39	Pass	TH
181 / 180	EEOS	WEOS	1357	20	RW	WW-26	6.8		AP+PS	7/29/2020	1718	1723	40	40	Pass	TH
176 / 182	NEOS	SEOS	1358	20	JK	WW-22	12.0		AP+PS	7/29/2020	1718	1723	40	40	Pass	TH
176 / 181	NEOS	SEOS	1403	20	JK	WW-22	74.5		AP+PS	7/30/2020	1302	1307	40	40	Pass	TH
175 / 179	NEOS	22I	1408	20	RW	WW-26	10.0		AP+PS	7/30/2020	1344	1349	40	40	Pass	TH
175 / 179	22I	SEOS	1413	20	RW	WW-26	43.4		AP+PS	7/30/2020	1404	1409	40	40	Pass	TH
						PAGE TOTAL	465.7									

TEST METHOD
AL - AIR LANCE | ST - SPARK TEST
AP - AIR PRESSURE | VB - EXTRUDED & VAC BOX
PS - POINT STRESS

REMARKS:

QC TECH: Thomas Howald
SUPERVISOR: Chad Messervey
SUBMISSION DATE: 2020/01/05
SHEET NUMBER: 36 of 113

GEOMEMBRANE SEAM & TEST LOG

PROJECT NUMBER CT001401 | AREA / LAYER Primary
PROJECT TITLE Victoria Gold Heap Leach Pad Phase 1B | SEAM DATE 2020/07/21

TRIAL SEAMS

#	MACHINE NUMBER	TIME	TECH	AIR TEMP °C	SPEED	TEMP/ SETTING	INSIDE PEEL (PPI)					OUTSIDE PEEL (PPI)					SHEAR (PPI)					CHK'D BY	LINER TO LINER TYPE AND REMARKS

WELD SEAMS

PANEL NUMBERS	SEAM SECTION FROM	SEAM SECTION TO	START TIME	AIR TEMP °C	WELD TECH	MACHINE NUMBER	WELD LENGTH	DESTRUCT NUMBER	QC TEST METH.	QC TEST DATE Y-M-D	AIR PRESSURE TEST (PSI) TIME START	TIME END	PRESSURE START	PRESSURE END	VERIFY PASS	VERIFY QC TECH
176 / 180	NEOS	SEOS	1430	20	JK	WW-22	33.9		AP+PS	7/30/2020	1258	1303	40	40	Pass	TH
174 / 179	NEOS	SEOS	1430	20	RW	WW-26	19.5		AP+PS	7/31/2020	809	814	40	39	Pass	TH
174 / 178	NEOS	SEOS	1440	20	RW	WW-26	36.9		AP+PS	7/31/2020	804	809	40	40	Pass	TH
175 / 180	NEOS	SEOS	1443	20	JK	WW-22	16.5		AP+PS	7/30/2020	1258	1303	40	40	Pass	TH
173 / 178	NEOS	SEOS	1503	20	RW	WW-26	18.8		AP+PS	7/31/2020	812	817	40	40	Pass	TH
173 / 177	NEOS	SEOS	1518	20	RW	WW-26	6.5	DS-80	AP+PS	7/31/2020	812	817	40	40	Pass	TH
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PAGE TOTAL							132.1									

TEST METHOD
AL - AIR LANCE
AP - AIR PRESSURE
PS - POINT STRESS
ST - SPARK TEST
VB - EXTRUDED & VAC BOX

REMARKS:

QC TECH Thomas Howald
SUPERVISOR Chad Messervey
SUBMISSION DATE 2020/01/05
SHEET NUMBER 37 of 113

GEOMEMBRANE SEAM & TEST LOG

PROJECT NUMBER CT001401 | AREA / LAYER Primary
PROJECT TITLE Victoria Gold Heap Leach Pad Phase 1B | SEAM DATE 2020/07/22

TRIAL SEAMS

#	MACHINE NUMBER	TIME	TECH	AIR TEMP °C	SPEED	TEMP/ SETTING	INSIDE PEEL (PPI)					OUTSIDE PEEL (PPI)					SHEAR (PPI)					CHK'D BY	LINER TO LINER TYPE AND REMARKS
1	WW-26	800	RW	15	35.0%	454°C	148	150	170	145	152	154	144	131	120	162	206	203	188	172	189	TH	TT
2	WW-26	800	RW	15	55.0%	454°C	138	136	140	150	149	145	169	165	166	158	158	150	164	160	174	TH	SS
3	WW-22	800	JK	15	55.0%	454°C	155	154	143	161	138	154	155	167	167	158	179	178	172	179	182	TH	SS
4	WW-26	1330	RW	15	35.0%	454°C	134	150	111	154	124	110	125	123	121	128	171	178	172	168	171	TH	TT
5	WW-26	1330	RW	15	55.0%	454°C	140	143	135	129	132	142	135	139	149	138	159	163	164	170	168	TH	SS
6	WW-22	1330	JK	15	55.0%	454°C	121	152	119	149	136	127	124	145	136	144	169	170	168	159	172	TH	SS

WELD SEAMS

PANEL NUMBERS	SEAM SECTION FROM	SEAM SECTION TO	START TIME	AIR TEMP °C	WELD TECH	MACHINE NUMBER	WELD LENGTH	DESTRUCT NUMBER	QC TEST METH.	QC TEST DATE Y-M-D	AIR PRESSURE TEST (PSI) TIME START	TIME END	PRESSURE START	PRESSURE END	VERIFY PASS	VERIFY QC TECH
185 / 186	EEOS	WEOS	844	15	RW	WW-26	6.8		AP+PS	7/29/2020	1721	1726	40	40	Pass	TH
184 / 185	EEOS	WEOS	853	15	RW	WW-26	6.8		AP+PS	7/30/2020	1312	1317	40	40	Pass	TH
179 / 183	NEOS	SEOS	854	15	JK	WW-22	65.8		AP+PS	8/6/2020	1040	1445	40	39	Pass	TH
183 / 184	EEOS	WEOS	902	15	RW	WW-26	6.8		AP+PS	7/30/2020	1353	1358	40	40	Pass	TH
182 / 186	NEOS	SEOS	911	15	RW	WW-26	12.0		AP+PS	7/29/2020	1719	1724	40	40	Pass	TH
178 / 183	NEOS	29F	916	15	JC	WW-22	22.0		AP+PS	8/6/2020	1346	1351	40	40	Pass	TH
178 / 183	29F	23M	917	15	JC	WW-22	22.6		AP+PS	8/6/2020	1346	1351	40	40	Pass	TH
181 / 186	NEOS	SEOS	917	15	RW	WW-26	3.7		AP+PS	7/29/2020	1721	1726	40	40	Pass	TH
181 / 185	NEOS	SEOS	918	15	RW	WW-26	66.0		AP+PS	7/30/2020	1312	1317	40	40	Pass	TH
178 / 183	23M	SEOS	922	15	JK	WW-22	12.0		AP+PS	7/31/2020	811	816	40	40	Pass	TH
181 / 184	NEOS	SEOS	935	15	RW	WW-26	4.8		AP+PS	7/30/2020	1303	1308	40	40	Pass	TH
180 / 184	NEOS	SEOS	936	15	RW	WW-26	50.0		AP+PS	7/30/2020	1303	1308	40	39	Pass	TH
177 / 183	NEOS	SEOS	937	15	JK	WW-22	6.5	DS-78	AP+PS	7/31/2020	811	816	40	40	Pass	TH
179 / 184	NEOS	SEOS	948	15	RW	WW-26	7.6		AP+PS	7/30/2020	1345	1350	40	39	Pass	TH
187 / 188	EEOS	WEOS	1331	15	RW	WW-26	6.8		AP+PS	7/30/2020	1413	1418	40	40	Pass	TH
188 / 189	EEOS	WEOS	1336	15	RW	WW-26	6.8		AP+PS	7/30/2020	1323	1327	40	40	Pass	TH
183 / 187	NEOS	23E	1341	15	JK	WW-22	48.5	DS-77	AP+PS	7/30/2020	1413	1418	40	40	Pass	TH
189 / 190	EEOS	WEOS	1351	15	RW	WW-26	6.8		AP+PS	7/29/2020	1823	1828	40	40	Pass	TH
186 / 190	NEOS	SEOS	1359	15	RW	WW-26	21.5		AP+PS	7/29/2020	1722	1727	40	40	Pass	TH
183 / 187	23E	SEOS	1400	15	JK	WW-22	57.9	DS-77	AP+PS	7/31/2020	759	804	40	40	Pass	TH
						PAGE TOTAL	441.7									

TEST METHOD
AL - AIR LANCE | ST - SPARK TEST
AP - AIR PRESSURE | VB - EXTRUDED & VAC BOX
PS - POINT STRESS

REMARKS:

QC TECH Thomas Howald
SUPERVISOR Chad Messervey
SUBMISSION DATE 2020/01/05
SHEET NUMBER 38 of 113

GEOMEMBRANE SEAM & TEST LOG

PROJECT NUMBER CT001401 | AREA / LAYER Primary
PROJECT TITLE Victoria Gold Heap Leach Pad Phase 1B | SEAM DATE 2020/07/22

TRIAL SEAMS

#	MACHINE NUMBER	TIME	TECH	AIR TEMP °C	SPEED	TEMP/ SETTING	INSIDE PEEL (PPI)					OUTSIDE PEEL (PPI)					SHEAR (PPI)					CHK'D BY	LINER TO LINER TYPE AND REMARKS
7	WW-22	1330	JK	15	40.0%	454°C	123	132	140	153	139	127	136	132	131	143	167	168	170	171	162	TH	TS

WELD SEAMS

PANEL NUMBERS		SEAM SECTION FROM	SEAM SECTION TO	START TIME	AIR TEMP °C	WELD TECH	MACHINE NUMBER	WELD LENGTH	DESTRUCT NUMBER	QC TEST METH.	QC TEST DATE Y-M-D	AIR PRESSURE TEST (PSI) TIME START	TIME END	PRESSURE START	PRESSURE END	VERIFY PASS	VERIFY QC TECH
185	190	NEOS	SEOS	1408	15	RW	WW-26	22.7		AP+PS	7/29/2020	1823	1828	40	40	Pass	TH
185	189	NEOS	SEOS	1415	15	RW	WW-26	43.3		AP+PS	7/29/2020	1823	1828	40	39	Pass	TH
184	189	NEOS	SEOS	1437	15	RW	WW-26	18.0		AP+PS	7/30/2020	1312	1317	40	40	Pass	TH
184	188	NEOS	SEOS	1445	15	RW	WW-26	44.0		AP+PS	7/30/2020	1323	1328	40	39	Pass	TH
183	188	NEOS	SEOS	1459	15	RW	WW-26	22.5		AP+PS	7/30/2020	1359	1404	40	40	Pass	TH

GEOMEMBRANE SEAM & TEST LOG

PROJECT NUMBER CT001401 | AREA / LAYER Primary
PROJECT TITLE Victoria Gold Heap Leach Pad Phase 1B | SEAM DATE 2020/07/23

TRIAL SEAMS

#	MACHINE NUMBER	TIME	TECH	AIR TEMP °C	SPEED	TEMP/ SETTING	INSIDE PEEL (PPI)					OUTSIDE PEEL (PPI)					SHEAR (PPI)					CHK'D BY	LINER TO LINER TYPE AND REMARKS
1	WW-26	1330	RW	15	35.0%	454°C	132	131	153	158	142	142	154	144	141	146	187	187	186	191	185	TH	TT
2	WW-22	1330	JK	15	55.0%	454°C	115	134	155	149	135	124	147	124	146	151	162	172	178	159	163	TH	SS
3	WW-26	1330	RW	15	55.0%	454°C	129	168	149	168	127	153	142	163	165	137	159	172	165	162	160	TH	SS

WELD SEAMS

PANEL NUMBERS	SEAM SECTION FROM	SEAM SECTION TO	START TIME	AIR TEMP °C	WELD TECH	MACHINE NUMBER	WELD LENGTH	DESTRUCT NUMBER	QC TEST METH.	QC TEST DATE Y-M-D	AIR PRESSURE TEST (PSI) TIME START	TIME END	PRESSURE START	PRESSURE END	VERIFY PASS	VERIFY QC TECH
191 / 192	EEOS	WEOS	1345	15	RW	WW-26	6.8		AP+PS	7/30/2020	1423	1428	40	40	Pass	TH
188 / 192	22L	SEOS	1419	15	RW	WW-26	15.6		AP+PS	7/30/2020	1414	1419	40	40	Pass	TH
190 / 193	NEOS	SEOS	1424	15	JK	WW-22	47.3	DS-74	AP+PS	8/6/2020	1311	1316	40	40	Pass	TH
187 / 192	NEOS	SEOS	1427	15	RW	WW-26	27.5		AP+PS	7/30/2020	1414	1419	40	40	Pass	TH
192 / 194	EEOS	WEOS	1428	15	RW	WW-26	6.8		AP+PS	7/30/2020	816	821	40	39	Pass	TH
194 / 193	EEOS	WEOS	1430	15	RW	WW-26	6.8		AP+PS	7/30/2020	816	821	40	40	Pass	TH
187 / 191	NEOS	22R	1438	15	RW	WW-26	18.6	DS-76	AP+PS	7/30/2020	1423	1428	40	40	Pass	TH
189 / 193	NEOS	SEOS	1440	15	JK	WW-22	27.2		AP+PS	7/29/2020	1824	1829	40	40	Pass	TH
187 / 191	22R	SEOS	1445	15	RW	WW-26	59.4	DS-76	AP+PS	7/30/2020	1441	1446	40	40	Pass	TH
189 / 192	NEOS	SEOS	1449	15	JK	WW-22	33.8		AP+PS	7/30/2020	1324	1329	40	40	Pass	TH
188 / 192	NEOS	22L	1501	15	JK	WW-22	51.2		AP+PS	7/30/2020	1324	1329	40	40	Pass	TH
195 / 196	EEOS	WEOS	1552	15	RW	WW-26	6.8		AP+PS	7/30/2020	1442	1447	40	40	Pass	TH
196 / 197	EEOS	WEOS	1611	15	RW	WW-26	6.8		AP+PS	7/30/2020	822	827	40	40	Pass	TH
192 / 196	NEOS	SEOS	1618	15	JK	WW-22	100.9		AP+PS	7/30/2020	1424	1429	40	40	Pass	TH
193 / 197	NEOS	SEOS	1623	15	RW	WW-26	79.6	DS-73	AP+PS	7/29/2020	1740	1745	40	40	Pass	TH
191 / 196	NEOS	SEOS	1638	15	JK	WW-22	27.6		AP+PS	7/30/2020	1424	1429	40	40	Pass	TH
192 / 197	NEOS	SEOS	1645	15	RW	WW-26	27.4		AP+PS	7/30/2020	816	821	40	40	Pass	TH
191 / 195	NEOS	SEOS	1649	15	JK	WW-22	50.7		AP+PS	7/30/2020	1442	1447	40	40	Pass	TH
/																
/																
						PAGE TOTAL	600.8									

TEST METHOD

AL - AIR LANCE	ST - SPARK TEST
AP - AIR PRESSURE	VB - EXTRUDED & VAC BOX
PS - POINT STRESS	

REMARKS:

QC TECH: Thomas Howald
SUPERVISOR: Chad Messervey
SUBMISSION DATE: 2020/01/05
SHEET NUMBER: 40 of 113

GEOMEMBRANE SEAM & TEST LOG

PROJECT NUMBER CT001401 | AREA / LAYER Primary
PROJECT TITLE Victoria Gold Heap Leach Pad Phase 1B | SEAM DATE 2020/07/24

TRIAL SEAMS

#	MACHINE NUMBER	TIME	TECH	AIR TEMP °C	SPEED	TEMP/ SETTING	INSIDE PEEL (PPI)					OUTSIDE PEEL (PPI)					SHEAR (PPI)					CHK'D BY	LINER TO LINER TYPE AND REMARKS
1	WW-22	1045	JK	15	35.0%	454°C	145	124	161	169	135	166	139	142	161	145	168	159	165	161	173	TH	TT
2	WW-22	1045	JK	15	55.0%	454°C	130	133	141	140	147	137	144	137	150	145	161	162	159	171	161	TH	SS
3	WW-26	1045	RW	15	35.0%	454°C	151	137	140	159	142	126	152	169	124	152	167	165	171	162	172	TH	TT
4	WW-26	1045	RW	15	55.0%	454°C	145	164	145	162	151	164	170	169	152	169	161	167	164	165	174	TH	SS

WELD SEAMS

PANEL NUMBERS	SEAM SECTION FROM	SEAM SECTION TO	START TIME	AIR TEMP °C	WELD TECH	MACHINE NUMBER	WELD LENGTH	DESTRUCT NUMBER	QC TEST METH.	QC TEST DATE Y-M-D	AIR PRESSURE TEST (PSI) TIME START	TIME END	PRESSURE START	PRESSURE END	VERIFY PASS	VERIFY QC TECH
198 / 199	EEOS	WEOS	1046	15	JK	WW-22	6.8		AP+PS	7/30/2020	1500	1505	40	40	Pass	TH
199 / 200	EEOS	WEOS	1053	15	JK	WW-22	6.8		AP+PS	7/30/2020	826	834	40	40	Pass	TH
200 / 201	EEOS	WEOS	1101	15	RW	WW-26	6.8	DS-97	AP+PS	7/29/2020	1751	1756	40	40	Pass	TH
196 / 199	NEOS	23A	1101	15	JK	WW-22	85.0		AP+PS	7/30/2020	1449	1454	40	40	Pass	TH
197 / 201	NEOS	SEOS	1108	15	RW	WW-26	15.6	DS-95	AP+PS	7/29/2020	1751	1756	40	40	Pass	TH
197 / 200	NEOS	SEOS	1114	15	RW	WW-26	93.6		AP+PS	7/30/2020	822	827	40	40	Pass	TH
200 / 196	NEOS	SEOS	1131	15	RW	WW-26	31.6		AP+PS	7/30/2020	822	827	40	39	Pass	TH
196 / 199	23A	SEOS	1132	15	JK	WW-22	12.1		AP+PS	7/30/2020	1443	1448	40	40	Pass	TH
195 / 199	NEOS	SEOS	1137	15	JK	WW-22	29.9		AP+PS	7/30/2020	1443	1448	40	40	Pass	TH
195 / 198	NEOS	SEOS	1148	15	JK	WW-22	18.8	DS-96	AP+PS	7/30/2020	1500	1505	40	40	Pass	TH
202 / 203	EEOS	WEOS	1231	15	RW	WW-26	6.8		AP+PS	7/30/2020	933	938	40	40	Pass	TH
203 / 204	EEOS	WEOS	1244	15	JK	WW-22	6.8		AP+PS	7/30/2020	849	854	40	40	Pass	TH
199 / 202	NEOS	23B	1245	15	JK	WW-22	50.6		AP+PS	7/30/2020	1450	1455	40	40	Pass	TH
201 / 204	NEOS	SEOS	1300	15	JK	WW-22	16.6	DS-93	AP+PS	7/29/2020	1752	1757	40	40	Pass	TH
200 / 204	NEOS	SEOS	1306	15	JK	WW-22	30.7		AP+PS	7/30/2020	849	854	40	40	Pass	TH
199 / 202	23B	SEOS	1307	15	RW	WW-26	42.0		AP+PS	7/30/2020	1450	1455	40	40	Pass	TH
200 / 203	NEOS	SEOS	1319	15	JK	WW-22	94.5		AP+PS	7/30/2020	826	831	40	40	Pass	TH
198 / 202	NEOS	SEOS	1323	15	RW	WW-26	18.8	DS-94	AP+PS	7/30/2020	1500	1505	40	40	Pass	TH
199 / 203	NEOS	SEOS	1350	15	JK	WW-22	34.4		AP+PS	7/30/2020	933	938	40	40	Pass	TH
/																
						PAGE TOTAL	608.2									

TEST METHOD
AL - AIR LANCE | ST - SPARK TEST
AP - AIR PRESSURE | VB - EXTRUDED & VAC BOX
PS - POINT STRESS

REMARKS:

QC TECH Thomas Howald
SUPERVISOR Chad Messervey
SUBMISSION DATE 2020/01/05
SHEET NUMBER 41 of 113

GEOMEMBRANE SEAM & TEST LOG

PROJECT NUMBER: CT001401 | AREA / LAYER: Primary
PROJECT TITLE: Victoria Gold Heap Leach Pad Phase 1B | SEAM DATE: 2020/07/25

TRIAL SEAMS

#	MACHINE NUMBER	TIME	TECH	AIR TEMP °C	SPEED	TEMP/ SETTING	INSIDE PEEL (PPI)					OUTSIDE PEEL (PPI)					SHEAR (PPI)					CHK'D BY	LINER TO LINER TYPE AND REMARKS
1	WW-22	845	JK	15	35.0%	454°C	143	161	124	162	134	145	174	178	167	161	177	188	180	178	185	TH	TT
2	WW-22	845	JK	15	55.0%	454°C	145	154	156	161	143	165	166	157	156	149	175	169	184	175	172	TH	SS
3	WW-26	850	RW	15	35.0%	454°C	153	173	153	161	142	173	159	170	173	134	175	166	174	168	172	TH	TT
4	WW-22	1235	JK	15	55.0%	454°C	140	147	137	144	137	158	142	142	154	144	161	167	164	159	175	TH	SS

WELD SEAMS

PANEL NUMBERS	SEAM SECTION FROM	SEAM SECTION TO	START TIME	AIR TEMP °C	WELD TECH	MACHINE NUMBER	WELD LENGTH	DESTRUCT NUMBER	QC TEST METH.	QC TEST DATE Y-M-D	AIR PRESSURE TEST (PSI) TIME START	TIME END	PRESSURE START	PRESSURE END	VERIFY PASS	VERIFY QC TECH
205 / 206	EEOS	WEOS	845	15	JK	WW-22	6.8		AP+PS	7/30/2020	1531	1536	40	40	Pass	TH
204 / 207	NEOS	SEOS	850	15	RW	WW-26	49.6	DS-92	AP+PS	7/29/2020	1755	1800	40	40	Pass	TH
206 / 207	EEOS	WEOS	850	15	JK	WW-22	6.8		AP+PS	7/30/2020	859	904	40	40	Pass	TH
203 / 207	NEOS	SEOS	906	15	RW	WW-26	33.3		AP+PS	7/30/2020	849	854	40	40	Pass	TH
203 / 206	NEOS	21P	918	15	RW	WW-26	90.0		AP+PS	7/30/2020	859	904	40	40	Pass	TH
203 / 206	21P	SEOS	920	15	RW	WW-26	6.2		AP+PS	7/30/2020	933	938	40	40	Pass	TH
208 / 209	EEOS	WEOS	925	15	JK	WW-22	6.8		AP+PS	7/30/2020	1515	1520	40	40	Pass	TH
209 / 210	EEOS	WEOS	943	15	JK	WW-22	6.8		AP+PS	7/30/2020	900	905	40	40	Pass	TH
211 / 212	EEOS	WEOS	954	15	JK	WW-22	6.8		AP+PS	8/6/2020	1109	1114	40	40	Pass	TH
202 / 206	NEOS	29E	1000	15	RW	WW-26	27.2		AP+PS	8/6/2020	1043	1048	40	40	Pass	TH
202 / 206	29E	SEOS	1015	15	RW	WW-26	4.6		AP+PS	8/6/2020	1043	1048	40	40	Pass	TH
202 / 205	NEOS	SEOS	1016	15	RW	WW-26	81.2	DS-91	AP+PS	7/31/2020	752	757	40	40	Pass	TH
212 / 213	EEOS	WEOS	1040	15	JK	WW-22	6.8		AP+PS	7/30/2020	942	947	40	39	Pass	TH
213 / 214	EEOS	WEOS	1056	15	RW	WW-26	6.8		AP+PS	7/30/2020	921	926	40	40	Pass	TH
207 / 210	NEOS	SEOS	1143	15	JK	WW-22	82.9	DS-88	AP+PS	7/29/2020	1754	1759	40	40	Pass	TH
210 / 214	NEOS	SEOS	1205	15	JK	WW-22	22.2	DS-87	AP+PS	7/29/2020	1755	1800	40	40	Pass	TH
210 / 213	NEOS	SEOS	1213	15	JK	WW-22	92.8		AP+PS	7/30/2020	920	925	40	40	Pass	TH
206 / 210	NEOS	SEOS	1218	15	JK	WW-22	34.1		AP+PS	7/30/2020	859	904	40	40	Pass	TH
206 / 209	NEOS	SEOS	1231	15	JK	WW-22	94.6		AP+PS	7/30/2020	1537	1542	40	40	Pass	TH
213 / 209	NEOS	SEOS	1252	15	JK	WW-22	35.6		AP+PS	7/30/2020	942	947	40	40	Pass	TH
						PAGE TOTAL	701.9									

TEST METHOD
AL - AIR LANCE | ST - SPARK TEST
AP - AIR PRESSURE | VB - EXTRUDED & VAC BOX
PS - POINT STRESS

REMARKS:

QC TECH: Thomas Howald
SUPERVISOR: Chad Messervey
SUBMISSION DATE: 2020/01/05
SHEET NUMBER: 42 of 113

GEOMEMBRANE SEAM & TEST LOG

PROJECT NUMBER CT001401 | AREA / LAYER Primary
PROJECT TITLE Victoria Gold Heap Leach Pad Phase 1B | SEAM DATE 2020/07/25

TRIAL SEAMS

#	MACHINE NUMBER	TIME	TECH	AIR TEMP °C	SPEED	TEMP/ SETTING	INSIDE PEEL (PPI)					OUTSIDE PEEL (PPI)					SHEAR (PPI)					CHK'D BY	LINER TO LINER TYPE AND REMARKS

WELD SEAMS

PANEL NUMBERS	SEAM SECTION FROM	SEAM SECTION TO	START TIME	AIR TEMP °C	WELD TECH	MACHINE NUMBER	WELD LENGTH	DESTRUCT NUMBER	QC TEST METH.	QC TEST DATE Y-M-D	AIR PRESSURE TEST (PSI) TIME START	TIME END	PRESSURE START	PRESSURE END	VERIFY PASS	VERIFY QC TECH
209 / 212	NEOS	23J	1306	15	JK	WW-22	73.4		AP+PS	7/30/2020	1537	1542	40	40	Pass	TH
209 / 205	NEOS	SEOS	1308	15	JK	WW-22	34.4		AP+PS	7/30/2020	1516	1521	40	40	Pass	TH
205 / 208	NEOS	SEOS	1324	15	JK	WW-22	46.8	DS-90	AP+PS	7/30/2020	1516	1521	40	40	Pass	TH
209 / 212	23J	SEOS	1325	15	JK	WW-22	20.0		AP+PS	7/30/2020	1515	1520	40	40	Pass	TH
208 / 212	NEOS	SEOS	1344	15	JK	WW-22	34.9		AP+PS	7/30/2020	1515	1520	40	40	Pass	TH
208 / 211	NEOS	SEOS	1400	15	JK	WW-22	11.9	DS-89	AP+PS	8/6/2020	1451	1456	40	40	Pass	TH
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PAGE TOTAL							221.4									

TEST METHOD
AL - AIR LANCE
AP - AIR PRESSURE
PS - POINT STRESS
ST - SPARK TEST
VB - EXTRUDED & VAC BOX

REMARKS:

QC TECH Thomas Howald
SUPERVISOR Chad Messervey
SUBMISSION DATE 2020/01/05
SHEET NUMBER 43 of 113

GEOMEMBRANE SEAM & TEST LOG

PROJECT NUMBER CT001401 | AREA / LAYER Primary
PROJECT TITLE Victoria Gold Heap Leach Pad Phase 1B | SEAM DATE 2020/07/30

TRIAL SEAMS

#	MACHINE NUMBER	TIME	TECH	AIR TEMP °C	SPEED	TEMP/ SETTING	INSIDE PEEL (PPI)					OUTSIDE PEEL (PPI)					SHEAR (PPI)					CHK'D BY	LINER TO LINER TYPE AND REMARKS
1	WW-22	1030	EA	20	35.0%	454°C	159	158	161	165	127	165	155	156	177	159	173	181	182	178	156	TH	TT
2	WW-26	1030	RP	20	35.0%	454°C	132	160	142	153	139	118	132	154	155	124	163	172	175	172	165	TH	TT
3	WW-22	1035	EA	20	55.0%	454°C	155	142	147	148	134	138	140	150	153	133	158	157	155	160	159	TH	SS
4	WW-26	1035	RP	20	55.0%	454°C	155	137	151	142	144	150	150	150	121	147	169	164	171	165	165	TH	SS
5	WW-22	1640	EA	20	35.0%	454°C	127	162	153	160	146	144	147	130	141	142	146	172	172	178	172	TH	TT
6	WW-26	1640	RP	20	55.0%	454°C	136	133	125	144	134	122	145	145	142	147	141	167	150	151	146	TH	SS

WELD SEAMS

PANEL NUMBERS	SEAM SECTION FROM	SEAM SECTION TO	START TIME	AIR TEMP °C	WELD TECH	MACHINE NUMBER	WELD LENGTH	DESTRUCT NUMBER	QC TEST METH.	QC TEST DATE Y-M-D	AIR PRESSURE TEST (PSI) TIME START	TIME END	PRESSURE START	PRESSURE END	VERIFY PASS	VERIFY QC TECH
215 / 216	EEOS	WEOS	1052	15	EA	WW-22	6.8		AP+PS	8/1/2020	952	957	40	40	Pass	TH
214 / 216	NEOS	SEOS	1100	15	RP	WW-26	23.2		AP+PS	8/1/2020	1524	1529	40	40	Pass	TH
213 / 216	NEOS	SEOS	1110	15	RP	WW-26	84.5		AP+PS	8/1/2020	1543	1548	40	39	Pass	TH
215 / 217	NEOS	SEOS	1133	15	EA	WW-22	15.6		AP+PS	8/3/2020	1350	1355	40	40	Pass	TH
213 / 215	NEOS	SEOS	1134	15	RP	WW-26	39.8		AP+PS	8/1/2020	952	957	40	40	Pass	TH
217 / 218	EEOS	WEOS	1140	15	EA	WW-22	6.8		AP+PS	8/3/2020	1352	1357	40	39	Pass	TH
212 / 215	NEOS	SEOS	1157	15	RP	WW-26	60.4		AP+PS	8/3/2020	1349	1354	40	39	Pass	TH
218 / 219	EEOS	24K	1214	15	EA	WW-22	3.8		AP+PS	8/1/2020	917	922	40	40	Pass	TH
218 / 219	24K	WEOS	1215	15	EA	WW-22	3.0		AP+PS	8/1/2020	917	922	40	40	Pass	TH
216 / 219	NEOS	SEOS	1223	15	EA	WW-22	67.3	DS-99	AP+PS	8/1/2020	1525	1530	40	40	Pass	TH
216 / 218	NEOS	SEOS	1247	15	EA	WW-22	40.4		AP+PS	8/1/2020	917	922	40	40	Pass	TH
215 / 218	NEOS	SEOS	1303	15	EA	WW-22	85.0		AP+PS	8/1/2020	952	957	40	40	Pass	TH
220 / 221	EEOS	WEOS	1701	15	EA	WW-22	6.8	DS-100	AP+PS	8/1/2020	1007	1012	40	40	Pass	TH
221 / 222	EEOS	WEOS	1712	15	EA	WW-22	6.8		AP+PS	8/1/2020	1542	1547	40	40	Pass	TH
219 / 222	NEOS	SEOS	1728	15	RP	WW-26	26.6	DS-98	AP+PS	8/1/2020	1525	1530	40	40	Pass	TH
223 / 224	EEOS	WEOS	1728	15	EA	WW-22	6.8		AP+PS	8/3/2020	1409	1414	40	39	Pass	TH
219 / 221	NEOS	SEOS	1739	15	RP	WW-26	40.7		AP+PS	8/1/2020	1542	1547	40	40	Pass	TH
218 / 221	NEOS	SEOS	1755	15	RP	WW-26	84.5		AP+PS	8/1/2020	917	922	40	40	Pass	TH
224 / 225	EEOS	WEOS	1757	15	EA	WW-22	6.8		AP+PS	8/1/2020	922	927	40	40	Pass	TH
222 / 225	NEOS	SEOS	1806	15	EA	WW-22	27.0	DS-102	AP+PS	8/1/2020	1525	1530	40	40	Pass	TH
						PAGE TOTAL	642.6									

TEST METHOD
AL - AIR LANCE | ST - SPARK TEST
AP - AIR PRESSURE | VB - EXTRUDED & VAC BOX
PS - POINT STRESS

REMARKS:

QC TECH: Thomas Howald
SUPERVISOR: Chad Messervey
SUBMISSION DATE: 2020/01/05
SHEET NUMBER: 44 of 113

GEOMEMBRANE SEAM & TEST LOG

PROJECT NUMBER CT001401 | AREA / LAYER Primary
PROJECT TITLE Victoria Gold Heap Leach Pad Phase 1B | SEAM DATE 2020/07/30

TRIAL SEAMS

#	MACHINE NUMBER	TIME	TECH	AIR TEMP °C	SPEED	TEMP/ SETTING	INSIDE PEEL (PPI)					OUTSIDE PEEL (PPI)					SHEAR (PPI)					CHK'D BY	LINER TO LINER TYPE AND REMARKS
7	WW-22	1640	EA	20	55.0%	454°C	140	143	138	141	137	133	158	141	141	149	161	170	163	162	162	TH	SS

WELD SEAMS

PANEL NUMBERS	SEAM SECTION FROM	SEAM SECTION TO	START TIME	AIR TEMP °C	WELD TECH	MACHINE NUMBER	WELD LENGTH	DESTRUCT NUMBER	QC TEST METH.	QC TEST DATE Y-M-D	AIR PRESSURE TEST (PSI) TIME START	TIME END	PRESSURE START	PRESSURE END	VERIFY PASS	VERIFY QC TECH
221 / 225	NEOS	SEOS	1816	15	EA	WW-22	32.0		AP+PS	8/1/2020	1542	1547	40	40	Pass	TH
218 / 220	NEOS	SEOS	1820	15	RP	WW-26	40.9		AP+PS	8/1/2020	1007	1012	40	40	Pass	TH
221 / 224	NEOS	SEOS	1825	15	EA	WW-22	97.4	DS-101	AP+PS	8/1/2020	922	927	40	40	Pass	TH
217 / 220	NEOS	SEOS	1829	15	RP	WW-26	15.6		AP+PS	8/3/2020	1352	1357	40	40	Pass	TH
220 / 224	NEOS	SEOS	1856	15	EA	WW-22	29.0		AP+PS	8/1/2020	1007	1012	40	40	Pass	TH
220 / 223	NEOS	SEOS	1911	15	EA	WW-22	27.5		AP+PS	8/3/2020	1407	1412	40	40	Pass	TH
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PAGE TOTAL							242.4									

TEST METHOD
AL - AIR LANCE
AP - AIR PRESSURE
PS - POINT STRESS
ST - SPARK TEST
VB - EXTRUDED & VAC BOX

REMARKS:

QC TECH Thomas Howald
SUPERVISOR Chad Messervey
SUBMISSION DATE 2020/01/05
SHEET NUMBER 45 of 113

GEOMEMBRANE SEAM & TEST LOG

PROJECT NUMBER CT001401 | AREA / LAYER Primary
PROJECT TITLE Victoria Gold Heap Leach Pad Phase 1B | SEAM DATE 2020/07/31

TRIAL SEAMS

#	MACHINE NUMBER	TIME	TECH	AIR TEMP °C	SPEED	TEMP/ SETTING	INSIDE PEEL (PPI)					OUTSIDE PEEL (PPI)					SHEAR (PPI)					CHK'D BY	LINER TO LINER TYPE AND REMARKS
1	WW-26	1200	RP	20	55.0%	454°C	143	143	155	149	142	149	139	150	151	146	148	163	152	162	156	TH	SS
2	WW-22	1215	EA	20	35.0%	454°C	114	146	143	143	129	131	154	111	123	143	160	175	162	158	173	TH	TT
3	WW-22	1215	EA	20	55.0%	454°C	142	147	133	144	126	141	137	146	144	141	161	161	151	164	159	TH	SS

WELD SEAMS

PANEL NUMBERS	SEAM SECTION FROM	SEAM SECTION TO	START TIME	AIR TEMP °C	WELD TECH	MACHINE NUMBER	WELD LENGTH	DESTRUCT NUMBER	QC TEST METH.	QC TEST DATE Y-M-D	AIR PRESSURE TEST (PSI) TIME START	TIME END	PRESSURE START	PRESSURE END	VERIFY PASS	VERIFY QC TECH
226 / 227	EEOS	WEOS	1247	20	EA	WW-22	6.8	DS-104	AP+PS	8/1/2020	1009	1014	40	40	Pass	TH
227 / 228	EEOS	WEOS	1306	20	EA	WW-22	6.8		AP+PS	8/1/2020	1527	1532	40	40	Pass	TH
225 / 228	NEOS	SEOS	1310	20	RP	WW-26	16.8	DS-105	AP+PS	8/1/2020	1526	1531	40	40	Pass	TH
225 / 227	NEOS	SEOS	1315	20	RP	WW-26	41.7		AP+PS	8/1/2020	922	927	40	40	Pass	TH
229 / 230	EEOS	WEOS	1331	20	EA	WW-22	6.8		AP+PS	8/1/2020	941	946	40	40	Pass	TH
224 / 227	NEOS	SEOS	1332	20	RP	WW-26	87.7		AP+PS	8/1/2020	922	927	40	40	Pass	TH
228 / 230	NEOS	SEOS	1343	20	EA	WW-22	16.8	DS-106	AP+PS	8/1/2020	1526	1531	40	40	Pass	TH
227 / 230	NEOS	SEOS	1350	20	EA	WW-22	83.1		AP+PS	8/1/2020	941	946	40	40	Pass	TH
224 / 226	NEOS	SEOS	1407	20	RP	WW-26	39.0	DS-103	AP+PS	8/1/2020	1008	1013	40	40	Pass	TH
227 / 229	NEOS	SEOS	1419	20	EA	WW-22	46.3		AP+PS	8/1/2020	941	946	40	39	Pass	TH
223 / 226	NEOS	SEOS	1421	20	RP	WW-26	27.5		AP+PS	8/3/2020	1409	1414	40	40	Pass	TH
226 / 229	NEOS	SEOS	1435	20	EA	WW-22	66.5		AP+PS	8/3/2020	1427	1432	40	40	Pass	TH
212 / 215	NEOS	SEOS	1602	15	EP	WW-22	5.0		AP+PS	8/3/2020	1349	1354	40	40	Pass	TH
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PAGE TOTAL							450.8									

TEST METHOD
AL - AIR LANCE
AP - AIR PRESSURE
PS - POINT STRESS
ST - SPARK TEST
VB - EXTRUDED & VAC BOX

REMARKS:

QC TECH Thomas Howald
SUPERVISOR Chad Messervey
SUBMISSION DATE 2020/01/05
SHEET NUMBER 46 of 113

GEOMEMBRANE SEAM & TEST LOG

PROJECT NUMBER CT001401 | AREA / LAYER Primary
PROJECT TITLE Victoria Gold Heap Leach Pad Phase 1B | SEAM DATE 2020/08/01

TRIAL SEAMS

#	MACHINE NUMBER	TIME	TECH	AIR TEMP °C	SPEED	TEMP/ SETTING	INSIDE PEEL (PPI)					OUTSIDE PEEL (PPI)					SHEAR (PPI)					CHK'D BY	LINER TO LINER TYPE AND REMARKS
1	WW-22	800	EA	20	35.0%	454°C	137	162	151	164	146	155	161	153	153	154	178	159	181	178	154	TH	TT
2	WW-26	800	RP	20	35.0%	454°C	145	142	142	145	128	142	147	154	151	143	171	165	159	172	182	TH	TT
3	WW-22	815	EA	20	55.0%	454°C	130	145	144	147	127	140	143	130	145	144	164	169	172	169	171	TH	SS
4	WW-26	815	RP	20	55.0%	454°C	145	146	147	150	133	144	142	127	151	147	165	163	163	162	168	TH	SS
5	WW-45	1100	DT	20	55.0%	454°C	114	109	117	121	119	128	129	130	136	134	135	140	152	156	139	TH	SS
6	WW-26	1435	RP	20	35.0%	454°C	163	155	140	139	157	119	150	147	148	124	166	157	165	168	169	TH	TT

WELD SEAMS

PANEL NUMBERS	SEAM SECTION FROM	SEAM SECTION TO	START TIME	AIR TEMP °C	WELD TECH	MACHINE NUMBER	WELD LENGTH	DESTRUCT NUMBER	QC TEST METH.	QC TEST DATE Y-M-D	AIR PRESSURE TEST (PSI) TIME START	TIME END	PRESSURE START	PRESSURE END	VERIFY PASS	VERIFY QC TECH
231 / 232	EEOS	WEOS	805	20	EA	WW-22	6.8		AP+PS	8/3/2020	1432	1437	40	40	Pass	TH
232 / 233	EEOS	WEOS	837	20	EA	WW-22	6.8		AP+PS	8/7/2020	1421	1426	40	40	Pass	TH
230 / 233	NEOS	SEOS	845	20	RP	WW-26	59.4	DS-107	AP+PS	8/1/2020	1527	1532	40	39	Pass	TH
230 / 232	NEOS	SEOS	906	20	RP	WW-26	10.0		AP+PS	8/1/2020	934	939	40	40	Pass	TH
234 / 235	EEOS	WEOS	909	20	EA	WW-22	6.8		AP+PS	8/3/2020	1437	1442	40	40	Pass	TH
230 / 232	NEOS	24G	912	20	RP	WW-26	10.0		AP+PS	8/1/2020	934	939	40	40	Pass	TH
230 / 232	24G	SEOS	915	20	RP	WW-26	20.9		AP+PS	8/1/2020	941	946	40	40	Pass	TH
235 / 236	EEOS	WEOS	920	20	EA	WW-22	6.8		AP+PS	8/1/2020	1501	1506	40	40	Pass	TH
229 / 232	NEOS	SEOS	921	20	RP	WW-26	87.6		AP+PS	8/1/2020	941	946	40	40	Pass	TH
237 / 238	EEOS	WEOS	950	20	EA	WW-22	6.8		AP+PS	8/6/2020	1517	1522	40	40	Pass	TH
229 / 231	NEOS	SEOS	1000	20	RP	WW-26	25.2		AP+PS	8/3/2020	1428	1432	40	40	Pass	TH
239 / 240	EEOS	WEOS	1006	20	EA	WW-22	6.8		AP+PS	8/6/2020	1300	1305	40	40	Pass	TH
240 / 241	EEOS	WEOS	1015	20	EA	WW-22	6.8		AP+PS	8/6/2020	1512	1517	40	40	Pass	TH
233 / 236	NEOS	SEOS	1035	20	EA	WW-22	13.0	DS-108	AP+PS	8/6/2020	1501	1506	40	39	Pass	TH
233 / 235	NEOS	SEOS	1040	20	EA	WW-22	46.4		AP+PS	8/6/2020	1501	1506	40	40	Pass	TH
236 / 238	NEOS	SEOS	1048	20	RP	WW-26	13.0	DS-109	AP+PS	8/6/2020	1502	1507	40	40	Pass	TH
235 / 238	NEOS	30B	1055	20	RP	WW-26	26.1		AP+PS	8/11/2020	1140	1145	40	40	Pass	TH
232 / 235	NEOS	SEOS	1059	20	EA	WW-22	83.0		AP+PS	8/11/2020	1421	1426	40	40	Pass	TH
235 / 238	30B	30C	1105	20	RP	WW-26	26.1		AP+PS	8/11/2020	1150	1155	40	38	Pass	TH
235 / 238	30C	SEOS	1112	20	RP	WW-26	50.0		AP+PS	8/11/2020	1017	1022	40	40	Pass	TH
						PAGE TOTAL	518.3									

TEST METHOD
AL - AIR LANCE | ST - SPARK TEST
AP - AIR PRESSURE | VB - EXTRUDED & VAC BOX
PS - POINT STRESS

REMARKS:

QC TECH: Thomas Howald
SUPERVISOR: Chad Messervey
SUBMISSION DATE: 2020/01/05
SHEET NUMBER: 47 of 113

GEOMEMBRANE SEAM & TEST LOG

PROJECT NUMBER CT001401 | AREA / LAYER Primary
PROJECT TITLE Victoria Gold Heap Leach Pad Phase 1B | SEAM DATE 2020/08/01

TRIAL SEAMS

#	MACHINE NUMBER	TIME	TECH	AIR TEMP °C	SPEED	TEMP/ SETTING	INSIDE PEEL (PPI)					OUTSIDE PEEL (PPI)					SHEAR (PPI)					CHK'D BY	LINER TO LINER TYPE AND REMARKS
7	WW-22	1440	EA	20	55.0%	454°C	135	140	114	145	144	143	142	125	147	139	151	162	158	161	160	TH	SS
8	WW-22	1453	EA	20	35.0%	454°C	141	136	136	129	130	139	135	135	146	131	146	158	153	157	159	TH	TT
9	WW-26	1500	RP	20	55.0%	454°C	135	147	148	152	138	129	142	129	144	136	154	153	145	155	156	TH	SS
10	WW-45	1500	EP	20	55.0%	454°C	140	142	141	143	148	137	137	131	125	128	152	153	147	155	149	TH	SS

WELD SEAMS

PANEL NUMBERS	SEAM SECTION FROM	SEAM SECTION TO	START TIME	AIR TEMP °C	WELD TECH	MACHINE NUMBER	WELD LENGTH	DESTRUCT NUMBER	QC TEST METH.	QC TEST DATE Y-M-D	AIR PRESSURE TEST (PSI) TIME START	TIME END	PRESSURE START	PRESSURE END	VERIFY PASS	VERIFY QC TECH
232 / 234	NEOS	SEOS	1128	20	EA	WW-22	46.0		AP+PS	8/3/2020	1432	1437	40	40	Pass	TH
235 / 237	NEOS	SEOS	1130	20	RP	WW-26	38.6		AP+PS	8/3/2020	1437	1442	40	40	Pass	TH
238 / 241	NEOS	27R	1134	20	DT	WW-45	15.0	DS-110	AP+PS	8/6/2020	1537	1542	40	40	Pass	TH
238 / 241	27R	SEOS	1139	20	DT	WW-45	43.7	DS-110	AP+PS	8/6/2020	1512	1517	40	40	Pass	TH
234 / 237	NEOS	SEOS	1145	20	RP	WW-26	71.2		AP+PS	8/3/2020	1437	1442	40	40	Pass	TH
231 / 234	NEOS	SEOS	1146	20	EA	WW-22	25.2		AP+PS	8/3/2020	1432	1437	40	40	Pass	TH
238 / 240	NEOS	SEOS	1157	20	DT	WW-45	34.5		AP+PS	8/6/2020	1512	1517	40	40	Pass	TH
237 / 240	NEOS	SEOS	1215	20	DT	WW-45	83.8		AP+PS	8/6/2020	1517	1522	40	40	Pass	TH
237 / 239	NEOS	SEOS	1248	20	DT	WW-45	26.0		AP+PS	8/3/2020	1445	1450	40	40	Pass	TH
215 / 244	NEOS	SEOS	1516	20	EA	WW-22	5.0		AP+PS	8/3/2020	1359	1404	40	40	Pass	TH
242 / 244	NEOS	SEOS	1519	20	EA	WW-22	28.6		AP+PS	8/3/2020	1508	1513	40	40	Pass	TH
242 / 243	NEOS	SEOS	1538	20	EA	WW-22	48.4	DS-111	AP+PS	8/3/2020	1508	1513	40	40	Pass	TH
212 / 242	NEOS	SEOS	1604	20	EP	WW-45	65.1		AP+PS	8/6/2020	1109	1114	40	40	Pass	TH
244 / 220	NEOS	SEOS	1611	20	RP	WW-26	5.0		AP+PS	8/3/2020	1406	1411	40	40	Pass	TH
244 / 245	NEOS	SEOS	1613	20	RP	WW-26	28.6		AP+PS	8/3/2020	1509	1514	40	40	Pass	TH
211 / 242	NEOS	SEOS	1623	20	EP	WW-45	11.9		AP+PS	8/6/2020	1109	1114	40	40	Pass	TH
243 / 245	NEOS	SEOS	1627	20	RP	WW-26	48.4	DS-112	AP+PS	8/3/2020	1509	1514	40	40	Pass	TH
220 / 247	NEOS	SEOS	1627	20	EA	WW-22	5.0		AP+PS	8/3/2020	1407	1412	40	39	Pass	TH
245 / 247	NEOS	SEOS	1630	20	EA	WW-22	64.3		AP+PS	8/3/2020	1546	1551	40	40	Pass	TH
245 / 246	NEOS	SEOS	1655	20	EA	WW-22	13.3	DS-113	AP+PS	8/3/2020	1546	1551	40	40	Pass	TH
						PAGE TOTAL	707.6									

TEST METHOD
AL - AIR LANCE | ST - SPARK TEST
AP - AIR PRESSURE | VB - EXTRUDED & VAC BOX
PS - POINT STRESS

REMARKS:

QC TECH: Thomas Howald
SUPERVISOR: Chad Messervey
SUBMISSION DATE: 2020/01/05
SHEET NUMBER: 48 of 113

GEOMEMBRANE SEAM & TEST LOG

PROJECT NUMBER CT001401 | AREA / LAYER Primary
PROJECT TITLE Victoria Gold Heap Leach Pad Phase 1B | SEAM DATE 2020/08/01

TRIAL SEAMS

#	MACHINE NUMBER	TIME	TECH	AIR TEMP °C	SPEED	TEMP/ SETTING	INSIDE PEEL (PPI)					OUTSIDE PEEL (PPI)					SHEAR (PPI)					CHK'D BY	LINER TO LINER TYPE AND REMARKS

WELD SEAMS

PANEL NUMBERS	SEAM SECTION FROM	SEAM SECTION TO	START TIME	AIR TEMP °C	WELD TECH	MACHINE NUMBER	WELD LENGTH	DESTRUCT NUMBER	QC TEST METH.	QC TEST DATE Y-M-D	AIR PRESSURE TEST (PSI) TIME START	TIME END	PRESSURE START	PRESSURE END	VERIFY PASS	VERIFY QC TECH
247 / 226	EEOS	WEOS	1712	20	EP	WW-45	5.0		AP+PS	8/3/2020	1411	1416	40	40	Pass	TH
247 / 249	NEOS	SEOS	1714	20	EP	WW-45	20.0		AP+PS	8/6/2020	1120	1125	40	40	Pass	TH
247 / 248	NEOS	27A	1722	20	EP	WW-45	29.3		AP+PS	8/6/2020	1120	1125	40	39	Pass	TH
247 / 248	27A	SEOS	1728	20	EP	WW-45	15.0		AP+PS	8/6/2020	1547	1552	40	40	Pass	TH
246 / 248	NEOS	SEOS	1750	20	EP	WW-45	13.3		AP+PS	8/3/2020	1547	1552	40	39	Pass	TH
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PAGE TOTAL							82.6									

TEST METHOD
AL - AIR LANCE
AP - AIR PRESSURE
PS - POINT STRESS
ST - SPARK TEST
VB - EXTRUDED & VAC BOX

REMARKS:

QC TECH Thomas Howald
SUPERVISOR Chad Messervey
SUBMISSION DATE 2020/01/05
SHEET NUMBER 49 of 113

GEOMEMBRANE SEAM & TEST LOG

PROJECT NUMBER CT001401 | AREA / LAYER Primary
PROJECT TITLE Victoria Gold Heap Leach Pad Phase 1B | SEAM DATE 2020/08/02

TRIAL SEAMS

#	MACHINE NUMBER	TIME	TECH	AIR TEMP °C	SPEED	TEMP/ SETTING	INSIDE PEEL (PPI)					OUTSIDE PEEL (PPI)					SHEAR (PPI)					CHK'D BY	LINER TO LINER TYPE AND REMARKS
1	WW-22	900	EA	20	35.0%	454°C	145	144	150	151	145	161	159	171	157	138	159	178	175	183	180	TH	TT
2	WW-45	900	EP	20	35.0%	454°C	128	132	146	151	159	141	132	142	138	147	200	187	176	181	181	TH	TT
3	WW-26	900	RP	20	55.0%	454°C	147	148	146	154	126	153	156	158	152	147	169	170	166	163	169	TH	SS
4	WW-22	900	EA	20	55.0%	454°C	144	151	150	145	137	147	148	145	150	146	139	145	153	158	147	TH	SS
5	WW-45	900	EP	20	55.0%	454°C	142	153	146	149	146	160	148	152	159	153	151	163	159	162	161	TH	SS

WELD SEAMS

PANEL NUMBERS	SEAM SECTION FROM	SEAM SECTION TO	START TIME	AIR TEMP °C	WELD TECH	MACHINE NUMBER	WELD LENGTH	DESTRUCT NUMBER	QC TEST METH.	QC TEST DATE Y-M-D	AIR PRESSURE TEST (PSI) TIME START	TIME END	PRESSURE START	PRESSURE END	VERIFY PASS	VERIFY QC TECH
251 / 252	EEOS	WEOS	908	20	EA	WW-22	6.8		AP+PS	8/3/2020	1602	1607	40	40	Pass	TH
250 / 231	NEOS	SEOS	921	20	RP	WW-26	5.0		AP+PS	8/3/2020	1428	1433	40	39	Pass	TH
250 / 252	NEOS	29H	923	20	RP	WW-26	40.1		AP+PS	8/6/2020	1351	1656	40	40	Pass	TH
250 / 252	29H	SEOS	923	20	RP	WW-26	20.0		AP+PS	8/6/2020	1351	1356	40	40	Pass	TH
253 / 254	EEOS	WEOS	932	20	EA	WW-22	6.8		AP+PS	8/3/2020	1536	1641	40	40	Pass	TH
231 / 254	NEOS	SEOS	947	20	EP	WW-45	5.0		AP+PS	8/3/2020	1451	1456	40	40	Pass	TH
250 / 251	NEOS	SEOS	947	20	RP	WW-26	19.5	DS-115	AP+PS	8/6/2020	1116	1121	40	40	Pass	TH
252 / 254	NEOS	SEOS	948	20	EP	WW-45	15.8		AP+PS	8/3/2020	1536	1541	40	40	Pass	TH
252 / 253	NEOS	SEOS	954	20	EP	WW-45	44.3		AP+PS	8/3/2020	1536	1541	40	38	Pass	TH
251 / 253	NEOS	SEOS	1009	20	EP	WW-45	19.5	DS-116	AP+PS	8/3/2020	1603	1608	40	40	Pass	TH
254 / 237	NEOS	SEOS	1148	20	EA	WW-22	5.0		AP+PS	8/3/2020	1450	1455	40	40	Pass	TH
254 / 255	NEOS	SEOS	1150	20	EA	WW-22	15.8		AP+PS	8/3/2020	1537	1542	40	40	Pass	TH
249 / 250	SEOS	NEOS	1202	20	EA	WW-22	20.0		AP+PS	8/3/2020	1528	1533	40	40	Pass	TH
253 / 255	NEOS	SEOS	1204	20	EA	WW-22	60.1	DS-117	AP+PS	8/3/2020	1537	1542	40	40	Pass	TH
226 / 250	SEOS	NEOS	1208	20	EA	WW-22	5.0		AP+PS	8/3/2020	1427	1432	40	40	Pass	TH
237 / 257	NEOS	SEOS	1223	20	EP	WW-45	5.0		AP+PS	8/3/2020	1450	1455	40	40	Pass	TH
255 / 257	NEOS	SEOS	1225	20	EP	WW-45	63.8		AP+PS	8/3/2020	1605	1610	40	38	Pass	TH
248 / 250	SEOS	NEOS	1245	20	EA	WW-22	57.6	DS-114	AP+PS	8/3/2020	1528	1533	40	38	Pass	TH
256 / 257	EEOS	WEOS	1250	20	EA	WW-22	6.8		AP+PS	8/13/2020	1747	1752	40	40	Pass	TH
255 / 256	NEOS	SEOS	1258	20	EP	WW-45	20.1	DS-118	AP+PS	8/3/2020	1605	1610	40	38	Pass	TH
						PAGE TOTAL	442.0									

TEST METHOD

AL - AIR LANCE	ST - SPARK TEST
AP - AIR PRESSURE	VB - EXTRUDED & VAC BOX
PS - POINT STRESS	

REMARKS:

QC TECH: Thomas Howald
SUPERVISOR: Chad Messervey
SUBMISSION DATE: 2020/01/05
SHEET NUMBER: 50 of 113

GEOMEMBRANE SEAM & TEST LOG

PROJECT NUMBER CT001401 | AREA / LAYER Primary
PROJECT TITLE Victoria Gold Heap Leach Pad Phase 1B | SEAM DATE 2020/08/03

TRIAL SEAMS

#	MACHINE NUMBER	TIME	TECH	AIR TEMP °C	SPEED	TEMP/ SETTING	INSIDE PEEL (PPI)					OUTSIDE PEEL (PPI)					SHEAR (PPI)					CHK'D BY	LINER TO LINER TYPE AND REMARKS
1	WW-45	800	EP	20	55.0%	454°C	153	143	146	142	146	150	156	148	152	151	156	171	159	173	160	TH	SS
2	WW-26	800	CC	20	55.0%	454°C	152	156	136	160	154	134	154	144	157	156	163	167	151	166	157	TH	SS
3	WW-26	800	CC	20	35.0%	454°C	150	158	100	157	130	156	167	140	158	148	173	182	159	174	173	TH	TT
4	WW-45	805	EP	20	35.0%	454°C	153	153	150	154	156	153	149	162	154	161	155	176	161	178	160	TH	TT
5	WW-22	815	EA	20	35.0%	454°C	119	156	144	138	117	155	159	135	171	149	178	179	148	181	179	TH	TT
6	WW-22	815	EA	20	55.0%	454°C	154	144	152	159	149	138	148	142	154	139	159	167	160	167	155	TH	SS

WELD SEAMS

PANEL NUMBERS	SEAM SECTION FROM	SEAM SECTION TO	START TIME	AIR TEMP °C	WELD TECH	MACHINE NUMBER	WELD LENGTH	DESTRUCT NUMBER	QC TEST METH.	QC TEST DATE Y-M-D	AIR PRESSURE TEST (PSI) TIME START	TIME END	PRESSURE START	PRESSURE END	VERIFY PASS	VERIFY QC TECH
258 / 259	EEOS	WEOS	840	20	EA	WW-22	6.8		AP+PS	8/5/2020	1311	1316	40	40	Pass	TH
259 / 260	EEOS	WEOS	853	20	EP	WW-45	6.8		AP+PS	8/5/2020	1741	1746	40	40	Pass	TH
241 / 260	NEOS	SEOS	858	20	EA	WW-22	50.4	DS-119	AP+PS	8/4/2020	1512	1517	40	40	Pass	TH
261 / 262	EEOS	WEOS	911	20	CC	WW-26	6.8		AP+PS	8/5/2020	1312	1317	40	40	Pass	TH
241 / 259	NEOS	SEOS	916	20	EA	WW-22	7.4		AP+PS	8/4/2020	1512	1517	40	40	Pass	TH
240 / 259	NEOS	SEOS	919	20	EA	WW-22	120.9		AP+PS	8/4/2020	1512	1517	40	40	Pass	TH
262 / 263	EEOS	WEOS	931	20	EP	WW-45	6.8		AP+PS	8/5/2020	1742	1747	40	40	Pass	TH
260 / 263	NEOS	SEOS	939	20	CC	WW-26	44.0	DS-120	AP+PS	8/4/2020	1728	1733	40	40	Pass	TH
260 / 262	NEOS	SEOS	957	20	CC	WW-26	6.4		AP+PS	8/4/2020	1741	1746	40	40	Pass	TH
259 / 262	NEOS	SEOS	1000	20	CC	WW-26	122.3		AP+PS	8/4/2020	1741	1746	40	40	Pass	TH
240 / 258	NEOS	SEOS	1001	20	EA	WW-22	6.4		AP+PS	8/5/2020	1300	1305	40	39	Pass	TH
239 / 258	NEOS	SEOS	1005	20	EA	WW-22	26.0		AP+PS	8/5/2020	1300	1305	40	40	Pass	TH
264 / 265	EEOS	WEOS	1012	20	EP	WW-45	6.8		AP+PS	8/5/2020	1313	1318	40	40	Pass	TH
257 / 258	NEOS	SEOS	1013	20	EA	WW-22	34.8		AP+PS	8/13/2020	1726	1731	40	39	Pass	TH
265 / 266	EEOS	WEOS	1037	20	EA	WW-22	6.8		AP+PS	8/5/2020	1743	1748	40	40	Pass	TH
259 / 261	NEOS	SEOS	1047	20	CC	WW-26	6.0		AP+PS	8/5/2020	1312	1317	40	40	Pass	TH
258 / 261	NEOS	SEOS	1050	20	CC	WW-26	67.2		AP+PS	8/13/2020	1730	1735	40	40	Pass	TH
267 / 268	EEOS	WEOS	1052	20	EP	WW-45	6.8		AP+PS	8/14/2020	1451	1456	40	40	Pass	TH
268 / 269	EEOS	WEOS	1057	20	EA	WW-22	6.8		AP+PS	8/11/2020	1319	1324	40	39	Pass	TH
263 / 266	NEOS	SEOS	1107	20	EA	WW-22	44.0	DS-121	AP+PS	8/4/2020	1729	1734	40	40	Pass	TH
						PAGE TOTAL	590.2									

TEST METHOD
AL - AIR LANCE | ST - SPARK TEST
AP - AIR PRESSURE | VB - EXTRUDED & VAC BOX
PS - POINT STRESS

REMARKS:

QC TECH: Thomas Howald
SUPERVISOR: Chad Messervey
SUBMISSION DATE: 2020/01/05
SHEET NUMBER: 51 of 113

GEOMEMBRANE SEAM & TEST LOG

PROJECT NUMBER CT001401 | AREA / LAYER Primary
PROJECT TITLE Victoria Gold Heap Leach Pad Phase 1B | SEAM DATE 2020/08/03

TRIAL SEAMS

#	MACHINE NUMBER	TIME	TECH	AIR TEMP °C	SPEED	TEMP/ SETTING	INSIDE PEEL (PPI)					OUTSIDE PEEL (PPI)					SHEAR (PPI)					CHK'D BY	LINER TO LINER TYPE AND REMARKS
7	WW-22	1300	EA	20	35.0%	454°C	138	144	137	137	123	132	148	132	140	111	140	150	145	164	137	TH	TT
8	WW-22	1300	EA	20	55.0%	454°C	132	135	129	133	140	129	141	141	149	129	148	156	140	154	154	TH	SS
9	WW-45	1325	EP	20	55.0%	454°C	132	142	128	135	129	135	127	134	134	129	152	141	156	145	158	TH	SS
10	WW-26	1326	CC	20	55.0%	454°C	133	143	132	145	140	118	154	125	149	134	160	153	161	137	160	TH	SS
11	WW-26	1328	CC	20	35.0%	454°C	160	155	134	129	152	141	147	137	142	140	159	162	166	176	158	TH	TT
12	WW-45	1330	EP	20	35.0%	454°C	141	104	128	136	117	120	154	118	142	136	144	159	160	163	156	TH	TT

WELD SEAMS

PANEL NUMBERS	SEAM SECTION FROM	SEAM SECTION TO	START TIME	AIR TEMP °C	WELD TECH	MACHINE NUMBER	WELD LENGTH	DESTRUCT NUMBER	QC TEST METH.	QC TEST DATE Y-M-D	AIR PRESSURE TEST (PSI) TIME START	TIME END	PRESSURE START	PRESSURE END	VERIFY PASS	VERIFY QC TECH
266 / 269	NEOS	SEOS	1108	20	EP	WW-45	47.8	DS-122	AP+PS	8/4/2020	1730	1735	40	40	Pass	TH
262 / 266	NEOS	SEOS	1123	20	EA	WW-22	3.8		AP+PS	8/4/2020	1742	1747	40	40	Pass	TH
262 / 265	NEOS	SEOS	1124	20	EA	WW-22	124.5		AP+PS	8/4/2020	1744	1749	40	40	Pass	TH
265 / 269	NEOS	SEOS	1128	20	EP	WW-45	5.2		AP+PS	8/4/2020	1743	1748	40	40	Pass	TH
265 / 268	NEOS	SEOS	1130	20	EP	WW-45	123.3		AP+PS	8/5/2020	1314	1319	40	39	Pass	TH
261 / 265	NEOS	SEOS	1209	20	EA	WW-22	4.0		AP+PS	8/5/2020	1313	1318	40	40	Pass	TH
261 / 264	NEOS	SEOS	1211	20	EA	WW-22	73.9		AP+PS	8/13/2020	1746	1751	40	40	Pass	TH
264 / 267	NEOS	SEOS	1326	20	EP	WW-45	69.2		AP+PS	8/13/2020	1807	1812	40	40	Pass	TH
264 / 268	NEOS	SEOS	1345	20	EP	WW-45	4.7		AP+PS	8/6/2020	1313	1318	40	40	Pass	TH
270 / 258	EEOS	WEOS	1428	20	EA	WW-22	6.8		AP+PS	8/13/2020	1725	1730	40	40	Pass	TH
271 / 261	EEOS	WEOS	1440	20	CC	WW-26	6.8		AP+PS	8/13/2020	1745	1750	40	40	Pass	TH
257 / 270	NEOS	SEOS	1440	20	EA	WW-22	30.7		AP+PS	8/13/2020	1725	1730	40	39	Pass	TH
274 / 267	EEOS	WEOS	1450	20	CC	WW-26	6.8		AP+PS	8/13/2020	1825	1830	40	40	Pass	TH
272 / 264	EEOS	WEOS	1452	20	EP	WW-45	6.8		AP+PS	8/13/2020	1805	1810	40	40	Pass	TH
256 / 270	NEOS	SEOS	1456	20	EA	WW-22	24.4	DS-123	AP+PS	8/13/2020	1747	1752	40	40	Pass	TH
270 / 261	NEOS	SEOS	1456	20	CC	WW-26	3.2		AP+PS	8/13/2020	1731	1736	40	40	Pass	TH
270 / 271	NEOS	SEOS	1457	20	CC	WW-26	51.9	DS-125	AP+PS	8/13/2020	1731	1736	40	40	Pass	TH
271 / 264	NEOS	SEOS	1507	20	EA	WW-22	7.7		AP+PS	8/13/2020	1745	1750	40	40	Pass	TH
273 / 274	EEOS	WEOS	1511	20	EA	WW-22	6.8		AP+PS	8/13/2020	1840	1845	40	40	Pass	TH
271 / 272	NEOS	SEOS	1512	20	EA	WW-22	44.2	DS-126	AP+PS	8/13/2020	1805	1810	40	40	Pass	TH
						PAGE TOTAL	652.5									

TEST METHOD
AL - AIR LANCE | ST - SPARK TEST
AP - AIR PRESSURE | VB - EXTRUDED & VAC BOX
PS - POINT STRESS

REMARKS:

QC TECH Thomas Howald
SUPERVISOR Chad Messervey
SUBMISSION DATE 2020/01/05
SHEET NUMBER 52 of 113

GEOMEMBRANE SEAM & TEST LOG

PROJECT NUMBER CT001401 | AREA / LAYER Primary
PROJECT TITLE Victoria Gold Heap Leach Pad Phase 1B | SEAM DATE 2020/08/03

TRIAL SEAMS

#	MACHINE NUMBER	TIME	TECH	AIR TEMP °C	SPEED	TEMP/ SETTING	INSIDE PEEL (PPI)					OUTSIDE PEEL (PPI)					SHEAR (PPI)					CHK'D BY	LINER TO LINER TYPE AND REMARKS

WELD SEAMS

PANEL NUMBERS	SEAM SECTION FROM	SEAM SECTION TO	START TIME	AIR TEMP °C	WELD TECH	MACHINE NUMBER	WELD LENGTH	DESTRUCT NUMBER	QC TEST METH.	QC TEST DATE Y-M-D	AIR PRESSURE TEST (PSI) TIME START	TIME END	PRESSURE START	PRESSURE END	VERIFY PASS	VERIFY QC TECH
272 / 273	NEOS	SEOS	1524	20	EP	WW-45	25.0	DS-127	AP+PS	8/13/2020	1840	1845	40	40	Pass	TH
272 / 267	NEOS	SEOS	1536	20	EP	WW-45	3.2		AP+PS	8/13/2020	1806	1811	40	40	Pass	TH
272 / 274	NEOS	SEOS	1537	20	EP	WW-45	16.0		AP+PS	8/13/2020	1807	1812	40	40	Pass	TH
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PAGE TOTAL							44.2									

TEST METHOD
AL - AIR LANCE
AP - AIR PRESSURE
PS - POINT STRESS
ST - SPARK TEST
VB - EXTRUDED & VAC BOX

REMARKS:

QC TECH Thomas Howald
SUPERVISOR Chad Messervey
SUBMISSION DATE 2020/01/05
SHEET NUMBER 53 of 113

GEOMEMBRANE SEAM & TEST LOG

PROJECT NUMBER CT001401 | AREA / LAYER Primary
PROJECT TITLE Victoria Gold Heap Leach Pad Phase 1B | SEAM DATE 2020/08/04

TRIAL SEAMS

#	MACHINE NUMBER	TIME	TECH	AIR TEMP °C	SPEED	TEMP/ SETTING	INSIDE PEEL (PPI)					OUTSIDE PEEL (PPI)					SHEAR (PPI)					CHK'D BY	LINER TO LINER TYPE AND REMARKS
1	WW-26	915	EA	20	35.0%	454°C	133	148	132	141	130	145	160	147	150	158	172	170	171	170	161	TH	TT
2	WW-45	915	CC	20	55.0%	454°C	144	149	140	148	153	148	152	155	151	144	157	158	160	164	159	TH	SS
3	WW-26	915	EA	20	55.0%	454°C	142	137	153	149	144	135	140	138	138	135	164	171	169	172	157	TH	SS
4	WW-45	915	CC	20	35.0%	454°C	144	157	157	151	150	133	147	131	159	129	157	183	177	174	173	TH	TT
5	WW-22	1300	EA	20	35.0%	454°C	138	159	138	164	143	133	139	150	153	140	169	162	161	171	160	TH	TT
6	WW-22	1300	EA	20	55.0%	454°C	128	111	120	130	121	138	129	135	135	129	147	135	147	154	139	TH	SS

WELD SEAMS

PANEL NUMBERS	SEAM SECTION FROM	SEAM SECTION TO	START TIME	AIR TEMP °C	WELD TECH	MACHINE NUMBER	WELD LENGTH	DESTRUCT NUMBER	QC TEST METH.	QC TEST DATE Y-M-D	AIR PRESSURE TEST (PSI) TIME START	TIME END	PRESSURE START	PRESSURE END	VERIFY PASS	VERIFY QC TECH
275 / 276	EEOS	WEOS	1040	20	EA	WW-26	6.8		AP+PS	8/13/2020	1635	1640	40	40	Pass	TH
276 / 277	EEOS	WEOS	1052	20	EA	WW-26	6.8		AP+PS	8/11/2020	1300	1305	40	40	Pass	TH
269 / 277	NEOS	SEOS	1055	20	CC	WW-45	53.0	DS-124	AP+PS	8/11/2020	1319	1324	40	40	Pass	TH
268 / 277	NEOS	SEOS	1115	20	CC	WW-45	44.4		AP+PS	8/11/2020	1300	1305	40	38	Pass	TH
268 / 276	NEOS	SEOS	1135	20	CC	WW-45	82.3		AP+PS	8/11/2020	1300	1305	40	40	Pass	TH
267 / 276	NEOS	SEOS	1209	20	CC	WW-45	46.5		AP+PS	8/13/2020	1635	1640	40	40	Pass	TH
267 / 275	NEOS	SEOS	1229	20	CC	WW-45	35.1		AP+PS	8/13/2020	1830	1835	40	39	Pass	TH
274 / 275	NEOS	SEOS	1245	20	CC	WW-45	16.0		AP+PS	8/13/2020	1825	1830	40	40	Pass	TH
278 / 279	EEOS	WEOS	1251	20	EA	WW-26	6.8		AP+PS	8/14/2020	835	840	40	40	Pass	TH
273 / 275	NEOS	SEOS	1254	20	CC	WW-45	25.0	DS-128	AP+PS	8/13/2020	1835	1840	40	40	Pass	TH
279 / 280	EEOS	WEOS	1344	20	EA	WW-22	6.8		AP+PS	8/11/2020	1323	1328	40	39	Pass	TH
280 / 281	EEOS	WEOS	1353	20	EA	WW-22	6.8		AP+PS	8/11/2020	1236	1241	40	40	Pass	TH
277 / 281	NEOS	SEOS	1401	20	EA	WW-22	18.6	DS-131	AP+PS	8/11/2020	1236	1241	40	40	Pass	TH
277 / 280	NEOS	SEOS	1407	20	EA	WW-22	78.8		AP+PS	8/11/2020	1235	1240	40	40	Pass	TH
276 / 280	NEOS	SEOS	1435	20	EA	WW-22	46.8		AP+PS	8/11/2020	1255	1300	40	40	Pass	TH
275 / 279	NEOS	37N	1445	20	CC	WW-45	26.1		AP+PS	8/14/2020	905	910	40	40	Pass	TH
276 / 279	NEOS	SEOS	1451	20	EA	WW-22	82.0		AP+PS	8/13/2020	1635	1640	40	40	Pass	TH
275 / 279	37N	SEOS	1454	20	CC	WW-45	20.0		AP+PS	8/14/2020	835	840	40	40	Pass	TH
275 / 278	NEOS	SEOS	1500	20	CC	WW-45	30.0	DS-129	AP+PS	8/14/2020	835	840	40	40	Pass	TH
282 / 283	EEOS	WEOS	1733	20	EA	WW-22	6.8		AP+PS	8/13/2020	1706	1711	40	38	Pass	TH
						PAGE TOTAL	645.4									

TEST METHOD
AL - AIR LANCE | ST - SPARK TEST
AP - AIR PRESSURE | VB - EXTRUDED & VAC BOX
PS - POINT STRESS

REMARKS:

QC TECH: Thomas Howald
SUPERVISOR: Chad Messervey
SUBMISSION DATE: 2020/01/05
SHEET NUMBER: 54 of 113

GEOMEMBRANE SEAM & TEST LOG

PROJECT NUMBER CT001401 | AREA / LAYER Primary
PROJECT TITLE Victoria Gold Heap Leach Pad Phase 1B | SEAM DATE 2020/08/04

TRIAL SEAMS

#	MACHINE NUMBER	TIME	TECH	AIR TEMP °C	SPEED	TEMP/ SETTING	INSIDE PEEL (PPI)					OUTSIDE PEEL (PPI)					SHEAR (PPI)					CHK'D BY	LINER TO LINER TYPE AND REMARKS
7	WW-45	1400	CC	20	55.0%	454°C	126	124	129	127	133	128	133	129	137	133	142	148	149	143	147	TH	SS
8	WW-22	1645	EA	20	35.0%	454°C	135	129	132	139	143	127	123	124	133	124	148	153	165	165	147	TH	TT
9	WW-22	1645	EA	20	55.0%	454°C	123	129	129	134	106	118	125	135	135	133	140	147	149	150	144	TH	SS

WELD SEAMS

PANEL NUMBERS	SEAM SECTION FROM	SEAM SECTION TO	START TIME	AIR TEMP °C	WELD TECH	MACHINE NUMBER	WELD LENGTH	DESTRUCT NUMBER	QC TEST METH.	QC TEST DATE Y-M-D	AIR PRESSURE TEST (PSI) TIME START	TIME END	PRESSURE START	PRESSURE END	VERIFY PASS	VERIFY QC TECH
283 / 284	EEOS	WEOS	1740	20	EA	WW-22	6.8		AP+PS	8/11/2020	1255	1300	40	40	Pass	TH
278 / 282	NEOS	SEOS	1745	20	CC	WW-45	30.0	DS-130	AP+PS	8/14/2020	837	842	40	40	Pass	TH
281 / 284	NEOS	SEOS	1750	20	EA	WW-22	18.6	DS-132	AP+PS	8/11/2020	1306	1311	40	40	Pass	TH
279 / 282	NEOS	37O	1755	20	CC	WW-45	58.1		AP+PS	8/13/2020	1845	1850	40	40	Pass	TH
279 / 282	37O	SEOS	1758	20	CC	WW-45	20.0		AP+PS	8/14/2020	837	842	40	40	Pass	TH
280 / 284	NEOS	SEOS	1759	20	EA	WW-22	67.0		AP+PS	8/11/2020	1233	1238	40	40	Pass	TH
280 / 283	NEOS	SEOS	1820	20	EA	WW-22	58.6		AP+PS	8/11/2020	1255	1300	40	40	Pass	TH
279 / 283	NEOS	30R	1835	20	EA	WW-22	28.3		AP+PS	8/13/2020	1620	1625	40	40	Pass	TH
279 / 283	30R	SEOS	1846	20	EA	WW-22	22.0		AP+PS	8/13/2020	1643	1648	40	40	Pass	TH
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PAGE TOTAL							309.4									

TEST METHOD
AL - AIR LANCE | ST - SPARK TEST
AP - AIR PRESSURE | VB - EXTRUDED & VAC BOX
PS - POINT STRESS

REMARKS:

QC TECH: Thomas Howald
SUPERVISOR: Chad Messervey
SUBMISSION DATE: 2020/01/05
SHEET NUMBER: 55 of 113

GEOMEMBRANE SEAM & TEST LOG

PROJECT NUMBER CT001401 | AREA / LAYER Primary
PROJECT TITLE Victoria Gold Heap Leach Pad Phase 1B | SEAM DATE 2020/08/05

TRIAL SEAMS

#	MACHINE NUMBER	TIME	TECH	AIR TEMP °C	SPEED	TEMP/ SETTING	INSIDE PEEL (PPI)					OUTSIDE PEEL (PPI)					SHEAR (PPI)					CHK'D BY	LINER TO LINER TYPE AND REMARKS
1	WW-45	1145	CC	20	35.0%	454°C	138	142	138	141	140	137	136	126	144	143	149	160	151	166	166	TH	TT
2	WW-22	1145	JC	20	35.0%	454°C	145	131	141	151	140	157	147	127	138	158	152	176	161	179	171	TH	TT
3	WW-45	1145	CC	20	55.0%	454°C	127	139	128	140	137	150	144	150	147	144	145	155	150	153	156	TH	SS
4	WW-22	1145	JC	20	55.0%	454°C	136	124	130	140	131	141	147	145	143	144	147	147	149	152	149	TH	SS
5	WW-45	1600	CC	20	35.0%	454°C	120	129	155	143	147	139	125	128	153	143	163	176	171	169	165	TH	TT
6	WW-22	1600	JC	20	55.0%	454°C	136	151	138	142	134	138	141	129	131	134	159	160	161	158	167	TH	SS

WELD SEAMS

PANEL NUMBERS	SEAM SECTION FROM	SEAM SECTION TO	START TIME	AIR TEMP °C	WELD TECH	MACHINE NUMBER	WELD LENGTH	DESTRUCT NUMBER	QC TEST METH.	QC TEST DATE Y-M-D	AIR PRESSURE TEST (PSI) TIME START	TIME END	PRESSURE START	PRESSURE END	VERIFY PASS	VERIFY QC TECH
285 / 286	EEOS	WEOS	1215	20	JC	WW-22	6.8		AP+PS	8/14/2020	840	845	40	40	Pass	TH
286 / 287	EEOS	WEOS	1230	20	JC	WW-22	6.8		AP+PS	8/11/2020	1324	1329	40	40	Pass	TH
289 / 290	EEOS	WEOS	1233	20	CC	WW-45	6.8		AP+PS	8/13/2020	1405	1410	40	40	Pass	TH
287 / 288	EEOS	WEOS	1237	20	CC	WW-45	6.8	DS-135	AP+PS	8/11/2020	1301	1306	40	39	Pass	TH
284 / 288	NEOS	SEOS	1255	20	CC	WW-45	13.5	DS-134	AP+PS	8/11/2020	1300	1305	40	39	Pass	TH
284 / 287	NEOS	SEOS	1300	20	CC	WW-45	70.9		AP+PS	8/13/2020	1605	1610	40	40	Pass	TH
290 / 291	EEOS	WEOS	1322	20	JC	WW-22	6.8		AP+PS	8/13/2020	1505	1510	40	40	Pass	TH
283 / 287	NEOS	SEOS	1325	20	CC	WW-45	36.9		AP+PS	8/11/2020	1253	1258	40	40	Pass	TH
291 / 292	EEOS	WEOS	1337	20	JC	WW-22	6.8		AP+PS	8/11/2020	1220	1225	40	40	Pass	TH
283 / 286	NEOS	SEOS	1352	20	CC	WW-45	63.4		AP+PS	8/13/2020	1610	1615	40	40	Pass	TH
288 / 292	NEOS	SEOS	1405	20	JC	WW-22	13.5	DS-136	AP+PS	8/11/2020	1305	1310	40	40	Pass	TH
287 / 292	NEOS	SEOS	1409	20	JC	WW-22	34.0		AP+PS	8/11/2020	1220	1225	40	40	Pass	TH
282 / 286	NEOS	SEOS	1416	20	CC	WW-45	66.5		AP+PS	8/13/2020	1706	1711	40	40	Pass	TH
287 / 291	NEOS	SEOS	1421	20	JC	WW-22	73.8		AP+PS	8/11/2020	1225	1230	40	40	Pass	TH
282 / 285	NEOS	SEOS	1446	20	CC	WW-45	41.3	DS-133	AP+PS	8/14/2020	840	845	40	40	Pass	TH
286 / 291	NEOS	SEOS	1451	20	JC	WW-22	44.8		AP+PS	8/13/2020	1507	1512	40	40	Pass	TH
286 / 290	NEOS	SEOS	1506	20	JC	WW-22	84.4		AP+PS	8/14/2020	850	855	40	40	Pass	TH
285 / 290	NEOS	SEOS	1536	20	JC	WW-22	29.3		AP+PS	8/14/2020	840	845	40	40	Pass	TH
285 / 289	NEOS	SEOS	1600	20	JC	WW-22	12.0	DS-137	AP+PS	8/19/2020	1713	1718	40	40	Pass	TH
293 / 294	EEOS	WEOS	1626	20	CC	WW-45	6.8		AP+PS	8/14/2020	843	848	40	40	Pass	TH
						PAGE TOTAL	631.9									

TEST METHOD
AL - AIR LANCE | ST - SPARK TEST
AP - AIR PRESSURE | VB - EXTRUDED & VAC BOX
PS - POINT STRESS

REMARKS:

QC TECH: Thomas Howald
SUPERVISOR: Chad Messervey
SUBMISSION DATE: 2020/01/05
SHEET NUMBER: 56 of 113

GEOMEMBRANE SEAM & TEST LOG

PROJECT NUMBER CT001401 | AREA / LAYER Primary
PROJECT TITLE Victoria Gold Heap Leach Pad Phase 1B | SEAM DATE 2020/08/05

TRIAL SEAMS

#	MACHINE NUMBER	TIME	TECH	AIR TEMP °C	SPEED	TEMP/ SETTING	INSIDE PEEL (PPI)					OUTSIDE PEEL (PPI)					SHEAR (PPI)					CHK'D BY	LINER TO LINER TYPE AND REMARKS
7	WW-45	1600	CC	20	35.0%	454°C	120	129	155	143	147	139	125	128	153	143	163	176	171	169	165	TH	TT
8	WW-22	1600	JC	20	55.0%	454°C	136	151	138	142	134	138	141	129	131	127	159	160	161	158	167	TH	SS
9	WW-22	1700	DT	20	55.0%	454°C	139	148	146	151	151	145	142	148	150	156	177	177	179	172	171	TH	SS
10	WW-22	1700	DT	20	55.0%	454°C	139	148	146	151	151	145	142	148	150	156	177	177	179	172	171	TH	SS

WELD SEAMS

PANEL NUMBERS	SEAM SECTION FROM	SEAM SECTION TO	START TIME	AIR TEMP °C	WELD TECH	MACHINE NUMBER	WELD LENGTH	DESTRUCT NUMBER	QC TEST METH.	QC TEST DATE Y-M-D	AIR PRESSURE TEST (PSI) TIME START	TIME END	PRESSURE START	PRESSURE END	VERIFY PASS	VERIFY QC TECH
294 / 295	EEOS	WEOS	1634	20	CC	WW-45	6.8		AP+PS	8/11/2020	1240	1245	40	40	Pass	TH
292 / 295	NEOS	SEOS	1650	20	CC	WW-45	47.5	DS-139	AP+PS	8/11/2020	1212	1217	40	40	Pass	TH
291 / 295	NEOS	30G	1708	20	CC	WW-45	6.0		AP+PS	8/11/2020	1215	1220	40	40	Pass	TH
291 / 295	30G	SEOS	1715	20	CC	WW-45	30.8		AP+PS	8/11/2020	1225	1230	40	40	Pass	TH
289 / 293	SEOS	NEOS	1716	20	JC	WW-22	5.0	DS-138	AP+PS	8/13/2020	1400	1405	40	40	Pass	TH
290 / 294	SEOS	NEOS	1724	20	JC	WW-22	37.4		AP+PS	8/13/2020	1505	1510	40	40	Pass	TH
290 / 293	SEOS	NEOS	1746	20	JC	WW-22	76.2		AP+PS	8/13/2020	1405	1410	40	39	Pass	TH
291 / 294	NEOS	SEOS	1802	20	CC	WW-45	91.6		AP+PS	8/13/2020	1505	1510	40	38	Pass	TH
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PAGE TOTAL							301.3									

TEST METHOD

AL - AIR LANCE	ST - SPARK TEST
AP - AIR PRESSURE	VB - EXTRUDED & VAC BOX
PS - POINT STRESS	

REMARKS:

QC TECH: Thomas Howald
SUPERVISOR: Chad Messervey
SUBMISSION DATE: 2020/01/05
SHEET NUMBER: 57 of 113

GEOMEMBRANE SEAM & TEST LOG

PROJECT NUMBER CT001401 | AREA / LAYER Primary
PROJECT TITLE Victoria Gold Heap Leach Pad Phase 1B | SEAM DATE 2020/08/06

TRIAL SEAMS

#	MACHINE NUMBER	TIME	TECH	AIR TEMP °C	SPEED	TEMP/ SETTING	INSIDE PEEL (PPI)					OUTSIDE PEEL (PPI)					SHEAR (PPI)					CHK'D BY	LINER TO LINER TYPE AND REMARKS
1	WW-45	825	CC	20	55.0%	454°C	144	155	148	144	150	149	157	159	153	152	158	156	153	168	155	TH	SS
2	WW-45	925	CC	20	35.0%	454°C	123	135	126	146	118	128	131	154	134	134	157	177	166	182	164	TH	TT
3	WW-22	925	JC	20	55.0%	454°C	150	162	166	153	141	142	141	145	145	144	151	175	172	181	165	TH	TT
4	WW-26	1250	DT	20	50.0%	454°C	114	124	135	130	136	143	120	136	140	135	154	155	159	171	166	TH	SS
5	WW-45	1330	CC	20	35.0%	454°C	138	155	150	145	152	125	143	130	141	139	167	170	171	168	172	TH	TT
6	WW-45	1330	CC	20	55.0%	454°C	133	153	140	133	144	133	131	135	136	143	169	168	171	170	167	TH	SS

WELD SEAMS

PANEL NUMBERS	SEAM SECTION FROM	SEAM SECTION TO	START TIME	AIR TEMP °C	WELD TECH	MACHINE NUMBER	WELD LENGTH	DESTRUCT NUMBER	QC TEST METH.	QC TEST DATE Y-M-D	AIR PRESSURE TEST (PSI) TIME START	TIME END	PRESSURE START	PRESSURE END	VERIFY PASS	VERIFY QC TECH
295 / 296	SEOS	NEOS	958	20	CC	WW-45	36.3		AP+PS	8/11/2020	1211	1216	40	39	Pass	TH
296 / 297	SEOS	NEOS	1000	20	JC	WW-22	22.7		AP+PS	8/11/2020	802	807	40	40	Pass	TH
297 / 298	SEOS	NEOS	1010	20	JC	WW-22	9.8		AP+PS	8/11/2020	815	820	40	40	Pass	TH
308 / 309	EEOS	WEOS	1050	20	CC	WW-45	35.4		AP+PS	8/11/2020	916	921	40	40	Pass	TH
307 / 308	EEOS	WEOS	1058	20	JC	WW-22	33.0		AP+PS	8/11/2020	844	849	40	40	Pass	TH
305 / 306	SEOS	NEOS	1145	20	CC	WW-45	6.8		AP+PS	8/11/2020	829	834	40	40	Pass	TH
306 / 307	EEOS	WEOS	1200	20	CC	WW-45	12.4	DS-154	AP+PS	8/11/2020	841	846	40	40	Pass	TH
304 / 306	EEOS	WEOS	1204	20	JC	WW-22	8.5		AP+PS	8/11/2020	852	827	40	40	Pass	TH
305 / 307	EEOS	WEOS	1205	20	CC	WW-45	18.9		AP+PS	8/11/2020	841	846	40	40	Pass	TH
304 / 305	EEOS	WEOS	1209	20	JC	WW-22	16.2		AP+PS	8/11/2020	826	831	40	40	Pass	TH
304 / 306	EEOS	WEOS	1210	20	JC	WW-22	4.0		AP+PS	8/11/2020	829	834	40	40	Pass	TH
303 / 304	EEOS	WEOS	1217	20	CC	WW-45	27.0		AP+PS	8/11/2020	824	829	40	40	Pass	TH
300 / 301	SEOS	NEOS	1229	20	JC	WW-22	6.8		AP+PS	8/11/2020	818	823	40	40	Pass	TH
301 / 302	EEOS	WEOS	1244	20	JC	WW-22	3.5	DS-153	AP+PS	8/11/2020	819	824	40	39	Pass	TH
302 / 303	EEOS	WEOS	1244	20	JC	WW-22	23.3		AP+PS	8/11/2020	756	801	40	40	Pass	TH
300 / 302	EEOS	WEOS	1247	20	JC	WW-22	12.9		AP+PS	8/11/2020	802	807	40	40	Pass	TH
299 / 301	EEOS	WEOS	1300	20	JC	WW-22	4.8		AP+PS	8/11/2020	818	823	40	40	Pass	TH
299 / 300	EEOS	WEOS	1303	20	JC	WW-22	5.4		AP+PS	8/11/2020	807	812	40	40	Pass	TH
299 / 319	EEOS	WEOS	1310	20	JC	WW-22	2.0		AP+PS	8/11/2020	1505	1510	40	40	Pass	TH
309 / 310	EEOS	WEOS	1315	20	DT	WW-26	37.8		AP+PS	8/11/2020	918	923	40	40	Pass	TH
						PAGE TOTAL	327.5									

TEST METHOD
AL - AIR LANCE | ST - SPARK TEST
AP - AIR PRESSURE | VB - EXTRUDED & VAC BOX
PS - POINT STRESS

REMARKS:

QC TECH Thomas Howald
SUPERVISOR Chad Messervey
SUBMISSION DATE 2020/01/05
SHEET NUMBER 58 of 113

GEOMEMBRANE SEAM & TEST LOG

PROJECT NUMBER CT001401 | AREA / LAYER Primary
PROJECT TITLE Victoria Gold Heap Leach Pad Phase 1B | SEAM DATE 2020/08/06

TRIAL SEAMS

#	MACHINE NUMBER	TIME	TECH	AIR TEMP °C	SPEED	TEMP/ SETTING	INSIDE PEEL (PPI)					OUTSIDE PEEL (PPI)					SHEAR (PPI)					CHK'D BY	LINER TO LINER TYPE AND REMARKS
7	WW-22	1330	JC	20	55.0%	454°C	151	148	131	133	138	144	143	141	141	141	175	174	171	175	172	TH	SS

WELD SEAMS

PANEL NUMBERS	SEAM SECTION FROM	SEAM SECTION TO	START TIME	AIR TEMP °C	WELD TECH	MACHINE NUMBER	WELD LENGTH	DESTRUCT NUMBER	QC TEST METH.	QC TEST DATE Y-M-D	AIR PRESSURE TEST (PSI) TIME START	TIME END	PRESSURE START	PRESSURE END	VERIFY PASS	VERIFY QC TECH
314 / 315	EEOS	WEOS	1340	20	DT	WW-26	46.6		AP+PS	8/11/2020	1446	1451	40	39	Pass	TH
310 / 311	EEOS	WEOS	1345	20	CC	WW-45	39.4		AP+PS	8/11/2020	926	931	40	38	Pass	TH
312 / 313	SEOS	NEOS	1353	20	CC	WW-45	6.8		AP+PS	8/11/2020	1057	1102	40	40	Pass	TH
311 / 313	EEOS	WEOS	1358	20	JC	WW-22	4.7		AP+PS	8/11/2020	1050	1055	40	40	Pass	TH
311 / 312	EEOS	31T	1359	20	JC	WW-22	14.4		AP+PS	8/11/2020	1036	1041	40	40	Pass	TH
311 / 312	31T	32A	1404	20	JC	WW-22	5.0		AP+PS	8/11/2020	1037	1042	40	40	Pass	TH
311 / 312	32A	WEOS	1406	20	JC	WW-22	17.2		AP+PS	8/11/2020	1035	1040	40	40	Pass	TH
313 / 314	EEOS	WEOS	1406	20	DT	WW-26	4.6		AP+PS	8/11/2020	1512	1517	40	40	Pass	TH
312 / 314	EEOS	WEOS	1409	20	DT	WW-26	39.2		AP+PS	8/11/2020	1443	1448	40	40	Pass	TH
316 / 317	SEOS	NEOS	1410	20	CC	WW-45	6.8		AP+PS	8/11/2020	1500	1505	40	40	Pass	TH
315 / 317	EEOS	WEOS	1415	20	JC	WW-22	25.8		AP+PS	8/11/2020	1459	1504	40	39	Pass	TH
298 / 319	EEOS	WEOS	1429	20	CC	WW-45	2.0		AP+PS	8/11/2020	1505	1510	40	40	Pass	TH
317 / 318	EEOS	WEOS	1430	20	DT	WW-26	25.8	DS-155	AP+PS	8/11/2020	1500	1505	40	37	Pass	TH
298 / 299	EEOS	WEOS	1433	20	CC	WW-45	6.3		AP+PS	8/11/2020	815	820	40	38	Pass	TH
297 / 300	EEOS	WEOS	1435	20	CC	WW-45	10.0		AP+PS	8/11/2020	802	807	40	40	Pass	TH
315 / 316	EEOS	WEOS	1438	20	JC	WW-22	22.0		AP+PS	8/11/2020	1458	1503	40	40	Pass	TH
296 / 302	EEOS	WEOS	1442	20	CC	WW-45	10.7		AP+PS	8/11/2020	1500	1505	40	40	Pass	TH
316 / 318	EEOS	WEOS	1443	20	DT	WW-26	24.7		AP+PS	8/11/2020	1500	1505	40	40	Pass	TH
297 / 299	EEOS	WEOS	1446	20	CC	WW-45	4.1		AP+PS	8/11/2020	807	812	40	40	Pass	TH
294 / 318	SEOS	NEOS	1508	20	CC	WW-45	7.0		AP+PS	8/11/2020	1730	1735	40	40	Pass	TH
						PAGE TOTAL	323.1									

TEST METHOD
AL - AIR LANCE | ST - SPARK TEST
AP - AIR PRESSURE | VB - EXTRUDED & VAC BOX
PS - POINT STRESS

REMARKS:

QC TECH Thomas Howald
SUPERVISOR Chad Messervey
SUBMISSION DATE 2020/01/05
SHEET NUMBER 59 of 113

GEOMEMBRANE SEAM & TEST LOG

PROJECT NUMBER CT001401 | AREA / LAYER Primary
PROJECT TITLE Victoria Gold Heap Leach Pad Phase 1B | SEAM DATE 2020/08/06

TRIAL SEAMS

#	MACHINE NUMBER	TIME	TECH	AIR TEMP °C	SPEED	TEMP/ SETTING	INSIDE PEEL (PPI)					OUTSIDE PEEL (PPI)					SHEAR (PPI)					CHK'D BY	LINER TO LINER TYPE AND REMARKS

WELD SEAMS

PANEL NUMBERS	SEAM SECTION FROM	SEAM SECTION TO	START TIME	AIR TEMP °C	WELD TECH	MACHINE NUMBER	WELD LENGTH	DESTRUCT NUMBER	QC TEST METH.	QC TEST DATE Y-M-D	AIR PRESSURE TEST (PSI) TIME START	TIME END	PRESSURE START	PRESSURE END	VERIFY PASS	VERIFY QC TECH
294 / 316	SEOS	NEOS	1511	20	CC	WW-45	7.0		AP+PS	8/11/2020	1458	1503	40	40	Pass	TH
294 / 315	SEOS	NEOS	1516	20	CC	WW-45	7.0		AP+PS	8/11/2020	1458	1503	40	39	Pass	TH
294 / 314	SEOS	NEOS	1521	20	CC	WW-45	7.0		AP+PS	8/11/2020	1443	1448	40	40	Pass	TH
294 / 312	SEOS	NEOS	1526	20	CC	WW-45	7.0		AP+PS	8/11/2020	1443	1448	40	40	Pass	TH
294 / 311	SEOS	NEOS	1531	20	CC	WW-45	7.0		AP+PS	8/11/2020	932	937	40	40	Pass	TH
295 / 310	SEOS	NEOS	1536	20	CC	WW-45	7.0		AP+PS	8/11/2020	918	923	40	40	Pass	TH
295 / 309	SEOS	NEOS	1541	20	CC	WW-45	7.0		AP+PS	8/11/2020	918	923	40	40	Pass	TH
295 / 308	SEOS	NEOS	1546	20	CC	WW-45	7.0		AP+PS	8/11/2020	844	849	40	40	Pass	TH
295 / 307	SEOS	NEOS	1551	20	CC	WW-45	7.0		AP+PS	8/11/2020	844	849	40	40	Pass	TH
295 / 305	SEOS	NEOS	1557	20	CC	WW-45	7.0		AP+PS	8/11/2020	826	831	40	40	Pass	TH
295 / 304	SEOS	NEOS	1602	20	CC	WW-45	7.0		AP+PS	8/11/2020	824	829	40	40	Pass	TH
295 / 303	SEOS	NEOS	1607	20	CC	WW-45	7.0	DS-145	AP+PS	8/11/2020	824	829	40	40	Pass	TH
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/																
PAGE TOTAL							84.0									

TEST METHOD
AL - AIR LANCE
AP - AIR PRESSURE
PS - POINT STRESS
ST - SPARK TEST
VB - EXTRUDED & VAC BOX

REMARKS:

QC TECH Thomas Howald
SUPERVISOR Chad Messervey
SUBMISSION DATE 2020/01/05
SHEET NUMBER 60 of 113

GEOMEMBRANE SEAM & TEST LOG

PROJECT NUMBER CT001401 | AREA / LAYER Primary
PROJECT TITLE Victoria Gold Heap Leach Pad Phase 1B | SEAM DATE 2020/08/07

TRIAL SEAMS

#	MACHINE NUMBER	TIME	TECH	AIR TEMP °C	SPEED	TEMP/ SETTING	INSIDE PEEL (PPI)					OUTSIDE PEEL (PPI)					SHEAR (PPI)					CHK'D BY	LINER TO LINER TYPE AND REMARKS
1	WW-22	900	JC	20	35.0%	454°C	156	153	144	157	165	123	157	146	152	133	168	165	179	175	175	TH	TT
2	WW-45	900	CC	20	35.0%	454°C	147	148	149	161	132	144	139	162	159	140	160	162	144	177	176	TH	TT
3	WW-45	900	CC	20	55.0%	454°C	143	144	135	137	141	138	151	137	153	140	150	158	149	164	155	TH	SS
4	WW-22	900	JC	20	55.0%	454°C	141	145	143	122	129	144	149	151	141	140	157	166	158	165	159	TH	SS
5	WW-22	1330	JC	20	55.0%	454°C	133	130	112	126	137	136	146	130	139	128	149	139	137	146	143	TH	SS
6	WW-45	1330	CC	20	35.0%	454°C	148	152	133	142	145	137	133	160	155	145	157	170	175	174	166	TH	TT

WELD SEAMS

PANEL NUMBERS	SEAM SECTION FROM	SEAM SECTION TO	START TIME	AIR TEMP °C	WELD TECH	MACHINE NUMBER	WELD LENGTH	DESTRUCT NUMBER	QC TEST METH.	QC TEST DATE Y-M-D	AIR PRESSURE TEST (PSI) TIME START	TIME END	PRESSURE START	PRESSURE END	VERIFY PASS	VERIFY QC TECH
320 / 321	SEOS	NEOS	930	15	JC	WW-22	6.8		AP+PS	8/11/2020	1704	1709	40	40	Pass	TH
318 / 321	SEOS	NEOS	936	15	CC	WW-45	12.0		AP+PS	8/11/2020	1704	1709	40	38	Pass	TH
318 / 320	EEOS	WEOS	939	15	CC	WW-45	42.2		AP+PS	8/11/2020	1704	1709	40	40	Pass	TH
323 / 324	SEOS	NEOS	952	15	JC	WW-22	6.8		AP+PS	8/11/2020	1714	1719	40	40	Pass	TH
322 / 321	EEOS	WEOS	1005	15	CC	WW-45	13.5		AP+PS	8/11/2020	1705	1710	40	39	Pass	TH
320 / 322	EEOS	WEOS	1010	15	JC	WW-22	44.9		AP+PS	8/11/2020	1705	1710	40	40	Pass	TH
322 / 324	EEOS	WEOS	1023	15	JC	WW-22	15.4		AP+PS	8/11/2020	1714	1719	40	40	Pass	TH
322 / 323	SEOS	NEOS	1031	15	JC	WW-22	48.2		AP+PS	8/11/2020	1714	1719	40	40	Pass	TH
326 / 325	EEOS	WEOS	1356	15	CC	WW-45	96.5	DS-156	AP+PS	8/14/2020	935	940	40	40	Pass	TH
327 / 328	SEOS	NEOS	1408	15	JC	WW-22	6.8		AP+PS	8/14/2020	926	931	40	40	Pass	TH
328 / 326	EEOS	WEOS	1445	15	JC	WW-22	61.5		AP+PS	8/14/2020	927	932	40	40	Pass	TH
330 / 329	EEOS	WEOS	1450	15	CC	WW-45	44.2		AP+PS	8/14/2020	826	831	40	40	Pass	TH
327 / 326	EEOS	WEOS	1506	15	JC	WW-22	27.4		AP+PS	8/14/2020	927	932	40	40	Pass	TH
331 / 330	EEOS	WEOS	1513	15	CC	WW-45	22.0		AP+PS	8/14/2020	825	830	40	40	Pass	TH
328 / 329	EEOS	WEOS	1526	15	CC	WW-45	45.4		AP+PS	8/14/2020	920	925	40	40	Pass	TH
329 / 327	EEOS	WEOS	1541	15	CC	WW-45	21.0		AP+PS	8/14/2020	925	930	40	40	Pass	TH
324 / 328	EEOS	WEOS	1605	15	JC	WW-22	16.4		AP+PS	8/14/2020	920	925	40	40	Pass	TH
323 / 329	EEOS	WEOS	1615	15	JC	WW-22	15.9		AP+PS	8/14/2020	915	920	40	40	Pass	TH
323 / 330	EEOS	WEOS	1623	15	JC	WW-22	17.8		AP+PS	8/14/2020	915	920	40	40	Pass	TH
323 / 331	EEOS	WEOS	1632	15	JC	WW-22	17.4		AP+PS	8/14/2020	820	825	40	40	Pass	TH
						PAGE TOTAL	582.1									

TEST METHOD
AL - AIR LANCE | ST - SPARK TEST
AP - AIR PRESSURE | VB - EXTRUDED & VAC BOX
PS - POINT STRESS

REMARKS:

QC TECH: Thomas Howald
SUPERVISOR: Chad Messervey
SUBMISSION DATE: 2020/01/05
SHEET NUMBER: 61 of 113

GEOMEMBRANE SEAM & TEST LOG

PROJECT NUMBER CT001401 | AREA / LAYER Primary
PROJECT TITLE Victoria Gold Heap Leach Pad Phase 1B | SEAM DATE 2020/08/07

TRIAL SEAMS

#	MACHINE NUMBER	TIME	TECH	AIR TEMP °C	SPEED	TEMP/ SETTING	INSIDE PEEL (PPI)					OUTSIDE PEEL (PPI)					SHEAR (PPI)					CHK'D BY	LINER TO LINER TYPE AND REMARKS
7	WW-22	1600	JC	20	40.0%	454°C	140	149	160	150	143	150	140	157	140	130	162	170	168	174	172	TH	TS
8	WW-22	1800	JC	20	35.0%	454°C	132	142	139	145	146	136	154	153	157	143	173	161	168	174	170	TH	TT
9	WW-45	1800	CC	20	55.0%	454°C	136	124	135	121	130	124	137	122	129	135	147	138	147	137	142	TH	SS

WELD SEAMS

PANEL NUMBERS	SEAM SECTION FROM	SEAM SECTION TO	START TIME	AIR TEMP °C	WELD TECH	MACHINE NUMBER	WELD LENGTH	DESTRUCT NUMBER	QC TEST METH.	QC TEST DATE Y-M-D	AIR PRESSURE TEST (PSI) TIME START	TIME END	PRESSURE START	PRESSURE END	VERIFY PASS	VERIFY QC TECH
332 / 333	SEOS	NEOS	1713	15	CC	WW-45	6.8		AP+PS	8/14/2020	941	946	40	40	Pass	TH
334 / 335	SEOS	NEOS	1720	15	CC	WW-45	6.8		AP+PS	8/14/2020	1010	1015	40	40	Pass	TH
325 / 333	EEOS	WEOS	1725	15	JC	WW-22	56.1	DS-142	AP+PS	8/14/2020	942	947	40	40	Pass	TH
333 / 335	EEOS	WEOS	1726	15	CC	WW-45	48.7		AP+PS	8/14/2020	1011	1016	40	40	Pass	TH
325 / 332	EEOS	WEOS	1748	15	JC	WW-22	49.1		AP+PS	8/14/2020	941	946	40	40	Pass	TH
333 / 334	EEOS	WEOS	1803	15	CC	WW-45	8.4		AP+PS	8/14/2020	942	947	40	40	Pass	TH
332 / 334	EEOS	WEOS	1806	15	CC	WW-45	51.2		AP+PS	8/14/2020	943	948	40	40	Pass	TH
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PAGE TOTAL							227.1									

TEST METHOD

AL - AIR LANCE	ST - SPARK TEST
AP - AIR PRESSURE	VB - EXTRUDED & VAC BOX
PS - POINT STRESS	

REMARKS:

QC TECH Thomas Howald
SUPERVISOR Chad Messervey
SUBMISSION DATE 2020/01/05
SHEET NUMBER 62 of 113

GEOMEMBRANE SEAM & TEST LOG

PROJECT NUMBER CT001401 | AREA / LAYER Primary
PROJECT TITLE Victoria Gold Heap Leach Pad Phase 1B | SEAM DATE 2020/08/09

TRIAL SEAMS

#	MACHINE NUMBER	TIME	TECH	AIR TEMP °C	SPEED	TEMP/ SETTING	INSIDE PEEL (PPI)					OUTSIDE PEEL (PPI)					SHEAR (PPI)					CHK'D BY	LINER TO LINER TYPE AND REMARKS
1	WW-45	900	CC	20	55.0%	454°C	145	143	153	146	139	150	148	143	144	139	172	158	164	157	168	TH	SS
2	WW-22	900	JC	20	35.0%	454°C	141	156	153	145	145	148	165	150	150	153	173	179	174	182	157	TH	TT
3	WW-45	900	CC	20	35.0%	454°C	150	146	154	155	154	160	158	152	163	140	177	185	186	181	175	TH	TT
4	WW-22	900	JC	20	55.0%	454°C	140	144	152	146	146	147	124	137	135	136	164	165	160	165	155	TH	SS
5	WW-22	1330	JC	20	35.0%	454°C	130	141	142	148	125	117	147	122	138	133	151	155	154	160	162	TH	TT
6	WW-22	1330	JC	20	55.0%	454°C	126	127	127	124	121	133	123	121	125	129	139	140	140	125	144	TH	SS

WELD SEAMS

PANEL NUMBERS	SEAM SECTION FROM	SEAM SECTION TO	START TIME	AIR TEMP °C	WELD TECH	MACHINE NUMBER	WELD LENGTH	DESTRUCT NUMBER	QC TEST METH.	QC TEST DATE Y-M-D	AIR PRESSURE TEST (PSI) TIME START	TIME END	PRESSURE START	PRESSURE END	VERIFY PASS	VERIFY QC TECH
336 / 337	SEOS	NEOS	940	15	CC	WW-45	6.8		AP+PS	8/14/2020	1012	1017	40	40	Pass	TH
338 / 339	SEOS	NEOS	952	15	JC	WW-22	6.8	DS-148	AP+PS	8/14/2020	1545	1550	40	39	Pass	TH
339 / 340	SEOS	NEOS	953	15	CC	WW-45	6.8		AP+PS	8/14/2020	1705	1710	40	40	Pass	TH
335 / 337	EEOS	WEOS	1005	15	CC	WW-45	52.0	DS-159	AP+PS	8/14/2020	1005	1010	40	40	Pass	TH
337 / 340	EEOS	WEOS	1005	15	JC	WW-22	58.1	DS-147	AP+PS	8/14/2020	1557	1602	40	40	Pass	TH
334 / 337	EEOS	WEOS	1025	15	CC	WW-45	9.1		AP+PS	8/14/2020	1005	1010	40	40	Pass	TH
337 / 339	EEOS	WEOS	1025	15	JC	WW-22	4.0		AP+PS	8/14/2020	1705	1710	40	40	Pass	TH
336 / 339	EEOS	WEOS	1026	15	JC	WW-22	66.0		AP+PS	8/14/2020	1013	1018	40	40	Pass	TH
334 / 336	EEOS	WEOS	1029	15	CC	WW-45	64.0		AP+PS	8/14/2020	1012	1017	40	40	Pass	TH
336 / 338	EEOS	WEOS	1049	15	JC	WW-22	5.9	DS-144	AP+PS	8/13/2020	1325	1330	40	40	Pass	TH
341 / 342	SEOS	NEOS	1201	15	CC	WW-45	6.8		AP+PS	8/14/2020	1711	1716	40	39	Pass	TH
343 / 344	SEOS	NEOS	1207	15	JC	WW-22	6.8		AP+PS	8/14/2020	1713	1718	40	40	Pass	TH
342 / 344	EEOS	WEOS	1219	15	JC	WW-22	72.9	DS-140	AP+PS	8/14/2020	1602	1607	40	40	Pass	TH
340 / 342	EEOS	WEOS	1220	15	CC	WW-45	59.1	DS-158	AP+PS	8/14/2020	1558	1603	40	40	Pass	TH
339 / 342	EEOS	WEOS	1242	15	CC	WW-45	15.6		AP+PS	8/14/2020	1705	1710	40	40	Pass	TH
341 / 344	EEOS	WEOS	1244	15	JC	WW-22	23.0		AP+PS	8/14/2020	1711	1716	40	40	Pass	TH
339 / 341	EEOS	WEOS	1251	15	CC	WW-45	50.1		AP+PS	8/14/2020	1543	1548	40	40	Pass	TH
341 / 343	EEOS	WEOS	1252	15	JC	WW-22	46.6		AP+PS	8/14/2020	1521	1526	40	40	Pass	TH
338 / 341	EEOS	WEOS	1330	15	CC	WW-45	11.9	DS-152	AP+PS	8/13/2020	1335	1340	40	40	Pass	TH
345 / 346	SEOS	NEOS	1354	15	JC	WW-22	6.8		AP+PS	8/14/2020	1548	1553	40	40	Pass	TH
						PAGE TOTAL	579.1									

TEST METHOD
AL - AIR LANCE | ST - SPARK TEST
AP - AIR PRESSURE | VB - EXTRUDED & VAC BOX
PS - POINT STRESS

REMARKS:

QC TECH Thomas Howald
SUPERVISOR Chad Messervey
SUBMISSION DATE 2020/01/05
SHEET NUMBER 63 of 113

GEOMEMBRANE SEAM & TEST LOG

PROJECT NUMBER CT001401 | AREA / LAYER Primary
PROJECT TITLE Victoria Gold Heap Leach Pad Phase 1B | SEAM DATE 2020/08/09

TRIAL SEAMS

#	MACHINE NUMBER	TIME	TECH	AIR TEMP °C	SPEED	TEMP/ SETTING	INSIDE PEEL (PPI)					OUTSIDE PEEL (PPI)					SHEAR (PPI)					CHK'D BY	LINER TO LINER TYPE AND REMARKS
7	WW-45	1330	CC	20	35.0%	454°C	133	147	136	124	131	151	129	129	140	135	150	160	160	164	170	TH	TT
8	WW-26	1430	CC	20	55.0%	454°C	123	112	114	127	120	130	135	130	131	130	144	140	153	150	131	TH	SS
9	WW-45	1600	CC	20	55.0%	454°C	128	115	117	114	128	123	119	127	120	119	143	140	139	140	141	TH	SS
10	WW-22	1630	JC	20	35.0%	454°C	139	147	142	139	139	141	149	153	144	127	166	164	150	163	157	TH	TT

WELD SEAMS

PANEL NUMBERS	SEAM SECTION FROM	SEAM SECTION TO	START TIME	AIR TEMP °C	WELD TECH	MACHINE NUMBER	WELD LENGTH	DESTRUCT NUMBER	QC TEST METH.	QC TEST DATE Y-M-D	AIR PRESSURE TEST (PSI) TIME START	TIME END	PRESSURE START	PRESSURE END	VERIFY PASS	VERIFY QC TECH
347 / 348	SEOS	NEOS	1405	15	JC	WW-22	6.8		AP+PS	8/14/2020	1653	1658	40	40	Pass	TH
344 / 346	EEOS	WEOS	1421	15	JC	WW-22	96.9	DS-160	AP+PS	8/14/2020	1603	1608	40	40	Pass	TH
343 / 346	EEOS	WEOS	1452	15	JC	WW-22	28.8		AP+PS	8/14/2020	1713	1718	40	39	Pass	TH
343 / 345	EEOS	WEOS	1502	15	JC	WW-22	24.9	DS-143	AP+PS	8/14/2020	1522	1527	40	40	Pass	TH
346 / 348	EEOS	WEOS	1556	15	JC	WW-22	35.4		AP+PS	8/14/2020	1603	1608	40	40	Pass	TH
346 / 347	EEOS	WEOS	1615	15	JC	WW-22	89.6		AP+PS	8/14/2020	1653	1658	40	40	Pass	TH
345 / 347	EEOS	WEOS	1632	15	JC	WW-22	31.1	DS-151	AP+PS	8/14/2020	1522	1527	40	40	Pass	TH
349 / 350	SEOS	NEOS	1649	15	CC	WW-45	6.8		AP+PS	8/14/2020	1735	1740	40	40	Pass	TH
348 / 350	EEOS	WEOS	1721	15	JC	WW-22	34.4		AP+PS	8/14/2020	1608	1613	40	40	Pass	TH
347 / 350	EEOS	WEOS	1731	15	JC	WW-22	44.0		AP+PS	8/14/2020	1653	1658	40	40	Pass	TH
347 / 349	EEOS	37D	1748	15	JC	WW-22	53.2		AP+PS	8/14/2020	1735	1740	40	39	Pass	TH
352 / 353	SEOS	NEOS	1751	15	CC	WW-45	6.8		AP+PS	8/14/2020	1625	1630	40	40	Pass	TH
347 / 349	37D	WEOS	1757	15	JC	WW-22	30.5		AP+PS	8/14/2020	1524	1529	40	40	Pass	TH
350 / 353	EEOS	WEOS	1759	15	CC	WW-45	69.3	DS-157	AP+PS	8/14/2020	1611	1616	40	40	Pass	TH
351 / 352	SEOS	NEOS	1800	15	JC	WW-22	6.8		AP+PS	8/17/2020	1323	1328	40	40	Pass	TH
350 / 352	EEOS	37C	1800	15	CC	WW-45	11.9		AP+PS	8/14/2020	1625	1630	40	40	Pass	TH
349 / 351	WEOS	EEOS	1805	15	JC	WW-22	33.1	DS-149	AP+PS	8/14/2020	1525	1530	40	40	Pass	TH
350 / 352	37C	36R	1819	15	CC	WW-45	48.3		AP+PS	8/14/2020	1747	1752	40	40	Pass	TH
350 / 352	36R	WEOS	1822	15	CC	WW-45	8.8		AP+PS	8/14/2020	1738	1742	40	38	Pass	TH
/																
						PAGE TOTAL	667.4									

TEST METHOD

AL - AIR LANCE	ST - SPARK TEST
AP - AIR PRESSURE	VB - EXTRUDED & VAC BOX
PS - POINT STRESS	

REMARKS:

QC TECH: Thomas Howald
SUPERVISOR: Chad Messervey
SUBMISSION DATE: 2020/01/05
SHEET NUMBER: 64 of 113

GEOMEMBRANE SEAM & TEST LOG

PROJECT NUMBER CT001401 | AREA / LAYER Primary
PROJECT TITLE Victoria Gold Heap Leach Pad Phase 1B | SEAM DATE 2020/08/10

TRIAL SEAMS

#	MACHINE NUMBER	TIME	TECH	AIR TEMP °C	SPEED	TEMP/ SETTING	INSIDE PEEL (PPI)					OUTSIDE PEEL (PPI)					SHEAR (PPI)					CHK'D BY	LINER TO LINER TYPE AND REMARKS
1	WW-22	800	EA	20	40.0%	454°C	160	153	145	143	144	160	145	152	145	148	164	165	168	170	163	TH	TS
2	WW-45	850	CC	20	55.0%	454°C	152	144	133	127	143	130	129	130	132	146	160	169	163	152	153	TH	SS

WELD SEAMS

PANEL NUMBERS	SEAM SECTION FROM	SEAM SECTION TO	START TIME	AIR TEMP °C	WELD TECH	MACHINE NUMBER	WELD LENGTH	DESTRUCT NUMBER	QC TEST METH.	QC TEST DATE Y-M-D	AIR PRESSURE TEST (PSI) TIME START	TIME END	PRESSURE START	PRESSURE END	VERIFY PASS	VERIFY QC TECH
289 / 354	SEOS	NEOS	850	15	EA	WW-22	4.0		AP+PS	8/14/2020	1351	1356	40	38	Pass	TH
293 / 354	WEOS	EEOS	853	15	EA	WW-22	3.0		AP+PS	8/14/2020	1340	1345	40	40	Pass	TH
289 / 351	EEOS	WEOS	915	15	EA	WW-22	3.4		AP+PS	8/19/2020	1714	1719	40	40	Pass	TH
354 / 351	EEOS	WEOS	918	15	EA	WW-22	5.9		AP+PS	8/14/2020	1357	1402	40	40	Pass	TH
349 / 352	EEOS	WEOS	922	15	CC	WW-45	59.0		AP+PS	8/14/2020	1738	1742	40	40	Pass	TH
293 / 349	SEOS	NEOS	923	15	EA	WW-22	11.0		AP+PS	8/14/2020	1340	1345	40	40	Pass	TH
293 / 347	SEOS	NEOS	929	15	EA	WW-22	9.4	DS-150	AP+PS	8/14/2020	1512	1517	40	40	Pass	TH
293 / 345	SEOS	NEOS	933	15	EA	WW-22	9.4		AP+PS	8/13/2020	1342	1347	40	40	Pass	TH
293 / 343	SEOS	NEOS	940	15	EA	WW-22	9.4		AP+PS	8/13/2020	1340	1345	40	40	Pass	TH
293 / 341	SEOS	NEOS	944	15	EA	WW-22	9.4		AP+PS	8/13/2020	1340	1345	40	38	Pass	TH
293 / 338	SEOS	NEOS	957	15	EA	WW-22	9.4		AP+PS	8/13/2020	1324	1329	40	39	Pass	TH
293 / 336	SEOS	NEOS	1000	15	EA	WW-22	9.4		AP+PS	8/14/2020	1210	1215	40	40	Pass	TH
293 / 334	SEOS	NEOS	1008	15	EA	WW-22	9.4		AP+PS	8/14/2020	844	849	40	40	Pass	TH
294 / 332	SEOS	NEOS	1013	15	EA	WW-22	9.4		AP+PS	8/14/2020	843	848	40	40	Pass	TH
294 / 325	SEOS	NEOS	1019	15	EA	WW-22	9.4		AP+PS	8/14/2020	835	840	40	40	Pass	TH
294 / 326	SEOS	NEOS	1023	15	EA	WW-22	9.4		AP+PS	8/14/2020	835	840	40	38	Pass	TH
294 / 327	SEOS	NEOS	1029	15	EA	WW-22	9.4		AP+PS	8/14/2020	829	834	40	40	Pass	TH
294 / 329	SEOS	NEOS	1034	15	EA	WW-22	9.4		AP+PS	8/14/2020	828	833	40	40	Pass	TH
294 / 330	SEOS	NEOS	1039	15	EA	WW-22	9.4		AP+PS	8/14/2020	823	828	40	40	Pass	TH
294 / 331	SEOS	NEOS	1044	15	EA	WW-22	9.4		AP+PS	8/14/2020	823	828	40	40	Pass	TH
						PAGE TOTAL	217.9									

TEST METHOD
AL - AIR LANCE | ST - SPARK TEST
AP - AIR PRESSURE | VB - EXTRUDED & VAC BOX
PS - POINT STRESS

REMARKS:

QC TECH Thomas Howald
SUPERVISOR Chad Messervey
SUBMISSION DATE 2020/01/05
SHEET NUMBER 65 of 113

GEOMEMBRANE SEAM & TEST LOG

PROJECT NUMBER CT001401 | AREA / LAYER Primary
PROJECT TITLE Victoria Gold Heap Leach Pad Phase 1B | SEAM DATE 2020/08/10

TRIAL SEAMS

#	MACHINE NUMBER	TIME	TECH	AIR TEMP °C	SPEED	TEMP/ SETTING	INSIDE PEEL (PPI)					OUTSIDE PEEL (PPI)					SHEAR (PPI)					CHK'D BY	LINER TO LINER TYPE AND REMARKS

WELD SEAMS

PANEL NUMBERS		SEAM SECTION FROM	SEAM SECTION TO	START TIME	AIR TEMP °C	WELD TECH	MACHINE NUMBER	WELD LENGTH	DESTRUCT NUMBER	QC TEST METH.	QC TEST DATE Y-M-D	AIR PRESSURE TEST (PSI) TIME START	TIME END	PRESSURE START	PRESSURE END	VERIFY PASS	VERIFY QC TECH
294	323	SEOS	NEOS	1048	15	EA	WW-22	9.4		AP+PS	8/13/2020	1738	1743	40	40	Pass	TH
294	322	SEOS	NEOS	1052	15	EA	WW-22	9.4		AP+PS	8/13/2020	1738	1743	40	40	Pass	TH
294	320	SEOS	NEOS	1056	15	EA	WW-22	9.4		AP+PS	8/13/2020	1731	1736	40	40	Pass	TH

GEOMEMBRANE SEAM & TEST LOG

PROJECT NUMBER: CT001401 | AREA / LAYER: Primary
PROJECT TITLE: Victoria Gold Heap Leach Pad Phase 1B | SEAM DATE: 2020/08/11

TRIAL SEAMS

#	MACHINE NUMBER	TIME	TECH	AIR TEMP °C	SPEED	TEMP/ SETTING	INSIDE PEEL (PPI)					OUTSIDE PEEL (PPI)					SHEAR (PPI)					CHK'D BY	LINER TO LINER TYPE AND REMARKS
1	WW-22	1600	JK	20	35.0%	454°C	148	155	151	155	140	156	138	153	150	143	169	175	170	186	171	TH	TT
2	WW-45	1600	JC	20	55.0%	454°C	142	140	132	145	147	129	119	134	138	139	162	166	160	163	160	TH	SS
3	WW-22	1600	JK	20	35.0%	454°C	144	137	122	137	138	131	131	129	128	125	145	153	143	152	142	TH	TT
4	WW-45	1600	JC	20	55.0%	454°C	158	159	151	153	155	146	149	140	158	145	176	161	169	154	177	TH	SS

WELD SEAMS

PANEL NUMBERS	SEAM SECTION FROM	SEAM SECTION TO	START TIME	AIR TEMP °C	WELD TECH	MACHINE NUMBER	WELD LENGTH	DESTRUCT NUMBER	QC TEST METH.	QC TEST DATE Y-M-D	AIR PRESSURE TEST (PSI) TIME START	TIME END	PRESSURE START	PRESSURE END	VERIFY PASS	VERIFY QC TECH
355 / 356	SEOS	NEOS	1632	20	JK	WW-22	6.8		AP+PS	8/14/2020	1754	1759	40	40	Pass	TH
357 / 358	SEOS	NEOS	1644	20	JK	WW-22	6.8		AP+PS	8/14/2020	1620	1625	40	40	Pass	TH
352 / 356	EEOS	WEOS	1645	20	JC	WW-45	49.3		AP+PS	8/14/2020	1754	1759	40	40	Pass	TH
356 / 358	EEOS	WEOS	1654	20	JK	WW-22	51.0		AP+PS	8/14/2020	1755	1800	40	40	Pass	TH
352 / 355	EEOS	WEOS	1705	20	JC	WW-45	78.3		AP+PS	8/14/2020	1754	1759	40	40	Pass	TH
355 / 358	EEOS	WEOS	1718	20	JK	WW-22	40.2		AP+PS	8/14/2020	1806	1811	40	40	Pass	TH
351 / 355	EEOS	WEOS	1730	20	JC	WW-45	41.9		AP+PS	8/15/2020	1325	1330	40	40	Pass	TH
355 / 357	EEOS	WEOS	1732	20	JK	WW-22	75.5		AP+PS	8/14/2020	1620	1625	40	40	Pass	TH
360 / 361	SEOS	NEOS	1750	20	JC	WW-45	6.8		AP+PS	8/15/2020	1349	1354	40	40	Pass	TH
359 / 360	SEOS	NEOS	1802	20	JC	WW-45	6.8		AP+PS	8/15/2020	1337	1342	40	39	Pass	TH
358 / 361	EEOS	WEOS	1816	20	JC	WW-45	76.5		AP+PS	8/15/2020	1349	1354	40	40	Pass	TH
358 / 360	EEOS	WEOS	1828	20	JC	WW-45	13.7		AP+PS	8/14/2020	1828	1833	40	40	Pass	TH
357 / 360	EEOS	WEOS	1830	20	JC	WW-45	33.6		AP+PS	8/14/2020	1827	1832	40	40	Pass	TH
357 / 359	EEOS	WEOS	1838	20	JC	WW-45	37.4		AP+PS	8/15/2020	1337	1342	40	40	Pass	TH
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PAGE TOTAL							524.6									

TEST METHOD
AL - AIR LANCE
AP - AIR PRESSURE
PS - POINT STRESS
ST - SPARK TEST
VB - EXTRUDED & VAC BOX

REMARKS:

QC TECH: Thomas Howald
SUPERVISOR: Chad Messervey
SUBMISSION DATE: 2020/01/05
SHEET NUMBER: 67 of 113

GEOMEMBRANE SEAM & TEST LOG

PROJECT NUMBER CT001401 | AREA / LAYER Primary
PROJECT TITLE Victoria Gold Heap Leach Pad Phase 1B | SEAM DATE 2020/08/14

TRIAL SEAMS

#	MACHINE NUMBER	TIME	TECH	AIR TEMP °C	SPEED	TEMP/ SETTING	INSIDE PEEL (PPI)					OUTSIDE PEEL (PPI)					SHEAR (PPI)					CHK'D BY	LINER TO LINER TYPE AND REMARKS
1	WW-54	1300	CC	20	35.0%	454°C	125	136	143	138	128	128	144	129	156	134	157	158	156	154	147	TH	TT
2	WW-22	1300	JK	20	55.0%	454°C	138	148	142	141	115	142	133	129	136	137	151	147	158	135	151	TH	SS
3	WW-54	1300	CC	20	55.0%	454°C	153	147	149	151	145	142	142	141	142	143	153	157	150	157	143	TH	TT
4	WW-22	1300	JK	20	35.0%	454°C	140	146	144	147	147	151	154	146	156	147	165	154	165	158	171	TH	SS

WELD SEAMS

PANEL NUMBERS	SEAM SECTION FROM	SEAM SECTION TO	START TIME	AIR TEMP °C	WELD TECH	MACHINE NUMBER	WELD LENGTH	DESTRUCT NUMBER	QC TEST METH.	QC TEST DATE Y-M-D	AIR PRESSURE TEST (PSI) TIME START	TIME END	PRESSURE START	PRESSURE END	VERIFY PASS	VERIFY QC TECH
363 / 364	NEOS	SEOS	1335	20	JK	WW-22	6.8		AP+PS	8/15/2020	1357	1402	40	40	Pass	TH
364 / 361	EEOS	WEOS	1337	20	CC	WW-54	77.5	DS-171	AP+PS	8/15/2020	1349	1354	40	40	Pass	TH
365 / 366	NEOS	SEOS	1345	20	JK	WW-22	6.8		AP+PS	8/15/2020	1408	1412	40	40	Pass	TH
364 / 360	EEOS	WEOS	1348	20	CC	WW-54	14.5		AP+PS	8/15/2020	1405	1410	40	40	Pass	TH
365 / 363	WEOS	EEOS	1359	20	JK	WW-22	36.4		AP+PS	8/19/2020	1758	1803	40	40	Pass	TH
366 / 363	WEOS	EEOS	1412	20	JK	WW-22	14.6		AP+PS	8/15/2020	1357	1402	40	40	Pass	TH
363 / 360	EEOS	WEOS	1415	20	CC	WW-54	19.1		AP+PS	8/15/2020	1337	1342	40	40	Pass	TH
364 / 366	WEOS	EEOS	1417	20	JK	WW-22	92.0	DS-170	AP+PS	8/15/2020	1357	1402	40	40	Pass	TH
363 / 359	EEOS	WEOS	1420	20	CC	WW-54	31.9		AP+PS	8/15/2020	1337	1342	40	40	Pass	TH
362 / 359	EEOS	WEOS	1432	20	CC	WW-54	4.2		AP+PS	8/15/2020	1339	1344	40	40	Pass	TH
362 / 363	NEOS	SEOS	1443	20	CC	WW-54	6.8		AP+PS	8/19/2020	1758	1803	40	40	Pass	TH
367 / 368	NEOS	SEOS	1516	20	CC	WW-54	6.8	DS-169	AP+PS	8/17/2020	839	844	40	40	Pass	TH
367 / 365	WEOS	EEOS	1522	20	CC	WW-54	32.4	DS-168	AP+PS	8/19/2020	1800	1805	40	40	Pass	TH
365 / 368	WEOS	EEOS	1533	20	CC	WW-54	9.2		AP+PS	8/15/2020	1408	1413	40	40	Pass	TH
366 / 368	WEOS	38H	1536	20	CC	WW-54	10.0		AP+PS	8/15/2020	1537	1542	40	40	Pass	TH
366 / 368	38H	EEOS	1539	20	CC	WW-54	97.6		AP+PS	8/15/2020	1537	1542	40	40	Pass	TH
/																
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/																
						PAGE TOTAL	466.6									

TEST METHOD
AL - AIR LANCE
AP - AIR PRESSURE
PS - POINT STRESS
ST - SPARK TEST
VB - EXTRUDED & VAC BOX

REMARKS:

QC TECH Thomas Howald
SUPERVISOR Chad Messervey
SUBMISSION DATE 2020/01/05
SHEET NUMBER 68 of 113

GEOMEMBRANE SEAM & TEST LOG

PROJECT NUMBER CT001401 | AREA / LAYER Primary
PROJECT TITLE Victoria Gold Heap Leach Pad Phase 1B | SEAM DATE 2020/08/15

TRIAL SEAMS

#	MACHINE NUMBER	TIME	TECH	AIR TEMP °C	SPEED	TEMP/ SETTING	INSIDE PEEL (PPI)					OUTSIDE PEEL (PPI)					SHEAR (PPI)					CHK'D BY	LINER TO LINER TYPE AND REMARKS
1	WW-54	1100	CC	20	55.0%	454°C	151	158	153	149	148	166	164	159	160	144	158	161	157	160	174	TH	SS
2	WW-45	1100	RW	20	35.0%	454°C	130	138	154	136	157	145	156	156	151	154	159	172	172	172	156	TH	TT
3	WW-22	1100	JK	20	55.0%	454°C	127	129	130	130	133	142	141	145	142	133	147	148	138	151	150	TH	SS
4	WW-22	1100	JK	20	35.0%	454°C	133	114	151	132	156	138	139	142	157	144	170	175	171	171	178	TH	TT
5	WW-54	1500	CC	20	55.0%	454°C	158	141	142	141	134	136	156	153	148	152	160	165	166	161	161	TH	SS
6	WW-22	1500	JK	20	55.0%	454°C	137	142	135	130	129	135	135	141	132	136	147	153	161	154	154	TH	SS

WELD SEAMS

PANEL NUMBERS	SEAM SECTION FROM	SEAM SECTION TO	START TIME	AIR TEMP °C	WELD TECH	MACHINE NUMBER	WELD LENGTH	DESTRUCT NUMBER	QC TEST METH.	QC TEST DATE Y-M-D	AIR PRESSURE TEST (PSI) TIME START	TIME END	PRESSURE START	PRESSURE END	VERIFY PASS	VERIFY QC TECH
369 / 370	SEOS	NEOS	1102	20	RW	WW-45	6.8		AP+PS	8/16/2020	1711	1716	40	40	Pass	TH
371 / 372	SEOS	NEOS	1109	20	RW	WW-45	6.8		AP+PS	8/16/2020	1652	1657	40	40	Pass	TH
370 / 372	EEOS	WEOS	1214	20	JK	WW-22	23.0		AP+PS	8/16/2020	1657	1702	40	40	Pass	TH
372 / 369	EEOS	WEOS	1220	20	JK	WW-22	16.8		AP+PS	8/16/2020	1656	1701	40	40	Pass	TH
369 / 371	EEOS	WEOS	1225	20	JK	WW-22	98.5		AP+PS	8/16/2020	1637	1642	40	40	Pass	TH
373 / 374	SEOS	NEOS	1240	20	RW	WW-45	6.8		AP+PS	8/16/2020	1652	1657	40	40	Pass	TH
372 / 374	EEOS	WEOS	1256	20	CC	WW-54	39.8		AP+PS	8/16/2020	1655	1700	40	40	Pass	TH
375 / 376	SEOS	NEOS	1307	20	RW	WW-45	6.8		AP+PS	8/16/2020	1653	1658	40	40	Pass	TH
374 / 371	EEOS	WEOS	1310	20	CC	WW-54	12.5		AP+PS	8/16/2020	1654	1659	40	40	Pass	TH
373 / 371	EEOS	WEOS	1316	20	CC	WW-54	84.9	DS-175	AP+PS	8/16/2020	1638	1643	40	40	Pass	TH
374 / 376	EEOS	WEOS	1325	20	JK	WW-22	52.6		AP+PS	8/16/2020	1701	1706	40	40	Pass	TH
376 / 373	EEOS	WEOS	1344	20	JK	WW-22	4.0		AP+PS	8/16/2020	1700	1705	40	38	Pass	TH
375 / 373	EEOS	WEOS	1345	20	JK	WW-22	74.6		AP+PS	8/16/2020	1639	1644	40	40	Pass	TH
377 / 378	SEOS	NEOS	1440	20	RW	WW-45	6.8		AP+PS	8/16/2020	1657	1702	40	40	Pass	TH
379 / 380	SEOS	NEOS	1450	20	RW	WW-45	6.8		AP+PS	8/16/2020	1726	1731	40	40	Pass	TH
376 / 378	EEOS	WEOS	1501	20	CC	WW-54	56.6		AP+PS	8/16/2020	1723	1728	40	39	Pass	TH
380 / 378	EEOS	WEOS	1503	20	JK	WW-22	51.7		AP+PS	8/16/2020	1724	1729	40	40	Pass	TH
378 / 379	EEOS	WEOS	1522	20	JK	WW-22	6.9		AP+PS	8/16/2020	1724	1729	40	40	Pass	TH
379 / 377	EEOS	WEOS	1524	20	JK	WW-22	60.0		AP+PS	8/16/2020	1651	1656	40	40	Pass	TH
377 / 375	EEOS	WEOS	1526	20	CC	WW-54	66.3	DS-162	AP+PS	8/16/2020	1650	1655	40	40	Pass	TH
						PAGE TOTAL	689.0									

TEST METHOD
AL - AIR LANCE | ST - SPARK TEST
AP - AIR PRESSURE | VB - EXTRUDED & VAC BOX
PS - POINT STRESS

REMARKS:

QC TECH: Thomas Howald
SUPERVISOR: Chad Messervey
SUBMISSION DATE: 2020/01/05
SHEET NUMBER: 69 of 113

GEOMEMBRANE SEAM & TEST LOG

PROJECT NUMBER CT001401 | AREA / LAYER Primary
PROJECT TITLE Victoria Gold Heap Leach Pad Phase 1B | SEAM DATE 2020/08/15

TRIAL SEAMS

#	MACHINE NUMBER	TIME	TECH	AIR TEMP °C	SPEED	TEMP/ SETTING	INSIDE PEEL (PPI)					OUTSIDE PEEL (PPI)					SHEAR (PPI)					CHK'D BY	LINER TO LINER TYPE AND REMARKS
7	WW-45	1500	RW	20	35.0%	454°C	161	155	145	142	143	151	139	153	132	137	162	163	165	170	157	TH	TT

WELD SEAMS

PANEL NUMBERS	SEAM SECTION FROM	SEAM SECTION TO	START TIME	AIR TEMP °C	WELD TECH	MACHINE NUMBER	WELD LENGTH	DESTRUCT NUMBER	QC TEST METH.	QC TEST DATE Y-M-D	AIR PRESSURE TEST (PSI) TIME START	TIME END	PRESSURE START	PRESSURE END	VERIFY PASS	VERIFY QC TECH
381 / 382	SEOS	NEOS	1715	20	RW	WW-45	6.8	DS-167	AP+PS	8/16/2020	1737	1742	40	40	Pass	TH
383 / 384	SEOS	NEOS	1725	20	RW	WW-45	6.8		AP+PS	8/16/2020	1742	1747	40	40	Pass	TH
384 / 382	EEOS	WEOS	1734	20	CC	WW-54	16.2		AP+PS	8/16/2020	1741	1746	40	40	Pass	TH
382 / 380	EEOS	WEOS	1737	20	JK	WW-22	36.4		AP+PS	8/16/2020	1737	1742	40	40	Pass	TH
382 / 383	EEOS	WEOS	1740	20	CC	WW-54	18.4		AP+PS	8/16/2020	1739	1744	40	39	Pass	TH
383 / 381	EEOS	WEOS	1749	20	CC	WW-54	68.4		AP+PS	8/16/2020	1739	1744	40	40	Pass	TH
380 / 381	EEOS	WEOS	1751	20	JK	WW-22	14.8		AP+PS	8/16/2020	1728	1733	40	40	Pass	TH
381 / 379	EEOS	WEOS	1757	20	JK	WW-22	60.6	DS-163	AP+PS	8/16/2020	1727	1732	40	40	Pass	TH
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/																
PAGE TOTAL							228.4									

TEST METHOD
AL - AIR LANCE
AP - AIR PRESSURE
PS - POINT STRESS
ST - SPARK TEST
VB - EXTRUDED & VAC BOX

REMARKS:

QC TECH Thomas Howald
SUPERVISOR Chad Messervey
SUBMISSION DATE 2020/01/05
SHEET NUMBER 70 of 113

GEOMEMBRANE SEAM & TEST LOG

PROJECT NUMBER CT001401 | AREA / LAYER Primary
PROJECT TITLE Victoria Gold Heap Leach Pad Phase 1B | SEAM DATE 2020/08/16

TRIAL SEAMS

#	MACHINE NUMBER	TIME	TECH	AIR TEMP °C	SPEED	TEMP/ SETTING	INSIDE PEEL (PPI)					OUTSIDE PEEL (PPI)					SHEAR (PPI)					CHK'D BY	LINER TO LINER TYPE AND REMARKS
1	WW-45	1030	CC	20	55.0%	454°C	138	143	138	141	136	145	152	142	138	150	152	160	158	163	172	TH	SS
2	WW-54	1030	GP	20	35.0%	454°C	130	156	153	161	146	154	151	153	131	132	178	181	181	183	137	TH	TT
3	WW-22	1030	JK	20	55.0%	454°C	134	132	132	126	130	141	140	140	138	136	161	154	163	155	156	TH	SS
4	WW-54	1215	JC	20	55.0%	454°C	133	148	137	140	134	140	140	141	137	141	152	154	159	159	157	TH	SS
5	WW-45	1400	CC	20	40.0%	454°C	109	121	129	127	129	101	122	127	129	117	148	145	146	146	152	TH	TS
6	WW-22	1400	JK	20	40.0%	454°C	119	116	136	125	125	127	129	128	119	145	155	150	159	158	154	TH	TS

WELD SEAMS

PANEL NUMBERS	SEAM SECTION FROM	SEAM SECTION TO	START TIME	AIR TEMP °C	WELD TECH	MACHINE NUMBER	WELD LENGTH	DESTRUCT NUMBER	QC TEST METH.	QC TEST DATE Y-M-D	AIR PRESSURE TEST (PSI) TIME START	TIME END	PRESSURE START	PRESSURE END	VERIFY PASS	VERIFY QC TECH
386 / 387	SEOS	NEOS	1120	20	GP	WW-54	6.8		AP+PS	8/16/2020	1803	1808	40	40	Pass	TH
390 / 391	SEOS	NEOS	1158	20	CC	WW-45	9.1	DS-164	AP+PS	8/17/2020	807	812	40	40	Pass	TH
385 / 384	EEOS	WEOS	1202	20	JK	WW-22	14.8		AP+PS	8/16/2020	1800	1805	40	40	Pass	TH
390 / 389	SEOS	NEOS	1206	20	CC	WW-45	19.5		AP+PS	8/17/2020	758	803	40	40	Pass	TH
385 / 383	EEOS	WEOS	1209	20	JK	WW-22	80.5	DS-173	AP+PS	8/16/2020	1801	1806	40	40	Pass	TH
388 / 389	SEOS	NEOS	1216	20	CC	WW-45	29.7		AP+PS	8/17/2020	746	751	40	40	Pass	TH
392 / 388	SEOS	NEOS	1232	20	JC	WW-54	19.7	DS-174	AP+PS	8/17/2020	741	746	40	40	Pass	TH
395 / 394	SEOS	NEOS	1236	20	CC	WW-45	23.4	DS-176	AP+PS	8/16/2020	1829	1834	40	40	Pass	TH
388 / 393	SEOS	NEOS	1244	20	JC	WW-54	11.7		AP+PS	8/17/2020	741	746	40	40	Pass	TH
387 / 385	EEOS	WEOS	1251	20	JK	WW-22	74.0		AP+PS	8/16/2020	1803	1808	40	40	Pass	TH
394 / 396	SEOS	NEOS	1252	20	CC	WW-45	6.1		AP+PS	8/16/2020	1835	1840	40	40	Pass	TH
394 / 392	SEOS	NEOS	1258	20	JC	WW-54	18.2		AP+PS	8/16/2020	1829	1834	40	40	Pass	TH
395 / 397	SEOS	NEOS	1300	20	CC	WW-45	22.0		AP+PS	8/16/2020	1822	1827	40	40	Pass	TH
396 / 397	SEOS	NEOS	1305	20	CC	WW-45	5.2		AP+PS	8/17/2020	817	822	40	40	Pass	TH
394 / 393	SEOS	NEOS	1307	20	JC	WW-54	11.6		AP+PS	8/17/2020	740	745	40	40	Pass	TH
398 / 399	SEOS	NEOS	1319	20	JC	WW-54	9.6	DS-161	AP+PS	8/16/2020	1816	1821	40	40	Pass	TH
397 / 398	SEOS	NEOS	1320	20	CC	WW-45	24.3		AP+PS	8/16/2020	1821	1826	40	40	Pass	TH
386 / 385	EEOS	WEOS	1322	20	JK	WW-22	13.1	DS-172	AP+PS	8/16/2020	1803	1808	40	40	Pass	TH
401 / 400	EEOS	WEOS	1333	20	CC	WW-45	4.1		AP+PS	8/16/2020	1822	1827	40	40	Pass	TH
399 / 401	EEOS	WEOS	1421	20	JK	WW-22	8.0		AP+PS	8/16/2020	1815	1820	40	40	Pass	TH
						PAGE TOTAL	411.4									

TEST METHOD
AL - AIR LANCE | ST - SPARK TEST
AP - AIR PRESSURE | VB - EXTRUDED & VAC BOX
PS - POINT STRESS

REMARKS:

QC TECH: Thomas Howald
SUPERVISOR: Chad Messervey
SUBMISSION DATE: 2020/01/05
SHEET NUMBER: 71 of 113

GEOMEMBRANE SEAM & TEST LOG

PROJECT NUMBER CT001401 | AREA / LAYER Primary
PROJECT TITLE Victoria Gold Heap Leach Pad Phase 1B | SEAM DATE 2020/08/16

TRIAL SEAMS

#	MACHINE NUMBER	TIME	TECH	AIR TEMP °C	SPEED	TEMP/ SETTING	INSIDE PEEL (PPI)					OUTSIDE PEEL (PPI)					SHEAR (PPI)					CHK'D BY	LINER TO LINER TYPE AND REMARKS

WELD SEAMS

PANEL NUMBERS	SEAM SECTION FROM	SEAM SECTION TO	START TIME	AIR TEMP °C	WELD TECH	MACHINE NUMBER	WELD LENGTH	DESTRUCT NUMBER	QC TEST METH.	QC TEST DATE Y-M-D	AIR PRESSURE TEST (PSI) TIME START	TIME END	PRESSURE START	PRESSURE END	VERIFY PASS	VERIFY QC TECH
399 / 400	EEOS	WEOS	1422	20	JK	WW-22	5.2		AP+PS	8/16/2020	1822	1827	40	40	Pass	TH
387 / 402	EEOS	WEOS	1425	20	CC	WW-45	9.2		AP+PS	8/16/2020	1815	1820	40	38	Pass	TH
387 / 399	EEOS	WEOS	1431	20	CC	WW-45	6.9		AP+PS	8/16/2020	1815	1820	40	40	Pass	TH
387 / 398	EEOS	WEOS	1435	20	CC	WW-45	6.9		AP+PS	8/16/2020	1816	1821	40	40	Pass	TH
387 / 397	EEOS	WEOS	1440	20	CC	WW-45	6.9		AP+PS	8/16/2020	1823	1828	40	38	Pass	TH
387 / 395	EEOS	WEOS	1444	20	CC	WW-45	6.9		AP+PS	8/16/2020	1823	1828	40	40	Pass	TH
387 / 394	EEOS	WEOS	1448	20	CC	WW-45	6.9		AP+PS	8/16/2020	1829	1834	40	39	Pass	TH
387 / 392	EEOS	WEOS	1452	20	CC	WW-45	6.9		AP+PS	8/17/2020	744	749	40	40	Pass	TH
387 / 388	EEOS	WEOS	1456	20	CC	WW-45	6.9		AP+PS	8/17/2020	744	749	40	40	Pass	TH
387 / 389	EEOS	WEOS	1500	20	CC	WW-45	6.9		AP+PS	8/17/2020	757	802	40	40	Pass	TH
387 / 390	EEOS	WEOS	1504	20	CC	WW-45	6.1		AP+PS	8/17/2020	757	802	40	40	Pass	TH
386 / 391	EEOS	WEOS	1507	20	CC	WW-45	6.4	DS-166	AP+PS	8/17/2020	807	812	40	40	Pass	TH
367 / 369	SEOS	NEOS	1551	20	JK	WW-22	9.3	DS-177	AP+PS	8/17/2020	847	852	40	40	Pass	TH
367 / 371	SEOS	NEOS	1556	20	JK	WW-22	4.0		AP+PS	8/17/2020	839	844	40	40	Pass	TH
368 / 371	SEOS	NEOS	1558	20	JK	WW-22	5.0		AP+PS	8/17/2020	839	844	40	39	Pass	TH
368 / 373	SEOS	NEOS	1600	20	JK	WW-22	9.3		AP+PS	8/17/2020	836	841	40	40	Pass	TH
368 / 375	SEOS	NEOS	1605	20	JK	WW-22	9.3		AP+PS	8/17/2020	834	839	40	40	Pass	TH
368 / 377	40Q	NEOS	1610	20	JK	WW-22	5.0		AP+PS	8/17/2020	927	932	40	40	Pass	TH
368 / 377	SEOS	40Q	1613	20	JK	WW-22	4.3		AP+PS	8/17/2020	921	926	40	40	Pass	TH
368 / 379	SEOS	NEOS	1615	20	JK	WW-22	9.3		AP+PS	8/17/2020	919	924	40	40	Pass	TH
						PAGE TOTAL	137.6									

TEST METHOD

AL - AIR LANCE	ST - SPARK TEST
AP - AIR PRESSURE	VB - EXTRUDED
PS - POINT STRESS	& VAC BOX

REMARKS:

QC TECH: Thomas Howald
SUPERVISOR: Chad Messervey
SUBMISSION DATE: 2020/01/05
SHEET NUMBER: 72 of 113

GEOMEMBRANE SEAM & TEST LOG

PROJECT NUMBER CT001401 | AREA / LAYER Primary
PROJECT TITLE Victoria Gold Heap Leach Pad Phase 1B | SEAM DATE 2020/08/16

TRIAL SEAMS

#	MACHINE NUMBER	TIME	TECH	AIR TEMP °C	SPEED	TEMP/ SETTING	INSIDE PEEL (PPI)					OUTSIDE PEEL (PPI)					SHEAR (PPI)					CHK'D BY	LINER TO LINER TYPE AND REMARKS

WELD SEAMS

PANEL NUMBERS	SEAM SECTION FROM	SEAM SECTION TO	START TIME	AIR TEMP °C	WELD TECH	MACHINE NUMBER	WELD LENGTH	DESTRUCT NUMBER	QC TEST METH.	QC TEST DATE Y-M-D	AIR PRESSURE TEST (PSI) TIME START	TIME END	PRESSURE START	PRESSURE END	VERIFY PASS	VERIFY QC TECH
368 / 381	SEOS	NEOS	1620	20	JK	WW-22	9.3		AP+PS	8/17/2020	824	829	40	40	Pass	TH
368 / 383	SEOS	NEOS	1625	20	JK	WW-22	9.3		AP+PS	8/17/2020	823	828	40	40	Pass	TH
368 / 385	SEOS	NEOS	1630	20	JK	WW-22	9.2		AP+PS	8/17/2020	819	824	40	40	Pass	TH
368 / 386	SEOS	NEOS	1635	20	JK	WW-22	9.1		AP+PS	8/17/2020	820	825	40	40	Pass	TH
368 / 391	SEOS	NEOS	1641	20	JK	WW-22	12.3		AP+PS	8/17/2020	809	814	40	40	Pass	TH
368 / 390	SEOS	NEOS	1648	20	JK	WW-22	13.4		AP+PS	8/17/2020	808	813	40	40	Pass	TH
368 / 389	SEOS	NEOS	1655	20	JK	WW-22	13.4		AP+PS	8/17/2020	755	800	40	40	Pass	TH
368 / 388	SEOS	NEOS	1659	20	JK	WW-22	2.7		AP+PS	8/17/2020	755	800	40	40	Pass	TH
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/																
PAGE TOTAL							78.7									

TEST METHOD
AL - AIR LANCE
AP - AIR PRESSURE
PS - POINT STRESS
ST - SPARK TEST
VB - EXTRUDED & VAC BOX

REMARKS:

QC TECH Thomas Howald
SUPERVISOR Chad Messervey
SUBMISSION DATE 2020/01/05
SHEET NUMBER 73 of 113

GEOMEMBRANE SEAM & TEST LOG

PROJECT NUMBER CT001401 | AREA / LAYER Primary
PROJECT TITLE Victoria Gold Heap Leach Pad Phase 1B | SEAM DATE 2020/08/17

TRIAL SEAMS

#	MACHINE NUMBER	TIME	TECH	AIR TEMP °C	SPEED	TEMP/ SETTING	INSIDE PEEL (PPI)					OUTSIDE PEEL (PPI)					SHEAR (PPI)					CHK'D BY	LINER TO LINER TYPE AND REMARKS
1	WW-22	1230	JC	20	50.0%	454°C	142	138	129	133	114	116	122	130	136	136	145	152	148	154	151	TH	SS
2	WW-22	1230	JC	20	35.0%	454°C	140	142	130	146	140	148	141	136	143	142	156	166	165	172	167	TH	TT
3	WW-22	1235	JC	20	40.0%	454°C	123	129	145	142	148	119	119	147	143	133	140	155	142	143	156	TH	TS
4	WW-54	1250	JK	20	55.0%	454°C	126	134	129	134	127	120	128	122	133	123	144	145	144	149	143	TH	SS

WELD SEAMS

PANEL NUMBERS	SEAM SECTION FROM	SEAM SECTION TO	START TIME	AIR TEMP °C	WELD TECH	MACHINE NUMBER	WELD LENGTH	DESTRUCT NUMBER	QC TEST METH.	QC TEST DATE Y-M-D	AIR PRESSURE TEST (PSI) TIME START	TIME END	PRESSURE START	PRESSURE END	VERIFY PASS	VERIFY QC TECH
370 / 405	EEOS	WEOS	1400	20	JK	WW-54	22.6	DS-188	AP+PS	8/19/2020	1722	1727	40	40	Pass	TH
369 / 405	EEOS	41N	1454	20	JK	WW-54	19.3		AP+PS	8/19/2020	1722	1727	40	40	Pass	TH
369 / 405	41N	WEOS	1514	20	JK	WW-54	57.0		AP+PS	8/19/2020	1736	1741	40	40	Pass	TH
369 / 404	EEOS	WEOS	1524	20	JK	WW-54	50.8		AP+PS	8/19/2020	1736	1741	40	40	Pass	TH
367 / 404	EEOS	WEOS	1526	20	JK	WW-54	9.4		AP+PS	8/19/2020	1754	1759	40	40	Pass	TH
365 / 404	EEOS	WEOS	1528	20	JK	WW-54	9.4		AP+PS	8/19/2020	1754	1759	40	40	Pass	TH
362 / 404	EEOS	WEOS	1530	20	JK	WW-54	7.7		AP+PS	8/19/2020	1756	1801	40	40	Pass	TH
359 / 404	EEOS	WEOS	1532	20	JK	WW-54	9.3		AP+PS	8/19/2020	1756	1801	40	40	Pass	TH
357 / 404	EEOS	WEOS	1534	20	JK	WW-54	9.3		AP+PS	8/19/2020	1805	1810	40	40	Pass	TH
355 / 404	EEOS	WEOS	1536	20	JK	WW-54	9.3		AP+PS	8/19/2020	1805	1810	40	40	Pass	TH
351 / 404	EEOS	WEOS	1538	20	JK	WW-54	5.8		AP+PS	8/19/2020	1807	1812	40	40	Pass	TH
354 / 404	EEOS	WEOS	1539	20	JK	WW-54	5.5		AP+PS	8/19/2020	1806	1811	40	40	Pass	TH
285 / 404	EEOS	WEOS	1540	20	JK	WW-54	5.2		AP+PS	8/19/2020	1723	1728	40	40	Pass	TH
282 / 404	EEOS	WEOS	1541	20	JK	WW-54	5.6		AP+PS	8/19/2020	1723	1728	40	40	Pass	TH
287 / 403	EEOS	WEOS	1542	20	JK	WW-54	6.8		AP+PS	8/19/2020	1729	1734	40	40	Pass	TH
275 / 403	EEOS	WEOS	1544	20	JK	WW-54	6.8	DS-178C	AP+PS	8/19/2020	1732	1737	40	40	Pass	TH
273 / 403	EEOS	WEOS	1545	20	JK	WW-54	6.8	DS-178	AP+PS	8/19/2020	1732	1737	40	38	Pass	TH
272 / 403	EEOS	WEOS	1546	20	JK	WW-54	6.8	DS-178B	AP+PS	8/19/2020	1745	1750	40	39	Pass	TH
271 / 403	EEOS	WEOS	1548	20	JK	WW-54	6.8		AP+PS	8/19/2020	1745	1750	40	40	Pass	TH
270 / 403	EEOS	WEOS	1549	20	JK	WW-54	3.4		AP+PS	8/19/2020	1746	1751	40	40	Pass	TH
						PAGE TOTAL	263.6									

TEST METHOD
AL - AIR LANCE
AP - AIR PRESSURE
PS - POINT STRESS
ST - SPARK TEST
VB - EXTRUDED & VAC BOX

REMARKS:

QC TECH Thomas Howald
SUPERVISOR Chad Messervey
SUBMISSION DATE 2020/01/05
SHEET NUMBER 74 of 113

GEOMEMBRANE SEAM & TEST LOG

PROJECT NUMBER CT001401 | AREA / LAYER Primary
PROJECT TITLE Victoria Gold Heap Leach Pad Phase 1B | SEAM DATE 2020/08/19

TRIAL SEAMS

#	MACHINE NUMBER	TIME	TECH	AIR TEMP °C	SPEED	TEMP/ SETTING	INSIDE PEEL (PPI)					OUTSIDE PEEL (PPI)					SHEAR (PPI)					CHK'D BY	LINER TO LINER TYPE AND REMARKS
1	WW-26	1030	CC	20	35.0%	454°C	137	139	141	142	134	135	141	148	146	144	165	173	167	168	155	TH	TT
2	WW-22	1030	JK	20	55.0%	454°C	146	147	149	144	129	142	160	154	154	147	158	164	162	167	166	TH	SS
3	WW-45	1030	JC	20	55.0%	454°C	141	135	145	138	147	141	142	131	147	152	158	162	158	160	158	TH	SS
4	WW-45	1430	JC	20	55.0%	454°C	118	120	124	113	134	130	119	115	123	131	142	132	134	129	141	TH	SS
5	WW-22	1430	JK	20	55.0%	454°C	132	128	135	146	140	130	130	130	135	129	136	144	144	129	138	TH	SS
6	WW-26	1435	CC	20	35.0%	454°C	122	129	125	130	128	127	121	126	133	124	129	161	147	146	127	TH	TT

WELD SEAMS

PANEL NUMBERS	SEAM SECTION FROM	SEAM SECTION TO	START TIME	AIR TEMP °C	WELD TECH	MACHINE NUMBER	WELD LENGTH	DESTRUCT NUMBER	QC TEST METH.	QC TEST DATE Y-M-D	AIR PRESSURE TEST (PSI) TIME START	TIME END	PRESSURE START	PRESSURE END	VERIFY PASS	VERIFY QC TECH
405 / 408	EEOS	WEOS	1100	20	JK	WW-22	99.9	DS-187	AP+PS	8/20/2020	1532	1537	40	39	Pass	TH
407 / 408	NEOS	SEOS	1105	20	CC	WW-22	6.8		AP+PS	8/20/2020	1513	1518	40	40	Pass	TH
410 / 411	NEOS	SEOS	1113	20	CC	WW-22	6.8		AP+PS	8/20/2020	1540	1545	40	40	Pass	TH
406 / 407	NEOS	SEOS	1123	20	CC	WW-22	6.8		AP+PS	8/20/2020	1705	1710	40	40	Pass	TH
409 / 410	NEOS	SEOS	1128	20	CC	WW-22	6.8	DS-215	AP+PS	8/20/2020	1706	1711	40	40	Pass	TH
404 / 408	EEOS	WEOS	1137	20	JK	WW-22	5.1		AP+PS	8/20/2020	1513	1518	40	39	Pass	TH
404 / 407	EEOS	WEOS	1139	20	JK	WW-22	117.4		AP+PS	8/20/2020	1646	1651	40	40	Pass	TH
403 / 407	EEOS	WEOS	1220	20	JK	WW-22	5.8		AP+PS	8/20/2020	1651	1656	40	40	Pass	TH
403 / 406	EEOS	WEOS	1222	20	JK	WW-22	29.9	DS-201	AP+PS	8/23/2020	1329	1334	40	40	Pass	TH
408 / 411	EEOS	WEOS	1233	20	JC	WW-45	105.0	DS-184	AP+PS	8/21/2020	1524	1529	40	40	Pass	TH
407 / 411	EEOS	WEOS	1315	20	JC	WW-45	6.6		AP+PS	8/20/2020	1540	1545	40	40	Pass	TH
407 / 410	43B	WEOS	1316	20	JC	WW-45	102.2		AP+PS	8/20/2020	1700	1705	40	40	Pass	TH
403 / 404	NEOS	SEOS	1350	20	JC	WW-22	6.8		AP+PS	8/20/2020	1729	1734	40	39	Pass	TH
407 / 410	EEOS	43B	1356	20	JC	WW-45	21.0		AP+PS	8/20/2020	1647	1652	40	38	Pass	TH
404 / 405	NEOS	SEOS	1404	20	JC	WW-22	6.8		AP+PS	8/20/2020	1737	1742	40	40	Pass	TH
406 / 410	EEOS	WEOS	1405	20	JC	WW-45	6.2		AP+PS	8/20/2020	1705	1710	40	40	Pass	TH
406 / 409	EEOS	WEOS	1407	20	JC	WW-45	23.7	DS-216	AP+PS	8/23/2020	1338	1343	40	39	Pass	TH
412 / 413	NEOS	SEOS	1420	20	CC	WW-22	6.8		AP+PS	8/20/2020	1708	1713	40	40	Pass	TH
411 / 414	EEOS	WEOS	1545	20	JK	WW-22	111.6	DS-199	AP+PS	8/20/2020	1528	1533	40	40	Pass	TH
413 / 414	NEOS	SEOS	1557	20	CC	WW-22	6.8		AP+PS	8/20/2020	1542	1547	40	40	Pass	TH
						PAGE TOTAL	688.8									

TEST METHOD
AL - AIR LANCE | ST - SPARK TEST
AP - AIR PRESSURE | VB - EXTRUDED & VAC BOX
PS - POINT STRESS

REMARKS:

QC TECH: Thomas Howald
SUPERVISOR: Chad Messervey
SUBMISSION DATE: 2020/01/05
SHEET NUMBER: 75 of 113

GEOMEMBRANE SEAM & TEST LOG

PROJECT NUMBER CT001401 | AREA / LAYER Primary
PROJECT TITLE Victoria Gold Heap Leach Pad Phase 1B | SEAM DATE 2020/08/19

TRIAL SEAMS

#	MACHINE NUMBER	TIME	TECH	AIR TEMP °C	SPEED	TEMP/ SETTING	INSIDE PEEL (PPI)					OUTSIDE PEEL (PPI)					SHEAR (PPI)					CHK'D BY	LINER TO LINER TYPE AND REMARKS

WELD SEAMS

PANEL NUMBERS	SEAM SECTION FROM	SEAM SECTION TO	START TIME	AIR TEMP °C	WELD TECH	MACHINE NUMBER	WELD LENGTH	DESTRUCT NUMBER	QC TEST METH.	QC TEST DATE Y-M-D	AIR PRESSURE TEST (PSI) TIME START	TIME END	PRESSURE START	PRESSURE END	VERIFY PASS	VERIFY QC TECH
410 / 414	EEOS	WEOS	1624	20	JK	WW-22	7.4		AP+PS	8/20/2020	1541	1546	40	40	Pass	TH
414 / 417	EEOS	43S	1624	20	JC	WW-45	87.7	DS-183	AP+PS	8/21/2020	1522	1527	40	40	Pass	TH
410 / 413	EEOS	41I	1626	20	JK	WW-22	112.0		AP+PS	8/20/2020	1648	1653	40	40	Pass	TH
410 / 413	41I	WEOS	1626	20	JK	WW-22	10.0		AP+PS	8/20/2020	1602	1607	40	40	Pass	TH
414 / 417	43S	WEOS	1630	20	JC	WW-45	32.1	DS-183	AP+PS	8/21/2020	1522	1527	40	40	Pass	TH
409 / 413	EEOS	WEOS	1638	20	JK	WW-22	6.5		AP+PS	8/20/2020	1706	1711	40	40	Pass	TH
409 / 412	EEOS	WEOS	1640	20	JK	WW-22	17.2	DS-203	AP+PS	8/23/2020	1337	1342	40	40	Pass	TH
415 / 416	NEOS	SEOS	1706	20	CC	WW-22	6.8		AP+PS	8/20/2020	1709	1714	40	40	Pass	TH
416 / 417	NEOS	SEOS	1715	20	CC	WW-22	6.8		AP+PS	8/20/2020	1610	1615	40	40	Pass	TH
413 / 417	EEOS	WEOS	1715	20	JC	WW-45	7.2		AP+PS	8/20/2020	1603	1608	40	40	Pass	TH
413 / 416	EEOS	WEOS	1717	20	JC	WW-45	121.3		AP+PS	8/20/2020	1649	1654	40	40	Pass	TH
412 / 416	EEOS	WEOS	1728	20	JC	WW-45	7.2		AP+PS	8/20/2020	1708	1713	40	39	Pass	TH
412 / 415	EEOS	WEOS	1730	20	JC	WW-45	10.0	DS-208	AP+PS	8/23/2020	1336	1341	40	40	Pass	TH
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PAGE TOTAL 432.2

TEST METHOD
AL - AIR LANCE | ST - SPARK TEST
AP - AIR PRESSURE | VB - EXTRUDED & VAC BOX
PS - POINT STRESS

REMARKS:

QC TECH Thomas Howald
SUPERVISOR Chad Messervey
SUBMISSION DATE 2020/01/05
SHEET NUMBER 76 of 113

GEOMEMBRANE SEAM & TEST LOG

PROJECT NUMBER CT001401 | AREA / LAYER Primary
PROJECT TITLE Victoria Gold Heap Leach Pad Phase 1B | SEAM DATE 2020/08/20

TRIAL SEAMS

#	MACHINE NUMBER	TIME	TECH	AIR TEMP °C	SPEED	TEMP/ SETTING	INSIDE PEEL (PPI)					OUTSIDE PEEL (PPI)					SHEAR (PPI)					CHK'D BY	LINER TO LINER TYPE AND REMARKS
1	WW-22	830	JK	20	55.0%	454°C	137	140	131	126	134	127	149	129	134	141	142	151	142	155	144	TH	SS
2	WW-45	830	CC	20	55.0%	454°C	129	132	118	134	134	136	142	104	125	140	157	143	155	142	143	TH	SS
3	WW-26	850	JC	20	35.0%	454°C	136	134	130	132	145	148	148	150	146	145	162	171	155	178	172	TH	TT
4	WW-26	1230	JC	20	35.0%	454°C	140	150	155	151	142	144	145	155	147	136	165	169	159	171	161	TH	TT
5	WW-26	1230	JC	20	55.0%	454°C	127	128	122	128	125	127	126	127	135	126	140	137	140	141	136	TH	SS
6	WW-45	1245	CC	20	55.0%	454°C	120	129	132	122	128	133	125	130	115	122	131	137	135	143	135	TH	SS

WELD SEAMS

PANEL NUMBERS	SEAM SECTION FROM	SEAM SECTION TO	START TIME	AIR TEMP °C	WELD TECH	MACHINE NUMBER	WELD LENGTH	DESTRUCT NUMBER	QC TEST METH.	QC TEST DATE Y-M-D	AIR PRESSURE TEST (PSI) TIME START	TIME END	PRESSURE START	PRESSURE END	VERIFY PASS	VERIFY QC TECH
419 / 420	SEOS	NEOS	923	20	JC	WW-45	6.8		AP+PS	8/21/2020	1553	1558	40	40	Pass	TH
422 / 423	SEOS	NEOS	930	20	JC	WW-45	6.8	DS-210	AP+PS	8/21/2020	1554	1549	40	40	Pass	TH
417 / 420	EEOS	WEOS	934	15	JK	WW-22	8.8	DS-189	AP+PS	8/21/2020	1537	1542	40	39	Pass	TH
417 / 419	EEOS	WEOS	937	15	JK	WW-22	109.8		AP+PS	8/21/2020	1728	1733	40	40	Pass	TH
420 / 423	EEOS	WEOS	940	15	CC	WW-45	8.8		AP+PS	8/21/2020	1538	1543	40	40	Pass	TH
419 / 423	EEOS	WEOS	944	15	CC	WW-45	12.4		AP+PS	8/21/2020	1553	1558	40	40	Pass	TH
425 / 426	SEOS	44O	947	20	JC	WW-45	3.8		AP+PS	8/22/2020	1513	1518	40	40	Pass	TH
425 / 426	44O	NEOS	948	20	JC	WW-45	3.0		AP+PS	8/22/2020	1513	1518	40	40	Pass	TH
419 / 422	EEOS	WEOS	948	15	CC	WW-45	109.6		AP+PS	8/21/2020	1729	1734	40	40	Pass	TH
418 / 419	SEOS	NEOS	1006	20	JC	WW-45	6.8		AP+PS	8/21/2020	1644	1649	40	40	Pass	TH
421 / 422	SEOS	NEOS	1016	20	JC	WW-45	6.8		AP+PS	8/21/2020	1645	1650	40	40	Pass	TH
416 / 419	EEOS	WEOS	1017	15	JK	WW-22	12.2		AP+PS	8/21/2020	1644	1649	40	39	Pass	TH
416 / 418	EEOS	WEOS	1022	15	JK	WW-22	119.7		AP+PS	8/28/2020	1035	1040	40	39	Pass	TH
424 / 425	SEOS	NEOS	1032	20	JC	WW-45	6.8		AP+PS	8/21/2020	1646	1651	40	40	Pass	TH
418 / 422	EEOS	WEOS	1036	15	CC	WW-45	12.2		AP+PS	8/21/2020	1645	1650	40	40	Pass	TH
418 / 421	EEOS	WEOS	1040	15	CC	WW-45	117.5	DS-207	AP+PS	8/23/2020	1312	1317	40	40	Pass	TH
415 / 418	EEOS	WEOS	1043	15	JK	WW-22	10.0		AP+PS	8/23/2020	1335	1340	40	40	Pass	TH
427 / 428	SEOS	44G	1215	20	JC	WW-45	3.8		AP+PS	8/21/2020	1656	1701	40	40	Pass	TH
427 / 428	44G	NEOS	1216	20	JC	WW-45	3.0		AP+PS	8/21/2020	1655	1700	40	40	Pass	TH
423 / 426	EEOS	WEOS	1216	20	JK	WW-22	21.2	DS-211	AP+PS	8/21/2020	1539	1544	40	40	Pass	TH
						PAGE TOTAL	589.8									

TEST METHOD
AL - AIR LANCE | ST - SPARK TEST
AP - AIR PRESSURE | VB - EXTRUDED & VAC BOX
PS - POINT STRESS

REMARKS:

QC TECH: Thomas Howald
SUPERVISOR: Chad Messervey
SUBMISSION DATE: 2020/01/05
SHEET NUMBER: 77 of 113

GEOMEMBRANE SEAM & TEST LOG

PROJECT NUMBER CT001401 | AREA / LAYER Primary
PROJECT TITLE Victoria Gold Heap Leach Pad Phase 1B | SEAM DATE 2020/08/20

TRIAL SEAMS

#	MACHINE NUMBER	TIME	TECH	AIR TEMP °C	SPEED	TEMP/ SETTING	INSIDE PEEL (PPI)					OUTSIDE PEEL (PPI)					SHEAR (PPI)					CHK'D BY	LINER TO LINER TYPE AND REMARKS
7	WW-22	1420	JK	20	55.0%	454°C	124	131	125	135	131	126	133	130	137	126	142	144	142	144	144	TH	SS
8	WW-22	1440	JK	20	35.0%	454°C	140	151	143	140	150	115	147	147	143	136	152	161	160	163	162	TH	SS

WELD SEAMS

PANEL NUMBERS	SEAM SECTION FROM	SEAM SECTION TO	START TIME	AIR TEMP °C	WELD TECH	MACHINE NUMBER	WELD LENGTH	DESTRUCT NUMBER	QC TEST METH.	QC TEST DATE Y-M-D	AIR PRESSURE TEST (PSI) TIME START	TIME END	PRESSURE START	PRESSURE END	VERIFY PASS	VERIFY QC TECH
422 / 426	EEOS	WEOS	1222	20	JK	WW-22	10.4		AP+PS	8/21/2020	1554	1559	40	40	Pass	TH
422 / 425	EEOS	WEOS	1225	20	JK	WW-22	111.4		AP+PS	8/21/2020	1730	1735	40	40	Pass	TH
430 / 431	SEOS	NEOS	1238	20	JC	WW-45	6.8		AP+PS	8/21/2020	1656	1701	40	40	Pass	TH
421 / 425	EEOS	WEOS	1308	20	JK	WW-22	10.1		AP+PS	8/21/2020	1646	1651	40	40	Pass	TH
421 / 424	EEOS	WEOS	1312	20	JK	WW-22	107.4	DS-206	AP+PS	8/23/2020	1316	1321	40	39	Pass	TH
428 / 429	SEOS	NEOS	1315	20	JC	WW-45	6.8		AP+PS	8/21/2020	1556	1601	40	40	Pass	TH
426 / 429	EEOS	WEOS	1317	20	CC	WW-45	31.6	DS-200	AP+PS	8/21/2020	1540	1545	40	40	Pass	TH
431 / 432	SEOS	NEOS	1322	20	JC	WW-45	6.8		AP+PS	8/21/2020	1612	1617	40	40	Pass	TH
425 / 429	EEOS	WEOS	1330	20	CC	WW-45	11.9		AP+PS	8/21/2020	1555	1600	40	40	Pass	TH
425 / 428	EEOS	WEOS	1334	20	CC	WW-45	109.6		AP+PS	8/22/2020	1520	1525	40	40	Pass	TH
429 / 432	EEOS	WEOS	1347	20	JC	WW-26	43.5	DS-196	AP+PS	8/21/2020	1541	1546	40	40	Pass	TH
428 / 432	EEOS	WEOS	1359	20	JC	WW-26	11.7		AP+PS	8/21/2020	1610	1615	40	40	Pass	TH
428 / 431	EEOS	WEOS	1408	20	JC	WW-26	110.0		AP+PS	8/22/2020	1521	1526	40	40	Pass	TH
424 / 428	EEOS	WEOS	1422	20	CC	WW-45	12.1		AP+PS	8/21/2020	1655	1700	40	40	Pass	TH
424 / 427	EEOS	49B	1428	20	CC	WW-45	15.0	DS-204	AP+PS	8/23/2020	1246	1251	40	40	Pass	TH
424 / 427	49C	WEOS	1438	20	CC	WW-45	60.3	DS-204	AP+PS	8/23/2020	1335	1340	40	40	Pass	TH
427 / 430	EEOS	WEOS	1450	20	JC	WW-26	84.0	DS-194	AP+PS	8/23/2020	1245	1250	40	40	Pass	TH
427 / 431	EEOS	WEOS	1454	20	JC	WW-26	11.3		AP+PS	8/21/2020	1656	1701	40	39	Pass	TH
433 / 434	SEOS	NEOS	1500	20	JK	WW-22	6.8		AP+PS	8/21/2020	1657	1703	40	40	Pass	TH
434 / 435	SEOS	NEOS	1604	20	JK	WW-22	6.8		AP+PS	8/21/2020	1614	1619	40	40	Pass	TH
						PAGE TOTAL	774.3									

TEST METHOD
AL - AIR LANCE | ST - SPARK TEST
AP - AIR PRESSURE | VB - EXTRUDED & VAC BOX
PS - POINT STRESS

REMARKS:

QC TECH: Thomas Howald
SUPERVISOR: Chad Messervey
SUBMISSION DATE: 2020/01/05
SHEET NUMBER: 78 of 113

GEOMEMBRANE SEAM & TEST LOG

PROJECT NUMBER CT001401 | AREA / LAYER Primary
PROJECT TITLE Victoria Gold Heap Leach Pad Phase 1B | SEAM DATE 2020/08/20

TRIAL SEAMS

#	MACHINE NUMBER	TIME	TECH	AIR TEMP °C	SPEED	TEMP/ SETTING	INSIDE PEEL (PPI)					OUTSIDE PEEL (PPI)					SHEAR (PPI)					CHK'D BY	LINER TO LINER TYPE AND REMARKS

WELD SEAMS

PANEL NUMBERS	SEAM SECTION FROM	SEAM SECTION TO	START TIME	AIR TEMP °C	WELD TECH	MACHINE NUMBER	WELD LENGTH	DESTRUCT NUMBER	QC TEST METH.	QC TEST DATE Y-M-D	AIR PRESSURE TEST (PSI) TIME START	TIME END	PRESSURE START	PRESSURE END	VERIFY PASS	VERIFY QC TECH
438 / 439	SEOS	NEOS	1636	20	JK	WW-22	6.8		AP+PS	8/22/2020	1522	1527	40	40	Pass	TH
432 / 435	EEOS	WEOS	1644	20	JC	WW-26	55.2		AP+PS	8/21/2020	1542	1547	40	40	Pass	TH
437 / 438	SEOS	NEOS	1645	20	JK	WW-22	6.8		AP+PS	8/22/2020	1522	1527	40	40	Pass	TH
435 / 439	EEOS	WEOS	1648	20	CC	WW-45	63.4	DS-191	AP+PS	8/21/2020	1624	1629	40	38	Pass	TH
431 / 435	EEOS	WEOS	1704	20	JC	WW-26	8.2		AP+PS	8/21/2020	1612	1617	40	40	Pass	TH
436 / 437	SEOS	NEOS	1705	20	JK	WW-22	6.8		AP+PS	8/21/2020	1708	1713	40	40	Pass	TH
431 / 434	EEOS	WEOS	1707	20	JC	WW-26	119.1		AP+PS	8/21/2020	1740	1745	40	40	Pass	TH
434 / 439	EEOS	WEOS	1710	20	CC	WW-45	8.1		AP+PS	8/21/2020	1614	1619	40	40	Pass	TH
434 / 437	EEOS	WEOS	1712	20	CC	WW-45	118.8		AP+PS	8/21/2020	1744	1749	40	39	Pass	TH
430 / 434	EEOS	WEOS	1731	20	JC	WW-26	8.8		AP+PS	8/21/2020	1657	1702	40	40	Pass	TH
433 / 437	EEOS	WEOS	1734	20	CC	WW-45	9.1		AP+PS	8/21/2020	1708	1713	40	39	Pass	TH
430 / 433	EEOS	WEOS	1738	20	JC	WW-26	75.2		AP+PS	8/23/2020	1244	1249	40	40	Pass	TH
433 / 436	EEOS	WEOS	1739	20	CC	WW-45	66.1	DS-193	AP+PS	8/23/2020	1243	1248	40	40	Pass	TH
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PAGE TOTAL 552.4

TEST METHOD
AL - AIR LANCE | ST - SPARK TEST
AP - AIR PRESSURE | VB - EXTRUDED & VAC BOX
PS - POINT STRESS

REMARKS:

QC TECH Thomas Howald
SUPERVISOR Chad Messervey
SUBMISSION DATE 2020/01/05
SHEET NUMBER 79 of 113

GEOMEMBRANE SEAM & TEST LOG

PROJECT NUMBER CT001401 | AREA / LAYER Primary
PROJECT TITLE Victoria Gold Heap Leach Pad Phase 1B | SEAM DATE 2020/08/21

TRIAL SEAMS

#	MACHINE NUMBER	TIME	TECH	AIR TEMP °C	SPEED	TEMP/ SETTING	INSIDE PEEL (PPI)					OUTSIDE PEEL (PPI)					SHEAR (PPI)					CHK'D BY	LINER TO LINER TYPE AND REMARKS
1	WW-22	915	JK	15	35.0%	454°C	143	141	148	143	141	149	144	122	147	137	160	166	163	166	167	TH	TT
2	WW-45	915	CC	15	55.0%	454°C	149	140	144	135	155	149	138	149	133	144	164	151	161	153	160	TH	SS
3	WW-26	915	JC	15	35.0%	454°C	125	136	156	152	152	114	136	147	148	121	171	184	176	171	161	TH	TT
4	WW-45	915	CC	15	35.0%	454°C	147	142	135	143	140	150	142	110	126	156	160	133	157	146	170	TH	TT
5	WW-22	915	JK	15	55.0%	454°C	140	139	141	142	132	125	130	129	141	143	145	148	146	148	146	TH	SS
6	WW-26	915	JC	15	55.0%	454°C	146	129	132	137	139	135	132	135	136	135	151	144	152	146	156	TH	SS

WELD SEAMS

PANEL NUMBERS	SEAM SECTION FROM	SEAM SECTION TO	START TIME	AIR TEMP °C	WELD TECH	MACHINE NUMBER	WELD LENGTH	DESTRUCT NUMBER	QC TEST METH.	QC TEST DATE Y-M-D	AIR PRESSURE TEST (PSI) TIME START	TIME END	PRESSURE START	PRESSURE END	VERIFY PASS	VERIFY QC TECH
441 / 442	SEOS	NEOS	959	15	CC	WW-45	6.8		AP+PS	8/22/2020	1551	1556	40	40	Pass	TH
439 / 442	EEOS	WEOS	1006	15	JK	WW-22	65.1	DS-190	AP+PS	8/22/2020	1648	1653	40	40	Pass	TH
440 / 441	SEOS	NEOS	1017	15	JC	WW-26	6.8		AP+PS	8/22/2020	1712	1717	40	40	Pass	TH
442 / 437	EEOS	WEOS	1030	15	JK	WW-22	7.1		AP+PS	8/22/2020	1551	1556	40	40	Pass	TH
443 / 444	SEOS	45N	1032	15	JC	WW-26	3.8		AP+PS	8/22/2020	1718	1723	40	40	Pass	TH
443 / 444	45N	NEOS	1033	15	JC	WW-26	3.0		AP+PS	8/22/2020	1722	1727	40	38	Pass	TH
437 / 441	EEOS	WEOS	1033	15	JK	WW-22	121.3		AP+PS	8/27/2020	1811	1816	40	40	Pass	TH
444 / 445	SEOS	NEOS	1037	15	CC	WW-45	6.8		AP+PS	8/22/2020	1552	1557	40	40	Pass	TH
446 / 447	SEOS	NEOS	1102	15	JC	WW-26	6.8	DS-213	AP+PS	8/23/2020	1146	1151	40	40	Pass	TH
447 / 448	SEOS	NEOS	1111	15	CC	WW-45	6.8		AP+PS	8/22/2020	1553	1558	40	40	Pass	TH
441 / 436	EEOS	WEOS	1114	15	JK	WW-22	6.9		AP+PS	8/22/2020	1712	1717	40	40	Pass	TH
436 / 440	EEOS	WEOS	1116	15	JK	WW-22	57.5	DS-192	AP+PS	8/23/2020	1242	1247	40	38	Pass	TH
442 / 445	EEOS	WEOS	1230	20	CC	WW-45	73.2	DS-197	AP+PS	8/22/2020	1632	1637	40	40	Pass	TH
445 / 448	44R	WEOS	1248	20	JC	WW-26	62.7		AP+PS	8/22/2020	1631	1636	40	40	Pass	TH
445 / 441	EEOS	WEOS	1300	20	CC	WW-45	5.1		AP+PS	8/22/2020	1552	1557	40	38	Pass	TH
441 / 444	EEOS	WEOS	1301	20	CC	WW-45	123.1		AP+PS	8/27/2020	1812	1817	40	39	Pass	TH
448 / 444	EEOS	WEOS	1311	20	JC	WW-26	2.7		AP+PS	8/22/2020	1553	1558	40	40	Pass	TH
444 / 447	EEOS	WEOS	1312	20	JC	WW-26	126.0		AP+PS	8/27/2020	1813	1818	40	40	Pass	TH
444 / 440	EEOS	WEOS	1353	20	CC	WW-45	5.6		AP+PS	8/22/2020	1718	1723	40	40	Pass	TH
440 / 443	EEOS	WEOS	1355	20	CC	WW-45	51.9	DS-205	AP+PS	8/23/2020	1241	1246	40	39	Pass	TH
						PAGE TOTAL	749.0									

TEST METHOD
AL - AIR LANCE | ST - SPARK TEST
AP - AIR PRESSURE | VB - EXTRUDED & VAC BOX
PS - POINT STRESS

REMARKS:

QC TECH: Thomas Howald
SUPERVISOR: Chad Messervey
SUBMISSION DATE: 2020/01/05
SHEET NUMBER: 80 of 113

GEOMEMBRANE SEAM & TEST LOG

PROJECT NUMBER CT001401 | AREA / LAYER Primary
PROJECT TITLE Victoria Gold Heap Leach Pad Phase 1B | SEAM DATE 2020/08/21

TRIAL SEAMS

#	MACHINE NUMBER	TIME	TECH	AIR TEMP °C	SPEED	TEMP/ SETTING	INSIDE PEEL (PPI)					OUTSIDE PEEL (PPI)					SHEAR (PPI)					CHK'D BY	LINER TO LINER TYPE AND REMARKS
7	WW-22	1500	JK	20	35.0%	454°C	158	119	146	148	131	136	148	147	142	146	157	161	156	166	160	TH	TT
8	WW-45	1500	CC	20	55.0%	454°C	120	140	155	141	122	133	140	147	145	125	153	161	156	161	158	TH	SS
9	WW-26	1500	JC	20	55.0%	454°C	140	134	138	134	125	132	139	132	143	129	150	155	139	164	146	TH	SS
10	WW-26	1500	JC	20	35.0%	454°C	125	139	117	146	153	131	149	132	137	153	155	159	147	163	150	TH	TT
11	WW-45	1500	CC	20	35.0%	454°C	144	144	146	109	140	131	155	147	142	141	161	160	154	163	152	TH	TT
12	WW-22	1500	JK	20	55.0%	454°C	117	120	130	127	113	130	137	143	137	130	139	142	137	147	120	TH	SS

WELD SEAMS

PANEL NUMBERS	SEAM SECTION FROM	SEAM SECTION TO	START TIME	AIR TEMP °C	WELD TECH	MACHINE NUMBER	WELD LENGTH	DESTRUCT NUMBER	QC TEST METH.	QC TEST DATE Y-M-D	AIR PRESSURE TEST (PSI) TIME START	TIME END	PRESSURE START	PRESSURE END	VERIFY PASS	VERIFY QC TECH
447 / 443	EEOS	WEOS	1359	20	JC	WW-26	2.9		AP+PS	8/22/2020	1722	1727	40	40	Pass	TH
443 / 446	EEOS	WEOS	1400	20	JC	WW-26	49.0	DS-212	AP+PS	8/23/2020	1228	1233	40	40	Pass	TH
449 / 450	SEOS	NEOS	1625	20	JC	WW-26	6.8		AP+PS	8/23/2020	1147	1152	40	40	Pass	TH
450 / 451	SEOS	NEOS	1627	20	CC	WW-45	6.8		AP+PS	8/22/2020	1602	1607	40	40	Pass	TH
448 / 451	EEOS	WEOS	1635	20	JK	WW-22	81.0	DS-186	AP+PS	8/22/2020	1630	1635	40	40	Pass	TH
451 / 447	EEOS	WEOS	1703	20	JK	WW-22	3.2		AP+PS	8/22/2020	1602	1607	40	40	Pass	TH
447 / 450	EEOS	45F	1703	20	JK	WW-22	115.7		AP+PS	8/27/2020	1814	1819	40	40	Pass	TH
447 / 450	45F	WEOS	1710	20	JK	WW-22	10.0		AP+PS	8/27/2020	1815	1820	40	40	Pass	TH
452 / 453	SEOS	NEOS	1739	20	JC	WW-26	6.8		AP+PS	8/23/2020	1148	1153	40	40	Pass	TH
453 / 454	SEOS	NEOS	1743	20	CC	WW-45	6.8		AP+PS	8/22/2020	1603	1608	40	40	Pass	TH
450 / 446	EEOS	WEOS	1747	20	JK	WW-22	3.4		AP+PS	8/23/2020	1140	1145	40	40	Pass	TH
446 / 449	EEOS	WEOS	1748	20	JK	WW-22	45.6	DS-198	AP+PS	8/23/2020	1227	1232	40	40	Pass	TH
451 / 454	EEOS	WEOS	1757	20	CC	WW-45	84.2	DS-179	AP+PS	8/22/2020	1629	1634	40	40	Pass	TH
453 / 449	EEOS	WEOS	1808	20	JC	WW-26	3.5		AP+PS	8/23/2020	1147	1152	40	40	Pass	TH
449 / 452	EEOS	WEOS	1809	20	JC	WW-26	42.1	DS-195	AP+PS	8/23/2020	1226	1231	40	40	Pass	TH
454 / 450	EEOS	WEOS	1826	20	CC	WW-45	3.3		AP+PS	8/22/2020	1603	1608	40	40	Pass	TH
450 / 453	EEOS	WEOS	1827	20	CC	WW-45	125.8		AP+PS	8/27/2020	1816	1821	40	40	Pass	TH
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PAGE TOTAL 596.9

TEST METHOD
AL - AIR LANCE | ST - SPARK TEST
AP - AIR PRESSURE | VB - EXTRUDED & VAC BOX
PS - POINT STRESS

REMARKS:

QC TECH Thomas Howald
SUPERVISOR Chad Messervey
SUBMISSION DATE 2020/01/05
SHEET NUMBER 81 of 113

GEOMEMBRANE SEAM & TEST LOG

PROJECT NUMBER CT001401 | AREA / LAYER Primary
PROJECT TITLE Victoria Gold Heap Leach Pad Phase 1B | SEAM DATE 2020/08/22

TRIAL SEAMS

#	MACHINE NUMBER	TIME	TECH	AIR TEMP °C	SPEED	TEMP/ SETTING	INSIDE PEEL (PPI)					OUTSIDE PEEL (PPI)					SHEAR (PPI)					CHK'D BY	LINER TO LINER TYPE AND REMARKS
1	WW-22	930	JK	15	35.0%	454°C	143	135	145	145	144	134	137	164	137	146	177	180	181	180	173	TH	TT
2	WW-45	930	JC	15	55.0%	454°C	140	136	136	134	134	115	115	128	126	129	157	151	153	149	156	TH	SS
3	WW-22	930	JK	15	55.0%	454°C	132	141	133	130	141	140	126	123	132	124	157	147	154	154	155	TH	SS
4	WW-45	930	JC	15	35.0%	454°C	124	154	154	143	161	154	147	146	139	142	171	178	171	177	169	TH	TT
5	WW-26	945	CC	15	35.0%	454°C	141	130	145	149	147	148	144	138	145	133	177	182	166	153	165	TH	TT
6	WW-26	1300	CC	20	55.0%	454°C	129	134	125	126	131	127	124	128	125	132	136	144	134	144	156	TH	SS

WELD SEAMS

PANEL NUMBERS	SEAM SECTION FROM	SEAM SECTION TO	START TIME	AIR TEMP °C	WELD TECH	MACHINE NUMBER	WELD LENGTH	DESTRUCT NUMBER	QC TEST METH.	QC TEST DATE Y-M-D	AIR PRESSURE TEST (PSI) TIME START	TIME END	PRESSURE START	PRESSURE END	VERIFY PASS	VERIFY QC TECH
455 / 456	SEOS	NEOS	956	15	JC	WW-26	6.8		AP+PS	8/23/2020	1205	1210	40	39	Pass	TH
454 / 457	EEOS	WEOS	1002	15	JK	WW-22	87.5	DS-185	AP+PS	8/22/2020	1628	1633	40	40	Pass	TH
456 / 457	SEOS	NEOS	1007	15	CC	WW-45	6.8		AP+PS	8/27/2020	1600	1605	40	40	Pass	TH
458 / 459	SEOS	NEOS	1025	15	JC	WW-26	6.8		AP+PS	8/23/2020	1206	1211	40	40	Pass	TH
457 / 453	EEOS	WEOS	1030	15	JK	WW-22	4.5		AP+PS	8/22/2020	1605	1610	40	40	Pass	TH
453 / 456	EEOS	WEOS	1032	15	JK	WW-22	124.2		AP+PS	8/28/2020	1437	1442	40	39	Pass	TH
459 / 460	SEOS	NEOS	1034	15	CC	WW-45	6.8		AP+PS	8/27/2020	1601	1606	40	40	Pass	TH
457 / 460	EEOS	WEOS	1043	15	JC	WW-26	82.4		AP+PS	8/29/2020	1526	1531	40	40	Pass	TH
456 / 452	EEOS	WEOS	1115	15	JK	WW-22	2.5		AP+PS	8/23/2020	1148	1153	40	40	Pass	TH
452 / 455	EEOS	WEOS	1116	15	JK	WW-22	42.1	DS-202	AP+PS	8/23/2020	1225	1230	40	40	Pass	TH
460 / 456	EEOS	WEOS	1117	15	JC	WW-26	3.4		AP+PS	8/28/2020	1600	1605	40	40	Pass	TH
456 / 459	EEOS	WEOS	1118	15	JC	WW-26	123.3		AP+PS	8/28/2020	1439	1444	40	40	Pass	TH
459 / 455	EEOS	WEOS	1157	15	JC	WW-26	3.7		AP+PS	8/23/2020	1205	1210	40	40	Pass	TH
455 / 458	EEOS	WEOS	1158	15	JC	WW-26	37.8	DS-209	AP+PS	8/23/2020	1224	1229	40	40	Pass	TH
462 / 463	SEOS	NEOS	1412	20	CC	WW-45	6.8		AP+PS	8/27/2020	1603	1608	40	40	Pass	TH
460 / 463	EEOS	WEOS	1414	20	JC	WW-26	78.2		AP+PS	8/29/2020	1527	1532	40	40	Pass	TH
461 / 462	SEOS	NEOS	1440	20	CC	WW-45	6.8		AP+PS	8/28/2020	1107	1112	40	40	Pass	TH
460 / 462	EEOS	WEOS	1448	20	JC	WW-26	4.2		AP+PS	8/28/2020	1601	1606	40	40	Pass	TH
464 / 465	SEOS	NEOS	1449	20	CC	WW-45	6.8		AP+PS	8/28/2020	1136	1141	40	40	Pass	TH
459 / 462	EEOS	WEOS	1450	20	JC	WW-26	124.2		AP+PS	8/28/2020	1440	1445	40	40	Pass	TH
						PAGE TOTAL	765.6									

TEST METHOD
AL - AIR LANCE | ST - SPARK TEST
AP - AIR PRESSURE | VB - EXTRUDED & VAC BOX
PS - POINT STRESS

REMARKS:

QC TECH: Thomas Howald
SUPERVISOR: Chad Messervey
SUBMISSION DATE: 2020/01/05
SHEET NUMBER: 82 of 113

GEOMEMBRANE SEAM & TEST LOG

PROJECT NUMBER: CT001401 | AREA / LAYER: Primary
PROJECT TITLE: Victoria Gold Heap Leach Pad Phase 1B | SEAM DATE: 2020/08/22

TRIAL SEAMS

#	MACHINE NUMBER	TIME	TECH	AIR TEMP °C	SPEED	TEMP/ SETTING	INSIDE PEEL (PPI)					OUTSIDE PEEL (PPI)					SHEAR (PPI)					CHK'D BY	LINER TO LINER TYPE AND REMARKS
7	WW-54	1300	JK	20	55.0%	454°C	112	110	119	120	123	124	122	126	124	117	144	144	143	146	142	TH	SS
8	WW-54	1330	JK	20	35.0%	454°C	132	132	136	132	136	138	136	138	137	131	158	159	145	155	159	TH	TT
9	WW-26	1330	CC	20	35.0%	454°C	142	148	129	128	128	148	152	139	139	140	145	161	152	159	160	TH	TT
10	WW-45	1330	JC	20	35.0%	454°C	150	139	136	154	141	117	131	129	145	128	151	158	152	163	154	TH	TT
11	WW-45	1330	JC	20	55.0%	454°C	139	150	137	134	141	136	142	145	142	142	160	144	148	145	151	TH	SS

WELD SEAMS

PANEL NUMBERS	SEAM SECTION FROM	SEAM SECTION TO	START TIME	AIR TEMP °C	WELD TECH	MACHINE NUMBER	WELD LENGTH	DESTRUCT NUMBER	QC TEST METH.	QC TEST DATE Y-M-D	AIR PRESSURE TEST (PSI) TIME START	TIME END	PRESSURE START	PRESSURE END	VERIFY PASS	VERIFY QC TECH
463 / 466	EEOS	WEOS	1453	20	JK	WW-54	73.4		AP+PS	8/29/2020	1528	1533	40	40	Pass	TH
465 / 466	SEOS	NEOS	1459	20	CC	WW-45	6.8		AP+PS	8/28/2020	1617	1622	40	40	Pass	TH
463 / 465	EEOS	WEOS	1530	20	JK	WW-54	4.8		AP+PS	8/28/2020	1603	1608	40	40	Pass	TH
462 / 465	EEOS	WEOS	1532	20	JK	WW-54	123.4		AP+PS	8/28/2020	1441	1446	40	40	Pass	TH
459 / 461	EEOS	WEOS	1544	20	JC	WW-26	2.8		AP+PS	8/23/2020	1206	1211	40	40	Pass	TH
458 / 461	EEOS	WEOS	1545	20	JC	WW-26	37.8	DS-180	AP+PS	8/23/2020	1206	1211	40	40	Pass	TH
462 / 464	EEOS	WEOS	1622	20	JK	WW-54	5.0		AP+PS	8/23/2020	1109	1114	40	38	Pass	TH
461 / 464	EEOS	WEOS	1624	20	JK	WW-54	42.4	DS-181	AP+PS	8/23/2020	1223	1228	40	40	Pass	TH
467 / 468	SEOS	NEOS	1656	20	JC	WW-26	6.8		AP+PS	8/28/2020	1117	1122	40	40	Pass	TH
466 / 470	EEOS	WEOS	1720	20	JC	WW-26	67.2		AP+PS	8/29/2020	1529	1534	40	40	Pass	TH
469 / 470	SEOS	NEOS	1730	20	CC	WW-45	6.8		AP+PS	8/28/2020	1622	1632	40	40	Pass	TH
468 / 469	SEOS	NEOS	1737	20	CC	WW-45	6.8		AP+PS	8/28/2020	1622	1627	40	40	Pass	TH
466 / 468	EEOS	WEOS	1747	20	JC	WW-26	4.5		AP+PS	8/28/2020	1617	1622	40	40	Pass	TH
465 / 468	EEOS	WEOS	1748	20	JC	WW-26	122.9		AP+PS	8/28/2020	1442	1447	40	40	Pass	TH
464 / 467	EEOS	WEOS	1833	20	JK	WW-54	47.4	DS-182	AP+PS	8/28/2020	1344	1349	40	40	Pass	TH
465 / 467	EEOS	WEOS	1840	20	JC	WW-26	5.3		AP+PS	8/28/2020	1136	1141	40	40	Pass	TH
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PAGE TOTAL: 564.1

TEST METHOD
AL - AIR LANCE | ST - SPARK TEST
AP - AIR PRESSURE | VB - EXTRUDED & VAC BOX
PS - POINT STRESS

REMARKS:

QC TECH: Thomas Howald
SUPERVISOR: Chad Messervey
SUBMISSION DATE: 2020/01/05
SHEET NUMBER: 83 of 113

GEOMEMBRANE SEAM & TEST LOG

PROJECT NUMBER: CT001401 | AREA / LAYER: Primary
PROJECT TITLE: Victoria Gold Heap Leach Pad Phase 1B | SEAM DATE: 2020/08/23

TRIAL SEAMS

#	MACHINE NUMBER	TIME	TECH	AIR TEMP °C	SPEED	TEMP/ SETTING	INSIDE PEEL (PPI)					OUTSIDE PEEL (PPI)					SHEAR (PPI)					CHK'D BY	LINER TO LINER TYPE AND REMARKS
1	WW-26	1015	CC	15	35.0%	454°C	148	140	163	151	122	141	145	122	146	140	174	175	164	176	171	TH	TT
2	WW-45	1015	JC	15	55.0%	454°C	127	114	119	126	128	118	127	129	129	127	138	141	135	142	139	TH	SS
3	WW-54	1015	RW	15	55.0%	454°C	141	126	135	126	130	133	134	131	129	126	140	134	143	141	140	TH	SS
4	WW-26	1015	CC	15	55.0%	454°C	141	150	149	141	139	139	140	139	145	144	150	143	147	147	146	TH	SS
5	WW-54	1015	RW	15	35.0%	454°C	137	142	160	150	140	150	147	149	126	135	172	159	156	158	152	TH	TT
6	WW-45	1015	JC	15	35.0%	454°C	149	142	125	144	143	145	145	130	139	149	152	161	150	165	164	TH	TT

WELD SEAMS

PANEL NUMBERS	SEAM SECTION FROM	SEAM SECTION TO	START TIME	AIR TEMP °C	WELD TECH	MACHINE NUMBER	WELD LENGTH	DESTRUCT NUMBER	QC TEST METH.	QC TEST DATE Y-M-D	AIR PRESSURE TEST (PSI) TIME START	TIME END	PRESSURE START	PRESSURE END	VERIFY PASS	VERIFY QC TECH
480 / 483	WEOS	EEOS	850	15	JK	WW-54	69.3	DS-227	AP+PS	8/28/2020	1354	1359	40	40	Pass	TH
481 / 483	WEOS	EEOS	918	15	JK	WW-54	6.8		AP+PS	8/28/2020	1150	1155	40	40	Pass	TH
482 / 484	WEOS	EEOS	919	15	JC	WW-45	8.0		AP+PS	8/29/2020	1647	1652	40	39	Pass	TH
481 / 484	WEOS	49E	921	15	JC	WW-45	53.1		AP+PS	8/29/2020	1612	1617	40	40	Pass	TH
482 / 485	WEOS	EEOS	923	15	JC	WW-45	32.7	DS-226	AP+PS	8/29/2020	1538	1543	40	40	Pass	TH
481 / 484	49E	EEOS	939	15	JC	WW-45	66.5		AP+PS	8/28/2020	1504	1509	40	40	Pass	TH
470 / 473	EEOS	WEOS	1107	15	RW	WW-54	53.7	DS-217	AP+PS	8/29/2020	1530	1535	40	40	Pass	TH
470 / 472	EEOS	WEOS	1134	15	RW	WW-54	3.5		AP+PS	8/28/2020	1622	1627	40	40	Pass	TH
468 / 472	EEOS	WEOS	1136	15	RW	WW-54	121.2		AP+PS	8/28/2020	1423	1428	40	39	Pass	TH
468 / 471	EEOS	WEOS	1227	20	RW	WW-54	5.4		AP+PS	8/28/2020	1117	1122	40	40	Pass	TH
467 / 471	EEOS	WEOS	1231	20	RW	WW-54	50.9		AP+PS	8/28/2020	1345	1350	40	40	Pass	TH
473 / 476	EEOS	WEOS	1236	20	JC	WW-45	48.7	DS-219	AP+PS	8/29/2020	1531	1536	40	40	Pass	TH
473 / 475	EEOS	WEOS	1259	20	JC	WW-45	5.0		AP+PS	8/28/2020	1633	1638	40	40	Pass	TH
472 / 475	EEOS	WEOS	1302	20	JC	WW-45	123.2		AP+PS	8/28/2020	1501	1506	40	39	Pass	TH
476 / 479	EEOS	WEOS	1350	20	RW	WW-54	43.7		AP+PS	8/29/2020	1545	1550	40	38	Pass	TH
471 / 474	EEOS	WEOS	1403	20	JC	WW-45	56.3	DS-218	AP+PS	8/28/2020	1346	1351	40	39	Pass	TH
476 / 478	EEOS	WEOS	1416	20	RW	WW-54	5.0		AP+PS	8/28/2020	1634	1639	40	38	Pass	TH
475 / 478	EEOS	WEOS	1418	20	RW	WW-54	123.4		AP+PS	8/28/2020	1502	1507	40	40	Pass	TH
475 / 477	EEOS	WEOS	1510	20	RW	WW-54	4.8		AP+PS	8/28/2020	1148	1153	40	40	Pass	TH
474 / 477	EEOS	WEOS	1512	20	RW	WW-54	59.5	DS-220	AP+PS	8/28/2020	1348	1353	40	40	Pass	TH
						PAGE TOTAL	940.7									

TEST METHOD
AL - AIR LANCE | ST - SPARK TEST
AP - AIR PRESSURE | VB - EXTRUDED & VAC BOX
PS - POINT STRESS

REMARKS:

QC TECH: Thomas Howald
SUPERVISOR: Chad Messervey
SUBMISSION DATE: 2020/01/05
SHEET NUMBER: 84 of 113

GEOMEMBRANE SEAM & TEST LOG

PROJECT NUMBER CT001401 | AREA / LAYER Primary
PROJECT TITLE Victoria Gold Heap Leach Pad Phase 1B | SEAM DATE 2020/08/23

TRIAL SEAMS

#	MACHINE NUMBER	TIME	TECH	AIR TEMP °C	SPEED	TEMP/ SETTING	INSIDE PEEL (PPI)					OUTSIDE PEEL (PPI)					SHEAR (PPI)					CHK'D BY	LINER TO LINER TYPE AND REMARKS
7	WW-45	1500	JC	20	35.0%	454°C	144	143	153	137	152	160	150	135	163	152	183	172	176	179	177	TH	TT
8	WW-26	1500	CC	20	55.0%	454°C	147	142	144	138	143	145	137	142	120	146	158	159	160	159	161	TH	SS
9	WW-26	1500	CC	20	35.0%	454°C	142	158	140	136	146	148	166	140	155	161	151	153	170	171	153	TH	TT
10	WW-45	1500	JC	20	55.0%	454°C	149	151	140	132	144	144	149	149	132	145	176	152	161	156	159	TH	SS

WELD SEAMS

PANEL NUMBERS		SEAM SECTION FROM	SEAM SECTION TO	START TIME	AIR TEMP °C	WELD TECH	MACHINE NUMBER	WELD LENGTH	DESTRUCT NUMBER	QC TEST METH.	QC TEST DATE Y-M-D	AIR PRESSURE TEST (PSI) TIME START	TIME END	PRESSURE START	PRESSURE END	VERIFY PASS	VERIFY QC TECH
477	480	WEOS	EEOS	1629	20	CC	WW-26	64.3	DS-221	AP+PS	8/28/2020	1350	1355	40	40	Pass	TH
478	480	49D	EEOS	1659	20	CC	WW-26	5.0		AP+PS	8/28/2020	1503	1508	40	40	Pass	TH
478	481	WEOS	49D	1700	20	CC	WW-26	123.4		AP+PS	8/29/2020	1618	1623	40	40	Pass	TH
479	481	WEOS	EEOS	1726	20	CC	WW-26	3.0		AP+PS	8/29/2020	1635	1640	40	40	Pass	TH
479	482	WEOS	47N	1728	20	CC	WW-26	22.5	DS-222	AP+PS	8/29/2020	1615	1620	40	39	Pass	TH
479	482	47N	EEOS	1735	20	CC	WW-26	18.2	DS-222	AP+PS	8/29/2020	1546	1551	40	40	Pass	TH

GEOMEMBRANE SEAM & TEST LOG

PROJECT NUMBER CT001401 | AREA / LAYER Primary
PROJECT TITLE Victoria Gold Heap Leach Pad Phase 1B | SEAM DATE 2020/08/24

TRIAL SEAMS

#	MACHINE NUMBER	TIME	TECH	AIR TEMP °C	SPEED	TEMP/ SETTING	INSIDE PEEL (PPI)					OUTSIDE PEEL (PPI)					SHEAR (PPI)					CHK'D BY	LINER TO LINER TYPE AND REMARKS
1	WW-26	800	CC	15	35.0%	454°C	139	141	142	148	140	131	159	142	152	150	149	168	174	172	183	TH	TT
2	WW-45	800	JC	15	55.0%	454°C	150	155	143	150	140	148	150	143	153	160	148	147	153	160	154	TH	SS
3	WW-54	805	JK	15	55.0%	454°C	134	134	134	145	136	133	133	136	131	143	161	149	162	156	161	TH	SS
4	WW-54	830	JK	15	35.0%	454°C	149	154	149	157	153	148	150	144	152	155	176	155	180	182	177	TH	TT
5	WW-45	830	JC	15	35.0%	454°C	138	153	146	160	141	131	145	142	156	130	165	159	165	178	178	TH	TT
6	WW-26	830	CC	15	55.0%	454°C	148	154	133	151	141	155	156	149	150	151	153	156	169	154	151	TH	SS

WELD SEAMS

PANEL NUMBERS	SEAM SECTION FROM	SEAM SECTION TO	START TIME	AIR TEMP °C	WELD TECH	MACHINE NUMBER	WELD LENGTH	DESTRUCT NUMBER	QC TEST METH.	QC TEST DATE Y-M-D	AIR PRESSURE TEST (PSI) TIME START	TIME END	PRESSURE START	PRESSURE END	VERIFY PASS	VERIFY QC TECH
483 / 484	SEOS	NEOS	853	15	CC	WW-26	6.8		AP+PS	8/28/2020	1150	1155	40	40	Pass	TH
484 / 485	SEOS	NEOS	902	15	JK	WW-54	6.8		AP+PS	8/29/2020	1647	1652	40	40	Pass	TH
487 / 488	SEOS	NEOS	1246	20	JK	WW-54	6.8		AP+PS	8/29/2020	1649	1654	40	40	Pass	TH
486 / 487	SEOS	NEOS	1250	20	JC	WW-45	6.8		AP+PS	8/28/2020	1216	1221	40	40	Pass	TH
483 / 486	WEOS	EEOS	1258	20	JC	WW-45	76.1	DS-225	AP+PS	8/28/2020	1422	1427	40	40	Pass	TH
484 / 487	49G	EEOS	1300	20	CC	WW-26	63.1		AP+PS	8/29/2020	1702	1707	40	40	Pass	TH
485 / 487	WEOS	EEOS	1313	20	CC	WW-26	6.7		AP+PS	8/29/2020	1649	1654	40	40	Pass	TH
485 / 488	WEOS	EEOS	1316	20	CC	WW-26	25.0	DS-224	AP+PS	8/29/2020	1545	1550	40	40	Pass	TH
484 / 486	WEOS	EEOS	1342	20	JC	WW-45	6.4		AP+PS	8/28/2020	1216	1221	40	39	Pass	TH
484 / 487	49F	WEOS	1343	20	JC	WW-45	40.6		AP+PS	8/29/2020	1505	1510	40	40	Pass	TH
484 / 487	49F	49G	1356	20	JC	WW-45	17.5		AP+PS	8/29/2020	1702	1707	40	40	Pass	TH
489 / 490	SEOS	NEOS	1400	20	JK	WW-54	6.8		AP+PS	9/7/2020	1531	1536	40	40	Pass	TH
486 / 489	WEOS	EEOS	1412	20	JK	WW-54	82.5	DS-223	AP+PS	9/7/2020	1512	1517	40	40	Pass	TH
487 / 490	49I	EEOS	1414	20	JK	WW-54	24.9		AP+PS	8/29/2020	1655	1700	40	40	Pass	TH
490 / 491	SEOS	NEOS	1414	20	JC	WW-45	6.8		AP+PS	9/8/2020	1448	1453	40	40	Pass	TH
487 / 490	49O	49I	1427	20	JK	WW-54	21.3		AP+PS	8/29/2020	1701	1706	40	40	Pass	TH
487 / 490	WEOS	49O	1431	20	JK	WW-54	75.1		AP+PS	8/29/2020	1506	1511	40	40	Pass	TH
488 / 490	WEOS	EEOS	1438	20	JK	WW-54	10.2		AP+PS	8/29/2020	1650	1655	40	40	Pass	TH
488 / 491	WEOS	EEOS	1443	20	JK	WW-54	14.8		AP+PS	8/29/2020	1546	1551	40	40	Pass	TH
487 / 489	WEOS	EEOS	1454	20	JK	WW-54	10.1		AP+PS	8/28/2020	1218	1223	40	40	Pass	TH
						PAGE TOTAL	515.1									

TEST METHOD
AL - AIR LANCE | ST - SPARK TEST
AP - AIR PRESSURE | VB - EXTRUDED & VAC BOX
PS - POINT STRESS

REMARKS:

QC TECH: Thomas Howald
SUPERVISOR: Chad Messervey
SUBMISSION DATE: 2020/01/05
SHEET NUMBER: 86 of 113

GEOMEMBRANE SEAM & TEST LOG

PROJECT NUMBER CT001401 | AREA / LAYER Primary
PROJECT TITLE Victoria Gold Heap Leach Pad Phase 1B | SEAM DATE 2020/08/24

TRIAL SEAMS

#	MACHINE NUMBER	TIME	TECH	AIR TEMP °C	SPEED	TEMP/ SETTING	INSIDE PEEL (PPI)					OUTSIDE PEEL (PPI)					SHEAR (PPI)					CHK'D BY	LINER TO LINER TYPE AND REMARKS
7	WW-54	1215	JK	20	35.0%	454°C	138	151	123	142	122	146	134	135	143	147	168	180	177	162	171	TH	TT
8	WW-45	1215	JC	20	35.0%	454°C	142	139	154	153	141	134	124	148	143	153	168	173	156	166	162	TH	TT
9	WW-26	1215	CC	20	55.0%	454°C	116	134	119	122	124	142	129	122	133	125	146	135	145	144	146	TH	SS
10	WW-54	1215	JK	20	55.0%	454°C	135	135	130	129	133	133	127	129	109	127	138	143	141	141	141	TH	SS
11	WW-45	1215	JC	20	55.0%	454°C	131	122	110	124	128	108	132	122	132	133	143	148	144	150	141	TH	SS

WELD SEAMS

PANEL NUMBERS	SEAM SECTION FROM	SEAM SECTION TO	START TIME	AIR TEMP °C	WELD TECH	MACHINE NUMBER	WELD LENGTH	DESTRUCT NUMBER	QC TEST METH.	QC TEST DATE Y-M-D	AIR PRESSURE TEST (PSI) TIME START	TIME END	PRESSURE START	PRESSURE END	VERIFY PASS	VERIFY QC TECH
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TEST METHOD

AL - AIR LANCE	ST - SPARK TEST
AP - AIR PRESSURE	VB - EXTRUDED & VAC BOX
PS - POINT STRESS	

REMARKS:

QC TECH Thomas Howald
SUPERVISOR Chad Messervey
SUBMISSION DATE 2020/01/05
SHEET NUMBER 87 of 113

GEOMEMBRANE SEAM & TEST LOG

PROJECT NUMBER CT001401 | AREA / LAYER Primary
PROJECT TITLE Victoria Gold Heap Leach Pad Phase 1B | SEAM DATE 2020/08/28

TRIAL SEAMS

#	MACHINE NUMBER	TIME	TECH	AIR TEMP °C	SPEED	TEMP/ SETTING	INSIDE PEEL (PPI)					OUTSIDE PEEL (PPI)					SHEAR (PPI)					CHK'D BY	LINER TO LINER TYPE AND REMARKS
1	WW-45	1215	CC	20	35.0%	454°C	128	161	126	157	140	137	165	156	162	150	169	187	184	184	177	TH	TT
2	WW-54	1215	JC	20	55.0%	454°C	130	141	126	134	137	133	132	145	131	145	155	152	155	157	160	TH	SS
3	WW-22	1215	JK	20	55.0%	454°C	112	132	140	123	140	135	138	136	130	143	158	143	156	148	157	TH	SS
4	WW-54	1215	JC	20	35.0%	454°C	149	149	159	141	144	164	159	145	155	151	169	182	185	176	164	TH	TT
5	WW-45	1215	CC	20	55.0%	454°C	150	150	144	146	148	150	155	142	156	156	176	144	172	163	167	TH	SS
6	WW-22	1215	JK	20	35.0%	454°C	158	148	152	164	137	152	161	128	152	164	167	167	174	185	166	TH	TT

WELD SEAMS

PANEL NUMBERS	SEAM SECTION FROM	SEAM SECTION TO	START TIME	AIR TEMP °C	WELD TECH	MACHINE NUMBER	WELD LENGTH	DESTRUCT NUMBER	QC TEST METH.	QC TEST DATE Y-M-D	AIR PRESSURE TEST (PSI) TIME START	TIME END	PRESSURE START	PRESSURE END	VERIFY PASS	VERIFY QC TECH
492 / 493	SEOS	NEOS	1309	20	CC	WW-26	6.8		AP+PS	9/7/2020	1509	1514	40	40	Pass	TH
491 / 493	EEOS	WEOS	1310	20	JK	WW-22	12.2	DS-234	AP+PS	9/8/2020	1448	1453	40	39	Pass	TH
490 / 493	EEOS	WEOS	1314	20	JK	WW-22	116.1		AP+PS	9/8/2020	1448	1453	40	40	Pass	TH
494 / 495	SEOS	NEOS	1319	20	CC	WW-26	6.8		AP+PS	9/8/2020	1518	1523	40	40	Pass	TH
493 / 495	EEOS	WEOS	1334	20	JC	WW-54	113.6	DS-237	AP+PS	9/7/2020	926	931	40	40	Pass	TH
490 / 492	EEOS	WEOS	1355	20	JK	WW-22	11.6		AP+PS	8/28/2020	1531	1536	40	40	Pass	TH
489 / 492	EEOS	WEOS	1400	20	JK	WW-22	102.0		AP+PS	8/28/2020	1531	1536	40	40	Pass	TH
493 / 494	EEOS	WEOS	1417	20	JC	WW-54	14.7		AP+PS	9/7/2020	926	931	40	40	Pass	TH
492 / 494	EEOS	WEOS	1423	20	JC	WW-54	113.6		AP+PS	9/7/2020	911	916	40	40	Pass	TH
495 / 499	EEOS	WEOS	1705	20	JC	WW-54	15.0	DS-236	AP+PS	9/7/2020	1037	1042	40	40	Pass	TH
498 / 499	SEOS	NEOS	1713	20	JK	WW-22	6.8		AP+PS	8/29/2020	1029	1034	40	40	Pass	TH
495 / 499	EEOS	WEOS	1715	20	JC	WW-54	77.1	DS-236	AP+PS	9/7/2020	1027	1032	40	40	Pass	TH
497 / 498	SEOS	NEOS	1720	20	JK	WW-22	6.8		AP+PS	8/29/2020	1025	1030	40	40	Pass	TH
496 / 497	SEOS	NEOS	1722	20	CC	WW-26	6.8	DS-231	AP+PS	8/29/2020	1609	1614	40	40	Pass	TH
500 / 501	SEOS	NEOS	1727	20	CC	WW-26	6.8		AP+PS	9/7/2020	1537	1542	40	39	Pass	TH
501 / 502	SEOS	NEOS	1730	20	JK	WW-22	6.8		AP+PS	9/8/2020	1517	1522	40	38	Pass	TH
496 / 500	WEOS	EEOS	1730	20	CC	WW-45	19.2	DS-230	AP+PS	9/8/2020	1602	1608	40	40	Pass	TH
497 / 500	WEOS	EEOS	1737	20	CC	WW-45	17.0		AP+PS	9/7/2020	1537	1542	40	40	Pass	TH
497 / 501	WEOS	EEOS	1740	20	CC	WW-45	111.6		AP+PS	9/7/2020	1537	1542	40	40	Pass	TH
495 / 497	EEOS	WEOS	1742	20	JC	WW-54	16.2		AP+PS	9/7/2020	1024	1029	40	40	Pass	TH
						PAGE TOTAL	787.5									

TEST METHOD
AL - AIR LANCE | ST - SPARK TEST
AP - AIR PRESSURE | VB - EXTRUDED & VAC BOX
PS - POINT STRESS

REMARKS:

QC TECH: Thomas Howald
SUPERVISOR: Chad Messervey
SUBMISSION DATE: 2020/01/05
SHEET NUMBER: 88 of 113

GEOMEMBRANE SEAM & TEST LOG

PROJECT NUMBER CT001401 | AREA / LAYER Primary
PROJECT TITLE Victoria Gold Heap Leach Pad Phase 1B | SEAM DATE 2020/08/28

TRIAL SEAMS

#	MACHINE NUMBER	TIME	TECH	AIR TEMP °C	SPEED	TEMP/ SETTING	INSIDE PEEL (PPI)					OUTSIDE PEEL (PPI)					SHEAR (PPI)					CHK'D BY	LINER TO LINER TYPE AND REMARKS
7	WW-22	1630	JK	20	35.0%	454°C	143	129	134	150	144	161	154	156	160	152	176	178	184	178	169	TH	TT
8	WW-54	1630	JC	20	55.0%	454°C	136	120	126	127	140	135	130	130	142	125	157	152	154	152	151	TH	SS
9	WW-54	1630	JC	20	35.0%	454°C	158	156	160	161	156	161	129	147	162	159	180	189	168	183	180	TH	TT
10	WW-22	1630	JK	20	55.0%	454°C	114	129	132	127	130	135	127	134	131	132	153	153	125	129	148	TH	SS
11	WW-45	1630	CC	20	35.0%	454°C	162	160	142	178	111	130	152	153	127	160	165	179	169	169	170	TH	TT
12	WW-45	1630	CC	20	55.0%	454°C	108	123	129	127	129	138	138	130	135	129	153	146	150	149	157	TH	SS

WELD SEAMS

PANEL NUMBERS	SEAM SECTION FROM	SEAM SECTION TO	START TIME	AIR TEMP °C	WELD TECH	MACHINE NUMBER	WELD LENGTH	DESTRUCT NUMBER	QC TEST METH.	QC TEST DATE Y-M-D	AIR PRESSURE TEST (PSI) TIME START	TIME END	PRESSURE START	PRESSURE END	VERIFY PASS	VERIFY QC TECH
494 / 497	EEOS	WEOS	1748	20	JC	WW-54	110.6		AP+PS	9/7/2020	926	931	40	40	Pass	TH
499 / 501	WEOS	EEOS	1805	20	CC	WW-45	16.2		AP+PS	9/8/2020	1517	1522	40	40	Pass	TH
494 / 496	EEOS	WEOS	1811	20	JC	WW-54	19.2		AP+PS	9/8/2020	1609	1614	40	40	Pass	TH
499 / 502	WEOS	EEOS	1812	20	CC	WW-45	73.0	DS-235	AP+PS	9/8/2020	1517	1522	40	40	Pass	TH
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PAGE TOTAL							219.0									

TEST METHOD
AL - AIR LANCE
AP - AIR PRESSURE
PS - POINT STRESS
ST - SPARK TEST
VB - EXTRUDED & VAC BOX

REMARKS:

QC TECH Thomas Howald
SUPERVISOR Chad Messervey
SUBMISSION DATE 2020/01/05
SHEET NUMBER 89 of 113

GEOMEMBRANE SEAM & TEST LOG

PROJECT NUMBER CT001401 | AREA / LAYER Primary
PROJECT TITLE Victoria Gold Heap Leach Pad Phase 1B | SEAM DATE 2020/08/29

TRIAL SEAMS

#	MACHINE NUMBER	TIME	TECH	AIR TEMP °C	SPEED	TEMP/ SETTING	INSIDE PEEL (PPI)					OUTSIDE PEEL (PPI)					SHEAR (PPI)					CHK'D BY	LINER TO LINER TYPE AND REMARKS
1	WW-22	1200	JK	15	35.0%	454°C	165	153	159	157	163	168	153	153	159	167	162	180	170	170	184	TH	TT
2	WW-45	1200	JC	15	35.0%	454°C	149	147	151	159	159	147	179	154	155	161	178	172	181	176	161	TH	TT
3	WW-26	1200	CC	15	35.0%	454°C	137	158	147	154	154	144	135	160	154	156	169	172	174	169	170	TH	TT
4	WW-22	1200	JK	15	55.0%	454°C	159	140	143	143	142	141	141	137	140	146	156	136	142	148	150	TH	SS
5	WW-45	1200	JC	15	55.0%	454°C	129	133	130	130	133	143	142	130	142	128	145	148	149	144	143	TH	SS
6	WW-26	1200	CC	15	55.0%	454°C	130	130	131	127	128	136	141	142	132	128	151	138	138	143	140	TH	SS

WELD SEAMS

PANEL NUMBERS	SEAM SECTION FROM	SEAM SECTION TO	START TIME	AIR TEMP °C	WELD TECH	MACHINE NUMBER	WELD LENGTH	DESTRUCT NUMBER	QC TEST METH.	QC TEST DATE Y-M-D	AIR PRESSURE TEST (PSI) TIME START	TIME END	PRESSURE START	PRESSURE END	VERIFY PASS	VERIFY QC TECH
510 / 511	SEOS	NEOS	1220	20	JK	WW-22	6.8		AP+PS	9/7/2020	831	836	40	40	Pass	TH
516 / 517	SEOS	NEOS	1226	20	JK	WW-22	6.8		AP+PS	9/11/2020	1325	1330	40	40	Pass	TH
518 / 519	SEOS	NEOS	1237	20	JK	WW-22	6.8		AP+PS	9/11/2020	1306	1311	40	40	Pass	TH
517 / 519	EEOS	WEOS	1238	20	JC	WW-45	26.2	DS-244	AP+PS	9/11/2020	1135	1140	40	40	Pass	TH
515 / 516	SEOS	NEOS	1238	20	CC	WW-26	6.8		AP+PS	9/7/2020	846	851	40	38	Pass	TH
514 / 517	EEOS	WEOS	1245	20	JK	WW-22	26.3		AP+PS	9/11/2020	1134	1139	40	40	Pass	TH
512 / 513	SEOS	NEOS	1247	20	CC	WW-26	6.8		AP+PS	9/7/2020	833	838	40	40	Pass	TH
516 / 519	EEOS	WEOS	1250	20	JC	WW-45	30.1		AP+PS	9/11/2020	1304	1309	40	40	Pass	TH
514 / 516	EEOS	WEOS	1255	20	JK	WW-22	65.7		AP+PS	9/8/2020	1740	1745	40	40	Pass	TH
516 / 518	EEOS	WEOS	1302	20	JC	WW-45	38.0		AP+PS	9/8/2020	1739	1744	40	40	Pass	TH
508 / 509	SEOS	NEOS	1304	20	CC	WW-26	6.8		AP+PS	8/30/2020	1718	1723	40	40	Pass	TH
515 / 518	EEOS	WEOS	1318	20	JC	WW-45	8.8		AP+PS	9/7/2020	854	859	40	40	Pass	TH
513 / 514	EEOS	WEOS	1328	20	JK	WW-22	60.1	DS-247	AP+PS	9/7/2020	834	839	40	40	Pass	TH
505 / 506	SEOS	NEOS	1328	20	CC	WW-26	6.8		AP+PS	9/7/2020	821	826	40	40	Pass	TH
511 / 513	EEOS	WEOS	1334	20	JC	WW-45	12.1		AP+PS	9/7/2020	832	837	40	40	Pass	TH
510 / 513	EEOS	WEOS	1338	20	JC	WW-45	48.6		AP+PS	9/7/2020	833	838	40	40	Pass	TH
509 / 511	EEOS	WEOS	1341	20	CC	WW-26	12.1	DS-243	AP+PS	9/7/2020	831	836	40	40	Pass	TH
509 / 510	EEOS	WEOS	1344	20	CC	WW-26	25.9		AP+PS	8/30/2020	1720	1725	40	40	Pass	TH
512 / 514	EEOS	WEOS	1350	20	JK	WW-22	18.5		AP+PS	8/30/2020	1728	1733	40	40	Pass	TH
508 / 510	EEOS	WEOS	1355	20	CC	WW-26	19.5		AP+PS	8/30/2020	1721	1726	40	40	Pass	TH
						PAGE TOTAL	439.5									

TEST METHOD
AL - AIR LANCE | ST - SPARK TEST
AP - AIR PRESSURE | VB - EXTRUDED & VAC BOX
PS - POINT STRESS

REMARKS:

QC TECH: Thomas Howald
SUPERVISOR: Chad Messervey
SUBMISSION DATE: 2020/01/05
SHEET NUMBER: 90 of 113

GEOMEMBRANE SEAM & TEST LOG

PROJECT NUMBER CT001401 | AREA / LAYER Primary
PROJECT TITLE Victoria Gold Heap Leach Pad Phase 1B | SEAM DATE 2020/08/29

TRIAL SEAMS

#	MACHINE NUMBER	TIME	TECH	AIR TEMP °C	SPEED	TEMP/ SETTING	INSIDE PEEL (PPI)					OUTSIDE PEEL (PPI)					SHEAR (PPI)					CHK'D BY	LINER TO LINER TYPE AND REMARKS
7	WW-45	1715	JC	15	40.0%	454°C	130	133	147	135	137	134	141	139	131	133	156	159	138	139	141	TH	TS
8	WW-22	1715	JK	15	35.0%	454°C	135	129	133	153	142	135	139	142	140	151	156	155	161	169	184	TH	TT
9	WW-22	1715	JK	15	55.0%	454°C	135	121	129	131	128	136	142	141	137	142	161	154	160	165	168	TH	SS

WELD SEAMS

PANEL NUMBERS	SEAM SECTION FROM	SEAM SECTION TO	START TIME	AIR TEMP °C	WELD TECH	MACHINE NUMBER	WELD LENGTH	DESTRUCT NUMBER	QC TEST METH.	QC TEST DATE Y-M-D	AIR PRESSURE TEST (PSI) TIME START	TIME END	PRESSURE START	PRESSURE END	VERIFY PASS	VERIFY QC TECH
510 / 512	EEOS	WEOS	1358	20	JC	WW-45	7.6		AP+PS	8/30/2020	1728	1733	40	40	Pass	TH
507 / 509	EEOS	WEOS	1410	20	JK	WW-22	37.2		AP+PS	9/11/2020	1133	1138	40	40	Pass	TH
506 / 507	EEOS	WEOS	1415	20	CC	WW-26	20.2		AP+PS	9/7/2020	820	825	40	40	Pass	TH
503 / 504	EEOS	WEOS	1423	20	JC	WW-45	9.1		AP+PS	9/11/2020	1115	1120	40	40	Pass	TH
504 / 506	EEOS	WEOS	1423	20	JC	WW-45	20.2	DS-246	AP+PS	9/7/2020	822	827	40	40	Pass	TH
505 / 507	EEOS	WEOS	1423	20	CC	WW-26	13.3		AP+PS	9/11/2020	1118	1123	40	39	Pass	TH
507 / 508	EEOS	WEOS	1423	20	JK	WW-22	8.8		AP+PS	8/30/2020	1717	1722	40	40	Pass	TH
501 / 518	WEOS	EEOS	1650	20	JC	WW-45	13.1		AP+PS	9/8/2020	1728	1733	40	40	Pass	TH
501 / 515	WEOS	EEOS	1656	20	JC	WW-45	11.6		AP+PS	9/7/2020	854	859	40	40	Pass	TH
501 / 514	WEOS	EEOS	1702	20	JC	WW-45	13.0		AP+PS	8/30/2020	1726	1731	40	40	Pass	TH
501 / 512	WEOS	EEOS	1710	20	JC	WW-45	13.0		AP+PS	8/30/2020	1728	1733	40	40	Pass	TH
501 / 510	WEOS	EEOS	1722	20	JC	WW-45	4.0		AP+PS	8/30/2020	1725	1730	40	39	Pass	TH
502 / 510	WEOS	EEOS	1724	20	JC	WW-45	9.1		AP+PS	8/30/2020	1725	1730	40	40	Pass	TH
502 / 508	WEOS	EEOS	1731	20	JC	WW-45	13.0		AP+PS	8/30/2020	1717	1722	40	40	Pass	TH
502 / 507	WEOS	EEOS	1742	20	JC	WW-45	13.0		AP+PS	9/11/2020	1118	1123	40	40	Pass	TH
502 / 505	WEOS	EEOS	1749	20	JC	WW-45	13.0		AP+PS	9/11/2020	1118	1123	40	40	Pass	TH
520 / 521	SEOS	NEOS	1751	20	JK	WW-22	6.8		AP+PS	9/11/2020	1301	1306	40	40	Pass	TH
502 / 504	WEOS	EEOS	1757	20	JC	WW-45	13.0		AP+PS	9/11/2020	1115	1120	40	40	Pass	TH
519 / 521	EEOS	WEOS	1802	20	JK	WW-22	22.7	DS-245	AP+PS	9/11/2020	1136	1141	40	40	Pass	TH
502 / 503	WEOS	EEOS	1806	20	JC	WW-45	9.2	DS-228	AP+PS	9/11/2020	1115	1120	40	39	Pass	TH
						PAGE TOTAL	270.9									

TEST METHOD
AL - AIR LANCE | ST - SPARK TEST
AP - AIR PRESSURE | VB - EXTRUDED & VAC BOX
PS - POINT STRESS

REMARKS:

QC TECH: Thomas Howald
SUPERVISOR: Chad Messervey
SUBMISSION DATE: 2020/01/05
SHEET NUMBER: 91 of 113

GEOMEMBRANE SEAM & TEST LOG

PROJECT NUMBER CT001401 | AREA / LAYER Primary
PROJECT TITLE Victoria Gold Heap Leach Pad Phase 1B | SEAM DATE 2020/08/29

TRIAL SEAMS

#	MACHINE NUMBER	TIME	TECH	AIR TEMP °C	SPEED	TEMP/ SETTING	INSIDE PEEL (PPI)					OUTSIDE PEEL (PPI)					SHEAR (PPI)					CHK'D BY	LINER TO LINER TYPE AND REMARKS

WELD SEAMS

PANEL NUMBERS		SEAM SECTION FROM	SEAM SECTION TO	START TIME	AIR TEMP °C	WELD TECH	MACHINE NUMBER	WELD LENGTH	DESTRUCT NUMBER	QC TEST METH.	QC TEST DATE Y-M-D	AIR PRESSURE TEST (PSI) TIME START	TIME END	PRESSURE START	PRESSURE END	VERIFY PASS	VERIFY QC TECH
519	520	EEOS	WEOS	1810	20	JK	WW-22	36.4		AP+PS	9/11/2020	1301	1306	40	40	Pass	TH
518	520	EEOS	WEOS	1822	20	JK	WW-22	57.6		AP+PS	9/8/2020	1728	1733	40	40	Pass	TH

GEOMEMBRANE SEAM & TEST LOG

PROJECT NUMBER CT001401 | AREA / LAYER Primary
PROJECT TITLE Victoria Gold Heap Leach Pad Phase 1B | SEAM DATE 2020/08/30

TRIAL SEAMS

#	MACHINE NUMBER	TIME	TECH	AIR TEMP °C	SPEED	TEMP/ SETTING	INSIDE PEEL (PPI)					OUTSIDE PEEL (PPI)					SHEAR (PPI)					CHK'D BY	LINER TO LINER TYPE AND REMARKS
1	WW-22	920	DT	10	35.0%	454°C	163	163	150	153	149	155	144	163	158	138	167	170	166	173	176	TH	TT
2	WW-26	920	CC	10	35.0%	454°C	129	145	137	147	159	155	149	148	148	139	159	171	155	161	170	TH	TT
3	WW-45	920	JC	10	35.0%	454°C	138	148	126	148	137	149	134	144	160	154	163	173	159	168	154	TH	TT
4	WW-45	920	JC	10	55.0%	454°C	148	148	145	151	148	150	148	148	152	151	160	146	160	151	154	TH	SS
5	WW-26	920	CC	10	55.0%	454°C	151	147	151	146	151	143	148	143	140	147	162	146	143	154	147	TH	SS
6	WW-22	1230	DT	10	35.0%	454°C	158	154	142	149	140	153	140	110	158	129	168	189	173	168	173	TH	TT

WELD SEAMS

PANEL NUMBERS	SEAM SECTION FROM	SEAM SECTION TO	START TIME	AIR TEMP °C	WELD TECH	MACHINE NUMBER	WELD LENGTH	DESTRUCT NUMBER	QC TEST METH.	QC TEST DATE Y-M-D	AIR PRESSURE TEST (PSI) TIME START	TIME END	PRESSURE START	PRESSURE END	VERIFY PASS	VERIFY QC TECH
523 / 524	SEOS	NEOS	930	15	JC	WW-45	6.8		AP+PS	9/11/2020	1303	1308	40	40	Pass	TH
525 / 526	SEOS	NEOS	950	15	DT	WW-22	6.8		AP+PS	9/11/2020	1332	1337	40	40	Pass	TH
521 / 524	EEOS	WEOS	953	15	JC	WW-45	23.3	DS-229	AP+PS	9/11/2020	1137	1142	40	40	Pass	TH
520 / 523	EEOS	WEOS	1002	15	JC	WW-45	103.6		AP+PS	9/8/2020	1726	1731	40	40	Pass	TH
524 / 526	EEOS	WEOS	1003	15	CC	WW-26	23.9	DS-242	AP+PS	9/11/2020	1139	1144	40	40	Pass	TH
523 / 526	EEOS	WEOS	1010	15	CC	WW-26	24.6		AP+PS	9/11/2020	1303	1308	40	40	Pass	TH
525 / 528	51N	EEOS	1015	15	JC	WW-45	9.7		AP+PS	9/8/2020	1659	1704	40	40	Pass	TH
525 / 528	WEOS	51N	1018	15	JC	WW-45	68.0		AP+PS	9/8/2020	1709	1714	40	40	Pass	TH
523 / 525	EEOS	WEOS	1020	15	CC	WW-26	79.0		AP+PS	9/8/2020	1717	1722	40	40	Pass	TH
528 / 529	SEOS	NEOS	1023	15	DT	WW-22	6.8		AP+PS	9/11/2020	1335	1340	40	39	Pass	TH
522 / 523	SEOS	NEOS	1040	15	DT	WW-22	6.8		AP+PS	9/8/2020	1717	1722	40	40	Pass	TH
527 / 528	SEOS	NEOS	1050	15	DT	WW-22	6.8		AP+PS	9/8/2020	1659	1704	40	40	Pass	TH
522 / 525	EEOS	WEOS	1051	15	CC	WW-26	12.1		AP+PS	9/8/2020	1716	1721	40	40	Pass	TH
525 / 529	53K	EEOS	1103	15	CC	WW-26	20.8		AP+PS	9/11/2020	1338	1343	40	38	Pass	TH
525 / 529	WEOS	53K	1110	15	CC	WW-26	2.7		AP+PS	9/11/2020	1332	1337	40	40	Pass	TH
526 / 529	WEOS	53D	1111	15	CC	WW-26	43.5	S-238 & 238	AP+PS	9/11/2020	1140	1145	40	40	Pass	TH
526 / 529	53D	EEOS	1113	15	CC	WW-26	6.0	S-238 & 238	AP+PS	9/11/2020	1139	1144	40	40	Pass	TH
530 / 531	SEOS	NEOS	1215	20	DT	WW-22	6.8		AP+PS	9/11/2020	1406	1411	40	40	Pass	TH
529 / 531	EEOS	WEOS	1245	20	DT	WW-22	73.6	DS-239	AP+PS	9/11/2020	1205	1210	40	40	Pass	TH
528 / 531	EEOS	WEOS	1312	20	DT	WW-22	48.0		AP+PS	9/11/2020	1406	1411	40	40	Pass	TH
						PAGE TOTAL	579.6									

TEST METHOD
AL - AIR LANCE | ST - SPARK TEST
AP - AIR PRESSURE | VB - EXTRUDED & VAC BOX
PS - POINT STRESS

REMARKS:

QC TECH: Thomas Howald
SUPERVISOR: Chad Messervey
SUBMISSION DATE: 2020/01/05
SHEET NUMBER: 93 of 113

GEOMEMBRANE SEAM & TEST LOG

PROJECT NUMBER CT001401 | AREA / LAYER Primary
PROJECT TITLE Victoria Gold Heap Leach Pad Phase 1B | SEAM DATE 2020/08/30

TRIAL SEAMS

#	MACHINE NUMBER	TIME	TECH	AIR TEMP °C	SPEED	TEMP/ SETTING	INSIDE PEEL (PPI)					OUTSIDE PEEL (PPI)					SHEAR (PPI)					CHK'D BY	LINER TO LINER TYPE AND REMARKS
7	WW-45	1230	JC	10	35.0%	454°C	150	115	136	148	150	150	151	141	135	129	179	151	139	153	163	TH	TT
8	WW-26	1230	CC	10	35.0%	454°C	155	135	158	149	151	154	152	136	147	147	164	163	166	171	177	TH	TT
9	WW-22	1230	DT	10	55.0%	454°C	147	149	139	133	146	155	150	150	151	146	165	146	173	162	154	TH	SS
10	WW-45	1230	JC	10	55.0%	454°C	151	136	148	156	148	154	155	147	147	155	160	160	162	163	165	TH	SS
11	WW-26	1230	CC	10	55.0%	454°C	136	130	139	150	146	155	156	147	147	155	168	158	157	152	161	TH	SS
12	WW-22	1630	JK	10	40.0%	454°C	150	143	154	151	153	157	153	163	150	161	165	165	167	164	162	TH	TS

WELD SEAMS

PANEL NUMBERS	SEAM SECTION FROM	SEAM SECTION TO	START TIME	AIR TEMP °C	WELD TECH	MACHINE NUMBER	WELD LENGTH	DESTRUCT NUMBER	QC TEST METH.	QC TEST DATE Y-M-D	AIR PRESSURE TEST (PSI) TIME START	TIME END	PRESSURE START	PRESSURE END	VERIFY PASS	VERIFY QC TECH
528 / 530	EEOS	WEOS	1329	20	DT	WW-22	29.7		AP+PS	9/8/2020	1657	1702	40	40	Pass	TH
534 / 537	EEOS	54E	1335	20	JC	WW-45	51.0		AP+PS	9/11/2020	1416	1421	40	40	Pass	TH
527 / 530	EEOS	WEOS	1340	20	DT	WW-22	10.9		AP+PS	9/8/2020	1656	1701	40	40	Pass	TH
534 / 537	54E	WEOS	1348	20	JC	WW-45	10.0		AP+PS	9/11/2020	1416	1421	40	40	Pass	TH
532 / 533	SEOS	NEOS	1424	20	DT	WW-22	6.8		AP+PS	9/8/2020	1642	1647	40	40	Pass	TH
533 / 534	SEOS	NEOS	1437	20	DT	WW-22	6.8		AP+PS	9/8/2020	1645	1650	40	40	Pass	TH
534 / 535	SEOS	NEOS	1447	20	CC	WW-26	6.8		AP+PS	9/11/2020	1454	1459	40	40	Pass	TH
531 / 534	EEOS	WEOS	1511	20	CC	WW-26	81.8		AP+PS	9/11/2020	1406	1411	40	40	Pass	TH
535 / 537	EEOS	WEOS	1519	20	JC	WW-45	40.8	DS-241	AP+PS	9/11/2020	1207	1212	40	40	Pass	TH
534 / 536	EEOS	WEOS	1521	20	DT	WW-22	56.7		AP+PS	9/8/2020	1645	1650	40	40	Pass	TH
533 / 536	EEOS	WEOS	1540	20	DT	WW-22	3.8		AP+PS	9/8/2020	1645	1650	40	40	Pass	TH
532 / 536	EEOS	WEOS	1541	20	DT	WW-22	11.0	DS-233	AP+PS	9/8/2020	1628	1633	40	40	Pass	TH
530 / 534	EEOS	WEOS	1542	20	CC	WW-26	47.1		AP+PS	9/8/2020	1646	1651	40	40	Pass	TH
536 / 537	SEOS	NEOS	1545	20	DT	WW-22	6.8		AP+PS	9/11/2020	1415	1420	40	40	Pass	TH
530 / 533	EEOS	WEOS	1600	20	CC	WW-26	3.8		AP+PS	9/8/2020	1642	1647	40	39	Pass	TH
536 / 500	WEOS	EEOS	1641	20	JK	WW-22	12.6		AP+PS	9/8/2020	1622	1627	40	40	Pass	TH
501 / 532	WEOS	EEOS	1649	20	JK	WW-22	8.6		AP+PS	9/8/2020	1634	1639	40	40	Pass	TH
501 / 530	WEOS	EEOS	1652	20	JK	WW-22	12.7		AP+PS	9/8/2020	1656	1701	40	40	Pass	TH
501 / 527	WEOS	EEOS	1700	20	JK	WW-22	12.7		AP+PS	9/8/2020	1656	1701	40	40	Pass	TH
501 / 525	WEOS	EEOS	1707	20	JK	WW-22	12.7		AP+PS	9/8/2020	1716	1721	40	40	Pass	TH
						PAGE TOTAL	433.1									

TEST METHOD
AL - AIR LANCE | ST - SPARK TEST
AP - AIR PRESSURE | VB - EXTRUDED & VAC BOX
PS - POINT STRESS

REMARKS:

QC TECH: Thomas Howald
SUPERVISOR: Chad Messervey
SUBMISSION DATE: 2020/01/05
SHEET NUMBER: 94 of 113

GEOMEMBRANE SEAM & TEST LOG

PROJECT NUMBER CT001401 | AREA / LAYER Primary
PROJECT TITLE Victoria Gold Heap Leach Pad Phase 1B | SEAM DATE 2020/08/30

TRIAL SEAMS

#	MACHINE NUMBER	TIME	TECH	AIR TEMP °C	SPEED	TEMP/ SETTING	INSIDE PEEL (PPI)					OUTSIDE PEEL (PPI)					SHEAR (PPI)					CHK'D BY	LINER TO LINER TYPE AND REMARKS

WELD SEAMS

PANEL NUMBERS		SEAM SECTION FROM	SEAM SECTION TO	START TIME	AIR TEMP °C	WELD TECH	MACHINE NUMBER	WELD LENGTH	DESTRUCT NUMBER	QC TEST METH.	QC TEST DATE Y-M-D	AIR PRESSURE TEST (PSI) TIME START	TIME END	PRESSURE START	PRESSURE END	VERIFY PASS	VERIFY QC TECH
501	522	WEOS	EEOS	1713	20	JK	WW-22	12.7		AP+PS	9/8/2020	1716	1721	40	40	Pass	TH
501	520	WEOS	EEOS	1719	20	JK	WW-22	12.7		AP+PS	9/8/2020	1726	1731	40	40	Pass	TH

GEOMEMBRANE SEAM & TEST LOG

PROJECT NUMBER CT001401 | AREA / LAYER Primary
PROJECT TITLE Victoria Gold Heap Leach Pad Phase 1B | SEAM DATE 2020/09/06

TRIAL SEAMS

#	MACHINE NUMBER	TIME	TECH	AIR TEMP °C	SPEED	TEMP/ SETTING	INSIDE PEEL (PPI)					OUTSIDE PEEL (PPI)					SHEAR (PPI)					CHK'D BY	LINER TO LINER TYPE AND REMARKS
1	WW-22	1445	JK	10	35.0%	454°C	155	136	157	162	159	133	154	160	162	153	168	175	173	183	178	TH	TT
2	WW-45	1445	EA	10	35.0%	454°C	142	145	148	143	141	153	159	162	152	138	171	172	171	171	177	TH	TT
3	WW-26	1445	DT	10	55.0%	454°C	146	146	141	146	143	141	143	142	139	150	148	156	166	161	170	TH	SS
4	WW-22	1445	JK	10	55.0%	454°C	140	157	139	145	143	137	138	135	143	139	170	151	150	155	155	TH	SS
5	WW-45	1445	EA	10	55.0%	454°C	124	128	132	126	137	144	138	144	145	144	154	155	152	153	151	TH	SS

WELD SEAMS

PANEL NUMBERS	SEAM SECTION FROM	SEAM SECTION TO	START TIME	AIR TEMP °C	WELD TECH	MACHINE NUMBER	WELD LENGTH	DESTRUCT NUMBER	QC TEST METH.	QC TEST DATE Y-M-D	AIR PRESSURE TEST (PSI) TIME START	TIME END	PRESSURE START	PRESSURE END	VERIFY PASS	VERIFY QC TECH
539 / 540	SEOS	NEOS	1507	15	EA	WW-45	6.8		AP+PS	9/11/2020	1449	1454	40	40	Pass	TH
544 / 543	SEOS	NEOS	1513	15	JK	WW-22	6.8		AP+PS	9/11/2020	1506	1511	40	40	Pass	TH
537 / 540	EEOS	WEOS	1520	15	JK	WW-22	66.4		AP+PS	9/11/2020	1209	1214	40	39	Pass	TH
540 / 544	EEOS	WEOS	1520	15	DT	WW-26	19.7		AP+PS	9/11/2020	1210	1215	40	40	Pass	TH
543 / 542	SEOS	NEOS	1520	15	EA	WW-45	6.8		AP+PS	9/11/2020	1533	1538	40	40	Pass	TH
540 / 543	EEOS	WEOS	1529	15	DT	WW-26	47.7		AP+PS	9/11/2020	1449	1454	40	40	Pass	TH
538 / 539	SEOS	NEOS	1533	15	EA	WW-45	6.8	DS-249	AP+PS	9/8/2020	1620	1625	40	40	Pass	TH
537 / 539	EEOS	54L	1543	15	JK	WW-22	26.1		AP+PS	9/11/2020	1428	1433	40	40	Pass	TH
542 / 541	SEOS	NEOS	1543	15	EA	WW-45	6.8		AP+PS	9/8/2020	1604	1609	40	40	Pass	TH
537 / 539	54J	WEOS	1550	15	JK	WW-22	21.0		AP+PS	9/11/2020	1424	1429	40	40	Pass	TH
539 / 543	EEOS	54M	1550	15	DT	WW-26	60.3		AP+PS	9/11/2020	1434	1439	40	40	Pass	TH
536 / 539	EEOS	WEOS	1558	15	JK	WW-22	80.0		AP+PS	9/8/2020	1620	1625	40	40	Pass	TH
539 / 543	54M	54N	1559	15	DT	WW-26	10.0		AP+PS	9/11/2020	1434	1439	40	40	Pass	TH
539 / 543	54N	WEOS	1601	15	DT	WW-26	10.0		AP+PS	9/11/2020	1435	1440	40	40	Pass	TH
539 / 542	EEOS	WEOS	1620	15	DT	WW-26	47.6	DS-248	AP+PS	9/8/2020	1620	1625	40	40	Pass	TH
538 / 542	EEOS	WEOS	1633	15	DT	WW-26	12.5		AP+PS	9/8/2020	1606	1611	40	40	Pass	TH
541 / 500	WEOS	EEOS	1717	15	EA	WW-45	8.2		AP+PS	9/8/2020	1606	1611	40	40	Pass	TH
538 / 500	WEOS	EEOS	1725	15	EA	WW-45	12.6		AP+PS	9/8/2020	1606	1611	40	40	Pass	TH
546 / 545	SEOS	NEOS	1745	15	EA	WW-45	6.8		AP+PS	9/11/2020	1521	1526	40	40	Pass	TH
544 / 546	EEOS	WEOS	1751	15	DT	WW-26	19.4		AP+PS	9/11/2020	1211	1216	40	40	Pass	TH
						PAGE TOTAL	482.3									

TEST METHOD
AL - AIR LANCE | ST - SPARK TEST
AP - AIR PRESSURE | VB - EXTRUDED & VAC BOX
PS - POINT STRESS

REMARKS:

QC TECH: Thomas Howald
SUPERVISOR: Chad Messervey
SUBMISSION DATE: 2020/01/05
SHEET NUMBER: 96 of 113

GEOMEMBRANE SEAM & TEST LOG

PROJECT NUMBER CT001401 | AREA / LAYER Primary
PROJECT TITLE Victoria Gold Heap Leach Pad Phase 1B | SEAM DATE 2020/09/06

TRIAL SEAMS

#	MACHINE NUMBER	TIME	TECH	AIR TEMP °C	SPEED	TEMP/ SETTING	INSIDE PEEL (PPI)					OUTSIDE PEEL (PPI)					SHEAR (PPI)					CHK'D BY	LINER TO LINER TYPE AND REMARKS

WELD SEAMS

PANEL NUMBERS	SEAM SECTION FROM	SEAM SECTION TO	START TIME	AIR TEMP °C	WELD TECH	MACHINE NUMBER	WELD LENGTH	DESTRUCT NUMBER	QC TEST METH.	QC TEST DATE Y-M-D	AIR PRESSURE TEST (PSI) TIME START	TIME END	PRESSURE START	PRESSURE END	VERIFY PASS	VERIFY QC TECH
543 / 545	WEOS	EEOS	1754	15	EA	WW-45	42.3		AP+PS	9/11/2020	1521	1526	40	40	Pass	TH
543 / 546	EEOS	WEOS	1803	15	DT	WW-26	85.7		AP+PS	9/11/2020	1506	1511	40	40	Pass	TH
542 / 545	WEOS	EEOS	1810	15	EA	WW-45	60.1		AP+PS	9/8/2020	1604	1609	40	40	Pass	TH
541 / 545	WEOS	EEOS	1826	15	EA	WW-45	6.3		AP+PS	9/8/2020	1604	1609	40	40	Pass	TH
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PAGE TOTAL							194.4									

TEST METHOD
AL - AIR LANCE
AP - AIR PRESSURE
PS - POINT STRESS
ST - SPARK TEST
VB - EXTRUDED & VAC BOX

REMARKS:

QC TECH Thomas Howald
SUPERVISOR Chad Messervey
SUBMISSION DATE 2020/01/05
SHEET NUMBER 97 of 113

GEOMEMBRANE SEAM & TEST LOG

PROJECT NUMBER CT001401 | AREA / LAYER Primary
PROJECT TITLE Victoria Gold Heap Leach Pad Phase 1B | SEAM DATE 2020/09/07

TRIAL SEAMS

#	MACHINE NUMBER	TIME	TECH	AIR TEMP °C	SPEED	TEMP/ SETTING	INSIDE PEEL (PPI)					OUTSIDE PEEL (PPI)					SHEAR (PPI)					CHK'D BY	LINER TO LINER TYPE AND REMARKS
1	WW-45	1030	EA	10	35.0%	454°C	149	159	162	144	146	159	147	151	149	139	173	171	183	176	176	TH	TT
2	WW-54	1030	DT	10	35.0%	454°C	148	158	134	160	168	143	157	159	160	144	172	175	170	172	176	TH	TT
3	WW-22	1030	JK	10	35.0%	454°C	150	148	160	157	157	142	164	154	157	156	178	172	175	172	177	TH	TT
4	WW-45	1030	EA	10	55.0%	454°C	143	146	138	147	144	138	137	139	139	141	169	171	171	171	166	TH	SS
5	WW-54	1030	DT	10	55.0%	454°C	157	149	154	158	148	142	142	143	143	140	171	167	167	167	167	TH	SS
6	WW-22	1030	JK	10	55.0%	454°C	143	147	138	141	137	148	150	147	147	130	158	159	157	159	159	TH	SS

WELD SEAMS

PANEL NUMBERS	SEAM SECTION FROM	SEAM SECTION TO	START TIME	AIR TEMP °C	WELD TECH	MACHINE NUMBER	WELD LENGTH	DESTRUCT NUMBER	QC TEST METH.	QC TEST DATE Y-M-D	AIR PRESSURE TEST (PSI) TIME START	TIME END	PRESSURE START	PRESSURE END	VERIFY PASS	VERIFY QC TECH
548 / 547	SEOS	NEOS	1040	15	EA	WW-45	6.8		AP+PS	9/12/2020	1649	1654	40	39	Pass	TH
545 / 547	WEOS	EEOS	1100	15	EA	WW-45	21.0		AP+PS	9/12/2020	1650	1655	40	40	Pass	TH
549 / 548	SEOS	NEOS	1102	15	JK	WW-22	6.8		AP+PS	9/12/2020	1452	1457	40	40	Pass	TH
546 / 549	WEOS	EEOS	1111	15	JK	WW-22	62.9		AP+PS	9/12/2020	1508	1513	40	40	Pass	TH
545 / 548	WEOS	EEOS	1111	15	EA	WW-45	84.9		AP+PS	9/12/2020	1522	1527	40	40	Pass	TH
546 / 548	WEOS	EEOS	1150	15	EA	WW-45	43.1		AP+PS	9/12/2020	1453	1458	40	40	Pass	TH
552 / 551	SEOS	NEOS	1240	15	JK	WW-22	6.8		AP+PS	9/12/2020	1231	1236	40	40	Pass	TH
551 / 550	SEOS	NEOS	1240	15	JL	WW-54	6.8		AP+PS	9/14/2020	1248	1253	40	40	Pass	TH
547 / 550	WEOS	EEOS	1250	15	JL	WW-54	18.6	DS-267	AP+PS	9/12/2020	1649	1654	40	40	Pass	TH
549 / 551	WEOS	EEOS	1300	15	JK	WW-22	41.6		AP+PS	9/12/2020	1452	1457	40	40	Pass	TH
548 / 550	WEOS	EEOS	1300	15	JL	WW-54	42.3		AP+PS	9/14/2020	1249	1254	40	40	Pass	TH
549 / 552	WEOS	EEOS	1318	15	JK	WW-22	21.5	DS-250 & 27	AP+PS	9/12/2020	1231	1236	40	40	Pass	TH
548 / 551	WEOS	56P	1318	15	JL	WW-54	65.7		AP+PS	9/12/2020	1506	1511	40	39	Pass	TH
548 / 551	56P	EEOS	1325	15	JL	WW-54	20.0		AP+PS	9/14/2020	1249	1254	40	40	Pass	TH
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PAGE TOTAL 448.8

TEST METHOD
AL - AIR LANCE | ST - SPARK TEST
AP - AIR PRESSURE | VB - EXTRUDED & VAC BOX
PS - POINT STRESS

REMARKS:

QC TECH Thomas Howald
SUPERVISOR Chad Messervey
SUBMISSION DATE 2020/01/05
SHEET NUMBER 98 of 113

GEOMEMBRANE SEAM & TEST LOG

PROJECT NUMBER CT001401 | AREA / LAYER Primary
PROJECT TITLE Victoria Gold Heap Leach Pad Phase 1B | SEAM DATE 2020/09/07

TRIAL SEAMS

#	MACHINE NUMBER	TIME	TECH	AIR TEMP °C	SPEED	TEMP/ SETTING	INSIDE PEEL (PPI)					OUTSIDE PEEL (PPI)					SHEAR (PPI)					CHK'D BY	LINER TO LINER TYPE AND REMARKS

WELD SEAMS

PANEL NUMBERS	SEAM SECTION FROM	SEAM SECTION TO	START TIME	AIR TEMP °C	WELD TECH	MACHINE NUMBER	WELD LENGTH	DESTRUCT NUMBER	QC TEST METH.	QC TEST DATE Y-M-D	AIR PRESSURE TEST (PSI) TIME START	TIME END	PRESSURE START	PRESSURE END	VERIFY PASS	VERIFY QC TECH
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TEST METHOD

AL - AIR LANCE	ST - SPARK TEST
AP - AIR PRESSURE	VB - EXTRUDED & VAC BOX
PS - POINT STRESS	

REMARKS:

QC TECH Thomas Howald
SUPERVISOR Chad Messervey
SUBMISSION DATE 2020/01/05
SHEET NUMBER 99 of 113

GEOMEMBRANE SEAM & TEST LOG

PROJECT NUMBER CT001401 | AREA / LAYER Primary
PROJECT TITLE Victoria Gold Heap Leach Pad Phase 1B | SEAM DATE 2020/09/08

TRIAL SEAMS

#	MACHINE NUMBER	TIME	TECH	AIR TEMP °C	SPEED	TEMP/ SETTING	INSIDE PEEL (PPI)					OUTSIDE PEEL (PPI)					SHEAR (PPI)					CHK'D BY	LINER TO LINER TYPE AND REMARKS
1	WW-45	840	EA	10	35.0%	454°C	133	157	152	150	149	140	145	161	149	151	166	167	165	182	162	TH	TT
2	WW-22	840	JK	10	35.0%	454°C	155	173	178	160	143	151	154	154	161	142	173	175	178	167	184	TH	TT
3	WW-45	840	EA	10	55.0%	454°C	145	144	140	145	137	146	152	157	151	152	163	166	169	169	164	TH	SS
4	WW-22	840	JK	10	55.0%	454°C	161	166	137	145	137	150	136	150	142	143	167	167	166	170	169	TH	SS
5	WW-54	840	JL	10	55.0%	454°C	137	147	147	142	149	143	153	143	148	143	169	163	161	164	162	TH	SS
6	WW-45	1300	EA	10	35.0%	454°C	152	132	163	155	138	147	156	122	153	155	170	173	170	173	179	TH	TT

WELD SEAMS

PANEL NUMBERS	SEAM SECTION FROM	SEAM SECTION TO	START TIME	AIR TEMP °C	WELD TECH	MACHINE NUMBER	WELD LENGTH	DESTRUCT NUMBER	QC TEST METH.	QC TEST DATE Y-M-D	AIR PRESSURE TEST (PSI) TIME START	TIME END	PRESSURE START	PRESSURE END	VERIFY PASS	VERIFY QC TECH
553 / 554	SEOS	NEOS	902	10	EA	WW-45	6.8		AP+PS	9/12/2020	1435	1440	40	40	Pass	TH
552 / 554	EEOS	WEOS	911	10	JK	WW-22	21.9		AP+PS	9/12/2020	1232	1237	40	40	Pass	TH
551 / 553	EEOS	WEOS	911	10	EA	WW-45	27.2		AP+PS	9/14/2020	1248	1253	40	40	Pass	TH
551 / 554	EEOS	WEOS	919	10	JK	WW-22	79.6		AP+PS	9/12/2020	1436	1441	40	40	Pass	TH
550 / 553	EEOS	WEOS	925	10	EA	WW-45	76.6	DS-253	AP+PS	9/14/2020	1248	1253	40	40	Pass	TH
562 / 564	EEOS	WEOS	945	10	RGP	WW-54	4.0	DS-252	AP+PS	9/12/2020	1301	1306	40	40	Pass	TH
561 / 564	EEOS	WEOS	951	10	RGP	WW-54	74.2		AP+PS	9/12/2020	1301	1306	40	40	Pass	TH
555 / 556	SEOS	NEOS	1021	10	EA	WW-45	6.8		AP+PS	9/12/2020	1635	1640	40	39	Pass	TH
560 / 563	EEOS	56S	1028	10	RGP	WW-54	50.0	DS-262	AP+PS	9/12/2020	1521	1526	40	39	Pass	TH
556 / 557	SEOS	NEOS	1039	10	JK	WW-22	6.8		AP+PS	9/12/2020	1234	1239	40	40	Pass	TH
554 / 557	EEOS	55G	1040	10	JL	WW-54	10.1		AP+PS	9/12/2020	1257	1302	40	40	Pass	TH
553 / 556	EEOS	WEOS	1042	10	EA	WW-54	78.4		AP+PS	9/12/2020	1435	1440	40	40	Pass	TH
554 / 557	55G	WEOS	1043	10	JL	WW-54	42.0		AP+PS	9/12/2020	1234	1239	40	38	Pass	TH
554 / 556	EEOS	WEOS	1059	10	JL	WW-54	49.6		AP+PS	9/12/2020	1435	1440	40	40	Pass	TH
553 / 555	EEOS	WEOS	1113	10	EA	WW-45	25.4	DS-260	AP+PS	9/12/2020	1637	1342	40	40	Pass	TH
558 / 559	SEOS	NEOS	1335	10	EA	WW-45	6.8		AP+PS	9/12/2020	1512	1517	40	39	Pass	TH
556 / 558	EEOS	WEOS	1340	10	EA	WW-45	51.9		AP+PS	9/12/2020	1512	1517	40	40	Pass	TH
557 / 559	EEOS	WEOS	1400	10	JK	WW-22	52.8	DS-269	AP+PS	9/12/2020	1235	1240	40	40	Pass	TH
555 / 558	EEOS	WEOS	1401	10	EA	WW-45	23.3	DS-261	AP+PS	9/12/2020	1635	1640	40	40	Pass	TH
556 / 559	EEOS	WEOS	1417	10	JK	WW-22	76.1		AP+PS	9/12/2020	1512	1517	40	40	Pass	TH
						PAGE TOTAL	770.3									

TEST METHOD
AL - AIR LANCE | ST - SPARK TEST
AP - AIR PRESSURE | VB - EXTRUDED & VAC BOX
PS - POINT STRESS

REMARKS:

QC TECH Thomas Howald
SUPERVISOR Chad Messervey
SUBMISSION DATE 2020/01/05
SHEET NUMBER 100 of 113

GEOMEMBRANE SEAM & TEST LOG

PROJECT NUMBER CT001401 | AREA / LAYER Primary
PROJECT TITLE Victoria Gold Heap Leach Pad Phase 1B | SEAM DATE 2020/09/08

TRIAL SEAMS

#	MACHINE NUMBER	TIME	TECH	AIR TEMP °C	SPEED	TEMP/ SETTING	INSIDE PEEL (PPI)					OUTSIDE PEEL (PPI)					SHEAR (PPI)					CHK'D BY	LINER TO LINER TYPE AND REMARKS
7	WW-54	1300	JL	10	35.0%	454°C	126	143	152	148	151	153	144	144	149	120	168	174	175	166	158	TH	TT
8	WW-45	1300	EA	10	55.0%	454°C	149	148	145	139	138	143	139	147	135	145	161	160	162	160	158	TH	SS
9	WW-22	1300	JK	10	55.0%	454°C	130	136	139	126	130	146	146	137	144	131	148	162	160	161	161	TH	SS
10	WW-54	1300	JL	10	55.0%	454°C	150	142	147	146	145	141	138	138	138	140	160	160	160	149	162	TH	SS

WELD SEAMS

PANEL NUMBERS	SEAM SECTION FROM	SEAM SECTION TO	START TIME	AIR TEMP °C	WELD TECH	MACHINE NUMBER	WELD LENGTH	DESTRUCT NUMBER	QC TEST METH.	QC TEST DATE Y-M-D	AIR PRESSURE TEST (PSI) TIME START	TIME END	PRESSURE START	PRESSURE END	VERIFY PASS	VERIFY QC TECH
558 / 560	EEOS	WEOS	1626	10	JK	WW-22	75.2	DS-254	AP+PS	9/12/2020	1513	1518	40	40	Pass	TH
560 / 561	SEOS	NEOS	1632	10	EA	WW-45	6.8		AP+PS	9/12/2020	1408	1413	40	40	Pass	TH
561 / 562	SEOS	NEOS	1640	10	JL	WW-54	6.8	DS-272	AP+PS	9/12/2020	1300	1305	40	39	Pass	TH
559 / 561	EEOS	WEOS	1650	10	JL	WW-54	74.2	DS-251B	AP+PS	9/12/2020	1300	1305	40	40	Pass	TH
559 / 560	EEOS	WEOS	1725	10	JL	WW-54	51.4		AP+PS	9/12/2020	1408	1413	40	40	Pass	TH
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PAGE TOTAL							214.4									

TEST METHOD

AL - AIR LANCE	ST - SPARK TEST
AP - AIR PRESSURE	VB - EXTRUDED & VAC BOX
PS - POINT STRESS	

REMARKS:

QC TECH: Thomas Howald
SUPERVISOR: Chad Messervey
SUBMISSION DATE: 2020/01/05
SHEET NUMBER: 101 of 113

GEOMEMBRANE SEAM & TEST LOG

PROJECT NUMBER CT001401 | AREA / LAYER Primary
PROJECT TITLE Victoria Gold Heap Leach Pad Phase 1B | SEAM DATE 2020/09/09

TRIAL SEAMS

#	MACHINE NUMBER	TIME	TECH	AIR TEMP °C	SPEED	TEMP/ SETTING	INSIDE PEEL (PPI)					OUTSIDE PEEL (PPI)					SHEAR (PPI)					CHK'D BY	LINER TO LINER TYPE AND REMARKS
1	WW-45	900	EA	10	35.0%	454°C	147	142	131	125	146	140	147	147	147	145	171	173	178	180	174	TH	TT
2	WW-54	900	RGP	10	35.0%	454°C	145	162	164	152	169	116	150	142	146	139	169	172	172	172	169	TH	TT
3	WW-22	900	JK	10	35.0%	454°C	155	139	142	149	154	152	128	150	124	120	172	167	169	164	171	TH	TT
4	WW-45	900	EA	10	55.0%	454°C	119	130	131	134	126	139	146	142	146	145	155	148	159	159	153	TH	SS
5	WW-54	900	RGP	10	55.0%	454°C	131	136	140	124	129	142	140	142	136	136	156	154	148	151	152	TH	SS
6	WW-22	900	JK	10	55.0%	454°C	124	139	130	133	120	138	139	142	138	140	135	132	141	142	141	TH	SS

WELD SEAMS

PANEL NUMBERS	SEAM SECTION FROM	SEAM SECTION TO	START TIME	AIR TEMP °C	WELD TECH	MACHINE NUMBER	WELD LENGTH	DESTRUCT NUMBER	QC TEST METH.	QC TEST DATE Y-M-D	AIR PRESSURE TEST (PSI) TIME START	TIME END	PRESSURE START	PRESSURE END	VERIFY PASS	VERIFY QC TECH
563 / 564	SEOS	NEOS	950	10	EA	WW-45	6.8		AP+PS	9/12/2020	1406	1411	40	40	Pass	TH
565 / 566	SEOS	NEOS	1017	10	EA	WW-45	6.8		AP+PS	9/12/2020	1620	1625	40	40	Pass	TH
563 / 566	57B	WEOS	1029	10	EA	WW-45	36.7		AP+PS	9/12/2020	1527	1532	40	40	Pass	TH
560 / 563	56S	WEOS	1039	10	RGP	WW-54	75.2	DS-262	AP+PS	9/12/2020	1521	1526	40	39	Pass	TH
566 / 567	SEOS	NEOS	1040	10	JK	WW-22	6.8		AP+PS	9/12/2020	1312	1317	40	40	Pass	TH
563 / 565	EEOS	WEOS	1042	10	EA	WW-45	45.1		AP+PS	9/12/2020	1621	1626	40	40	Pass	TH
564 / 567	EEOS	WEOS	1044	10	JK	WW-22	34.1	DS-266	AP+PS	9/12/2020	1312	1317	40	39	Pass	TH
564 / 566	EEOS	WEOS	1056	10	JK	WW-22	48.5		AP+PS	9/12/2020	1406	1411	40	40	Pass	TH
563 / 566	EEOS	57B	1112	10	JK	WW-22	43.2		AP+PS	9/12/2020	1406	1411	40	40	Pass	TH
567 / 569	EEOS	WEOS	1304	10	RGP	WW-54	37.7	DS-264	AP+PS	9/12/2020	1313	1318	40	40	Pass	TH
566 / 569	EEOS	WEOS	1321	10	RGP	WW-54	83.9		AP+PS	9/12/2020	1532	1537	40	40	Pass	TH
568 / 569	SEOS	NEOS	1325	10	EA	WW-45	6.8		AP+PS	9/14/2020	1224	1229	40	40	Pass	TH
566 / 568	EEOS	WEOS	1339	10	EA	WW-45	44.4		AP+PS	9/12/2020	1532	1537	40	40	Pass	TH
565 / 568	EEOS	WEOS	1357	10	EA	WW-45	45.1	DS-271	AP+PS	9/12/2020	1620	1625	40	40	Pass	TH
570 / 571	SEOS	NEOS	1415	10	RGP	WW-54	6.8		AP+PS	9/14/2020	1221	1226	40	40	Pass	TH
569 / 571	WEOS	EEOS	1422	10	RGP	WW-54	85.9		AP+PS	9/14/2020	1221	1226	40	40	Pass	TH
568 / 570	WEOS	EEOS	1442	10	EA	WW-45	90.3	DS-268	AP+PS	9/14/2020	1224	1229	40	40	Pass	TH
569 / 570	WEOS	EEOS	1519	10	EA	WW-45	38.7		AP+PS	9/14/2020	1221	1226	40	39	Pass	TH
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PAGE TOTAL 742.8

TEST METHOD
AL - AIR LANCE | ST - SPARK TEST
AP - AIR PRESSURE | VB - EXTRUDED & VAC BOX
PS - POINT STRESS

REMARKS:

QC TECH Thomas Howald
SUPERVISOR Chad Messervey
SUBMISSION DATE 2020/01/05
SHEET NUMBER 102 of 113

GEOMEMBRANE SEAM & TEST LOG

PROJECT NUMBER CT001401 | AREA / LAYER Primary
PROJECT TITLE Victoria Gold Heap Leach Pad Phase 1B | SEAM DATE 2020/09/09

TRIAL SEAMS

#	MACHINE NUMBER	TIME	TECH	AIR TEMP °C	SPEED	TEMP/ SETTING	INSIDE PEEL (PPI)					OUTSIDE PEEL (PPI)					SHEAR (PPI)					CHK'D BY	LINER TO LINER TYPE AND REMARKS
7	WW-45	1300	EA	10	35.0%	454°C	146	140	132	149	142	132	141	149	131	136	173	170	170	173	170	TH	TT
8	WW-54	1300	RGP	10	35.0%	454°C	155	154	160	144	146	141	149	138	147	142	169	152	162	153	173	TH	TT
9	WW-22	1300	JK	10	35.0%	454°C	156	148	152	140	125	122	149	129	147	141	159	166	156	171	155	TH	TT
10	WW-45	1300	EA	10	55.0%	454°C	137	128	138	136	139	139	136	135	133	139	155	149	153	151	157	TH	SS
11	WW-54	1300	RGP	10	55.0%	454°C	134	126	136	143	129	137	129	137	119	136	152	153	156	156	154	TH	SS
12	WW-22	1300	JK	10	55.0%	454°C	123	136	151	141	148	146	148	129	144	146	156	145	158	157	156	TH	SS

WELD SEAMS

PANEL NUMBERS	SEAM SECTION FROM	SEAM SECTION TO	START TIME	AIR TEMP °C	WELD TECH	MACHINE NUMBER	WELD LENGTH	DESTRUCT NUMBER	QC TEST METH.	QC TEST DATE Y-M-D	AIR PRESSURE TEST (PSI) TIME START	TIME END	PRESSURE START	PRESSURE END	VERIFY PASS	VERIFY QC TECH
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TEST METHOD

AL - AIR LANCE	ST - SPARK TEST
AP - AIR PRESSURE	VB - EXTRUDED & VAC BOX
PS - POINT STRESS	

REMARKS:

QC TECH: Thomas Howald
SUPERVISOR: Chad Messervey
SUBMISSION DATE: 2020/01/05
SHEET NUMBER: 103 of 113

GEOMEMBRANE SEAM & TEST LOG

PROJECT NUMBER CT001401 | AREA / LAYER Primary
PROJECT TITLE Victoria Gold Heap Leach Pad Phase 1B | SEAM DATE 2020/09/10

TRIAL SEAMS

#	MACHINE NUMBER	TIME	TECH	AIR TEMP °C	SPEED	TEMP/ SETTING	INSIDE PEEL (PPI)					OUTSIDE PEEL (PPI)					SHEAR (PPI)					CHK'D BY	LINER TO LINER TYPE AND REMARKS
1	WW-22	1045	JK	10	35.0%	454°C	151	161	160	161	150	115	148	128	141	154	171	172	174	176	174	TH	TT
2	WW-54	1045	RGP	10	35.0%	454°C	158	153	159	157	155	157	151	156	162	146	174	165	166	157	177	TH	TT
3	WW-26	1045	EA	10	55.0%	454°C	158	152	144	153	150	145	139	117	147	125	155	147	157	160	157	TH	SS
4	WW-22	1045	JK	10	55.0%	454°C	143	145	142	146	148	147	140	142	159	139	166	164	165	164	165	TH	SS
5	WW-54	1045	RGP	10	55.0%	454°C	153	126	135	141	125	148	146	149	148	132	156	157	159	158	155	TH	SS
6	WW-22	1730	JK	10	35.0%	454°C	147	151	161	144	157	147	158	160	133	154	150	141	161	167	177	TH	TT

WELD SEAMS

PANEL NUMBERS	SEAM SECTION FROM	SEAM SECTION TO	START TIME	AIR TEMP °C	WELD TECH	MACHINE NUMBER	WELD LENGTH	DESTRUCT NUMBER	QC TEST METH.	QC TEST DATE Y-M-D	AIR PRESSURE TEST (PSI) TIME START	TIME END	PRESSURE START	PRESSURE END	VERIFY PASS	VERIFY QC TECH
571 / 574	EEOS	WEOS	1103	10	RGP	WW-54	53.8	DS-259	AP+PS	9/12/2020	1330	1335	40	40	Pass	TH
573 / 574	SEOS	NEOS	1108	10	JK	WW-22	6.8		AP+PS	9/12/2020	1353	1358	40	40	Pass	TH
572 / 573	SEOS	NEOS	1119	10	JK	WW-22	6.8		AP+PS	9/12/2020	1614	1619	40	40	Pass	TH
571 / 573	EEOS	WEOS	1122	10	RGP	WW-54	36.5		AP+PS	9/14/2020	1222	1227	40	39	Pass	TH
570 / 573	EEOS	WEOS	1146	10	RGP	WW-54	91.3		AP+PS	9/14/2020	1222	1227	40	40	Pass	TH
570 / 572	EEOS	WEOS	1204	10	RGP	WW-54	38.5	DS-265	AP+PS	9/12/2020	1615	1620	40	40	Pass	TH
576 / 577	SEOS	NEOS	1313	10	RGP	WW-54	6.8		AP+PS	9/12/2020	1333	1338	40	40	Pass	TH
575 / 576	SEOS	NEOS	1344	10	JK	WW-22	6.8		AP+PS	9/12/2020	1602	1607	40	40	Pass	TH
573 / 575	EEOS	WEOS	1353	10	JK	WW-22	32.4		AP+PS	9/12/2020	1603	1608	40	38	Pass	TH
574 / 577	EEOS	WEOS	1354	10	RGP	WW-54	23.2	DS-263	AP+PS	9/12/2020	1333	1338	40	38	Pass	TH
574 / 576	EEOS	WEOS	1402	10	RGP	WW-54	32.6		AP+PS	9/12/2020	1333	1338	40	40	Pass	TH
572 / 575	EEOS	WEOS	1404	10	JK	WW-22	38.5	DS-255	AP+PS	9/12/2020	1614	1619	40	40	Pass	TH
573 / 576	EEOS	WEOS	1416	10	RGP	WW-54	95.4		AP+PS	9/12/2020	1354	1359	40	40	Pass	TH
579 / 580	SEOS	NEOS	1755	10	RGP	WW-54	6.8		AP+PS	9/14/2020	1640	1645	40	40	Pass	TH
578 / 579	SEOS	NEOS	1804	10	JK	WW-22	6.8		AP+PS	9/12/2020	1544	1549	40	40	Pass	TH
575 / 578	EEOS	WEOS	1809	10	JK	WW-22	71.4	DS-258	AP+PS	9/14/2020	1602	1607	40	40	Pass	TH
576 / 579	SEOS	NEOS	1812	10	RGP	WW-54	100.2		AP+PS	9/14/2020	1333	1338	40	40	Pass	TH
576 / 578	EEOS	WEOS	1819	10	RGP	WW-54	27.8		AP+PS	9/14/2020	1544	1549	40	40	Pass	TH
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PAGE TOTAL 682.4

TEST METHOD
AL - AIR LANCE | ST - SPARK TEST
AP - AIR PRESSURE | VB - EXTRUDED & VAC BOX
PS - POINT STRESS

REMARKS:

QC TECH Thomas Howald
SUPERVISOR Chad Messervey
SUBMISSION DATE 2020/01/05
SHEET NUMBER 104 of 113

GEOMEMBRANE SEAM & TEST LOG

PROJECT NUMBER CT001401 | AREA / LAYER Primary
PROJECT TITLE Victoria Gold Heap Leach Pad Phase 1B | SEAM DATE 2020/09/10

TRIAL SEAMS

#	MACHINE NUMBER	TIME	TECH	AIR TEMP °C	SPEED	TEMP/ SETTING	INSIDE PEEL (PPI)					OUTSIDE PEEL (PPI)					SHEAR (PPI)					CHK'D BY	LINER TO LINER TYPE AND REMARKS
7	WW-26	1730	EA	10	55.0%	454°C	142	140	137	135	139	139	145	143	145	151	166	166	161	167	162	TH	SS
8	WW-54	1730	RGP	10	55.0%	454°C	153	136	144	146	145	132	146	143	146	144	163	164	164	164	172	TH	SS
9	WW-22	1730	JK	10	55.0%	454°C	142	137	149	143	142	139	155	152	155	151	159	163	157	163	161	TH	SS
10	WW-54	1730	RGP	10	35.0%	454°C	169	147	144	153	130	126	150	168	142	153	177	173	185	162	184	TH	TT

WELD SEAMS

PANEL NUMBERS	SEAM SECTION FROM	SEAM SECTION TO	START TIME	AIR TEMP °C	WELD TECH	MACHINE NUMBER	WELD LENGTH	DESTRUCT NUMBER	QC TEST METH.	QC TEST DATE Y-M-D	AIR PRESSURE TEST (PSI) TIME START	TIME END	PRESSURE START	PRESSURE END	VERIFY PASS	VERIFY QC TECH
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TEST METHOD

AL - AIR LANCE	ST - SPARK TEST
AP - AIR PRESSURE	VB - EXTRUDED & VAC BOX
PS - POINT STRESS	

REMARKS:

QC TECH Thomas Howald
SUPERVISOR Chad Messervey
SUBMISSION DATE 2020/01/05
SHEET NUMBER 105 of 113

GEOMEMBRANE SEAM & TEST LOG

PROJECT NUMBER CT001401 | AREA / LAYER Primary
PROJECT TITLE Victoria Gold Heap Leach Pad Phase 1B | SEAM DATE 2020/09/11

TRIAL SEAMS

#	MACHINE NUMBER	TIME	TECH	AIR TEMP °C	SPEED	TEMP/ SETTING	INSIDE PEEL (PPI)					OUTSIDE PEEL (PPI)					SHEAR (PPI)					CHK'D BY	LINER TO LINER TYPE AND REMARKS
1	WW-22	1100	JK	10	35.0%	454°C	165	143	153	149	133	156	154	141	151	155	157	159	163	161	155	TH	TT
2	WW-22	1100	JK	10	55.0%	454°C	122	130	138	129	136	151	152	152	143	152	162	151	174	163	165	TH	SS
3	WW-54	1100	DT	10	35.0%	454°C	119	142	159	151	151	137	153	137	151	154	158	165	166	166	159	TH	TT
4	WW-54	1100	DT	10	55.0%	454°C	140	145	132	146	142	142	147	152	136	147	153	151	151	153	153	TH	SS
5	WW-26	1100	EA	10	35.0%	454°C	150	141	153	141	160	150	163	148	159	148	161	157	172	165	166	TH	TT
6	WW-26	1100	EA	10	55.0%	454°C	145	131	136	136	134	139	142	147	145	152	147	149	152	151	146	TH	SS

WELD SEAMS

PANEL NUMBERS	SEAM SECTION FROM	SEAM SECTION TO	START TIME	AIR TEMP °C	WELD TECH	MACHINE NUMBER	WELD LENGTH	DESTRUCT NUMBER	QC TEST METH.	QC TEST DATE Y-M-D	AIR PRESSURE TEST (PSI) TIME START	TIME END	PRESSURE START	PRESSURE END	VERIFY PASS	VERIFY QC TECH
581 / 582	SEOS	NEOS	1211	10	EA	WW-26	6.8		AP+PS	9/14/2020	1745	1750	40	40	Pass	TH
582 / 582	56E	NEOS	1225	10	DT	WW-54	3.0		AP+PS	9/14/2020	1642	1647	40	39	Pass	TH
579 / 581	EEOS	WEOS	1228	10	EA	WW-26	22.5		AP+PS	9/14/2020	1545	1550	40	40	Pass	TH
580 / 582	EEOS	WEOS	1230	10	DT	WW-54	4.0		AP+PS	9/14/2020	1640	1645	40	40	Pass	TH
579 / 582	EEOS	WEOS	1231	10	DT	WW-54	8.2		AP+PS	9/14/2020	1640	1645	40	40	Pass	TH
579 / 582	EEOS	WEOS	1232	10	DT	WW-54	100.1		AP+PS	9/14/2020	1642	1647	40	40	Pass	TH
578 / 581	EEOS	WEOS	1237	10	EA	WW-26	98.2	DS-257	AP+PS	9/14/2020	1545	1550	40	39	Pass	TH
583 / 584	SEOS	NEOS	1307	10	JK	WW-22	6.8		AP+PS	9/15/2020	1232	1237	40	40	Pass	TH
584 / 585	SEOS	NEOS	1320	10	DT	WW-54	6.8		AP+PS	9/14/2020	1650	1655	40	40	Pass	TH
582 / 585	EEOS	WEOS	1331	10	JK	WW-22	84.1	DS-278	AP+PS	9/14/2020	1650	1655	40	40	Pass	TH
582 / 584	EEOS	WEOS	1334	10	DT	WW-54	22.7		AP+PS	9/14/2020	1745	1750	40	40	Pass	TH
581 / 584	EEOS	60Q	1340	10	DT	WW-54	65.4		AP+PS	9/15/2020	1243	1248	40	40	Pass	TH
581 / 583	EEOS	WEOS	1343	10	DT	WW-54	15.3	DS-256	AP+PS	9/15/2020	1232	1237	40	40	Pass	TH
581 / 584	60Q	WEOS	1353	10	DT	WW-54	40.0		AP+PS	9/15/2020	1232	1237	40	40	Pass	TH
577 / 579	SEOS	NEOS	1802	10	RGP	WW-54	25.0		AP+PS	9/14/2020	1334	1339	40	40	Pass	TH
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PAGE TOTAL 508.9

TEST METHOD
AL - AIR LANCE | ST - SPARK TEST
AP - AIR PRESSURE | VB - EXTRUDED & VAC BOX
PS - POINT STRESS

REMARKS:

QC TECH Thomas Howald
SUPERVISOR Chad Messervey
SUBMISSION DATE 2020/01/05
SHEET NUMBER 106 of 113

GEOMEMBRANE SEAM & TEST LOG

PROJECT NUMBER CT001401 | AREA / LAYER Primary
PROJECT TITLE Victoria Gold Heap Leach Pad Phase 1B | SEAM DATE 2020/09/11

TRIAL SEAMS

#	MACHINE NUMBER	TIME	TECH	AIR TEMP °C	SPEED	TEMP/ SETTING	INSIDE PEEL (PPI)					OUTSIDE PEEL (PPI)					SHEAR (PPI)					CHK'D BY	LINER TO LINER TYPE AND REMARKS

WELD SEAMS

PANEL NUMBERS	SEAM SECTION FROM	SEAM SECTION TO	START TIME	AIR TEMP °C	WELD TECH	MACHINE NUMBER	WELD LENGTH	DESTRUCT NUMBER	QC TEST METH.	QC TEST DATE Y-M-D	AIR PRESSURE TEST (PSI) TIME START	TIME END	PRESSURE START	PRESSURE END	VERIFY PASS	VERIFY QC TECH
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PAGE TOTAL																

TEST METHOD

AL - AIR LANCE	ST - SPARK TEST
AP - AIR PRESSURE	VB - EXTRUDED & VAC BOX
PS - POINT STRESS	

REMARKS:

QC TECH Thomas Howald
SUPERVISOR Chad Messervey
SUBMISSION DATE 2020/01/05
SHEET NUMBER 107 of 113

GEOMEMBRANE SEAM & TEST LOG

PROJECT NUMBER CT001401 | AREA / LAYER Primary
PROJECT TITLE Victoria Gold Heap Leach Pad Phase 1B | SEAM DATE 2020/09/12

TRIAL SEAMS

#	MACHINE NUMBER	TIME	TECH	AIR TEMP °C	SPEED	TEMP/ SETTING	INSIDE PEEL (PPI)					OUTSIDE PEEL (PPI)					SHEAR (PPI)					CHK'D BY	LINER TO LINER TYPE AND REMARKS
1	WW-22	1020	JK	10	35.0%	454°C	153	147	161	146	162	161	127	161	160	141	211	198	198	205	204	TH	TT
2	WW-26	1020	EA	10	35.0%	454°C	154	145	158	122	142	133	131	135	140	145	174	147	173	173	174	TH	TT
3	WW-54	1020	DT	10	55.0%	454°C	146	147	146	142	150	144	136	126	136	154	161	163	163	161	148	TH	SS
4	WW-22	1020	JK	10	55.0%	454°C	141	143	142	137	142	143	143	140	132	143	161	160	160	162	161	TH	SS
5	WW-26	1020	EA	10	55.0%	454°C	142	133	139	138	113	132	143	139	146	138	153	162	157	159	157	TH	SS
6	WW-54	1020	DT	10	35.0%	454°C	123	148	137	154	163	139	159	121	155	149	162	173	179	176	177	TH	TT

WELD SEAMS

PANEL NUMBERS	SEAM SECTION FROM	SEAM SECTION TO	START TIME	AIR TEMP °C	WELD TECH	MACHINE NUMBER	WELD LENGTH	DESTRUCT NUMBER	QC TEST METH.	QC TEST DATE Y-M-D	AIR PRESSURE TEST (PSI) TIME START	TIME END	PRESSURE START	PRESSURE END	VERIFY PASS	VERIFY QC TECH
586 / 587	SEOS	NEOS	1102	10	EA	WW-26	6.8		AP+PS	9/15/2020	1250	1255	40	40	Pass	TH
587 / 588	SEOS	NEOS	1121	10	EA	WW-26	6.8		AP+PS	9/14/2020	1758	1803	40	40	Pass	TH
584 / 587	EEOS	WEOS	1127	10	EA	WW-26	72.5		AP+PS	9/14/2020	1758	1803	40	40	Pass	TH
588 / 589	SEOS	NEOS	1128	10	JK	WW-22	6.8		AP+PS	9/14/2020	1651	1656	40	40	Pass	TH
585 / 589	EEOS	WEOS	1148	10	DT	WW-54	57.1	DS-280	AP+PS	9/14/2020	1651	1656	40	40	Pass	TH
584 / 586	EEOS	WEOS	1155	10	EA	WW-26	24.9		AP+PS	9/15/2020	1233	1238	40	40	Pass	TH
585 / 588	EEOS	WEOS	1206	10	DT	WW-54	21.4		AP+PS	9/14/2020	1650	1655	40	40	Pass	TH
584 / 588	EEOS	WEOS	1209	10	DT	WW-54	30.6		AP+PS	9/14/2020	1758	1803	40	40	Pass	TH
583 / 586	EEOS	WEOS	1210	10	EA	WW-26	14.3		AP+PS	9/15/2020	1233	1238	40	40	Pass	TH
590 / 591	SEOS	NEOS	1307	10	EA	WW-26	6.8		AP+PS	9/15/2020	1302	1307	40	40	Pass	TH
591 / 592	SEOS	NEOS	1316	10	JK	WW-22	6.8		AP+PS	9/14/2020	1711	1716	40	40	Pass	TH
587 / 591	EEOS	WEOS	1319	10	EA	WW-26	41.7		AP+PS	9/14/2020	1759	1804	40	40	Pass	TH
589 / 592	EEOS	WEOS	1322	10	JK	WW-22	16.1	DS-286	AP+PS	9/14/2020	1711	1716	40	40	Pass	TH
588 / 591	EEOS	WEOS	1324	10	DT	WW-54	52.0		AP+PS	9/14/2020	1759	1804	40	40	Pass	TH
589 / 591	EEOS	58O	1328	10	JK	WW-22	18.6		AP+PS	9/14/2020	1711	1716	40	40	Pass	TH
589 / 591	58O	WEOS	1335	10	JK	WW-22	15.0		AP+PS	9/14/2020	1653	1658	40	40	Pass	TH
587 / 590	EEOS	WEOS	1336	10	EA	WW-26	30.6		AP+PS	9/15/2020	1250	1255	40	40	Pass	TH
586 / 590	EEOS	WEOS	1347	10	EA	WW-26	38.4		AP+PS	9/15/2020	1250	1255	40	40	Pass	TH
593 / 594	SEOS	NEOS	1405	10	DT	WW-54	6.8		AP+PS	9/14/2020	1811	1816	40	40	Pass	TH
591 / 593	EEOS	WEOS	1420	10	DT	WW-54	42.9		AP+PS	9/14/2020	1812	1817	40	40	Pass	TH
						PAGE TOTAL	516.9									

TEST METHOD
AL - AIR LANCE | ST - SPARK TEST
AP - AIR PRESSURE | VB - EXTRUDED & VAC BOX
PS - POINT STRESS

REMARKS:

QC TECH Thomas Howald
SUPERVISOR Chad Messervey
SUBMISSION DATE 2020/01/05
SHEET NUMBER 108 of 113

GEOMEMBRANE SEAM & TEST LOG

PROJECT NUMBER CT001401 | AREA / LAYER Primary
PROJECT TITLE Victoria Gold Heap Leach Pad Phase 1B | SEAM DATE 2020/09/12

TRIAL SEAMS

#	MACHINE NUMBER	TIME	TECH	AIR TEMP °C	SPEED	TEMP/ SETTING	INSIDE PEEL (PPI)					OUTSIDE PEEL (PPI)					SHEAR (PPI)					CHK'D BY	LINER TO LINER TYPE AND REMARKS
7	WW-22	1430	JK	10	35.0%	454°C	155	150	159	151	152	149	151	162	143	150	159	169	169	163	165	TH	TT
8	WW-22	1430	JK	10	55.0%	454°C	136	131	149	145	134	129	140	128	144	140	150	154	152	149	156	TH	SS
9	WW-54	1430	DT	10	35.0%	454°C	126	151	143	153	149	150	140	138	139	152	161	170	171	170	169	TH	TT
10	WW-54	1430	DT	10	55.0%	454°C	145	149	139	141	136	143	146	139	138	141	154	157	153	145	154	TH	SS
11	WW-26	1430	EA	10	35.0%	454°C	139	145	150	112	154	136	131	152	132	128	163	165	172	160	127	TH	TT
12	WW-26	1430	EA	10	55.0%	454°C	137	129	112	158	151	152	153	151	107	138	158	156	157	155	161	TH	SS

WELD SEAMS

PANEL NUMBERS	SEAM SECTION FROM	SEAM SECTION TO	START TIME	AIR TEMP °C	WELD TECH	MACHINE NUMBER	WELD LENGTH	DESTRUCT NUMBER	QC TEST METH.	QC TEST DATE Y-M-D	AIR PRESSURE TEST (PSI) TIME START	TIME END	PRESSURE START	PRESSURE END	VERIFY PASS	VERIFY QC TECH
592 / 594	EEOS	WEOS	1430	10	JK	WW-22	8.7	DS-277	AP+PS	9/14/2020	1712	1717	40	40	Pass	TH
591 / 594	EEOS	WEOS	1433	10	JK	WW-22	84.8		AP+PS	9/14/2020	1712	1717	40	40	Pass	TH
590 / 593	EEOS	WEOS	1438	10	DT	WW-54	68.0		AP+PS	9/15/2020	1302	1307	40	40	Pass	TH
595 / 596	SEOS	NEOS	1615	10	EA	WW-26	6.8		AP+PS	9/15/2020	1303	1308	40	40	Pass	TH
593 / 596	EEOS	WEOS	1623	10	JK	WW-22	76.3		AP+PS	9/14/2020	1811	1816	40	38	Pass	TH
596 / 597	SEOS	NEOS	1625	10	DT	WW-54	6.8		AP+PS	9/14/2020	1724	1729	40	39	Pass	TH
593 / 595	EEOS	WEOS	1628	10	EA	WW-26	30.9		AP+PS	9/15/2020	1724	1729	40	39	Pass	TH
597 / 598	SEOS	NEOS	1650	10	DT	WW-54	6.8		AP+PS	9/14/2020	1722	1727	40	40	Pass	TH
594 / 598	EEOS	WEOS	1656	10	DT	WW-54	7.0	DS-276	AP+PS	9/14/2020	1722	1727	40	40	Pass	TH
594 / 597	EEOS	WEOS	1700	10	DT	WW-54	26.7		AP+PS	9/14/2020	1722	1727	40	40	Pass	TH
594 / 596	EEOS	WEOS	1709	10	DT	WW-54	50.8		AP+PS	9/14/2020	1811	1816	40	40	Pass	TH
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PAGE TOTAL							373.6									

TEST METHOD
AL - AIR LANCE
AP - AIR PRESSURE
PS - POINT STRESS
ST - SPARK TEST
VB - EXTRUDED & VAC BOX

REMARKS:

QC TECH Thomas Howald
SUPERVISOR Chad Messervey
SUBMISSION DATE 2020/01/05
SHEET NUMBER 109 of 113

GEOMEMBRANE SEAM & TEST LOG

PROJECT NUMBER CT001401 | AREA / LAYER Primary
PROJECT TITLE Victoria Gold Heap Leach Pad Phase 1B | SEAM DATE 2020/09/13

TRIAL SEAMS

#	MACHINE NUMBER	TIME	TECH	AIR TEMP °C	SPEED	TEMP/ SETTING	INSIDE PEEL (PPI)					OUTSIDE PEEL (PPI)					SHEAR (PPI)					CHK'D BY	LINER TO LINER TYPE AND REMARKS
1	WW-22	1030	JK	10	35.0%	454°C	142	162	151	150	142	129	151	121	160	161	173	177	171	174	170	TH	TT
2	WW-26	1030	EA	10	35.0%	454°C	153	168	159	152	155	160	170	164	131	166	184	191	179	175	188	TH	TT
3	WW-54	1030	DT	10	55.0%	454°C	151	133	143	133	142	156	145	146	144	155	163	163	162	165	164	TH	SS
4	WW-22	1030	JK	10	55.0%	454°C	143	150	148	147	145	157	128	140	142	145	165	161	164	163	162	TH	SS
5	WW-26	1030	EA	10	55.0%	454°C	136	148	147	145	136	159	147	154	143	141	156	160	163	164	159	TH	SS
6	WW-54	1030	DT	10	35.0%	454°C	141	150	147	165	156	119	159	149	171	162	188	183	193	186	187	TH	TT

WELD SEAMS

PANEL NUMBERS	SEAM SECTION FROM	SEAM SECTION TO	START TIME	AIR TEMP °C	WELD TECH	MACHINE NUMBER	WELD LENGTH	DESTRUCT NUMBER	QC TEST METH.	QC TEST DATE Y-M-D	AIR PRESSURE TEST (PSI) TIME START	TIME END	PRESSURE START	PRESSURE END	VERIFY PASS	VERIFY QC TECH
599 / 600	SEOS	NEOS	1213	10	EA	WW-26	6.8		AP+PS	9/14/2020	1826	1831	40	40	Pass	TH
597 / 600	EEOS	61M	1216	10	DT	WW-54	9.9	DS-281	AP+PS	9/14/2020	1723	1728	40	40	Pass	TH
597 / 600	61M	WEOS	1216	10	DT	WW-54	6.0	DS-281	AP+PS	9/15/2020	1124	1129	40	40	Pass	TH
596 / 600	EEOS	WEOS	1227	10	DT	WW-54	62.8		AP+PS	9/14/2020	1826	1831	40	40	Pass	TH
596 / 599	EEOS	WEOS	1232	10	EA	WW-26	68.3		AP+PS	9/14/2020	1826	1831	40	39	Pass	TH
595 / 599	EEOS	WEOS	1242	10	EA	WW-26	29.9		AP+PS	9/15/2020	1303	1308	40	40	Pass	TH
601 / 602	SEOS	NEOS	1248	10	JK	WW-22	6.8		AP+PS	9/15/2020	1314	1319	40	40	Pass	TH
600 / 602	EEOS	WEOS	1304	10	DT	WW-54	69.8	DS-282	AP+PS	9/15/2020	1126	1131	40	40	Pass	TH
603 / 604	SEOS	NEOS	1309	10	JK	WW-22	6.8	DS-287	AP+PS	9/15/2020	1222	1227	40	40	Pass	TH
604 / 605	SEOS	NEOS	1324	10	EA	WW-26	6.8		AP+PS	9/15/2020	1128	1133	40	40	Pass	TH
599 / 601	EEOS	WEOS	1329	10	JK	WW-22	45.0		AP+PS	9/15/2020	1314	1319	40	40	Pass	TH
599 / 602	EEOS	WEOS	1331	10	DT	WW-54	51.8		AP+PS	9/15/2020	1126	1131	40	40	Pass	TH
602 / 605	EEOS	WEOS	1334	10	EA	WW-26	58.5	DS-283	AP+PS	9/15/2020	1128	1131	40	40	Pass	TH
601 / 604	EEOS	WEOS	1353	10	JK	WW-22	37.3		AP+PS	9/15/2020	1315	1320	40	40	Pass	TH
602 / 604	EEOS	WEOS	1358	10	EA	WW-26	54.6		AP+PS	9/15/2020	1128	1131	40	40	Pass	TH
601 / 603	EEOS	WEOS	1404	10	JK	WW-22	6.6		AP+PS	9/15/2020	1222	1227	40	40	Pass	TH
606 / 607	SEOS	NEOS	1425	10	EA	WW-26	6.8		AP+PS	9/15/2020	1131	1136	40	40	Pass	TH
604 / 606	EEOS	WEOS	1500	10	EA	WW-26	63.8		AP+PS	9/15/2020	1130	1135	40	40	Pass	TH
605 / 607	EEOS	WEOS	1503	10	DT	WW-54	49.1	DS-285	AP+PS	9/15/2020	1129	1134	40	40	Pass	TH
604 / 607	EEOS	WEOS	1526	10	DT	WW-54	26.4		AP+PS	9/15/2020	1129	1134	40	40	Pass	TH
						PAGE TOTAL	673.8									

TEST METHOD
AL - AIR LANCE | ST - SPARK TEST
AP - AIR PRESSURE | VB - EXTRUDED & VAC BOX
PS - POINT STRESS

REMARKS:

QC TECH: Thomas Howald
SUPERVISOR: Chad Messervey
SUBMISSION DATE: 2020/01/05
SHEET NUMBER: 110 of 113

GEOMEMBRANE SEAM & TEST LOG

PROJECT NUMBER CT001401 | AREA / LAYER Primary
PROJECT TITLE Victoria Gold Heap Leach Pad Phase 1B | SEAM DATE 2020/09/13

TRIAL SEAMS

#	MACHINE NUMBER	TIME	TECH	AIR TEMP °C	SPEED	TEMP/ SETTING	INSIDE PEEL (PPI)					OUTSIDE PEEL (PPI)					SHEAR (PPI)					CHK'D BY	LINER TO LINER TYPE AND REMARKS
7	WW-22	1430	JK	10	35.0%	454°C	119	156	147	154	153	160	153	145	140	127	167	181	168	178	178	TH	TT
8	WW-26	1430	EA	10	35.0%	454°C	159	155	142	156	147	136	135	142	152	160	165	172	164	173	169	TH	TT
9	WW-54	1430	DT	10	55.0%	454°C	150	143	146	142	146	147	144	154	137	160	165	164	148	167	168	TH	SS
10	WW-22	1430	JK	10	55.0%	454°C	150	146	141	150	144	149	142	144	142	151	163	164	165	164	163	TH	SS
11	WW-26	1430	EA	10	55.0%	454°C	133	147	141	135	147	143	147	152	142	146	158	159	159	159	159	TH	SS
12	WW-54	1430	DT	10	35.0%	454°C	146	155	156	143	145	147	150	160	131	136	168	173	171	170	174	TH	TT

WELD SEAMS

PANEL NUMBERS	SEAM SECTION FROM	SEAM SECTION TO	START TIME	AIR TEMP °C	WELD TECH	MACHINE NUMBER	WELD LENGTH	DESTRUCT NUMBER	QC TEST METH.	QC TEST DATE Y-M-D	AIR PRESSURE TEST (PSI) TIME START	TIME END	PRESSURE START	PRESSURE END	VERIFY PASS	VERIFY QC TECH
608 / 609	SEOS	NEOS	1604	10	JK	WW-22	6.8		AP+PS	9/15/2020	1150	1155	40	40	Pass	TH
607 / 609	EEOS	WEOS	1617	10	EA	WW-26	65.1	DS-284	AP+PS	9/15/2020	1131	1136	40	40	Pass	TH
606 / 608	EEOS	WEOS	1623	10	JK	WW-22	45.9		AP+PS	9/15/2020	1146	1151	40	40	Pass	TH
606 / 609	EEOS	WEOS	1719	10	JK	WW-22	11.4		AP+PS	9/15/2020	1131	1136	40	40	Pass	TH
610 / 611	SEOS	NEOS	1722	10	JK	WW-22	6.8		AP+PS	9/15/2020	1156	1201	40	40	Pass	TH
609 / 611	EEOS	WEOS	1723	10	DT	WW-54	62.5	DS-275	AP+PS	9/15/2020	1153	1158	40	39	Pass	TH
612 / 613	SEOS	NEOS	1746	10	JK	WW-22	6.8		AP+PS	9/15/2020	1202	1207	40	40	Pass	TH
609 / 610	EEOS	WEOS	1750	10	DT	WW-54	4.3		AP+PS	9/15/2020	1150	1155	40	40	Pass	TH
608 / 610	EEOS	WEOS	1751	10	DT	WW-54	43.9		AP+PS	9/15/2020	1150	1155	40	40	Pass	TH
611 / 613	EEOS	WEOS	1756	10	EA	WW-26	31.7		AP+PS	9/15/2020	1201	1206	40	40	Pass	TH
611 / 612	EEOS	WEOS	1809	10	EA	WW-26	20.0		AP+PS	9/15/2020	1156	1201	40	40	Pass	TH
610 / 612	EEOS	WEOS	1817	10	EA	WW-26	42.4		AP+PS	9/15/2020	1156	1201	40	40	Pass	TH
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PAGE TOTAL 347.6

TEST METHOD
AL - AIR LANCE | ST - SPARK TEST
AP - AIR PRESSURE | VB - EXTRUDED & VAC BOX
PS - POINT STRESS

REMARKS:

QC TECH Thomas Howald
SUPERVISOR Chad Messervey
SUBMISSION DATE 2020/01/05
SHEET NUMBER 111 of 113

GEOMEMBRANE SEAM & TEST LOG

PROJECT NUMBER CT001401 | AREA / LAYER Primary
PROJECT TITLE Victoria Gold Heap Leach Pad Phase 1B | SEAM DATE 2020/09/13

TRIAL SEAMS

#	MACHINE NUMBER	TIME	TECH	AIR TEMP °C	SPEED	TEMP/ SETTING	INSIDE PEEL (PPI)					OUTSIDE PEEL (PPI)					SHEAR (PPI)					CHK'D BY	LINER TO LINER TYPE AND REMARKS

WELD SEAMS

PANEL NUMBERS	SEAM SECTION FROM	SEAM SECTION TO	START TIME	AIR TEMP °C	WELD TECH	MACHINE NUMBER	WELD LENGTH	DESTRUCT NUMBER	QC TEST METH.	QC TEST DATE Y-M-D	AIR PRESSURE TEST (PSI) TIME START	TIME END	PRESSURE START	PRESSURE END	VERIFY PASS	VERIFY QC TECH
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TEST METHOD

AL - AIR LANCE	ST - SPARK TEST
AP - AIR PRESSURE	VB - EXTRUDED & VAC BOX
PS - POINT STRESS	

REMARKS:

QC TECH: Thomas Howald
SUPERVISOR: Chad Messervey
SUBMISSION DATE: 2020/01/05
SHEET NUMBER: 112 of 113

GEOMEMBRANE SEAM & TEST LOG

PROJECT NUMBER CT001401 | AREA / LAYER Primary
PROJECT TITLE Victoria Gold Heap Leach Pad Phase 1B | SEAM DATE 2020/09/14

TRIAL SEAMS

#	MACHINE NUMBER	TIME	TECH	AIR TEMP °C	SPEED	TEMP/ SETTING	INSIDE PEEL (PPI)					OUTSIDE PEEL (PPI)					SHEAR (PPI)					CHK'D BY	LINER TO LINER TYPE AND REMARKS
1	WW-22	940	JK	10	35.0%	454°C	149	144	168	131	149	163	157	127	172	162	197	202	196	201	196	TH	TT
2	WW-54	940	DT	10	55.0%	454°C	150	144	150	153	146	149	149	147	147	136	168	165	167	168	167	TH	SS
3	WW-26	940	EA	10	55.0%	454°C	146	149	142	133	141	150	149	142	146	141	166	166	166	169	167	TH	SS
4	WW-22	940	JK	10	55.0%	454°C	155	146	144	154	146	129	141	141	141	141	166	166	167	164	166	TH	SS
5	WW-54	940	DT	10	35.0%	454°C	159	177	169	154	141	154	169	173	161	180	178	183	191	186	185	TH	TT
6	WW-26	940	EA	10	35.0%	454°C	163	159	169	160	159	171	163	156	179	159	193	183	174	198	191	TH	TT

WELD SEAMS

PANEL NUMBERS	SEAM SECTION FROM	SEAM SECTION TO	START TIME	AIR TEMP °C	WELD TECH	MACHINE NUMBER	WELD LENGTH	DESTRUCT NUMBER	QC TEST METH.	QC TEST DATE Y-M-D	AIR PRESSURE TEST (PSI) TIME START	TIME END	PRESSURE START	PRESSURE END	VERIFY PASS	VERIFY QC TECH
613 / 614	EEOS	WEOS	1029	10	JK	WW-22	19.8		AP+PS	9/15/2020	1202	1207	40	39	Pass	TH
615 / 616	SEOS	NEOS	1030	10	EA	WW-26	6.8		AP+PS	9/15/2020	1208	1213	40	40	Pass	TH
612 / 614	EEOS	WEOS	1037	10	JK	WW-22	56.7		AP+PS	9/15/2020	1202	1207	40	40	Pass	TH
614 / 616	EEOS	WEOS	1038	10	EA	WW-26	37.1		AP+PS	9/15/2020	1208	1213	40	40	Pass	TH
614 / 615	EEOS	WEOS	1054	10	EA	WW-26	20.8	DS-274	AP+PS	9/15/2020	1208	1213	40	39	Pass	TH
616 / 617	EEOS	WEOS	1058	10	DT	WW-54	23.6		AP+PS	9/15/2020	1209	1214	40	40	Pass	TH
618 / 619	EEOS	WEOS	1107	10	EA	WW-26	6.2	DS-273	AP+PS	9/15/2020	1211	1216	40	40	Pass	TH
615 / 617	EEOS	WEOS	1109	10	DT	WW-54	13.7		AP+PS	9/15/2020	1209	1214	40	40	Pass	TH
617 / 618	EEOS	WEOS	1110	10	JK	WW-22	22.9		AP+PS	9/15/2020	1210	1215	40	40	Pass	TH
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PAGE TOTAL							207.6									

TEST METHOD
AL - AIR LANCE | ST - SPARK TEST
AP - AIR PRESSURE | VB - EXTRUDED & VAC BOX
PS - POINT STRESS

REMARKS:

QC TECH: Thomas Howald
SUPERVISOR: Chad Messervey
SUBMISSION DATE: 2020/01/05
SHEET NUMBER: 113 of 113

GEOMEMBRANE DETAIL & TEST LOG

PROJECT NUMBER CT001401 AREA / LAYER Primary

PROJECT TITLE Victoria Gold Heap Leach Pad Phase 1B

TRIAL SEAMS

#	MACHINE NUMBER	DATE YYYY-MM-DD	TIME	WELD TECH	AIR TEMP °C	PREHEAT TEMP °C	EXTRUDER TEMP °C	PEEL (PPI)					SHEAR (PPI)					CHK'D BY	REMARKS
1	EX-4037	2020/06/06	925	RP	15	235°C	254°C	113	124	121	112	129	159	160	153	151	153	TH	TT
2	EX-011	2020/06/09	745	RGP	10	260°C	268°C	124	147	144	140	145	164	162	163	159	167	TH	TT
3	EX-4037	2020/06/09	800	EA	10	260°C	257°C	92	115	100	107	115	160	149	162	162	165	TH	TT
4	EX-4037	2020/06/09	1030	EA	10	262°C	257°C	109	104	109	109	106	160	158	158	158	153	TH	TT
5	EX-011	2020/06/09	1030	RGP	10	260°C	268°C	99	99	95	91	95	163	170	165	163	163	TH	TT
6	EX-011	2020/06/09	1500	RGP	15	260°C	268°C	148	152	164	149	149	164	173	173	165	161	TH	TT

DETAIL CODE	PANEL NUMBER(S)	LOCATION DESCRIPTION	DETAIL TYPE	REPAIR TYPE	MACHINE NUMBER	REPAIR DATE YYYY-MM-DD	START TIME	WELD TECH	AIR TEMP °C	TEST DATE YYYY-MM-DD	TEST METH.	QC TECH
1A	2 /	1m From NEOS 1m East	D	P	EX-4037	2020/06/06	1025	RP	15	2020/06/06	VB+PS	TH
1B	2 / 4	NEOS	D	P	EX-011	2020/06/09	1009	RGP	15	2020/06/11	VB+PS	TH
1C	4 /	1m From NEOS 3m West	D	P	EX-4037	2020/06/06	1040	RP	15	2020/06/06	VB+PS	TH
1D	4 / 6	NEOS	WS	P	EX-011	2020/06/09	1128	RGP	15	2020/06/11	VB+PS	TH
1E	6 /	NEOS	D	P	EX-4037	2020/06/06	1050	RP	15	2020/06/06	VB+PS	TH
1F	6 /	NEOS	D	P	EX-4037	2020/06/06	1055	RP	15	2020/06/06	VB+PS	TH
1G	9 /	NEOS	D	P	EX-4037	2020/06/06	1100	RP	15	2020/06/06	VB+PS	TH
1H	9 /	NEOS	D	P	EX-4037	2020/06/06	1105	RP	15	2020/06/06	VB+PS	TH
1I	9 /	1m From NEOS 1m East	D	P	EX-4037	2020/06/06	1230	RP	15	2020/06/06	VB+PS	TH
1J	11 /	NEOS	D	P	EX-4037	2020/06/06	1250	RP	15	2020/06/06	VB+PS	TH
1K	11 /	NEOS	D	P	EX-4037	2020/06/06	1300	RP	15	2020/06/06	VB+PS	TH
1L	11 / 13	NEOS	WS	P	EX-011	2020/06/09	1223	RGP	15	2020/06/11	VB+PS	TH
1M	9 / 11	NEOS	D	P	EX-011	2020/06/09	1153	RGP	15	2020/06/11	VB+PS	TH
1N	13 /	NEOS	D	G&W	EX-4037	2020/06/06	1306	RP	15	2020/06/06	VB+PS	TH
1O	13 /	NEOS	D	G&W	EX-4037	2020/06/06	1307	RP	15	2020/06/06	VB+PS	TH
1P	13 /	NEOS	D	G&W	EX-4037	2020/06/06	1308	RP	15	2020/06/06	VB+PS	TH
1Q	13 / 15	NEOS	D	P	EX-011	2020/06/09	1247	RGP	15	2020/06/11	VB+PS	TH
1R	15 / 17	NEOS	D	P	EX-4037	2020/06/06	1315	RP	15	2020/06/06	VB+PS	TH
1S	11 /	NEOS	D	P	EX-4037	2020/06/06	1255	RP	15	2020/06/06	VB+PS	TH
1T	6 / 9	NEOS	WS	P	EX-011	2020/06/09	1043	RP	15	2020/06/11	VB+PS	TH

DETAIL TYPE:

AD - ANIMAL DAMAGE	DS-# - DESTRUCT SAMPLE NUMBER	IO - INSUFFICIENT OVERLAP	T - THREE PANEL INTERSECTION
ATL - AIR TEST LEAK	EE - EARTHWORK EQUIPMENT DAMAGE	MD - MANUFACTURER/DELIVERY DAMAGE	VL - VACUUM TEST LEAK
BO - FUSION WELDER BURN	EXT - EXTENSION	P - PENETRATION	WR - WRINKLE
CR - CREASE	FM - FISHMOUTH	PT - PRESSURE TEST CUT	WS - WELDER RESTART
D - INSTALLATION DAMAGE	FS - FAILED SEAM LENGTH	SI - SOIL SURFACE IRREGULARITY	OTHER:

TEST METHOD:

AL - AIR LANCE	VB - VAC BOX
PS - POINT STRESS	ST - SPARK TEST

REPAIR TYPE:

G&W - GRIND & WELD	B - BOOT	P - PATCH
HAW - HOT AIR WELD	C - CAP	

REMARKS

QC TECH Thomas Howald

SUPERVISOR Chad Messervey

SUBMISSION DATE 2020/01/05

SHEET NUMBER 1 of 117

GEOMEMBRANE DETAIL & TEST LOG

PROJECT NUMBER CT001401 AREA / LAYER Primary

PROJECT TITLE Victoria Gold Heap Leach Pad Phase 1B

TRIAL SEAMS

#	MACHINE NUMBER	DATE YYYY-MM-DD	TIME	WELD TECH	AIR TEMP °C	PREHEAT TEMP °C	EXTRUDER TEMP °C	PEEL (PPI)					SHEAR (PPI)					CHK'D BY	REMARKS
1	EX-4037	2020/06/07	805	RP	10	260°C	254°C	98	96	96	104	102	162	165	168	168	167	TH	TT
2	EX-4037	2020/06/07	1145	RP	10	260°C	254°C	147	146	148	139	149	165	165	168	169	168	TH	TT
3	EX-4037	2020/06/07	1540	RP	20	260°C	254°C	148	115	162	151	150	152	144	157	133	179	TH	TT
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DETAIL CODE	PANEL NUMBER(S)	LOCATION DESCRIPTION	DETAIL TYPE	REPAIR TYPE	MACHINE NUMBER	REPAIR DATE YYYY-MM-DD	START TIME	WELD TECH	AIR TEMP °C	TEST DATE YYYY-MM-DD	TEST METH.	QC TECH
2A	5 /	100.9m From NEOS 1m West	SI	P	EX-4037	2020/06/07	955	RP	15	2020/06/11	VB+PS	TH
2B	5 /	99.8m From NEOS 1.5m East	SI	P	EX-4037	2020/06/07	1345	RP	15	2020/06/11	VB+PS	TH
2C	5 /	97.1m From NEOS .5m East	SI	P	EX-4037	2020/06/07	1350	RP	15	2020/06/11	VB+PS	TH
2D	5 /	96.2m From NEOS 2.2m East	SI	P	EX-4037	2020/06/07	1355	RP	15	2020/06/11	VB+PS	TH
2E	8 / 10	106.7m From NEOS	DS-4	P	EX-4037	2020/06/07	945	RP	15	2020/06/11	VB+PS	TH
2F	8 /	82.7m From NEOS 3m West	D	P	EX-4037	2020/06/07	1315	RP	15	2020/06/11	VB+PS	TH
2G	8 /	77.3m From NEOS 3m West	D	P	EX-4037	2020/06/07	1310	RP	15	2020/06/11	VB+PS	TH
2H	5 / 6	At Intersection of P3	T	G&W	EX-4037	2020/06/07	1357	RP	15	2020/06/11	VB+PS	TH
2I	5 / 6	At Intersection of P8	T	G&W	EX-4037	2020/06/07	957	RP	15	2020/06/11	VB+PS	TH
2J	3 /	18m From SEOS 3m West	D	P	EX-4037	2020/06/07	1025	RP	15	2020/06/11	VB+PS	TH
2K	1 /	35.5m From SEOS 3m West	D	P	EX-4037	2020/06/07	1410	RP	15	2020/06/11	VB+PS	TH
2L	3 /	38.8m From SEOS 3m West	D	P	EX-4037	2020/06/07	1000	RP	15	2020/06/11	VB+PS	TH
2M	3 / 6	60.7m From SEOS	D	P	EX-4037	2020/06/07	1418	RP	15	2020/06/11	VB+PS	TH
2N	1 / 3	69.6m From SEOS	D	P	EX-4037	2020/06/07	1425	RP	15	2020/06/11	VB+PS	TH
2O	3 /	87m From SEOS 2.4m East	D	P	EX-4037	2020/06/07	1300	RP	15	2020/06/11	VB+PS	TH
2P	3 / 4	At Intersection Of P1	T	P	EX-4037	2020/06/07	1255	RP	15	2020/06/11	VB+PS	TH
2Q	3 / 4	88m From SEOS 3m West	PT	P	EX-4037	2020/06/07	1241	RP	15	2020/06/11	VB+PS	TH
2R	3 / 4	At Intersection Of P6	T	G&W	EX-4037	2020/06/07	1242	RP	15	2020/06/11	VB+PS	TH
2S	1 / 4	70m From SEOS	D	P	EX-4037	2020/06/07	1250	RP	15	2020/06/11	VB+PS	TH
2T	14 / 15	At Intersection Of P12	T	P	EX-4037	2020/06/07	1440	RP	15	2020/06/11	VB+PS	TH

DETAIL TYPE:

AD - ANIMAL DAMAGE	DS-# - DESTRUCT SAMPLE NUMBER	IO - INSUFFICIENT OVERLAP	T - THREE PANEL INTERSECTION
ATL - AIR TEST LEAK	EE - EARTHWORK EQUIPMENT DAMAGE	MD - MANUFACTURER/DELIVERY DAMAGE	VL - VACUUM TEST LEAK
BO - FUSION WELDER BURN	EXT - EXTENSION	P - PENETRATION	WR - WRINKLE
CR - CREASE	FM - FISHMOUTH	PT - PRESSURE TEST CUT	WS - WELDER RESTART
D - INSTALLATION DAMAGE	FS - FAILED SEAM LENGTH	SI - SOIL SURFACE IRREGULARITY	OTHER:

TEST METHOD:

AL - AIR LANCE	VB - VAC BOX
PS - POINT STRESS	ST - SPARK TEST

REPAIR TYPE:

G&W - GRIND & WELD	B - BOOT	P - PATCH
HAW - HOT AIR WELD	C - CAP	

REMARKS

QC TECH Thomas Howald

SUPERVISOR Chad Messervey

SUBMISSION DATE 2020/01/05

SHEET NUMBER 2 of 117

GEOMEMBRANE DETAIL & TEST LOG

PROJECT NUMBER CT001401 AREA / LAYER Primary

PROJECT TITLE Victoria Gold Heap Leach Pad Phase 1B

TRIAL SEAMS

#	MACHINE NUMBER	DATE YYYY-MM-DD	TIME	WELD TECH	AIR TEMP °C	PREHEAT TEMP °C	EXTRUDER TEMP °C	PEEL (PPI)					SHEAR (PPI)					CHK'D BY	REMARKS
1	EX-4037	2020/06/08	745	RP	15	260°C	257°C	113	112	111	123	117	169	172	167	167	169	TH	TT
2	EX-011	2020/06/08	825	RGP	15	268°C	260°C	102	101	111	113	105	167	163	169	167	179	TH	TT
3	EX-4037	2020/06/08	1140	EA	15	260°C	257°C	140	150	149	148	146	172	165	173	166	158	TH	TT
4	EX-011	2020/06/08	1300	RGP	15	260°C	268°C	138	151	145	144	117	189	189	188	187	182	TH	TT
5	EX-011	2020/06/09	745	RGP	10	260°C	268°C	124	147	144	140	145	164	162	163	159	167	TH	TT
6	EX-4037	2020/06/09	800	EA	10	260°C	257°C	92	115	100	107	115	160	149	162	162	165	TH	TT

DETAIL CODE	PANEL NUMBER(S)	LOCATION DESCRIPTION	DETAIL TYPE	REPAIR TYPE	MACHINE NUMBER	REPAIR DATE YYYY-MM-DD	START TIME	WELD TECH	AIR TEMP °C	TEST DATE YYYY-MM-DD	TEST METH.	QC TECH
3A	12 / 14	68.8m From NEOS	D	P	EX-4037	2020/06/08	1539	EA	15	2020/06/11	VB+PS	TH
3B	14 / 16	101.5m From NEOS	D	P	EX-4037	2020/06/08	930	EA	15	2020/06/11	VB+PS	TH
3C	7 / 5	2m From SEOS	IO	G&W	EX-4037	2020/06/08	1535	EA	15	2020/06/11	VB+PS	TH
3D	7 / 8	Intersection Of P5	T	G&W	EX-4037	2020/06/08	1534	EA	15	2020/06/11	VB+PS	TH
3E	7 / 8	Intersection Of P10	T	G&W	EX-4037	2020/06/08	1533	EA	15	2020/06/11	VB+PS	TH
3F	4 /	48m From NEOS 3m West	D	P	EX-4037	2020/06/08	1123	EA	15	2020/06/11	VB+PS	TH
3G	1 / 4	48m From NEOS	D	P	EX-4037	2020/06/08	1118	EA	15	2020/06/11	VB+PS	TH
3H	8 / 10	51.2m From NEOS	D	P	EX-4037	2020/06/08	1115	EA	15	2020/06/11	VB+PS	TH
3I	10 / 11	Intersection Of P8	T	P	EX-4037	2020/06/08	1038	EA	15	2020/06/11	VB+PS	TH
3J	10 /	28.8m From NEOS 2.6m East	D	P	EX-4037	2020/06/08	1048	EA	15	2020/06/11	VB+PS	TH
3K	10 /	29.8m From NEOS 1.3m East	D	P	EX-4037	2020/06/08	1050	EA	15	2020/06/11	VB+PS	TH
3L	10 /	30.8m From NEOS	D	P	EX-4037	2020/06/08	1052	EA	15	2020/06/11	VB+PS	TH
3M	10 /	31.8m From Neos 1.4m West	D	P	EX-4037	2020/06/08	1057	EA	15	2020/06/11	VB+PS	TH
3N	10 /	32.8m From NEOS 2.5m West	D	P	EX-4037	2020/06/08	1059	EA	15	2020/06/11	VB+PS	TH
3O	11 / 10	Intersection Of P13	T	G&W	EX-4037	2020/06/08	1101	EA	15	2020/06/11	VB+PS	TH
3P	10 / 13	35.8m From NEOS	BO	P	EX-4037	2020/06/08	1103	EA	15	2020/06/11	VB+PS	TH
3Q	10 / 12	40.3m From NEOS	D	P	EX-4037	2020/06/08	1110	EA	15	2020/06/11	VB+PS	TH
3R	1 / 2	Intersection Of P4	D	P	EX-011	2020/06/09	1606	RGP	15	2020/06/11	VB+PS	TH
3S	4 /	8.8m From NEOS 3.4m West	D	P	EX-011	2020/06/09	1350	RGP	15	2020/06/11	VB+PS	TH
3T	4 /	14.5m From NEOS 3.4m West	D	P	EX-011	2020/06/09	1352	RGP	15	2020/06/11	VB+PS	TH

DETAIL TYPE:

AD - ANIMAL DAMAGE	DS-# - DESTRUCT SAMPLE NUMBER	IO - INSUFFICIENT OVERLAP	T - THREE PANEL INTERSECTION
ATL - AIR TEST LEAK	EE - EARTHWORK EQUIPMENT DAMAGE	MD - MANUFACTURER/DELIVERY DAMAGE	VL - VACUUM TEST LEAK
BO - FUSION WELDER BURN	EXT - EXTENSION	P - PENETRATION	WR - WRINKLE
CR - CREASE	FM - FISHMOUTH	PT - PRESSURE TEST CUT	WS - WELDER RESTART
D - INSTALLATION DAMAGE	FS - FAILED SEAM LENGTH	SI - SOIL SURFACE IRREGULARITY	OTHER:

TEST METHOD:

AL - AIR LANCE	VB - VAC BOX
PS - POINT STRESS	ST - SPARK TEST

REPAIR TYPE:

G&W - GRIND & WELD	B - BOOT	P - PATCH
HAW - HOT AIR WELD	C - CAP	

REMARKS

QC TECH Thomas Howald

SUPERVISOR Chad Messervey

SUBMISSION DATE 2020/01/05

SHEET NUMBER 3 of 117

GEOMEMBRANE DETAIL & TEST LOG

PROJECT NUMBER CT001401 AREA / LAYER Primary

PROJECT TITLE Victoria Gold Heap Leach Pad Phase 1B

TRIAL SEAMS

#	MACHINE NUMBER	DATE YYYY-MM-DD	TIME	WELD TECH	AIR TEMP °C	PREHEAT TEMP °C	EXTRUDER TEMP °C	PEEL (PPI)					SHEAR (PPI)					CHK'D BY	REMARKS
1	EX-4037	2020/06/09	1030	EA	10	262°C	257°C	109	104	109	109	106	160	158	158	158	153	TH	TT
2	EX-011	2020/06/09	1030	RGP	10	260°C	268°C	99	99	95	91	95	163	170	165	163	163	TH	TT
3	EX-011	2020/06/09	1500	RGP	15	260°C	268°C	148	152	164	149	149	164	173	173	165	161	TH	TT
4																			
5																			
6																			

DETAIL CODE	PANEL NUMBER(S)	LOCATION DESCRIPTION	DETAIL TYPE	REPAIR TYPE	MACHINE NUMBER	REPAIR DATE YYYY-MM-DD	START TIME	WELD TECH	AIR TEMP °C	TEST DATE YYYY-MM-DD	TEST METH.	QC TECH
A	/											
B	/											
C	/											
D	/											
E	/											
F	/											
G	/											
H	/											
I	/											
J	/											
K	/											
L	/											
M	/											
N	/											
O	/											
P	/											
Q	/											
R	/											
S	/											
T	/											

DETAIL TYPE:

AD - ANIMAL DAMAGE	DS-# - DESTRUCT SAMPLE NUMBER	IO - INSUFFICIENT OVERLAP	T - THREE PANEL INTERSECTION
ATL - AIR TEST LEAK	EE - EARTHWORK EQUIPMENT DAMAGE	MD - MANUFACTURER/DELIVERY DAMAGE	VL - VACUUM TEST LEAK
BO - FUSION WELDER BURN	EXT - EXTENSION	P - PENETRATION	WR - WRINKLE
CR - CREASE	FM - FISHMOUTH	PT - PRESSURE TEST CUT	WS - WELDER RESTART
D - INSTALLATION DAMAGE	FS - FAILED SEAM LENGTH	SI - SOIL SURFACE IRREGULARITY	OTHER:

TEST METHOD:

AL - AIR LANCE	VB - VAC BOX
PS - POINT STRESS	ST - SPARK TEST

REPAIR TYPE:

G&W - GRIND & WELD	B - BOOT	P - PATCH
HAW - HOT AIR WELD	C - CAP	

REMARKS

QC TECH Thomas Howald

SUPERVISOR Chad Messervey

SUBMISSION DATE 2020/01/05

SHEET NUMBER 4 of 117

GEOMEMBRANE DETAIL & TEST LOG

PROJECT NUMBER CT001401 AREA / LAYER Primary

PROJECT TITLE Victoria Gold Heap Leach Pad Phase 1B

TRIAL SEAMS

#	MACHINE NUMBER	DATE YYYY-MM-DD	TIME	WELD TECH	AIR TEMP °C	PREHEAT TEMP °C	EXTRUDER TEMP °C	PEEL (PPI)					SHEAR (PPI)					CHK'D BY	REMARKS
1	EX-4037	2020/06/07	805	RP	10	260°C	254°C	98	96	96	104	102	162	165	168	168	167	TH	TT
2	EX-4037	2020/06/07	1145	RP	10	260°C	254°C	147	146	148	139	149	165	165	168	169	168	TH	TT
3	EX-4037	2020/06/07	1540	RP	20	260°C	254°C	148	115	162	151	150	152	144	157	133	179	TH	TT
4	EX-011	2020/06/09	745	RGP	10	260°C	268°C	124	147	144	140	145	164	162	163	159	167	TH	TT
5	EX-4037	2020/06/09	800	EA	10	260°C	257°C	92	115	100	107	115	160	149	162	162	165	TH	TT
6	EX-4037	2020/06/09	1030	EA	10	262°C	257°C	109	104	109	109	106	160	158	158	158	153	TH	TT

DETAIL CODE	PANEL NUMBER(S)	LOCATION DESCRIPTION	DETAIL TYPE	REPAIR TYPE	MACHINE NUMBER	REPAIR DATE YYYY-MM-DD	START TIME	WELD TECH	AIR TEMP °C	TEST DATE YYYY-MM-DD	TEST METH.	QC TECH
4A	4 /	22.8m From NEOS 3.4m West	D	P	EX-011	2020/06/09	1353	RGP	15	2020/06/11	VB+PS	TH
4B	8 / 9	Intersection Of P6	T	G&W	EX-011	2020/06/09	1310	RGP	15	2020/06/11	VB+PS	TH
4C	8 /	7.3m From NEOS 3m East	D	P	EX-011	2020/06/09	1311	RGP	15	2020/06/11	VB+PS	TH
4D	8 /	8.8m From NEOS 2m East	D	P	EX-011	2020/06/09	1313	RGP	15	2020/06/11	VB+PS	TH
4E	8 /	9.8m From NEOS 2m West	D	P	EX-011	2020/06/09	1315	RGP	15	2020/06/11	VB+PS	TH
4F	8 /	10.8m From NEOS 3m West	D	P	EX-011	2020/06/09	1317	RGP	15	2020/06/11	VB+PS	TH
4G	8 / 9	Intersection Of P11	T	G&W	EX-011	2020/06/09	1320	RGP	15	2020/06/11	VB+PS	TH
4H	1 / 3	26.6m From SEOS	D	P	EX-4037	2020/06/27	850	TH	10	2020/07/08	VB+PS	TH
4I	10 /	84.3m From NEOS 2m East	D	P	EX-4037	2020/06/07	1658	RP	15	2020/06/11	VB+PS	TH
4J	8 /	45.5m From NEOS 3m West	D	P	EX-4037	2020/06/18	1618	RP	15	2020/06/20	VB+PS	TH
4K	8 /	44.5m From NEOS 3m West	D	P	EX-4037	2020/06/18	1615	RP	15	2020/06/20	VB+PS	TH
4L	12 / 13	Intersection Of P10	T	G&W	EX-4037	2020/06/10	943	RP	15	2020/06/11	VB+PS	TH
4M	12 /	46.6m From NEOS 3m East	D	P	EX-4037	2020/06/10	1006	RP	15	2020/06/11	VB+PS	TH
4N	12 /	47.6m From NEOS 2m East	D	P	EX-4037	2020/06/10	950	RP	15	2020/06/11	VB+PS	TH
4O	12 /	48.6m From NEOS 1m East	D	P	EX-4037	2020/06/10	955	RP	15	2020/06/11	VB+PS	TH
4P	12 / 13	2m From P15	DS-5	P	EX-4037	2020/06/10	1000	RP	15	2020/06/11	VB+PS	TH
4Q	12 /	46.8m From NEOS 2m West	D	P	EX-4037	2020/06/10	1003	RP	15	2020/06/11	VB+PS	TH
4R	12 /	45.4m From NESO 3m West	D	P	EX-4037	2020/06/10	1010	RP	15	2020/06/11	VB+PS	TH
4S	12 / 13	Intersection Of P15	D	P	EX-4037	2020/06/10	1010	RP	15	2020/06/11	VB+PS	TH
4T	14 / 15	Intersection Of P17	T	G&W	EX-4037	2020/06/10	1452	RP	15	2020/06/11	VB+PS	TH

DETAIL TYPE:

AD - ANIMAL DAMAGE	DS-# - DESTRUCT SAMPLE NUMBER	IO - INSUFFICIENT OVERLAP	T - THREE PANEL INTERSECTION
ATL - AIR TEST LEAK	EE - EARTHWORK EQUIPMENT DAMAGE	MD - MANUFACTURER/DELIVERY DAMAGE	VL - VACUUM TEST LEAK
BO - FUSION WELDER BURN	EXT - EXTENSION	P - PENETRATION	WR - WRINKLE
CR - CREASE	FM - FISHMOUTH	PT - PRESSURE TEST CUT	WS - WELDER RESTART
D - INSTALLATION DAMAGE	FS - FAILED SEAM LENGTH	SI - SOIL SURFACE IRREGULARITY	OTHER:

TEST METHOD:

AL - AIR LANCE	VB - VAC BOX
PS - POINT STRESS	ST - SPARK TEST

REPAIR TYPE:

G&W - GRIND & WELD	B - BOOT	P - PATCH
HAW - HOT AIR WELD	C - CAP	

REMARKS

QC TECH Thomas Howald

SUPERVISOR Chad Messervey

SUBMISSION DATE 2020/01/05

SHEET NUMBER 5 of 117

GEOMEMBRANE DETAIL & TEST LOG

PROJECT NUMBER CT001401 AREA / LAYER Primary

PROJECT TITLE Victoria Gold Heap Leach Pad Phase 1B

TRIAL SEAMS

#	MACHINE NUMBER	DATE YYYY-MM-DD	TIME	WELD TECH	AIR TEMP °C	PREHEAT TEMP °C	EXTRUDER TEMP °C	PEEL (PPI)					SHEAR (PPI)					CHK'D BY	REMARKS
1	EX-011	2020/06/09	1030	RGP	10	260°C	268°C	99	99	95	91	95	163	170	165	163	163	TH	TT
2	EX-011	2020/06/09	1500	RGP	15	260°C	268°C	148	152	164	149	149	164	173	173	165	161	TH	TT
3	EX-4037	2020/06/10	910	EA	15	260°C	254°C	122	111	104	104	109	169	162	167	166	159	TH	TT
4	EX-4037	2020/06/10	915	RP	15	260°C	254°C	103	104	108	111	109	157	174	175	159	166	TH	TT
5	EX-4037	2020/06/10	1300	EA	15	260°C	254°C	138	144	155	144	141	162	156	167	177	168	TH	TT
6	EX-4037	2020/06/18	1300	EA	15	262°C	257°C	95	100	100	112	97	155	155	158	156	155	TH	TT

DETAIL CODE	PANEL NUMBER(S)	LOCATION DESCRIPTION	DETAIL TYPE	REPAIR TYPE	MACHINE NUMBER	REPAIR DATE YYYY-MM-DD	START TIME	WELD TECH	AIR TEMP °C	TEST DATE YYYY-MM-DD	TEST METH.	QC TECH
A	/											
B	/											
C	/											
D	/											
E	/											
F	/											
G	/											
H	/											
I	/											
J	/											
K	/											
L	/											
M	/											
N	/											
O	/											
P	/											
Q	/											
R	/											
S	/											
T	/											

DETAIL TYPE:

AD - ANIMAL DAMAGE	DS-# - DESTRUCT SAMPLE NUMBER	IO - INSUFFICIENT OVERLAP	T - THREE PANEL INTERSECTION
ATL - AIR TEST LEAK	EE - EARTHWORK EQUIPMENT DAMAGE	MD - MANUFACTURER/DELIVERY DAMAGE	VL - VACUUM TEST LEAK
BO - FUSION WELDER BURN	EXT - EXTENSION	P - PENETRATION	WR - WRINKLE
CR - CREASE	FM - FISHMOUTH	PT - PRESSURE TEST CUT	WS - WELDER RESTART
D - INSTALLATION DAMAGE	FS - FAILED SEAM LENGTH	SI - SOIL SURFACE IRREGULARITY	OTHER:

TEST METHOD:

AL - AIR LANCE	VB - VAC BOX
PS - POINT STRESS	ST - SPARK TEST

REPAIR TYPE:

G&W - GRIND & WELD	B - BOOT	P - PATCH
HAW - HOT AIR WELD	C - CAP	

REMARKS

QC TECH Thomas Howald

SUPERVISOR Chad Messervey

SUBMISSION DATE 2020/01/05

SHEET NUMBER 6 of 117

GEOMEMBRANE DETAIL & TEST LOG

PROJECT NUMBER CT001401 AREA / LAYER Primary

PROJECT TITLE Victoria Gold Heap Leach Pad Phase 1B

TRIAL SEAMS

#	MACHINE NUMBER	DATE YYYY-MM-DD	TIME	WELD TECH	AIR TEMP °C	PREHEAT TEMP °C	EXTRUDER TEMP °C	PEEL (PPI)					SHEAR (PPI)					CHK'D BY	REMARKS
1	EX-4037	2020/06/18	1300	RP	15	262°C	257°C	100	97	112	114	101	154	155	162	159	162	TH	TT
2	EX-4037	2020/06/18	1600	EA	15	262°C	257°C	134	118	127	126	130	148	160	156	163	159	TH	TT
3	EX-4037	2020/06/18	1600	RP	15	262°C	257°C	132	140	141	116	136	179	174	171	180	179	TH	TT
4	EX-4037	2020/06/27	800	TH	6	260°C	257°C	117	131	129	118	115	174	168	169	172	171	TH	TT
5	EX-4037	2020/06/27	1300	TH	10	260°C	257°C	147	144	140	154	143	179	172	174	174	173	TH	TT
6																			

DETAIL CODE	PANEL NUMBER(S)	LOCATION DESCRIPTION	DETAIL TYPE	REPAIR TYPE	MACHINE NUMBER	REPAIR DATE YYYY-MM-DD	START TIME	WELD TECH	AIR TEMP °C	TEST DATE YYYY-MM-DD	TEST METH.	QC TECH
A	/											
B	/											
C	/											
D	/											
E	/											
F	/											
G	/											
H	/											
I	/											
J	/											
K	/											
L	/											
M	/											
N	/											
O	/											
P	/											
Q	/											
R	/											
S	/											
T	/											

DETAIL TYPE:

AD - ANIMAL DAMAGE	DS-# - DESTRUCT SAMPLE NUMBER	IO - INSUFFICIENT OVERLAP	T - THREE PANEL INTERSECTION
ATL - AIR TEST LEAK	EE - EARTHWORK EQUIPMENT DAMAGE	MD - MANUFACTURER/DELIVERY DAMAGE	VL - VACUUM TEST LEAK
BO - FUSION WELDER BURN	EXT - EXTENSION	P - PENETRATION	WR - WRINKLE
CR - CREASE	FM - FISHMOUTH	PT - PRESSURE TEST CUT	WS - WELDER RESTART
D - INSTALLATION DAMAGE	FS - FAILED SEAM LENGTH	SI - SOIL SURFACE IRREGULARITY	OTHER:

TEST METHOD:

AL - AIR LANCE	VB - VAC BOX
PS - POINT STRESS	ST - SPARK TEST

REPAIR TYPE:

G&W - GRIND & WELD	B - BOOT	P - PATCH
HAW - HOT AIR WELD	C - CAP	

REMARKS

QC TECH Thomas Howald

SUPERVISOR Chad Messervey

SUBMISSION DATE 2020/01/05

SHEET NUMBER 7 of 117

GEOMEMBRANE DETAIL & TEST LOG

PROJECT NUMBER CT001401 AREA / LAYER Primary

PROJECT TITLE Victoria Gold Heap Leach Pad Phase 1B

TRIAL SEAMS

#	MACHINE NUMBER	DATE YYYY-MM-DD	TIME	WELD TECH	AIR TEMP °C	PREHEAT TEMP °C	EXTRUDER TEMP °C	PEEL (PPI)					SHEAR (PPI)					CHK'D BY	REMARKS
1	EX-011	2020/06/09	745	RGP	10	260°C	268°C	124	147	144	140	145	164	162	163	159	167	TH	TT
2	EX-4037	2020/06/09	800	EA	10	260°C	257°C	92	115	100	107	115	160	149	162	162	165	TH	TT
3	EX-4037	2020/06/09	1030	EA	10	262°C	257°C	109	104	109	109	106	160	158	158	158	153	TH	TT
4	EX-011	2020/06/09	1030	RGP	10	260°C	268°C	99	99	95	91	95	163	170	165	163	163	TH	TT
5	EX-011	2020/06/09	1500	RGP	15	260°C	268°C	148	152	164	149	149	164	173	173	165	161	TH	TT
6	EX-4037	2020/06/10	910	EA	15	260°C	254°C	122	111	104	104	109	169	162	167	166	159	TH	TT

DETAIL CODE	PANEL NUMBER(S)	LOCATION DESCRIPTION	DETAIL TYPE	REPAIR TYPE	MACHINE NUMBER	REPAIR DATE YYYY-MM-DD	START TIME	WELD TECH	AIR TEMP °C	TEST DATE YYYY-MM-DD	TEST METH.	QC TECH
5A	16 / 17	Intersection Of P14	T	G&W	EX-4037	2020/06/11	1255	EA	15	2020/06/11	VB+PS	TH
5B	18 / 19	Intersection Of P17	T	G&W	EX-4037	2020/06/10	1040	RP	15	2020/06/11	VB+PS	TH
5C	16 / 17	Intersection Of P18	T	G&W	EX-4037	2020/06/10	1050	RP	15	2020/06/11	VB+PS	TH
5D	18 / 19	Intersection Of P20	T	G&W	EX-4037	2020/06/10	1045	RP	15	2020/06/11	VB+PS	TH
5E	20 / 21	Intersection Of P19	T	G&W	EX-4037	2020/06/10	1035	RP	15	2020/06/11	VB+PS	TH
5F	20 / 21	Intersection Of P22	T	G&W	EX-4037	2020/06/10	1115	RP	15	2020/06/11	VB+PS	TH
5G	20 / 22	48.9m From NEOS	D	P	EX-4037	2020/06/10	1110	RP	15	2020/06/11	VB+PS	TH
5H	20 /	64m From NEOS 2m East	WR	G&W	EX-4037	2020/06/10	1125	RP	15	2020/06/11	VB+PS	TH
5I	20 /	65m From NEOS 2m East	WR	G&W	EX-4037	2020/06/10	1125	RP	15	2020/06/11	VB+PS	TH
5J	22 / 23	Intersection Of P21	T	G&W	EX-4037	2020/06/10	1250	RP	15	2020/06/11	VB+PS	TH
5K	22 / 23	Intersection Of P25	T	G&W	EX-4037	2020/06/10	1030	RP	15	2020/06/11	VB+PS	TH
5L	24 / 25	Intersection Of P23	T	G&W	EX-4037	2020/06/10	1528	EA	15	2020/06/11	VB+PS	TH
5M	27 / 28	Intersection Of P26	T	G&W	EX-4037	2020/06/10	1120	RP	15	2020/06/11	VB+PS	TH
5N	27 / 28	Intersection Of P29	T	P	EX-4037	2020/06/10	1215	EA	15	2020/06/11	VB+PS	TH
5O	32 / 34	Intersection Of P31	T	G&W	EX-4037	2020/06/10	1345	EA	15	2020/06/11	VB+PS	TH
5P	32 / 34	EEOS	DS-10	P	EX-4037	2020/06/10	1336	EA	15	2020/06/11	VB+PS	TH
5Q	32 / 34	Intersection Of P33	T	G&W	EX-4037	2020/06/10	1350	EA	15	2020/06/11	VB+PS	TH
5R	24 /	NEOS	D	P	EX-4037	2020/06/10	1525	EA	15	2020/06/11	VB+PS	TH
5S	2 /	1m From NEOS 2m East	D	P	EX-011	2020/06/09	1621	RGP	15	2020/06/11	VB+PS	TH
5T	2 /	14m From NEOS	D	P	EX-4037	2020/06/15	1732	RP	15	2020/06/20	VB+PS	TH

DETAIL TYPE:

AD - ANIMAL DAMAGE	DS-# - DESTRUCT SAMPLE NUMBER	IO - INSUFFICIENT OVERLAP	T - THREE PANEL INTERSECTION
ATL - AIR TEST LEAK	EE - EARTHWORK EQUIPMENT DAMAGE	MD - MANUFACTURER/DELIVERY DAMAGE	VL - VACUUM TEST LEAK
BO - FUSION WELDER BURN	EXT - EXTENSION	P - PENETRATION	WR - WRINKLE
CR - CREASE	FM - FISHMOUTH	PT - PRESSURE TEST CUT	WS - WELDER RESTART
D - INSTALLATION DAMAGE	FS - FAILED SEAM LENGTH	SI - SOIL SURFACE IRREGULARITY	OTHER:

TEST METHOD:

AL - AIR LANCE	VB - VAC BOX
PS - POINT STRESS	ST - SPARK TEST

REPAIR TYPE:

G&W - GRIND & WELD	B - BOOT	P - PATCH
HAW - HOT AIR WELD	C - CAP	

REMARKS

QC TECH Thomas Howald

SUPERVISOR Chad Messervey

SUBMISSION DATE 2020/01/05

SHEET NUMBER 8 of 117

GEOMEMBRANE DETAIL & TEST LOG

PROJECT NUMBER CT001401 AREA / LAYER Primary

PROJECT TITLE Victoria Gold Heap Leach Pad Phase 1B

TRIAL SEAMS

#	MACHINE NUMBER	DATE YYYY-MM-DD	TIME	WELD TECH	AIR TEMP °C	PREHEAT TEMP °C	EXTRUDER TEMP °C	PEEL (PPI)					SHEAR (PPI)					CHK'D BY	REMARKS
1	EX-4037	2020/06/10	915	RP	15	260°C	254°C	103	104	108	111	109	157	174	175	159	166	TH	TT
2	EX-4037	2020/06/10	1300	EA	15	260°C	254°C	138	144	155	144	141	162	156	167	177	168	TH	TT
3	EX-4037	2020/06/11	910	EA	15	260°C	254°C	149	128	119	126	149	172	183	175	189	175	TH	TT
4	EX-4037	2020/06/11	910	RP	15	260°C	254°C	109	109	119	105	103	172	177	178	172	177	TH	TT
5	EX-4037	2020/06/15	1500	RP	20	262°C	257°C	106	104	103	104	119	159	161	159	174	164	TH	TT
6	EX-4037	2020/06/15	1505	EA	20	262°C	257°C	117	102	116	115	106	152	156	153	149	153	TH	TT

DETAIL CODE	PANEL NUMBER(S)	LOCATION DESCRIPTION	DETAIL TYPE	REPAIR TYPE	MACHINE NUMBER	REPAIR DATE YYYY-MM-DD	START TIME	WELD TECH	AIR TEMP °C	TEST DATE YYYY-MM-DD	TEST METH.	QC TECH
A	/											
B	/											
C	/											
D	/											
E	/											
F	/											
G	/											
H	/											
I	/											
J	/											
K	/											
L	/											
M	/											
N	/											
O	/											
P	/											
Q	/											
R	/											
S	/											
T	/											

DETAIL TYPE:

AD - ANIMAL DAMAGE	DS-# - DESTRUCT SAMPLE NUMBER	IO - INSUFFICIENT OVERLAP	T - THREE PANEL INTERSECTION
ATL - AIR TEST LEAK	EE - EARTHWORK EQUIPMENT DAMAGE	MD - MANUFACTURER/DELIVERY DAMAGE	VL - VACUUM TEST LEAK
BO - FUSION WELDER BURN	EXT - EXTENSION	P - PENETRATION	WR - WRINKLE
CR - CREASE	FM - FISHMOUTH	PT - PRESSURE TEST CUT	WS - WELDER RESTART
D - INSTALLATION DAMAGE	FS - FAILED SEAM LENGTH	SI - SOIL SURFACE IRREGULARITY	OTHER:

TEST METHOD:

AL - AIR LANCE	VB - VAC BOX
PS - POINT STRESS	ST - SPARK TEST

REPAIR TYPE:

G&W - GRIND & WELD	B - BOOT	P - PATCH
HAW - HOT AIR WELD	C - CAP	

REMARKS

QC TECH Thomas Howald

SUPERVISOR Chad Messervey

SUBMISSION DATE 2020/01/05

SHEET NUMBER 9 of 117

GEOMEMBRANE DETAIL & TEST LOG

PROJECT NUMBER CT001401 AREA / LAYER Primary

PROJECT TITLE Victoria Gold Heap Leach Pad Phase 1B

TRIAL SEAMS

#	MACHINE NUMBER	DATE YYYY-MM-DD	TIME	WELD TECH	AIR TEMP °C	PREHEAT TEMP °C	EXTRUDER TEMP °C	PEEL (PPI)					SHEAR (PPI)					CHK'D BY	REMARKS
1	EX-4037	2020/06/15	1500	RP	20	262°C	257°C	106	104	103	104	119	159	161	159	174	164	TH	TT
2	EX-4037	2020/06/15	1505	EA	20	262°C	257°C	117	102	116	115	106	152	156	153	149	153	TH	TT
3	EX-4037	2020/06/19	830	EA	10	262°C	257°C	141	146	141	156	142	191	194	183	176	184	TH	TT
4	EX-4037	2020/06/19	830	RP	10	268°C	260°C	121	154	144	137	152	180	181	189	184	178	TH	TT
5	EX-4037	2020/06/19	1230	EA	10	262°C	257°C	120	98	128	99	134	154	169	165	168	162	TH	TT
6	EX-4037	2020/06/19	1245	RP	10	268°C	260°C	136	137	148	131	141	159	171	166	166	173	TH	TT

DETAIL CODE	PANEL NUMBER(S)	LOCATION DESCRIPTION	DETAIL TYPE	REPAIR TYPE	MACHINE NUMBER	REPAIR DATE YYYY-MM-DD	START TIME	WELD TECH	AIR TEMP °C	TEST DATE YYYY-MM-DD	TEST METH.	QC TECH
6A	2 /	15m From NEOS	D	P	EX-4037	2020/06/15	1734	RP	15	2020/06/20	VB+PS	TH
6B	2 /	16m From NEOS	D	P	EX-4037	2020/06/15	1736	RP	15	2020/06/20	VB+PS	TH
6C	2 / 38	SEOS	T	G&W	EX-4037	2020/06/15	1655	EA	20	2020/06/20	VB+PS	TH
6D	2 /	25m From NEOS 2m East	D	P	EX-4037	2020/06/15	1538	RP	20	2020/06/20	VB+PS	TH
6E	2 /	30.3m From NEOS 2m East	D	P	EX-4037	2020/06/19	1652	EA	15	2020/06/20	VB+PS	TH
6F	2 /	32.3m From NEOS 2m East	D	P	EX-4037	2020/06/19	1654	EA	15	2020/06/20	VB+PS	TH
6G	2 / 1	EEOS	D	P	EX-4037	2020/06/19	1700	EA	15	2020/06/20	VB+PS	TH
6H	1 /	42.6m From NEOS 2m East	D	P	EX-4037	2020/06/19	1724	EA	15	2020/06/20	VB+PS	TH
6I	1 /	76.9m From NEOS 2m East	D	P	EX-4037	2020/06/19	1730	EA	15	2020/06/20	VB+PS	TH
6J	1 /	69.2m From NEOS 2m East	D	P	EX-4037	2020/06/19	1723	EA	15	2020/06/20	VB+PS	TH
6K	1 /	61.9m From NEOS 2m East	D	P	EX-4037	2020/06/19	1720	EA	15	2020/06/20	VB+PS	TH
6L	1 /	55.1m From NEOS 2m East	D	P	EX-4037	2020/06/19	1716	EA	15	2020/06/20	VB+PS	TH
6M	1 /	50.7m From NEOS 2m East	D	P	EX-4037	2020/06/19	1714	EA	15	2020/06/20	VB+PS	TH
6N	1 /	48.2m From NEOS 2m East	D	P	EX-4037	2020/06/19	1711	EA	15	2020/06/20	VB+PS	TH
6O	1 /	45.7m From NEOS 2m East	D	P	EX-4037	2020/06/19	1707	EA	15	2020/06/20	VB+PS	TH
6P	1 /	43.9m From NEOS 2m East	D	P	EX-4037	2020/06/19	1704	EA	15	2020/06/20	VB+PS	TH
6Q	41 / 43	155.3m From NEOS	D	P	EX-4037	2020/06/19	1623	RP	15	2020/06/20	VB+PS	TH
6R	1 /	108.8m From NEOS	D	P	EX-4037	2020/06/19	935	EA	15	2020/06/20	VB+PS	TH
6S	1 / 37	52.6m From SEOS	WR	P	EX-4037	2020/06/19	955	EA	15	2020/06/20	VB+PS	TH
6T	1 / 37	17m From SEOS	WR	P	EX-4037	2020/06/19	1454	RP	15	2020/06/25	VB+PS	TH

DETAIL TYPE:

AD - ANIMAL DAMAGE	DS-# - DESTRUCT SAMPLE NUMBER	IO - INSUFFICIENT OVERLAP	T - THREE PANEL INTERSECTION
ATL - AIR TEST LEAK	EE - EARTHWORK EQUIPMENT DAMAGE	MD - MANUFACTURER/DELIVERY DAMAGE	VL - VACUUM TEST LEAK
BO - FUSION WELDER BURN	EXT - EXTENSION	P - PENETRATION	WR - WRINKLE
CR - CREASE	FM - FISHMOUTH	PT - PRESSURE TEST CUT	WS - WELDER RESTART
D - INSTALLATION DAMAGE	FS - FAILED SEAM LENGTH	SI - SOIL SURFACE IRREGULARITY	OTHER:

TEST METHOD:

AL - AIR LANCE	VB - VAC BOX
PS - POINT STRESS	ST - SPARK TEST

REPAIR TYPE:

G&W - GRIND & WELD	B - BOOT	P - PATCH
HAW - HOT AIR WELD	C - CAP	

REMARKS

QC TECH Thomas Howald

SUPERVISOR Chad Messervey

SUBMISSION DATE 2020/01/05

SHEET NUMBER 10 of 117

GEOMEMBRANE DETAIL & TEST LOG

PROJECT NUMBER CT001401 AREA / LAYER Primary

PROJECT TITLE Victoria Gold Heap Leach Pad Phase 1B

TRIAL SEAMS

#	MACHINE NUMBER	DATE YYYY-MM-DD	TIME	WELD TECH	AIR TEMP °C	PREHEAT TEMP °C	EXTRUDER TEMP °C	PEEL (PPI)					SHEAR (PPI)					CHK'D BY	REMARKS
1	EX-4037	2020/06/19	1615	EA	15	262°C	257°C	110	138	134	143	123	165	167	153	168	166	TH	TT
2																			
3																			
4																			
5																			
6																			

DETAIL CODE	PANEL NUMBER(S)	LOCATION DESCRIPTION	DETAIL TYPE	REPAIR TYPE	MACHINE NUMBER	REPAIR DATE YYYY-MM-DD	START TIME	WELD TECH	AIR TEMP °C	TEST DATE YYYY-MM-DD	TEST METH.	QC TECH
A	/											
B	/											
C	/											
D	/											
E	/											
F	/											
G	/											
H	/											
I	/											
J	/											
K	/											
L	/											
M	/											
N	/											
O	/											
P	/											
Q	/											
R	/											
S	/											
T	/											

DETAIL TYPE:

AD - ANIMAL DAMAGE	DS-# - DESTRUCT SAMPLE NUMBER	IO - INSUFFICIENT OVERLAP	T - THREE PANEL INTERSECTION
ATL - AIR TEST LEAK	EE - EARTHWORK EQUIPMENT DAMAGE	MD - MANUFACTURER/DELIVERY DAMAGE	VL - VACUUM TEST LEAK
BO - FUSION WELDER BURN	EXT - EXTENSION	P - PENETRATION	WR - WRINKLE
CR - CREASE	FM - FISHMOUTH	PT - PRESSURE TEST CUT	WS - WELDER RESTART
D - INSTALLATION DAMAGE	FS - FAILED SEAM LENGTH	SI - SOIL SURFACE IRREGULARITY	OTHER:

TEST METHOD:

AL - AIR LANCE	VB - VAC BOX
PS - POINT STRESS	ST - SPARK TEST

REPAIR TYPE:

G&W - GRIND & WELD	B - BOOT	P - PATCH
HAW - HOT AIR WELD	C - CAP	

REMARKS

QC TECH Thomas Howald

SUPERVISOR Chad Messervey

SUBMISSION DATE 2020/01/05

SHEET NUMBER 11 of 117

GEOMEMBRANE DETAIL & TEST LOG

PROJECT NUMBER CT001401 AREA / LAYER Primary

PROJECT TITLE Victoria Gold Heap Leach Pad Phase 1B

TRIAL SEAMS

#	MACHINE NUMBER	DATE YYYY-MM-DD	TIME	WELD TECH	AIR TEMP °C	PREHEAT TEMP °C	EXTRUDER TEMP °C	PEEL (PPI)					SHEAR (PPI)					CHK'D BY	REMARKS
1	EX-011	2020/06/09	745	RGP	10	260°C	268°C	124	147	144	140	145	164	162	163	159	167	TH	TT
2	EX-4037	2020/06/09	800	EA	10	260°C	257°C	92	115	100	107	115	160	149	162	162	165	TH	TT
3	EX-4037	2020/06/09	1030	EA	10	262°C	257°C	109	104	109	109	106	160	158	158	158	153	TH	TT
4	EX-011	2020/06/09	1030	RGP	10	260°C	268°C	99	99	95	91	95	163	170	165	163	163	TH	TT
5	EX-011	2020/06/09	1500	RGP	15	260°C	268°C	148	152	164	149	149	164	173	173	165	161	TH	TT
6	EX-4037	2020/06/15	1500	RP	20	262°C	257°C	106	104	103	104	119	159	161	159	174	164	TH	TT

DETAIL CODE	PANEL NUMBER(S)	LOCATION DESCRIPTION	DETAIL TYPE	REPAIR TYPE	MACHINE NUMBER	REPAIR DATE YYYY-MM-DD	START TIME	WELD TECH	AIR TEMP °C	TEST DATE YYYY-MM-DD	TEST METH.	QC TECH
7A	1 / 37	5.2m From SEOS	WR	P	EX-4037	2020/06/19	1418	RP	15	2020/06/25	VB+PS	TH
7B	46 / 47	Intersection Of P44	T	G&W	EX-4037	2020/06/15	1624	EA	20	2020/06/20	VB+PS	TH
7C	51 / 54	58.4m From NEOS	WS	G&W	EX-011	2020/06/25	1345	EP	15	2020/06/25	VB+PS	TH
7D	54 / 56	78m From NEOS	DS-25	P	EX-4037	2020/06/19	1407	EA	15	2020/06/20	VB+PS	TH
7E	48 / 49	Intersection Of P46	WS	P	EX-4037	2020/06/19	1449	EA	15	2020/06/20	VB+PS	TH
7F	43 / 44	Intersection Of P41	DS-24	P	EX-4037	2020/06/19	1345	EA	15	2020/06/20	VB+PS	TH
7G	43 / 44	WEOS	DS-23	P	EX-4037	2020/06/19	1350	EA	15	2020/06/20	VB+PS	TH
7H	48 / 51	69m From SEOS	DS-22	P	EX-4037	2020/06/19	1319	EA	15	2020/06/20	VB+PS	TH
7I	51 / 50	Intersection Of P53	DS-21	P	EX-4037	2020/06/19	1300	EA	15	2020/06/20	VB+PS	TH
7J	50 / 51	Intersection Of P48	T	G&W	EX-4037	2020/06/19	1249	EA	15	2020/06/20	VB+PS	TH
7K	45 / 46	Intersection Of P48	DS-20	P	EX-4037	2020/06/19	1240	EA	15	2020/06/20	VB+PS	TH
7L	1 /	52.6m From SEOS 3m East	D	P	EX-4037	2020/06/19	957	EA	15	2020/06/20	VB+PS	TH
7M	37 / 38	Intersection Of P1	T	G&W	EX-4037	2020/06/19	925	EA	15	2020/06/20	VB+PS	TH
7N	37 / 38	Intersection Of P41	T	G&W	EX-4037	2020/06/19	930	EA	15	2020/06/20	VB+PS	TH
7O	43 / 44	Intersection Of P46	T	G&W	EX-4037	2020/06/19	1355	EA	15	2020/06/20	VB+PS	TH
7P	2 /	NEOS	D	P	EX-011	2020/06/09	1621	RGP	15	2020/06/20	VB+PS	TH
7Q	8 /	48m From NEOS 3m West	D	P	EX-4037	2020/06/18	1621	RP	15	2020/06/20	VB+PS	TH
7R	6 /	26m From NEOS	D	P	EX-4037	2020/06/18	1646	EA	15	2020/06/20	VB+PS	TH
7S	10 /	88.2m From SEOS 2.8m West	D	P	EX-4037	2020/06/18	1425	RP	15	2020/06/20	VB+PS	TH
7T	8 /	55.3m From SEOS	D	P	EX-4037	2020/06/27	900	TH	10	2020/07/08	VB+PS	TH

DETAIL TYPE:

AD - ANIMAL DAMAGE	DS-# - DESTRUCT SAMPLE NUMBER	IO - INSUFFICIENT OVERLAP	T - THREE PANEL INTERSECTION
ATL - AIR TEST LEAK	EE - EARTHWORK EQUIPMENT DAMAGE	MD - MANUFACTURER/DELIVERY DAMAGE	VL - VACUUM TEST LEAK
BO - FUSION WELDER BURN	EXT - EXTENSION	P - PENETRATION	WR - WRINKLE
CR - CREASE	FM - FISHMOUTH	PT - PRESSURE TEST CUT	WS - WELDER RESTART
D - INSTALLATION DAMAGE	FS - FAILED SEAM LENGTH	SI - SOIL SURFACE IRREGULARITY	OTHER:

TEST METHOD:

AL - AIR LANCE	VB - VAC BOX
PS - POINT STRESS	ST - SPARK TEST

REPAIR TYPE:

G&W - GRIND & WELD	B - BOOT	P - PATCH
HAW - HOT AIR WELD	C - CAP	

REMARKS

QC TECH Thomas Howald

SUPERVISOR Chad Messervey

SUBMISSION DATE 2020/01/05

SHEET NUMBER 12 of 117

GEOMEMBRANE DETAIL & TEST LOG

PROJECT NUMBER CT001401 AREA / LAYER Primary

PROJECT TITLE Victoria Gold Heap Leach Pad Phase 1B

TRIAL SEAMS

#	MACHINE NUMBER	DATE YYYY-MM-DD	TIME	WELD TECH	AIR TEMP °C	PREHEAT TEMP °C	EXTRUDER TEMP °C	PEEL (PPI)					SHEAR (PPI)					CHK'D BY	REMARKS
1	EX-4037	2020/06/15	1505	EA	20	262°C	257°C	117	102	116	115	106	152	156	153	149	153	TH	TT
2	EX-4037	2020/06/18	1300	EA	15	262°C	257°C	95	100	100	112	97	155	155	158	156	155	TH	TT
3	EX-4037	2020/06/18	1300	RP	15	262°C	257°C	100	97	112	114	101	154	155	162	159	162	TH	TT
4	EX-4037	2020/06/18	1600	EA	15	262°C	257°C	134	118	127	126	130	148	160	156	163	159	TH	TT
5	EX-4037	2020/06/18	1600	RP	15	262°C	257°C	132	140	141	116	136	179	174	171	180	179	TH	TT
6	EX-4037	2020/06/19	830	EA	10	262°C	257°C	141	146	141	156	142	191	194	183	176	184	TH	TT

DETAIL CODE	PANEL NUMBER(S)	LOCATION DESCRIPTION	DETAIL TYPE	REPAIR TYPE	MACHINE NUMBER	REPAIR DATE YYYY-MM-DD	START TIME	WELD TECH	AIR TEMP °C	TEST DATE YYYY-MM-DD	TEST METH.	QC TECH
A	/											
B	/											
C	/											
D	/											
E	/											
F	/											
G	/											
H	/											
I	/											
J	/											
K	/											
L	/											
M	/											
N	/											
O	/											
P	/											
Q	/											
R	/											
S	/											
T	/											

DETAIL TYPE:

AD - ANIMAL DAMAGE	DS-# - DESTRUCT SAMPLE NUMBER	IO - INSUFFICIENT OVERLAP	T - THREE PANEL INTERSECTION
ATL - AIR TEST LEAK	EE - EARTHWORK EQUIPMENT DAMAGE	MD - MANUFACTURER/DELIVERY DAMAGE	VL - VACUUM TEST LEAK
BO - FUSION WELDER BURN	EXT - EXTENSION	P - PENETRATION	WR - WRINKLE
CR - CREASE	FM - FISHMOUTH	PT - PRESSURE TEST CUT	WS - WELDER RESTART
D - INSTALLATION DAMAGE	FS - FAILED SEAM LENGTH	SI - SOIL SURFACE IRREGULARITY	OTHER:

TEST METHOD:

AL - AIR LANCE	VB - VAC BOX
PS - POINT STRESS	ST - SPARK TEST

REPAIR TYPE:

G&W - GRIND & WELD	B - BOOT	P - PATCH
HAW - HOT AIR WELD	C - CAP	

REMARKS

QC TECH Thomas Howald

SUPERVISOR Chad Messervey

SUBMISSION DATE 2020/01/05

SHEET NUMBER 13 of 117

GEOMEMBRANE DETAIL & TEST LOG

PROJECT NUMBER CT001401 AREA / LAYER Primary

PROJECT TITLE Victoria Gold Heap Leach Pad Phase 1B

TRIAL SEAMS

#	MACHINE NUMBER	DATE YYYY-MM-DD	TIME	WELD TECH	AIR TEMP °C	PREHEAT TEMP °C	EXTRUDER TEMP °C	PEEL (PPI)					SHEAR (PPI)					CHK'D BY	REMARKS
1	EX-4037	2020/06/19	830	RP	10	268°C	260°C	121	154	144	137	152	180	181	189	184	178	TH	TT
2	EX-4037	2020/06/19	1230	EA	10	262°C	257°C	120	98	128	99	134	154	169	165	168	162	TH	TT
3	EX-4037	2020/06/19	1245	RP	10	268°C	260°C	136	137	148	131	141	159	171	166	166	173	TH	TT
4	EX-4037	2020/06/19	1615	EA	15	262°C	257°C	110	138	134	143	123	165	167	153	168	166	TH	TT
5	EX-011	2020/06/25	740	EP	15	265°C	260°C	134	122	126	138	135	167	171	159	169	162	TH	TT
6	EX-4037	2020/06/25	800	RW	15	260°C	257°C	94	115	108	109	113	141	142	144	144	162	TH	TT

DETAIL CODE	PANEL NUMBER(S)	LOCATION DESCRIPTION	DETAIL TYPE	REPAIR TYPE	MACHINE NUMBER	REPAIR DATE YYYY-MM-DD	START TIME	WELD TECH	AIR TEMP °C	TEST DATE YYYY-MM-DD	TEST METH.	QC TECH
A	/											
B	/											
C	/											
D	/											
E	/											
F	/											
G	/											
H	/											
I	/											
J	/											
K	/											
L	/											
M	/											
N	/											
O	/											
P	/											
Q	/											
R	/											
S	/											
T	/											

DETAIL TYPE:

AD - ANIMAL DAMAGE	DS-# - DESTRUCT SAMPLE NUMBER	IO - INSUFFICIENT OVERLAP	T - THREE PANEL INTERSECTION
ATL - AIR TEST LEAK	EE - EARTHWORK EQUIPMENT DAMAGE	MD - MANUFACTURER/DELIVERY DAMAGE	VL - VACUUM TEST LEAK
BO - FUSION WELDER BURN	EXT - EXTENSION	P - PENETRATION	WR - WRINKLE
CR - CREASE	FM - FISHMOUTH	PT - PRESSURE TEST CUT	WS - WELDER RESTART
D - INSTALLATION DAMAGE	FS - FAILED SEAM LENGTH	SI - SOIL SURFACE IRREGULARITY	OTHER:

TEST METHOD:

AL - AIR LANCE	VB - VAC BOX
PS - POINT STRESS	ST - SPARK TEST

REPAIR TYPE:

G&W - GRIND & WELD	B - BOOT	P - PATCH
HAW - HOT AIR WELD	C - CAP	

REMARKS

QC TECH Thomas Howald

SUPERVISOR Chad Messervey

SUBMISSION DATE 2020/01/05

SHEET NUMBER 14 of 117

GEOMEMBRANE DETAIL & TEST LOG

PROJECT NUMBER CT001401 AREA / LAYER Primary

PROJECT TITLE Victoria Gold Heap Leach Pad Phase 1B

TRIAL SEAMS

#	MACHINE NUMBER	DATE YYYY-MM-DD	TIME	WELD TECH	AIR TEMP °C	PREHEAT TEMP °C	EXTRUDER TEMP °C	PEEL (PPI)					SHEAR (PPI)					CHK'D BY	REMARKS
1	EX-011	2020/06/25	1200	EP	15	265°C	260°C	96	141	130	105	138	151	156	158	174	169	TH	TT
2	EX-4037	2020/06/25	1225	RW	15	260°C	257°C	127	103	133	130	119	173	177	179	170	174	TH	TT
3	EX-4037	2020/06/27	800	TH	6	260°C	257°C	117	131	129	118	115	174	168	169	172	171	TH	TT
4	EX-4037	2020/06/27	1300	TH	10	260°C	257°C	147	144	140	154	143	179	172	174	174	173	TH	TT
5																			
6																			

DETAIL CODE	PANEL NUMBER(S)	LOCATION DESCRIPTION	DETAIL TYPE	REPAIR TYPE	MACHINE NUMBER	REPAIR DATE YYYY-MM-DD	START TIME	WELD TECH	AIR TEMP °C	TEST DATE YYYY-MM-DD	TEST METH.	QC TECH
A	/											
B	/											
C	/											
D	/											
E	/											
F	/											
G	/											
H	/											
I	/											
J	/											
K	/											
L	/											
M	/											
N	/											
O	/											
P	/											
Q	/											
R	/											
S	/											
T	/											

DETAIL TYPE:

AD - ANIMAL DAMAGE	DS-# - DESTRUCT SAMPLE NUMBER	IO - INSUFFICIENT OVERLAP	T - THREE PANEL INTERSECTION
ATL - AIR TEST LEAK	EE - EARTHWORK EQUIPMENT DAMAGE	MD - MANUFACTURER/DELIVERY DAMAGE	VL - VACUUM TEST LEAK
BO - FUSION WELDER BURN	EXT - EXTENSION	P - PENETRATION	WR - WRINKLE
CR - CREASE	FM - FISHMOUTH	PT - PRESSURE TEST CUT	WS - WELDER RESTART
D - INSTALLATION DAMAGE	FS - FAILED SEAM LENGTH	SI - SOIL SURFACE IRREGULARITY	OTHER:

TEST METHOD:

AL - AIR LANCE	VB - VAC BOX
PS - POINT STRESS	ST - SPARK TEST

REPAIR TYPE:

G&W - GRIND & WELD	B - BOOT	P - PATCH
HAW - HOT AIR WELD	C - CAP	

REMARKS

QC TECH Thomas Howald

SUPERVISOR Chad Messervey

SUBMISSION DATE 2020/01/05

SHEET NUMBER 15 of 117

GEOMEMBRANE DETAIL & TEST LOG

PROJECT NUMBER CT001401 AREA / LAYER Primary

PROJECT TITLE Victoria Gold Heap Leach Pad Phase 1B

TRIAL SEAMS

#	MACHINE NUMBER	DATE YYYY-MM-DD	TIME	WELD TECH	AIR TEMP °C	PREHEAT TEMP °C	EXTRUDER TEMP °C	PEEL (PPI)					SHEAR (PPI)					CHK'D BY	REMARKS
1	EX-011	2020/06/09	745	RGP	10	260°C	268°C	124	147	144	140	145	164	162	163	159	167	TH	TT
2	EX-4037	2020/06/09	800	EA	10	260°C	257°C	92	115	100	107	115	160	149	162	162	165	TH	TT
3	EX-4037	2020/06/09	1030	EA	10	262°C	257°C	109	104	109	109	106	160	158	158	158	153	TH	TT
4	EX-011	2020/06/09	1030	RGP	10	260°C	268°C	99	99	95	91	95	163	170	165	163	163	TH	TT
5	EX-011	2020/06/09	1500	RGP	15	260°C	268°C	148	152	164	149	149	164	173	173	165	161	TH	TT
6	EX-4037	2020/06/15	1500	RP	20	262°C	257°C	106	104	103	104	119	159	161	159	174	164	TH	TT

DETAIL CODE	PANEL NUMBER(S)	LOCATION DESCRIPTION	DETAIL TYPE	REPAIR TYPE	MACHINE NUMBER	REPAIR DATE YYYY-MM-DD	START TIME	WELD TECH	AIR TEMP °C	TEST DATE YYYY-MM-DD	TEST METH.	QC TECH
8A	45 / 46	Intersection Of P43	T	G&W	EX-011	2020/06/09	1644	RGP	15	2020/06/20	VB+PS	TH
8B	40 / 41	Intersecton Of P43	T	G&W	EX-4037	2020/06/19	1608	RP	15	2020/06/20	VB+PS	TH
8C	41 /	25.6m From SEOS	D	G&W	EX-4037	2020/06/19	1606	RP	15	2020/06/20	VB+PS	TH
8D	40 / 41	Intersection Of P37	T	G&W	EX-4037	2020/06/19	1605	RP	15	2020/06/25	VB+PS	TH
8E	53 / 54	Intersection Of P51	T	G&W	EX-4037	2020/06/19	1417	EA	15	2020/06/25	VB+PS	TH
8F	53 / 54	Intersection Of P56	T	G&W	EX-4037	2020/06/19	1410	EA	15	2020/06/25	VB+PS	TH
8G	56 / 57	Intersection Of P54	T	G&W	EX-4037	2020/06/19	1800	EA	15	2020/06/25	VB+PS	TH
8H	56 / 57	Intersection Of P59	T	G&W	EX-4037	2020/06/19	1803	EA	15	2020/06/25	VB+PS	TH
8I	51 / 52	Intersection Of P54	T	G&W	EX-4037	2020/06/19	1757	EA	15	2020/06/25	VB+PS	TH
8J	51 / 52	Intersection Of P49	T	G&W	EX-4037	2020/06/19	1754	EA	15	2020/06/25	VB+PS	TH
8K	41 / 42	Intersection Of P44	T	G&W	EX-4037	2020/06/15	1628	EA	15	2020/06/25	VB+PS	TH
8L	41 / 42	Intersection Of P38	T	G&W	EX-4037	2020/06/15	1631	EA	15	2020/06/25	VB+PS	TH
8M	46 / 47	Intersection Of P49	T	G&W	EX-4037	2020/06/19	1750	EA	15	2020/06/25	VB+PS	TH
8N	48 / 49	Intersection Of P51	T	G&W	EX-4037	2020/06/19	1415	EA	15	2020/06/25	VB+PS	TH
8O	58 / 59	Tie In Of P58/59	IO	C	EX-011	2020/06/25	1310	EP	15	2020/06/25	VB+PS	TH
8P	56 / 58	NEOS	BO	P	EX-011	2020/06/25	1240	EP	15	2020/06/25	VB+PS	TH
8Q	55 / 56	Intersection Of P53	T	G&W	EX-011	2020/06/25	1328	EP	15	2020/06/25	VB+PS	TH
8R	55 / 56	Intersection Of P58	T	G&W	EX-011	2020/06/25	1328	EP	15	2020/06/25	VB+PS	TH
8S	1 /	17m From SEOS	D	P	EX-4037	2020/06/19	1158	RP	15	2020/06/25	VB+PS	TH
8T	1 / 37	6.2m From SEOS	WR	P	EX-4037	2020/06/25	1125	RW	15	2020/06/25	VB+PS	TH

DETAIL TYPE:

AD - ANIMAL DAMAGE	DS-# - DESTRUCT SAMPLE NUMBER	IO - INSUFFICIENT OVERLAP	T - THREE PANEL INTERSECTION
ATL - AIR TEST LEAK	EE - EARTHWORK EQUIPMENT DAMAGE	MD - MANUFACTURER/DELIVERY DAMAGE	VL - VACUUM TEST LEAK
BO - FUSION WELDER BURN	EXT - EXTENSION	P - PENETRATION	WR - WRINKLE
CR - CREASE	FM - FISHMOUTH	PT - PRESSURE TEST CUT	WS - WELDER RESTART
D - INSTALLATION DAMAGE	FS - FAILED SEAM LENGTH	SI - SOIL SURFACE IRREGULARITY	OTHER:

TEST METHOD:

AL - AIR LANCE	VB - VAC BOX
PS - POINT STRESS	ST - SPARK TEST

REPAIR TYPE:

G&W - GRIND & WELD	B - BOOT	P - PATCH
HAW - HOT AIR WELD	C - CAP	

REMARKS

QC TECH Thomas Howald

SUPERVISOR Chad Messervey

SUBMISSION DATE 2020/01/05

SHEET NUMBER 16 of 117

GEOMEMBRANE DETAIL & TEST LOG

PROJECT NUMBER CT001401 AREA / LAYER Primary

PROJECT TITLE Victoria Gold Heap Leach Pad Phase 1B

TRIAL SEAMS

#	MACHINE NUMBER	DATE YYYY-MM-DD	TIME	WELD TECH	AIR TEMP °C	PREHEAT TEMP °C	EXTRUDER TEMP °C	PEEL (PPI)					SHEAR (PPI)					CHK'D BY	REMARKS
1	EX-4037	2020/06/15	1505	EA	20	262°C	257°C	117	102	116	115	106	152	156	153	149	153	TH	TT
2	EX-4037	2020/06/19	830	EA	10	262°C	257°C	141	146	141	156	142	191	194	183	176	184	TH	TT
3	EX-4037	2020/06/19	830	RP	10	268°C	260°C	121	154	144	137	152	180	181	189	184	178	TH	TT
4	EX-4037	2020/06/19	1230	EA	10	262°C	257°C	120	98	128	99	134	154	169	165	168	162	TH	TT
5	EX-4037	2020/06/19	1245	RP	10	268°C	260°C	136	137	148	131	141	159	171	166	166	173	TH	TT
6	EX-4037	2020/06/19	1615	EA	15	262°C	257°C	110	138	134	143	123	165	167	153	168	166	TH	TT

DETAIL CODE	PANEL NUMBER(S)	LOCATION DESCRIPTION	DETAIL TYPE	REPAIR TYPE	MACHINE NUMBER	REPAIR DATE YYYY-MM-DD	START TIME	WELD TECH	AIR TEMP °C	TEST DATE YYYY-MM-DD	TEST METH.	QC TECH
A	/											
B	/											
C	/											
D	/											
E	/											
F	/											
G	/											
H	/											
I	/											
J	/											
K	/											
L	/											
M	/											
N	/											
O	/											
P	/											
Q	/											
R	/											
S	/											
T	/											

DETAIL TYPE:

AD - ANIMAL DAMAGE	DS-# - DESTRUCT SAMPLE NUMBER	IO - INSUFFICIENT OVERLAP	T - THREE PANEL INTERSECTION
ATL - AIR TEST LEAK	EE - EARTHWORK EQUIPMENT DAMAGE	MD - MANUFACTURER/DELIVERY DAMAGE	VL - VACUUM TEST LEAK
BO - FUSION WELDER BURN	EXT - EXTENSION	P - PENETRATION	WR - WRINKLE
CR - CREASE	FM - FISHMOUTH	PT - PRESSURE TEST CUT	WS - WELDER RESTART
D - INSTALLATION DAMAGE	FS - FAILED SEAM LENGTH	SI - SOIL SURFACE IRREGULARITY	OTHER:

TEST METHOD:

AL - AIR LANCE	VB - VAC BOX
PS - POINT STRESS	ST - SPARK TEST

REPAIR TYPE:

G&W - GRIND & WELD	B - BOOT	P - PATCH
HAW - HOT AIR WELD	C - CAP	

REMARKS

QC TECH Thomas Howald

SUPERVISOR Chad Messervey

SUBMISSION DATE 2020/01/05

SHEET NUMBER 17 of 117

GEOMEMBRANE DETAIL & TEST LOG

PROJECT NUMBER CT001401 AREA / LAYER Primary

PROJECT TITLE Victoria Gold Heap Leach Pad Phase 1B

TRIAL SEAMS

#	MACHINE NUMBER	DATE YYYY-MM-DD	TIME	WELD TECH	AIR TEMP °C	PREHEAT TEMP °C	EXTRUDER TEMP °C	PEEL (PPI)					SHEAR (PPI)					CHK'D BY	REMARKS
1	EX-011	2020/06/25	740	EP	15	265°C	260°C	134	122	126	138	135	167	171	159	169	162	TH	TT
2	EX-4037	2020/06/25	800	RW	15	260°C	257°C	94	115	108	109	113	141	142	144	144	162	TH	TT
3	EX-011	2020/06/25	1200	EP	15	265°C	260°C	96	141	130	105	138	151	156	158	174	169	TH	TT
4	EX-4037	2020/06/25	1225	RW	15	260°C	257°C	127	103	133	130	119	173	177	179	170	174	TH	TT
5																			
6																			

DETAIL CODE	PANEL NUMBER(S)	LOCATION DESCRIPTION	DETAIL TYPE	REPAIR TYPE	MACHINE NUMBER	REPAIR DATE YYYY-MM-DD	START TIME	WELD TECH	AIR TEMP °C	TEST DATE YYYY-MM-DD	TEST METH.	QC TECH
A	/											
B	/											
C	/											
D	/											
E	/											
F	/											
G	/											
H	/											
I	/											
J	/											
K	/											
L	/											
M	/											
N	/											
O	/											
P	/											
Q	/											
R	/											
S	/											
T	/											

DETAIL TYPE:

AD - ANIMAL DAMAGE	DS-# - DESTRUCT SAMPLE NUMBER	IO - INSUFFICIENT OVERLAP	T - THREE PANEL INTERSECTION
ATL - AIR TEST LEAK	EE - EARTHWORK EQUIPMENT DAMAGE	MD - MANUFACTURER/DELIVERY DAMAGE	VL - VACUUM TEST LEAK
BO - FUSION WELDER BURN	EXT - EXTENSION	P - PENETRATION	WR - WRINKLE
CR - CREASE	FM - FISHMOUTH	PT - PRESSURE TEST CUT	WS - WELDER RESTART
D - INSTALLATION DAMAGE	FS - FAILED SEAM LENGTH	SI - SOIL SURFACE IRREGULARITY	OTHER:

TEST METHOD:

AL - AIR LANCE	VB - VAC BOX
PS - POINT STRESS	ST - SPARK TEST

REPAIR TYPE:

G&W - GRIND & WELD	B - BOOT	P - PATCH
HAW - HOT AIR WELD	C - CAP	

REMARKS

QC TECH Thomas Howald

SUPERVISOR Chad Messervey

SUBMISSION DATE 2020/01/05

SHEET NUMBER 18 of 117

GEOMEMBRANE DETAIL & TEST LOG

PROJECT NUMBER CT001401 AREA / LAYER Primary

PROJECT TITLE Victoria Gold Heap Leach Pad Phase 1B

TRIAL SEAMS

#	MACHINE NUMBER	DATE YYYY-MM-DD	TIME	WELD TECH	AIR TEMP °C	PREHEAT TEMP °C	EXTRUDER TEMP °C	PEEL (PPI)					SHEAR (PPI)					CHK'D BY	REMARKS
1	EX-4037	2020/06/19	830	EA	10	262°C	257°C	141	146	141	156	142	191	194	183	176	184	TH	TT
2	EX-4037	2020/06/19	830	RP	10	268°C	260°C	121	154	144	137	152	180	181	189	184	178	TH	TT
3	EX-4037	2020/06/19	1230	EA	10	262°C	257°C	120	98	128	99	134	154	169	165	168	162	TH	TT
4	EX-4037	2020/06/19	1245	RP	10	268°C	260°C	136	137	148	131	141	159	171	166	166	173	TH	TT
5	EX-4037	2020/06/19	1615	EA	15	262°C	257°C	110	138	134	143	123	165	167	153	168	166	TH	TT
6	EX-011	2020/06/25	740	EP	15	265°C	260°C	134	122	126	138	135	167	171	159	169	162	TH	TT

DETAIL CODE	PANEL NUMBER(S)	LOCATION DESCRIPTION	DETAIL TYPE	REPAIR TYPE	MACHINE NUMBER	REPAIR DATE YYYY-MM-DD	START TIME	WELD TECH	AIR TEMP °C	TEST DATE YYYY-MM-DD	TEST METH.	QC TECH
9A	1 /	5.8m From SEOS	WR	P	EX-4037	2020/06/19	1420	RP	15	2020/06/25	VB+PS	TH
9B	1 / 37	SEOS	WR	G&W	EX-4037	2020/06/19	1425	RP	15	2020/06/25	VB+PS	TH
9C	58 / 61	64.1m From SEOS	WS	P	EX-011	2020/06/25	1326	EP	15	2020/06/25	VB+PS	TH
9D	61 / 62	Intersection Of P59	T	G&W	EX-4037	2020/06/27	1355	TH	10	2020/07/08	VB+PS	TH
9E	60 / 61	Intersection Of P58	T	G&W	EX-4037	2020/06/27	1140	TH	10	2020/07/08	VB+PS	TH
9F	61 / 62	Intersection Of P64	T	G&W	EX-4037	2020/06/27	1318	TH	10	2020/07/08	VB+PS	TH
9G	60 / 61	Intesection Of P63	T	G&W	EX-4037	2020/06/27	1141	TH	10	2020/07/08	VB+PS	TH
9H	61 / 63	42.2m From Seos	WS	P	EX-4037	2020/06/27	1148	TH	10	2020/07/08	VB+PS	TH
9I	63 / 64	Intersection Of P61	T	P	EX-4037	2020/06/27	1425	TH	10	2020/07/08	VB+PS	TH
9J	63 / 64	Intesection Of P66	T	G&W	EX-4037	2020/06/27	1433	TH	10	2020/07/08	VB+PS	TH
9K	66 / 67	Intersection Of P64	T	P	EX-4037	2020/06/27	1520	TH	10	2020/07/08	VB+PS	TH
9L	66 / 67	Intersection Of P69	T	P	EX-4037	2020/06/27	1515	TH	10	2020/07/08	VB+PS	TH
9M	1 /	26.6m From SEOS 3m East	D	P	EX-4037	2020/06/27	855	TH	10	2020/07/08	VB+PS	TH
9N	58 / 60	10m From SEOS	DS-26	P	EX-4037	2020/06/28	1540	TH	15	2020/07/08	VB+PS	TH
9O	65 / 66	Intersection Of P63	DS-30	P	EX-4037	2020/06/28	1535	TH	15	2020/07/08	VB+PS	TH
9P	65 / 66	WEOS	DS-29	P	EX-4037	2020/06/28	1530	TH	15	2020/07/08	VB+PS	TH
9Q	65 / 66	Intersection Of P68	T	G&W	EX-4037	2020/06/28	1525	TH	15	2020/07/08	VB+PS	TH
9R	66 /	24m From Seos 3m West	D	G&W	EX-4037	2020/06/28	1520	TH	15	2020/07/08	VB+PS	TH
9S	69 / 71	NEOS	DS-33	P	EX-4037	2020/06/29	1150	TH	10	2020/07/08	VB+PS	TH
9T	74 / 76	NEOS	DS-35	P	EX-4037	2020/06/29	1155	TH	10	2020/07/08	VB+PS	TH

DETAIL TYPE:

AD - ANIMAL DAMAGE	DS-# - DESTRUCT SAMPLE NUMBER	IO - INSUFFICIENT OVERLAP	T - THREE PANEL INTERSECTION
ATL - AIR TEST LEAK	EE - EARTHWORK EQUIPMENT DAMAGE	MD - MANUFACTURER/DELIVERY DAMAGE	VL - VACUUM TEST LEAK
BO - FUSION WELDER BURN	EXT - EXTENSION	P - PENETRATION	WR - WRINKLE
CR - CREASE	FM - FISHMOUTH	PT - PRESSURE TEST CUT	WS - WELDER RESTART
D - INSTALLATION DAMAGE	FS - FAILED SEAM LENGTH	SI - SOIL SURFACE IRREGULARITY	OTHER:

TEST METHOD:

AL - AIR LANCE	VB - VAC BOX
PS - POINT STRESS	ST - SPARK TEST

REPAIR TYPE:

G&W - GRIND & WELD	B - BOOT	P - PATCH
HAW - HOT AIR WELD	C - CAP	

REMARKS

QC TECH Thomas Howald

SUPERVISOR Chad Messervey

SUBMISSION DATE 2020/01/05

SHEET NUMBER 19 of 117

GEOMEMBRANE DETAIL & TEST LOG

PROJECT NUMBER CT001401 AREA / LAYER Primary

PROJECT TITLE Victoria Gold Heap Leach Pad Phase 1B

TRIAL SEAMS

#	MACHINE NUMBER	DATE YYYY-MM-DD	TIME	WELD TECH	AIR TEMP °C	PREHEAT TEMP °C	EXTRUDER TEMP °C	PEEL (PPI)					SHEAR (PPI)					CHK'D BY	REMARKS
1	EX-4037	2020/06/25	800	RW	15	260°C	257°C	94	115	108	109	113	141	142	144	144	162	TH	TT
2	EX-011	2020/06/25	1200	EP	15	265°C	260°C	96	141	130	105	138	151	156	158	174	169	TH	TT
3	EX-4037	2020/06/25	1225	RW	15	260°C	257°C	127	103	133	130	119	173	177	179	170	174	TH	TT
4	EX-4037	2020/06/27	800	TH	6	260°C	257°C	117	131	129	118	115	174	168	169	172	171	TH	TT
5	EX-4037	2020/06/27	1300	TH	10	260°C	257°C	147	144	140	154	143	179	172	174	174	173	TH	TT
6	EX-4037	2020/06/28	1230	TH	10	260°C	257°C	121	120	114	133	128	154	148	167	161	161	TH	TT

DETAIL CODE	PANEL NUMBER(S)	LOCATION DESCRIPTION	DETAIL TYPE	REPAIR TYPE	MACHINE NUMBER	REPAIR DATE YYYY-MM-DD	START TIME	WELD TECH	AIR TEMP °C	TEST DATE YYYY-MM-DD	TEST METH.	QC TECH
A	/											
B	/											
C	/											
D	/											
E	/											
F	/											
G	/											
H	/											
I	/											
J	/											
K	/											
L	/											
M	/											
N	/											
O	/											
P	/											
Q	/											
R	/											
S	/											
T	/											

DETAIL TYPE:

AD - ANIMAL DAMAGE	DS-# - DESTRUCT SAMPLE NUMBER	IO - INSUFFICIENT OVERLAP	T - THREE PANEL INTERSECTION
ATL - AIR TEST LEAK	EE - EARTHWORK EQUIPMENT DAMAGE	MD - MANUFACTURER/DELIVERY DAMAGE	VL - VACUUM TEST LEAK
BO - FUSION WELDER BURN	EXT - EXTENSION	P - PENETRATION	WR - WRINKLE
CR - CREASE	FM - FISHMOUTH	PT - PRESSURE TEST CUT	WS - WELDER RESTART
D - INSTALLATION DAMAGE	FS - FAILED SEAM LENGTH	SI - SOIL SURFACE IRREGULARITY	OTHER:

TEST METHOD:

AL - AIR LANCE	VB - VAC BOX
PS - POINT STRESS	ST - SPARK TEST

REPAIR TYPE:

G&W - GRIND & WELD	B - BOOT	P - PATCH
HAW - HOT AIR WELD	C - CAP	

REMARKS

QC TECH Thomas Howald

SUPERVISOR Chad Messervey

SUBMISSION DATE 2020/01/05

SHEET NUMBER 20 of 117

GEOMEMBRANE DETAIL & TEST LOG

PROJECT NUMBER CT001401 AREA / LAYER Primary

PROJECT TITLE Victoria Gold Heap Leach Pad Phase 1B

TRIAL SEAMS

#	MACHINE NUMBER	DATE YYYY-MM-DD	TIME	WELD TECH	AIR TEMP °C	PREHEAT TEMP °C	EXTRUDER TEMP °C	PEEL (PPI)					SHEAR (PPI)					CHK'D BY	REMARKS
1	EX-35	2020/06/28	1650	EP	15	260°C	254°C	120	143	123	124	142	158	157	151	163	163	TH	TT
2	EX-4037	2020/06/28	1700	EA	15	260°C	257°C	88	102	122	110	131	152	151	158	149	157	TH	TT
3	EX-4037	2020/06/29	1030	TH	10	260°C	257°C	125	132	132	121	121	156	157	153	165	159	TH	TT
4																			
5																			
6																			

DETAIL CODE	PANEL NUMBER(S)	LOCATION DESCRIPTION	DETAIL TYPE	REPAIR TYPE	MACHINE NUMBER	REPAIR DATE YYYY-MM-DD	START TIME	WELD TECH	AIR TEMP °C	TEST DATE YYYY-MM-DD	TEST METH.	QC TECH
A	/											
B	/											
C	/											
D	/											
E	/											
F	/											
G	/											
H	/											
I	/											
J	/											
K	/											
L	/											
M	/											
N	/											
O	/											
P	/											
Q	/											
R	/											
S	/											
T	/											

DETAIL TYPE:

AD - ANIMAL DAMAGE	DS-# - DESTRUCT SAMPLE NUMBER	IO - INSUFFICIENT OVERLAP	T - THREE PANEL INTERSECTION
ATL - AIR TEST LEAK	EE - EARTHWORK EQUIPMENT DAMAGE	MD - MANUFACTURER/DELIVERY DAMAGE	VL - VACUUM TEST LEAK
BO - FUSION WELDER BURN	EXT - EXTENSION	P - PENETRATION	WR - WRINKLE
CR - CREASE	FM - FISHMOUTH	PT - PRESSURE TEST CUT	WS - WELDER RESTART
D - INSTALLATION DAMAGE	FS - FAILED SEAM LENGTH	SI - SOIL SURFACE IRREGULARITY	OTHER:

TEST METHOD:

AL - AIR LANCE	VB - VAC BOX
PS - POINT STRESS	ST - SPARK TEST

REPAIR TYPE:

G&W - GRIND & WELD	B - BOOT	P - PATCH
HAW - HOT AIR WELD	C - CAP	

REMARKS

QC TECH Thomas Howald

SUPERVISOR Chad Messervey

SUBMISSION DATE 2020/01/05

SHEET NUMBER 21 of 117

GEOMEMBRANE DETAIL & TEST LOG

PROJECT NUMBER CT001401 AREA / LAYER Primary

PROJECT TITLE Victoria Gold Heap Leach Pad Phase 1B

TRIAL SEAMS

#	MACHINE NUMBER	DATE YYYY-MM-DD	TIME	WELD TECH	AIR TEMP °C	PREHEAT TEMP °C	EXTRUDER TEMP °C	PEEL (PPI)					SHEAR (PPI)					CHK'D BY	REMARKS
1	EX-4037	2020/06/28	1230	TH	10	260°C	257°C	121	120	114	133	128	154	148	167	161	161	TH	TT
2	EX-35	2020/06/28	1650	EP	15	260°C	254°C	120	143	123	124	142	158	157	151	163	163	TH	TT
3	EX-4037	2020/06/28	1700	EA	15	260°C	257°C	88	102	122	110	131	152	151	158	149	157	TH	TT
4	EX-4037	2020/06/29	1030	TH	10	260°C	257°C	125	132	132	121	121	156	157	153	165	159	TH	TT
5	EX-4037	2020/07/02	1130	TH	10	260°C	254°C	137	127	145	118	131	151	154	146	146	157	TH	TT
6	EX-4037	2020/07/02	1700	TH	10	260°C	254°C	111	113	115	106	115	142	143	144	150	152	TH	TT

DETAIL CODE	PANEL NUMBER(S)	LOCATION DESCRIPTION	DETAIL TYPE	REPAIR TYPE	MACHINE NUMBER	REPAIR DATE YYYY-MM-DD	START TIME	WELD TECH	AIR TEMP °C	TEST DATE YYYY-MM-DD	TEST METH.	QC TECH
10A	73 / 74	EEOS	DS-34	P	EX-4037	2020/06/29	1200	TH	10	2020/07/08	VB+PS	TH
10B	73 / 74	Intersection Of P71	T	G&W	EX-4037	2020/06/28	1735	EA	10	2020/07/08	VB+PS	TH
10C	73 / 74	Intersection Of P76	T	G&W	EX-4037	2020/06/28	1730	EA	10	2020/07/08	VB+PS	TH
10D	68 / 69	Intersection Of P70	WS	P	EX-35	2020/06/28	1822	EP	10	2020/07/08	VB+PS	TH
10E	68 / 69	Intersection Of P66	WS	P	EX-35	2020/06/28	1815	EP	10	2020/07/08	VB+PS	TH
10F	70 / 71	Intersection Of P69	T	G&W	EX-4037	2020/06/28	1745	EA	10	2020/07/08	VB+PS	TH
10G	70 / 71	Intersection Of P73	T	G&W	EX-4037	2020/06/28	1750	EA	10	2020/07/08	VB+PS	TH
10H	69 /	104.7m From SEOS 2m West	D	G&W	EX-4037	2020/07/04	1208	TH	10	2020/07/08	VB+PS	TH
10I	62 /	38m From NEOS	D	G&W	EX-4037	2020/07/04	1220	TH	10	2020/07/08	VB+PS	TH
10J	82 / 83	Intersection Of P85	T	G&W	EX-4037	2020/07/09	940	GP	10	2020/07/09	VB+PS	TH
10K	85 / 87	WEOS	DS-42	P	EX-4037	2020/07/02	1410	TH	10	2020/07/08	VB+PS	TH
10L	82 / 83	Intersection Of P80	DS-40	P	EX-4037	2020/07/02	1415	TH	10	2020/07/08	VB+PS	TH
10M	82 / 83	WEOS	DS-41	P	EX-4037	2020/07/02	1420	TH	10	2020/07/08	VB+PS	TH
10N	85 / 87	Intersection Of P88	T	G&W	EX-4037	2020/07/02	1425	TH	10	2020/07/08	VB+PS	TH
10O	82 / 87	6m From SEOS	WS	G&W	EX-4037	2020/07/09	945	GP	10	2020/07/09	VB+PS	TH
10P	68 / 70	1m From SEOS	FS	P	EX-4037	2020/07/02	1725	TH	10	2020/07/08	VB+PS	TH
10Q	68 / 70	15m From SEOS	FS	P	EX-4037	2020/07/02	1730	TH	10	2020/07/08	VB+PS	TH
10R	68 / 70	10m From SEOS	FS	G&W	EX-4037	2020/07/02	1735	TH	10	2020/07/08	VB+PS	TH
10S	69 /	75m From SEOS 3m East	D	P	EX-4037	2020/07/04	1210	TH	10	2020/07/08	VB+PS	TH
10T	61 / 64	85m From NEOS	FS	G&W	EX-4037	2020/07/04	1215	TH	10	2020/07/08	VB+PS	TH

DETAIL TYPE:

AD - ANIMAL DAMAGE	DS-# - DESTRUCT SAMPLE NUMBER	IO - INSUFFICIENT OVERLAP	T - THREE PANEL INTERSECTION
ATL - AIR TEST LEAK	EE - EARTHWORK EQUIPMENT DAMAGE	MD - MANUFACTURER/DELIVERY DAMAGE	VL - VACUUM TEST LEAK
BO - FUSION WELDER BURN	EXT - EXTENSION	P - PENETRATION	WR - WRINKLE
CR - CREASE	FM - FISHMOUTH	PT - PRESSURE TEST CUT	WS - WELDER RESTART
D - INSTALLATION DAMAGE	FS - FAILED SEAM LENGTH	SI - SOIL SURFACE IRREGULARITY	OTHER:

TEST METHOD:

AL - AIR LANCE	VB - VAC BOX
PS - POINT STRESS	ST - SPARK TEST

REPAIR TYPE:

G&W - GRIND & WELD	B - BOOT	P - PATCH
HAW - HOT AIR WELD	C - CAP	

REMARKS

QC TECH Thomas Howald

SUPERVISOR Chad Messervey

SUBMISSION DATE 2020/01/05

SHEET NUMBER 22 of 117

GEOMEMBRANE DETAIL & TEST LOG

PROJECT NUMBER CT001401 AREA / LAYER Primary

PROJECT TITLE Victoria Gold Heap Leach Pad Phase 1B

TRIAL SEAMS

#	MACHINE NUMBER	DATE YYYY-MM-DD	TIME	WELD TECH	AIR TEMP °C	PREHEAT TEMP °C	EXTRUDER TEMP °C	PEEL (PPI)					SHEAR (PPI)					CHK'D BY	REMARKS
1	EX-4037	2020/07/04	830	TH	10	260°C	257°C	129	105	127	119	128	156	153	138	151	147	TH	TT
2	EX-4037	2020/07/09	800	EA	10	260°C	257°C	148	147	144	141	151	204	197	203	194	199	TH	TT
3	EX-4037	2020/07/09	800	GP	10	260°C	257°C	150	137	170	158	191	181	186	199	204	200	TH	TT
4	EX-35	2020/07/09	835	RGP	10	257°C	265°C	168	176	169	174	174	199	205	197	196	184	TH	TT
5	EX-4037	2020/07/09	1230	EA	10	257°C	254°C	122	117	123	116	121	169	166	167	164	170	TH	TT
6	EX-4037	2020/07/09	1230	GP	10	257°C	254°C	125	126	120	121	127	156	157	147	149	151	TH	TT

DETAIL CODE	PANEL NUMBER(S)	LOCATION DESCRIPTION	DETAIL TYPE	REPAIR TYPE	MACHINE NUMBER	REPAIR DATE YYYY-MM-DD	START TIME	WELD TECH	AIR TEMP °C	TEST DATE YYYY-MM-DD	TEST METH.	QC TECH
A	/											
B	/											
C	/											
D	/											
E	/											
F	/											
G	/											
H	/											
I	/											
J	/											
K	/											
L	/											
M	/											
N	/											
O	/											
P	/											
Q	/											
R	/											
S	/											
T	/											

DETAIL TYPE:

AD - ANIMAL DAMAGE	DS-# - DESTRUCT SAMPLE NUMBER	IO - INSUFFICIENT OVERLAP	T - THREE PANEL INTERSECTION
ATL - AIR TEST LEAK	EE - EARTHWORK EQUIPMENT DAMAGE	MD - MANUFACTURER/DELIVERY DAMAGE	VL - VACUUM TEST LEAK
BO - FUSION WELDER BURN	EXT - EXTENSION	P - PENETRATION	WR - WRINKLE
CR - CREASE	FM - FISHMOUTH	PT - PRESSURE TEST CUT	WS - WELDER RESTART
D - INSTALLATION DAMAGE	FS - FAILED SEAM LENGTH	SI - SOIL SURFACE IRREGULARITY	OTHER:

TEST METHOD:

AL - AIR LANCE	VB - VAC BOX
PS - POINT STRESS	ST - SPARK TEST

REPAIR TYPE:

G&W - GRIND & WELD	B - BOOT	P - PATCH
HAW - HOT AIR WELD	C - CAP	

REMARKS

QC TECH Thomas Howald

SUPERVISOR Chad Messervey

SUBMISSION DATE 2020/01/05

SHEET NUMBER 23 of 117

GEOMEMBRANE DETAIL & TEST LOG

PROJECT NUMBER CT001401 AREA / LAYER Primary

PROJECT TITLE Victoria Gold Heap Leach Pad Phase 1B

TRIAL SEAMS

#	MACHINE NUMBER	DATE YYYY-MM-DD	TIME	WELD TECH	AIR TEMP °C	PREHEAT TEMP °C	EXTRUDER TEMP °C	PEEL (PPI)					SHEAR (PPI)					CHK'D BY	REMARKS
1	EX-35	2020/07/09	1235	RGP	10	257°C	265°C	124	136	138	124	125	162	168	178	172	175	TH	TT
2	EX-35	2020/07/09	1400	RGP	10	257°C	265°C	132	125	136	132	150	165	168	163	170	164	TH	TT
3																			
4																			
5																			
6																			

DETAIL CODE	PANEL NUMBER(S)	LOCATION DESCRIPTION	DETAIL TYPE	REPAIR TYPE	MACHINE NUMBER	REPAIR DATE YYYY-MM-DD	START TIME	WELD TECH	AIR TEMP °C	TEST DATE YYYY-MM-DD	TEST METH.	QC TECH
A	/											
B	/											
C	/											
D	/											
E	/											
F	/											
G	/											
H	/											
I	/											
J	/											
K	/											
L	/											
M	/											
N	/											
O	/											
P	/											
Q	/											
R	/											
S	/											
T	/											

DETAIL TYPE:

AD - ANIMAL DAMAGE	DS-# - DESTRUCT SAMPLE NUMBER	IO - INSUFFICIENT OVERLAP	T - THREE PANEL INTERSECTION
ATL - AIR TEST LEAK	EE - EARTHWORK EQUIPMENT DAMAGE	MD - MANUFACTURER/DELIVERY DAMAGE	VL - VACUUM TEST LEAK
BO - FUSION WELDER BURN	EXT - EXTENSION	P - PENETRATION	WR - WRINKLE
CR - CREASE	FM - FISHMOUTH	PT - PRESSURE TEST CUT	WS - WELDER RESTART
D - INSTALLATION DAMAGE	FS - FAILED SEAM LENGTH	SI - SOIL SURFACE IRREGULARITY	OTHER:

TEST METHOD:

AL - AIR LANCE	VB - VAC BOX
PS - POINT STRESS	ST - SPARK TEST

REPAIR TYPE:

G&W - GRIND & WELD	B - BOOT	P - PATCH
HAW - HOT AIR WELD	C - CAP	

REMARKS

QC TECH Thomas Howald

SUPERVISOR Chad Messervey

SUBMISSION DATE 2020/01/05

SHEET NUMBER 24 of 117

GEOMEMBRANE DETAIL & TEST LOG

PROJECT NUMBER CT001401 AREA / LAYER Primary

PROJECT TITLE Victoria Gold Heap Leach Pad Phase 1B

TRIAL SEAMS

#	MACHINE NUMBER	DATE YYYY-MM-DD	TIME	WELD TECH	AIR TEMP °C	PREHEAT TEMP °C	EXTRUDER TEMP °C	PEEL (PPI)					SHEAR (PPI)					CHK'D BY	REMARKS
1	EX-4037	2020/07/03	1220	TH	10	260°C	254°C	118	113	115	111	119	155	148	147	152	157	TH	TT
2	EX-4037	2020/07/03	1500	EA	10	260°C	257°C	102	91	94	90	103	162	161	167	160	163	TH	TT
3	EX-4037	2020/07/03	1500	GP	10	260°C	257°C	116	114	135	90	112	170	153	165	158	165	TH	TT
4	EX-35	2020/07/03	1600	RGP	10	268°C	260°C	158	161	157	158	167	171	171	175	174	170	TH	TT
5	EX-4037	2020/07/04	830	TH	10	260°C	257°C	129	105	127	119	128	156	153	138	151	147	TH	TT
6																			

DETAIL CODE	PANEL NUMBER(S)	LOCATION DESCRIPTION	DETAIL TYPE	REPAIR TYPE	MACHINE NUMBER	REPAIR DATE YYYY-MM-DD	START TIME	WELD TECH	AIR TEMP °C	TEST DATE YYYY-MM-DD	TEST METH.	QC TECH
11A	69 / 70	Entire Seam Of P69/70	FS	G&W	EX-4037	2020/07/04	1145	TH	10	2020/07/08	VB+PS	TH
11B	68 / 70	Entire Seam Of P68/70	FS	G&W	EX-4037	2020/07/04	1155	TH	10	2020/07/08	VB+PS	TH
11C	90 / 91	Intersection Of P93	T	G&W	EX-4037	2020/07/03	1640	EA	10	2020/07/08	VB+PS	TH
11D	90 / 91	Intersection Of P88	T	G&W	EX-4037	2020/07/03	1635	GP	10	2020/07/08	VB+PS	TH
11E	85 / 86	Intersection Of P88	T	G&W	EX-4037	2020/07/03	1701	GP	10	2020/07/08	VB+PS	TH
11F	85 / 86	Intersection Of P83	T	G&W	EX-4037	2020/07/03	1655	GP	10	2020/07/08	VB+PS	TH
11G	93 / 94	Intersection Of P91	T	G&W	EX-4037	2020/07/03	1645	GP	10	2020/07/08	VB+PS	TH
11H	83 / 86	76.2m From NEOS	WS	G&W	EX-4037	2020/07/04	853	TH	10	2020/07/08	VB+PS	TH
11I	88 / 89	Intersection Of P91	T	G&W	EX-4037	2020/07/03	1732	GP	10	2020/07/08	VB+PS	TH
11J	89 / 91	90m From NEOS	WS	P	EX-4037	2020/07/03	1730	GP	10	2020/07/08	VB+PS	TH
11K	88 / 89	Intersection Of P86	T	G&W	EX-4037	2020/07/03	1745	GP	10	2020/07/08	VB+PS	TH
11L	86 /	126m From NEOS	D	G&W	EX-4037	2020/07/03	1646	GP	10	2020/07/08	VB+PS	TH
11M	86 /	126m From NEOS	D	G&W	EX-4037	2020/07/03	1657	GP	10	2020/07/08	VB+PS	TH
11N	78 / 81	75m From NEOS	WS	P	EX-4037	2020/07/04	915	TH	10	2020/07/08	VB+PS	TH
11O	80 / 81	Intersection Of P78	T	G&W	EX-4037	2020/07/04	900	TH	10	2020/07/08	VB+PS	TH
11P	80 / 81	Intersection Of P83	T	G&W	EX-4037	2020/07/04	855	TH	10	2020/07/08	VB+PS	TH
11Q	77 / 78	Intersection Of P80	T	G&W	EX-4037	2020/07/04	910	TH	10	2020/07/08	VB+PS	TH
11R	77 / 78	Intersection Of P75	T	G&W	EX-4037	2020/07/04	905	TH	10	2020/07/08	VB+PS	TH
11S	72 / 73	Intersection Of P75	T	G&W	EX-4037	2020/07/04	950	TH	10	2020/07/08	VB+PS	TH
11T	72 / 73	Intersection Of P70	T	G&W	EX-4037	2020/07/04	945	TH	10	2020/07/08	VB+PS	TH

DETAIL TYPE:

AD - ANIMAL DAMAGE	DS-# - DESTRUCT SAMPLE NUMBER	IO - INSUFFICIENT OVERLAP	T - THREE PANEL INTERSECTION
ATL - AIR TEST LEAK	EE - EARTHWORK EQUIPMENT DAMAGE	MD - MANUFACTURER/DELIVERY DAMAGE	VL - VACUUM TEST LEAK
BO - FUSION WELDER BURN	EXT - EXTENSION	P - PENETRATION	WR - WRINKLE
CR - CREASE	FM - FISHMOUTH	PT - PRESSURE TEST CUT	WS - WELDER RESTART
D - INSTALLATION DAMAGE	FS - FAILED SEAM LENGTH	SI - SOIL SURFACE IRREGULARITY	OTHER:

TEST METHOD:

AL - AIR LANCE	VB - VAC BOX
PS - POINT STRESS	ST - SPARK TEST

REPAIR TYPE:

G&W - GRIND & WELD	B - BOOT	P - PATCH
HAW - HOT AIR WELD	C - CAP	

REMARKS

QC TECH Thomas Howald

SUPERVISOR Chad Messervey

SUBMISSION DATE 2020/01/05

SHEET NUMBER 25 of 117

GEOMEMBRANE DETAIL & TEST LOG

PROJECT NUMBER CT001401 AREA / LAYER Primary

PROJECT TITLE Victoria Gold Heap Leach Pad Phase 1B

TRIAL SEAMS

#	MACHINE NUMBER	DATE YYYY-MM-DD	TIME	WELD TECH	AIR TEMP °C	PREHEAT TEMP °C	EXTRUDER TEMP °C	PEEL (PPI)					SHEAR (PPI)					CHK'D BY	REMARKS
1	EX-4037	2020/07/03	1220	TH	10	260°C	254°C	118	113	115	111	119	155	148	147	152	157	TH	TT
2	EX-4037	2020/07/03	1500	EA	10	260°C	257°C	102	91	94	90	103	162	161	167	160	163	TH	TT
3	EX-4037	2020/07/03	1500	GP	10	260°C	257°C	116	114	135	90	112	170	153	165	158	165	TH	TT
4	EX-35	2020/07/03	1600	RGP	10	268°C	260°C	158	161	157	158	167	171	171	175	174	170	TH	TT
5	EX-4037	2020/07/04	830	TH	10	260°C	257°C	129	105	127	119	128	156	153	138	151	147	TH	TT
6	EX-4037	2020/07/09	800	EA	10	260°C	257°C	148	147	144	141	151	204	197	203	194	199	TH	TT

DETAIL CODE	PANEL NUMBER(S)	LOCATION DESCRIPTION	DETAIL TYPE	REPAIR TYPE	MACHINE NUMBER	REPAIR DATE YYYY-MM-DD	START TIME	WELD TECH	AIR TEMP °C	TEST DATE YYYY-MM-DD	TEST METH.	QC TECH
12A	75 / 76	Intersection Of P78	T	G&W	EX-4037	2020/07/04	935	TH	10	2020/07/08	VB+PS	TH
12B	75 / 76	Intersection Of P73	T	G&W	EX-4037	2020/07/04	930	TH	10	2020/07/08	VB+PS	TH
12C	78 / 79	Intersection Of P76	T	G&W	EX-4037	2020/07/03	1815	GP	10	2020/07/08	VB+PS	TH
12D	78 / 79	Intersection Of P81	T	G&W	EX-4037	2020/07/03	1813	GP	10	2020/07/08	VB+PS	TH
12E	83 / 84	Intersection Of P81	T	G&W	EX-4037	2020/07/03	1830	GP	10	2020/07/08	VB+PS	TH
12F	83 / 84	Intersection Of P86	T	G&W	EX-4037	2020/07/03	1826	GP	10	2020/07/08	VB+PS	TH
12G	91 / 92	Intersection Of P89	T	G&W	EX-4037	2020/07/03	1758	GP	10	2020/07/08	VB+PS	TH
12H	91 / 92	Intersection Of P94	T	G&W	EX-4037	2020/07/03	1753	GP	10	2020/07/08	VB+PS	TH
12I	85 / 87	Intersection Of P83	T	P	EX-4037	2020/07/09	923	GP	10	2020/07/09	VB+PS	TH
12J	85 / 87	Intersection Of P88	T	P	EX-4037	2020/07/09	915	GP	10	2020/07/09	VB+PS	TH
12K	87 /	25m From SEOS 2.5m East	D	P	EX-4037	2020/07/09	918	GP	10	2020/07/09	VB+PS	TH
12L	87 /	20m From SEOS	D	P	EX-4037	2020/07/09	927	GP	10	2020/07/09	VB+PS	TH
12M	87 /	20m From SEOS	D	G&W	EX-4037	2020/07/09	928	GP	10	2020/07/09	VB+PS	TH
12N	113 / 114	Intersection Of P111	T	G&W	EX-35	2020/07/09	1321	RGP	10	2020/07/09	VB+PS	TH
12O	113 / 114	Intersection Of P116	T	G&W	EX-35	2020/07/09	1706	RGP	10	2020/07/09	VB+PS	TH
12P	116 / 117	23m From SEOS	WS	P	EX-35	2020/07/09	1702	RGP	10	2020/07/09	VB+PS	TH
12Q	117 / 119	Intersection Of P106	T	G&W	EX-35	2020/07/09	1711	RGP	10	2020/07/09	VB+PS	TH
12R	106 /	23.3m From SEOS	D	P	EX-35	2020/07/09	1740	RGP	10	2020/07/09	VB+PS	TH
12S	117 / 118	Intersection Of P119	T	G&W	EX-35	2020/07/09	1717	RGP	10	2020/07/09	VB+PS	TH
12T	117 / 118	Intersection Of P	T	G&W	EX-35	2020/07/09	1715	RGP	10	2020/07/09	VB+PS	TH

DETAIL TYPE:

AD - ANIMAL DAMAGE	DS-# - DESTRUCT SAMPLE NUMBER	IO - INSUFFICIENT OVERLAP	T - THREE PANEL INTERSECTION
ATL - AIR TEST LEAK	EE - EARTHWORK EQUIPMENT DAMAGE	MD - MANUFACTURER/DELIVERY DAMAGE	VL - VACUUM TEST LEAK
BO - FUSION WELDER BURN	EXT - EXTENSION	P - PENETRATION	WR - WRINKLE
CR - CREASE	FM - FISHMOUTH	PT - PRESSURE TEST CUT	WS - WELDER RESTART
D - INSTALLATION DAMAGE	FS - FAILED SEAM LENGTH	SI - SOIL SURFACE IRREGULARITY	OTHER:

TEST METHOD:

AL - AIR LANCE	VB - VAC BOX
PS - POINT STRESS	ST - SPARK TEST

REPAIR TYPE:

G&W - GRIND & WELD	B - BOOT	P - PATCH
HAW - HOT AIR WELD	C - CAP	

REMARKS

QC TECH Thomas Howald

SUPERVISOR Chad Messervey

SUBMISSION DATE 2020/01/05

SHEET NUMBER 26 of 117

GEOMEMBRANE DETAIL & TEST LOG

PROJECT NUMBER CT001401 AREA / LAYER Primary

PROJECT TITLE Victoria Gold Heap Leach Pad Phase 1B

TRIAL SEAMS

#	MACHINE NUMBER	DATE YYYY-MM-DD	TIME	WELD TECH	AIR TEMP °C	PREHEAT TEMP °C	EXTRUDER TEMP °C	PEEL (PPI)					SHEAR (PPI)					CHK'D BY	REMARKS
1	EX-4037	2020/07/09	800	GP	10	260°C	257°C	150	137	170	158	191	181	186	199	204	200	TH	TT
2	EX-35	2020/07/09	835	RGP	10	257°C	265°C	168	176	169	174	174	199	205	197	196	184	TH	TT
3	EX-4037	2020/07/09	1230	EA	10	257°C	254°C	122	117	123	116	121	169	166	167	164	170	TH	TT
4	EX-4037	2020/07/09	1230	GP	10	257°C	254°C	125	126	120	121	127	156	157	147	149	151	TH	TT
5	EX-35	2020/07/09	1235	RGP	10	257°C	265°C	124	136	138	124	125	162	168	178	172	175	TH	TT
6	EX-35	2020/07/09	1400	RGP	10	257°C	265°C	132	125	136	132	150	165	168	163	170	164	TH	TT

DETAIL CODE	PANEL NUMBER(S)	LOCATION DESCRIPTION	DETAIL TYPE	REPAIR TYPE	MACHINE NUMBER	REPAIR DATE YYYY-MM-DD	START TIME	WELD TECH	AIR TEMP °C	TEST DATE YYYY-MM-DD	TEST METH.	QC TECH
A	/											
B	/											
C	/											
D	/											
E	/											
F	/											
G	/											
H	/											
I	/											
J	/											
K	/											
L	/											
M	/											
N	/											
O	/											
P	/											
Q	/											
R	/											
S	/											
T	/											

DETAIL TYPE:

AD - ANIMAL DAMAGE	DS-# - DESTRUCT SAMPLE NUMBER	IO - INSUFFICIENT OVERLAP	T - THREE PANEL INTERSECTION
ATL - AIR TEST LEAK	EE - EARTHWORK EQUIPMENT DAMAGE	MD - MANUFACTURER/DELIVERY DAMAGE	VL - VACUUM TEST LEAK
BO - FUSION WELDER BURN	EXT - EXTENSION	P - PENETRATION	WR - WRINKLE
CR - CREASE	FM - FISHMOUTH	PT - PRESSURE TEST CUT	WS - WELDER RESTART
D - INSTALLATION DAMAGE	FS - FAILED SEAM LENGTH	SI - SOIL SURFACE IRREGULARITY	OTHER:

TEST METHOD:

AL - AIR LANCE	VB - VAC BOX
PS - POINT STRESS	ST - SPARK TEST

REPAIR TYPE:

G&W - GRIND & WELD	B - BOOT	P - PATCH
HAW - HOT AIR WELD	C - CAP	

REMARKS

QC TECH Thomas Howald

SUPERVISOR Chad Messervey

SUBMISSION DATE 2020/01/05

SHEET NUMBER 27 of 117

GEOMEMBRANE DETAIL & TEST LOG

PROJECT NUMBER CT001401 AREA / LAYER Primary

PROJECT TITLE Victoria Gold Heap Leach Pad Phase 1B

TRIAL SEAMS

#	MACHINE NUMBER	DATE YYYY-MM-DD	TIME	WELD TECH	AIR TEMP °C	PREHEAT TEMP °C	EXTRUDER TEMP °C	PEEL (PPI)					SHEAR (PPI)					CHK'D BY	REMARKS
1	EX-4037	2020/07/09	800	EA	10	260°C	257°C	148	147	144	141	151	204	197	203	194	199	TH	TT
2	EX-4037	2020/07/09	800	GP	10	260°C	257°C	150	137	170	158	191	181	186	199	204	200	TH	TT
3	EX-35	2020/07/09	835	RGP	10	257°C	265°C	168	176	169	174	174	199	205	197	196	184	TH	TT
4	EX-4037	2020/07/09	1230	EA	10	257°C	254°C	122	117	123	116	121	169	166	167	164	170	TH	TT
5	EX-4037	2020/07/09	1230	GP	10	257°C	254°C	125	126	120	121	127	156	157	147	149	151	TH	TT
6	EX-35	2020/07/09	1235	RGP	10	257°C	265°C	124	136	138	124	125	162	168	178	172	175	TH	TT

DETAIL CODE	PANEL NUMBER(S)	LOCATION DESCRIPTION	DETAIL TYPE	REPAIR TYPE	MACHINE NUMBER	REPAIR DATE YYYY-MM-DD	START TIME	WELD TECH	AIR TEMP °C	TEST DATE YYYY-MM-DD	TEST METH.	QC TECH
13A	119 / 120	Intersection Of P106	T	G&W	EX-35	2020/07/09	1722	RGP	10	2020/08/19	VB+PS	TH
13B	104 / 106	SEOS	IO	P	EX-35	2020/07/09	1437	RGP	10	2020/07/09	VB+PS	TH
13C	102 / 104	7m From SEOS	DS-50	P	EX-35	2020/07/09	1733	RGP	10	2020/07/09	VB+PS	TH
13D	99 / 102	SEOS	DS-48	P	EX-35	2020/07/09	1500	RGP	10	2020/07/09	VB+PS	TH
13E	107 / 110	Intersection Of P97	T	P	EX-4037	2020/07/09	1425	GP	10	2020/07/10	VB+PS	TH
13F	102 / 103	Intersection Of P105	T	G&W	EX-4037	2020/07/09	1449	GP	10	2020/07/10	VB+PS	TH
13G	102 / 103	Intersection Of P100	T	G&W	EX-4037	2020/07/09	1452	GP	10	2020/07/10	VB+PS	TH
13H	96 /	125m From SEOS .2m East	D	P	EX-4037	2020/07/09	1456	GP	10	2020/07/10	VB+PS	TH
13I	96 /	124m From SEOS.2m East	D	P	EX-4037	2020/07/09	1459	GP	10	2020/07/10	VB+PS	TH
13J	105 / 107	Intersection Of P97/98	T	P	EX-4037	2020/07/09	1417	GP	10	2020/07/10	VB+PS	TH
13K	97 / 98	Intersection Of P94	T	G&W	EX-4037	2020/07/09	1407	GP	10	2020/07/10	VB+PS	TH
13L	103 / 105	146.5m From SEOS	WS	P	EX-4037	2020/07/09	1356	GP	10	2020/07/10	VB+PS	TH
13M	103 / 105	Intersection Of P98	T	P	EX-4037	2020/07/09	1343	GP	10	2020/07/10	VB+PS	TH
13N	100 / 103	Intersection Of P98	T	P	EX-4037	2020/07/09	1321	GP	10	2020/07/10	VB+PS	TH
13O	100 / 101	Intersection Of P98	T	G&W	EX-4037	2020/07/09	1300	GP	10	2020/07/10	VB+PS	TH
13P	100 / 101	Intersection Of P96	T	G&W	EX-4037	2020/07/09	1304	GP	10	2020/07/10	VB+PS	TH
13Q	98 / 101	Intersection Of P96	T	G&W	EX-4037	2020/07/09	1245	GP	10	2020/07/10	VB+PS	TH
13R	96 / 98	18m From NEOS	WS	P	EX-4037	2020/07/09	1115	GP	10	2020/07/10	VB+PS	TH
13S	95 / 96	Intersection Of P100	T	G&W	EX-4037	2020/07/12	1757	GP	10	2020/07/18	VB+PS	TH
13T	95 / 96	Intersection Of P122	T	G&W	EX-4037	2020/07/12	1803	GP	10	2020/07/18	VB+PS	TH

DETAIL TYPE:

AD - ANIMAL DAMAGE	DS-# - DESTRUCT SAMPLE NUMBER	IO - INSUFFICIENT OVERLAP	T - THREE PANEL INTERSECTION
ATL - AIR TEST LEAK	EE - EARTHWORK EQUIPMENT DAMAGE	MD - MANUFACTURER/DELIVERY DAMAGE	VL - VACUUM TEST LEAK
BO - FUSION WELDER BURN	EXT - EXTENSION	P - PENETRATION	WR - WRINKLE
CR - CREASE	FM - FISHMOUTH	PT - PRESSURE TEST CUT	WS - WELDER RESTART
D - INSTALLATION DAMAGE	FS - FAILED SEAM LENGTH	SI - SOIL SURFACE IRREGULARITY	OTHER:

TEST METHOD:

AL - AIR LANCE	VB - VAC BOX
PS - POINT STRESS	ST - SPARK TEST

REPAIR TYPE:

G&W - GRIND & WELD	B - BOOT	P - PATCH
HAW - HOT AIR WELD	C - CAP	

REMARKS

QC TECH Thomas Howald

SUPERVISOR Chad Messervey

SUBMISSION DATE 2020/01/05

SHEET NUMBER 28 of 117

GEOMEMBRANE DETAIL & TEST LOG

PROJECT NUMBER CT001401 AREA / LAYER Primary

PROJECT TITLE Victoria Gold Heap Leach Pad Phase 1B

TRIAL SEAMS

#	MACHINE NUMBER	DATE YYYY-MM-DD	TIME	WELD TECH	AIR TEMP °C	PREHEAT TEMP °C	EXTRUDER TEMP °C	PEEL (PPI)					SHEAR (PPI)					CHK'D BY	REMARKS
1	EX-35	2020/07/09	1400	RGP	10	257°C	265°C	132	125	136	132	150	165	168	163	170	164	TH	TT
2	EX-4037	2020/07/12	1420	GP	10	257°C	254°C	122	121	127	119	131	151	155	156	136	146	TH	TT
3	EX-4036	2020/07/12	1430	RP	10	257°C	254°C	140	134	120	116	150	149	154	156	170	171	TH	TT
4																			
5																			
6																			

DETAIL CODE	PANEL NUMBER(S)	LOCATION DESCRIPTION	DETAIL TYPE	REPAIR TYPE	MACHINE NUMBER	REPAIR DATE YYYY-MM-DD	START TIME	WELD TECH	AIR TEMP °C	TEST DATE YYYY-MM-DD	TEST METH.	QC TECH
A	/											
B	/											
C	/											
D	/											
E	/											
F	/											
G	/											
H	/											
I	/											
J	/											
K	/											
L	/											
M	/											
N	/											
O	/											
P	/											
Q	/											
R	/											
S	/											
T	/											

DETAIL TYPE:

AD - ANIMAL DAMAGE	DS-# - DESTRUCT SAMPLE NUMBER	IO - INSUFFICIENT OVERLAP	T - THREE PANEL INTERSECTION
ATL - AIR TEST LEAK	EE - EARTHWORK EQUIPMENT DAMAGE	MD - MANUFACTURER/DELIVERY DAMAGE	VL - VACUUM TEST LEAK
BO - FUSION WELDER BURN	EXT - EXTENSION	P - PENETRATION	WR - WRINKLE
CR - CREASE	FM - FISHMOUTH	PT - PRESSURE TEST CUT	WS - WELDER RESTART
D - INSTALLATION DAMAGE	FS - FAILED SEAM LENGTH	SI - SOIL SURFACE IRREGULARITY	OTHER:

TEST METHOD:

AL - AIR LANCE	VB - VAC BOX
PS - POINT STRESS	ST - SPARK TEST

REPAIR TYPE:

G&W - GRIND & WELD	B - BOOT	P - PATCH
HAW - HOT AIR WELD	C - CAP	

REMARKS

QC TECH Thomas Howald

SUPERVISOR Chad Messervey

SUBMISSION DATE 2020/01/05

SHEET NUMBER 29 of 117

GEOMEMBRANE DETAIL & TEST LOG

PROJECT NUMBER CT001401 AREA / LAYER Primary

PROJECT TITLE Victoria Gold Heap Leach Pad Phase 1B

TRIAL SEAMS

#	MACHINE NUMBER	DATE YYYY-MM-DD	TIME	WELD TECH	AIR TEMP °C	PREHEAT TEMP °C	EXTRUDER TEMP °C	PEEL (PPI)					SHEAR (PPI)					CHK'D BY	REMARKS
1	EX-4037	2020/07/12	1420	GP	10	257°C	254°C	122	121	127	119	131	151	155	156	136	146	TH	TT
2	EX-4036	2020/07/12	1430	RP	10	257°C	254°C	140	134	120	116	150	149	154	156	170	171	TH	TT
3																			
4																			
5																			
6																			

DETAIL CODE	PANEL NUMBER(S)	LOCATION DESCRIPTION	DETAIL TYPE	REPAIR TYPE	MACHINE NUMBER	REPAIR DATE YYYY-MM-DD	START TIME	WELD TECH	AIR TEMP °C	TEST DATE YYYY-MM-DD	TEST METH.	QC TECH
14A	121 / 122	Intersection Of P95	T	G&W	EX-4037	2020/07/12	1813	GP	10	2020/07/18	VB+PS	TH
14B	121 / 122	Intersection Of P124	T	P	EX-4037	2020/07/12	1814	GP	10	2020/07/18	VB+PS	TH
14C	124 / 125	Intersection Of P122	T	G&W	EX-4037	2020/07/12	1533	GP	10	2020/07/18	VB+PS	TH
14D	124 / 125	Inmtersection Of P127	T	G&W	EX-4037	2020/07/12	1536	GP	10	2020/07/18	VB+PS	TH
14E	124 / 127	92m From SEOS	WS	P	EX-4037	2020/07/12	1731	GP	10	2020/07/18	VB+PS	TH
14F	123 / 124	Intersection Of P121	T	G&W	EX-4036	2020/07/12	1744	RP	10	2020/07/18	VB+PS	TH
14G	123 / 124	Intersection Of P126	T	G&W	EX-4036	2020/07/12	1748	RP	10	2020/07/18	VB+PS	TH
14H	126 / 127	Intersecton Of P124	T	G&W	EX-4036	2020/07/12	1703	RP	10	2020/07/18	VB+PS	TH
14I	99 / 100	Intersection Of P95	T	G&W	EX-4036	2020/07/12	1659	RP	10	2020/08/19	VB+PS	TH
14J	99 / 100	Intersection Of P102	T	G&W	EX-4036	2020/07/12	1656	RP	10	2020/08/19	VB+PS	TH
14K	106 / 107	Intersection Of P104	T	P	EX-4036	2020/07/12	1538	RP	10	2020/07/18	VB+PS	TH
14L	106 / 107	Intersection Of P116	T	G&W	EX-4036	2020/07/12	1643	RP	10	2020/07/18	VB+PS	TH
14M	116 / 117	Intersection Of P106	T	G&W	EX-4036	2020/07/12	1645	RP	10	2020/07/18	VB+PS	TH
14N	114 / 115	Intersection Of P116	T	G&W	EX-4036	2020/07/12	1526	RP	10	2020/07/18	VB+PS	TH
14O	114 / 115	Intersection Of P111	T	G&W	EX-4036	2020/07/12	1523	RP	10	2020/07/18	VB+PS	TH
14P	115 / 116	Intersection Of P107	T	G&W	EX-4036	2020/07/12	1510	RP	10	2020/07/18	VB+PS	TH
14Q	111 / 112	Intersection Of P115	T	G&W	EX-4036	2020/07/12	1512	RP	10	2020/07/18	VB+PS	TH
14R	111 / 112	Intersection Of P109	T	G&W	EX-4036	2020/07/12	1517	RP	10	2020/07/18	VB+PS	TH
14S	111 / 109	47m From SEOS	IO	G&W	EX-4036	2020/07/12	1516	RP	10	2020/07/18	VB+PS	TH
14T	108 / 109	WEOS	DS-51	P	EX-4037	2020/07/12	1804	GP	10	2020/07/18	VB+PS	TH

DETAIL TYPE:

AD - ANIMAL DAMAGE	DS-# - DESTRUCT SAMPLE NUMBER	IO - INSUFFICIENT OVERLAP	T - THREE PANEL INTERSECTION
ATL - AIR TEST LEAK	EE - EARTHWORK EQUIPMENT DAMAGE	MD - MANUFACTURER/DELIVERY DAMAGE	VL - VACUUM TEST LEAK
BO - FUSION WELDER BURN	EXT - EXTENSION	P - PENETRATION	WR - WRINKLE
CR - CREASE	FM - FISHMOUTH	PT - PRESSURE TEST CUT	WS - WELDER RESTART
D - INSTALLATION DAMAGE	FS - FAILED SEAM LENGTH	SI - SOIL SURFACE IRREGULARITY	OTHER:

TEST METHOD:

AL - AIR LANCE	VB - VAC BOX
PS - POINT STRESS	ST - SPARK TEST

REPAIR TYPE:

G&W - GRIND & WELD	B - BOOT	P - PATCH
HAW - HOT AIR WELD	C - CAP	

REMARKS

QC TECH Thomas Howald

SUPERVISOR Chad Messervey

SUBMISSION DATE 2020/01/05

SHEET NUMBER 30 of 117

GEOMEMBRANE DETAIL & TEST LOG

PROJECT NUMBER CT001401 AREA / LAYER Primary

PROJECT TITLE Victoria Gold Heap Leach Pad Phase 1B

TRIAL SEAMS

#	MACHINE NUMBER	DATE YYYY-MM-DD	TIME	WELD TECH	AIR TEMP °C	PREHEAT TEMP °C	EXTRUDER TEMP °C	PEEL (PPI)					SHEAR (PPI)					CHK'D BY	REMARKS
1	EX-4037	2020/07/09	800	EA	10	260°C	257°C	148	147	144	141	151	204	197	203	194	199	TH	TT
2	EX-4037	2020/07/09	800	GP	10	260°C	257°C	150	137	170	158	191	181	186	199	204	200	TH	TT
3	EX-35	2020/07/09	835	RGP	10	257°C	265°C	168	176	169	174	174	199	205	197	196	184	TH	TT
4	EX-4037	2020/07/09	1230	EA	10	257°C	254°C	122	117	123	116	121	169	166	167	164	170	TH	TT
5	EX-4037	2020/07/09	1230	GP	10	257°C	254°C	125	126	120	121	127	156	157	147	149	151	TH	TT
6	EX-35	2020/07/09	1235	RGP	10	257°C	265°C	124	136	138	124	125	162	168	178	172	175	TH	TT

DETAIL CODE	PANEL NUMBER(S)	LOCATION DESCRIPTION	DETAIL TYPE	REPAIR TYPE	MACHINE NUMBER	REPAIR DATE YYYY-MM-DD	START TIME	WELD TECH	AIR TEMP °C	TEST DATE YYYY-MM-DD	TEST METH.	QC TECH
15A	93 / 94	Intersection Of P97	T	G&W	EX-35	2020/07/13	1748	EA	10	2020/08/19	VB+PS	TH
15B	94 / 97	104m From Seos	IO	P	EX-4037	2020/07/09	1442	GP	10	2020/07/18	VB+PS	TH
15C	109 / 110	Intersection Of P97	T	G&W	EX-35	2020/07/13	1821	GP	10	2020/07/18	VB+PS	TH
15D	109 / 110	Intersection Of P112	T	G&W	EX-35	2020/07/13	1828	EA	10	2020/08/19	VB+PS	TH
15E	110 / 112	Intersection Of P107	T	G&W	EX-35	2020/07/13	1814	GP	10	2020/08/19	VB+PS	TH
15F	112 / 115	Intersection Of P107	T	G&W	EX-35	2020/07/13	1836	GP	10	2020/08/19	VB+PS	TH
15G	127 / 128	Intersection Of P125	T	G&W	EX-4037	2020/07/12	1500	GP	10	2020/07/18	VB+PS	TH
15H	127 / 128	Intersection Of P132	T	G&W	EX-4037	2020/07/13	1822	RP	10	2020/07/18	VB+PS	TH
15I	134 / 135	Intersection Of P132	T	G&W	EX-4037	2020/07/13	1817	RP	10	2020/07/18	VB+PS	TH
15J	99 / 95	37m From SEOS	WS	P	EX-4036	2020/07/12	1758	RP	10	2020/07/18	VB+PS	TH
15K	108 /	37.2m From SEOS	D	P	EX-4036	2020/07/16	1715	RGP	10	2020/07/18	VB+PS	TH
15L	108 /	37m From SEOS	D	P	EX-4036	2020/07/16	1724	RGP	15	2020/07/18	VB+PS	TH
15M	108 / 109	Intersection Of P111	T	G&W	EX-4036	2020/07/16	1725	RGP	15	2020/07/18	VB+PS	TH
15N	93 / 97	SEOS	DS-63	P	EX-4036	2020/07/16	1747	RGP	15	2020/07/18	VB+PS	TH
15O	97 / 108	SEOS	DS-64	P	EX-4036	2020/07/16	1751	RGP	15	2020/07/18	VB+PS	TH
15P	108 / 111	SEOS	DS-65	P	EX-4036	2020/07/16	1741	RGP	15	2020/07/18	VB+PS	TH
15Q	104 / 105	Intersection Of P107	T	G&W	EX-4036	2020/07/16	1755	RGP	15	2020/07/18	VB+PS	TH
15R	104 / 105	Intersection Of P102	T	G&W	EX-4036	2020/07/16	1757	RGP	15	2020/08/19	VB+PS	TH
15S	130 / 131	Intersection Of P126	T	G&W	EX-4036	2020/07/12	1700	RP	10	2020/07/18	VB+PS	TH
15T	127 / 126	Intersection Of P131	T	G&W	EX-4036	2020/07/12	1658	RP	10	2020/07/18	VB+PS	TH

DETAIL TYPE:

AD - ANIMAL DAMAGE	DS-# - DESTRUCT SAMPLE NUMBER	IO - INSUFFICIENT OVERLAP	T - THREE PANEL INTERSECTION
ATL - AIR TEST LEAK	EE - EARTHWORK EQUIPMENT DAMAGE	MD - MANUFACTURER/DELIVERY DAMAGE	VL - VACUUM TEST LEAK
BO - FUSION WELDER BURN	EXT - EXTENSION	P - PENETRATION	WR - WRINKLE
CR - CREASE	FM - FISHMOUTH	PT - PRESSURE TEST CUT	WS - WELDER RESTART
D - INSTALLATION DAMAGE	FS - FAILED SEAM LENGTH	SI - SOIL SURFACE IRREGULARITY	OTHER:

TEST METHOD:

AL - AIR LANCE	VB - VAC BOX
PS - POINT STRESS	ST - SPARK TEST

REPAIR TYPE:

G&W - GRIND & WELD	B - BOOT	P - PATCH
HAW - HOT AIR WELD	C - CAP	

REMARKS

QC TECH Thomas Howald

SUPERVISOR Chad Messervey

SUBMISSION DATE 2020/01/05

SHEET NUMBER 31 of 117

GEOMEMBRANE DETAIL & TEST LOG

PROJECT NUMBER CT001401 AREA / LAYER Primary

PROJECT TITLE Victoria Gold Heap Leach Pad Phase 1B

TRIAL SEAMS

#	MACHINE NUMBER	DATE YYYY-MM-DD	TIME	WELD TECH	AIR TEMP °C	PREHEAT TEMP °C	EXTRUDER TEMP °C	PEEL (PPI)					SHEAR (PPI)					CHK'D BY	REMARKS
1	EX-35	2020/07/09	1400	RGP	10	257°C	265°C	132	125	136	132	150	165	168	163	170	164	TH	TT
2	EX-4037	2020/07/12	1420	GP	10	257°C	254°C	122	121	127	119	131	151	155	156	136	146	TH	TT
3	EX-4036	2020/07/12	1430	RP	10	257°C	254°C	140	134	120	116	150	149	154	156	170	171	TH	TT
4	EX-35	2020/07/13	1623	GP	10	257°C	254°C	111	122	128	121	113	156	155	148	157	151	TH	TT
5	EX-35	2020/07/13	1623	EA	10	257°C	254°C	136	131	122	121	118	145	141	158	151	149	TH	TT
6	EX-4037	2020/07/13	1740	RP	10	257°C	254°C	92	95	102	109	107	139	130	124	136	144	TH	TT

DETAIL CODE	PANEL NUMBER(S)	LOCATION DESCRIPTION	DETAIL TYPE	REPAIR TYPE	MACHINE NUMBER	REPAIR DATE YYYY-MM-DD	START TIME	WELD TECH	AIR TEMP °C	TEST DATE YYYY-MM-DD	TEST METH.	QC TECH
A	/											
B	/											
C	/											
D	/											
E	/											
F	/											
G	/											
H	/											
I	/											
J	/											
K	/											
L	/											
M	/											
N	/											
O	/											
P	/											
Q	/											
R	/											
S	/											
T	/											

DETAIL TYPE:

AD - ANIMAL DAMAGE	DS-# - DESTRUCT SAMPLE NUMBER	IO - INSUFFICIENT OVERLAP	T - THREE PANEL INTERSECTION
ATL - AIR TEST LEAK	EE - EARTHWORK EQUIPMENT DAMAGE	MD - MANUFACTURER/DELIVERY DAMAGE	VL - VACUUM TEST LEAK
BO - FUSION WELDER BURN	EXT - EXTENSION	P - PENETRATION	WR - WRINKLE
CR - CREASE	FM - FISHMOUTH	PT - PRESSURE TEST CUT	WS - WELDER RESTART
D - INSTALLATION DAMAGE	FS - FAILED SEAM LENGTH	SI - SOIL SURFACE IRREGULARITY	OTHER:

TEST METHOD:

AL - AIR LANCE	VB - VAC BOX
PS - POINT STRESS	ST - SPARK TEST

REPAIR TYPE:

G&W - GRIND & WELD	B - BOOT	P - PATCH
HAW - HOT AIR WELD	C - CAP	

REMARKS

QC TECH Thomas Howald

SUPERVISOR Chad Messervey

SUBMISSION DATE 2020/01/05

SHEET NUMBER 32 of 117

GEOMEMBRANE DETAIL & TEST LOG

PROJECT NUMBER CT001401 AREA / LAYER Primary

PROJECT TITLE Victoria Gold Heap Leach Pad Phase 1B

TRIAL SEAMS

#	MACHINE NUMBER	DATE YYYY-MM-DD	TIME	WELD TECH	AIR TEMP °C	PREHEAT TEMP °C	EXTRUDER TEMP °C	PEEL (PPI)					SHEAR (PPI)					CHK'D BY	REMARKS
1	EX-4037	2020/07/16	1415	EA	15	257°C	254°C	89	89	112	110	94	144	152	122	142	148	TH	TT
2	EX-4036	2020/07/16	1545	RGP	15	257°C	254°C	112	120	108	110	109	121	138	144	132	129	TH	TT
3																			
4																			
5																			
6																			

DETAIL CODE	PANEL NUMBER(S)	LOCATION DESCRIPTION	DETAIL TYPE	REPAIR TYPE	MACHINE NUMBER	REPAIR DATE YYYY-MM-DD	START TIME	WELD TECH	AIR TEMP °C	TEST DATE YYYY-MM-DD	TEST METH.	QC TECH
A	/											
B	/											
C	/											
D	/											
E	/											
F	/											
G	/											
H	/											
I	/											
J	/											
K	/											
L	/											
M	/											
N	/											
O	/											
P	/											
Q	/											
R	/											
S	/											
T	/											

DETAIL TYPE:

AD - ANIMAL DAMAGE	DS-# - DESTRUCT SAMPLE NUMBER	IO - INSUFFICIENT OVERLAP	T - THREE PANEL INTERSECTION
ATL - AIR TEST LEAK	EE - EARTHWORK EQUIPMENT DAMAGE	MD - MANUFACTURER/DELIVERY DAMAGE	VL - VACUUM TEST LEAK
BO - FUSION WELDER BURN	EXT - EXTENSION	P - PENETRATION	WR - WRINKLE
CR - CREASE	FM - FISHMOUTH	PT - PRESSURE TEST CUT	WS - WELDER RESTART
D - INSTALLATION DAMAGE	FS - FAILED SEAM LENGTH	SI - SOIL SURFACE IRREGULARITY	OTHER:

TEST METHOD:

AL - AIR LANCE	VB - VAC BOX
PS - POINT STRESS	ST - SPARK TEST

REPAIR TYPE:

G&W - GRIND & WELD	B - BOOT	P - PATCH
HAW - HOT AIR WELD	C - CAP	

REMARKS

QC TECH Thomas Howald

SUPERVISOR Chad Messervey

SUBMISSION DATE 2020/01/05

SHEET NUMBER 33 of 117

GEOMEMBRANE DETAIL & TEST LOG

PROJECT NUMBER CT001401 AREA / LAYER Primary

PROJECT TITLE Victoria Gold Heap Leach Pad Phase 1B

TRIAL SEAMS

#	MACHINE NUMBER	DATE YYYY-MM-DD	TIME	WELD TECH	AIR TEMP °C	PREHEAT TEMP °C	EXTRUDER TEMP °C	PEEL (PPI)					SHEAR (PPI)					CHK'D BY	REMARKS
1	EX-4037	2020/07/12	1420	GP	10	257°C	254°C	122	121	127	119	131	151	155	156	136	146	TH	TT
2	EX-4036	2020/07/12	1430	RP	10	257°C	254°C	140	134	120	116	150	149	154	156	170	171	TH	TT
3	EX-4037	2020/07/16	1415	EA	15	257°C	254°C	89	89	112	110	94	144	152	122	142	148	TH	TT
4	EX-4036	2020/07/16	1545	RGP	15	257°C	254°C	112	120	108	110	109	121	138	144	132	129	TH	TT
5																			
6																			

DETAIL CODE	PANEL NUMBER(S)	LOCATION DESCRIPTION	DETAIL TYPE	REPAIR TYPE	MACHINE NUMBER	REPAIR DATE YYYY-MM-DD	START TIME	WELD TECH	AIR TEMP °C	TEST DATE YYYY-MM-DD	TEST METH.	QC TECH
16A	130 / 131	Intersection Of P133	T	P	EX-4036	2020/07/12	1657	RP	10	2020/07/18	VB+PS	TH
16B	159 / 160	19.1m From NEOS	IO	P	EX-4037	2020/07/16	1635	EA	15	2020/08/03	VB+PS	TH
16C	159 / 158	Intersection Of P157	T	G&W	EX-4037	2020/07/16	1702	EA	15	2020/08/03	VB+PS	TH
16D	155 / 157	24.8m Frpm NEOS	IO	P	EX-4037	2020/07/16	1647	EA	15	2020/08/03	VB+PS	TH
16E	152 / 153	Intersection Of P155	T	G&W	EX-4037	2020/07/16	1652	EA	15	2020/08/03	VB+PS	TH
16F	152 / 153	Intersection Of P164	T	G&W	EX-4037	2020/07/16	1655	EA	15	2020/08/03	VB+PS	TH
16G	163 / 164	Intersection Of P152	T	G&W	EX-4037	2020/07/16	1729	EA	15	2020/08/03	VB+PS	TH
16H	163 / 164	Intersection Of P151	T	G&W	EX-4037	2020/07/16	1727	EA	15	2020/08/03	VB+PS	TH
16I	154 / 155	Intersection Of P152	T	G&W	EX-4037	2020/07/16	1711	EA	15	2020/08/03	VB+PS	TH
16J	155 / 154	Intersection Of P156	T	G&W	EX-4037	2020/07/16	1706	EA	15	2020/08/03	VB+PS	TH
16K	156 / 157	Intersection Of P155	T	G&W	EX-4037	2020/07/16	1659	EA	15	2020/08/03	VB+PS	TH
16L	150 / 151	Intersection Of P149	T	G&W	EX-4037	2020/07/16	1752	EA	15	2020/08/03	VB+PS	TH
16M	150 / 151	Intersection Of P149	T	G&W	EX-4037	2020/07/16	1755	EA	15	2020/08/03	VB+PS	TH
16N	146 / 147	Intersection Of P144	T	G&W	EX-4037	2020/07/16	1758	EA	15	2020/08/03	VB+PS	TH
16O	142 / 143	Intersection Of P144	T	G&W	EX-4037	2020/07/16	1812	EA	15	2020/08/03	VB+PS	TH
16P	142 / 143	Intersection Of P139	DS-69	P	EX-4037	2020/07/16	1810	EA	15	2020/08/03	VB+PS	TH
16Q	139 / 142	NEOS	DS-68	P	EX-4037	2020/07/16	1814	EA	15	2020/08/03	VB+PS	TH
16R	139 / 140	Intersection Of P143	T	G&W	EX-4037	2020/07/16	1801	EA	15	2020/08/03	VB+PS	TH
16S	139 / 140	Intersection Of P137	T	G&W	EX-4037	2020/07/16	1804	EA	15	2020/08/03	VB+PS	TH
16T	141 / 142	Intersection Of P139	T	G&W	EX-4037	2020/07/16	1805	EA	15	2020/08/03	VB+PS	TH

DETAIL TYPE:

AD - ANIMAL DAMAGE	DS-# - DESTRUCT SAMPLE NUMBER	IO - INSUFFICIENT OVERLAP	T - THREE PANEL INTERSECTION
ATL - AIR TEST LEAK	EE - EARTHWORK EQUIPMENT DAMAGE	MD - MANUFACTURER/DELIVERY DAMAGE	VL - VACUUM TEST LEAK
BO - FUSION WELDER BURN	EXT - EXTENSION	P - PENETRATION	WR - WRINKLE
CR - CREASE	FM - FISHMOUTH	PT - PRESSURE TEST CUT	WS - WELDER RESTART
D - INSTALLATION DAMAGE	FS - FAILED SEAM LENGTH	SI - SOIL SURFACE IRREGULARITY	OTHER:

TEST METHOD:

AL - AIR LANCE	VB - VAC BOX
PS - POINT STRESS	ST - SPARK TEST

REPAIR TYPE:

G&W - GRIND & WELD	B - BOOT	P - PATCH
HAW - HOT AIR WELD	C - CAP	

REMARKS

QC TECH Thomas Howald

SUPERVISOR Chad Messervey

SUBMISSION DATE 2020/01/05

SHEET NUMBER 34 of 117

GEOMEMBRANE DETAIL & TEST LOG

PROJECT NUMBER CT001401 AREA / LAYER Primary

PROJECT TITLE Victoria Gold Heap Leach Pad Phase 1B

TRIAL SEAMS

#	MACHINE NUMBER	DATE YYYY-MM-DD	TIME	WELD TECH	AIR TEMP °C	PREHEAT TEMP °C	EXTRUDER TEMP °C	PEEL (PPI)					SHEAR (PPI)					CHK'D BY	REMARKS
1	EX-4037	2020/07/12	1420	GP	10	257°C	254°C	122	121	127	119	131	151	155	156	136	146	TH	TT
2	EX-4036	2020/07/12	1430	RP	10	257°C	254°C	140	134	120	116	150	149	154	156	170	171	TH	TT
3	EX-4037	2020/07/16	1415	EA	15	257°C	254°C	89	89	112	110	94	144	152	122	142	148	TH	TT
4	EX-4036	2020/07/16	1545	RGP	15	257°C	254°C	112	120	108	110	109	121	138	144	132	129	TH	TT
5	EX-4035	2020/07/17	1400	EA	15	257°C	254°C	121	100	115	113	133	143	143	155	149	143	TH	TT
6	EX-4035	2020/07/20	800	EA	15	260°C	257°C	99	98	97	90	108	154	163	165	158	163	TH	TT

DETAIL CODE	PANEL NUMBER(S)	LOCATION DESCRIPTION	DETAIL TYPE	REPAIR TYPE	MACHINE NUMBER	REPAIR DATE YYYY-MM-DD	START TIME	WELD TECH	AIR TEMP °C	TEST DATE YYYY-MM-DD	TEST METH.	QC TECH
17A	136 / 137	Intersection Of P139	T	G&W	EX-4037	2020/07/16	1638	EA	15	2020/08/03	VB+PS	TH
17B	136 / 137	Intersection Of P134	T	G&W	EX-4037	2020/07/16	1640	EA	15	2020/08/03	VB+PS	TH
17C	133 / 134	Intersection Of P136	T	G&W	EX-4037	2020/07/16	1645	EA	15	2020/08/03	VB+PS	TH
17D	133 / 134	Intersection Of P131	T	G&W	EX-4037	2020/07/16	1644	EA	15	2020/08/03	VB+PS	TH
17E	122 / 125	35m From NEOS	IO	P	EX-4037	2020/07/16	1504	EA	15	2020/08/03	VB+PS	TH
17F	134 / 135	Intersection Of P138	T	G&W	EX-4037	2020/07/16	1415	EA	15	2020/08/03	VB+PS	TH
17G	140 / 143	72.3m From NEOS	IO	P	EX-4037	2020/07/16	1742	EA	15	2020/08/03	VB+PS	TH
17H	140 / 143	42.3m From NEOS	IO	P	EX-4035	2020/07/17	1411	EA	15	2020/08/03	VB+PS	TH
17I	147 / 148	Intersection Of P145	T	P	EX-4035	2020/07/17	1643	EA	15	2020/08/03	VB+PS	TH
17J	147 / 148	Intersection Of P149	T	P	EX-4035	2020/07/17	1653	EA	15	2020/08/03	VB+PS	TH
17K	147 / 149	51.8m From NEOS	WS	P	EX-4035	2020/07/17	1720	EA	15	2020/08/03	VB+PS	TH
17L	102 / 105	91.2m From SEOS	WS	P	EX-4035	2020/07/20	935	EA	15	2020/08/19	VB+PS	TH
17M	94 / 96	NEOS	DS-46	P	EX-4037	2020/07/12	1644	GP	10	2020/08/03	VB+PS	TH
17N	161 / 162	Intersection Of P168	T	G&W	EX-4036	2020/07/21	837	EP	15	2020/08/03	VB+PS	TH
17O	162 / 168	NEOS	FS	G&W	EX-4036	2020/07/21	826	EP	15	2020/08/03	VB+PS	TH
17P	161 / 162	NEOS	FS	G&W	EX-4036	2020/07/21	820	EP	15	2020/08/03	VB+PS	TH
17Q	160 / 161	NEOS	FS	G&W	EX-4036	2020/07/21	821	EP	15	2020/08/03	VB+PS	TH
17R	160 / 161	Intersection Of P168	T	G&W	EX-4036	2020/07/21	843	EP	15	2020/08/03	VB+PS	TH
17S	159 / 160	Intersection Of P168	T	G&W	EX-4036	2020/07/21	846	EP	15	2020/08/03	VB+PS	TH
17T	159 / 158	Intersection Of P168	T	G&W	EX-4036	2020/07/21	853	EP	15	2020/08/03	VB+PS	TH

DETAIL TYPE:

AD - ANIMAL DAMAGE	DS-# - DESTRUCT SAMPLE NUMBER	IO - INSUFFICIENT OVERLAP	T - THREE PANEL INTERSECTION
ATL - AIR TEST LEAK	EE - EARTHWORK EQUIPMENT DAMAGE	MD - MANUFACTURER/DELIVERY DAMAGE	VL - VACUUM TEST LEAK
BO - FUSION WELDER BURN	EXT - EXTENSION	P - PENETRATION	WR - WRINKLE
CR - CREASE	FM - FISHMOUTH	PT - PRESSURE TEST CUT	WS - WELDER RESTART
D - INSTALLATION DAMAGE	FS - FAILED SEAM LENGTH	SI - SOIL SURFACE IRREGULARITY	OTHER:

TEST METHOD:

AL - AIR LANCE	VB - VAC BOX
PS - POINT STRESS	ST - SPARK TEST

REPAIR TYPE:

G&W - GRIND & WELD	B - BOOT	P - PATCH
HAW - HOT AIR WELD	C - CAP	

REMARKS

QC TECH Thomas Howald

SUPERVISOR Chad Messervey

SUBMISSION DATE 2020/01/05

SHEET NUMBER 35 of 117

GEOMEMBRANE DETAIL & TEST LOG

PROJECT NUMBER CT001401 AREA / LAYER Primary

PROJECT TITLE Victoria Gold Heap Leach Pad Phase 1B

TRIAL SEAMS

#	MACHINE NUMBER	DATE YYYY-MM-DD	TIME	WELD TECH	AIR TEMP °C	PREHEAT TEMP °C	EXTRUDER TEMP °C	PEEL (PPI)					SHEAR (PPI)					CHK'D BY	REMARKS
1	EX-4036	2020/07/21	800	EP	15	260°C	254°C	139	137	147	129	150	192	206	190	196	196	TH	TT
2	EX-4036	2020/07/21	1245	EP	15	257°C	254°C	123	118	130	135	128	141	152	157	154	161	TH	TT
3																			
4																			
5																			
6																			

DETAIL CODE	PANEL NUMBER(S)	LOCATION DESCRIPTION	DETAIL TYPE	REPAIR TYPE	MACHINE NUMBER	REPAIR DATE YYYY-MM-DD	START TIME	WELD TECH	AIR TEMP °C	TEST DATE YYYY-MM-DD	TEST METH.	QC TECH
A	/											
B	/											
C	/											
D	/											
E	/											
F	/											
G	/											
H	/											
I	/											
J	/											
K	/											
L	/											
M	/											
N	/											
O	/											
P	/											
Q	/											
R	/											
S	/											
T	/											

DETAIL TYPE:

AD - ANIMAL DAMAGE	DS-# - DESTRUCT SAMPLE NUMBER	IO - INSUFFICIENT OVERLAP	T - THREE PANEL INTERSECTION
ATL - AIR TEST LEAK	EE - EARTHWORK EQUIPMENT DAMAGE	MD - MANUFACTURER/DELIVERY DAMAGE	VL - VACUUM TEST LEAK
BO - FUSION WELDER BURN	EXT - EXTENSION	P - PENETRATION	WR - WRINKLE
CR - CREASE	FM - FISHMOUTH	PT - PRESSURE TEST CUT	WS - WELDER RESTART
D - INSTALLATION DAMAGE	FS - FAILED SEAM LENGTH	SI - SOIL SURFACE IRREGULARITY	OTHER:

TEST METHOD:

AL - AIR LANCE	VB - VAC BOX
PS - POINT STRESS	ST - SPARK TEST

REPAIR TYPE:

G&W - GRIND & WELD	B - BOOT	P - PATCH
HAW - HOT AIR WELD	C - CAP	

REMARKS

QC TECH Thomas Howald

SUPERVISOR Chad Messervey

SUBMISSION DATE 2020/01/05

SHEET NUMBER 36 of 117

GEOMEMBRANE DETAIL & TEST LOG

PROJECT NUMBER CT001401 AREA / LAYER Primary

PROJECT TITLE Victoria Gold Heap Leach Pad Phase 1B

TRIAL SEAMS

#	MACHINE NUMBER	DATE YYYY-MM-DD	TIME	WELD TECH	AIR TEMP °C	PREHEAT TEMP °C	EXTRUDER TEMP °C	PEEL (PPI)					SHEAR (PPI)					CHK'D BY	REMARKS
1	EX-4036	2020/07/21	800	EP	15	260°C	254°C	139	137	147	129	150	192	206	190	196	196	TH	TT
2	EX-4036	2020/07/21	1245	EP	15	257°C	254°C	123	118	130	135	128	141	152	157	154	161	TH	TT
3																			
4																			
5																			
6																			

DETAIL CODE	PANEL NUMBER(S)	LOCATION DESCRIPTION	DETAIL TYPE	REPAIR TYPE	MACHINE NUMBER	REPAIR DATE YYYY-MM-DD	START TIME	WELD TECH	AIR TEMP °C	TEST DATE YYYY-MM-DD	TEST METH.	QC TECH
18A	157 / 156	Intersection Of P168	T	P	EX-4036	2020/07/21	914	EP	15	2020/08/03	VB+PS	TH
18B	154 / 156	Intersection Of P168	T	G&W	EX-4036	2020/07/21	919	EP	15	2020/08/03	VB+PS	TH
18C	152 / 154	Intersection Of P168	T	G&W	EX-4036	2020/07/21	923	EP	15	2020/08/03	VB+PS	TH
18D	163 / 152	Intersection Of P168	T	G&W	EX-4036	2020/07/21	937	EP	15	2020/08/04	VB+PS	TH
18E	168 / 168	Intersection Of P172	T	G&W	EX-4036	2020/07/21	941	EP	15	2020/08/04	VB+PS	TH
18F	150 / 151	Intersection Of P167	T	G&W	EX-4036	2020/07/21	1045	EP	15	2020/08/04	VB+PS	TH
18G	172 / 171	Intersection Of P167	T	P	EX-4036	2020/07/21	1018	EP	15	2020/08/04	VB+PS	TH
18H	172 / 171	Intersection Of P176	T	G&W	EX-4036	2020/07/21	1032	EP	15	2020/08/04	VB+PS	TH
18I	175 / 176	Intersection Of P171	T	G&W	EX-4036	2020/07/21	1102	EP	15	2020/08/04	VB+PS	TH
18J	149 / 150	Intersection Of P167	T	G&W	EX-4036	2020/07/21	1048	EP	15	2020/08/04	VB+PS	TH
18K	149 / 146	Intersection Of P167	T	G&W	EX-4036	2020/07/21	1110	EP	15	2020/08/04	VB+PS	TH
18L	167 / 166	Intersection Of P146	T	G&W	EX-4036	2020/07/21	1116	EP	15	2020/08/04	VB+PS	TH
18M	166 / 167	Intersection Of P171	T	G&W	EX-4036	2020/07/21	1120	EP	15	2020/08/04	VB+PS	TH
18N	146 / 144	Intersection Of P166	T	G&W	EX-4036	2020/07/21	1124	EP	15	2020/08/04	VB+PS	TH
18O	144 / 166	8m From NEOS	WS	P	EX-4036	2020/07/21	1320	EP	15	2020/08/04	VB+PS	TH
18P	141 / 142	Intersection Of P144	T	G&W	EX-4036	2020/07/21	1326	EP	15	2020/08/04	VB+PS	TH
18Q	141 / 166	8m From NEOS	IO	P	EX-4036	2020/07/21	1335	EP	15	2020/08/04	VB+PS	TH
18R	141 / 139	Intersection Of P166	T	P	EX-4036	2020/07/21	1354	EP	15	2020/08/04	VB+PS	TH
18S	166 / 171	33.6m From NEOS	WS	P	EX-4036	2020/07/21	1340	EP	15	2020/08/04	VB+PS	TH
18T	171 / 170	Intersection Of P166	T	G&W	EX-4036	2020/07/21	1345	EP	15	2020/08/04	VB+PS	TH

DETAIL TYPE:

AD - ANIMAL DAMAGE	DS-# - DESTRUCT SAMPLE NUMBER	IO - INSUFFICIENT OVERLAP	T - THREE PANEL INTERSECTION
ATL - AIR TEST LEAK	EE - EARTHWORK EQUIPMENT DAMAGE	MD - MANUFACTURER/DELIVERY DAMAGE	VL - VACUUM TEST LEAK
BO - FUSION WELDER BURN	EXT - EXTENSION	P - PENETRATION	WR - WRINKLE
CR - CREASE	FM - FISHMOUTH	PT - PRESSURE TEST CUT	WS - WELDER RESTART
D - INSTALLATION DAMAGE	FS - FAILED SEAM LENGTH	SI - SOIL SURFACE IRREGULARITY	OTHER:

TEST METHOD:

AL - AIR LANCE	VB - VAC BOX
PS - POINT STRESS	ST - SPARK TEST

REPAIR TYPE:

G&W - GRIND & WELD	B - BOOT	P - PATCH
HAW - HOT AIR WELD	C - CAP	

REMARKS

QC TECH Thomas Howald

SUPERVISOR Chad Messervey

SUBMISSION DATE 2020/01/05

SHEET NUMBER 37 of 117

GEOMEMBRANE DETAIL & TEST LOG

PROJECT NUMBER CT001401 AREA / LAYER Primary

PROJECT TITLE Victoria Gold Heap Leach Pad Phase 1B

TRIAL SEAMS

#	MACHINE NUMBER	DATE YYYY-MM-DD	TIME	WELD TECH	AIR TEMP °C	PREHEAT TEMP °C	EXTRUDER TEMP °C	PEEL (PPI)					SHEAR (PPI)					CHK'D BY	REMARKS
1	EX-4035	2020/07/20	800	EA	15	260°C	257°C	99	98	97	90	108	154	163	165	158	163	TH	TT
2	EX-4036	2020/07/21	800	EP	15	260°C	254°C	139	137	147	129	150	192	206	190	196	196	TH	TT
3	EX-4036	2020/07/21	1245	EP	15	257°C	254°C	123	118	130	135	128	141	152	157	154	161	TH	TT
4	EX-35	2020/07/24	815	TH	15	254°C	257°C	127	123	138	120	131	155	154	162	155	155	TH	TT
5																			
6																			

DETAIL CODE	PANEL NUMBER(S)	LOCATION DESCRIPTION	DETAIL TYPE	REPAIR TYPE	MACHINE NUMBER	REPAIR DATE YYYY-MM-DD	START TIME	WELD TECH	AIR TEMP °C	TEST DATE YYYY-MM-DD	TEST METH.	QC TECH
19A	171 / 170	Intersection Of P175	T	G&W	EX-4036	2020/07/21	1358	EP	15	2020/08/04	VB+PS	TH
19B	166 / 165	Intersection Of P170	T	G&W	EX-4035	2020/07/20	1022	EA	15	2020/08/04	VB+PS	TH
19C	130 / 126	Intersection Of P165	DS-86	P	EX-4035	2020/07/20	841	EA	15	2020/08/04	VB+PS	TH
19D	170 / 169	WEOS	DS-83	P	EX-4035	2020/07/20	855	EA	15	2020/08/04	VB+PS	TH
19E	165 / 169	NEOS	DS-85	P	EX-4035	2020/07/20	857	EA	15	2020/08/04	VB+PS	TH
19F	145 / 144	Intersection Of P147	T	G&W	EX-35	2020/07/24	1140	TH	15	2020/08/04	VB+PS	TH
19G	145 / 144	Intersection Of P143	T	G&W	EX-35	2020/07/24	1142	TH	15	2020/08/04	VB+PS	TH
19H	137 / 138	Intersection Of P140	T	G&W	EX-35	2020/07/24	1136	TH	15	2020/08/04	VB+PS	TH
19I	137 / 138	Intersection Of P134	T	G&W	EX-35	2020/07/24	1135	TH	15	2020/08/04	VB+PS	TH
19J	131 / 132	Intersection Of P134	T	G&W	EX-35	2020/07/24	1132	TH	15	2020/08/04	VB+PS	TH
19K	131 / 132	Intersection Of P127	T	G&W	EX-35	2020/07/24	1129	TH	15	2020/08/04	VB+PS	TH
19L	136 / 139	Intersection Of P166	T	G&W	EX-35	2020/07/24	1055	TH	15	2020/08/19	VB+PS	TH
19M	133 / 136	Intersection Of P166	T	G&W	EX-35	2020/07/24	1057	TH	15	2020/08/19	VB+PS	TH
19N	130 / 133	Intersection Of P166	T	G&W	EX-35	2020/07/24	1103	TH	15	2020/08/19	VB+PS	TH
19O	166 / 165	Intersection Of P130	T	G&W	EX-35	2020/07/24	1106	TH	15	2020/08/19	VB+PS	TH
19P	123 / 126	Intersection Of P165	T	G&W	EX-35	2020/07/24	906	TH	15	2020/08/19	VB+PS	TH
19Q	121 / 123	Intersection Of P165	T	G&W	EX-35	2020/07/24	905	TH	15	2020/08/19	VB+PS	TH
19R	169 / 170	Intersection Of P174	T	P	EX-35	2020/07/24	1007	TH	15	2020/08/19	VB+PS	TH
19S	173 / 174	Intersection Of P169	DS-81	P	EX-35	2020/07/24	1010	TH	15	2020/08/19	VB+PS	TH
19T	173 / 174	Intersection Of P178	T	G&W	EX-35	2020/07/24	1012	TH	15	2020/08/19	VB+PS	TH

DETAIL TYPE:

AD - ANIMAL DAMAGE	DS-# - DESTRUCT SAMPLE NUMBER	IO - INSUFFICIENT OVERLAP	T - THREE PANEL INTERSECTION
ATL - AIR TEST LEAK	EE - EARTHWORK EQUIPMENT DAMAGE	MD - MANUFACTURER/DELIVERY DAMAGE	VL - VACUUM TEST LEAK
BO - FUSION WELDER BURN	EXT - EXTENSION	P - PENETRATION	WR - WRINKLE
CR - CREASE	FM - FISHMOUTH	PT - PRESSURE TEST CUT	WS - WELDER RESTART
D - INSTALLATION DAMAGE	FS - FAILED SEAM LENGTH	SI - SOIL SURFACE IRREGULARITY	OTHER:

TEST METHOD:

AL - AIR LANCE	VB - VAC BOX
PS - POINT STRESS	ST - SPARK TEST

REPAIR TYPE:

G&W - GRIND & WELD	B - BOOT	P - PATCH
HAW - HOT AIR WELD	C - CAP	

REMARKS

QC TECH Thomas Howald

SUPERVISOR Chad Messervey

SUBMISSION DATE 2020/01/05

SHEET NUMBER 38 of 117

GEOMEMBRANE DETAIL & TEST LOG

PROJECT NUMBER CT001401 AREA / LAYER Primary

PROJECT TITLE Victoria Gold Heap Leach Pad Phase 1B

TRIAL SEAMS

#	MACHINE NUMBER	DATE YYYY-MM-DD	TIME	WELD TECH	AIR TEMP °C	PREHEAT TEMP °C	EXTRUDER TEMP °C	PEEL (PPI)					SHEAR (PPI)					CHK'D BY	REMARKS
1	EX-35	2020/07/24	815	TH	15	254°C	257°C	127	123	138	120	131	155	154	162	155	155	TH	TT
2	EX-35	2020/07/25	1545	EA	15	257°C	254°C	137	117	134	142	112	165	166	173	163	170	TH	TT
3	EX-4037	2020/07/25	1545	GP	15	257°C	254°C	143	136	134	131	154	164	159	159	161	163	TH	TT
4	EX-008	2020/07/25	1725	EA	15	257°C	254°C	126	116	120	131	147	165	171	169	163	163	TH	TT
5	EX-4036	2020/07/26	820	RGP	15	265°C	260°C	152	135	116	137	143	190	199	166	180	184	TH	TT
6	EX-008	2020/07/26	830	EA	15	257°C	254°C	148	141	129	133	144	182	186	185	181	179	TH	TT

DETAIL CODE	PANEL NUMBER(S)	LOCATION DESCRIPTION	DETAIL TYPE	REPAIR TYPE	MACHINE NUMBER	REPAIR DATE YYYY-MM-DD	START TIME	WELD TECH	AIR TEMP °C	TEST DATE YYYY-MM-DD	TEST METH.	QC TECH
20A	169 / 173	5m From NEOS	WS	G&W	EX-35	2020/07/24	1014	TH	15	2020/08/19	VB+PS	TH
20B	177 / 178	Intersection Of P173	DS-79	P	EX-35	2020/07/24	1020	TH	15	2020/08/19	VB+PS	TH
20C	177 / 178	Intersection Of P183	T	G&W	EX-35	2020/07/24	1016	TH	15	2020/08/19	VB+PS	TH
20D	181 / 182	Intersection Of P176	T	G&W	EX-35	2020/07/25	1738	EA	15	2020/08/04	VB+PS	TH
20E	181 / 182	Intersection Of P186	T	G&W	EX-008	2020/07/26	930	EA	15	2020/08/04	VB+PS	TH
20F	186 / 185	Intersection Of P181	T	G&W	EX-008	2020/07/26	935	EA	15	2020/08/04	VB+PS	TH
20G	186 /	12m From NEOS	D	P	EX-008	2020/07/26	938	EA	15	2020/08/04	VB+PS	TH
20H	186 / 185	Intersection Of P190	T	G&W	EX-008	2020/07/26	927	EA	15	2020/08/04	VB+PS	TH
20I	197 /	35m From NEOS	D	P	EX-35	2020/07/25	1636	EA	15	2020/08/04	VB+PS	TH
20J	201 / 200	Intersection Of P197	T	G&W	EX-35	2020/07/25	1605	EA	15	2020/08/04	VB+PS	TH
20K	201 / 200	WEOS	DS-97	P	EX-008	2020/07/26	839	EA	15	2020/08/04	VB+PS	TH
20L	201 / 200	Intersection Of P204	T	G&W	EX-35	2020/07/25	1602	EA	15	2020/08/04	VB+PS	TH
20M	204 / 207	12m From NEOS	WS	G&W	EX-35	2020/07/25	1558	EA	15	2020/08/04	VB+PS	TH
20N	201 / 204	NEOS	BO	P	EX-35	2020/07/25	1622	EA	15	2020/08/04	VB+PS	TH
20O	214 / 213	Intersection Of P	T	G&W	EX-35	2020/07/25	1553	EA	15	2020/08/04	VB+PS	TH
20P	214 / 213	WEOS	D	P	EX-008	2020/07/26	855	EA	15	2020/08/04	VB+PS	TH
20Q	190 / 189	Intersection Of P185	T	G&W	EX-008	2020/07/26	940	EA	15	2020/08/04	VB+PS	TH
20R	190 / 189	Intersection Of P193	T	G&W	EX-008	2020/07/26	945	GP	15	2020/08/04	VB+PS	TH
20S	192 / 194	Intersection Of P189	T	G&W	EX-008	2020/07/26	1000	EA	15	2020/08/04	VB+PS	TH
20T	192 / 194	Intersection Of P197	T	G&W	EX-008	2020/07/26	1010	EA	15	2020/08/04	VB+PS	TH

DETAIL TYPE:

AD - ANIMAL DAMAGE	DS-# - DESTRUCT SAMPLE NUMBER	IO - INSUFFICIENT OVERLAP	T - THREE PANEL INTERSECTION
ATL - AIR TEST LEAK	EE - EARTHWORK EQUIPMENT DAMAGE	MD - MANUFACTURER/DELIVERY DAMAGE	VL - VACUUM TEST LEAK
BO - FUSION WELDER BURN	EXT - EXTENSION	P - PENETRATION	WR - WRINKLE
CR - CREASE	FM - FISHMOUTH	PT - PRESSURE TEST CUT	WS - WELDER RESTART
D - INSTALLATION DAMAGE	FS - FAILED SEAM LENGTH	SI - SOIL SURFACE IRREGULARITY	OTHER:

TEST METHOD:

AL - AIR LANCE	VB - VAC BOX
PS - POINT STRESS	ST - SPARK TEST

REPAIR TYPE:

G&W - GRIND & WELD	B - BOOT	P - PATCH
HAW - HOT AIR WELD	C - CAP	

REMARKS

QC TECH Thomas Howald

SUPERVISOR Chad Messervey

SUBMISSION DATE 2020/01/05

SHEET NUMBER 39 of 117

GEOMEMBRANE DETAIL & TEST LOG

PROJECT NUMBER CT001401 AREA / LAYER Primary

PROJECT TITLE Victoria Gold Heap Leach Pad Phase 1B

TRIAL SEAMS

#	MACHINE NUMBER	DATE YYYY-MM-DD	TIME	WELD TECH	AIR TEMP °C	PREHEAT TEMP °C	EXTRUDER TEMP °C	PEEL (PPI)					SHEAR (PPI)					CHK'D BY	REMARKS
1	EX-008	2020/07/26	845	GP	15	257°C	254°C	123	110	139	112	185	142	159	175	190	182	TH	TT
2																			
3																			
4																			
5																			
6																			

DETAIL CODE	PANEL NUMBER(S)	LOCATION DESCRIPTION	DETAIL TYPE	REPAIR TYPE	MACHINE NUMBER	REPAIR DATE YYYY-MM-DD	START TIME	WELD TECH	AIR TEMP °C	TEST DATE YYYY-MM-DD	TEST METH.	QC TECH
A	/											
B	/											
C	/											
D	/											
E	/											
F	/											
G	/											
H	/											
I	/											
J	/											
K	/											
L	/											
M	/											
N	/											
O	/											
P	/											
Q	/											
R	/											
S	/											
T	/											

DETAIL TYPE:

AD - ANIMAL DAMAGE	DS-# - DESTRUCT SAMPLE NUMBER	IO - INSUFFICIENT OVERLAP	T - THREE PANEL INTERSECTION
ATL - AIR TEST LEAK	EE - EARTHWORK EQUIPMENT DAMAGE	MD - MANUFACTURER/DELIVERY DAMAGE	VL - VACUUM TEST LEAK
BO - FUSION WELDER BURN	EXT - EXTENSION	P - PENETRATION	WR - WRINKLE
CR - CREASE	FM - FISHMOUTH	PT - PRESSURE TEST CUT	WS - WELDER RESTART
D - INSTALLATION DAMAGE	FS - FAILED SEAM LENGTH	SI - SOIL SURFACE IRREGULARITY	OTHER:

TEST METHOD:

AL - AIR LANCE	VB - VAC BOX
PS - POINT STRESS	ST - SPARK TEST

REPAIR TYPE:

G&W - GRIND & WELD	B - BOOT	P - PATCH
HAW - HOT AIR WELD	C - CAP	

REMARKS

QC TECH Thomas Howald

SUPERVISOR Chad Messervey

SUBMISSION DATE 2020/01/05

SHEET NUMBER 40 of 117

GEOMEMBRANE DETAIL & TEST LOG

PROJECT NUMBER CT001401 AREA / LAYER Primary

PROJECT TITLE Victoria Gold Heap Leach Pad Phase 1B

TRIAL SEAMS

#	MACHINE NUMBER	DATE YYYY-MM-DD	TIME	WELD TECH	AIR TEMP °C	PREHEAT TEMP °C	EXTRUDER TEMP °C	PEEL (PPI)					SHEAR (PPI)					CHK'D BY	REMARKS
1	EX-4036	2020/07/26	820	RGP	15	265°C	260°C	152	135	116	137	143	190	199	166	180	184	TH	TT
2	EX-008	2020/07/26	830	EA	15	257°C	254°C	148	141	129	133	144	182	186	185	181	179	TH	TT
3	EX-008	2020/07/26	845	GP	15	257°C	254°C	123	110	139	112	185	142	159	175	190	182	TH	TT
4	EX-4036	2020/07/29	1300	RGP	15	265°C	257°C	135	134	137	139	153	165	167	164	165	162	TH	TT
5	EX-4037	2020/07/29	1315	GP	15	257°C	254°C	171	143	154	155	148	179	177	174	169	178	TH	TT
6	EX-4037	2020/07/29	1315	EA	15	257°C	254°C	137	149	129	136	160	170	162	171	169	178	TH	TT

DETAIL CODE	PANEL NUMBER(S)	LOCATION DESCRIPTION	DETAIL TYPE	REPAIR TYPE	MACHINE NUMBER	REPAIR DATE YYYY-MM-DD	START TIME	WELD TECH	AIR TEMP °C	TEST DATE YYYY-MM-DD	TEST METH.	QC TECH
21A	185 / 189	5m From SEOS	IO	P	EX-008	2020/07/26	1035	EA	15	2020/08/04	VB+PS	TH
21B	185 / 189	4m From SEOS	IO	P	EX-008	2020/07/26	1040	EA	15	2020/08/04	VB+PS	TH
21C	185 / 184	Intersection Of P189	T	G&W	EX-4036	2020/07/26	920	RGP	15	2020/08/04	VB+PS	TH
21D	185 / 184	Intersection Of P181	T	G&W	EX-4036	2020/07/26	922	RGP	15	2020/08/04	VB+PS	TH
21E	181 / 180	Intersection Of P184	T	G&W	EX-4036	2020/07/26	925	RGP	15	2020/08/19	VB+PS	TH
21F	181 / 180	Intersection Of P176	T	G&W	EX-4036	2020/07/26	930	RGP	15	2020/08/19	VB+PS	TH
21G	189 / 188	Intersection Of P184	T	G&W	EX-008	2020/07/26	1100	GP	15	2020/08/19	VB+PS	TH
21H	188 / 189	Intersection Of P192	T	G&W	EX-008	2020/07/26	1058	GP	15	2020/08/19	VB+PS	TH
21I	196 / 197	Intersection Of P192	T	G&W	EX-008	2020/07/26	1053	EA	15	2020/08/19	VB+PS	TH
21J	197 / 196	Intersection Of P200	T	G&W	EX-008	2020/07/26	1106	GP	15	2020/08/19	VB+PS	TH
21K	197 /	51m From NEOS	D	P	EX-008	2020/07/26	952	EA	15	2020/08/19	VB+PS	TH
21L	197 /	52m From NEOS	D	P	EX-008	2020/07/26	955	EA	15	2020/08/19	VB+PS	TH
21M	199 / 200	Intersection Of P196	T	G&W	EX-4036	2020/07/29	1310	RGP	15	2020/08/19	VB+PS	TH
21N	199 / 200	Intersection Of P203	T	G&W	EX-4036	2020/07/29	1316	RGP	15	2020/08/19	VB+PS	TH
21O	203 /	35m From NEOS	D	P	EX-4037	2020/07/29	1342	EA	15	2020/08/19	VB+PS	TH
21P	203 / 206	4m From NEOS	IO	G&W	EX-4037	2020/07/29	1351	EA	15	2020/08/19	VB+PS	TH
21Q	203 / 204	Intersection Of P200	D	P	EX-008	2020/07/26	915	EA	15	2020/08/19	VB+PS	TH
21R	203 / 204	Intersection Of P207	T	G&W	EX-008	2020/07/26	919	GP	15	2020/08/19	VB+PS	TH
21S	206 / 207	Intersection Of P203	T	G&W	EX-008	2020/07/26	1014	EA	15	2020/08/19	VB+PS	TH
21T	206 / 207	Intersection Of P210	T	G&W	EX-008	2020/07/26	1017	EA	15	2020/08/19	VB+PS	TH

DETAIL TYPE:

AD - ANIMAL DAMAGE	DS-# - DESTRUCT SAMPLE NUMBER	IO - INSUFFICIENT OVERLAP	T - THREE PANEL INTERSECTION
ATL - AIR TEST LEAK	EE - EARTHWORK EQUIPMENT DAMAGE	MD - MANUFACTURER/DELIVERY DAMAGE	VL - VACUUM TEST LEAK
BO - FUSION WELDER BURN	EXT - EXTENSION	P - PENETRATION	WR - WRINKLE
CR - CREASE	FM - FISHMOUTH	PT - PRESSURE TEST CUT	WS - WELDER RESTART
D - INSTALLATION DAMAGE	FS - FAILED SEAM LENGTH	SI - SOIL SURFACE IRREGULARITY	OTHER:

TEST METHOD:

AL - AIR LANCE	VB - VAC BOX
PS - POINT STRESS	ST - SPARK TEST

REPAIR TYPE:

G&W - GRIND & WELD	B - BOOT	P - PATCH
HAW - HOT AIR WELD	C - CAP	

REMARKS

QC TECH Thomas Howald

SUPERVISOR Chad Messervey

SUBMISSION DATE 2020/01/05

SHEET NUMBER 41 of 117

GEOMEMBRANE DETAIL & TEST LOG

PROJECT NUMBER CT001401 AREA / LAYER Primary

PROJECT TITLE Victoria Gold Heap Leach Pad Phase 1B

TRIAL SEAMS

#	MACHINE NUMBER	DATE YYYY-MM-DD	TIME	WELD TECH	AIR TEMP °C	PREHEAT TEMP °C	EXTRUDER TEMP °C	PEEL (PPI)					SHEAR (PPI)					CHK'D BY	REMARKS
1	EX-4036	2020/07/26	820	RGP	15	265°C	260°C	152	135	116	137	143	190	199	166	180	184	TH	TT
2	EX-008	2020/07/26	830	EA	15	257°C	254°C	148	141	129	133	144	182	186	185	181	179	TH	TT
3	EX-008	2020/07/26	845	GP	15	257°C	254°C	123	110	139	112	185	142	159	175	190	182	TH	TT
4	EX-4036	2020/07/29	1300	RGP	15	265°C	257°C	135	134	137	139	153	165	167	164	165	162	TH	TT
5	EX-4037	2020/07/29	1315	GP	15	257°C	254°C	171	143	154	155	148	179	177	174	169	178	TH	TT
6	EX-4037	2020/07/29	1315	EA	15	257°C	254°C	137	149	129	136	160	170	162	171	169	178	TH	TT

DETAIL CODE	PANEL NUMBER(S)	LOCATION DESCRIPTION	DETAIL TYPE	REPAIR TYPE	MACHINE NUMBER	REPAIR DATE YYYY-MM-DD	START TIME	WELD TECH	AIR TEMP °C	TEST DATE YYYY-MM-DD	TEST METH.	QC TECH
22A	209 / 210	Intersection Of P206	T	G&W	EX-008	2020/07/26	1110	GP	15	2020/08/19	VB+PS	TH
22B	209 / 210	Intersection Of P213	T	G&W	EX-008	2020/07/26	1112	EA	15	2020/08/19	VB+PS	TH
22C	202 / 203	Intersection Of P199	T	G&W	EX-4036	2020/07/29	1330	RGP	15	2020/08/19	VB+PS	TH
22D	202 / 203	Intersection Of P206	T	G&W	EX-4036	2020/07/29	1345	RGP	15	2020/08/19	VB+PS	TH
22E	212 / 213	Intersection Of P209	T	G&W	EX-4037	2020/07/29	1401	EA	15	2020/08/19	VB+PS	TH
22F	175 / 176	Intersection Of P180	T	G&W	EX-4036	2020/07/26	940	RGP	15	2020/08/19	VB+PS	TH
22G	179 / 180	Intersection Of P175	T	G&W	EX-4036	2020/07/26	1000	RGP	15	2020/08/19	VB+PS	TH
22H	179 / 180	Intersection Of P184	T	G&W	EX-4036	2020/07/26	1002	RGP	15	2020/08/19	VB+PS	TH
22I	175 / 179	6m Frrom NEOS	IO	G&W	EX-4036	2020/07/26	1040	RP	15	2020/08/19	VB+PS	TH
22J	183 / 184	Intersection Of P179	T	P	EX-4036	2020/07/26	1016	RP	15	2020/08/19	VB+PS	TH
22K	183 / 184	Intersection Of P188	T	G&W	EX-4036	2020/07/26	1006	RGP	15	2020/08/19	VB+PS	TH
22L	188 / 192	15.6m From SEOS	IO	G&W	EX-4036	2020/07/26	1024	RGP	15	2020/08/19	VB+PS	TH
22M	187 / 188	Intresection Of P183	T	G&W	EX-4036	2020/07/26	1030	RGP	15	2020/08/19	VB+PS	TH
22N	188 / 187	Intersection Of P192	T	G&W	EX-4036	2020/07/26	1027	RGP	15	2020/08/19	VB+PS	TH
22O	196 /	35m From SEOS	D	P	EX-4036	2020/07/29	1408	RGP	15	2020/08/19	VB+PS	TH
22P	191 / 192	Intersection Of P187	T	G&W	EX-4036	2020/07/29	1414	RGP	15	2020/08/19	VB+PS	TH
22Q	191 / 192	Intersection Of P196	T	G&W	EX-4036	2020/07/29	1419	RGP	15	2020/08/19	VB+PS	TH
22R	187 / 191	18.6m From NEOS	IO	G&W	EX-4037	2020/07/29	1621	EA	15	2020/08/19	VB+PS	TH
22S	195 / 196	Intersection Of P191	T	G&W	EX-4037	2020/07/29	1617	GP	15	2020/08/19	VB+PS	TH
22T	195 / 196	Intersection Of P199	T	G&W	EX-4037	2020/07/29	1614	GP	15	2020/08/19	VB+PS	TH

DETAIL TYPE:

AD - ANIMAL DAMAGE	DS-# - DESTRUCT SAMPLE NUMBER	IO - INSUFFICIENT OVERLAP	T - THREE PANEL INTERSECTION
ATL - AIR TEST LEAK	EE - EARTHWORK EQUIPMENT DAMAGE	MD - MANUFACTURER/DELIVERY DAMAGE	VL - VACUUM TEST LEAK
BO - FUSION WELDER BURN	EXT - EXTENSION	P - PENETRATION	WR - WRINKLE
CR - CREASE	FM - FISHMOUTH	PT - PRESSURE TEST CUT	WS - WELDER RESTART
D - INSTALLATION DAMAGE	FS - FAILED SEAM LENGTH	SI - SOIL SURFACE IRREGULARITY	OTHER:

TEST METHOD:

AL - AIR LANCE	VB - VAC BOX
PS - POINT STRESS	ST - SPARK TEST

REPAIR TYPE:

G&W - GRIND & WELD	B - BOOT	P - PATCH
HAW - HOT AIR WELD	C - CAP	

REMARKS

QC TECH Thomas Howald

SUPERVISOR Chad Messervey

SUBMISSION DATE 2020/01/05

SHEET NUMBER 42 of 117

GEOMEMBRANE DETAIL & TEST LOG

PROJECT NUMBER CT001401 AREA / LAYER Primary

PROJECT TITLE Victoria Gold Heap Leach Pad Phase 1B

TRIAL SEAMS

#	MACHINE NUMBER	DATE YYYY-MM-DD	TIME	WELD TECH	AIR TEMP °C	PREHEAT TEMP °C	EXTRUDER TEMP °C	PEEL (PPI)					SHEAR (PPI)					CHK'D BY	REMARKS
1	EX-4036	2020/07/26	820	RGP	15	265°C	260°C	152	135	116	137	143	190	199	166	180	184	TH	TT
2	EX-008	2020/07/26	830	EA	15	257°C	254°C	148	141	129	133	144	182	186	185	181	179	TH	TT
3	EX-008	2020/07/26	845	GP	15	257°C	254°C	123	110	139	112	185	142	159	175	190	182	TH	TT
4	EX-4036	2020/07/29	1300	RGP	15	265°C	257°C	135	134	137	139	153	165	167	164	165	162	TH	TT
5	EX-4037	2020/07/29	1315	GP	15	257°C	254°C	171	143	154	155	148	179	177	174	169	178	TH	TT
6	EX-4037	2020/07/29	1315	EA	15	257°C	254°C	137	149	129	136	160	170	162	171	169	178	TH	TT

DETAIL CODE	PANEL NUMBER(S)	LOCATION DESCRIPTION	DETAIL TYPE	REPAIR TYPE	MACHINE NUMBER	REPAIR DATE YYYY-MM-DD	START TIME	WELD TECH	AIR TEMP °C	TEST DATE YYYY-MM-DD	TEST METH.	QC TECH
23A	196 / 199	12.1m From SEOS	IO	P	EX-4037	2020/07/29	1522	EA	15	2020/08/19	VB+PS	TH
23B	199 / 202	42m From SEOS	IO	P	EX-4037	2020/07/29	1510	EA	15	2020/08/19	VB+PS	TH
23C	198 / 199	Intersection Of P195	T	G&W	EX-4037	2020/07/29	1705	EA	15	2020/08/19	VB+PS	TH
23D	198 / 199	Intersection Of P202	T	G&W	EX-4037	2020/07/29	1710	EA	15	2020/08/19	VB+PS	TH
23E	211 / 212	Intersection Of P208	T	G&W	EX-4037	2020/07/29	1714	EA	15	2020/08/19	VB+PS	TH
23F	208 / 209	Intersection Of P205	T	G&W	EX-4037	2020/07/29	1451	EA	15	2020/08/19	VB+PS	TH
23G	208 / 209	Intersection Of P212	T	G&W	EX-4037	2020/07/29	1454	EA	15	2020/08/19	VB+PS	TH
23H	205 / 206	Intersection Of P202	T	G&W	EX-4037	2020/07/29	1417	EA	15	2020/08/19	VB+PS	TH
23I	205 / 206	Intersection Of P209	T	G&W	EX-4037	2020/07/29	1419	EA	15	2020/08/19	VB+PS	TH
23J	209 / 212	43m From SEOS	WS	P	EX-4037	2020/07/29	1442	EA	15	2020/08/19	VB+PS	TH
23K	183 / 187	57.9m From SEOS	WS	P	EX-4037	2020/07/29	1640	EA	15	2020/08/19	VB+PS	TH
23L	178 / 179	Intersection Of P183	T	G&W	EX-4037	2020/07/29	1710	EA	15	2020/08/19	VB+PS	TH
23M	178 / 183	10m From NEOS	BO	P	EX-4037	2020/07/29	1654	EA	15	2020/08/19	VB+PS	TH
23N	178 / 179	Intersection Of P174	T	P	EX-4037	2020/07/29	1708	EA	15	2020/08/19	VB+PS	TH
23O	174 / 175	Intersection Of P170	T	G&W	EX-4036	2020/07/26	1046	RGP	15	2020/08/19	VB+PS	TH
23P	174 / 175	Intersection Of P179	T	G&W	EX-4036	2020/07/26	1045	RGP	15	2020/08/19	VB+PS	TH
23Q	190 / 193	NEOS	BO	P	EX-35	2020/07/30	1655	RW	15	2020/08/19	VB+PS	TH
23R	197 / 201	NEOS	BO	P	EX-35	2020/07/30	1628	RW	15	2020/08/19	VB+PS	TH
23S	214 / 216	NEOS	BO	P	EX-35	2020/07/31	900	RW	15	2020/08/05	VB+PS	TH
23T	213 / 214	Intersection Of P216	T	G&W	EX-35	2020/07/30	1430	RW	15	2020/08/05	VB+PS	TH

DETAIL TYPE:

AD - ANIMAL DAMAGE	DS-# - DESTRUCT SAMPLE NUMBER	IO - INSUFFICIENT OVERLAP	T - THREE PANEL INTERSECTION
ATL - AIR TEST LEAK	EE - EARTHWORK EQUIPMENT DAMAGE	MD - MANUFACTURER/DELIVERY DAMAGE	VL - VACUUM TEST LEAK
BO - FUSION WELDER BURN	EXT - EXTENSION	P - PENETRATION	WR - WRINKLE
CR - CREASE	FM - FISHMOUTH	PT - PRESSURE TEST CUT	WS - WELDER RESTART
D - INSTALLATION DAMAGE	FS - FAILED SEAM LENGTH	SI - SOIL SURFACE IRREGULARITY	OTHER:

TEST METHOD:

AL - AIR LANCE	VB - VAC BOX
PS - POINT STRESS	ST - SPARK TEST

REPAIR TYPE:

G&W - GRIND & WELD	B - BOOT	P - PATCH
HAW - HOT AIR WELD	C - CAP	

REMARKS

QC TECH Thomas Howald

SUPERVISOR Chad Messervey

SUBMISSION DATE 2020/01/05

SHEET NUMBER 43 of 117

GEOMEMBRANE DETAIL & TEST LOG

PROJECT NUMBER CT001401 AREA / LAYER Primary

PROJECT TITLE Victoria Gold Heap Leach Pad Phase 1B

TRIAL SEAMS

#	MACHINE NUMBER	DATE YYYY-MM-DD	TIME	WELD TECH	AIR TEMP °C	PREHEAT TEMP °C	EXTRUDER TEMP °C	PEEL (PPI)					SHEAR (PPI)					CHK'D BY	REMARKS
1	EX-35	2020/07/30	1400	RW	20	257°C	257°C	154	151	159	145	145	168	165	175	168	182	TH	TT
2	EX-35	2020/07/31	830	RW	20	257°C	257°C	140	138	127	126	127	198	188	179	195	178	TH	TT
3																			
4																			
5																			
6																			

DETAIL CODE	PANEL NUMBER(S)	LOCATION DESCRIPTION	DETAIL TYPE	REPAIR TYPE	MACHINE NUMBER	REPAIR DATE YYYY-MM-DD	START TIME	WELD TECH	AIR TEMP °C	TEST DATE YYYY-MM-DD	TEST METH.	QC TECH
A	/											
B	/											
C	/											
D	/											
E	/											
F	/											
G	/											
H	/											
I	/											
J	/											
K	/											
L	/											
M	/											
N	/											
O	/											
P	/											
Q	/											
R	/											
S	/											
T	/											

DETAIL TYPE:

AD - ANIMAL DAMAGE	DS-# - DESTRUCT SAMPLE NUMBER	IO - INSUFFICIENT OVERLAP	T - THREE PANEL INTERSECTION
ATL - AIR TEST LEAK	EE - EARTHWORK EQUIPMENT DAMAGE	MD - MANUFACTURER/DELIVERY DAMAGE	VL - VACUUM TEST LEAK
BO - FUSION WELDER BURN	EXT - EXTENSION	P - PENETRATION	WR - WRINKLE
CR - CREASE	FM - FISHMOUTH	PT - PRESSURE TEST CUT	WS - WELDER RESTART
D - INSTALLATION DAMAGE	FS - FAILED SEAM LENGTH	SI - SOIL SURFACE IRREGULARITY	OTHER:

TEST METHOD:

AL - AIR LANCE	VB - VAC BOX
PS - POINT STRESS	ST - SPARK TEST

REPAIR TYPE:

G&W - GRIND & WELD	B - BOOT	P - PATCH
HAW - HOT AIR WELD	C - CAP	

REMARKS

QC TECH Thomas Howald

SUPERVISOR Chad Messervey

SUBMISSION DATE 2020/01/05

SHEET NUMBER 44 of 117

GEOMEMBRANE DETAIL & TEST LOG

PROJECT NUMBER CT001401 AREA / LAYER Primary

PROJECT TITLE Victoria Gold Heap Leach Pad Phase 1B

TRIAL SEAMS

#	MACHINE NUMBER	DATE YYYY-MM-DD	TIME	WELD TECH	AIR TEMP °C	PREHEAT TEMP °C	EXTRUDER TEMP °C	PEEL (PPI)					SHEAR (PPI)					CHK'D BY	REMARKS
1	EX-35	2020/07/30	1400	RW	20	257°C	257°C	154	151	159	145	145	168	165	175	168	182	TH	TT
2	EX-35	2020/07/31	830	RW	20	257°C	257°C	140	138	127	126	127	198	188	179	195	178	TH	TT
3	EX-35	2020/08/01	815	RW	20	257°C	257°C	127	152	156	152	149	157	166	166	172	170	TH	TT
4	EX-35	2020/08/01	1200	RW	20	257°C	257°C	130	122	110	110	115	145	146	146	148	153	TH	TT
5	EX-35	2020/08/01	1445	RW	20	257°C	257°C	125	150	145	157	124	152	152	165	158	168	TH	TT
6																			

DETAIL CODE	PANEL NUMBER(S)	LOCATION DESCRIPTION	DETAIL TYPE	REPAIR TYPE	MACHINE NUMBER	REPAIR DATE YYYY-MM-DD	START TIME	WELD TECH	AIR TEMP °C	TEST DATE YYYY-MM-DD	TEST METH.	QC TECH
24A	213 / 216	10m From NEOS	IO	G&W	EX-35	2020/07/30	1435	RW	15	2020/08/05	VB+PS	TH
24B	221 / 222	Intersection Of P219	T	G&W	EX-35	2020/07/31	850	RW	15	2020/08/05	VB+PS	TH
24C	222 / 221	Intersection Of P225	T	G&W	EX-35	2020/07/31	845	RW	15	2020/08/05	VB+PS	TH
24D	228 / 227	Intersection Of P225	T	G&W	EX-35	2020/08/01	853	RW	15	2020/08/19	VB+PS	TH
24E	227 / 228	Intersection Of P230	T	G&W	EX-35	2020/08/01	900	RW	15	2020/08/19	VB+PS	TH
24F	232 / 233	Intersection Of P230	T	G&W	EX-35	2020/08/01	921	RW	15	2020/08/05	VB+PS	TH
24G	230 / 232	11m From NEOS	BO	P	EX-35	2020/08/01	941	RW	15	2020/08/05	VB+PS	TH
24H	225 / 224	Intersection Of P227	T	G&W	EX-35	2020/08/01	912	RW	15	2020/08/05	VB+PS	TH
24I	224 / 225	Intersection Of P221	T	G&W	EX-35	2020/07/30	1735	RW	15	2020/08/05	VB+PS	TH
24J	218 / 219	Intersection Of P221	T	G&W	EX-35	2020/07/30	1718	RW	15	2020/08/05	VB+PS	TH
24K	218 / 219	2m From EEOS	IO	P	EX-35	2020/07/30	1740	RW	15	2020/08/05	VB+PS	TH
24L	218 / 219	2m From WEOS	D	P	EX-35	2020/07/30	1743	RW	15	2020/08/05	VB+PS	TH
24M	218 / 219	Intersection Of P216	T	G&W	EX-35	2020/07/30	1713	RW	15	2020/08/05	VB+PS	TH
24N	215 / 216	Intersection Of P213	T	G&W	EX-35	2020/07/30	1759	RW	15	2020/08/05	VB+PS	TH
24O	215 / 216	Intersection Of P218	T	G&W	EX-35	2020/07/30	1758	RW	15	2020/08/05	VB+PS	TH
24P	229 / 230	Intersection Of P227	T	G&W	EX-35	2020/08/01	1000	RW	15	2020/08/05	VB+PS	TH
24Q	229 / 230	Intersection Of P232	T	G&W	EX-35	2020/08/01	1004	RW	15	2020/08/05	VB+PS	TH
24R	234 / 235	Intersection Of P237	T	G&W	EX-35	2020/08/01	1317	RW	15	2020/08/05	VB+PS	TH
24S	234 / 235	Intersection Of P232	T	G&W	EX-35	2020/08/01	1308	RW	15	2020/08/06	VB+PS	TH
24T	226 / 227	Intersection Of P229	T	G&W	EX-35	2020/08/01	1205	RW	15	2020/08/06	VB+PS	TH

DETAIL TYPE:

AD - ANIMAL DAMAGE	DS-# - DESTRUCT SAMPLE NUMBER	IO - INSUFFICIENT OVERLAP	T - THREE PANEL INTERSECTION
ATL - AIR TEST LEAK	EE - EARTHWORK EQUIPMENT DAMAGE	MD - MANUFACTURER/DELIVERY DAMAGE	VL - VACUUM TEST LEAK
BO - FUSION WELDER BURN	EXT - EXTENSION	P - PENETRATION	WR - WRINKLE
CR - CREASE	FM - FISHMOUTH	PT - PRESSURE TEST CUT	WS - WELDER RESTART
D - INSTALLATION DAMAGE	FS - FAILED SEAM LENGTH	SI - SOIL SURFACE IRREGULARITY	OTHER:

TEST METHOD:

AL - AIR LANCE	VB - VAC BOX
PS - POINT STRESS	ST - SPARK TEST

REPAIR TYPE:

G&W - GRIND & WELD	B - BOOT	P - PATCH
HAW - HOT AIR WELD	C - CAP	

REMARKS

QC TECH Thomas Howald

SUPERVISOR Chad Messervey

SUBMISSION DATE 2020/01/05

SHEET NUMBER 45 of 117

GEOMEMBRANE DETAIL & TEST LOG

PROJECT NUMBER CT001401 AREA / LAYER Primary

PROJECT TITLE Victoria Gold Heap Leach Pad Phase 1B

TRIAL SEAMS

#	MACHINE NUMBER	DATE YYYY-MM-DD	TIME	WELD TECH	AIR TEMP °C	PREHEAT TEMP °C	EXTRUDER TEMP °C	PEEL (PPI)					SHEAR (PPI)					CHK'D BY	REMARKS
1	EX-35	2020/07/31	830	RW	20	257°C	257°C	140	138	127	126	127	198	188	179	195	178	TH	TT
2	EX-35	2020/08/01	815	RW	20	257°C	257°C	127	152	156	152	149	157	166	166	172	170	TH	TT
3	EX-35	2020/08/01	1200	RW	20	257°C	257°C	130	122	110	110	115	145	146	146	148	153	TH	TT
4	EX-35	2020/08/01	1445	RW	20	257°C	257°C	125	150	145	157	124	152	152	165	158	168	TH	TT
5	EX-35	2020/08/02	845	RW	20	257°C	257°C	142	144	155	152	160	146	147	163	152	174	TH	TT
6	EX-4037	2020/08/02	1200	RW	20	257°C	257°C	110	143	113	128	125	154	165	172	166	164	TH	TT

DETAIL CODE	PANEL NUMBER(S)	LOCATION DESCRIPTION	DETAIL TYPE	REPAIR TYPE	MACHINE NUMBER	REPAIR DATE YYYY-MM-DD	START TIME	WELD TECH	AIR TEMP °C	TEST DATE YYYY-MM-DD	TEST METH.	QC TECH
25A	226 / 227	WEOS	DS-104	P	EX-35	2020/08/01	1217	RW	15	2020/08/06	VB+PS	TH
25B	224 / 226	NEOS	DS-103	P	EX-35	2020/08/01	1220	RW	15	2020/08/06	VB+PS	TH
25C	221 / 220	Intersection Of P224	DS-100	P	EX-35	2020/08/01	1237	RW	15	2020/08/06	VB+PS	TH
25D	220 / 221	Intersection Of P218	DS-101	P	EX-35	2020/08/01	1253	RW	15	2020/08/06	VB+PS	TH
25E	212 / 213	Intersection Of P215	T	G&W	EX-35	2020/07/31	947	RW	15	2020/08/06	VB+PS	TH
25F	217 / 218	Intersection Of P215	T	G&W	EX-35	2020/07/31	1041	RW	15	2020/08/06	VB+PS	TH
25G	218 /	2m From SEOS	D	P	EX-35	2020/07/31	1058	RW	15	2020/08/06	VB+PS	TH
25H	217 / 218	Intersection Of P220	T	G&W	EX-35	2020/07/31	1033	RW	15	2020/08/06	VB+PS	TH
25I	223 / 224	Intersection Of P220	T	G&W	EX-35	2020/07/31	1017	RW	15	2020/08/06	VB+PS	TH
25J	223 / 224	Intersection Of P226	T	G&W	EX-35	2020/08/01	1351	RW	15	2020/08/06	VB+PS	TH
25K	226 /	26m From SEOS	D	P	EX-35	2020/08/01	1345	RW	15	2020/08/06	VB+PS	TH
25L	231 / 232	Intersection Of P229	T	G&W	EX-35	2020/08/01	1358	RW	15	2020/08/06	VB+PS	TH
25M	231 / 232	Intersection Of P234	T	G&W	EX-35	2020/08/01	1407	RW	15	2020/08/06	VB+PS	TH
25N	239 / 240	Intersection Of P237	T	G&W	EX-35	2020/08/01	1417	RW	15	2020/08/06	VB+PS	TH
25O	212 / 215	4m From SEOS	WS	G&W	EX-35	2020/08/01	1703	RW	15	2020/08/06	VB+PS	TH
25P	215 / 242	Intersection Of P212	T	G&W	EX-35	2020/08/02	919	RW	15	2020/08/06	VB+PS	TH
25Q	215 / 242	Intersection Of P244	T	G&W	EX-35	2020/08/01	1655	RW	15	2020/08/06	VB+PS	TH
25R	217 / 244	Intersection Of P215	T	G&W	EX-35	2020/08/01	1643	RW	15	2020/08/06	VB+PS	TH
25S	217 / 244	Intersection Of P220	T	G&W	EX-35	2020/08/02	938	RW	15	2020/08/06	VB+PS	TH
25T	220 / 245	Intersection Of P244	T	G&W	EX-35	2020/08/02	927	RW	15	2020/08/06	VB+PS	TH

DETAIL TYPE:

AD - ANIMAL DAMAGE	DS-# - DESTRUCT SAMPLE NUMBER	IO - INSUFFICIENT OVERLAP	T - THREE PANEL INTERSECTION
ATL - AIR TEST LEAK	EE - EARTHWORK EQUIPMENT DAMAGE	MD - MANUFACTURER/DELIVERY DAMAGE	VL - VACUUM TEST LEAK
BO - FUSION WELDER BURN	EXT - EXTENSION	P - PENETRATION	WR - WRINKLE
CR - CREASE	FM - FISHMOUTH	PT - PRESSURE TEST CUT	WS - WELDER RESTART
D - INSTALLATION DAMAGE	FS - FAILED SEAM LENGTH	SI - SOIL SURFACE IRREGULARITY	OTHER:

TEST METHOD:

AL - AIR LANCE	VB - VAC BOX
PS - POINT STRESS	ST - SPARK TEST

REPAIR TYPE:

G&W - GRIND & WELD	B - BOOT	P - PATCH
HAW - HOT AIR WELD	C - CAP	

REMARKS

QC TECH Thomas Howald

SUPERVISOR Chad Messervey

SUBMISSION DATE 2020/01/05

SHEET NUMBER 46 of 117

GEOMEMBRANE DETAIL & TEST LOG

PROJECT NUMBER CT001401 AREA / LAYER Primary

PROJECT TITLE Victoria Gold Heap Leach Pad Phase 1B

TRIAL SEAMS

#	MACHINE NUMBER	DATE YYYY-MM-DD	TIME	WELD TECH	AIR TEMP °C	PREHEAT TEMP °C	EXTRUDER TEMP °C	PEEL (PPI)					SHEAR (PPI)					CHK'D BY	REMARKS
1	EX-4037	2020/08/02	1555	RW	20	257°C	257°C	134	123	145	126	141	164	169	166	171	156	TH	TT
2																			
3																			
4																			
5																			
6																			

DETAIL CODE	PANEL NUMBER(S)	LOCATION DESCRIPTION	DETAIL TYPE	REPAIR TYPE	MACHINE NUMBER	REPAIR DATE YYYY-MM-DD	START TIME	WELD TECH	AIR TEMP °C	TEST DATE YYYY-MM-DD	TEST METH.	QC TECH
A	/											
B	/											
C	/											
D	/											
E	/											
F	/											
G	/											
H	/											
I	/											
J	/											
K	/											
L	/											
M	/											
N	/											
O	/											
P	/											
Q	/											
R	/											
S	/											
T	/											

DETAIL TYPE:

AD - ANIMAL DAMAGE	DS-# - DESTRUCT SAMPLE NUMBER	IO - INSUFFICIENT OVERLAP	T - THREE PANEL INTERSECTION
ATL - AIR TEST LEAK	EE - EARTHWORK EQUIPMENT DAMAGE	MD - MANUFACTURER/DELIVERY DAMAGE	VL - VACUUM TEST LEAK
BO - FUSION WELDER BURN	EXT - EXTENSION	P - PENETRATION	WR - WRINKLE
CR - CREASE	FM - FISHMOUTH	PT - PRESSURE TEST CUT	WS - WELDER RESTART
D - INSTALLATION DAMAGE	FS - FAILED SEAM LENGTH	SI - SOIL SURFACE IRREGULARITY	OTHER:

TEST METHOD:

AL - AIR LANCE	VB - VAC BOX
PS - POINT STRESS	ST - SPARK TEST

REPAIR TYPE:

G&W - GRIND & WELD	B - BOOT	P - PATCH
HAW - HOT AIR WELD	C - CAP	

REMARKS

QC TECH Thomas Howald

SUPERVISOR Chad Messervey

SUBMISSION DATE 2020/01/05

SHEET NUMBER 47 of 117

GEOMEMBRANE DETAIL & TEST LOG

PROJECT NUMBER CT001401 AREA / LAYER Primary

PROJECT TITLE Victoria Gold Heap Leach Pad Phase 1B

TRIAL SEAMS

#	MACHINE NUMBER	DATE YYYY-MM-DD	TIME	WELD TECH	AIR TEMP °C	PREHEAT TEMP °C	EXTRUDER TEMP °C	PEEL (PPI)					SHEAR (PPI)					CHK'D BY	REMARKS
1	EX-35	2020/08/02	845	RW	20	257°C	257°C	142	144	155	152	160	146	147	163	152	174	TH	TT
2	EX-4037	2020/08/02	1200	RW	20	257°C	257°C	110	143	113	128	125	154	165	172	166	164	TH	TT
3	EX-4037	2020/08/02	1555	RW	20	257°C	257°C	134	123	145	126	141	164	169	166	171	156	TH	TT
4																			
5																			
6																			

DETAIL CODE	PANEL NUMBER(S)	LOCATION DESCRIPTION	DETAIL TYPE	REPAIR TYPE	MACHINE NUMBER	REPAIR DATE YYYY-MM-DD	START TIME	WELD TECH	AIR TEMP °C	TEST DATE YYYY-MM-DD	TEST METH.	QC TECH
26A	245 / 220	Intersection Of P247	T	G&W	EX-35	2020/08/02	1011	RW	15	2020/08/06	VB+PS	TH
26B	223 / 247	Intersection Of P220	T	G&W	EX-35	2020/08/02	952	RW	15	2020/08/06	VB+PS	TH
26C	226 / 249	Intersection Of P247	T	G&W	EX-35	2020/08/02	1032	RW	15	2020/08/06	VB+PS	TH
26D	223 / 247	Intersection Of P226	T	G&W	EX-35	2020/08/02	1001	RW	15	2020/08/06	VB+PS	TH
26E	226 / 249	Intersection Of P250	T	P	EX-35	2020/08/02	1050	RW	15	2020/08/06	VB+PS	TH
26F	229 / 250	Intersection Of P226	T	P	EX-4037	2020/08/02	1231	RW	15	2020/08/06	VB+PS	TH
26G	229 / 250	Intersection Of P231	T	G&W	EX-4037	2020/08/02	1237	RW	15	2020/08/06	VB+PS	TH
26H	231 / 252	Intersection Of P250	T	G&W	EX-4037	2020/08/02	1241	RW	15	2020/08/06	VB+PS	TH
26I	231 / 252	Intersection Of P254	T	G&W	EX-4037	2020/08/02	1245	RW	15	2020/08/06	VB+PS	TH
26J	234 / 254	Intersection Of P231	T	G&W	EX-4037	2020/08/02	1251	RW	15	2020/08/06	VB+PS	TH
26K	234 / 254	Intersection Of P237	T	G&W	EX-4037	2020/08/02	1257	RW	15	2020/08/06	VB+PS	TH
26L	237 / 255	Intersection Of P254	T	G&W	EX-4037	2020/08/02	1304	RW	15	2020/08/06	VB+PS	TH
26M	237 / 255	Intersection Of P257	T	G&W	EX-4037	2020/08/02	1309	RW	15	2020/08/06	VB+PS	TH
26N	239 / 257	Intersection Of P237	T	P	EX-4037	2020/08/02	1350	RW	15	2020/08/06	VB+PS	TH
26O	253 / 234	Intersection Of P255	T	G&W	EX-4037	2020/08/02	1403	RW	15	2020/08/06	VB+PS	TH
26P	235 / 254	Intersection Of P252	T	G&W	EX-4037	2020/08/02	1358	RW	15	2020/08/06	VB+PS	TH
26Q	248 / 249	Intersection Of P252	T	G&W	EX-4037	2020/08/02	1409	RW	15	2020/08/06	VB+PS	TH
26R	248 / 249	Intersection Of P247	T	G&W	EX-4037	2020/08/02	1414	RW	15	2020/08/06	VB+PS	TH
26S	243 / 244	Intersection Of P245	T	G&W	EX-4037	2020/08/02	1425	RW	15	2020/08/06	VB+PS	TH
26T	243 / 244	Intersection Of P242	T	G&W	EX-4037	2020/08/02	1426	RW	15	2020/08/06	VB+PS	TH

DETAIL TYPE:

AD - ANIMAL DAMAGE	DS-# - DESTRUCT SAMPLE NUMBER	IO - INSUFFICIENT OVERLAP	T - THREE PANEL INTERSECTION
ATL - AIR TEST LEAK	EE - EARTHWORK EQUIPMENT DAMAGE	MD - MANUFACTURER/DELIVERY DAMAGE	VL - VACUUM TEST LEAK
BO - FUSION WELDER BURN	EXT - EXTENSION	P - PENETRATION	WR - WRINKLE
CR - CREASE	FM - FISHMOUTH	PT - PRESSURE TEST CUT	WS - WELDER RESTART
D - INSTALLATION DAMAGE	FS - FAILED SEAM LENGTH	SI - SOIL SURFACE IRREGULARITY	OTHER:

TEST METHOD:

AL - AIR LANCE	VB - VAC BOX
PS - POINT STRESS	ST - SPARK TEST

REPAIR TYPE:

G&W - GRIND & WELD	B - BOOT	P - PATCH
HAW - HOT AIR WELD	C - CAP	

REMARKS

QC TECH Thomas Howald

SUPERVISOR Chad Messervey

SUBMISSION DATE 2020/01/05

SHEET NUMBER 48 of 117

GEOMEMBRANE DETAIL & TEST LOG

PROJECT NUMBER CT001401 AREA / LAYER Primary

PROJECT TITLE Victoria Gold Heap Leach Pad Phase 1B

TRIAL SEAMS

#	MACHINE NUMBER	DATE YYYY-MM-DD	TIME	WELD TECH	AIR TEMP °C	PREHEAT TEMP °C	EXTRUDER TEMP °C	PEEL (PPI)					SHEAR (PPI)					CHK'D BY	REMARKS
1	EX-35	2020/08/02	845	RW	20	257°C	257°C	142	144	155	152	160	146	147	163	152	174	TH	TT
2	EX-4037	2020/08/02	1200	RW	20	257°C	257°C	110	143	113	128	125	154	165	172	166	164	TH	TT
3	EX-4037	2020/08/02	1555	RW	20	257°C	257°C	134	123	145	126	141	164	169	166	171	156	TH	TT
4	EX-4037	2020/08/03	1230	RW	20	257°C	257°C	118	124	103	143	129	148	155	146	167	147	TH	TT
5	EX-4036	2020/08/03	1430	RW	20	257°C	257°C	104	110	105	102	102	142	147	145	145	147	TH	TT
6																			

DETAIL CODE	PANEL NUMBER(S)	LOCATION DESCRIPTION	DETAIL TYPE	REPAIR TYPE	MACHINE NUMBER	REPAIR DATE YYYY-MM-DD	START TIME	WELD TECH	AIR TEMP °C	TEST DATE YYYY-MM-DD	TEST METH.	QC TECH
27A	247 / 248	20m From NEOS	WS	P	EX-4037	2020/08/02	1449	RW	15	2020/08/06	VB+PS	TH
27B	248 / 250	19m From NEOS	WS	P	EX-4037	2020/08/02	1454	RW	15	2020/08/06	VB+PS	TH
27C	246 / 247	Intersection Of P245	T	G&W	EX-4037	2020/08/02	1648	RW	15	2020/08/06	VB+PS	TH
27D	247 /	4m From SEOS 3m West	D	P	EX-4037	2020/08/02	1654	RW	15	2020/08/06	VB+PS	TH
27E	246 / 247	Intersection Of P248	T	G&W	EX-4037	2020/08/02	1650	RW	15	2020/08/06	VB+PS	TH
27F	247 /	2m From SEOS.8m East	D	P	EX-4037	2020/08/02	1659	RW	15	2020/08/06	VB+PS	TH
27G	248 / 250	10m From SEOS	IO	P	EX-4037	2020/08/02	1710	RW	15	2020/08/06	VB+PS	TH
27H	251 / 252	Intersection Of P250	T	G&W	EX-4037	2020/08/02	1724	RW	15	2020/08/06	VB+PS	TH
27I	251 / 252	Intersection Of P253	T	G&W	EX-4037	2020/08/02	1728	RW	15	2020/08/06	VB+PS	TH
27J	256 / 257	Intersection Of P255	T	G&W	EX-4037	2020/08/02	1746	RW	15	2020/08/19	VB+PS	TH
27K	236 / 235	Intersection Of P233	T	G&W	EX-4036	2020/08/03	1654	RW	20	2020/08/06	VB+PS	TH
27L	235 / 236	Intersection Of P238	T	G&W	EX-4036	2020/08/03	1649	RW	20	2020/08/19	VB+PS	TH
27M	225 / 228	NEOS	BO	P	EX-4037	2020/08/03	1347	RW	20	2020/08/06	VB+PS	TH
27N	230 / 233	NEOS	IO	P	EX-4037	2020/08/03	1403	RW	20	2020/08/06	VB+PS	TH
27O	233 / 236	NEOS	IO	P	EX-4037	2020/08/03	1419	RW	20	2020/08/06	VB+PS	TH
27P	236 / 238	NEOS	BO	P	EX-4037	2020/08/03	1430	RW	20	2020/08/06	VB+PS	TH
27Q	238 / 241	NEOS	IO	P	EX-4037	2020/08/03	1449	RW	20	2020/08/06	VB+PS	TH
27R	238 / 241	7m From NEOS	BO	P	EX-4037	2020/08/03	1452	RW	20	2020/08/06	VB+PS	TH
27S	240 / 241	Intersection Of P238	T	G&W	EX-4036	2020/08/03	1719	RW	20	2020/08/06	VB+PS	TH
27T	240 / 241	Intersection Of P259	T	G&W	EX-4036	2020/08/03	1717	RW	20	2020/08/06	VB+PS	TH

DETAIL TYPE:

AD - ANIMAL DAMAGE	DS-# - DESTRUCT SAMPLE NUMBER	IO - INSUFFICIENT OVERLAP	T - THREE PANEL INTERSECTION
ATL - AIR TEST LEAK	EE - EARTHWORK EQUIPMENT DAMAGE	MD - MANUFACTURER/DELIVERY DAMAGE	VL - VACUUM TEST LEAK
BO - FUSION WELDER BURN	EXT - EXTENSION	P - PENETRATION	WR - WRINKLE
CR - CREASE	FM - FISHMOUTH	PT - PRESSURE TEST CUT	WS - WELDER RESTART
D - INSTALLATION DAMAGE	FS - FAILED SEAM LENGTH	SI - SOIL SURFACE IRREGULARITY	OTHER:

TEST METHOD:

AL - AIR LANCE	VB - VAC BOX
PS - POINT STRESS	ST - SPARK TEST

REPAIR TYPE:

G&W - GRIND & WELD	B - BOOT	P - PATCH
HAW - HOT AIR WELD	C - CAP	

REMARKS

QC TECH Thomas Howald

SUPERVISOR Chad Messervey

SUBMISSION DATE 2020/01/05

SHEET NUMBER 49 of 117

GEOMEMBRANE DETAIL & TEST LOG

PROJECT NUMBER CT001401 AREA / LAYER Primary

PROJECT TITLE Victoria Gold Heap Leach Pad Phase 1B

TRIAL SEAMS

#	MACHINE NUMBER	DATE YYYY-MM-DD	TIME	WELD TECH	AIR TEMP °C	PREHEAT TEMP °C	EXTRUDER TEMP °C	PEEL (PPI)					SHEAR (PPI)					CHK'D BY	REMARKS
1	EX-4037	2020/08/03	1230	RW	20	257°C	257°C	118	124	103	143	129	148	155	146	167	147	TH	TT
2	EX-4036	2020/08/03	1430	RW	20	257°C	257°C	104	110	105	102	102	142	147	145	145	147	TH	TT
3																			
4																			
5																			
6																			

DETAIL CODE	PANEL NUMBER(S)	LOCATION DESCRIPTION	DETAIL TYPE	REPAIR TYPE	MACHINE NUMBER	REPAIR DATE YYYY-MM-DD	START TIME	WELD TECH	AIR TEMP °C	TEST DATE YYYY-MM-DD	TEST METH.	QC TECH
28A	237 / 238	Intersection Of P235	T	G&W	EX-4036	2020/08/03	1725	RW	20	2020/08/06	VB+PS	TH
28B	237 / 238	Intersection Of P240	T	G&W	EX-4036	2020/08/03	1733	RW	20	2020/08/06	VB+PS	TH
28C	232 / 233	Intersection Of P235	T	G&W	EX-4036	2020/08/03	1721	RW	20	2020/08/06	VB+PS	TH
28D	259 / 260	Intersection Of P241	T	G&W	EX-4036	2020/08/03	1715	RW	20	2020/08/06	VB+PS	TH
28E	259 / 260	Intersection Of P260	T	G&W	EX-4036	2020/08/03	1712	RW	20	2020/08/06	VB+PS	TH
28F	262 / 263	Intersection Of P260	T	G&W	EX-4036	2020/08/03	1700	RW	20	2020/08/06	VB+PS	TH
28G	262 / 263	Intersection Of P266	T	G&W	EX-4036	2020/08/03	1703	RW	20	2020/08/06	VB+PS	TH
28H	265 / 266	Intersection Of P262	T	G&W	EX-4036	2020/08/03	1705	RW	20	2020/08/06	VB+PS	TH
28I	265 / 266	Intersection Of P269	T	G&W	EX-4036	2020/08/03	1707	RW	20	2020/08/06	VB+PS	TH
28J	268 / 269	Intersection Of P265	T	G&W	EX-4036	2020/08/03	1710	RW	20	2020/08/06	VB+PS	TH
28K	239 / 240	Intersection Of P258	T	G&W	EX-4036	2020/08/03	1759	RW	20	2020/08/06	VB+PS	TH
28L	258 / 259	Intersection Of P240	T	G&W	EX-4036	2020/08/03	1754	RW	20	2020/08/06	VB+PS	TH
28M	258 / 259	Intersection Of P261	T	G&W	EX-4036	2020/08/03	1751	RW	20	2020/08/06	VB+PS	TH
28N	261 / 262	Intersection Of P259	T	G&W	EX-4036	2020/08/03	1743	RW	20	2020/08/06	VB+PS	TH
28O	261 / 262	Intersection Of P265	T	G&W	EX-4036	2020/08/03	1745	RW	20	2020/08/06	VB+PS	TH
28P	264 / 265	Intersection Of P261	T	G&W	EX-4036	2020/08/03	1748	RW	20	2020/08/06	VB+PS	TH
28Q	264 / 265	Intersection Of P268	T	G&W	EX-4036	2020/08/03	1805	RW	20	2020/08/06	VB+PS	TH
28R	267 / 268	Intersection Of P264	T	G&W	EX-4036	2020/08/03	1801	RW	20	2020/08/06	VB+PS	TH
28S	268 /	2m From SEOS	D	P	EX-4036	2020/08/03	1828	RW	20	2020/08/06	VB+PS	TH
28T	268 /	4m From SEOS	D	P	EX-4036	2020/08/03	1829	RW	20	2020/08/06	VB+PS	TH

DETAIL TYPE:

AD - ANIMAL DAMAGE	DS-# - DESTRUCT SAMPLE NUMBER	IO - INSUFFICIENT OVERLAP	T - THREE PANEL INTERSECTION
ATL - AIR TEST LEAK	EE - EARTHWORK EQUIPMENT DAMAGE	MD - MANUFACTURER/DELIVERY DAMAGE	VL - VACUUM TEST LEAK
BO - FUSION WELDER BURN	EXT - EXTENSION	P - PENETRATION	WR - WRINKLE
CR - CREASE	FM - FISHMOUTH	PT - PRESSURE TEST CUT	WS - WELDER RESTART
D - INSTALLATION DAMAGE	FS - FAILED SEAM LENGTH	SI - SOIL SURFACE IRREGULARITY	OTHER:

TEST METHOD:

AL - AIR LANCE	VB - VAC BOX
PS - POINT STRESS	ST - SPARK TEST

REPAIR TYPE:

G&W - GRIND & WELD	B - BOOT	P - PATCH
HAW - HOT AIR WELD	C - CAP	

REMARKS

QC TECH Thomas Howald

SUPERVISOR Chad Messervey

SUBMISSION DATE 2020/01/05

SHEET NUMBER 50 of 117

GEOMEMBRANE DETAIL & TEST LOG

PROJECT NUMBER CT001401 AREA / LAYER Primary

PROJECT TITLE Victoria Gold Heap Leach Pad Phase 1B

TRIAL SEAMS

#	MACHINE NUMBER	DATE YYYY-MM-DD	TIME	WELD TECH	AIR TEMP °C	PREHEAT TEMP °C	EXTRUDER TEMP °C	PEEL (PPI)					SHEAR (PPI)					CHK'D BY	REMARKS
1	EX-4037	2020/08/03	1230	RW	20	257°C	257°C	118	124	103	143	129	148	155	146	167	147	TH	TT
2	EX-4036	2020/08/03	1430	RW	20	257°C	257°C	104	110	105	102	102	142	147	145	145	147	TH	TT
3	EX-4037	2020/08/06	1245	TH	20	257°C	257°C	105	139	130	131	116	155	155	155	164	155	TH	TT
4	EX-4037	2020/08/06	1630	TH	20	257°C	257°C	143	142	130	135	125	177	166	164	172	164	TH	TT
5	EX-008	2020/08/06	1715	EA	20	254°C	257°C	133	150	131	150	149	166	171	165	164	168	TH	TT
6	EX-4037	2020/08/10	1300	GP	20	260°C	257°C	131	109	122	125	127	160	153	153	161	163	TH	TT

DETAIL CODE	PANEL NUMBER(S)	LOCATION DESCRIPTION	DETAIL TYPE	REPAIR TYPE	MACHINE NUMBER	REPAIR DATE YYYY-MM-DD	START TIME	WELD TECH	AIR TEMP °C	TEST DATE YYYY-MM-DD	TEST METH.	QC TECH
29A	268 /	6m From SEOS	D	P	EX-4036	2020/08/03	1825	RW	20	2020/08/06	VB+PS	TH
29B	268 /	8m From SEOS	D	P	EX-4036	2020/08/03	1822	RW	20	2020/08/06	VB+PS	TH
29C	268 /	10m From SEOS	D	P	EX-4036	2020/08/03	1819	RW	20	2020/08/06	VB+PS	TH
29D	239 / 257	Intersection Of P258	T	G&W	EX-4036	2020/08/03	1825	RW	20	2020/08/06	VB+PS	TH
29E	202 / 206	7m From SEOS	IO	G&W	EX-4037	2020/08/06	1600	TH	20	2020/08/10	VB+PS	TH
29F	178 / 183	8m From NEOS	WS	G&W	EX-4037	2020/08/06	1325	TH	20	2020/08/10	VB+PS	TH
29G	212 / 211	Intersection Of P242	T	G&W	EX-4037	2020/08/06	1615	TH	20	2020/08/19	VB+PS	TH
29H	250 / 252	20m From NEOS	WS	G&W	EX-4037	2020/08/06	1340	TH	20	2020/08/10	VB+PS	TH
29I	284 / 288	NEOS	DS-134	P	EX-4037	2020/08/06	1710	TH	20	2020/08/10	VB+PS	TH
29J	288 / 292	NEOS	DS-136	P	EX-4037	2020/08/06	1735	TH	20	2020/08/10	VB+PS	TH
29K	292 / 295	NEOS	DS-139	P	EX-4037	2020/08/06	1750	TH	20	2020/08/10	VB+PS	TH
29L	280 / 281	Intersection Of P277	T	G&W	EX-4037	2020/08/06	1746	TH	20	2020/08/10	VB+PS	TH
29M	280 / 281	Intersection Of P284	T	G&W	EX-4037	2020/08/06	1748	TH	20	2020/08/10	VB+PS	TH
29N	287 / 288	Intersection Of P284	T	P	EX-4037	2020/08/06	1718	TH	20	2020/08/10	VB+PS	TH
29O	287 / 288	Intersection Of P292	T	G&W	EX-4037	2020/08/06	1722	TH	20	2020/08/10	VB+PS	TH
29P	284 /	4.7m From NEOS	D	P	EX-4037	2020/08/06	1655	TH	20	2020/08/10	VB+PS	TH
29Q	219 /	10m From NEOS	D	G&W	EX-35	2020/08/10	1320	EA	20	2020/08/10	VB+PS	TH
29R	228 /	1m From NEOS	D	G&W	EX-4037	2020/08/10	1325	GP	20	2020/08/19	VB+PS	TH
29S	233 /	2.2m From SEOS	D	P	EX-4037	2020/08/10	1341	GP	20	2020/08/10	VB+PS	TH
29T	238 /	15.1m From NEOS	D	G&W	EX-4037	2020/08/11	903	RP	15	2020/08/13	VB+PS	TH

DETAIL TYPE:

AD - ANIMAL DAMAGE	DS-# - DESTRUCT SAMPLE NUMBER	IO - INSUFFICIENT OVERLAP	T - THREE PANEL INTERSECTION
ATL - AIR TEST LEAK	EE - EARTHWORK EQUIPMENT DAMAGE	MD - MANUFACTURER/DELIVERY DAMAGE	VL - VACUUM TEST LEAK
BO - FUSION WELDER BURN	EXT - EXTENSION	P - PENETRATION	WR - WRINKLE
CR - CREASE	FM - FISHMOUTH	PT - PRESSURE TEST CUT	WS - WELDER RESTART
D - INSTALLATION DAMAGE	FS - FAILED SEAM LENGTH	SI - SOIL SURFACE IRREGULARITY	OTHER:

TEST METHOD:

AL - AIR LANCE	VB - VAC BOX
PS - POINT STRESS	ST - SPARK TEST

REPAIR TYPE:

G&W - GRIND & WELD	B - BOOT	P - PATCH
HAW - HOT AIR WELD	C - CAP	

REMARKS

QC TECH Thomas Howald

SUPERVISOR Chad Messervey

SUBMISSION DATE 2020/01/05

SHEET NUMBER 51 of 117

GEOMEMBRANE DETAIL & TEST LOG

PROJECT NUMBER CT001401 AREA / LAYER Primary

PROJECT TITLE Victoria Gold Heap Leach Pad Phase 1B

TRIAL SEAMS

#	MACHINE NUMBER	DATE YYYY-MM-DD	TIME	WELD TECH	AIR TEMP °C	PREHEAT TEMP °C	EXTRUDER TEMP °C	PEEL (PPI)					SHEAR (PPI)					CHK'D BY	REMARKS
1	EX-4037	2020/08/10	1300	RP	20	260°C	257°C	121	128	137	107	122	155	148	161	158	163	TH	TT
2	EX-35	2020/08/10	1300	RW	20	257°C	257°C	163	140	152	158	149	166	160	166	157	160	TH	TT
3	EX-35	2020/08/10	1300	EA	20	257°C	257°C	117	126	139	131	131	170	168	158	165	166	TH	TT
4	EX-23	2020/08/11	840	GP	20	257°C	254°C	135	124	131	141	137	156	162	171	178	165	TH	TT
5	EX-23	2020/08/11	840	RP	20	257°C	254°C	129	129	136	146	132	162	165	172	167	159	TH	TT
6	EX-4037	2020/08/11	900	EA	20	262°C	260°C	134	114	124	116	118	174	160	186	171	183	TH	TT

DETAIL CODE	PANEL NUMBER(S)	LOCATION DESCRIPTION	DETAIL TYPE	REPAIR TYPE	MACHINE NUMBER	REPAIR DATE YYYY-MM-DD	START TIME	WELD TECH	AIR TEMP °C	TEST DATE YYYY-MM-DD	TEST METH.	QC TECH
A	/											
B	/											
C	/											
D	/											
E	/											
F	/											
G	/											
H	/											
I	/											
J	/											
K	/											
L	/											
M	/											
N	/											
O	/											
P	/											
Q	/											
R	/											
S	/											
T	/											

DETAIL TYPE:

AD - ANIMAL DAMAGE	DS-# - DESTRUCT SAMPLE NUMBER	IO - INSUFFICIENT OVERLAP	T - THREE PANEL INTERSECTION
ATL - AIR TEST LEAK	EE - EARTHWORK EQUIPMENT DAMAGE	MD - MANUFACTURER/DELIVERY DAMAGE	VL - VACUUM TEST LEAK
BO - FUSION WELDER BURN	EXT - EXTENSION	P - PENETRATION	WR - WRINKLE
CR - CREASE	FM - FISHMOUTH	PT - PRESSURE TEST CUT	WS - WELDER RESTART
D - INSTALLATION DAMAGE	FS - FAILED SEAM LENGTH	SI - SOIL SURFACE IRREGULARITY	OTHER:

TEST METHOD:

AL - AIR LANCE	VB - VAC BOX
PS - POINT STRESS	ST - SPARK TEST

REPAIR TYPE:

G&W - GRIND & WELD	B - BOOT	P - PATCH
HAW - HOT AIR WELD	C - CAP	

REMARKS

QC TECH Thomas Howald

SUPERVISOR Chad Messervey

SUBMISSION DATE 2020/01/05

SHEET NUMBER 52 of 117

GEOMEMBRANE DETAIL & TEST LOG

PROJECT NUMBER CT001401 AREA / LAYER Primary

PROJECT TITLE Victoria Gold Heap Leach Pad Phase 1B

TRIAL SEAMS

#	MACHINE NUMBER	DATE YYYY-MM-DD	TIME	WELD TECH	AIR TEMP °C	PREHEAT TEMP °C	EXTRUDER TEMP °C	PEEL (PPI)					SHEAR (PPI)					CHK'D BY	REMARKS
1	EX-4037	2020/08/11	900	RW	20	262°C	260°C	92	103	128	117	128	142	165	182	175	167	TH	TT
2	EX-4037	2020/08/11	1345	RW	20	260°C	257°C	115	117	115	114	123	143	145	139	140	141	TH	TT
3	EX-4037	2020/08/11	1345	EA	20	260°C	257°C	129	121	123	125	117	142	142	135	151	157	TH	TT
4	EX-4037	2020/08/11	1730	EA	20	260°C	257°C	128	129	140	137	145	128	144	164	164	159	TH	TT
5	EX-4037	2020/08/11	1730	RW	20	260°C	257°C	130	127	135	134	129	151	168	160	172	154	TH	TT
6																			

DETAIL CODE	PANEL NUMBER(S)	LOCATION DESCRIPTION	DETAIL TYPE	REPAIR TYPE	MACHINE NUMBER	REPAIR DATE YYYY-MM-DD	START TIME	WELD TECH	AIR TEMP °C	TEST DATE YYYY-MM-DD	TEST METH.	QC TECH
A	/											
B	/											
C	/											
D	/											
E	/											
F	/											
G	/											
H	/											
I	/											
J	/											
K	/											
L	/											
M	/											
N	/											
O	/											
P	/											
Q	/											
R	/											
S	/											
T	/											

DETAIL TYPE:

AD - ANIMAL DAMAGE	DS-# - DESTRUCT SAMPLE NUMBER	IO - INSUFFICIENT OVERLAP	T - THREE PANEL INTERSECTION
ATL - AIR TEST LEAK	EE - EARTHWORK EQUIPMENT DAMAGE	MD - MANUFACTURER/DELIVERY DAMAGE	VL - VACUUM TEST LEAK
BO - FUSION WELDER BURN	EXT - EXTENSION	P - PENETRATION	WR - WRINKLE
CR - CREASE	FM - FISHMOUTH	PT - PRESSURE TEST CUT	WS - WELDER RESTART
D - INSTALLATION DAMAGE	FS - FAILED SEAM LENGTH	SI - SOIL SURFACE IRREGULARITY	OTHER:

TEST METHOD:

AL - AIR LANCE	VB - VAC BOX
PS - POINT STRESS	ST - SPARK TEST

REPAIR TYPE:

G&W - GRIND & WELD	B - BOOT	P - PATCH
HAW - HOT AIR WELD	C - CAP	

REMARKS

QC TECH Thomas Howald

SUPERVISOR Chad Messervey

SUBMISSION DATE 2020/01/05

SHEET NUMBER 53 of 117

GEOMEMBRANE DETAIL & TEST LOG

PROJECT NUMBER CT001401 AREA / LAYER Primary

PROJECT TITLE Victoria Gold Heap Leach Pad Phase 1B

TRIAL SEAMS

#	MACHINE NUMBER	DATE YYYY-MM-DD	TIME	WELD TECH	AIR TEMP °C	PREHEAT TEMP °C	EXTRUDER TEMP °C	PEEL (PPI)					SHEAR (PPI)					CHK'D BY	REMARKS
1	EX-4037	2020/08/06	1245	TH	20	257°C	257°C	105	139	130	131	116	155	155	155	164	155	TH	TT
2	EX-4037	2020/08/06	1630	TH	20	257°C	257°C	143	142	130	135	125	177	166	164	172	164	TH	TT
3	EX-008	2020/08/06	1715	EA	20	254°C	257°C	133	150	131	150	149	166	171	165	164	168	TH	TT
4	EX-4037	2020/08/10	1300	GP	20	260°C	257°C	131	109	122	125	127	160	153	153	161	163	TH	TT
5	EX-4037	2020/08/10	1300	RP	20	260°C	257°C	121	128	137	107	122	155	148	161	158	163	TH	TT
6	EX-35	2020/08/10	1300	RW	20	257°C	257°C	163	140	152	158	149	166	160	166	157	160	TH	TT

DETAIL CODE	PANEL NUMBER(S)	LOCATION DESCRIPTION	DETAIL TYPE	REPAIR TYPE	MACHINE NUMBER	REPAIR DATE YYYY-MM-DD	START TIME	WELD TECH	AIR TEMP °C	TEST DATE YYYY-MM-DD	TEST METH.	QC TECH
30A	235 / 238	NEOS	ATL	P	EX-4037	2020/08/11	1050	RP	15	2020/08/13	VB+PS	TH
30B	235 / 238	20m From NEOS	ATL	G&W	EX-4037	2020/08/11	1055	RP	15	2020/08/19	VB+PS	TH
30C	235 / 238	30m From NEOS	ATL	G&W	EX-4037	2020/08/11	1143	RP	15	2020/08/13	VB+PS	TH
30D	269 / 268	Intersection Of P277	T	G&W	EX-4037	2020/08/06	1806	TH	20	2020/08/10	VB+PS	TH
30E	292 / 291	Intersection Of P287	T	G&W	EX-23	2020/08/11	914	GP	15	2020/08/13	VB+PS	TH
30F	292 / 291	Intersection Of P295	T	P	EX-23	2020/08/11	930	GP	15	2020/08/19	VB+PS	TH
30G	291 / 295	13m From NEOS	IO	P	EX-23	2020/08/11	949	RP	15	2020/08/13	VB+PS	TH
30H	295 / 294	Intersection Of P291	T	G&W	EX-4037	2020/08/06	1815	TH	20	2020/08/10	VB+PS	TH
30I	283 / 284	Intersection Of P287	T	G&W	EX-4037	2020/08/06	1811	TH	20	2020/08/10	VB+PS	TH
30J	283 / 284	Intersection Of P280	T	G&W	EX-4037	2020/08/06	1806	TH	20	2020/08/10	VB+PS	TH
30K	284 /	1m From SEOS	D	G&W	EX-4037	2020/08/06	1805	TH	20	2020/08/10	VB+PS	TH
30L	276 / 277	Intersection Of P280	T	G&W	EX-4037	2020/08/10	1435	RP	20	2020/08/10	VB+PS	TH
30M	276 / 277	Intersection Of P268	T	G&W	EX-4037	2020/08/10	1531	RP	20	2020/08/10	VB+PS	TH
30N	287 / 286	Intersection Of P283	T	G&W	EX-23	2020/08/11	1213	GP	20	2020/08/13	VB+PS	TH
30O	287 / 286	Intersection Of P291	T	G&W	EX-23	2020/08/11	1216	GP	20	2020/08/13	VB+PS	TH
30P	280 / 279	Intersection Of P283	T	G&W	EX-23	2020/08/11	1224	GP	20	2020/08/13	VB+PS	TH
30Q	280 / 279	Intersection Of P276	T	G&W	EX-23	2020/08/11	1221	GP	20	2020/08/13	VB+PS	TH
30R	279 / 283	22.3m From NEOS	IO	G&W	EX-23	2020/08/11	1239	GP	20	2020/08/13	VB+PS	TH
30S	319 / 299	Itersection Of P298	T	G&W	EX-008	2020/08/06	1736	EA	20	2020/08/10	VB+PS	TH
30T	297 / 298	Intersection Of P299	T	G&W	EX-008	2020/08/06	1738	EA	20	2020/08/10	VB+PS	TH

DETAIL TYPE:

AD - ANIMAL DAMAGE	DS-# - DESTRUCT SAMPLE NUMBER	IO - INSUFFICIENT OVERLAP	T - THREE PANEL INTERSECTION
ATL - AIR TEST LEAK	EE - EARTHWORK EQUIPMENT DAMAGE	MD - MANUFACTURER/DELIVERY DAMAGE	VL - VACUUM TEST LEAK
BO - FUSION WELDER BURN	EXT - EXTENSION	P - PENETRATION	WR - WRINKLE
CR - CREASE	FM - FISHMOUTH	PT - PRESSURE TEST CUT	WS - WELDER RESTART
D - INSTALLATION DAMAGE	FS - FAILED SEAM LENGTH	SI - SOIL SURFACE IRREGULARITY	OTHER:

TEST METHOD:

AL - AIR LANCE	VB - VAC BOX
PS - POINT STRESS	ST - SPARK TEST

REPAIR TYPE:

G&W - GRIND & WELD	B - BOOT	P - PATCH
HAW - HOT AIR WELD	C - CAP	

REMARKS

QC TECH Thomas Howald

SUPERVISOR Chad Messervey

SUBMISSION DATE 2020/01/05

SHEET NUMBER 54 of 117

GEOMEMBRANE DETAIL & TEST LOG

PROJECT NUMBER CT001401 AREA / LAYER Primary

PROJECT TITLE Victoria Gold Heap Leach Pad Phase 1B

TRIAL SEAMS

#	MACHINE NUMBER	DATE YYYY-MM-DD	TIME	WELD TECH	AIR TEMP °C	PREHEAT TEMP °C	EXTRUDER TEMP °C	PEEL (PPI)					SHEAR (PPI)					CHK'D BY	REMARKS
1	EX-35	2020/08/10	1300	EA	20	257°C	257°C	117	126	139	131	131	170	168	158	165	166	TH	TT
2	EX-23	2020/08/11	840	GP	20	257°C	254°C	135	124	131	141	137	156	162	171	178	165	TH	TT
3	EX-23	2020/08/11	840	RP	20	257°C	254°C	129	129	136	146	132	162	165	172	167	159	TH	TT
4	EX-4037	2020/08/11	900	EA	20	262°C	260°C	134	114	124	116	118	174	160	186	171	183	TH	TT
5	EX-4037	2020/08/11	900	RW	20	262°C	260°C	92	103	128	117	128	142	165	182	175	167	TH	TT
6	EX-4037	2020/08/11	1345	RW	20	260°C	257°C	115	117	115	114	123	143	145	139	140	141	TH	TT

DETAIL CODE	PANEL NUMBER(S)	LOCATION DESCRIPTION	DETAIL TYPE	REPAIR TYPE	MACHINE NUMBER	REPAIR DATE YYYY-MM-DD	START TIME	WELD TECH	AIR TEMP °C	TEST DATE YYYY-MM-DD	TEST METH.	QC TECH
A	/											
B	/											
C	/											
D	/											
E	/											
F	/											
G	/											
H	/											
I	/											
J	/											
K	/											
L	/											
M	/											
N	/											
O	/											
P	/											
Q	/											
R	/											
S	/											
T	/											

DETAIL TYPE:

AD - ANIMAL DAMAGE	DS-# - DESTRUCT SAMPLE NUMBER	IO - INSUFFICIENT OVERLAP	T - THREE PANEL INTERSECTION
ATL - AIR TEST LEAK	EE - EARTHWORK EQUIPMENT DAMAGE	MD - MANUFACTURER/DELIVERY DAMAGE	VL - VACUUM TEST LEAK
BO - FUSION WELDER BURN	EXT - EXTENSION	P - PENETRATION	WR - WRINKLE
CR - CREASE	FM - FISHMOUTH	PT - PRESSURE TEST CUT	WS - WELDER RESTART
D - INSTALLATION DAMAGE	FS - FAILED SEAM LENGTH	SI - SOIL SURFACE IRREGULARITY	OTHER:

TEST METHOD:

AL - AIR LANCE	VB - VAC BOX
PS - POINT STRESS	ST - SPARK TEST

REPAIR TYPE:

G&W - GRIND & WELD	B - BOOT	P - PATCH
HAW - HOT AIR WELD	C - CAP	

REMARKS

QC TECH Thomas Howald

SUPERVISOR Chad Messervey

SUBMISSION DATE 2020/01/05

SHEET NUMBER 55 of 117

GEOMEMBRANE DETAIL & TEST LOG

PROJECT NUMBER CT001401 AREA / LAYER Primary

PROJECT TITLE Victoria Gold Heap Leach Pad Phase 1B

TRIAL SEAMS

#	MACHINE NUMBER	DATE YYYY-MM-DD	TIME	WELD TECH	AIR TEMP °C	PREHEAT TEMP °C	EXTRUDER TEMP °C	PEEL (PPI)					SHEAR (PPI)					CHK'D BY	REMARKS
1	EX-4037	2020/08/11	1345	EA	20	260°C	257°C	129	121	123	125	117	142	142	135	151	157	TH	TT
2	EX-4037	2020/08/11	1730	EA	20	260°C	257°C	128	129	140	137	145	128	144	164	164	159	TH	TT
3	EX-4037	2020/08/11	1730	RW	20	260°C	257°C	130	127	135	134	129	151	168	160	172	154	TH	TT
4																			
5																			
6																			

DETAIL CODE	PANEL NUMBER(S)	LOCATION DESCRIPTION	DETAIL TYPE	REPAIR TYPE	MACHINE NUMBER	REPAIR DATE YYYY-MM-DD	START TIME	WELD TECH	AIR TEMP °C	TEST DATE YYYY-MM-DD	TEST METH.	QC TECH
A	/											
B	/											
C	/											
D	/											
E	/											
F	/											
G	/											
H	/											
I	/											
J	/											
K	/											
L	/											
M	/											
N	/											
O	/											
P	/											
Q	/											
R	/											
S	/											
T	/											

DETAIL TYPE:

AD - ANIMAL DAMAGE	DS-# - DESTRUCT SAMPLE NUMBER	IO - INSUFFICIENT OVERLAP	T - THREE PANEL INTERSECTION
ATL - AIR TEST LEAK	EE - EARTHWORK EQUIPMENT DAMAGE	MD - MANUFACTURER/DELIVERY DAMAGE	VL - VACUUM TEST LEAK
BO - FUSION WELDER BURN	EXT - EXTENSION	P - PENETRATION	WR - WRINKLE
CR - CREASE	FM - FISHMOUTH	PT - PRESSURE TEST CUT	WS - WELDER RESTART
D - INSTALLATION DAMAGE	FS - FAILED SEAM LENGTH	SI - SOIL SURFACE IRREGULARITY	OTHER:

TEST METHOD:

AL - AIR LANCE	VB - VAC BOX
PS - POINT STRESS	ST - SPARK TEST

REPAIR TYPE:

G&W - GRIND & WELD	B - BOOT	P - PATCH
HAW - HOT AIR WELD	C - CAP	

REMARKS

QC TECH Thomas Howald

SUPERVISOR Chad Messervey

SUBMISSION DATE 2020/01/05

SHEET NUMBER 56 of 117

GEOMEMBRANE DETAIL & TEST LOG

PROJECT NUMBER CT001401 AREA / LAYER Primary

PROJECT TITLE Victoria Gold Heap Leach Pad Phase 1B

TRIAL SEAMS

#	MACHINE NUMBER	DATE YYYY-MM-DD	TIME	WELD TECH	AIR TEMP °C	PREHEAT TEMP °C	EXTRUDER TEMP °C	PEEL (PPI)					SHEAR (PPI)					CHK'D BY	REMARKS
1	EX-4037	2020/08/06	1245	TH	20	257°C	257°C	105	139	130	131	116	155	155	155	164	155	TH	TT
2	EX-4037	2020/08/06	1630	TH	20	257°C	257°C	143	142	130	135	125	177	166	164	172	164	TH	TT
3	EX-008	2020/08/06	1715	EA	20	254°C	257°C	133	150	131	150	149	166	171	165	164	168	TH	TT
4	EX-4037	2020/08/10	1300	GP	20	260°C	257°C	131	109	122	125	127	160	153	153	161	163	TH	TT
5	EX-4037	2020/08/10	1300	RP	20	260°C	257°C	121	128	137	107	122	155	148	161	158	163	TH	TT
6	EX-35	2020/08/10	1300	RW	20	257°C	257°C	163	140	152	158	149	166	160	166	157	160	TH	TT

DETAIL CODE	PANEL NUMBER(S)	LOCATION DESCRIPTION	DETAIL TYPE	REPAIR TYPE	MACHINE NUMBER	REPAIR DATE YYYY-MM-DD	START TIME	WELD TECH	AIR TEMP °C	TEST DATE YYYY-MM-DD	TEST METH.	QC TECH
31A	299 / 300	Intersection Of P297	T	G&W	EX-008	2020/08/06	1741	EA	20	2020/08/10	VB+PS	TH
31B	301 / 300	Intersection Of P299	T	G&W	EX-008	2020/08/06	1744	EA	20	2020/08/10	VB+PS	TH
31C	301 / 300	Intersection Of P302	T	G&W	EX-008	2020/08/06	1747	EA	20	2020/08/10	VB+PS	TH
31D	300 / 302	Intersection Of P297/296	T	G&W	EX-008	2020/08/06	1755	EA	20	2020/08/10	VB+PS	TH
31E	302 / 303	Intersection Of P296	T	G&W	EX-008	2020/08/06	1759	EA	20	2020/08/10	VB+PS	TH
31F	303 / 296	SEOS	DS-146	P	EX-4037	2020/08/11	935	RW	15	2020/08/13	VB+PS	TH
31G	296 / 303	Intersection OF P295	T	P	EX-4037	2020/08/06	1828	TH	20	2020/08/10	VB+PS	TH
31H	303 / 295	NEOS	DS-145	P	EX-4037	2020/08/11	945	EA	15	2020/08/13	VB+PS	TH
31I	303 / 304	Intersection Of P295	T	G&W	EX-4037	2020/08/06	1830	TH	20	2020/08/10	VB+PS	TH
31J	304 / 305	Intersection Of P295	T	G&W	EX-35	2020/08/10	1406	RW	20	2020/08/10	VB+PS	TH
31K	305 / 306	Intersection Of P304	T	G&W	EX-35	2020/08/10	1349	EA	20	2020/08/10	VB+PS	TH
31L	304 / 306	8m From EEOS	T	G&W	EX-35	2020/08/10	1345	RW	20	2020/08/10	VB+PS	TH
31M	305 / 306	Intersection Of P307	T	G&W	EX-35	2020/08/10	1351	RW	20	2020/08/10	VB+PS	TH
31N	307 / 305	Intersection Of P295	T	G&W	EX-35	2020/08/10	1320	RW	20	2020/08/10	VB+PS	TH
31O	308 / 307	Intersection Of P295	T	G&W	EX-35	2020/08/10	1414	RW	20	2020/08/10	VB+PS	TH
31P	309 / 308	Intersection Of P295	T	G&W	EX-35	2020/08/10	1417	EA	20	2020/08/10	VB+PS	TH
31Q	310 / 309	Intersection Of P295	T	G&W	EX-35	2020/08/10	1419	RW	20	2020/08/10	VB+PS	TH
31R	311 / 310	Intersection Of P295	T	G&W	EX-35	2020/08/10	1423	RW	20	2020/08/10	VB+PS	TH
31S	312 / 311	Intersection Of P295	T	G&W	EX-4037	2020/08/11	1053	EA	15	2020/08/13	VB+PS	TH
31T	312 / 311	8.3m From EEOS	IO	P	EX-4037	2020/08/11	1008	RW	15	2020/08/13	VB+PS	TH

DETAIL TYPE:

AD - ANIMAL DAMAGE	DS-# - DESTRUCT SAMPLE NUMBER	IO - INSUFFICIENT OVERLAP	T - THREE PANEL INTERSECTION
ATL - AIR TEST LEAK	EE - EARTHWORK EQUIPMENT DAMAGE	MD - MANUFACTURER/DELIVERY DAMAGE	VL - VACUUM TEST LEAK
BO - FUSION WELDER BURN	EXT - EXTENSION	P - PENETRATION	WR - WRINKLE
CR - CREASE	FM - FISHMOUTH	PT - PRESSURE TEST CUT	WS - WELDER RESTART
D - INSTALLATION DAMAGE	FS - FAILED SEAM LENGTH	SI - SOIL SURFACE IRREGULARITY	OTHER:

TEST METHOD:

AL - AIR LANCE	VB - VAC BOX
PS - POINT STRESS	ST - SPARK TEST

REPAIR TYPE:

G&W - GRIND & WELD	B - BOOT	P - PATCH
HAW - HOT AIR WELD	C - CAP	

REMARKS

QC TECH Thomas Howald

SUPERVISOR Chad Messervey

SUBMISSION DATE 2020/01/05

SHEET NUMBER 57 of 117

GEOMEMBRANE DETAIL & TEST LOG

PROJECT NUMBER CT001401 AREA / LAYER Primary

PROJECT TITLE Victoria Gold Heap Leach Pad Phase 1B

TRIAL SEAMS

#	MACHINE NUMBER	DATE YYYY-MM-DD	TIME	WELD TECH	AIR TEMP °C	PREHEAT TEMP °C	EXTRUDER TEMP °C	PEEL (PPI)					SHEAR (PPI)					CHK'D BY	REMARKS
1	EX-35	2020/08/10	1300	EA	20	257°C	257°C	117	126	139	131	131	170	168	158	165	166	TH	TT
2	EX-23	2020/08/11	840	GP	20	257°C	254°C	135	124	131	141	137	156	162	171	178	165	TH	TT
3	EX-23	2020/08/11	840	RP	20	257°C	254°C	129	129	136	146	132	162	165	172	167	159	TH	TT
4	EX-4037	2020/08/11	900	EA	20	262°C	260°C	134	114	124	116	118	174	160	186	171	183	TH	TT
5	EX-4037	2020/08/11	900	RW	20	262°C	260°C	92	103	128	117	128	142	165	182	175	167	TH	TT
6	EX-4037	2020/08/11	1345	RW	20	260°C	257°C	115	117	115	114	123	143	145	139	140	141	TH	TT

DETAIL CODE	PANEL NUMBER(S)	LOCATION DESCRIPTION	DETAIL TYPE	REPAIR TYPE	MACHINE NUMBER	REPAIR DATE YYYY-MM-DD	START TIME	WELD TECH	AIR TEMP °C	TEST DATE YYYY-MM-DD	TEST METH.	QC TECH
A	/											
B	/											
C	/											
D	/											
E	/											
F	/											
G	/											
H	/											
I	/											
J	/											
K	/											
L	/											
M	/											
N	/											
O	/											
P	/											
Q	/											
R	/											
S	/											
T	/											

DETAIL TYPE:

AD - ANIMAL DAMAGE	DS-# - DESTRUCT SAMPLE NUMBER	IO - INSUFFICIENT OVERLAP	T - THREE PANEL INTERSECTION
ATL - AIR TEST LEAK	EE - EARTHWORK EQUIPMENT DAMAGE	MD - MANUFACTURER/DELIVERY DAMAGE	VL - VACUUM TEST LEAK
BO - FUSION WELDER BURN	EXT - EXTENSION	P - PENETRATION	WR - WRINKLE
CR - CREASE	FM - FISHMOUTH	PT - PRESSURE TEST CUT	WS - WELDER RESTART
D - INSTALLATION DAMAGE	FS - FAILED SEAM LENGTH	SI - SOIL SURFACE IRREGULARITY	OTHER:

TEST METHOD:

AL - AIR LANCE	VB - VAC BOX
PS - POINT STRESS	ST - SPARK TEST

REPAIR TYPE:

G&W - GRIND & WELD	B - BOOT	P - PATCH
HAW - HOT AIR WELD	C - CAP	

REMARKS

QC TECH Thomas Howald

SUPERVISOR Chad Messervey

SUBMISSION DATE 2020/01/05

SHEET NUMBER 58 of 117

GEOMEMBRANE DETAIL & TEST LOG

PROJECT NUMBER CT001401 AREA / LAYER Primary

PROJECT TITLE Victoria Gold Heap Leach Pad Phase 1B

TRIAL SEAMS

#	MACHINE NUMBER	DATE YYYY-MM-DD	TIME	WELD TECH	AIR TEMP °C	PREHEAT TEMP °C	EXTRUDER TEMP °C	PEEL (PPI)					SHEAR (PPI)					CHK'D BY	REMARKS
1	EX-4037	2020/08/11	1345	EA	20	260°C	257°C	129	121	123	125	117	142	142	135	151	157	TH	TT
2	EX-4037	2020/08/11	1730	EA	20	260°C	257°C	128	129	140	137	145	128	144	164	164	159	TH	TT
3	EX-4037	2020/08/11	1730	RW	20	260°C	257°C	130	127	135	134	129	151	168	160	172	154	TH	TT
4																			
5																			
6																			

DETAIL CODE	PANEL NUMBER(S)	LOCATION DESCRIPTION	DETAIL TYPE	REPAIR TYPE	MACHINE NUMBER	REPAIR DATE YYYY-MM-DD	START TIME	WELD TECH	AIR TEMP °C	TEST DATE YYYY-MM-DD	TEST METH.	QC TECH
A	/											
B	/											
C	/											
D	/											
E	/											
F	/											
G	/											
H	/											
I	/											
J	/											
K	/											
L	/											
M	/											
N	/											
O	/											
P	/											
Q	/											
R	/											
S	/											
T	/											

DETAIL TYPE:

AD - ANIMAL DAMAGE	DS-# - DESTRUCT SAMPLE NUMBER	IO - INSUFFICIENT OVERLAP	T - THREE PANEL INTERSECTION
ATL - AIR TEST LEAK	EE - EARTHWORK EQUIPMENT DAMAGE	MD - MANUFACTURER/DELIVERY DAMAGE	VL - VACUUM TEST LEAK
BO - FUSION WELDER BURN	EXT - EXTENSION	P - PENETRATION	WR - WRINKLE
CR - CREASE	FM - FISHMOUTH	PT - PRESSURE TEST CUT	WS - WELDER RESTART
D - INSTALLATION DAMAGE	FS - FAILED SEAM LENGTH	SI - SOIL SURFACE IRREGULARITY	OTHER:

TEST METHOD:

AL - AIR LANCE	VB - VAC BOX
PS - POINT STRESS	ST - SPARK TEST

REPAIR TYPE:

G&W - GRIND & WELD	B - BOOT	P - PATCH
HAW - HOT AIR WELD	C - CAP	

REMARKS

QC TECH Thomas Howald

SUPERVISOR Chad Messervey

SUBMISSION DATE 2020/01/05

SHEET NUMBER 59 of 117

GEOMEMBRANE DETAIL & TEST LOG

PROJECT NUMBER CT001401 AREA / LAYER Primary

PROJECT TITLE Victoria Gold Heap Leach Pad Phase 1B

TRIAL SEAMS

#	MACHINE NUMBER	DATE YYYY-MM-DD	TIME	WELD TECH	AIR TEMP °C	PREHEAT TEMP °C	EXTRUDER TEMP °C	PEEL (PPI)					SHEAR (PPI)					CHK'D BY	REMARKS
1	EX-23	2020/08/11	840	GP	20	257°C	254°C	135	124	131	141	137	156	162	171	178	165	TH	TT
2	EX-23	2020/08/11	840	RP	20	257°C	254°C	129	129	136	146	132	162	165	172	167	159	TH	TT
3	EX-4037	2020/08/11	900	EA	20	262°C	260°C	134	114	124	116	118	174	160	186	171	183	TH	TT
4	EX-4037	2020/08/11	900	RW	20	262°C	260°C	92	103	128	117	128	142	165	182	175	167	TH	TT
5	EX-4037	2020/08/11	1345	RW	20	260°C	257°C	115	117	115	114	123	143	145	139	140	141	TH	TT
6	EX-4037	2020/08/11	1345	EA	20	260°C	257°C	129	121	123	125	117	142	142	135	151	157	TH	TT

DETAIL CODE	PANEL NUMBER(S)	LOCATION DESCRIPTION	DETAIL TYPE	REPAIR TYPE	MACHINE NUMBER	REPAIR DATE YYYY-MM-DD	START TIME	WELD TECH	AIR TEMP °C	TEST DATE YYYY-MM-DD	TEST METH.	QC TECH
32A	312 / 311	24.6m From WEOS	IO	G&W	EX-4037	2020/08/11	1017	RW	15	2020/08/13	VB+PS	TH
32B	313 / 312	Intersection Of P311	T	G&W	EX-4037	2020/08/11	954	RW	15	2020/08/13	VB+PS	TH
32C	312 / 313	Intersection Of P314	T	G&W	EX-4037	2020/08/11	958	RW	15	2020/08/13	VB+PS	TH
32D	312 /	24m From EEOS	D	G&W	EX-4037	2020/08/11	1000	RW	15	2020/08/13	VB+PS	TH
32E	312 /	23.8m From EEOS	D	G&W	EX-4037	2020/08/11	1001	RW	15	2020/08/13	VB+PS	TH
32F	314 / 312	Intersection Of P294	T	G&W	EX-4037	2020/08/11	1021	RW	15	2020/08/13	VB+PS	TH
32G	315 / 314	Intersection Of P294	T	G&W	EX-4037	2020/08/11	1024	RW	15	2020/08/13	VB+PS	TH
32H	315 / 316	Intersection Of P294	T	G&W	EX-4037	2020/08/11	1034	RW	15	2020/08/13	VB+PS	TH
32I	316 / 317	Intersection Of P315	T	G&W	EX-4037	2020/08/11	1055	EA	15	2020/08/13	VB+PS	TH
32J	316 / 317	Intersection Of P318	T	G&W	EX-4037	2020/08/11	1100	EA	15	2020/08/13	VB+PS	TH
32K	316 / 318	Intersection Of P294	T	G&W	EX-4037	2020/08/11	1038	RW	15	2020/08/13	VB+PS	TH
32L	320 / 321	Intersection Of P318	T	G&W	EX-4037	2020/08/11	1159	RW	15	2020/08/13	VB+PS	TH
32M	320 / 321	Intersection Of P322	T	G&W	EX-4037	2020/08/11	1206	RW	20	2020/08/13	VB+PS	TH
32N	323 / 324	Intersection Of P322	T	G&W	EX-4037	2020/08/11	1209	RW	20	2020/08/13	VB+PS	TH
32O	324 /	1.1m From WEOS	D	P	EX-4037	2020/08/11	1212	RW	20	2020/08/13	VB+PS	TH
32P	323 / 324	Intersection Of P328/329	T	G&W	EX-4037	2020/08/11	1217	EA	20	2020/08/13	VB+PS	TH
32Q	320 / 318	Intersection Of P294	T	G&W	EX-4037	2020/08/11	1235	RW	20	2020/08/13	VB+PS	TH
32R	322 / 320	Intersection Of P294	T	G&W	EX-4037	2020/08/11	1400	RW	20	2020/08/13	VB+PS	TH
32S	323 / 322	Intersection Of P294	T	G&W	EX-4037	2020/08/11	1403	RW	20	2020/08/13	VB+PS	TH
32T	323 / 331	Intersection Of P294	T	G&W	EX-4037	2020/08/11	1406	RW	20	2020/08/13	VB+PS	TH

DETAIL TYPE:

AD - ANIMAL DAMAGE	DS-# - DESTRUCT SAMPLE NUMBER	IO - INSUFFICIENT OVERLAP	T - THREE PANEL INTERSECTION
ATL - AIR TEST LEAK	EE - EARTHWORK EQUIPMENT DAMAGE	MD - MANUFACTURER/DELIVERY DAMAGE	VL - VACUUM TEST LEAK
BO - FUSION WELDER BURN	EXT - EXTENSION	P - PENETRATION	WR - WRINKLE
CR - CREASE	FM - FISHMOUTH	PT - PRESSURE TEST CUT	WS - WELDER RESTART
D - INSTALLATION DAMAGE	FS - FAILED SEAM LENGTH	SI - SOIL SURFACE IRREGULARITY	OTHER:

TEST METHOD:

AL - AIR LANCE	VB - VAC BOX
PS - POINT STRESS	ST - SPARK TEST

REPAIR TYPE:

G&W - GRIND & WELD	B - BOOT	P - PATCH
HAW - HOT AIR WELD	C - CAP	

REMARKS

QC TECH Thomas Howald

SUPERVISOR Chad Messervey

SUBMISSION DATE 2020/01/05

SHEET NUMBER 60 of 117

GEOMEMBRANE DETAIL & TEST LOG

PROJECT NUMBER CT001401 AREA / LAYER Primary

PROJECT TITLE Victoria Gold Heap Leach Pad Phase 1B

TRIAL SEAMS

#	MACHINE NUMBER	DATE YYYY-MM-DD	TIME	WELD TECH	AIR TEMP °C	PREHEAT TEMP °C	EXTRUDER TEMP °C	PEEL (PPI)					SHEAR (PPI)					CHK'D BY	REMARKS
1	EX-4037	2020/08/11	1730	EA	20	260°C	257°C	128	129	140	137	145	128	144	164	164	159	TH	TT
2	EX-4037	2020/08/11	1730	RW	20	260°C	257°C	130	127	135	134	129	151	168	160	172	154	TH	TT
3																			
4																			
5																			
6																			

DETAIL CODE	PANEL NUMBER(S)	LOCATION DESCRIPTION	DETAIL TYPE	REPAIR TYPE	MACHINE NUMBER	REPAIR DATE YYYY-MM-DD	START TIME	WELD TECH	AIR TEMP °C	TEST DATE YYYY-MM-DD	TEST METH.	QC TECH
A	/											
B	/											
C	/											
D	/											
E	/											
F	/											
G	/											
H	/											
I	/											
J	/											
K	/											
L	/											
M	/											
N	/											
O	/											
P	/											
Q	/											
R	/											
S	/											
T	/											

DETAIL TYPE:

AD - ANIMAL DAMAGE	DS-# - DESTRUCT SAMPLE NUMBER	IO - INSUFFICIENT OVERLAP	T - THREE PANEL INTERSECTION
ATL - AIR TEST LEAK	EE - EARTHWORK EQUIPMENT DAMAGE	MD - MANUFACTURER/DELIVERY DAMAGE	VL - VACUUM TEST LEAK
BO - FUSION WELDER BURN	EXT - EXTENSION	P - PENETRATION	WR - WRINKLE
CR - CREASE	FM - FISHMOUTH	PT - PRESSURE TEST CUT	WS - WELDER RESTART
D - INSTALLATION DAMAGE	FS - FAILED SEAM LENGTH	SI - SOIL SURFACE IRREGULARITY	OTHER:

TEST METHOD:

AL - AIR LANCE	VB - VAC BOX
PS - POINT STRESS	ST - SPARK TEST

REPAIR TYPE:

G&W - GRIND & WELD	B - BOOT	P - PATCH
HAW - HOT AIR WELD	C - CAP	

REMARKS

QC TECH Thomas Howald

SUPERVISOR Chad Messervey

SUBMISSION DATE 2020/01/05

SHEET NUMBER 61 of 117

GEOMEMBRANE DETAIL & TEST LOG

PROJECT NUMBER CT001401 AREA / LAYER Primary

PROJECT TITLE Victoria Gold Heap Leach Pad Phase 1B

TRIAL SEAMS

#	MACHINE NUMBER	DATE YYYY-MM-DD	TIME	WELD TECH	AIR TEMP °C	PREHEAT TEMP °C	EXTRUDER TEMP °C	PEEL (PPI)					SHEAR (PPI)					CHK'D BY	REMARKS
1	EX-23	2020/08/11	840	GP	20	257°C	254°C	135	124	131	141	137	156	162	171	178	165	TH	TT
2	EX-23	2020/08/11	840	RP	20	257°C	254°C	129	129	136	146	132	162	165	172	167	159	TH	TT
3	EX-4037	2020/08/11	900	EA	20	262°C	260°C	134	114	124	116	118	174	160	186	171	183	TH	TT
4	EX-4037	2020/08/11	900	RW	20	262°C	260°C	92	103	128	117	128	142	165	182	175	167	TH	TT
5	EX-4037	2020/08/11	1345	RW	20	260°C	257°C	115	117	115	114	123	143	145	139	140	141	TH	TT
6	EX-4037	2020/08/11	1345	EA	20	260°C	257°C	129	121	123	125	117	142	142	135	151	157	TH	TT

DETAIL CODE	PANEL NUMBER(S)	LOCATION DESCRIPTION	DETAIL TYPE	REPAIR TYPE	MACHINE NUMBER	REPAIR DATE YYYY-MM-DD	START TIME	WELD TECH	AIR TEMP °C	TEST DATE YYYY-MM-DD	TEST METH.	QC TECH
33A	331 / 330	Intersection Of P323	T	G&W	EX-4037	2020/08/11	1223	RW	20	2020/08/13	VB+PS	TH
33B	329 / 330	Intersection Of P323	T	G&W	EX-4037	2020/08/11	1220	RW	20	2020/08/13	VB+PS	TH
33C	294 /	32.6m From NEOS	D	P	EX-4037	2020/08/11	1044	RW	20	2020/08/13	VB+PS	TH
33D	321 /	1.1m From WEOS	D	P	EX-4037	2020/08/13	1345	GP	20	2020/08/13	VB+PS	TH
33E	331 / 330	Intersection Of P294	T	G&W	EX-4037	2020/08/11	1346	RW	20	2020/08/13	VB+PS	TH
33F	329 / 330	Intersection Of P294	T	G&W	EX-4037	2020/08/11	1347	RW	20	2020/08/13	VB+PS	TH
33G	327 / 328	Intersection Of P329	T	G&W	EX-4037	2020/08/13	1445	GP	20	2020/08/13	VB+PS	TH
33H	327 / 328	Intersection Of P326	T	G&W	EX-4037	2020/08/13	1446	GP	20	2020/08/13	VB+PS	TH
33I	327 / 329	Intersection Of P294	T	G&W	EX-4037	2020/08/11	1348	EA	20	2020/08/13	VB+PS	TH
33J	327 / 326	Intersection Of P294	T	G&W	EX-4037	2020/08/11	1424	RW	20	2020/08/13	VB+PS	TH
33K	325 / 326	Intersection Of P294	T	G&W	EX-4037	2020/08/11	1420	RW	20	2020/08/13	VB+PS	TH
33L	332 / 325	Intersection Of P294	T	G&W	EX-4037	2020/08/11	1444	RW	20	2020/08/13	VB+PS	TH
33M	334 / 332	Intersection Of P294	T	G&W	EX-4037	2020/08/11	1450	RW	20	2020/08/13	VB+PS	TH
33N	336 / 334	Intersection Of P293	T	G&W	EX-4037	2020/08/11	1607	RW	20	2020/08/13	VB+PS	TH
33O	293 / 336	3m From NEOS	IO	G&W	EX-4037	2020/08/11	1609	RW	20	2020/08/13	VB+PS	TH
33P	338 / 336	Intersection Of P293	T	G&W	EX-4037	2020/08/11	1612	RW	20	2020/08/13	VB+PS	TH
33Q	338 / 336	EEOS	DS-144	P	EX-4037	2020/08/11	1650	EA	20	2020/08/13	VB+PS	TH
33R	338 / 339	NEOS	DS-148	P	EX-4037	2020/08/11	1655	EA	20	2020/08/13	VB+PS	TH
33S	338 / 339	Intersection Of P341	T	G&W	EX-4037	2020/08/11	1727	EA	20	2020/08/13	VB+PS	TH
33T	338 / 341	Intersection Of P293	T	G&W	EX-4037	2020/08/11	1734	EA	20	2020/08/13	VB+PS	TH

DETAIL TYPE:

AD - ANIMAL DAMAGE	DS-# - DESTRUCT SAMPLE NUMBER	IO - INSUFFICIENT OVERLAP	T - THREE PANEL INTERSECTION
ATL - AIR TEST LEAK	EE - EARTHWORK EQUIPMENT DAMAGE	MD - MANUFACTURER/DELIVERY DAMAGE	VL - VACUUM TEST LEAK
BO - FUSION WELDER BURN	EXT - EXTENSION	P - PENETRATION	WR - WRINKLE
CR - CREASE	FM - FISHMOUTH	PT - PRESSURE TEST CUT	WS - WELDER RESTART
D - INSTALLATION DAMAGE	FS - FAILED SEAM LENGTH	SI - SOIL SURFACE IRREGULARITY	OTHER:

TEST METHOD:

AL - AIR LANCE	VB - VAC BOX
PS - POINT STRESS	ST - SPARK TEST

REPAIR TYPE:

G&W - GRIND & WELD	B - BOOT	P - PATCH
HAW - HOT AIR WELD	C - CAP	

REMARKS

QC TECH Thomas Howald

SUPERVISOR Chad Messervey

SUBMISSION DATE 2020/01/05

SHEET NUMBER 62 of 117

GEOMEMBRANE DETAIL & TEST LOG

PROJECT NUMBER CT001401 AREA / LAYER Primary

PROJECT TITLE Victoria Gold Heap Leach Pad Phase 1B

TRIAL SEAMS

#	MACHINE NUMBER	DATE YYYY-MM-DD	TIME	WELD TECH	AIR TEMP °C	PREHEAT TEMP °C	EXTRUDER TEMP °C	PEEL (PPI)					SHEAR (PPI)					CHK'D BY	REMARKS
1	EX-4037	2020/08/11	1730	EA	20	260°C	257°C	128	129	140	137	145	128	144	164	164	159	TH	TT
2	EX-4037	2020/08/11	1730	RW	20	260°C	257°C	130	127	135	134	129	151	168	160	172	154	TH	TT
3	EX-4037	2020/08/13	800	GP	20	260°C	257°C	97	109	100	98	104	166	173	173	167	173	TH	TT
4	EX-4037	2020/08/13	800	EA	20	260°C	257°C	121	126	125	102	114	175	162	176	175	173	TH	TT
5	EX-23	2020/08/13	800	RW	20	257°C	257°C	121	139	123	133	139	171	172	177	157	160	TH	TT
6	EX-4037	2020/08/13	1315	GP	20	260°C	257°C	157	139	128	135	144	185	181	162	184	186	TH	TT

DETAIL CODE	PANEL NUMBER(S)	LOCATION DESCRIPTION	DETAIL TYPE	REPAIR TYPE	MACHINE NUMBER	REPAIR DATE YYYY-MM-DD	START TIME	WELD TECH	AIR TEMP °C	TEST DATE YYYY-MM-DD	TEST METH.	QC TECH
A	/											
B	/											
C	/											
D	/											
E	/											
F	/											
G	/											
H	/											
I	/											
J	/											
K	/											
L	/											
M	/											
N	/											
O	/											
P	/											
Q	/											
R	/											
S	/											
T	/											

DETAIL TYPE:

AD - ANIMAL DAMAGE	DS-# - DESTRUCT SAMPLE NUMBER	IO - INSUFFICIENT OVERLAP	T - THREE PANEL INTERSECTION
ATL - AIR TEST LEAK	EE - EARTHWORK EQUIPMENT DAMAGE	MD - MANUFACTURER/DELIVERY DAMAGE	VL - VACUUM TEST LEAK
BO - FUSION WELDER BURN	EXT - EXTENSION	P - PENETRATION	WR - WRINKLE
CR - CREASE	FM - FISHMOUTH	PT - PRESSURE TEST CUT	WS - WELDER RESTART
D - INSTALLATION DAMAGE	FS - FAILED SEAM LENGTH	SI - SOIL SURFACE IRREGULARITY	OTHER:

TEST METHOD:

AL - AIR LANCE	VB - VAC BOX
PS - POINT STRESS	ST - SPARK TEST

REPAIR TYPE:

G&W - GRIND & WELD	B - BOOT	P - PATCH
HAW - HOT AIR WELD	C - CAP	

REMARKS

QC TECH Thomas Howald

SUPERVISOR Chad Messervey

SUBMISSION DATE 2020/01/05

SHEET NUMBER 63 of 117

GEOMEMBRANE DETAIL & TEST LOG

PROJECT NUMBER CT001401 AREA / LAYER Primary

PROJECT TITLE Victoria Gold Heap Leach Pad Phase 1B

TRIAL SEAMS

#	MACHINE NUMBER	DATE YYYY-MM-DD	TIME	WELD TECH	AIR TEMP °C	PREHEAT TEMP °C	EXTRUDER TEMP °C	PEEL (PPI)					SHEAR (PPI)					CHK'D BY	REMARKS
1	EX-23	2020/08/13	1315	RW	20	257°C	257°C	101	107	134	135	119	167	154	147	173	168	TH	TT
2	EX-4037	2020/08/13	1315	EA	20	260°C	257°C	114	103	128	147	122	152	160	161	179	169	TH	TT
3	EX-23	2020/08/13	1520	RW	20	257°C	257°C	130	131	124	133	138	142	143	150	145	144	TH	TT
4	EX-4037	2020/08/13	1700	GP	20	260°C	257°C	126	123	131	134	127	164	161	159	160	162	TH	TT
5	EX-4037	2020/08/13	1700	EA	20	260°C	257°C	122	124	118	120	126	175	157	163	161	160	TH	TT
6																			

DETAIL CODE	PANEL NUMBER(S)	LOCATION DESCRIPTION	DETAIL TYPE	REPAIR TYPE	MACHINE NUMBER	REPAIR DATE YYYY-MM-DD	START TIME	WELD TECH	AIR TEMP °C	TEST DATE YYYY-MM-DD	TEST METH.	QC TECH
A	/											
B	/											
C	/											
D	/											
E	/											
F	/											
G	/											
H	/											
I	/											
J	/											
K	/											
L	/											
M	/											
N	/											
O	/											
P	/											
Q	/											
R	/											
S	/											
T	/											

DETAIL TYPE:

AD - ANIMAL DAMAGE	DS-# - DESTRUCT SAMPLE NUMBER	IO - INSUFFICIENT OVERLAP	T - THREE PANEL INTERSECTION
ATL - AIR TEST LEAK	EE - EARTHWORK EQUIPMENT DAMAGE	MD - MANUFACTURER/DELIVERY DAMAGE	VL - VACUUM TEST LEAK
BO - FUSION WELDER BURN	EXT - EXTENSION	P - PENETRATION	WR - WRINKLE
CR - CREASE	FM - FISHMOUTH	PT - PRESSURE TEST CUT	WS - WELDER RESTART
D - INSTALLATION DAMAGE	FS - FAILED SEAM LENGTH	SI - SOIL SURFACE IRREGULARITY	OTHER:

TEST METHOD:

AL - AIR LANCE	VB - VAC BOX
PS - POINT STRESS	ST - SPARK TEST

REPAIR TYPE:

G&W - GRIND & WELD	B - BOOT	P - PATCH
HAW - HOT AIR WELD	C - CAP	

REMARKS

QC TECH Thomas Howald

SUPERVISOR Chad Messervey

SUBMISSION DATE 2020/01/05

SHEET NUMBER 64 of 117

GEOMEMBRANE DETAIL & TEST LOG

PROJECT NUMBER CT001401 AREA / LAYER Primary

PROJECT TITLE Victoria Gold Heap Leach Pad Phase 1B

TRIAL SEAMS

#	MACHINE NUMBER	DATE YYYY-MM-DD	TIME	WELD TECH	AIR TEMP °C	PREHEAT TEMP °C	EXTRUDER TEMP °C	PEEL (PPI)					SHEAR (PPI)					CHK'D BY	REMARKS
1	EX-23	2020/08/11	840	GP	20	257°C	254°C	135	124	131	141	137	156	162	171	178	165	TH	TT
2	EX-23	2020/08/11	840	RP	20	257°C	254°C	129	129	136	146	132	162	165	172	167	159	TH	TT
3	EX-4037	2020/08/11	900	EA	20	262°C	260°C	134	114	124	116	118	174	160	186	171	183	TH	TT
4	EX-4037	2020/08/11	900	RW	20	262°C	260°C	92	103	128	117	128	142	165	182	175	167	TH	TT
5	EX-4037	2020/08/11	1345	RW	20	260°C	257°C	115	117	115	114	123	143	145	139	140	141	TH	TT
6	EX-4037	2020/08/11	1345	EA	20	260°C	257°C	129	121	123	125	117	142	142	135	151	157	TH	TT

DETAIL CODE	PANEL NUMBER(S)	LOCATION DESCRIPTION	DETAIL TYPE	REPAIR TYPE	MACHINE NUMBER	REPAIR DATE YYYY-MM-DD	START TIME	WELD TECH	AIR TEMP °C	TEST DATE YYYY-MM-DD	TEST METH.	QC TECH
34A	343 / 341	Intersection Of P293	T	G&W	EX-4037	2020/08/11	1745	EA	20	2020/08/13	VB+PS	TH
34B	345 / 343	Intersection Of P293	T	G&W	EX-4037	2020/08/11	1748	RW	20	2020/08/13	VB+PS	TH
34C	347 / 345	Intersection Of P293	T	G&W	EX-4037	2020/08/11	1819	RW	20	2020/08/13	VB+PS	TH
34D	345 / 347	WEOS	DS-151	P	EX-4037	2020/08/11	1815	RW	20	2020/08/13	VB+PS	TH
34E	349 / 347	Intersection Of P293	T	G&W	EX-4037	2020/08/11	1823	RW	20	2020/08/13	VB+PS	TH
34F	351 / 349	WEOS	DS-149	P	EX-4037	2020/08/11	1840	RW	20	2020/08/13	VB+PS	TH
34G	293 / 351	Whole Seam	T	G&W	EX-4037	2020/08/11	1848	RW	20	2020/08/13	VB+PS	TH
34H	293 / 354	Intersection Of P351	T	P	EX-4037	2020/08/11	1850	RW	20	2020/08/13	VB+PS	TH
34I	289 / 293	Intersection Of P354	T	G&W	EX-4037	2020/08/11	1858	RW	20	2020/08/13	VB+PS	TH
34J	289 / 354	Intersection Of P351	T	G&W	EX-4037	2020/08/11	1854	RW	20	2020/08/13	VB+PS	TH
34K	257 / 256	Intersection Of P270	T	G&W	EX-23	2020/08/13	1513	RW	20	2020/08/13	VB+PS	TH
34L	258 / 270	Intersection Of P257	T	G&W	EX-23	2020/08/13	1429	RW	20	2020/08/13	VB+PS	TH
34M	261 / 258	SEOS	BO	P	EX-23	2020/08/13	1423	RW	20	2020/08/13	VB+PS	TH
34N	258 / 270	Intersection Of P261	T	G&W	EX-23	2020/08/13	1424	RW	20	2020/08/13	VB+PS	TH
34O	261 / 271	Intersection Of P270	T	G&W	EX-23	2020/08/13	1439	RW	20	2020/08/13	VB+PS	TH
34P	264 / 261	5m From SEOS	IO	G&W	EX-23	2020/08/13	1411	RW	20	2020/08/13	VB+PS	TH
34Q	261 / 271	Intersection Of P264	T	G&W	EX-23	2020/08/13	1414	RW	20	2020/08/13	VB+PS	TH
34R	264 / 272	Intersection Of P271	T	G&W	EX-23	2020/08/13	1437	RW	20	2020/08/13	VB+PS	TH
34S	264 / 267	10m From SEOS	IO	G&W	EX-23	2020/08/13	1407	RW	20	2020/08/13	VB+PS	TH
34T	264 / 272	Intersection Of P267	T	G&W	EX-23	2020/08/13	1445	RW	20	2020/08/13	VB+PS	TH

DETAIL TYPE:

AD - ANIMAL DAMAGE	DS-# - DESTRUCT SAMPLE NUMBER	IO - INSUFFICIENT OVERLAP	T - THREE PANEL INTERSECTION
ATL - AIR TEST LEAK	EE - EARTHWORK EQUIPMENT DAMAGE	MD - MANUFACTURER/DELIVERY DAMAGE	VL - VACUUM TEST LEAK
BO - FUSION WELDER BURN	EXT - EXTENSION	P - PENETRATION	WR - WRINKLE
CR - CREASE	FM - FISHMOUTH	PT - PRESSURE TEST CUT	WS - WELDER RESTART
D - INSTALLATION DAMAGE	FS - FAILED SEAM LENGTH	SI - SOIL SURFACE IRREGULARITY	OTHER:

TEST METHOD:

AL - AIR LANCE	VB - VAC BOX
PS - POINT STRESS	ST - SPARK TEST

REPAIR TYPE:

G&W - GRIND & WELD	B - BOOT	P - PATCH
HAW - HOT AIR WELD	C - CAP	

REMARKS

QC TECH Thomas Howald

SUPERVISOR Chad Messervey

SUBMISSION DATE 2020/01/05

SHEET NUMBER 65 of 117

GEOMEMBRANE DETAIL & TEST LOG

PROJECT NUMBER CT001401 AREA / LAYER Primary

PROJECT TITLE Victoria Gold Heap Leach Pad Phase 1B

TRIAL SEAMS

#	MACHINE NUMBER	DATE YYYY-MM-DD	TIME	WELD TECH	AIR TEMP °C	PREHEAT TEMP °C	EXTRUDER TEMP °C	PEEL (PPI)					SHEAR (PPI)					CHK'D BY	REMARKS
1	EX-4037	2020/08/11	1730	EA	20	260°C	257°C	128	129	140	137	145	128	144	164	164	159	TH	TT
2	EX-4037	2020/08/11	1730	RW	20	260°C	257°C	130	127	135	134	129	151	168	160	172	154	TH	TT
3	EX-4037	2020/08/13	800	GP	20	260°C	257°C	97	109	100	98	104	166	173	173	167	173	TH	TT
4	EX-4037	2020/08/13	800	EA	20	260°C	257°C	121	126	125	102	114	175	162	176	175	173	TH	TT
5	EX-23	2020/08/13	800	RW	20	257°C	257°C	121	139	123	133	139	171	172	177	157	160	TH	TT
6	EX-4037	2020/08/13	1315	GP	20	260°C	257°C	157	139	128	135	144	185	181	162	184	186	TH	TT

DETAIL CODE	PANEL NUMBER(S)	LOCATION DESCRIPTION	DETAIL TYPE	REPAIR TYPE	MACHINE NUMBER	REPAIR DATE YYYY-MM-DD	START TIME	WELD TECH	AIR TEMP °C	TEST DATE YYYY-MM-DD	TEST METH.	QC TECH
A	/											
B	/											
C	/											
D	/											
E	/											
F	/											
G	/											
H	/											
I	/											
J	/											
K	/											
L	/											
M	/											
N	/											
O	/											
P	/											
Q	/											
R	/											
S	/											
T	/											

DETAIL TYPE:

AD - ANIMAL DAMAGE	DS-# - DESTRUCT SAMPLE NUMBER	IO - INSUFFICIENT OVERLAP	T - THREE PANEL INTERSECTION
ATL - AIR TEST LEAK	EE - EARTHWORK EQUIPMENT DAMAGE	MD - MANUFACTURER/DELIVERY DAMAGE	VL - VACUUM TEST LEAK
BO - FUSION WELDER BURN	EXT - EXTENSION	P - PENETRATION	WR - WRINKLE
CR - CREASE	FM - FISHMOUTH	PT - PRESSURE TEST CUT	WS - WELDER RESTART
D - INSTALLATION DAMAGE	FS - FAILED SEAM LENGTH	SI - SOIL SURFACE IRREGULARITY	OTHER:

TEST METHOD:

AL - AIR LANCE	VB - VAC BOX
PS - POINT STRESS	ST - SPARK TEST

REPAIR TYPE:

G&W - GRIND & WELD	B - BOOT	P - PATCH
HAW - HOT AIR WELD	C - CAP	

REMARKS

QC TECH Thomas Howald

SUPERVISOR Chad Messervey

SUBMISSION DATE 2020/01/05

SHEET NUMBER 66 of 117

GEOMEMBRANE DETAIL & TEST LOG

PROJECT NUMBER CT001401 AREA / LAYER Primary

PROJECT TITLE Victoria Gold Heap Leach Pad Phase 1B

TRIAL SEAMS

#	MACHINE NUMBER	DATE YYYY-MM-DD	TIME	WELD TECH	AIR TEMP °C	PREHEAT TEMP °C	EXTRUDER TEMP °C	PEEL (PPI)					SHEAR (PPI)					CHK'D BY	REMARKS
1	EX-23	2020/08/13	1315	RW	20	257°C	257°C	101	107	134	135	119	167	154	147	173	168	TH	TT
2	EX-4037	2020/08/13	1315	EA	20	260°C	257°C	114	103	128	147	122	152	160	161	179	169	TH	TT
3	EX-23	2020/08/13	1520	RW	20	257°C	257°C	130	131	124	133	138	142	143	150	145	144	TH	TT
4	EX-4037	2020/08/13	1700	GP	20	260°C	257°C	126	123	131	134	127	164	161	159	160	162	TH	TT
5	EX-4037	2020/08/13	1700	EA	20	260°C	257°C	122	124	118	120	126	175	157	163	161	160	TH	TT
6																			

DETAIL CODE	PANEL NUMBER(S)	LOCATION DESCRIPTION	DETAIL TYPE	REPAIR TYPE	MACHINE NUMBER	REPAIR DATE YYYY-MM-DD	START TIME	WELD TECH	AIR TEMP °C	TEST DATE YYYY-MM-DD	TEST METH.	QC TECH
A	/											
B	/											
C	/											
D	/											
E	/											
F	/											
G	/											
H	/											
I	/											
J	/											
K	/											
L	/											
M	/											
N	/											
O	/											
P	/											
Q	/											
R	/											
S	/											
T	/											

DETAIL TYPE:

AD - ANIMAL DAMAGE	DS-# - DESTRUCT SAMPLE NUMBER	IO - INSUFFICIENT OVERLAP	T - THREE PANEL INTERSECTION
ATL - AIR TEST LEAK	EE - EARTHWORK EQUIPMENT DAMAGE	MD - MANUFACTURER/DELIVERY DAMAGE	VL - VACUUM TEST LEAK
BO - FUSION WELDER BURN	EXT - EXTENSION	P - PENETRATION	WR - WRINKLE
CR - CREASE	FM - FISHMOUTH	PT - PRESSURE TEST CUT	WS - WELDER RESTART
D - INSTALLATION DAMAGE	FS - FAILED SEAM LENGTH	SI - SOIL SURFACE IRREGULARITY	OTHER:

TEST METHOD:

AL - AIR LANCE	VB - VAC BOX
PS - POINT STRESS	ST - SPARK TEST

REPAIR TYPE:

G&W - GRIND & WELD	B - BOOT	P - PATCH
HAW - HOT AIR WELD	C - CAP	

REMARKS

QC TECH Thomas Howald

SUPERVISOR Chad Messervey

SUBMISSION DATE 2020/01/05

SHEET NUMBER 67 of 117

GEOMEMBRANE DETAIL & TEST LOG

PROJECT NUMBER CT001401 AREA / LAYER Primary

PROJECT TITLE Victoria Gold Heap Leach Pad Phase 1B

TRIAL SEAMS

#	MACHINE NUMBER	DATE YYYY-MM-DD	TIME	WELD TECH	AIR TEMP °C	PREHEAT TEMP °C	EXTRUDER TEMP °C	PEEL (PPI)					SHEAR (PPI)					CHK'D BY	REMARKS
1	EX-4037	2020/08/06	1245	TH	20	257°C	257°C	105	139	130	131	116	155	155	155	164	155	TH	TT
2	EX-4037	2020/08/06	1630	TH	20	257°C	257°C	143	142	130	135	125	177	166	164	172	164	TH	TT
3	EX-008	2020/08/06	1715	EA	20	254°C	257°C	133	150	131	150	149	166	171	165	164	168	TH	TT
4	EX-23	2020/08/11	840	GP	20	257°C	254°C	135	124	131	141	137	156	162	171	178	165	TH	TT
5	EX-23	2020/08/11	840	RP	20	257°C	254°C	129	129	136	146	132	162	165	172	167	159	TH	TT
6	EX-4037	2020/08/11	900	EA	20	262°C	260°C	134	114	124	116	118	174	160	186	171	183	TH	TT

DETAIL CODE	PANEL NUMBER(S)	LOCATION DESCRIPTION	DETAIL TYPE	REPAIR TYPE	MACHINE NUMBER	REPAIR DATE YYYY-MM-DD	START TIME	WELD TECH	AIR TEMP °C	TEST DATE YYYY-MM-DD	TEST METH.	QC TECH
35A	267 / 274	Intersection Of P272	T	G&W	EX-23	2020/08/13	1444	RW	20	2020/08/13	VB+PS	TH
35B	274 / 273	Intersection Of P272	T	P	EX-23	2020/08/13	1509	RW	20	2020/08/13	VB+PS	TH
35C	274 / 273	Intersection Of P275	T	G&W	EX-23	2020/08/13	1500	RW	20	2020/08/13	VB+PS	TH
35D	274 / 267	Intersection Of P275	T	G&W	EX-23	2020/08/13	1448	RW	20	2020/08/13	VB+PS	TH
35E	278 / 279	Intersection Of P275	T	G&W	EX-23	2020/08/13	1455	RW	20	2020/08/13	VB+PS	TH
35F	278 / 279	Intersection Of P282	T	G&W	EX-23	2020/08/13	1458	RW	20	2020/08/13	VB+PS	TH
35G	285 / 286	Intersection Of P282	T	G&W	EX-23	2020/08/13	1519	RW	20	2020/08/13	VB+PS	TH
35H	285 / 286	Intersection Of P290	T	G&W	EX-23	2020/08/13	1521	RW	20	2020/08/13	VB+PS	TH
35I	285 / 289	NEOS	DS-137	P	EX-4037	2020/08/06	1448	TH	20	2020/08/13	VB+PS	TH
35J	289 / 293	NEOS	DS-138	P	EX-4037	2020/08/06	1501	TH	20	2020/08/13	VB+PS	TH
35K	275 / 276	Intersection Of P267	T	G&W	EX-4037	2020/08/11	1356	RW	20	2020/08/13	VB+PS	TH
35L	275 / 276	Intersection Of P279	T	G&W	EX-4037	2020/08/11	1353	RW	20	2020/08/13	VB+PS	TH
35M	283 / 282	Intersection Of P279	T	G&W	EX-4037	2020/08/11	1450	RW	20	2020/08/13	VB+PS	TH
35N	282 / 283	Intersection Of P286	T	G&W	EX-4037	2020/08/11	1457	RW	20	2020/08/13	VB+PS	TH
35O	283 /	1.1m From SEOS	D	P	EX-4037	2020/08/11	1556	RW	20	2020/08/13	VB+PS	TH
35P	291 / 290	Intersection Of P286	T	G&W	EX-4037	2020/08/11	1500	RW	20	2020/08/13	VB+PS	TH
35Q	291 / 290	Intersection Of P294	T	P	EX-4037	2020/08/11	1435	RW	20	2020/08/13	VB+PS	TH
35R	293 / 294	Intersection Of P290	T	G&W	EX-4037	2020/08/11	1455	RW	20	2020/08/13	VB+PS	TH
35S	332 / 325	10m From WEOS	IO	G&W	EX-4037	2020/08/11	1600	RW	20	2020/08/13	VB+PS	TH
35T	333 / 332	Intersection Of P325	T	G&W	EX-4037	2020/08/13	1450	GP	20	2020/08/13	VB+PS	TH

DETAIL TYPE:

AD - ANIMAL DAMAGE	DS-# - DESTRUCT SAMPLE NUMBER	IO - INSUFFICIENT OVERLAP	T - THREE PANEL INTERSECTION
ATL - AIR TEST LEAK	EE - EARTHWORK EQUIPMENT DAMAGE	MD - MANUFACTURER/DELIVERY DAMAGE	VL - VACUUM TEST LEAK
BO - FUSION WELDER BURN	EXT - EXTENSION	P - PENETRATION	WR - WRINKLE
CR - CREASE	FM - FISHMOUTH	PT - PRESSURE TEST CUT	WS - WELDER RESTART
D - INSTALLATION DAMAGE	FS - FAILED SEAM LENGTH	SI - SOIL SURFACE IRREGULARITY	OTHER:

TEST METHOD:

AL - AIR LANCE	VB - VAC BOX
PS - POINT STRESS	ST - SPARK TEST

REPAIR TYPE:

G&W - GRIND & WELD	B - BOOT	P - PATCH
HAW - HOT AIR WELD	C - CAP	

REMARKS

QC TECH Thomas Howald

SUPERVISOR Chad Messervey

SUBMISSION DATE 2020/01/05

SHEET NUMBER 68 of 117

GEOMEMBRANE DETAIL & TEST LOG

PROJECT NUMBER CT001401 AREA / LAYER Primary

PROJECT TITLE Victoria Gold Heap Leach Pad Phase 1B

TRIAL SEAMS

#	MACHINE NUMBER	DATE YYYY-MM-DD	TIME	WELD TECH	AIR TEMP °C	PREHEAT TEMP °C	EXTRUDER TEMP °C	PEEL (PPI)					SHEAR (PPI)					CHK'D BY	REMARKS
1	EX-4037	2020/08/11	900	RW	20	262°C	260°C	92	103	128	117	128	142	165	182	175	167	TH	TT
2	EX-4037	2020/08/11	1345	RW	20	260°C	257°C	115	117	115	114	123	143	145	139	140	141	TH	TT
3	EX-4037	2020/08/11	1345	EA	20	260°C	257°C	129	121	123	125	117	142	142	135	151	157	TH	TT
4	EX-4037	2020/08/11	1730	EA	20	260°C	257°C	128	129	140	137	145	128	144	164	164	159	TH	TT
5	EX-4037	2020/08/11	1730	RW	20	260°C	257°C	130	127	135	134	129	151	168	160	172	154	TH	TT
6	EX-4037	2020/08/13	800	GP	20	260°C	257°C	97	109	100	98	104	166	173	173	167	173	TH	TT

DETAIL CODE	PANEL NUMBER(S)	LOCATION DESCRIPTION	DETAIL TYPE	REPAIR TYPE	MACHINE NUMBER	REPAIR DATE YYYY-MM-DD	START TIME	WELD TECH	AIR TEMP °C	TEST DATE YYYY-MM-DD	TEST METH.	QC TECH
A	/											
B	/											
C	/											
D	/											
E	/											
F	/											
G	/											
H	/											
I	/											
J	/											
K	/											
L	/											
M	/											
N	/											
O	/											
P	/											
Q	/											
R	/											
S	/											
T	/											

DETAIL TYPE:

AD - ANIMAL DAMAGE	DS-# - DESTRUCT SAMPLE NUMBER	IO - INSUFFICIENT OVERLAP	T - THREE PANEL INTERSECTION
ATL - AIR TEST LEAK	EE - EARTHWORK EQUIPMENT DAMAGE	MD - MANUFACTURER/DELIVERY DAMAGE	VL - VACUUM TEST LEAK
BO - FUSION WELDER BURN	EXT - EXTENSION	P - PENETRATION	WR - WRINKLE
CR - CREASE	FM - FISHMOUTH	PT - PRESSURE TEST CUT	WS - WELDER RESTART
D - INSTALLATION DAMAGE	FS - FAILED SEAM LENGTH	SI - SOIL SURFACE IRREGULARITY	OTHER:

TEST METHOD:

AL - AIR LANCE	VB - VAC BOX
PS - POINT STRESS	ST - SPARK TEST

REPAIR TYPE:

G&W - GRIND & WELD	B - BOOT	P - PATCH
HAW - HOT AIR WELD	C - CAP	

REMARKS

QC TECH Thomas Howald

SUPERVISOR Chad Messervey

SUBMISSION DATE 2020/01/05

SHEET NUMBER 69 of 117

GEOMEMBRANE DETAIL & TEST LOG

PROJECT NUMBER CT001401 AREA / LAYER Primary

PROJECT TITLE Victoria Gold Heap Leach Pad Phase 1B

TRIAL SEAMS

#	MACHINE NUMBER	DATE YYYY-MM-DD	TIME	WELD TECH	AIR TEMP °C	PREHEAT TEMP °C	EXTRUDER TEMP °C	PEEL (PPI)					SHEAR (PPI)					CHK'D BY	REMARKS
1	EX-4037	2020/08/13	800	EA	20	260°C	257°C	121	126	125	102	114	175	162	176	175	173	TH	TT
2	EX-23	2020/08/13	800	RW	20	257°C	257°C	121	139	123	133	139	171	172	177	157	160	TH	TT
3	EX-4037	2020/08/13	1315	GP	20	260°C	257°C	157	139	128	135	144	185	181	162	184	186	TH	TT
4	EX-23	2020/08/13	1315	RW	20	257°C	257°C	101	107	134	135	119	167	154	147	173	168	TH	TT
5	EX-4037	2020/08/13	1315	EA	20	260°C	257°C	114	103	128	147	122	152	160	161	179	169	TH	TT
6	EX-23	2020/08/13	1520	RW	20	257°C	257°C	130	131	124	133	138	142	143	150	145	144	TH	TT

DETAIL CODE	PANEL NUMBER(S)	LOCATION DESCRIPTION	DETAIL TYPE	REPAIR TYPE	MACHINE NUMBER	REPAIR DATE YYYY-MM-DD	START TIME	WELD TECH	AIR TEMP °C	TEST DATE YYYY-MM-DD	TEST METH.	QC TECH
A	/											
B	/											
C	/											
D	/											
E	/											
F	/											
G	/											
H	/											
I	/											
J	/											
K	/											
L	/											
M	/											
N	/											
O	/											
P	/											
Q	/											
R	/											
S	/											
T	/											

DETAIL TYPE:

AD - ANIMAL DAMAGE	DS-# - DESTRUCT SAMPLE NUMBER	IO - INSUFFICIENT OVERLAP	T - THREE PANEL INTERSECTION
ATL - AIR TEST LEAK	EE - EARTHWORK EQUIPMENT DAMAGE	MD - MANUFACTURER/DELIVERY DAMAGE	VL - VACUUM TEST LEAK
BO - FUSION WELDER BURN	EXT - EXTENSION	P - PENETRATION	WR - WRINKLE
CR - CREASE	FM - FISHMOUTH	PT - PRESSURE TEST CUT	WS - WELDER RESTART
D - INSTALLATION DAMAGE	FS - FAILED SEAM LENGTH	SI - SOIL SURFACE IRREGULARITY	OTHER:

TEST METHOD:

AL - AIR LANCE	VB - VAC BOX
PS - POINT STRESS	ST - SPARK TEST

REPAIR TYPE:

G&W - GRIND & WELD	B - BOOT	P - PATCH
HAW - HOT AIR WELD	C - CAP	

REMARKS

QC TECH Thomas Howald

SUPERVISOR Chad Messervey

SUBMISSION DATE 2020/01/05

SHEET NUMBER 70 of 117

GEOMEMBRANE DETAIL & TEST LOG

PROJECT NUMBER CT001401 AREA / LAYER Primary

PROJECT TITLE Victoria Gold Heap Leach Pad Phase 1B

TRIAL SEAMS

#	MACHINE NUMBER	DATE YYYY-MM-DD	TIME	WELD TECH	AIR TEMP °C	PREHEAT TEMP °C	EXTRUDER TEMP °C	PEEL (PPI)					SHEAR (PPI)					CHK'D BY	REMARKS
1	EX-4037	2020/08/13	1700	GP	20	260°C	257°C	126	123	131	134	127	164	161	159	160	162	TH	TT
2	EX-4037	2020/08/13	1700	EA	20	260°C	257°C	122	124	118	120	126	175	157	163	161	160	TH	TT
3																			
4																			
5																			
6																			

DETAIL CODE	PANEL NUMBER(S)	LOCATION DESCRIPTION	DETAIL TYPE	REPAIR TYPE	MACHINE NUMBER	REPAIR DATE YYYY-MM-DD	START TIME	WELD TECH	AIR TEMP °C	TEST DATE YYYY-MM-DD	TEST METH.	QC TECH
A	/											
B	/											
C	/											
D	/											
E	/											
F	/											
G	/											
H	/											
I	/											
J	/											
K	/											
L	/											
M	/											
N	/											
O	/											
P	/											
Q	/											
R	/											
S	/											
T	/											

DETAIL TYPE:

AD - ANIMAL DAMAGE	DS-# - DESTRUCT SAMPLE NUMBER	IO - INSUFFICIENT OVERLAP	T - THREE PANEL INTERSECTION
ATL - AIR TEST LEAK	EE - EARTHWORK EQUIPMENT DAMAGE	MD - MANUFACTURER/DELIVERY DAMAGE	VL - VACUUM TEST LEAK
BO - FUSION WELDER BURN	EXT - EXTENSION	P - PENETRATION	WR - WRINKLE
CR - CREASE	FM - FISHMOUTH	PT - PRESSURE TEST CUT	WS - WELDER RESTART
D - INSTALLATION DAMAGE	FS - FAILED SEAM LENGTH	SI - SOIL SURFACE IRREGULARITY	OTHER:

TEST METHOD:

AL - AIR LANCE	VB - VAC BOX
PS - POINT STRESS	ST - SPARK TEST

REPAIR TYPE:

G&W - GRIND & WELD	B - BOOT	P - PATCH
HAW - HOT AIR WELD	C - CAP	

REMARKS

QC TECH Thomas Howald

SUPERVISOR Chad Messervey

SUBMISSION DATE 2020/01/05

SHEET NUMBER 71 of 117

GEOMEMBRANE DETAIL & TEST LOG

PROJECT NUMBER CT001401 AREA / LAYER Primary

PROJECT TITLE Victoria Gold Heap Leach Pad Phase 1B

TRIAL SEAMS

#	MACHINE NUMBER	DATE YYYY-MM-DD	TIME	WELD TECH	AIR TEMP °C	PREHEAT TEMP °C	EXTRUDER TEMP °C	PEEL (PPI)					SHEAR (PPI)					CHK'D BY	REMARKS
1	EX-4037	2020/08/13	800	GP	20	260°C	257°C	97	109	100	98	104	166	173	173	167	173	TH	TT
2	EX-4037	2020/08/13	800	EA	20	260°C	257°C	121	126	125	102	114	175	162	176	175	173	TH	TT
3	EX-23	2020/08/13	800	RW	20	257°C	257°C	121	139	123	133	139	171	172	177	157	160	TH	TT
4	EX-4037	2020/08/13	1315	GP	20	260°C	257°C	157	139	128	135	144	185	181	162	184	186	TH	TT
5	EX-23	2020/08/13	1315	RW	20	257°C	257°C	101	107	134	135	119	167	154	147	173	168	TH	TT
6	EX-4037	2020/08/13	1315	EA	20	260°C	257°C	114	103	128	147	122	152	160	161	179	169	TH	TT

DETAIL CODE	PANEL NUMBER(S)	LOCATION DESCRIPTION	DETAIL TYPE	REPAIR TYPE	MACHINE NUMBER	REPAIR DATE YYYY-MM-DD	START TIME	WELD TECH	AIR TEMP °C	TEST DATE YYYY-MM-DD	TEST METH.	QC TECH
36A	333 / 332	Intersection Of P334	T	G&W	EX-4037	2020/08/13	1453	GP	20	2020/08/13	VB+PS	TH
36B	335 / 334	Intersection Of P333	T	G&W	EX-4037	2020/08/13	1458	GP	20	2020/08/13	VB+PS	TH
36C	335 / 334	Intersection Of P337	T	G&W	EX-4037	2020/08/13	1501	GP	20	2020/08/13	VB+PS	TH
36D	337 / 336	Intersection Of P334	T	G&W	EX-4037	2020/08/13	1504	GP	20	2020/08/13	VB+PS	TH
36E	337 / 336	Intersection Of P339	T	G&W	EX-4037	2020/08/13	1508	GP	20	2020/08/13	VB+PS	TH
36F	340 / 339	Intersection Of P337	T	G&W	EX-4037	2020/08/13	1511	GP	20	2020/08/13	VB+PS	TH
36G	340 / 339	Intersection Of P342	T	G&W	EX-4037	2020/08/13	1515	GP	20	2020/08/13	VB+PS	TH
36H	342 / 341	Intersection Of P339	T	G&W	EX-4037	2020/08/13	1518	GP	20	2020/08/13	VB+PS	TH
36I	342 / 341	Intersection Of P344	T	G&W	EX-4037	2020/08/13	1521	GP	20	2020/08/13	VB+PS	TH
36J	343 / 344	Intersection Of P341	T	G&W	EX-4037	2020/08/13	1612	GP	20	2020/08/13	VB+PS	TH
36K	344 / 343	Intersection Of P346	T	G&W	EX-4037	2020/08/13	1617	GP	20	2020/08/13	VB+PS	TH
36L	345 / 346	Intersection Of P343	T	G&W	EX-4037	2020/08/13	1622	GP	20	2020/08/13	VB+PS	TH
36M	345 / 346	Intersection Of P347	T	G&W	EX-4037	2020/08/13	1628	GP	20	2020/08/13	VB+PS	TH
36N	351 / 352	Intersection Of P349	T	P	EX-23	2020/08/13	1700	RW	20	2020/08/13	VB+PS	TH
36O	351 / 352	Intersection Of P355	T	P	EX-23	2020/08/13	1711	RW	20	2020/08/13	VB+PS	TH
36P	350 / 349	Intersection Of P352	T	G&W	EX-4037	2020/08/13	1717	GP	20	2020/08/13	VB+PS	TH
36Q	350 / 349	Intersection Of P347	T	G&W	EX-4037	2020/08/13	1718	GP	20	2020/08/13	VB+PS	TH
36R	352 / 350	8.8m From WEOS	WS	G&W	EX-4037	2020/08/13	1720	GP	20	2020/08/13	VB+PS	TH
36S	355 / 356	Intersection Of P352	T	G&W	EX-4037	2020/08/13	1727	GP	20	2020/08/13	VB+PS	TH
36T	355 / 356	Intersection Of P358	T	G&W	EX-4037	2020/08/13	1729	EA	20	2020/08/13	VB+PS	TH

DETAIL TYPE:

AD - ANIMAL DAMAGE	DS-# - DESTRUCT SAMPLE NUMBER	IO - INSUFFICIENT OVERLAP	T - THREE PANEL INTERSECTION
ATL - AIR TEST LEAK	EE - EARTHWORK EQUIPMENT DAMAGE	MD - MANUFACTURER/DELIVERY DAMAGE	VL - VACUUM TEST LEAK
BO - FUSION WELDER BURN	EXT - EXTENSION	P - PENETRATION	WR - WRINKLE
CR - CREASE	FM - FISHMOUTH	PT - PRESSURE TEST CUT	WS - WELDER RESTART
D - INSTALLATION DAMAGE	FS - FAILED SEAM LENGTH	SI - SOIL SURFACE IRREGULARITY	OTHER:

TEST METHOD:

AL - AIR LANCE	VB - VAC BOX
PS - POINT STRESS	ST - SPARK TEST

REPAIR TYPE:

G&W - GRIND & WELD	B - BOOT	P - PATCH
HAW - HOT AIR WELD	C - CAP	

REMARKS

QC TECH Thomas Howald

SUPERVISOR Chad Messervey

SUBMISSION DATE 2020/01/05

SHEET NUMBER 72 of 117

GEOMEMBRANE DETAIL & TEST LOG

PROJECT NUMBER CT001401 AREA / LAYER Primary

PROJECT TITLE Victoria Gold Heap Leach Pad Phase 1B

TRIAL SEAMS

#	MACHINE NUMBER	DATE YYYY-MM-DD	TIME	WELD TECH	AIR TEMP °C	PREHEAT TEMP °C	EXTRUDER TEMP °C	PEEL (PPI)					SHEAR (PPI)					CHK'D BY	REMARKS
1	EX-23	2020/08/13	1520	RW	20	257°C	257°C	130	131	124	133	138	142	143	150	145	144	TH	TT
2	EX-4037	2020/08/13	1700	GP	20	260°C	257°C	126	123	131	134	127	164	161	159	160	162	TH	TT
3	EX-4037	2020/08/13	1700	EA	20	260°C	257°C	122	124	118	120	126	175	157	163	161	160	TH	TT
4																			
5																			
6																			

DETAIL CODE	PANEL NUMBER(S)	LOCATION DESCRIPTION	DETAIL TYPE	REPAIR TYPE	MACHINE NUMBER	REPAIR DATE YYYY-MM-DD	START TIME	WELD TECH	AIR TEMP °C	TEST DATE YYYY-MM-DD	TEST METH.	QC TECH
A	/											
B	/											
C	/											
D	/											
E	/											
F	/											
G	/											
H	/											
I	/											
J	/											
K	/											
L	/											
M	/											
N	/											
O	/											
P	/											
Q	/											
R	/											
S	/											
T	/											

DETAIL TYPE:

AD - ANIMAL DAMAGE	DS-# - DESTRUCT SAMPLE NUMBER	IO - INSUFFICIENT OVERLAP	T - THREE PANEL INTERSECTION
ATL - AIR TEST LEAK	EE - EARTHWORK EQUIPMENT DAMAGE	MD - MANUFACTURER/DELIVERY DAMAGE	VL - VACUUM TEST LEAK
BO - FUSION WELDER BURN	EXT - EXTENSION	P - PENETRATION	WR - WRINKLE
CR - CREASE	FM - FISHMOUTH	PT - PRESSURE TEST CUT	WS - WELDER RESTART
D - INSTALLATION DAMAGE	FS - FAILED SEAM LENGTH	SI - SOIL SURFACE IRREGULARITY	OTHER:

TEST METHOD:

AL - AIR LANCE	VB - VAC BOX
PS - POINT STRESS	ST - SPARK TEST

REPAIR TYPE:

G&W - GRIND & WELD	B - BOOT	P - PATCH
HAW - HOT AIR WELD	C - CAP	

REMARKS

QC TECH Thomas Howald

SUPERVISOR Chad Messervey

SUBMISSION DATE 2020/01/05

SHEET NUMBER 73 of 117

GEOMEMBRANE DETAIL & TEST LOG

PROJECT NUMBER CT001401 AREA / LAYER Primary

PROJECT TITLE Victoria Gold Heap Leach Pad Phase 1B

TRIAL SEAMS

#	MACHINE NUMBER	DATE YYYY-MM-DD	TIME	WELD TECH	AIR TEMP °C	PREHEAT TEMP °C	EXTRUDER TEMP °C	PEEL (PPI)					SHEAR (PPI)					CHK'D BY	REMARKS
1	EX-4037	2020/08/13	800	GP	20	260°C	257°C	97	109	100	98	104	166	173	173	167	173	TH	TT
2	EX-4037	2020/08/13	800	EA	20	260°C	257°C	121	126	125	102	114	175	162	176	175	173	TH	TT
3	EX-23	2020/08/13	800	RW	20	257°C	257°C	121	139	123	133	139	171	172	177	157	160	TH	TT
4	EX-4037	2020/08/13	1315	GP	20	260°C	257°C	157	139	128	135	144	185	181	162	184	186	TH	TT
5	EX-23	2020/08/13	1315	RW	20	257°C	257°C	101	107	134	135	119	167	154	147	173	168	TH	TT
6	EX-4037	2020/08/13	1315	EA	20	260°C	257°C	114	103	128	147	122	152	160	161	179	169	TH	TT

DETAIL CODE	PANEL NUMBER(S)	LOCATION DESCRIPTION	DETAIL TYPE	REPAIR TYPE	MACHINE NUMBER	REPAIR DATE YYYY-MM-DD	START TIME	WELD TECH	AIR TEMP °C	TEST DATE YYYY-MM-DD	TEST METH.	QC TECH
37A	348 / 347	Intersection Of P350	T	G&W	EX-4037	2020/08/13	1740	EA	20	2020/08/13	VB+PS	TH
37B	348 / 346	Intersection Of P346	T	G&W	EX-4037	2020/08/13	1738	EA	20	2020/08/13	VB+PS	TH
37C	352 / 350	11.9m From EEOS	WS	P	EX-4037	2020/08/13	1743	GP	20	2020/08/13	VB+PS	TH
37D	347 / 349	30.5m From WEOS	WS	G&W	EX-23	2020/08/13	1758	RW	20	2020/08/13	VB+PS	TH
37E	352 / 353	Intersection Of P350	T	G&W	EX-4037	2020/08/13	1747	GP	20	2020/08/13	VB+PS	TH
37F	353 / 352	Intersection Of P356	T	G&W	EX-4037	2020/08/13	1805	EA	20	2020/08/13	VB+PS	TH
37G	356 / 353	EEOS	IO	P	EX-4037	2020/08/13	1807	EA	20	2020/08/13	VB+PS	TH
37H	350 / 353	EEOS	IO	P	EX-4037	2020/08/13	1800	EA	20	2020/08/13	VB+PS	TH
37I	333 / 325	EEOS	IO	P	EX-4037	2020/08/13	1440	GP	20	2020/08/13	VB+PS	TH
37J	348 / 346	EEOS	IO	G&W	EX-4037	2020/08/13	1823	EA	20	2020/08/13	VB+PS	TH
37K	344 / 342	EEOS	IO	P	EX-4037	2020/08/13	1830	EA	20	2020/08/13	VB+PS	TH
37L	359 / 360	Intersection Of P357	T	G&W	EX-23	2020/08/13	1810	RW	20	2020/08/13	VB+PS	TH
37M	267 / 268	Intersection Of P276	T	G&W	EX-23	2020/08/13	1339	RW	20	2020/08/13	VB+PS	TH
37N	275 / 279	11m From SEOS	IO	G&W	EX-23	2020/08/13	858	RW	20	2020/08/13	VB+PS	TH
37O	279 / 282	12m From SEOS	IO	G&W	EX-23	2020/08/13	1856	RW	20	2020/08/13	VB+PS	TH
37P	358 / 357	Intersection Of P355	T	G&W	EX-23	2020/08/13	838	RW	15	2020/08/14	VB+PS	TH
37Q	357 / 358	Intersection Of P360	T	G&W	EX-23	2020/08/13	834	RW	15	2020/08/14	VB+PS	TH
37R	360 / 359	Intersection Of P363	T	G&W	EX-23	2020/08/14	1728	RW	20	2020/08/14	VB+PS	TH
37S	362 / 363	Intersection Of P359	T	G&W	EX-23	2020/08/14	1740	RW	20	2020/08/14	VB+PS	TH
37T	364 / 363	Intersection Of P360	T	G&W	EX-23	2020/08/14	1714	RW	20	2020/08/14	VB+PS	TH

DETAIL TYPE:

AD - ANIMAL DAMAGE	DS-# - DESTRUCT SAMPLE NUMBER	IO - INSUFFICIENT OVERLAP	T - THREE PANEL INTERSECTION
ATL - AIR TEST LEAK	EE - EARTHWORK EQUIPMENT DAMAGE	MD - MANUFACTURER/DELIVERY DAMAGE	VL - VACUUM TEST LEAK
BO - FUSION WELDER BURN	EXT - EXTENSION	P - PENETRATION	WR - WRINKLE
CR - CREASE	FM - FISHMOUTH	PT - PRESSURE TEST CUT	WS - WELDER RESTART
D - INSTALLATION DAMAGE	FS - FAILED SEAM LENGTH	SI - SOIL SURFACE IRREGULARITY	OTHER:

TEST METHOD:

AL - AIR LANCE	VB - VAC BOX
PS - POINT STRESS	ST - SPARK TEST

REPAIR TYPE:

G&W - GRIND & WELD	B - BOOT	P - PATCH
HAW - HOT AIR WELD	C - CAP	

REMARKS

QC TECH Thomas Howald

SUPERVISOR Chad Messervey

SUBMISSION DATE 2020/01/05

SHEET NUMBER 74 of 117

GEOMEMBRANE DETAIL & TEST LOG

PROJECT NUMBER CT001401 AREA / LAYER Primary

PROJECT TITLE Victoria Gold Heap Leach Pad Phase 1B

TRIAL SEAMS

#	MACHINE NUMBER	DATE YYYY-MM-DD	TIME	WELD TECH	AIR TEMP °C	PREHEAT TEMP °C	EXTRUDER TEMP °C	PEEL (PPI)					SHEAR (PPI)					CHK'D BY	REMARKS
1	EX-23	2020/08/13	1520	RW	20	257°C	257°C	130	131	124	133	138	142	143	150	145	144	TH	TT
2	EX-4037	2020/08/13	1700	GP	20	260°C	257°C	126	123	131	134	127	164	161	159	160	162	TH	TT
3	EX-4037	2020/08/13	1700	EA	20	260°C	257°C	122	124	118	120	126	175	157	163	161	160	TH	TT
4	EX-23	2020/08/14	815	RW	20	260°C	257°C	100	137	101	144	144	163	162	163	161	164	TH	TT
5	EX-23	2020/08/14	815	EA	20	260°C	257°C	103	127	112	120	108	165	170	171	164	172	TH	TT
6	EX-23	2020/08/14	1230	RW	20	260°C	257°C	131	131	129	104	133	172	159	164	164	163	TH	TT

DETAIL CODE	PANEL NUMBER(S)	LOCATION DESCRIPTION	DETAIL TYPE	REPAIR TYPE	MACHINE NUMBER	REPAIR DATE YYYY-MM-DD	START TIME	WELD TECH	AIR TEMP °C	TEST DATE YYYY-MM-DD	TEST METH.	QC TECH
A	/											
B	/											
C	/											
D	/											
E	/											
F	/											
G	/											
H	/											
I	/											
J	/											
K	/											
L	/											
M	/											
N	/											
O	/											
P	/											
Q	/											
R	/											
S	/											
T	/											

DETAIL TYPE:

AD - ANIMAL DAMAGE	DS-# - DESTRUCT SAMPLE NUMBER	IO - INSUFFICIENT OVERLAP	T - THREE PANEL INTERSECTION
ATL - AIR TEST LEAK	EE - EARTHWORK EQUIPMENT DAMAGE	MD - MANUFACTURER/DELIVERY DAMAGE	VL - VACUUM TEST LEAK
BO - FUSION WELDER BURN	EXT - EXTENSION	P - PENETRATION	WR - WRINKLE
CR - CREASE	FM - FISHMOUTH	PT - PRESSURE TEST CUT	WS - WELDER RESTART
D - INSTALLATION DAMAGE	FS - FAILED SEAM LENGTH	SI - SOIL SURFACE IRREGULARITY	OTHER:

TEST METHOD:

AL - AIR LANCE	VB - VAC BOX
PS - POINT STRESS	ST - SPARK TEST

REPAIR TYPE:

G&W - GRIND & WELD	B - BOOT	P - PATCH
HAW - HOT AIR WELD	C - CAP	

REMARKS

QC TECH Thomas Howald

SUPERVISOR Chad Messervey

SUBMISSION DATE 2020/01/05

SHEET NUMBER 75 of 117

GEOMEMBRANE DETAIL & TEST LOG

PROJECT NUMBER CT001401 AREA / LAYER Primary

PROJECT TITLE Victoria Gold Heap Leach Pad Phase 1B

TRIAL SEAMS

#	MACHINE NUMBER	DATE YYYY-MM-DD	TIME	WELD TECH	AIR TEMP °C	PREHEAT TEMP °C	EXTRUDER TEMP °C	PEEL (PPI)					SHEAR (PPI)					CHK'D BY	REMARKS
1	EX-23	2020/08/14	1230	EA	20	260°C	257°C	135	135	152	140	130	149	153	161	153	151	TH	TT
2	EX-23	2020/08/14	1645	RW	20	260°C	257°C	110	121	110	115	111	149	171	172	157	167	TH	TT
3	EX-23	2020/08/14	1645	EA	20	260°C	257°C	112	115	110	106	108	150	144	151	164	149	TH	TT
4																			
5																			
6																			

DETAIL CODE	PANEL NUMBER(S)	LOCATION DESCRIPTION	DETAIL TYPE	REPAIR TYPE	MACHINE NUMBER	REPAIR DATE YYYY-MM-DD	START TIME	WELD TECH	AIR TEMP °C	TEST DATE YYYY-MM-DD	TEST METH.	QC TECH
A	/											
B	/											
C	/											
D	/											
E	/											
F	/											
G	/											
H	/											
I	/											
J	/											
K	/											
L	/											
M	/											
N	/											
O	/											
P	/											
Q	/											
R	/											
S	/											
T	/											

DETAIL TYPE:

AD - ANIMAL DAMAGE	DS-# - DESTRUCT SAMPLE NUMBER	IO - INSUFFICIENT OVERLAP	T - THREE PANEL INTERSECTION
ATL - AIR TEST LEAK	EE - EARTHWORK EQUIPMENT DAMAGE	MD - MANUFACTURER/DELIVERY DAMAGE	VL - VACUUM TEST LEAK
BO - FUSION WELDER BURN	EXT - EXTENSION	P - PENETRATION	WR - WRINKLE
CR - CREASE	FM - FISHMOUTH	PT - PRESSURE TEST CUT	WS - WELDER RESTART
D - INSTALLATION DAMAGE	FS - FAILED SEAM LENGTH	SI - SOIL SURFACE IRREGULARITY	OTHER:

TEST METHOD:

AL - AIR LANCE	VB - VAC BOX
PS - POINT STRESS	ST - SPARK TEST

REPAIR TYPE:

G&W - GRIND & WELD	B - BOOT	P - PATCH
HAW - HOT AIR WELD	C - CAP	

REMARKS

QC TECH Thomas Howald

SUPERVISOR Chad Messervey

SUBMISSION DATE 2020/01/05

SHEET NUMBER 76 of 117

GEOMEMBRANE DETAIL & TEST LOG

PROJECT NUMBER CT001401 AREA / LAYER Primary

PROJECT TITLE Victoria Gold Heap Leach Pad Phase 1B

TRIAL SEAMS

#	MACHINE NUMBER	DATE YYYY-MM-DD	TIME	WELD TECH	AIR TEMP °C	PREHEAT TEMP °C	EXTRUDER TEMP °C	PEEL (PPI)					SHEAR (PPI)					CHK'D BY	REMARKS
1	EX-4037	2020/08/13	800	GP	20	260°C	257°C	97	109	100	98	104	166	173	173	167	173	TH	TT
2	EX-4037	2020/08/13	800	EA	20	260°C	257°C	121	126	125	102	114	175	162	176	175	173	TH	TT
3	EX-23	2020/08/13	800	RW	20	257°C	257°C	121	139	123	133	139	171	172	177	157	160	TH	TT
4	EX-4037	2020/08/13	1315	GP	20	260°C	257°C	157	139	128	135	144	185	181	162	184	186	TH	TT
5	EX-23	2020/08/13	1315	RW	20	257°C	257°C	101	107	134	135	119	167	154	147	173	168	TH	TT
6	EX-4037	2020/08/13	1315	EA	20	260°C	257°C	114	103	128	147	122	152	160	161	179	169	TH	TT

DETAIL CODE	PANEL NUMBER(S)	LOCATION DESCRIPTION	DETAIL TYPE	REPAIR TYPE	MACHINE NUMBER	REPAIR DATE YYYY-MM-DD	START TIME	WELD TECH	AIR TEMP °C	TEST DATE YYYY-MM-DD	TEST METH.	QC TECH
38A	364 / 363	Intersection Of P366	T	G&W	EX-23	2020/08/14	1712	RW	20	2020/08/14	VB+PS	TH
38B	361 / 360	Intersection Of P358	T	G&W	EX-23	2020/08/13	830	RW	20	2020/08/14	VB+PS	TH
38C	361 / 360	Intersection Of P364	T	G&W	EX-23	2020/08/14	1717	RW	20	2020/08/14	VB+PS	TH
38D	366 / 365	Intersection Of P363	T	G&W	EX-23	2020/08/14	1718	RW	20	2020/08/14	VB+PS	TH
38E	366 / 365	Intersection Of P386	T	G&W	EX-23	2020/08/14	1721	RW	20	2020/08/14	VB+PS	TH
38F	367 / 368	Intersection Of P365	DS-169	P	EX-23	2020/08/14	1815	RW	20	2020/08/14	VB+PS	TH
38G	367 / 368	NEOS	DS-177	P	EX-23	2020/08/14	1812	RW	20	2020/08/14	VB+PS	TH
38H	366 / 368	10m From WEOS	WS	P	EX-23	2020/08/14	1707	RW	20	2020/08/14	VB+PS	TH
38I	369 / 370	Intersection Of P372	T	G&W	EX-23	2020/08/15	1302	EA	20	2020/08/17	VB+PS	TH
38J	371 / 372	Intersection Of P369	T	G&W	EX-23	2020/08/15	1305	EA	20	2020/08/17	VB+PS	TH
38K	372 / 371	Intersection Of P374	T	G&W	EX-23	2020/08/15	1322	EA	20	2020/08/17	VB+PS	TH
38L	373 / 374	Intersection Of P371	T	G&W	EX-23	2020/08/15	1354	EA	20	2020/08/17	VB+PS	TH
38M	373 / 374	Intersection Of P376	T	G&W	EX-23	2020/08/15	1356	EA	20	2020/08/17	VB+PS	TH
38N	375 / 376	Intersection Of P373	T	G&W	EX-23	2020/08/15	1401	EA	20	2020/08/17	VB+PS	TH
38O	378 / 377	Intersection Of P375	T	G&W	EX-23	2020/08/15	1628	EA	20	2020/08/17	VB+PS	TH
38P	377 / 378	Intersection Of P379	T	G&W	EX-23	2020/08/15	1633	EA	20	2020/08/17	VB+PS	TH
38Q	379 / 380	Intersection Of P378	T	G&W	EX-23	2020/08/15	1638	EA	20	2020/08/17	VB+PS	TH
38R	380 /	1m From WEOS	D	P	EX-23	2020/08/15	1647	EA	20	2020/08/17	VB+PS	TH
38S	379 / 380	Intersection Of P381	T	G&W	EX-23	2020/08/15	1245	EA	20	2020/08/17	VB+PS	TH
38T	382 / 381	Intersection Of P380	DS	P	EX-23	2020/08/16	1110	EA	15	2020/08/17	VB+PS	TH

DETAIL TYPE:

AD - ANIMAL DAMAGE	DS-# - DESTRUCT SAMPLE NUMBER	IO - INSUFFICIENT OVERLAP	T - THREE PANEL INTERSECTION
ATL - AIR TEST LEAK	EE - EARTHWORK EQUIPMENT DAMAGE	MD - MANUFACTURER/DELIVERY DAMAGE	VL - VACUUM TEST LEAK
BO - FUSION WELDER BURN	EXT - EXTENSION	P - PENETRATION	WR - WRINKLE
CR - CREASE	FM - FISHMOUTH	PT - PRESSURE TEST CUT	WS - WELDER RESTART
D - INSTALLATION DAMAGE	FS - FAILED SEAM LENGTH	SI - SOIL SURFACE IRREGULARITY	OTHER:

TEST METHOD:

AL - AIR LANCE	VB - VAC BOX
PS - POINT STRESS	ST - SPARK TEST

REPAIR TYPE:

G&W - GRIND & WELD	B - BOOT	P - PATCH
HAW - HOT AIR WELD	C - CAP	

REMARKS

QC TECH Thomas Howald

SUPERVISOR Chad Messervey

SUBMISSION DATE 2020/01/05

SHEET NUMBER 77 of 117

GEOMEMBRANE DETAIL & TEST LOG

PROJECT NUMBER CT001401 AREA / LAYER Primary

PROJECT TITLE Victoria Gold Heap Leach Pad Phase 1B

TRIAL SEAMS

#	MACHINE NUMBER	DATE YYYY-MM-DD	TIME	WELD TECH	AIR TEMP °C	PREHEAT TEMP °C	EXTRUDER TEMP °C	PEEL (PPI)					SHEAR (PPI)					CHK'D BY	REMARKS
1	EX-23	2020/08/13	1520	RW	20	257°C	257°C	130	131	124	133	138	142	143	150	145	144	TH	TT
2	EX-4037	2020/08/13	1700	GP	20	260°C	257°C	126	123	131	134	127	164	161	159	160	162	TH	TT
3	EX-4037	2020/08/13	1700	EA	20	260°C	257°C	122	124	118	120	126	175	157	163	161	160	TH	TT
4	EX-23	2020/08/14	815	RW	20	260°C	257°C	100	137	101	144	144	163	162	163	161	164	TH	TT
5	EX-23	2020/08/14	815	EA	20	260°C	257°C	103	127	112	120	108	165	170	171	164	172	TH	TT
6	EX-23	2020/08/14	1230	RW	20	260°C	257°C	131	131	129	104	133	172	159	164	164	163	TH	TT

DETAIL CODE	PANEL NUMBER(S)	LOCATION DESCRIPTION	DETAIL TYPE	REPAIR TYPE	MACHINE NUMBER	REPAIR DATE YYYY-MM-DD	START TIME	WELD TECH	AIR TEMP °C	TEST DATE YYYY-MM-DD	TEST METH.	QC TECH
A	/											
B	/											
C	/											
D	/											
E	/											
F	/											
G	/											
H	/											
I	/											
J	/											
K	/											
L	/											
M	/											
N	/											
O	/											
P	/											
Q	/											
R	/											
S	/											
T	/											

DETAIL TYPE:

AD - ANIMAL DAMAGE	DS-# - DESTRUCT SAMPLE NUMBER	IO - INSUFFICIENT OVERLAP	T - THREE PANEL INTERSECTION
ATL - AIR TEST LEAK	EE - EARTHWORK EQUIPMENT DAMAGE	MD - MANUFACTURER/DELIVERY DAMAGE	VL - VACUUM TEST LEAK
BO - FUSION WELDER BURN	EXT - EXTENSION	P - PENETRATION	WR - WRINKLE
CR - CREASE	FM - FISHMOUTH	PT - PRESSURE TEST CUT	WS - WELDER RESTART
D - INSTALLATION DAMAGE	FS - FAILED SEAM LENGTH	SI - SOIL SURFACE IRREGULARITY	OTHER:

TEST METHOD:

AL - AIR LANCE	VB - VAC BOX
PS - POINT STRESS	ST - SPARK TEST

REPAIR TYPE:

G&W - GRIND & WELD	B - BOOT	P - PATCH
HAW - HOT AIR WELD	C - CAP	

REMARKS

QC TECH Thomas Howald

SUPERVISOR Chad Messervey

SUBMISSION DATE 2020/01/05

SHEET NUMBER 78 of 117

GEOMEMBRANE DETAIL & TEST LOG

PROJECT NUMBER CT001401 AREA / LAYER Primary

PROJECT TITLE Victoria Gold Heap Leach Pad Phase 1B

TRIAL SEAMS

#	MACHINE NUMBER	DATE YYYY-MM-DD	TIME	WELD TECH	AIR TEMP °C	PREHEAT TEMP °C	EXTRUDER TEMP °C	PEEL (PPI)					SHEAR (PPI)					CHK'D BY	REMARKS
1	EX-23	2020/08/14	1230	EA	20	260°C	257°C	135	135	152	140	130	149	153	161	153	151	TH	TT
2	EX-23	2020/08/14	1645	RW	20	260°C	257°C	110	121	110	115	111	149	171	172	157	167	TH	TT
3	EX-23	2020/08/14	1645	EA	20	260°C	257°C	112	115	110	106	108	150	144	151	164	149	TH	TT
4	EX-23	2020/08/15	1100	EA	20	260°C	257°C	175	171	129	157	162	184	176	182	184	193	TH	TT
5	EX-23	2020/08/15	1500	EA	20	260°C	257°C	129	138	140	132	141	159	179	159	169	168	TH	TT
6	EX-23	2020/08/16	1030	EA	20	260°C	507°C	133	143	148	149	138	175	174	175	167	165	TH	TT

DETAIL CODE	PANEL NUMBER(S)	LOCATION DESCRIPTION	DETAIL TYPE	REPAIR TYPE	MACHINE NUMBER	REPAIR DATE YYYY-MM-DD	START TIME	WELD TECH	AIR TEMP °C	TEST DATE YYYY-MM-DD	TEST METH.	QC TECH
A	/											
B	/											
C	/											
D	/											
E	/											
F	/											
G	/											
H	/											
I	/											
J	/											
K	/											
L	/											
M	/											
N	/											
O	/											
P	/											
Q	/											
R	/											
S	/											
T	/											

DETAIL TYPE:

AD - ANIMAL DAMAGE	DS-# - DESTRUCT SAMPLE NUMBER	IO - INSUFFICIENT OVERLAP	T - THREE PANEL INTERSECTION
ATL - AIR TEST LEAK	EE - EARTHWORK EQUIPMENT DAMAGE	MD - MANUFACTURER/DELIVERY DAMAGE	VL - VACUUM TEST LEAK
BO - FUSION WELDER BURN	EXT - EXTENSION	P - PENETRATION	WR - WRINKLE
CR - CREASE	FM - FISHMOUTH	PT - PRESSURE TEST CUT	WS - WELDER RESTART
D - INSTALLATION DAMAGE	FS - FAILED SEAM LENGTH	SI - SOIL SURFACE IRREGULARITY	OTHER:

TEST METHOD:

AL - AIR LANCE	VB - VAC BOX
PS - POINT STRESS	ST - SPARK TEST

REPAIR TYPE:

G&W - GRIND & WELD	B - BOOT	P - PATCH
HAW - HOT AIR WELD	C - CAP	

REMARKS

QC TECH Thomas Howald

SUPERVISOR Chad Messervey

SUBMISSION DATE 2020/01/05

SHEET NUMBER 79 of 117

GEOMEMBRANE DETAIL & TEST LOG

PROJECT NUMBER CT001401 AREA / LAYER Primary

PROJECT TITLE Victoria Gold Heap Leach Pad Phase 1B

TRIAL SEAMS

#	MACHINE NUMBER	DATE YYYY-MM-DD	TIME	WELD TECH	AIR TEMP °C	PREHEAT TEMP °C	EXTRUDER TEMP °C	PEEL (PPI)					SHEAR (PPI)					CHK'D BY	REMARKS
1	EX-23	2020/08/16	1430	EA	20	260°C	257°C	129	150	140	137	135	174	175	159	169	167	TH	TT
2																			
3																			
4																			
5																			
6																			

DETAIL CODE	PANEL NUMBER(S)	LOCATION DESCRIPTION	DETAIL TYPE	REPAIR TYPE	MACHINE NUMBER	REPAIR DATE YYYY-MM-DD	START TIME	WELD TECH	AIR TEMP °C	TEST DATE YYYY-MM-DD	TEST METH.	QC TECH
A	/											
B	/											
C	/											
D	/											
E	/											
F	/											
G	/											
H	/											
I	/											
J	/											
K	/											
L	/											
M	/											
N	/											
O	/											
P	/											
Q	/											
R	/											
S	/											
T	/											

DETAIL TYPE:

AD - ANIMAL DAMAGE	DS-# - DESTRUCT SAMPLE NUMBER	IO - INSUFFICIENT OVERLAP	T - THREE PANEL INTERSECTION
ATL - AIR TEST LEAK	EE - EARTHWORK EQUIPMENT DAMAGE	MD - MANUFACTURER/DELIVERY DAMAGE	VL - VACUUM TEST LEAK
BO - FUSION WELDER BURN	EXT - EXTENSION	P - PENETRATION	WR - WRINKLE
CR - CREASE	FM - FISHMOUTH	PT - PRESSURE TEST CUT	WS - WELDER RESTART
D - INSTALLATION DAMAGE	FS - FAILED SEAM LENGTH	SI - SOIL SURFACE IRREGULARITY	OTHER:

TEST METHOD:

AL - AIR LANCE	VB - VAC BOX
PS - POINT STRESS	ST - SPARK TEST

REPAIR TYPE:

G&W - GRIND & WELD	B - BOOT	P - PATCH
HAW - HOT AIR WELD	C - CAP	

REMARKS

QC TECH Thomas Howald

SUPERVISOR Chad Messervey

SUBMISSION DATE 2020/01/05

SHEET NUMBER 80 of 117

GEOMEMBRANE DETAIL & TEST LOG

PROJECT NUMBER CT001401 AREA / LAYER Primary

PROJECT TITLE Victoria Gold Heap Leach Pad Phase 1B

TRIAL SEAMS

#	MACHINE NUMBER	DATE YYYY-MM-DD	TIME	WELD TECH	AIR TEMP °C	PREHEAT TEMP °C	EXTRUDER TEMP °C	PEEL (PPI)					SHEAR (PPI)					CHK'D BY	REMARKS
1	EX-23	2020/08/15	1100	EA	20	260°C	257°C	175	171	129	157	162	184	176	182	184	193	TH	TT
2	EX-23	2020/08/15	1500	EA	20	260°C	257°C	129	138	140	132	141	159	179	159	169	168	TH	TT
3	EX-23	2020/08/16	1030	EA	20	260°C	507°C	133	143	148	149	138	175	174	175	167	165	TH	TT
4	EX-23	2020/08/16	1430	EA	20	260°C	257°C	129	150	140	137	135	174	175	159	169	167	TH	TT
5																			
6																			

DETAIL CODE	PANEL NUMBER(S)	LOCATION DESCRIPTION	DETAIL TYPE	REPAIR TYPE	MACHINE NUMBER	REPAIR DATE YYYY-MM-DD	START TIME	WELD TECH	AIR TEMP °C	TEST DATE YYYY-MM-DD	TEST METH.	QC TECH
39A	382 / 381	Intersection Of P383	T	G&W	EX-23	2020/08/16	1243	EA	20	2020/08/17	VB+PS	TH
39B	384 / 383	Intersection Of P382	T	G&W	EX-23	2020/08/16	1235	EA	20	2020/08/17	VB+PS	TH
39C	384 / 383	Intersection Of P385	T	G&W	EX-23	2020/08/16	1238	EA	20	2020/08/17	VB+PS	TH
39D	382 / 380	12m From EEOS	IO	G&W	EX-23	2020/08/16	1229	EA	20	2020/08/17	VB+PS	TH
39E	374 / 372	EEOS	BO	P	EX-23	2020/08/15	1345	EA	20	2020/08/17	VB+PS	TH
39F	372 / 370	EEOS	BO	P	EX-23	2020/08/16	1050	EA	20	2020/08/17	VB+PS	TH
39G	399 / 401	Intersection Of P387	T	G&W	EX-23	2020/08/16	1505	EA	20	2020/08/17	VB+PS	TH
39H	400 / 401	Intersection Of P399	T	G&W	EX-23	2020/08/16	1501	EA	20	2020/08/17	VB+PS	TH
39I	398 / 399	Intersection Of P387	T	G&W	EX-23	2020/08/16	1610	EA	20	2020/08/17	VB+PS	TH
39J	397 / 388	Intersection Of P387	T	G&W	EX-23	2020/08/16	1615	EA	20	2020/08/17	VB+PS	TH
39K	397 / 395	Intersection Of P387	T	G&W	EX-23	2020/08/16	1619	EA	20	2020/08/17	VB+PS	TH
39L	395 / 366	Intersection Of P397	T	G&W	EX-23	2020/08/16	1337	EA	20	2020/08/17	VB+PS	TH
39M	395 / 396	Intersection Of P394	T	G&W	EX-23	2020/08/16	1332	EA	20	2020/08/17	VB+PS	TH
39N	394 / 395	Intersection Of P387	T	G&W	EX-23	2020/08/16	1622	EA	20	2020/08/17	VB+PS	TH
39O	393 / 392	Intersection Of P394	T	G&W	EX-23	2020/08/16	1325	EA	20	2020/08/17	VB+PS	TH
39P	392 / 393	Intersection Of P388	T	G&W	EX-23	2020/08/16	1322	EA	20	2020/08/17	VB+PS	TH
39Q	392 / 394	Intersection Of P387	T	G&W	EX-23	2020/08/16	1624	EA	20	2020/08/17	VB+PS	TH
39R	388 / 392	Intersection Of P387	T	G&W	EX-23	2020/08/16	1635	EA	20	2020/08/17	VB+PS	TH
39S	388 / 389	Intersection Of P387	T	G&W	EX-23	2020/08/16	1638	EA	20	2020/08/17	VB+PS	TH
39T	390 / 389	Intersection Of P387	T	G&W	EX-23	2020/08/16	1644	EA	20	2020/08/17	VB+PS	TH

DETAIL TYPE:

AD - ANIMAL DAMAGE	DS-# - DESTRUCT SAMPLE NUMBER	IO - INSUFFICIENT OVERLAP	T - THREE PANEL INTERSECTION
ATL - AIR TEST LEAK	EE - EARTHWORK EQUIPMENT DAMAGE	MD - MANUFACTURER/DELIVERY DAMAGE	VL - VACUUM TEST LEAK
BO - FUSION WELDER BURN	EXT - EXTENSION	P - PENETRATION	WR - WRINKLE
CR - CREASE	FM - FISHMOUTH	PT - PRESSURE TEST CUT	WS - WELDER RESTART
D - INSTALLATION DAMAGE	FS - FAILED SEAM LENGTH	SI - SOIL SURFACE IRREGULARITY	OTHER:

TEST METHOD:

AL - AIR LANCE	VB - VAC BOX
PS - POINT STRESS	ST - SPARK TEST

REPAIR TYPE:

G&W - GRIND & WELD	B - BOOT	P - PATCH
HAW - HOT AIR WELD	C - CAP	

REMARKS

QC TECH Thomas Howald

SUPERVISOR Chad Messervey

SUBMISSION DATE 2020/01/05

SHEET NUMBER 81 of 117

GEOMEMBRANE DETAIL & TEST LOG

PROJECT NUMBER CT001401 AREA / LAYER Primary

PROJECT TITLE Victoria Gold Heap Leach Pad Phase 1B

TRIAL SEAMS

#	MACHINE NUMBER	DATE YYYY-MM-DD	TIME	WELD TECH	AIR TEMP °C	PREHEAT TEMP °C	EXTRUDER TEMP °C	PEEL (PPI)					SHEAR (PPI)					CHK'D BY	REMARKS
1	EX-23	2020/08/16	1030	EA	20	260°C	507°C	133	143	148	149	138	175	174	175	167	165	TH	TT
2	EX-23	2020/08/16	1430	EA	20	260°C	257°C	129	150	140	137	135	174	175	159	169	167	TH	TT
3	EX-4037	2020/08/19	830	EA	20	260°C	257°C	109	127	140	149	138	169	127	140	149	138	TH	TT
4	EX-4037	2020/08/19	1230	EA	20	260°C	257°C	125	125	126	137	132	141	146	148	151	167	TH	TT
5	EX-4037	2020/08/19	1635	EA	20	260°C	257°C	134	129	134	128	131	148	147	151	154	149	TH	TT
6																			

DETAIL CODE	PANEL NUMBER(S)	LOCATION DESCRIPTION	DETAIL TYPE	REPAIR TYPE	MACHINE NUMBER	REPAIR DATE YYYY-MM-DD	START TIME	WELD TECH	AIR TEMP °C	TEST DATE YYYY-MM-DD	TEST METH.	QC TECH
40A	390 / 391	Intersection Of P386	T	G&W	EX-23	2020/08/16	1650	EA	20	2020/08/17	VB+PS	TH
40B	386 / 391	Intersection Of P368	T	G&W	EX-23	2020/08/16	1654	EA	20	2020/08/17	VB+PS	TH
40C	387 / 386	Intersection Of P385	T	G&W	EX-23	2020/08/16	1646	EA	20	2020/08/17	VB+PS	TH
40D	391 / 390	Intersection Of P368	T	G&W	EX-23	2020/08/16	1701	EA	20	2020/08/17	VB+PS	TH
40E	389 / 390	Intersection Of P368	T	G&W	EX-23	2020/08/16	1706	EA	20	2020/08/17	VB+PS	TH
40F	388 / 389	Intersection Of P368	T	G&W	EX-23	2020/08/16	1711	EA	20	2020/08/17	VB+PS	TH
40G	386 / 385	Intersection Of P368	T	G&W	EX-23	2020/08/16	1717	EA	20	2020/08/17	VB+PS	TH
40H	383 / 385	Intersection Of P368	T	G&W	EX-23	2020/08/16	1725	EA	20	2020/08/17	VB+PS	TH
40I	381 / 383	Intersection Of P368	T	G&W	EX-23	2020/08/16	1728	EA	20	2020/08/17	VB+PS	TH
40J	379 / 381	Intersection Of P368	T	G&W	EX-23	2020/08/16	1740	EA	20	2020/08/17	VB+PS	TH
40K	377 / 379	Intersection Of P368	T	G&W	EX-23	2020/08/16	1743	EA	20	2020/08/17	VB+PS	TH
40L	375 / 377	Intersection Of P368	T	G&W	EX-23	2020/08/16	1747	EA	20	2020/08/17	VB+PS	TH
40M	373 / 375	Intersection Of P368	T	G&W	EX-23	2020/08/16	1750	EA	20	2020/08/17	VB+PS	TH
40N	371 / 373	Intersection Of P368	T	G&W	EX-23	2020/08/16	1754	EA	20	2020/08/17	VB+PS	TH
40O	367 / 368	Intersection Of P371	T	G&W	EX-23	2020/08/16	1801	EA	20	2020/08/17	VB+PS	TH
40P	369 / 371	Intersection Of P367	T	P	EX-23	2020/08/16	1809	EA	20	2020/08/17	VB+PS	TH
40Q	144 /	2m From NEOS .8m West	MD	P	EX-4037	2020/08/19	1350	EA	20	2020/08/19	VB+PS	TH
40R	127 /	19.2m From NEOS	MD	P	EX-4037	2020/08/19	1405	EA	20	2020/08/19	VB+PS	TH
40S	123 /	1.2m From NEOS	D	P	EX-4037	2020/08/19	1418	EA	20	2020/08/19	VB+PS	TH
40T	123 /	1.9m From NEOS	D	G&W	EX-4037	2020/08/19	1419	EA	20	2020/08/19	VB+PS	TH

DETAIL TYPE:

AD - ANIMAL DAMAGE	DS-# - DESTRUCT SAMPLE NUMBER	IO - INSUFFICIENT OVERLAP	T - THREE PANEL INTERSECTION
ATL - AIR TEST LEAK	EE - EARTHWORK EQUIPMENT DAMAGE	MD - MANUFACTURER/DELIVERY DAMAGE	VL - VACUUM TEST LEAK
BO - FUSION WELDER BURN	EXT - EXTENSION	P - PENETRATION	WR - WRINKLE
CR - CREASE	FM - FISHMOUTH	PT - PRESSURE TEST CUT	WS - WELDER RESTART
D - INSTALLATION DAMAGE	FS - FAILED SEAM LENGTH	SI - SOIL SURFACE IRREGULARITY	OTHER:

TEST METHOD:

AL - AIR LANCE	VB - VAC BOX
PS - POINT STRESS	ST - SPARK TEST

REPAIR TYPE:

G&W - GRIND & WELD	B - BOOT	P - PATCH
HAW - HOT AIR WELD	C - CAP	

REMARKS

QC TECH Thomas Howald

SUPERVISOR Chad Messervey

SUBMISSION DATE 2020/01/05

SHEET NUMBER 82 of 117

GEOMEMBRANE DETAIL & TEST LOG

PROJECT NUMBER CT001401 AREA / LAYER Primary

PROJECT TITLE Victoria Gold Heap Leach Pad Phase 1B

TRIAL SEAMS

#	MACHINE NUMBER	DATE YYYY-MM-DD	TIME	WELD TECH	AIR TEMP °C	PREHEAT TEMP °C	EXTRUDER TEMP °C	PEEL (PPI)					SHEAR (PPI)					CHK'D BY	REMARKS
1	EX-4037	2020/08/17	850	EA	20	260°C	257°C	94	90	104	116	119	166	162	173	176	171	TH	TT
2	EX-4037	2020/08/17	1250	EA	20	260°C	257°C	131	132	115	125	134	157	163	165	160	160	TH	TT
3	EX-4037	2020/08/19	830	EA	20	260°C	257°C	109	127	140	149	138	169	127	140	149	138	TH	TT
4	EX-4037	2020/08/19	1230	EA	20	260°C	257°C	125	125	126	137	132	141	146	148	151	167	TH	TT
5	EX-4037	2020/08/19	1635	EA	20	260°C	257°C	134	129	134	128	131	148	147	151	154	149	TH	TT
6																			

DETAIL CODE	PANEL NUMBER(S)	LOCATION DESCRIPTION	DETAIL TYPE	REPAIR TYPE	MACHINE NUMBER	REPAIR DATE YYYY-MM-DD	START TIME	WELD TECH	AIR TEMP °C	TEST DATE YYYY-MM-DD	TEST METH.	QC TECH
41A	110 /	5.4m From SEOS .9m West	SI	P	EX-4037	2020/08/19	1430	EA	20	2020/08/19	VB+PS	TH
41B	111 /	29.9m From SEOS 1.5m East	MD	P	EX-4037	2020/08/19	1422	EA	20	2020/08/19	VB+PS	TH
41C	3 /	10.1m From SEOS 2.1m West	D	G&W	EX-4037	2020/08/19	1435	EA	20	2020/08/19	VB+PS	TH
41D	407 / 408	Intersection Of P404	T	G&W	EX-4037	2020/08/19	1744	EA	20	2020/08/24	VB+PS	TH
41E	407 / 408	Intersection Of P411	T	G&W	EX-4037	2020/08/19	1747	EA	20	2020/08/24	VB+PS	TH
41F	410 / 411	Intersection Of P407	T	G&W	EX-4037	2020/08/19	1748	EA	20	2020/08/24	VB+PS	TH
41G	411 / 410	Intersection Of P414	T	G&W	EX-4037	2020/08/19	1750	EA	20	2020/08/24	VB+PS	TH
41H	414 / 413	Intersection Of P410	T	G&W	EX-4037	2020/08/19	1752	EA	20	2020/08/24	VB+PS	TH
41I	410 / 413	11m From EEOS	IO	P	EX-4037	2020/08/19	1803	EA	20	2020/08/24	VB+PS	TH
41J	414 / 413	Intersection Of P417	T	G&W	EX-4037	2020/08/19	1757	EA	20	2020/08/24	VB+PS	TH
41K	416 / 417	Intersection Of P419	T	G&W	EX-4037	2020/08/19	1759	EA	20	2020/08/24	VB+PS	TH
41L	404 / 405	Intersection Of P408	T	G&W	EX-4037	2020/08/19	1741	EA	20	2020/08/24	VB+PS	TH
41M	404 / 405	Intersection Of P369	T	G&W	EX-4037	2020/08/19	1644	EA	20	2020/08/24	VB+PS	TH
41N	369 / 405	13.6m From EEOS	WS	P	EX-4037	2020/08/19	1628	EA	20	2020/08/24	VB+PS	TH
41O	370 / 369	Intersection Of 405	T	G&W	EX-4037	2020/08/19	1619	EA	20	2020/08/24	VB+PS	TH
41P	370 / 405	EEOS	WS	P	EX-4037	2020/08/19	1616	EA	20	2020/08/24	VB+PS	TH
41Q	369 / 367	Intersection of P404	T	G&W	EX-4037	2020/08/17	1554	EA	20	2020/08/24	VB+PS	TH
41R	367 / 365	Intersection of P404	T	G&W	EX-4037	2020/08/17	1547	EA	20	2020/08/24	VB+PS	TH
41S	365 / 363	Intersection of P404	T	G&W	EX-4037	2020/08/17	1605	EA	20	2020/08/24	VB+PS	TH
41T	362 / 359	Intersection of P404	T	G&W	EX-4037	2020/08/17	1607	EA	20	2020/08/24	VB+PS	TH

DETAIL TYPE:

AD - ANIMAL DAMAGE	DS-# - DESTRUCT SAMPLE NUMBER	IO - INSUFFICIENT OVERLAP	T - THREE PANEL INTERSECTION
ATL - AIR TEST LEAK	EE - EARTHWORK EQUIPMENT DAMAGE	MD - MANUFACTURER/DELIVERY DAMAGE	VL - VACUUM TEST LEAK
BO - FUSION WELDER BURN	EXT - EXTENSION	P - PENETRATION	WR - WRINKLE
CR - CREASE	FM - FISHMOUTH	PT - PRESSURE TEST CUT	WS - WELDER RESTART
D - INSTALLATION DAMAGE	FS - FAILED SEAM LENGTH	SI - SOIL SURFACE IRREGULARITY	OTHER:

TEST METHOD:

AL - AIR LANCE	VB - VAC BOX
PS - POINT STRESS	ST - SPARK TEST

REPAIR TYPE:

G&W - GRIND & WELD	B - BOOT	P - PATCH
HAW - HOT AIR WELD	C - CAP	

REMARKS

QC TECH Thomas Howald

SUPERVISOR Chad Messervey

SUBMISSION DATE 2020/01/05

SHEET NUMBER 83 of 117

GEOMEMBRANE DETAIL & TEST LOG

PROJECT NUMBER CT001401 AREA / LAYER Primary

PROJECT TITLE Victoria Gold Heap Leach Pad Phase 1B

TRIAL SEAMS

#	MACHINE NUMBER	DATE YYYY-MM-DD	TIME	WELD TECH	AIR TEMP °C	PREHEAT TEMP °C	EXTRUDER TEMP °C	PEEL (PPI)					SHEAR (PPI)					CHK'D BY	REMARKS
1	EX-4037	2020/08/17	850	EA	20	260°C	257°C	94	90	104	116	119	166	162	173	176	171	TH	TT
2	EX-4037	2020/08/17	1250	EA	20	260°C	257°C	131	132	115	125	134	157	163	165	160	160	TH	TT
3	EX-4037	2020/08/19	830	EA	20	260°C	257°C	109	127	140	149	138	169	127	140	149	138	TH	TT
4	EX-4037	2020/08/19	1230	EA	20	260°C	257°C	125	125	126	137	132	141	146	148	151	167	TH	TT
5	EX-4037	2020/08/19	1635	EA	20	260°C	257°C	134	129	134	128	131	148	147	151	154	149	TH	TT
6	EX-4037	2020/08/20	1230	RW	20	260°C	257°C	134	134	109	101	107	153	158	150	160	147	TH	TT

DETAIL CODE	PANEL NUMBER(S)	LOCATION DESCRIPTION	DETAIL TYPE	REPAIR TYPE	MACHINE NUMBER	REPAIR DATE YYYY-MM-DD	START TIME	WELD TECH	AIR TEMP °C	TEST DATE YYYY-MM-DD	TEST METH.	QC TECH
42A	359 / 357	Intersection of P404	T	G&W	EX-4037	2020/08/17	1618	EA	20	2020/08/24	VB+PS	TH
42B	355 / 357	Intersection of P404	T	G&W	EX-4037	2020/08/17	1620	EA	20	2020/08/24	VB+PS	TH
42C	351 / 355	Intersection of P404	T	G&W	EX-4037	2020/08/17	1625	EA	20	2020/08/24	VB+PS	TH
42D	345 / 351	Intersection Of P351	T	G&W	EX-4037	2020/08/17	1635	EA	20	2020/08/24	VB+PS	TH
42E	285 / 282	Intersection of P404	T	G&W	EX-4037	2020/08/19	1010	EA	15	2020/08/24	VB+PS	TH
42F	282 / 287	Intersection of P404	T	G&W	EX-4037	2020/08/19	1015	EA	15	2020/08/24	VB+PS	TH
42G	287 / 275	Intersection Of P403	T	P	EX-4037	2020/08/19	1020	EA	15	2020/08/24	VB+PS	TH
42H	275 / 273	SEOS	D	P	EX-4037	2020/08/19	1055	EA	15	2020/08/24	VB+PS	TH
42I	275 / 273	Intersection Of P403	T	P	EX-4037	2020/08/19	1302	EA	15	2020/08/24	VB+PS	TH
42J	273 / 272	Intersection Of P403	T	P	EX-4037	2020/08/19	1100	EA	15	2020/08/24	VB+PS	TH
42K	272 / 271	Intersection Of P403	T	P	EX-4037	2020/08/19	1105	EA	15	2020/08/24	VB+PS	TH
42L	271 / 270	Intersection Of P403	T	G&W	EX-4037	2020/08/19	1108	EA	15	2020/08/24	VB+PS	TH
42M	404 / 403	Intersection Of P407	T	G&W	EX-4037	2020/08/20	1322	RW	20	2020/08/24	VB+PS	TH
42N	406 / 407	Intersection Of P403	T	G&W	EX-4037	2020/08/20	1325	RW	20	2020/08/24	VB+PS	TH
42O	406 / 407	Intersection Of P410	T	G&W	EX-4037	2020/08/20	1328	RW	20	2020/08/24	VB+PS	TH
42P	409 / 410	Intersection Of P406	T	G&W	EX-4037	2020/08/20	1344	RW	20	2020/08/24	VB+PS	TH
42Q	409 / 410	Intersection Of P413	T	P	EX-4037	2020/08/20	1351	RW	20	2020/08/24	VB+PS	TH
42R	412 / 413	Intersection Of P409	T	G&W	EX-4037	2020/08/20	1358	RW	20	2020/08/24	VB+PS	TH
42S	412 / 413	Intersection Of P416	T	P	EX-4037	2020/08/20	1434	RW	20	2020/08/24	VB+PS	TH
42T	415 / 416	Intersection Of P412	T	G&W	EX-4037	2020/08/20	1423	RW	20	2020/08/24	VB+PS	TH

DETAIL TYPE:

AD - ANIMAL DAMAGE	DS-# - DESTRUCT SAMPLE NUMBER	IO - INSUFFICIENT OVERLAP	T - THREE PANEL INTERSECTION
ATL - AIR TEST LEAK	EE - EARTHWORK EQUIPMENT DAMAGE	MD - MANUFACTURER/DELIVERY DAMAGE	VL - VACUUM TEST LEAK
BO - FUSION WELDER BURN	EXT - EXTENSION	P - PENETRATION	WR - WRINKLE
CR - CREASE	FM - FISHMOUTH	PT - PRESSURE TEST CUT	WS - WELDER RESTART
D - INSTALLATION DAMAGE	FS - FAILED SEAM LENGTH	SI - SOIL SURFACE IRREGULARITY	OTHER:

TEST METHOD:

AL - AIR LANCE	VB - VAC BOX
PS - POINT STRESS	ST - SPARK TEST

REPAIR TYPE:

G&W - GRIND & WELD	B - BOOT	P - PATCH
HAW - HOT AIR WELD	C - CAP	

REMARKS

QC TECH Thomas Howald

SUPERVISOR Chad Messervey

SUBMISSION DATE 2020/01/05

SHEET NUMBER 84 of 117

GEOMEMBRANE DETAIL & TEST LOG

PROJECT NUMBER CT001401 AREA / LAYER Primary

PROJECT TITLE Victoria Gold Heap Leach Pad Phase 1B

TRIAL SEAMS

#	MACHINE NUMBER	DATE YYYY-MM-DD	TIME	WELD TECH	AIR TEMP °C	PREHEAT TEMP °C	EXTRUDER TEMP °C	PEEL (PPI)					SHEAR (PPI)					CHK'D BY	REMARKS
1	EX-4037	2020/08/20	1600	RW	20	260°C	257°C	134	132	133	110	115	145	140	135	139	129	TH	TT
2																			
3																			
4																			
5																			
6																			

DETAIL CODE	PANEL NUMBER(S)	LOCATION DESCRIPTION	DETAIL TYPE	REPAIR TYPE	MACHINE NUMBER	REPAIR DATE YYYY-MM-DD	START TIME	WELD TECH	AIR TEMP °C	TEST DATE YYYY-MM-DD	TEST METH.	QC TECH
A	/											
B	/											
C	/											
D	/											
E	/											
F	/											
G	/											
H	/											
I	/											
J	/											
K	/											
L	/											
M	/											
N	/											
O	/											
P	/											
Q	/											
R	/											
S	/											
T	/											

DETAIL TYPE:

AD - ANIMAL DAMAGE	DS-# - DESTRUCT SAMPLE NUMBER	IO - INSUFFICIENT OVERLAP	T - THREE PANEL INTERSECTION
ATL - AIR TEST LEAK	EE - EARTHWORK EQUIPMENT DAMAGE	MD - MANUFACTURER/DELIVERY DAMAGE	VL - VACUUM TEST LEAK
BO - FUSION WELDER BURN	EXT - EXTENSION	P - PENETRATION	WR - WRINKLE
CR - CREASE	FM - FISHMOUTH	PT - PRESSURE TEST CUT	WS - WELDER RESTART
D - INSTALLATION DAMAGE	FS - FAILED SEAM LENGTH	SI - SOIL SURFACE IRREGULARITY	OTHER:

TEST METHOD:

AL - AIR LANCE	VB - VAC BOX
PS - POINT STRESS	ST - SPARK TEST

REPAIR TYPE:

G&W - GRIND & WELD	B - BOOT	P - PATCH
HAW - HOT AIR WELD	C - CAP	

REMARKS

QC TECH Thomas Howald

SUPERVISOR Chad Messervey

SUBMISSION DATE 2020/01/05

SHEET NUMBER 85 of 117

GEOMEMBRANE DETAIL & TEST LOG

PROJECT NUMBER CT001401 AREA / LAYER Primary

PROJECT TITLE Victoria Gold Heap Leach Pad Phase 1B

TRIAL SEAMS

#	MACHINE NUMBER	DATE YYYY-MM-DD	TIME	WELD TECH	AIR TEMP °C	PREHEAT TEMP °C	EXTRUDER TEMP °C	PEEL (PPI)					SHEAR (PPI)					CHK'D BY	REMARKS
1	EX-4037	2020/08/20	1230	RW	20	260°C	257°C	134	134	109	101	107	153	158	150	160	147	TH	TT
2	EX-4037	2020/08/20	1600	RW	20	260°C	257°C	134	132	133	110	115	145	140	135	139	129	TH	TT
3	EX-4037	2020/08/21	800	EA	15	260°C	257°C	115	104	120	139	115	141	143	143	150	152	TH	TT
4	EX-4037	2020/08/21	1300	EA	20	260°C	257°C	154	133	106	139	140	120	175	176	183	158	TH	TT
5																			
6																			

DETAIL CODE	PANEL NUMBER(S)	LOCATION DESCRIPTION	DETAIL TYPE	REPAIR TYPE	MACHINE NUMBER	REPAIR DATE YYYY-MM-DD	START TIME	WELD TECH	AIR TEMP °C	TEST DATE YYYY-MM-DD	TEST METH.	QC TECH
43A	415 / 416	Intersection Of P418	T	G&W	EX-4037	2020/08/20	1441	RW	20	2020/08/24	VB+PS	TH
43B	407 / 410	12.3m From WEOS	IO	P	EX-4037	2020/08/20	1843	RW	20	2020/08/24	VB+PS	TH
43C	417 / 416	Intersection Of P419	T	G&W	EX-4037	2020/08/21	944	EA	15	2020/08/24	VB+PS	TH
43D	420 / 419	Intersection Of P417	T	G&W	EX-4037	2020/08/20	1739	RW	20	2020/08/24	VB+PS	TH
43E	420 / 419	Intersection Of P423	T	G&W	EX-4037	2020/08/20	1735	RW	20	2020/08/24	VB+PS	TH
43F	423 / 422	Intersection Of P419	T	G&W	EX-4037	2020/08/20	1730	RW	20	2020/08/24	VB+PS	TH
43G	423 / 422	Intersection Of P426	T	G&W	EX-4037	2020/08/20	1723	RW	20	2020/08/24	VB+PS	TH
43H	426 / 425	Intersection Of P157	T	G&W	EX-4037	2020/08/20	1718	RW	20	2020/08/24	VB+PS	TH
43I	426 / 425	Intersection Of P429	T	G&W	EX-4037	2020/08/20	1715	RW	20	2020/08/24	VB+PS	TH
43J	429 / 428	Intersection Of P425	T	G&W	EX-4037	2020/08/20	1713	RW	20	2020/08/24	VB+PS	TH
43K	429 / 431	Intersection Of P432	T	P	EX-4037	2020/08/20	1710	RW	20	2020/08/24	VB+PS	TH
43L	432 / 431	Intersection Of P428	T	G&W	EX-4037	2020/08/20	1814	RW	20	2020/08/24	VB+PS	TH
43M	432 / 431	Intersection Of P435	T	G&W	EX-4037	2020/08/20	1816	RW	20	2020/08/24	VB+PS	TH
43N	435 / 434	Intersection Of P431	T	G&W	EX-4037	2020/08/20	1818	RW	20	2020/08/24	VB+PS	TH
43O	435 / 434	Intersection Of P439	T	G&W	EX-4037	2020/08/20	1821	RW	20	2020/08/24	VB+PS	TH
43P	439 / 437	Intersection Of P434	T	G&W	EX-4037	2020/08/20	1828	RW	20	2020/08/24	VB+PS	TH
43Q	438 /	1m South	D	P	EX-4037	2020/08/20	1833	RW	20	2020/08/24	VB+PS	TH
43R	438 /	2m South	D	P	EX-4037	2020/08/20	1836	RW	20	2020/08/24	VB+PS	TH
43S	414 / 417	24.2m From EEOS	IO	P	EX-4037	2020/08/21	831	EA	15	2020/08/24	VB+PS	TH
43T	418 / 419	Intersection Of P416	T	G&W	EX-4037	2020/08/21	951	EA	15	2020/08/24	VB+PS	TH

DETAIL TYPE:

AD - ANIMAL DAMAGE	DS-# - DESTRUCT SAMPLE NUMBER	IO - INSUFFICIENT OVERLAP	T - THREE PANEL INTERSECTION
ATL - AIR TEST LEAK	EE - EARTHWORK EQUIPMENT DAMAGE	MD - MANUFACTURER/DELIVERY DAMAGE	VL - VACUUM TEST LEAK
BO - FUSION WELDER BURN	EXT - EXTENSION	P - PENETRATION	WR - WRINKLE
CR - CREASE	FM - FISHMOUTH	PT - PRESSURE TEST CUT	WS - WELDER RESTART
D - INSTALLATION DAMAGE	FS - FAILED SEAM LENGTH	SI - SOIL SURFACE IRREGULARITY	OTHER:

TEST METHOD:

AL - AIR LANCE	VB - VAC BOX
PS - POINT STRESS	ST - SPARK TEST

REPAIR TYPE:

G&W - GRIND & WELD	B - BOOT	P - PATCH
HAW - HOT AIR WELD	C - CAP	

REMARKS

QC TECH Thomas Howald

SUPERVISOR Chad Messervey

SUBMISSION DATE 2020/01/05

SHEET NUMBER 86 of 117

GEOMEMBRANE DETAIL & TEST LOG

PROJECT NUMBER CT001401 AREA / LAYER Primary

PROJECT TITLE Victoria Gold Heap Leach Pad Phase 1B

TRIAL SEAMS

#	MACHINE NUMBER	DATE YYYY-MM-DD	TIME	WELD TECH	AIR TEMP °C	PREHEAT TEMP °C	EXTRUDER TEMP °C	PEEL (PPI)					SHEAR (PPI)					CHK'D BY	REMARKS
1	EX-4037	2020/08/21	800	EA	15	260°C	257°C	115	104	120	139	115	141	143	143	150	152	TH	TT
2	EX-4037	2020/08/21	1300	EA	20	260°C	257°C	154	133	106	139	140	120	175	176	183	158	TH	TT
3	EX-35	2020/08/22	830	EA	15	260°C	257°C	103	104	121	105	106	152	152	151	153	148	TH	SS
4	EX-35	2020/08/22	1230	EA	20	260°C	257°C	140	141	145	146	151	171	139	161	157	161	TH	TT
5	EX-35	2020/08/22	1605	EA	20	260°C	257°C	114	116	120	117	122	135	143	145	146	136	TH	TT
6																			

DETAIL CODE	PANEL NUMBER(S)	LOCATION DESCRIPTION	DETAIL TYPE	REPAIR TYPE	MACHINE NUMBER	REPAIR DATE YYYY-MM-DD	START TIME	WELD TECH	AIR TEMP °C	TEST DATE YYYY-MM-DD	TEST METH.	QC TECH
44A	419 / 418	Intersection Of P422	T	G&W	EX-4037	2020/08/21	953	EA	15	2020/08/24	VB+PS	TH
44B	421 / 422	Intersection Of P418	T	G&W	EX-4037	2020/08/21	1010	EA	15	2020/08/24	VB+PS	TH
44C	422 / 421	Intersection Of P425	T	G&W	EX-4037	2020/08/21	1012	EA	15	2020/08/24	VB+PS	TH
44D	424 / 425	Intersection Of P421	T	G&W	EX-4037	2020/08/21	1018	EA	15	2020/08/24	VB+PS	TH
44E	424 / 425	Intersection Of P428	T	G&W	EX-4037	2020/08/21	1022	EA	15	2020/08/24	VB+PS	TH
44F	427 / 428	Intersection Of P424	T	G&W	EX-4037	2020/08/21	1031	EA	15	2020/08/24	VB+PS	TH
44G	427 / 428	3m From NEOS	WS	G&W	EX-4037	2020/08/21	1033	EA	15	2020/08/24	VB+PS	TH
44H	427 / 428	Intersection Of P431	T	G&W	EX-4037	2020/08/21	1035	EA	15	2020/08/24	VB+PS	TH
44I	430 / 431	Intersection Of P427	T	G&W	EX-4037	2020/08/21	1043	EA	15	2020/08/24	VB+PS	TH
44J	431 / 430	Intersection Of P434	T	G&W	EX-4037	2020/08/21	1046	EA	15	2020/08/24	VB+PS	TH
44K	433 / 434	Intersection Of P430	T	G&W	EX-4037	2020/08/21	1057	EA	15	2020/08/24	VB+PS	TH
44L	433 / 434	Intersection Of P437	T	G&W	EX-4037	2020/08/21	1059	EA	15	2020/08/24	VB+PS	TH
44M	436 / 437	Intersection Of P433	T	G&W	EX-4037	2020/08/21	1101	EA	15	2020/08/24	VB+PS	TH
44N	436 / 437	Intersection Of P441	T	G&W	EX-4037	2020/08/21	1618	EA	20	2020/08/24	VB+PS	TH
44O	426 / 425	3m From NEOS	WS	G&W	EX-4037	2020/08/21	1659	EA	20	2020/08/24	VB+PS	TH
44P	439 / 437	Intersection Of P442	T	G&W	EX-4037	2020/08/21	1322	EA	20	2020/08/24	VB+PS	TH
44Q	445 /	15.6m From EEOS 1m North	WR	P	EX-4037	2020/08/21	1658	EA	20	2020/08/24	VB+PS	TH
44R	445 / 448	15.6m From EEOS	WR	G&W	EX-4037	2020/08/21	1657	EA	20	2020/08/24	VB+PS	TH
44S	442 / 441	Intersection Of P437	T	G&W	EX-35	2020/08/22	1317	EA	20	2020/08/24	VB+PS	TH
44T	442 / 441	Intersection Of P445	T	P	EX-35	2020/08/22	1315	EA	20	2020/08/24	VB+PS	TH

DETAIL TYPE:

AD - ANIMAL DAMAGE	DS-# - DESTRUCT SAMPLE NUMBER	IO - INSUFFICIENT OVERLAP	T - THREE PANEL INTERSECTION
ATL - AIR TEST LEAK	EE - EARTHWORK EQUIPMENT DAMAGE	MD - MANUFACTURER/DELIVERY DAMAGE	VL - VACUUM TEST LEAK
BO - FUSION WELDER BURN	EXT - EXTENSION	P - PENETRATION	WR - WRINKLE
CR - CREASE	FM - FISHMOUTH	PT - PRESSURE TEST CUT	WS - WELDER RESTART
D - INSTALLATION DAMAGE	FS - FAILED SEAM LENGTH	SI - SOIL SURFACE IRREGULARITY	OTHER:

TEST METHOD:

AL - AIR LANCE	VB - VAC BOX
PS - POINT STRESS	ST - SPARK TEST

REPAIR TYPE:

G&W - GRIND & WELD	B - BOOT	P - PATCH
HAW - HOT AIR WELD	C - CAP	

REMARKS

QC TECH Thomas Howald

SUPERVISOR Chad Messervey

SUBMISSION DATE 2020/01/05

SHEET NUMBER 87 of 117

GEOMEMBRANE DETAIL & TEST LOG

PROJECT NUMBER CT001401 AREA / LAYER Primary

PROJECT TITLE Victoria Gold Heap Leach Pad Phase 1B

TRIAL SEAMS

#	MACHINE NUMBER	DATE YYYY-MM-DD	TIME	WELD TECH	AIR TEMP °C	PREHEAT TEMP °C	EXTRUDER TEMP °C	PEEL (PPI)					SHEAR (PPI)					CHK'D BY	REMARKS
1	EX-4037	2020/08/21	800	EA	15	260°C	257°C	115	104	120	139	115	141	143	143	150	152	TH	TT
2	EX-4037	2020/08/21	1300	EA	20	260°C	257°C	154	133	106	139	140	120	175	176	183	158	TH	TT
3	EX-35	2020/08/22	830	EA	15	260°C	257°C	103	104	121	105	106	152	152	151	153	148	TH	SS
4	EX-35	2020/08/22	1230	EA	20	260°C	257°C	140	141	145	146	151	171	139	161	157	161	TH	TT
5	EX-35	2020/08/22	1605	EA	20	260°C	257°C	114	116	120	117	122	135	143	145	146	136	TH	TT
6																			

DETAIL CODE	PANEL NUMBER(S)	LOCATION DESCRIPTION	DETAIL TYPE	REPAIR TYPE	MACHINE NUMBER	REPAIR DATE YYYY-MM-DD	START TIME	WELD TECH	AIR TEMP °C	TEST DATE YYYY-MM-DD	TEST METH.	QC TECH
45A	445 / 444	Intersection Of P441	T	G&W	EX-35	2020/08/22	1311	EA	20	2020/08/24	VB+PS	TH
45B	445 / 444	Intersection Of P448	T	G&W	EX-35	2020/08/22	1307	EA	20	2020/08/24	VB+PS	TH
45C	447 / 448	Intersection Of P444	T	G&W	EX-35	2020/08/22	1305	EA	20	2020/08/24	VB+PS	TH
45D	448 / 447	Intersection Of P451	T	P	EX-35	2020/08/22	1104	EA	15	2020/08/24	VB+PS	TH
45E	451 / 450	Intersection Of P447	T	P	EX-35	2020/08/22	1113	EA	15	2020/08/24	VB+PS	TH
45F	447 / 450	10m From EEOS	WS	P	EX-35	2020/08/22	1242	EA	20	2020/08/24	VB+PS	TH
45G	451 / 450	Intersection Of P454	T	P	EX-35	2020/08/22	1047	EA	15	2020/08/24	VB+PS	TH
45H	453 / 454	Intersection Of P450	T	P	EX-35	2020/08/22	1036	EA	15	2020/08/24	VB+PS	TH
45I	454 / 453	Intersection Of P457	T	G&W	EX-35	2020/08/22	1052	EA	15	2020/08/24	VB+PS	TH
45J	456 / 457	Intersection Of P453	T	G&W	EX-35	2020/08/22	1055	EA	15	2020/08/24	VB+PS	TH
45K	440 / 441	Intersection Of P436	T	G&W	EX-4037	2020/08/21	1620	EA	20	2020/08/24	VB+PS	TH
45L	440 / 441	Intersection Of P444	T	G&W	EX-4037	2020/08/21	1622	EA	20	2020/08/24	VB+PS	TH
45M	443 / 444	Intersection Of P440	T	G&W	EX-4037	2020/08/21	1625	EA	20	2020/08/24	VB+PS	TH
45N	444 / 443	3m From NEOS	BO	G&W	EX-4037	2020/08/21	1627	EA	20	2020/08/24	VB+PS	TH
45O	444 / 443	Intersection Of P447	T	G&W	EX-4037	2020/08/21	1629	EA	20	2020/08/24	VB+PS	TH
45P	446 / 447	Intersection Of P443	T	G&W	EX-4037	2020/08/21	1631	EA	20	2020/08/24	VB+PS	TH
45Q	447 / 446	Intersection Of P450	T	G&W	EX-35	2020/08/22	1447	EA	20	2020/08/24	VB+PS	TH
45R	447 /	1m From SEOS 2.1m North	D	P	EX-4037	2020/08/21	1638	EA	20	2020/08/24	VB+PS	TH
45S	447 /	1m From SEOS .5m South	D	P	EX-4037	2020/08/21	1640	EA	20	2020/08/24	VB+PS	TH
45T	450 / 449	Intersection Of P446	T	G&W	EX-35	2020/08/22	1445	EA	20	2020/08/24	VB+PS	TH

DETAIL TYPE:

AD - ANIMAL DAMAGE	DS-# - DESTRUCT SAMPLE NUMBER	IO - INSUFFICIENT OVERLAP	T - THREE PANEL INTERSECTION
ATL - AIR TEST LEAK	EE - EARTHWORK EQUIPMENT DAMAGE	MD - MANUFACTURER/DELIVERY DAMAGE	VL - VACUUM TEST LEAK
BO - FUSION WELDER BURN	EXT - EXTENSION	P - PENETRATION	WR - WRINKLE
CR - CREASE	FM - FISHMOUTH	PT - PRESSURE TEST CUT	WS - WELDER RESTART
D - INSTALLATION DAMAGE	FS - FAILED SEAM LENGTH	SI - SOIL SURFACE IRREGULARITY	OTHER:

TEST METHOD:

AL - AIR LANCE	VB - VAC BOX
PS - POINT STRESS	ST - SPARK TEST

REPAIR TYPE:

G&W - GRIND & WELD	B - BOOT	P - PATCH
HAW - HOT AIR WELD	C - CAP	

REMARKS

QC TECH Thomas Howald

SUPERVISOR Chad Messervey

SUBMISSION DATE 2020/01/05

SHEET NUMBER 88 of 117

GEOMEMBRANE DETAIL & TEST LOG

PROJECT NUMBER CT001401 AREA / LAYER Primary

PROJECT TITLE Victoria Gold Heap Leach Pad Phase 1B

TRIAL SEAMS

#	MACHINE NUMBER	DATE YYYY-MM-DD	TIME	WELD TECH	AIR TEMP °C	PREHEAT TEMP °C	EXTRUDER TEMP °C	PEEL (PPI)					SHEAR (PPI)					CHK'D BY	REMARKS
1	EX-4037	2020/08/21	800	EA	15	260°C	257°C	115	104	120	139	115	141	143	143	150	152	TH	TT
2	EX-4037	2020/08/21	1300	EA	20	260°C	257°C	154	133	106	139	140	120	175	176	183	158	TH	TT
3	EX-35	2020/08/22	830	EA	15	260°C	257°C	103	104	121	105	106	152	152	151	153	148	TH	SS
4	EX-35	2020/08/22	1230	EA	20	260°C	257°C	140	141	145	146	151	171	139	161	157	161	TH	TT
5	EX-35	2020/08/22	1605	EA	20	260°C	257°C	114	116	120	117	122	135	143	145	146	136	TH	TT
6																			

DETAIL CODE	PANEL NUMBER(S)	LOCATION DESCRIPTION	DETAIL TYPE	REPAIR TYPE	MACHINE NUMBER	REPAIR DATE YYYY-MM-DD	START TIME	WELD TECH	AIR TEMP °C	TEST DATE YYYY-MM-DD	TEST METH.	QC TECH
46A	449 / 450	Intersection Of P453	T	G&W	EX-35	2020/08/22	1443	EA	20	2020/08/24	VB+PS	TH
46B	452 / 453	Intersection Of P449	T	G&W	EX-35	2020/08/22	1441	EA	20	2020/08/24	VB+PS	TH
46C	453 /	1.1m From WEOS 1m South	D	P	EX-35	2020/08/22	1421	EA	20	2020/08/24	VB+PS	TH
46D	453 / 452	Intersection Of P456	T	G&W	EX-35	2020/08/22	1423	EA	20	2020/08/24	VB+PS	TH
46E	456 / 455	Intersection Of P452	T	G&W	EX-35	2020/08/22	1425	EA	20	2020/08/24	VB+PS	TH
46F	455 / 456	Intersection Of P459	T	G&W	EX-35	2020/08/22	1426	EA	20	2020/08/24	VB+PS	TH
46G	458 / 459	Intersection Of P455	T	G&W	EX-35	2020/08/22	1428	EA	20	2020/08/24	VB+PS	TH
46H	459 / 458	Intersection Of P461	T	G&W	EX-35	2020/08/22	1706	EA	20	2020/08/24	VB+PS	TH
46I	462 / 461	Intersection Of P459	T	G&W	EX-35	2020/08/22	1703	EA	20	2020/08/24	VB+PS	TH
46J	461 / 462	Intersection Of P464	T	G&W	EX-35	2020/08/22	1700	EA	20	2020/08/24	VB+PS	TH
46K	465 / 464	Intersection Of P462	T	G&W	EX-35	2020/08/22	1656	EA	20	2020/08/24	VB+PS	TH
46L	416 /	1.1m From NEOS 2.1m North	D	P	EX-4037	2020/08/21	925	EA	15	2020/08/24	VB+PS	TH
46M	457 / 456	Intersection Of P460	T	G&W	EX-35	2020/08/22	1632	EA	20	2020/08/24	VB+PS	TH
46N	460 / 459	Intersection Of P456	T	G&W	EX-35	2020/08/22	1632	EA	20	2020/08/24	VB+PS	TH
46O	460 / 459	Intersection Of P462	T	G&W	EX-35	2020/08/22	1636	EA	20	2020/08/24	VB+PS	TH
46P	463 / 462	Intersection Of P460	T	G&W	EX-35	2020/08/22	1638	EA	20	2020/08/24	VB+PS	TH
46Q	462 / 463	Intersection Of P465	T	G&W	EX-35	2020/08/22	1642	EA	20	2020/08/24	VB+PS	TH
46R	466 / 465	Intersection Of P463	T	G&W	EX-35	2020/08/22	1640	EA	20	2020/08/24	VB+PS	TH
46S	466 / 465	Intersection Of P468	T	G&W	EX-35	2020/08/22	1810	EA	20	2020/08/24	VB+PS	TH
46T	470 / 468	Intersection Of P466	T	G&W	EX-35	2020/08/22	1821	EA	20	2020/08/24	VB+PS	TH

DETAIL TYPE:

AD - ANIMAL DAMAGE	DS-# - DESTRUCT SAMPLE NUMBER	IO - INSUFFICIENT OVERLAP	T - THREE PANEL INTERSECTION
ATL - AIR TEST LEAK	EE - EARTHWORK EQUIPMENT DAMAGE	MD - MANUFACTURER/DELIVERY DAMAGE	VL - VACUUM TEST LEAK
BO - FUSION WELDER BURN	EXT - EXTENSION	P - PENETRATION	WR - WRINKLE
CR - CREASE	FM - FISHMOUTH	PT - PRESSURE TEST CUT	WS - WELDER RESTART
D - INSTALLATION DAMAGE	FS - FAILED SEAM LENGTH	SI - SOIL SURFACE IRREGULARITY	OTHER:

TEST METHOD:

AL - AIR LANCE	VB - VAC BOX
PS - POINT STRESS	ST - SPARK TEST

REPAIR TYPE:

G&W - GRIND & WELD	B - BOOT	P - PATCH
HAW - HOT AIR WELD	C - CAP	

REMARKS

QC TECH Thomas Howald

SUPERVISOR Chad Messervey

SUBMISSION DATE 2020/01/05

SHEET NUMBER 89 of 117

GEOMEMBRANE DETAIL & TEST LOG

PROJECT NUMBER CT001401 AREA / LAYER Primary

PROJECT TITLE Victoria Gold Heap Leach Pad Phase 1B

TRIAL SEAMS

#	MACHINE NUMBER	DATE YYYY-MM-DD	TIME	WELD TECH	AIR TEMP °C	PREHEAT TEMP °C	EXTRUDER TEMP °C	PEEL (PPI)					SHEAR (PPI)					CHK'D BY	REMARKS
1	EX-4037	2020/08/27	930	EA	15	262°C	260°C	118	130	126	132	116	154	166	168	160	163	TH	TT
2	EX-008	2020/08/27	930	RW	15	257°C	257°C	110	97	96	98	105	154	141	162	163	157	TH	TT
3	EX-35	2020/08/27	1200	GP	20	260°C	257°C	156	158	148	146	137	180	172	184	176	183	TH	TT
4	EX-4037	2020/08/27	1330	EA	20	262°C	260°C	120	121	134	121	130	165	159	159	159	161	TH	TT
5	EX-008	2020/08/27	1500	RW	20	257°C	257°C	123	129	121	129	130	146	142	148	151	149	TH	TT
6	EX-35	2020/08/27	1620	GP	20	260°C	257°C	131	129	149	135	146	162	167	167	163	161	TH	TT

DETAIL CODE	PANEL NUMBER(S)	LOCATION DESCRIPTION	DETAIL TYPE	REPAIR TYPE	MACHINE NUMBER	REPAIR DATE YYYY-MM-DD	START TIME	WELD TECH	AIR TEMP °C	TEST DATE YYYY-MM-DD	TEST METH.	QC TECH
47A	470 / 468	Intersection Of P472	T	G&W	EX-008	2020/08/27	1708	RW	20	2020/08/24	VB+PS	TH
47B	473 / 472	Intersection Of P470	T	G&W	EX-008	2020/08/27	1702	RW	20	2020/08/24	VB+PS	TH
47C	473 /	1m From WEOS	D	P	EX-008	2020/08/27	1700	RW	20	2020/08/24	VB+PS	TH
47D	473 / 472	Intersection Of P475	T	G&W	EX-008	2020/08/27	1652	RW	20	2020/08/24	VB+PS	TH
47E	475 / 476	Intersection Of P473	T	G&W	EX-008	2020/08/27	1650	RW	20	2020/08/24	VB+PS	TH
47F	476 / 476	Intersection Of P478	T	G&W	EX-008	2020/08/27	1641	RW	20	2020/08/24	VB+PS	TH
47G	478 /	10m From EEOS	D	P	EX-008	2020/08/27	1646	RW	20	2020/08/24	VB+PS	TH
47H	479 / 478	Intersection Of P476	T	G&W	EX-008	2020/08/27	1639	RW	20	2020/08/24	VB+PS	TH
47I	479 / 478	Intersection Of P481	T	G&W	EX-008	2020/08/27	1637	RW	20	2020/08/24	VB+PS	TH
47J	482 / 481	Intersection Of P479	T	G&W	EX-008	2020/08/27	1635	RW	20	2020/08/24	VB+PS	TH
47K	482 /	1m From WEOS	D	P	EX-008	2020/08/27	1633	RW	20	2020/08/24	VB+PS	TH
47L	482 / 481	Intersection Of P484	T	G&W	EX-008	2020/08/27	1617	RW	20	2020/08/24	VB+PS	TH
47M	485 / 484	Intersection Of P482	T	G&W	EX-008	2020/08/27	1614	RW	20	2020/08/24	VB+PS	TH
47N	479 / 482	18.2m From EEOS	IO	G&W	EX-008	2020/08/27	1741	RW	20	2020/08/24	VB+PS	TH
47O	485 / 484	Intersection Of P487	T	G&W	EX-008	2020/08/27	1611	RW	20	2020/08/24	VB+PS	TH
47P	488 / 487	Intersection Of P485	T	G&W	EX-008	2020/08/27	1530	RW	20	2020/08/24	VB+PS	TH
47Q	488 / 487	Intersection Of P490	T	G&W	EX-008	2020/08/27	1525	RW	20	2020/08/24	VB+PS	TH
47R	491 / 490	Intersection Of P488	T	G&W	EX-008	2020/08/27	1518	RW	20	2020/08/24	VB+PS	TH
47S	275 / 403	WEOS	DS-217	P	EX-4037	2020/08/27	1005	EA	15	2020/08/27	VB+PS	TH
47T	272 / 403	EEOS	DS-216	P	EX-4037	2020/08/27	1021	EA	15	2020/08/27	VB+PS	TH

DETAIL TYPE:

AD - ANIMAL DAMAGE	DS-# - DESTRUCT SAMPLE NUMBER	IO - INSUFFICIENT OVERLAP	T - THREE PANEL INTERSECTION
ATL - AIR TEST LEAK	EE - EARTHWORK EQUIPMENT DAMAGE	MD - MANUFACTURER/DELIVERY DAMAGE	VL - VACUUM TEST LEAK
BO - FUSION WELDER BURN	EXT - EXTENSION	P - PENETRATION	WR - WRINKLE
CR - CREASE	FM - FISHMOUTH	PT - PRESSURE TEST CUT	WS - WELDER RESTART
D - INSTALLATION DAMAGE	FS - FAILED SEAM LENGTH	SI - SOIL SURFACE IRREGULARITY	OTHER:

TEST METHOD:

AL - AIR LANCE	VB - VAC BOX
PS - POINT STRESS	ST - SPARK TEST

REPAIR TYPE:

G&W - GRIND & WELD	B - BOOT	P - PATCH
HAW - HOT AIR WELD	C - CAP	

REMARKS

QC TECH Thomas Howald

SUPERVISOR Chad Messervey

SUBMISSION DATE 2020/01/05

SHEET NUMBER 90 of 117

GEOMEMBRANE DETAIL & TEST LOG

PROJECT NUMBER CT001401 AREA / LAYER Primary

PROJECT TITLE Victoria Gold Heap Leach Pad Phase 1B

TRIAL SEAMS

#	MACHINE NUMBER	DATE YYYY-MM-DD	TIME	WELD TECH	AIR TEMP °C	PREHEAT TEMP °C	EXTRUDER TEMP °C	PEEL (PPI)					SHEAR (PPI)					CHK'D BY	REMARKS
1	EX-4037	2020/08/27	1700	EA	20	262°C	260°C	115	123	119	123	121	130	148	130	142	126	TH	TT
2																			
3																			
4																			
5																			
6																			

DETAIL CODE	PANEL NUMBER(S)	LOCATION DESCRIPTION	DETAIL TYPE	REPAIR TYPE	MACHINE NUMBER	REPAIR DATE YYYY-MM-DD	START TIME	WELD TECH	AIR TEMP °C	TEST DATE YYYY-MM-DD	TEST METH.	QC TECH
A	/											
B	/											
C	/											
D	/											
E	/											
F	/											
G	/											
H	/											
I	/											
J	/											
K	/											
L	/											
M	/											
N	/											
O	/											
P	/											
Q	/											
R	/											
S	/											
T	/											

DETAIL TYPE:

AD - ANIMAL DAMAGE	DS-# - DESTRUCT SAMPLE NUMBER	IO - INSUFFICIENT OVERLAP	T - THREE PANEL INTERSECTION
ATL - AIR TEST LEAK	EE - EARTHWORK EQUIPMENT DAMAGE	MD - MANUFACTURER/DELIVERY DAMAGE	VL - VACUUM TEST LEAK
BO - FUSION WELDER BURN	EXT - EXTENSION	P - PENETRATION	WR - WRINKLE
CR - CREASE	FM - FISHMOUTH	PT - PRESSURE TEST CUT	WS - WELDER RESTART
D - INSTALLATION DAMAGE	FS - FAILED SEAM LENGTH	SI - SOIL SURFACE IRREGULARITY	OTHER:

TEST METHOD:

AL - AIR LANCE	VB - VAC BOX
PS - POINT STRESS	ST - SPARK TEST

REPAIR TYPE:

G&W - GRIND & WELD	B - BOOT	P - PATCH
HAW - HOT AIR WELD	C - CAP	

REMARKS

QC TECH Thomas Howald

SUPERVISOR Chad Messervey

SUBMISSION DATE 2020/01/05

SHEET NUMBER 91 of 117

GEOMEMBRANE DETAIL & TEST LOG

PROJECT NUMBER CT001401 AREA / LAYER Primary

PROJECT TITLE Victoria Gold Heap Leach Pad Phase 1B

TRIAL SEAMS

#	MACHINE NUMBER	DATE YYYY-MM-DD	TIME	WELD TECH	AIR TEMP °C	PREHEAT TEMP °C	EXTRUDER TEMP °C	PEEL (PPI)					SHEAR (PPI)					CHK'D BY	REMARKS
1	EX-4037	2020/08/27	930	EA	15	262°C	260°C	118	130	126	132	116	154	166	168	160	163	TH	TT
2	EX-008	2020/08/27	930	RW	15	257°C	257°C	110	97	96	98	105	154	141	162	163	157	TH	TT
3	EX-35	2020/08/27	1200	GP	20	260°C	257°C	156	158	148	146	137	180	172	184	176	183	TH	TT
4	EX-4037	2020/08/27	1330	EA	20	262°C	260°C	120	121	134	121	130	165	159	159	159	161	TH	TT
5	EX-008	2020/08/27	1500	RW	20	257°C	257°C	123	129	121	129	130	146	142	148	151	149	TH	TT
6	EX-35	2020/08/27	1620	GP	20	260°C	257°C	131	129	149	135	146	162	167	167	163	161	TH	TT

DETAIL CODE	PANEL NUMBER(S)	LOCATION DESCRIPTION	DETAIL TYPE	REPAIR TYPE	MACHINE NUMBER	REPAIR DATE YYYY-MM-DD	START TIME	WELD TECH	AIR TEMP °C	TEST DATE YYYY-MM-DD	TEST METH.	QC TECH
48A	409 / 410	NEOS	DS-215	P	EX-4037	2020/08/27	1036	EA	15	2020/08/27	VB+PS	TH
48B	406 / 409	EEOS	DS-218	P	EX-4037	2020/08/27	1031	EA	15	2020/08/27	VB+PS	TH
48C	424 / 427	39.1m From WEOS	DS-204	P	EX-4037	2020/08/27	1100	EA	15	2020/08/27	VB+PS	TH
48D	446 / 447	NEOS	DS-213	P	EX-4037	2020/08/27	1340	EA	20	2020/08/27	VB+PS	TH
48E	443 / 446	EEOS	DS-212	P	EX-4037	2020/08/27	1345	EA	20	2020/08/27	VB+PS	TH
48F	464 / 465	Intersection Of P467	T	G&W	EX-4037	2020/08/27	1403	EA	20	2020/08/27	VB+PS	TH
48G	467 / 468	Intersection Of P465	T	G&W	EX-4037	2020/08/27	1355	EA	20	2020/08/27	VB+PS	TH
48H	467 / 468	Intersection Of P471	T	G&W	EX-4037	2020/08/27	1337	EA	20	2020/08/27	VB+PS	TH
48I	471 / 472	Intersection Of P468	T	G&W	EX-4037	2020/08/27	1405	EA	20	2020/08/27	VB+PS	TH
48J	472 / 471	Intersection Of P474	T	G&W	EX-4037	2020/08/27	1412	EA	20	2020/08/27	VB+PS	TH
48K	475 /	1.2m From WEOS	D	G&W	EX-4037	2020/08/27	1409	EA	20	2020/08/27	VB+PS	TH
48L	474 / 475	Intersection Of P477	T	G&W	EX-4037	2020/08/27	1415	EA	20	2020/08/27	VB+PS	TH
48M	477 / 478	Intersection Of P475	T	G&W	EX-4037	2020/08/27	1417	EA	20	2020/08/27	VB+PS	TH
48N	477 / 478	Intersection Of P480	T	G&W	EX-4037	2020/08/27	1420	EA	20	2020/08/27	VB+PS	TH
48O	480 / 481	Intersection Of P478	T	G&W	EX-4037	2020/08/27	1421	EA	20	2020/08/27	VB+PS	TH
48P	480 / 481	Intersection Of P483	T	G&W	EX-4037	2020/08/27	1423	EA	20	2020/08/27	VB+PS	TH
48Q	483 / 484	Intersection Of P481	T	G&W	EX-4037	2020/08/27	1427	EA	20	2020/08/27	VB+PS	TH
48R	483 / 484	Intersection Of P486	T	G&W	EX-4037	2020/08/27	1428	EA	20	2020/08/27	VB+PS	TH
48S	486 / 487	Intersection Of P484	T	G&W	EX-4037	2020/08/27	1413	EA	20	2020/08/29	VB+PS	TH
48T	486 / 487	Intersection Of P489	T	G&W	EX-4037	2020/08/27	1433	EA	20	2020/08/29	VB+PS	TH

DETAIL TYPE:

AD - ANIMAL DAMAGE	DS-# - DESTRUCT SAMPLE NUMBER	IO - INSUFFICIENT OVERLAP	T - THREE PANEL INTERSECTION
ATL - AIR TEST LEAK	EE - EARTHWORK EQUIPMENT DAMAGE	MD - MANUFACTURER/DELIVERY DAMAGE	VL - VACUUM TEST LEAK
BO - FUSION WELDER BURN	EXT - EXTENSION	P - PENETRATION	WR - WRINKLE
CR - CREASE	FM - FISHMOUTH	PT - PRESSURE TEST CUT	WS - WELDER RESTART
D - INSTALLATION DAMAGE	FS - FAILED SEAM LENGTH	SI - SOIL SURFACE IRREGULARITY	OTHER:

TEST METHOD:

AL - AIR LANCE	VB - VAC BOX
PS - POINT STRESS	ST - SPARK TEST

REPAIR TYPE:

G&W - GRIND & WELD	B - BOOT	P - PATCH
HAW - HOT AIR WELD	C - CAP	

REMARKS

QC TECH Thomas Howald

SUPERVISOR Chad Messervey

SUBMISSION DATE 2020/01/05

SHEET NUMBER 92 of 117

GEOMEMBRANE DETAIL & TEST LOG

PROJECT NUMBER CT001401 AREA / LAYER Primary

PROJECT TITLE Victoria Gold Heap Leach Pad Phase 1B

TRIAL SEAMS

#	MACHINE NUMBER	DATE YYYY-MM-DD	TIME	WELD TECH	AIR TEMP °C	PREHEAT TEMP °C	EXTRUDER TEMP °C	PEEL (PPI)					SHEAR (PPI)					CHK'D BY	REMARKS
1	EX-4037	2020/08/27	1700	EA	20	262°C	260°C	115	123	119	123	121	130	148	130	142	126	TH	TT
2																			
3																			
4																			
5																			
6																			

DETAIL CODE	PANEL NUMBER(S)	LOCATION DESCRIPTION	DETAIL TYPE	REPAIR TYPE	MACHINE NUMBER	REPAIR DATE YYYY-MM-DD	START TIME	WELD TECH	AIR TEMP °C	TEST DATE YYYY-MM-DD	TEST METH.	QC TECH
A	/											
B	/											
C	/											
D	/											
E	/											
F	/											
G	/											
H	/											
I	/											
J	/											
K	/											
L	/											
M	/											
N	/											
O	/											
P	/											
Q	/											
R	/											
S	/											
T	/											

DETAIL TYPE:

AD - ANIMAL DAMAGE	DS-# - DESTRUCT SAMPLE NUMBER	IO - INSUFFICIENT OVERLAP	T - THREE PANEL INTERSECTION
ATL - AIR TEST LEAK	EE - EARTHWORK EQUIPMENT DAMAGE	MD - MANUFACTURER/DELIVERY DAMAGE	VL - VACUUM TEST LEAK
BO - FUSION WELDER BURN	EXT - EXTENSION	P - PENETRATION	WR - WRINKLE
CR - CREASE	FM - FISHMOUTH	PT - PRESSURE TEST CUT	WS - WELDER RESTART
D - INSTALLATION DAMAGE	FS - FAILED SEAM LENGTH	SI - SOIL SURFACE IRREGULARITY	OTHER:

TEST METHOD:

AL - AIR LANCE	VB - VAC BOX
PS - POINT STRESS	ST - SPARK TEST

REPAIR TYPE:

G&W - GRIND & WELD	B - BOOT	P - PATCH
HAW - HOT AIR WELD	C - CAP	

REMARKS

QC TECH Thomas Howald

SUPERVISOR Chad Messervey

SUBMISSION DATE 2020/01/05

SHEET NUMBER 93 of 117

GEOMEMBRANE DETAIL & TEST LOG

PROJECT NUMBER CT001401 AREA / LAYER Primary

PROJECT TITLE Victoria Gold Heap Leach Pad Phase 1B

TRIAL SEAMS

#	MACHINE NUMBER	DATE YYYY-MM-DD	TIME	WELD TECH	AIR TEMP °C	PREHEAT TEMP °C	EXTRUDER TEMP °C	PEEL (PPI)					SHEAR (PPI)					CHK'D BY	REMARKS
1	EX-4037	2020/08/27	930	EA	15	262°C	260°C	118	130	126	132	116	154	166	168	160	163	TH	TT
2	EX-008	2020/08/27	930	RW	15	257°C	257°C	110	97	96	98	105	154	141	162	163	157	TH	TT
3	EX-35	2020/08/27	1200	GP	20	260°C	257°C	156	158	148	146	137	180	172	184	176	183	TH	TT
4	EX-4037	2020/08/27	1330	EA	20	262°C	260°C	120	121	134	121	130	165	159	159	159	161	TH	TT
5	EX-008	2020/08/27	1500	RW	20	257°C	257°C	123	129	121	129	130	146	142	148	151	149	TH	TT
6	EX-35	2020/08/27	1620	GP	20	260°C	257°C	131	129	149	135	146	162	167	167	163	161	TH	TT

DETAIL CODE	PANEL NUMBER(S)	LOCATION DESCRIPTION	DETAIL TYPE	REPAIR TYPE	MACHINE NUMBER	REPAIR DATE YYYY-MM-DD	START TIME	WELD TECH	AIR TEMP °C	TEST DATE YYYY-MM-DD	TEST METH.	QC TECH
49A	489 / 490	Intersection Of P487	T	G&W	EX-4037	2020/08/27	1439	EA	20	2020/08/29	VB+PS	TH
49B	424 / 427	22.4m From EEOS	FS	P	EX-4037	2020/08/27	1300	EA	20	2020/08/29	VB+PS	TH
49C	424 / 427	40.1m From EEOS	FS	G&W	EX-4037	2020/08/27	1310	EA	20	2020/08/29	VB+PS	TH
49D	478 / 481	53.1m From EEOS	FS	G&W	EX-008	2020/08/27	1822	RW	20	2020/08/29	VB+PS	TH
49E	481 / 484	54m From EEOS	BO	G&W	EX-008	2020/08/27	1802	RW	20	2020/08/29	VB+PS	TH
49F	484 / 487	50.1m From EEOS	BO	G&W	EX-008	2020/08/27	1758	RW	20	2020/08/29	VB+PS	TH
49G	484 / 487	41.2m From EEOS	BO	G&W	EX-008	2020/08/27	1748	RW	20	2020/08/29	VB+PS	TH
49H	487 / 490	34.2m From EEOS	BO	P	EX-008	2020/08/27	1724	RW	20	2020/08/29	VB+PS	TH
49I	487 / 490	25.3m From EEOS	BO	P	EX-008	2020/08/27	1735	RW	20	2020/08/29	VB+PS	TH
49J	478 /	19m From EEOS 1.2m North	D	G&W	EX-4037	2020/08/30	1213	EA	20	2020/08/29	VB+PS	TH
49K	472 / 475	20.2m From EEOS	BO	P	EX-4037	2020/08/30	950	EA	20	2020/08/29	VB+PS	TH
49L	472 /	23m From EEOS 1m South	D	P	EX-4037	2020/08/30	931	EA	20	2020/08/29	VB+PS	TH
49M	493 / 492	Intersection Of P490	T	G&W	EX-4037	2020/08/29	1647	EA	20	2020/08/29	VB+PS	TH
49N	493 /	1m From WEOS	D	P	EX-4037	2020/08/29	1712	EA	20	2020/08/29	VB+PS	TH
49O	493 /	2.3m From WEOS	D	P	EX-4037	2020/08/29	1710	EA	20	2020/08/29	VB+PS	TH
49P	492 / 493	Intersection Of P494	T	G&W	EX-4037	2020/08/29	1649	EA	20	2020/08/29	VB+PS	TH
49Q	495 / 494	Intersection Of P493	T	G&W	EX-4037	2020/08/29	1611	EA	20	2020/08/29	VB+PS	TH
49R	495 /	1.5m From WEOS 2m North	D	P	EX-4037	2020/08/29	1613	EA	20	2020/08/29	VB+PS	TH
49S	495 /	2.2m From WEOS	D	P	EX-4037	2020/08/29	1615	EA	20	2020/08/29	VB+PS	TH
49T	495 /	.8m From WEOS 1m South	D	P	EX-4037	2020/08/29	1617	EA	20	2020/08/29	VB+PS	TH

DETAIL TYPE:

AD - ANIMAL DAMAGE	DS-# - DESTRUCT SAMPLE NUMBER	IO - INSUFFICIENT OVERLAP	T - THREE PANEL INTERSECTION
ATL - AIR TEST LEAK	EE - EARTHWORK EQUIPMENT DAMAGE	MD - MANUFACTURER/DELIVERY DAMAGE	VL - VACUUM TEST LEAK
BO - FUSION WELDER BURN	EXT - EXTENSION	P - PENETRATION	WR - WRINKLE
CR - CREASE	FM - FISHMOUTH	PT - PRESSURE TEST CUT	WS - WELDER RESTART
D - INSTALLATION DAMAGE	FS - FAILED SEAM LENGTH	SI - SOIL SURFACE IRREGULARITY	OTHER:

TEST METHOD:

AL - AIR LANCE	VB - VAC BOX
PS - POINT STRESS	ST - SPARK TEST

REPAIR TYPE:

G&W - GRIND & WELD	B - BOOT	P - PATCH
HAW - HOT AIR WELD	C - CAP	

REMARKS

QC TECH Thomas Howald

SUPERVISOR Chad Messervey

SUBMISSION DATE 2020/01/05

SHEET NUMBER 94 of 117

GEOMEMBRANE DETAIL & TEST LOG

PROJECT NUMBER CT001401 AREA / LAYER Primary

PROJECT TITLE Victoria Gold Heap Leach Pad Phase 1B

TRIAL SEAMS

#	MACHINE NUMBER	DATE YYYY-MM-DD	TIME	WELD TECH	AIR TEMP °C	PREHEAT TEMP °C	EXTRUDER TEMP °C	PEEL (PPI)					SHEAR (PPI)					CHK'D BY	REMARKS
1	EX-4037	2020/08/27	1700	EA	20	262°C	260°C	115	123	119	123	121	130	148	130	142	126	TH	TT
2	EX-4037	2020/08/29	1500	EA	15	260°C	257°C	125	144	150	140	145	154	167	165	177	166	TH	TT
3	EX-23	2020/08/29	1500	RW	15	260°C	257°C	136	147	164	143	140	157	163	150	165	160	TH	TT
4	EX-23	2020/08/29	1500	RL	15	260°C	257°C	129	146	136	149	147	161	159	161	156	162	TH	TT
5	EX-4037	2020/08/30	815	EA	10	262°C	260°C	126	132	106	112	149	157	142	140	165	155	TH	TT
6																			

DETAIL CODE	PANEL NUMBER(S)	LOCATION DESCRIPTION	DETAIL TYPE	REPAIR TYPE	MACHINE NUMBER	REPAIR DATE YYYY-MM-DD	START TIME	WELD TECH	AIR TEMP °C	TEST DATE YYYY-MM-DD	TEST METH.	QC TECH
A	/											
B	/											
C	/											
D	/											
E	/											
F	/											
G	/											
H	/											
I	/											
J	/											
K	/											
L	/											
M	/											
N	/											
O	/											
P	/											
Q	/											
R	/											
S	/											
T	/											

DETAIL TYPE:

AD - ANIMAL DAMAGE	DS-# - DESTRUCT SAMPLE NUMBER	IO - INSUFFICIENT OVERLAP	T - THREE PANEL INTERSECTION
ATL - AIR TEST LEAK	EE - EARTHWORK EQUIPMENT DAMAGE	MD - MANUFACTURER/DELIVERY DAMAGE	VL - VACUUM TEST LEAK
BO - FUSION WELDER BURN	EXT - EXTENSION	P - PENETRATION	WR - WRINKLE
CR - CREASE	FM - FISHMOUTH	PT - PRESSURE TEST CUT	WS - WELDER RESTART
D - INSTALLATION DAMAGE	FS - FAILED SEAM LENGTH	SI - SOIL SURFACE IRREGULARITY	OTHER:

TEST METHOD:

AL - AIR LANCE	VB - VAC BOX
PS - POINT STRESS	ST - SPARK TEST

REPAIR TYPE:

G&W - GRIND & WELD	B - BOOT	P - PATCH
HAW - HOT AIR WELD	C - CAP	

REMARKS

QC TECH Thomas Howald

SUPERVISOR Chad Messervey

SUBMISSION DATE 2020/01/05

SHEET NUMBER 95 of 117

GEOMEMBRANE DETAIL & TEST LOG

PROJECT NUMBER CT001401 AREA / LAYER Primary

PROJECT TITLE Victoria Gold Heap Leach Pad Phase 1B

TRIAL SEAMS

#	MACHINE NUMBER	DATE YYYY-MM-DD	TIME	WELD TECH	AIR TEMP °C	PREHEAT TEMP °C	EXTRUDER TEMP °C	PEEL (PPI)					SHEAR (PPI)					CHK'D BY	REMARKS
1	EX-4037	2020/08/29	1500	EA	15	260°C	257°C	125	144	150	140	145	154	167	165	177	166	TH	TT
2	EX-23	2020/08/29	1500	RW	15	260°C	257°C	136	147	164	143	140	157	163	150	165	160	TH	TT
3	EX-23	2020/08/29	1500	RL	15	260°C	257°C	129	146	136	149	147	161	159	161	156	162	TH	TT
4	EX-23	2020/09/06	900	RW	10	260°C	257°C	159	155	147	159	147	183	166	170	176	176	TH	TT
5	EX-4037	2020/09/06	900	JL	10	262°C	260°C	120	112	117	114	136	188	166	180	169	172	TH	TT
6	EX-23	2020/09/06	900	GP	10	260°C	257°C	144	142	150	134	134	157	170	176	171	171	TH	TT

DETAIL CODE	PANEL NUMBER(S)	LOCATION DESCRIPTION	DETAIL TYPE	REPAIR TYPE	MACHINE NUMBER	REPAIR DATE YYYY-MM-DD	START TIME	WELD TECH	AIR TEMP °C	TEST DATE YYYY-MM-DD	TEST METH.	QC TECH
50A	495 / 494	Intersection Of P497	T	G&W	EX-4037	2020/08/29	1621	EA	20	2020/08/29	VB+PS	TH
50B	495 /	10m From WEOS 2.3m North	D	O	EX-4037	2020/08/29	1638	EA	20	2020/08/29	VB+PS	TH
50C	499 / 497	Intersection Of P495	T	G&W	EX-4037	2020/08/29	1633	EA	20	2020/08/29	VB+PS	TH
50D	497 / 499	Intersection Of P501	T	G&W	EX-4037	2020/08/29	1630	EA	20	2020/08/29	VB+PS	TH
50E	505 / 506	Intersection Of P504/502	T	G&W	EX-23	2020/08/29	1616	RW	20	2020/08/29	VB+PS	TH
50F	506 / 505	Intersection Of P507	T	G&W	EX-23	2020/08/29	1613	RW	20	2020/08/29	VB+PS	TH
50G	508 / 509	Intersection Of P507	T	G&W	EX-23	2020/08/29	1622	RW	20	2020/08/29	VB+PS	TH
50H	508 / 509	Intersection Of P510	T	G&W	EX-23	2020/08/29	1619	RW	20	2020/08/29	VB+PS	TH
50I	510 /	26m From EEOS	D	P	EX-23	2020/08/29	1605	RW	20	2020/08/29	VB+PS	TH
50J	511 / 510	Intersection Of P509	T	G&W	EX-23	2020/08/29	1611	RW	20	2020/08/29	VB+PS	TH
50K	511 / 510	Intersection Of P513	T	G&W	EX-23	2020/08/29	1609	RW	20	2020/08/29	VB+PS	TH
50L	517 / 516	Intersection Of P514	T	G&W	EX-23	2020/08/29	1548	RW	20	2020/08/29	VB+PS	TH
50M	517 /	.9m From WEOS .9m South	D	P	EX-23	2020/08/29	1555	RW	20	2020/08/29	VB+PS	TH
50N	517 / 516	Intersection Of P519	T	P	EX-23	2020/08/29	1550	RW	20	2020/08/29	VB+PS	TH
50O	497 / 501	5m From EEOS	IO	G&W	EX-4037	2020/08/29	1624	EA	20	2020/08/29	VB+PS	TH
50P	501 / 500	Intersection Of P497	T	G&W	EX-4037	2020/09/06	1223	JL	20	2020/09/06	VB+PS	TH
50Q	497 / 496	Intersection Of P494	T	G&W	EX-4037	2020/09/06	1228	JL	20	2020/09/06	VB+PS	TH
50R	497 / 496	Intersection Of P500	T	P	EX-4037	2020/09/06	1229	JL	20	2020/09/06	VB+PS	TH
50S	536 / 532	Intersection Of P500	T	P	EX-4037	2020/09/06	1226	JL	20	2020/09/06	VB+PS	TH
50T	500 / 501	Intersection Of P532	T	G&W	EX-4037	2020/09/06	1256	JL	20	2020/09/06	VB+PS	TH

DETAIL TYPE:

AD - ANIMAL DAMAGE	DS-# - DESTRUCT SAMPLE NUMBER	IO - INSUFFICIENT OVERLAP	T - THREE PANEL INTERSECTION
ATL - AIR TEST LEAK	EE - EARTHWORK EQUIPMENT DAMAGE	MD - MANUFACTURER/DELIVERY DAMAGE	VL - VACUUM TEST LEAK
BO - FUSION WELDER BURN	EXT - EXTENSION	P - PENETRATION	WR - WRINKLE
CR - CREASE	FM - FISHMOUTH	PT - PRESSURE TEST CUT	WS - WELDER RESTART
D - INSTALLATION DAMAGE	FS - FAILED SEAM LENGTH	SI - SOIL SURFACE IRREGULARITY	OTHER:

TEST METHOD:

AL - AIR LANCE	VB - VAC BOX
PS - POINT STRESS	ST - SPARK TEST

REPAIR TYPE:

G&W - GRIND & WELD	B - BOOT	P - PATCH
HAW - HOT AIR WELD	C - CAP	

REMARKS

QC TECH Thomas Howald

SUPERVISOR Chad Messervey

SUBMISSION DATE 2020/01/05

SHEET NUMBER 96 of 117

GEOMEMBRANE DETAIL & TEST LOG

PROJECT NUMBER CT001401 AREA / LAYER Primary

PROJECT TITLE Victoria Gold Heap Leach Pad Phase 1B

TRIAL SEAMS

#	MACHINE NUMBER	DATE YYYY-MM-DD	TIME	WELD TECH	AIR TEMP °C	PREHEAT TEMP °C	EXTRUDER TEMP °C	PEEL (PPI)					SHEAR (PPI)					CHK'D BY	REMARKS
1	EX-4037	2020/08/29	1500	EA	15	260°C	257°C	125	144	150	140	145	154	167	165	177	166	TH	TT
2	EX-23	2020/08/29	1500	RW	15	260°C	257°C	136	147	164	143	140	157	163	150	165	160	TH	TT
3	EX-23	2020/08/29	1500	RL	15	260°C	257°C	129	146	136	149	147	161	159	161	156	162	TH	TT
4	EX-23	2020/09/06	900	RW	10	260°C	257°C	159	155	147	159	147	183	166	170	176	176	TH	TT
5	EX-4037	2020/09/06	900	JL	10	262°C	260°C	120	112	117	114	136	188	166	180	169	172	TH	TT
6	EX-23	2020/09/06	900	GP	10	260°C	257°C	144	142	150	134	134	157	170	176	171	171	TH	TT

DETAIL CODE	PANEL NUMBER(S)	LOCATION DESCRIPTION	DETAIL TYPE	REPAIR TYPE	MACHINE NUMBER	REPAIR DATE YYYY-MM-DD	START TIME	WELD TECH	AIR TEMP °C	TEST DATE YYYY-MM-DD	TEST METH.	QC TECH
51A	532 / 533	Intersection Of P530	T	G&W	EX-4037	2020/09/06	1223	JL	20	2020/09/06	VB+PS	TH
51B	532 / 533	Intersection Of P536	T	G&W	EX-4037	2020/09/06	1221	JL	20	2020/09/06	VB+PS	TH
51C	533 / 534	Intersection Of P536	T	G&W	EX-4037	2020/09/06	1220	JL	20	2020/09/06	VB+PS	TH
51D	534 /	.2m From WEOS 3m South	D	G&W	EX-4037	2020/09/06	1220	JL	20	2020/09/06	VB+PS	TH
51E	533 / 534	On Cross Seam In Center	D	G&W	EX-4037	2020/09/06	1212	JL	20	2020/09/06	VB+PS	TH
51F	534 /	.2m From WEOS 3m North	D	G&W	EX-4037	2020/09/06	1211	JL	20	2020/09/06	VB+PS	TH
51G	533 / 534	Intersection Of P530	T	G&W	EX-4037	2020/09/06	1210	JL	20	2020/09/06	VB+PS	TH
51H	534 /	2m From WEOS .9m North	D	P	EX-4037	2020/09/06	1213	JL	20	2020/09/06	VB+PS	TH
51I	534 /	2.3m Frrom WEOS .3m South	D	P	EX-4037	2020/09/06	1216	JL	20	2020/09/06	VB+PS	TH
51J	534 /	4.1m From WEOS	D	P	EX-4037	2020/09/06	1218	JL	20	2020/09/06	VB+PS	TH
51K	527 / 530	Intersection Of P501	T	G&W	EX-4037	2020/09/06	1208	JL	20	2020/09/06	VB+PS	TH
51L	527 / 528	Intersection Of P530	T	G&W	EX-4037	2020/09/06	1206	JL	20	2020/09/06	VB+PS	TH
51M	527 / 528	Intersection Of P525/501	T	G&W	EX-4037	2020/09/06	1204	JL	20	2020/09/06	VB+PS	TH
51N	525 / 528	5m From WEOS	BO	P	EX-4037	2020/09/06	1100	JL	20	2020/09/06	VB+PS	TH
51O	522 / 525	Intersection Of P501	T	G&W	EX-4037	2020/09/06	1053	JL	20	2020/09/06	VB+PS	TH
51P	522 / 523	Intersection Of P525	T	G&W	EX-4037	2020/09/06	1016	JL	20	2020/09/06	VB+PS	TH
51Q	522 / 523	Intersection Of P520/501	T	P	EX-4037	2020/09/06	1015	JL	20	2020/09/06	VB+PS	TH
51R	518 / 520	Intersection Of P501	T	G&W	EX-4037	2020/09/06	1029	JL	20	2020/09/06	VB+PS	TH
51S	515 / 518	Intersection Of P501	T	G&W	EX-4037	2020/08/29	1734	EA	20	2020/09/06	VB+PS	TH
51T	515 / 516	Intersection Of P518	T	G&W	EX-4037	2020/08/29	1740	EA	20	2020/09/06	VB+PS	TH

DETAIL TYPE:

AD - ANIMAL DAMAGE	DS-# - DESTRUCT SAMPLE NUMBER	IO - INSUFFICIENT OVERLAP	T - THREE PANEL INTERSECTION
ATL - AIR TEST LEAK	EE - EARTHWORK EQUIPMENT DAMAGE	MD - MANUFACTURER/DELIVERY DAMAGE	VL - VACUUM TEST LEAK
BO - FUSION WELDER BURN	EXT - EXTENSION	P - PENETRATION	WR - WRINKLE
CR - CREASE	FM - FISHMOUTH	PT - PRESSURE TEST CUT	WS - WELDER RESTART
D - INSTALLATION DAMAGE	FS - FAILED SEAM LENGTH	SI - SOIL SURFACE IRREGULARITY	OTHER:

TEST METHOD:

AL - AIR LANCE	VB - VAC BOX
PS - POINT STRESS	ST - SPARK TEST

REPAIR TYPE:

G&W - GRIND & WELD	B - BOOT	P - PATCH
HAW - HOT AIR WELD	C - CAP	

REMARKS

QC TECH Thomas Howald

SUPERVISOR Chad Messervey

SUBMISSION DATE 2020/01/05

SHEET NUMBER 97 of 117

GEOMEMBRANE DETAIL & TEST LOG

PROJECT NUMBER CT001401 AREA / LAYER Primary

PROJECT TITLE Victoria Gold Heap Leach Pad Phase 1B

TRIAL SEAMS

#	MACHINE NUMBER	DATE YYYY-MM-DD	TIME	WELD TECH	AIR TEMP °C	PREHEAT TEMP °C	EXTRUDER TEMP °C	PEEL (PPI)					SHEAR (PPI)					CHK'D BY	REMARKS
1	EX-4037	2020/08/29	1500	EA	15	260°C	257°C	125	144	150	140	145	154	167	165	177	166	TH	TT
2	EX-23	2020/08/29	1500	RW	15	260°C	257°C	136	147	164	143	140	157	163	150	165	160	TH	TT
3	EX-23	2020/08/29	1500	RL	15	260°C	257°C	129	146	136	149	147	161	159	161	156	162	TH	TT
4	EX-4037	2020/09/07	1500	JL	10	260°C	260°C	121	119	118	132	120	159	142	149	153	164	TH	TT
5	EX-23	2020/09/07	1500	RW	10	260°C	257°C	135	147	124	129	132	168	154	164	170	167	TH	TT
6																			

DETAIL CODE	PANEL NUMBER(S)	LOCATION DESCRIPTION	DETAIL TYPE	REPAIR TYPE	MACHINE NUMBER	REPAIR DATE YYYY-MM-DD	START TIME	WELD TECH	AIR TEMP °C	TEST DATE YYYY-MM-DD	TEST METH.	QC TECH
52A	515 / 516	Intersection Of P501/514	T	G&W	EX-4037	2020/08/29	1750	EA	20	2020/09/06	VB+PS	TH
52B	512 / 514	Intersection Of P501	T	G&W	EX-4037	2020/08/29	1753	EA	20	2020/09/06	VB+PS	TH
52C	512 / 510	Intersection Of P501	T	G&W	EX-4037	2020/08/29	1755	EA	20	2020/09/06	VB+PS	TH
52D	501 / 502	Intersection Of P510	T	G&W	EX-4037	2020/08/29	1755	EA	20	2020/09/06	VB+PS	TH
52E	512 / 513	Intersection Of P510	T	G&W	EX-4037	2020/08/29	1758	EA	20	2020/09/06	VB+PS	TH
52F	512 / 513	Intersection Of P514	T	G&W	EX-4037	2020/08/29	1801	EA	20	2020/09/06	VB+PS	TH
52G	508 / 510	Intersection Of P502	T	G&W	EX-4037	2020/08/29	1803	EA	20	2020/09/06	VB+PS	TH
52H	508 / 507	Intersection Of P502	T	G&W	EX-4037	2020/08/29	1806	EA	20	2020/09/06	VB+PS	TH
52I	491 / 490	Intersection Of P493	T	G&W	EX-23	2020/09/07	1745	RW	20	2020/09/09	VB+PS	TH
52J	495 / 499	5m From EEOS	BO	P	EX-23	2020/09/07	1705	RW	20	2020/09/09	VB+PS	TH
52K	501 / 502	Intersection Of P499	T	G&W	EX-23	2020/09/07	1737	RW	20	2020/09/09	VB+PS	TH
52L	489 / 490	Intersection Of P492	T	G&W	EX-23	2020/09/07	1720	RW	20	2020/09/09	VB+PS	TH
52M	490 /	1.1m From WEOS	D	G&W	EX-23	2020/09/07	1721	RW	20	2020/09/09	VB+PS	TH
52N	538 / 539	Intersection Of P532/500	T	P	EX-4037	2020/09/07	1730	JL	20	2020/09/09	VB+PS	TH
52O	538 / 539	On Cross Seam 2.5m South	D	P	EX-4037	2020/09/07	1750	JL	20	2020/09/09	VB+PS	TH
52P	538 / 539	Intersection Of P	WS	P	EX-4037	2020/09/07	1752	JL	20	2020/09/09	VB+PS	TH
52Q	538 / 542	5m From SEOS	BO	P	EX-4037	2020/09/07	1735	JL	20	2020/09/09	VB+PS	TH
52R	542 / 541	Intersection Of P538/500	T	P	EX-4037	2020/09/07	1738	JL	20	2020/09/09	VB+PS	TH
52S	541 / 542	Intersection Of P545	T	G&W	EX-4037	2020/09/07	1740	JL	20	2020/09/09	VB+PS	TH
52T	505 / 507	Intersection Of P502	T	G&W	EX-23	2020/09/07	1804	RW	15	2020/09/10	VB+PS	TH

DETAIL TYPE:

AD - ANIMAL DAMAGE	DS-# - DESTRUCT SAMPLE NUMBER	IO - INSUFFICIENT OVERLAP	T - THREE PANEL INTERSECTION
ATL - AIR TEST LEAK	EE - EARTHWORK EQUIPMENT DAMAGE	MD - MANUFACTURER/DELIVERY DAMAGE	VL - VACUUM TEST LEAK
BO - FUSION WELDER BURN	EXT - EXTENSION	P - PENETRATION	WR - WRINKLE
CR - CREASE	FM - FISHMOUTH	PT - PRESSURE TEST CUT	WS - WELDER RESTART
D - INSTALLATION DAMAGE	FS - FAILED SEAM LENGTH	SI - SOIL SURFACE IRREGULARITY	OTHER:

TEST METHOD:

AL - AIR LANCE	VB - VAC BOX
PS - POINT STRESS	ST - SPARK TEST

REPAIR TYPE:

G&W - GRIND & WELD	B - BOOT	P - PATCH
HAW - HOT AIR WELD	C - CAP	

REMARKS

QC TECH Thomas Howald

SUPERVISOR Chad Messervey

SUBMISSION DATE 2020/01/05

SHEET NUMBER 98 of 117

GEOMEMBRANE DETAIL & TEST LOG

PROJECT NUMBER CT001401 AREA / LAYER Primary

PROJECT TITLE Victoria Gold Heap Leach Pad Phase 1B

TRIAL SEAMS

#	MACHINE NUMBER	DATE YYYY-MM-DD	TIME	WELD TECH	AIR TEMP °C	PREHEAT TEMP °C	EXTRUDER TEMP °C	PEEL (PPI)					SHEAR (PPI)					CHK'D BY	REMARKS
1	EX-23	2020/09/06	900	RW	10	260°C	257°C	159	155	147	159	147	183	166	170	176	176	TH	TT
2	EX-4037	2020/09/06	900	JL	10	262°C	260°C	120	112	117	114	136	188	166	180	169	172	TH	TT
3	EX-23	2020/09/06	900	GP	10	260°C	257°C	144	142	150	134	134	157	170	176	171	171	TH	TT
4	EX-4037	2020/09/07	1500	JL	10	260°C	260°C	121	119	118	132	120	159	142	149	153	164	TH	TT
5	EX-23	2020/09/07	1500	RW	10	260°C	257°C	135	147	124	129	132	168	154	164	170	167	TH	TT
6	EX-008	2020/09/09	815	JL	10	260°C	260°C	104	105	106	103	101	162	168	167	159	163	TH	TT

DETAIL CODE	PANEL NUMBER(S)	LOCATION DESCRIPTION	DETAIL TYPE	REPAIR TYPE	MACHINE NUMBER	REPAIR DATE YYYY-MM-DD	START TIME	WELD TECH	AIR TEMP °C	TEST DATE YYYY-MM-DD	TEST METH.	QC TECH
53A	503 / 504	Intersection Of P502	T	G&W	EX-23	2020/09/07	1800	RW	15	2020/09/10	VB+PS	TH
53B	503 / 504	3m From EEOS	BO	G&W	EX-23	2020/09/07	1756	RW	15	2020/09/10	VB+PS	TH
53C	507 / 509	EEOS	BO	G&W	EX-23	2020/09/07	1818	RW	15	2020/09/10	VB+PS	TH
53D	526 / 529	5m From EEOS	DS-238	P	EX-008	2020/09/09	950	JL	15	2020/09/10	VB+PS	TH
53E	521 / 520	Intersection Of P519	T	G&W	EX-23	2020/09/06	1001	RW	15	2020/09/10	VB+PS	TH
53F	521 /	1m From WEOS	D	P	EX-23	2020/09/06	1100	RW	15	2020/09/10	VB+PS	TH
53G	521 / 520	Intersection Of P524/523	T	P	EX-23	2020/09/06	1209	RW	15	2020/09/10	VB+PS	TH
53H	524 / 523	Intersection Of P526	T	G&W	EX-23	2020/09/06	1211	RW	15	2020/09/10	VB+PS	TH
53I	525 / 526	Intersection Of P523	T	G&W	EX-23	2020/09/06	1217	RW	15	2020/09/10	VB+PS	TH
53J	526 / 525	Intersection Of P529	T	G&W	EX-23	2020/09/06	1221	RW	15	2020/09/10	VB+PS	TH
53K	525 / 529	3m From EEOS	IO	G&W	EX-23	2020/09/06	1222	RW	15	2020/09/10	VB+PS	TH
53L	544 / 543	Intersection Of P540	T	G&W	EX-23	2020/09/07	1826	RW	15	2020/09/10	VB+PS	TH
53M	544 / 543	Intersection Of P546	T	G&W	EX-23	2020/09/07	1830	RW	15	2020/09/10	VB+PS	TH
53N	535 / 534	Intersection Of P537	T	G&W	EX-23	2020/09/06	1233	RW	15	2020/09/10	VB+PS	TH
53O	535 / 534	Intersection Of P531	T	G&W	EX-23	2020/09/06	1230	RW	15	2020/09/10	VB+PS	TH
53P	535 /	.8m From WEOS 2.2m North	D	P	EX-23	2020/09/06	1240	RW	15	2020/09/10	VB+PS	TH
53Q	535 /	1m From WEOS 1m South	D	P	EX-23	2020/09/06	1245	RW	15	2020/09/10	VB+PS	TH
53R	535 /	2m From WEOS .8m South	D	P	EX-23	2020/09/06	1244	RW	15	2020/09/10	VB+PS	TH
53S	535 /	2.2m From WEOS	D	G&W	EX-23	2020/09/06	1245	RW	15	2020/09/10	VB+PS	TH
53T	518 / 519	Intersection Of P516	T	G&W	EX-23	2020/09/06	925	RW	15	2020/09/10	VB+PS	TH

DETAIL TYPE:

AD - ANIMAL DAMAGE	DS-# - DESTRUCT SAMPLE NUMBER	IO - INSUFFICIENT OVERLAP	T - THREE PANEL INTERSECTION
ATL - AIR TEST LEAK	EE - EARTHWORK EQUIPMENT DAMAGE	MD - MANUFACTURER/DELIVERY DAMAGE	VL - VACUUM TEST LEAK
BO - FUSION WELDER BURN	EXT - EXTENSION	P - PENETRATION	WR - WRINKLE
CR - CREASE	FM - FISHMOUTH	PT - PRESSURE TEST CUT	WS - WELDER RESTART
D - INSTALLATION DAMAGE	FS - FAILED SEAM LENGTH	SI - SOIL SURFACE IRREGULARITY	OTHER:

TEST METHOD:

AL - AIR LANCE	VB - VAC BOX
PS - POINT STRESS	ST - SPARK TEST

REPAIR TYPE:

G&W - GRIND & WELD	B - BOOT	P - PATCH
HAW - HOT AIR WELD	C - CAP	

REMARKS

QC TECH Thomas Howald

SUPERVISOR Chad Messervey

SUBMISSION DATE 2020/01/05

SHEET NUMBER 99 of 117

GEOMEMBRANE DETAIL & TEST LOG

PROJECT NUMBER CT001401 AREA / LAYER Primary

PROJECT TITLE Victoria Gold Heap Leach Pad Phase 1B

TRIAL SEAMS

#	MACHINE NUMBER	DATE YYYY-MM-DD	TIME	WELD TECH	AIR TEMP °C	PREHEAT TEMP °C	EXTRUDER TEMP °C	PEEL (PPI)					SHEAR (PPI)					CHK'D BY	REMARKS
1	EX-008	2020/09/09	1230	JL	10	260°C	260°C	144	138	111	126	136	155	155	153	159	164	TH	TT
2																			
3																			
4																			
5																			
6																			

DETAIL CODE	PANEL NUMBER(S)	LOCATION DESCRIPTION	DETAIL TYPE	REPAIR TYPE	MACHINE NUMBER	REPAIR DATE YYYY-MM-DD	START TIME	WELD TECH	AIR TEMP °C	TEST DATE YYYY-MM-DD	TEST METH.	QC TECH
A	/											
B	/											
C	/											
D	/											
E	/											
F	/											
G	/											
H	/											
I	/											
J	/											
K	/											
L	/											
M	/											
N	/											
O	/											
P	/											
Q	/											
R	/											
S	/											
T	/											

DETAIL TYPE:

AD - ANIMAL DAMAGE	DS-# - DESTRUCT SAMPLE NUMBER	IO - INSUFFICIENT OVERLAP	T - THREE PANEL INTERSECTION
ATL - AIR TEST LEAK	EE - EARTHWORK EQUIPMENT DAMAGE	MD - MANUFACTURER/DELIVERY DAMAGE	VL - VACUUM TEST LEAK
BO - FUSION WELDER BURN	EXT - EXTENSION	P - PENETRATION	WR - WRINKLE
CR - CREASE	FM - FISHMOUTH	PT - PRESSURE TEST CUT	WS - WELDER RESTART
D - INSTALLATION DAMAGE	FS - FAILED SEAM LENGTH	SI - SOIL SURFACE IRREGULARITY	OTHER:

TEST METHOD:

AL - AIR LANCE	VB - VAC BOX
PS - POINT STRESS	ST - SPARK TEST

REPAIR TYPE:

G&W - GRIND & WELD	B - BOOT	P - PATCH
HAW - HOT AIR WELD	C - CAP	

REMARKS

QC TECH Thomas Howald

SUPERVISOR Chad Messervey

SUBMISSION DATE 2020/01/05

SHEET NUMBER 100 of 117

GEOMEMBRANE DETAIL & TEST LOG

PROJECT NUMBER CT001401 AREA / LAYER Primary

PROJECT TITLE Victoria Gold Heap Leach Pad Phase 1B

TRIAL SEAMS

#	MACHINE NUMBER	DATE YYYY-MM-DD	TIME	WELD TECH	AIR TEMP °C	PREHEAT TEMP °C	EXTRUDER TEMP °C	PEEL (PPI)					SHEAR (PPI)					CHK'D BY	REMARKS
1	EX-23	2020/09/06	900	RW	10	260°C	257°C	159	155	147	159	147	183	166	170	176	176	TH	TT
2	EX-4037	2020/09/06	900	JL	10	262°C	260°C	120	112	117	114	136	188	166	180	169	172	TH	TT
3	EX-23	2020/09/06	900	GP	10	260°C	257°C	144	142	150	134	134	157	170	176	171	171	TH	TT
4	EX-4037	2020/09/07	1500	JL	10	260°C	260°C	121	119	118	132	120	159	142	149	153	164	TH	TT
5	EX-23	2020/09/07	1500	RW	10	260°C	257°C	135	147	124	129	132	168	154	164	170	167	TH	TT
6	EX-008	2020/09/09	815	JL	10	260°C	260°C	104	105	106	103	101	162	168	167	159	163	TH	TT

DETAIL CODE	PANEL NUMBER(S)	LOCATION DESCRIPTION	DETAIL TYPE	REPAIR TYPE	MACHINE NUMBER	REPAIR DATE YYYY-MM-DD	START TIME	WELD TECH	AIR TEMP °C	TEST DATE YYYY-MM-DD	TEST METH.	QC TECH
54A	519 / 518	Intersection Of P520	T	G&W	EX-23	2020/09/06	1256	RW	15	2020/09/10	VB+PS	TH
54B	528 / 529	Intersection Of P531	T	G&W	EX-23	2020/09/06	1259	RW	15	2020/09/10	VB+PS	TH
54C	530 / 531	Intersection Of P528	T	G&W	EX-4037	2020/09/06	935	JL	15	2020/09/10	VB+PS	TH
54D	530 / 531	Interection Of P534	T	G&W	EX-4037	2020/09/06	938	JL	15	2020/09/10	VB+PS	TH
54E	534 / 537	10m From WEOS	IO	G&W	EX-4037	2020/09/06	924	JL	15	2020/09/10	VB+PS	TH
54F	536 / 537	Intersection Of P534	T	G&W	EX-4037	2020/09/06	928	JL	15	2020/09/10	VB+PS	TH
54G	537 /	1.1m From WEOS 2m North	D	P	EX-4037	2020/09/06	925	JL	15	2020/09/10	VB+PS	TH
54H	536 / 537	Interrsection Of P539	T	P	EX-4037	2020/09/07	1829	JL	15	2020/09/10	VB+PS	TH
54I	537 /	.2m From WEOS .9m South	D	G&W	EX-4037	2020/09/07	1827	JL	15	2020/09/10	VB+PS	TH
54J	537 / 539	6m From WEOS	IO	G&W	EX-4037	2020/09/07	1828	JL	15	2020/09/10	VB+PS	TH
54K	536 / 539	11m Form EEOS	BO	P	EX-4037	2020/09/07	1830	JL	15	2020/09/10	VB+PS	TH
54L	537 / 539	15m From WEOS	BO	P	EX-23	2020/09/07	1859	RW	15	2020/09/10	VB+PS	TH
54M	539 / 543	24m From WEOS	BO	P	EX-4037	2020/09/07	1836	JL	15	2020/09/10	VB+PS	TH
54N	539 / 543	15m From WEOS	IO	G&W	EX-4037	2020/09/07	1835	JL	15	2020/09/10	VB+PS	TH
54O	540 / 539	Intersection Of P543	T	G&W	EX-008	2020/09/09	1135	JL	15	2020/09/10	VB+PS	TH
54P	540 / 539	Intersection Of P537	T	G&W	EX-008	2020/09/09	1130	JL	15	2020/09/10	VB+PS	TH
54Q	546 / 545	Intersection Of P548	T	G&W	EX-008	2020/09/09	1119	JL	15	2020/09/10	VB+PS	TH
54R	546 / 545	Intersection Of P543	T	G&W	EX-008	2020/09/09	1118	JL	15	2020/09/10	VB+PS	TH
54S	542 / 543	Intersection Of P539	T	G&W	EX-4037	2020/09/07	1821	JL	15	2020/09/10	VB+PS	TH
54T	543 / 542	Intersection Of P545	T	G&W	EX-4037	2020/09/07	1819	JL	15	2020/09/10	VB+PS	TH

DETAIL TYPE:

AD - ANIMAL DAMAGE	DS-# - DESTRUCT SAMPLE NUMBER	IO - INSUFFICIENT OVERLAP	T - THREE PANEL INTERSECTION
ATL - AIR TEST LEAK	EE - EARTHWORK EQUIPMENT DAMAGE	MD - MANUFACTURER/DELIVERY DAMAGE	VL - VACUUM TEST LEAK
BO - FUSION WELDER BURN	EXT - EXTENSION	P - PENETRATION	WR - WRINKLE
CR - CREASE	FM - FISHMOUTH	PT - PRESSURE TEST CUT	WS - WELDER RESTART
D - INSTALLATION DAMAGE	FS - FAILED SEAM LENGTH	SI - SOIL SURFACE IRREGULARITY	OTHER:

TEST METHOD:

AL - AIR LANCE	VB - VAC BOX
PS - POINT STRESS	ST - SPARK TEST

REPAIR TYPE:

G&W - GRIND & WELD	B - BOOT	P - PATCH
HAW - HOT AIR WELD	C - CAP	

REMARKS

QC TECH Thomas Howald

SUPERVISOR Chad Messervey

SUBMISSION DATE 2020/01/05

SHEET NUMBER 101 of 117

GEOMEMBRANE DETAIL & TEST LOG

PROJECT NUMBER CT001401 AREA / LAYER Primary

PROJECT TITLE Victoria Gold Heap Leach Pad Phase 1B

TRIAL SEAMS

#	MACHINE NUMBER	DATE YYYY-MM-DD	TIME	WELD TECH	AIR TEMP °C	PREHEAT TEMP °C	EXTRUDER TEMP °C	PEEL (PPI)					SHEAR (PPI)					CHK'D BY	REMARKS
1	EX-008	2020/09/09	1230	JL	10	260°C	260°C	144	138	111	126	136	155	155	153	159	164	TH	TT
2																			
3																			
4																			
5																			
6																			

DETAIL CODE	PANEL NUMBER(S)	LOCATION DESCRIPTION	DETAIL TYPE	REPAIR TYPE	MACHINE NUMBER	REPAIR DATE YYYY-MM-DD	START TIME	WELD TECH	AIR TEMP °C	TEST DATE YYYY-MM-DD	TEST METH.	QC TECH
A	/											
B	/											
C	/											
D	/											
E	/											
F	/											
G	/											
H	/											
I	/											
J	/											
K	/											
L	/											
M	/											
N	/											
O	/											
P	/											
Q	/											
R	/											
S	/											
T	/											

DETAIL TYPE:

AD - ANIMAL DAMAGE	DS-# - DESTRUCT SAMPLE NUMBER	IO - INSUFFICIENT OVERLAP	T - THREE PANEL INTERSECTION
ATL - AIR TEST LEAK	EE - EARTHWORK EQUIPMENT DAMAGE	MD - MANUFACTURER/DELIVERY DAMAGE	VL - VACUUM TEST LEAK
BO - FUSION WELDER BURN	EXT - EXTENSION	P - PENETRATION	WR - WRINKLE
CR - CREASE	FM - FISHMOUTH	PT - PRESSURE TEST CUT	WS - WELDER RESTART
D - INSTALLATION DAMAGE	FS - FAILED SEAM LENGTH	SI - SOIL SURFACE IRREGULARITY	OTHER:

TEST METHOD:

AL - AIR LANCE	VB - VAC BOX
PS - POINT STRESS	ST - SPARK TEST

REPAIR TYPE:

G&W - GRIND & WELD	B - BOOT	P - PATCH
HAW - HOT AIR WELD	C - CAP	

REMARKS

QC TECH Thomas Howald

SUPERVISOR Chad Messervey

SUBMISSION DATE 2020/01/05

SHEET NUMBER 102 of 117

GEOMEMBRANE DETAIL & TEST LOG

PROJECT NUMBER CT001401 AREA / LAYER Primary

PROJECT TITLE Victoria Gold Heap Leach Pad Phase 1B

TRIAL SEAMS

#	MACHINE NUMBER	DATE YYYY-MM-DD	TIME	WELD TECH	AIR TEMP °C	PREHEAT TEMP °C	EXTRUDER TEMP °C	PEEL (PPI)					SHEAR (PPI)					CHK'D BY	REMARKS
1	EX-4037	2020/09/07	1500	JL	10	260°C	260°C	121	119	118	132	120	159	142	149	153	164	TH	TT
2	EX-23	2020/09/07	1500	RW	10	260°C	257°C	135	147	124	129	132	168	154	164	170	167	TH	TT
3	EX-008	2020/09/09	815	JL	10	260°C	260°C	104	105	106	103	101	162	168	167	159	163	TH	TT
4	EX-008	2020/09/09	1230	JL	10	260°C	260°C	144	138	111	126	136	155	155	153	159	164	TH	TT
5	EX-008	2020/09/11	1015	JL	10	260°C	260°C	101	99	99	107	110	175	157	179	172	172	TH	TT
6	EX-008	2020/09/11	1400	JL	10	260°C	260°C	111	129	106	103	125	166	149	139	145	161	TH	TT

DETAIL CODE	PANEL NUMBER(S)	LOCATION DESCRIPTION	DETAIL TYPE	REPAIR TYPE	MACHINE NUMBER	REPAIR DATE YYYY-MM-DD	START TIME	WELD TECH	AIR TEMP °C	TEST DATE YYYY-MM-DD	TEST METH.	QC TECH
55A	548 / 547	Intersection Of P545	T	G&W	EX-4037	2020/09/07	1819	JL	10	2020/09/15	VB+PS	TH
55B	548 / 547	Intersection Of P550	T	G&W	EX-4037	2020/09/07	1810	JL	10	2020/09/15	VB+PS	TH
55C	552 / 551	Intersection Of P549	T	G&W	EX-23	2020/09/07	1835	RW	10	2020/09/15	VB+PS	TH
55D	552 / 551	Intersection Of P554	T	G&W	EX-008	2020/09/09	1214	JL	10	2020/09/15	VB+PS	TH
55E	552 /	1m From WEOS .5m North	D	P	EX-008	2020/09/09	1213	JL	10	2020/09/15	VB+PS	TH
55F	552 /	1m From WEOS .5m South	D	G&W	EX-008	2020/09/09	1214	JL	10	2020/09/15	VB+PS	TH
55G	554 / 557	11m Form EEOS	IO	P	EX-008	2020/09/09	1200	JL	10	2020/09/15	VB+PS	TH
55H	556 / 557	Intersection Of P554	T	G&W	EX-008	2020/09/09	1322	JL	10	2020/09/15	VB+PS	TH
55I	557 / 556	Intersection Of P559	T	G&W	EX-008	2020/09/09	1315	JL	10	2020/09/15	VB+PS	TH
55J	557 /	.9m From WEOS .9m North	D	G&W	EX-008	2020/09/09	1320	JL	10	2020/09/15	VB+PS	TH
55K	557 /	.9m From WEOS 1.3m South	D	P	EX-008	2020/09/09	1320	JL	10	2020/09/15	VB+PS	TH
55L	562 / 561	Intersection Of P559	T	G&W	EX-008	2020/09/09	1159	JL	10	2020/09/15	VB+PS	TH
55M	562 / 561	Intersection Of P564	T	G&W	EX-008	2020/09/09	1213	JL	10	2020/09/15	VB+PS	TH
55N	562 /	1m From WEOS .5m South	D	P	EX-008	2020/09/09	1212	JL	10	2020/09/15	VB+PS	TH
55O	567 / 566	Intersection Of P564	T	G&W	EX-008	2020/09/11	1636	JL	10	2020/09/15	VB+PS	TH
55P	567 / 566	Intersection Of P569	T	G&W	EX-008	2020/09/11	1638	JL	10	2020/09/15	VB+PS	TH
55Q	567 /	.7m From WEOS.5m North	D	G&W	EX-008	2020/09/11	1637	JL	10	2020/09/15	VB+PS	TH
55R	577 / 576	Intersection Of P574	T	G&W	EX-008	2020/09/11	1645	JL	10	2020/09/15	VB+PS	TH
55S	577 / 576	Intersection Of P579	T	G&W	EX-008	2020/09/11	1640	JL	10	2020/09/15	VB+PS	TH
55T	577 /	.5m From WEOS .2m North	D	G&W	EX-008	2020/09/11	1642	JL	10	2020/09/15	VB+PS	TH

DETAIL TYPE:

AD - ANIMAL DAMAGE	DS-# - DESTRUCT SAMPLE NUMBER	IO - INSUFFICIENT OVERLAP	T - THREE PANEL INTERSECTION
ATL - AIR TEST LEAK	EE - EARTHWORK EQUIPMENT DAMAGE	MD - MANUFACTURER/DELIVERY DAMAGE	VL - VACUUM TEST LEAK
BO - FUSION WELDER BURN	EXT - EXTENSION	P - PENETRATION	WR - WRINKLE
CR - CREASE	FM - FISHMOUTH	PT - PRESSURE TEST CUT	WS - WELDER RESTART
D - INSTALLATION DAMAGE	FS - FAILED SEAM LENGTH	SI - SOIL SURFACE IRREGULARITY	OTHER:

TEST METHOD:

AL - AIR LANCE	VB - VAC BOX
PS - POINT STRESS	ST - SPARK TEST

REPAIR TYPE:

G&W - GRIND & WELD	B - BOOT	P - PATCH
HAW - HOT AIR WELD	C - CAP	

REMARKS

QC TECH Thomas Howald

SUPERVISOR Chad Messervey

SUBMISSION DATE 2020/01/05

SHEET NUMBER 103 of 117

GEOMEMBRANE DETAIL & TEST LOG

PROJECT NUMBER CT001401 AREA / LAYER Primary

PROJECT TITLE Victoria Gold Heap Leach Pad Phase 1B

TRIAL SEAMS

#	MACHINE NUMBER	DATE YYYY-MM-DD	TIME	WELD TECH	AIR TEMP °C	PREHEAT TEMP °C	EXTRUDER TEMP °C	PEEL (PPI)					SHEAR (PPI)					CHK'D BY	REMARKS
1	EX-008	2020/09/09	815	JL	10	260°C	260°C	104	105	106	103	101	162	168	167	159	163	TH	TT
2	EX-008	2020/09/09	1230	JL	10	260°C	260°C	144	138	111	126	136	155	155	153	159	164	TH	TT
3	EX-008	2020/09/11	1015	JL	10	260°C	260°C	101	99	99	107	110	175	157	179	172	172	TH	TT
4	EX-008	2020/09/11	1400	JL	10	260°C	260°C	111	129	106	103	125	166	149	139	145	161	TH	TT
5																			
6																			

DETAIL CODE	PANEL NUMBER(S)	LOCATION DESCRIPTION	DETAIL TYPE	REPAIR TYPE	MACHINE NUMBER	REPAIR DATE YYYY-MM-DD	START TIME	WELD TECH	AIR TEMP °C	TEST DATE YYYY-MM-DD	TEST METH.	QC TECH
56A	577 /	.6m From WEOS 1m South	D	G&W	EX-008	2020/09/11	1641	JL	10	2020/09/15	VB+PS	TH
56B	577 /	.9m From WEOS 1m South	D	G&W	EX-008	2020/09/11	1641	JL	10	2020/09/15	VB+PS	TH
56C	580 / 579	Intersection Of P577	T	G&W	EX-008	2020/09/11	1700	JL	10	2020/09/15	VB+PS	TH
56D	580 / 579	Intersection Of P582	T	G&W	EX-008	2020/09/11	1705	JL	10	2020/09/15	VB+PS	TH
56E	582 / 582	Intersection Of P579	T	G&W	EX-008	2020/09/11	1710	JL	10	2020/09/15	VB+PS	TH
56F	582 /	15.6m From EEOS	WR	P	EX-008	2020/09/11	1759	JL	10	2020/09/15	VB+PS	TH
56G	574 / 573	Intersection Of P576	T	G&W	EX-008	2020/09/11	1610	JL	10	2020/09/15	VB+PS	TH
56H	574 / 573	Intersection Of P571	T	G&W	EX-008	2020/09/11	1620	JL	10	2020/09/15	VB+PS	TH
56I	564 / 563	Intersection Of P566	T	G&W	EX-008	2020/09/09	1400	JL	10	2020/09/15	VB+PS	TH
56J	564 /	.8m From WEOS	D	P	EX-008	2020/09/09	1405	JL	10	2020/09/15	VB+PS	TH
56K	564 / 563	Intersection Of P561/560	T	G&W	EX-008	2020/09/09	1410	JL	10	2020/09/15	VB+PS	TH
56L	561 / 560	Intersection Of P559	T	G&W	EX-008	2020/09/09	1355	JL	10	2020/09/15	VB+PS	TH
56M	554 / 553	Intersection Of P556	T	G&W	EX-008	2020/09/09	1100	JL	10	2020/09/15	VB+PS	TH
56N	554 / 553	Intersection Of P551	T	G&W	EX-008	2020/09/09	1055	JL	10	2020/09/15	VB+PS	TH
56O	551 /	86m From EEOS 1m South	D	P	EX-008	2020/09/09	1115	JL	10	2020/09/15	VB+PS	TH
56P	551 / 548	49.2m From EEOS	IO	P	EX-008	2020/09/09	1125	JL	10	2020/09/15	VB+PS	TH
56Q	549 / 548	Intersection Of P551	T	G&W	EX-008	2020/09/09	1200	JL	10	2020/09/15	VB+PS	TH
56R	549 / 548	Intersection Of P546	T	G&W	EX-008	2020/09/09	1205	JL	10	2020/09/15	VB+PS	TH
56S	560 / 563	50m From EEOS	BO	P	EX-008	2020/09/09	1530	JL	10	2020/09/15	VB+PS	TH
56T	558 / 559	Intersection Of P560	T	G&W	EX-008	2020/09/09	1529	JL	10	2020/09/15	VB+PS	TH

DETAIL TYPE:

AD - ANIMAL DAMAGE	DS-# - DESTRUCT SAMPLE NUMBER	IO - INSUFFICIENT OVERLAP	T - THREE PANEL INTERSECTION
ATL - AIR TEST LEAK	EE - EARTHWORK EQUIPMENT DAMAGE	MD - MANUFACTURER/DELIVERY DAMAGE	VL - VACUUM TEST LEAK
BO - FUSION WELDER BURN	EXT - EXTENSION	P - PENETRATION	WR - WRINKLE
CR - CREASE	FM - FISHMOUTH	PT - PRESSURE TEST CUT	WS - WELDER RESTART
D - INSTALLATION DAMAGE	FS - FAILED SEAM LENGTH	SI - SOIL SURFACE IRREGULARITY	OTHER:

TEST METHOD:

AL - AIR LANCE	VB - VAC BOX
PS - POINT STRESS	ST - SPARK TEST

REPAIR TYPE:

G&W - GRIND & WELD	B - BOOT	P - PATCH
HAW - HOT AIR WELD	C - CAP	

REMARKS

QC TECH Thomas Howald

SUPERVISOR Chad Messervey

SUBMISSION DATE 2020/01/05

SHEET NUMBER 104 of 117

GEOMEMBRANE DETAIL & TEST LOG

PROJECT NUMBER CT001401 AREA / LAYER Primary

PROJECT TITLE Victoria Gold Heap Leach Pad Phase 1B

TRIAL SEAMS

#	MACHINE NUMBER	DATE YYYY-MM-DD	TIME	WELD TECH	AIR TEMP °C	PREHEAT TEMP °C	EXTRUDER TEMP °C	PEEL (PPI)					SHEAR (PPI)					CHK'D BY	REMARKS
1	EX-4037	2020/09/07	1500	JL	10	260°C	260°C	121	119	118	132	120	159	142	149	153	164	TH	TT
2	EX-23	2020/09/07	1500	RW	10	260°C	257°C	135	147	124	129	132	168	154	164	170	167	TH	TT
3	EX-008	2020/09/09	815	JL	10	260°C	260°C	104	105	106	103	101	162	168	167	159	163	TH	TT
4	EX-008	2020/09/09	1230	JL	10	260°C	260°C	144	138	111	126	136	155	155	153	159	164	TH	TT
5	EX-008	2020/09/11	1015	JL	10	260°C	260°C	101	99	99	107	110	175	157	179	172	172	TH	TT
6	EX-008	2020/09/11	1400	JL	10	260°C	260°C	111	129	106	103	125	166	149	139	145	161	TH	TT

DETAIL CODE	PANEL NUMBER(S)	LOCATION DESCRIPTION	DETAIL TYPE	REPAIR TYPE	MACHINE NUMBER	REPAIR DATE YYYY-MM-DD	START TIME	WELD TECH	AIR TEMP °C	TEST DATE YYYY-MM-DD	TEST METH.	QC TECH
57A	558 / 559	Intersection Of P556	T	G&W	EX-008	2020/09/09	1528	JL	10	2020/09/15	VB+PS	TH
57B	563 / 566	43.2m From EEOS	IO	G&W	EX-008	2020/09/09	1455	JL	10	2020/09/15	VB+PS	TH
57C	568 / 569	Intersection Of P566	T	G&W	EX-008	2020/09/09	1454	JL	10	2020/09/15	VB+PS	TH
57D	578 / 579	Intersection Of P576	T	G&W	EX-008	2020/09/11	1435	JL	10	2020/09/15	VB+PS	TH
57E	578 / 579	Intersection Of P581	T	G&W	EX-008	2020/09/11	1437	JL	10	2020/09/15	VB+PS	TH
57F	579 /	1m From WEOS 1m North	D	G&W	EX-008	2020/09/11	1436	JL	10	2020/09/15	VB+PS	TH
57G	579 /	1m From WEOS 1m South	D	G&W	EX-008	2020/09/11	1434	JL	10	2020/09/15	VB+PS	TH
57H	576 / 575	Intersection Of P573	T	G&W	EX-008	2020/09/11	1225	JL	10	2020/09/15	VB+PS	TH
57I	576 / 575	Intersection Of P578	T	G&W	EX-008	2020/09/11	1300	JL	10	2020/09/15	VB+PS	TH
57J	576 /	1m From WEOS 1m South	D	P	EX-008	2020/09/11	1245	JL	10	2020/09/15	VB+PS	TH
57K	576 /	2m From WEOS 1m South	D	P	EX-008	2020/09/11	1315	JL	10	2020/09/15	VB+PS	TH
57L	576 /	3m From WEOS 1m South	D	P	EX-008	2020/09/11	1325	JL	10	2020/09/15	VB+PS	TH
57M	576 /	4m From WEOS 1m South	D	P	EX-008	2020/09/11	1330	JL	10	2020/09/15	VB+PS	TH
57N	576 /	5m From WEOS 1m South	D	P	EX-008	2020/09/11	1310	JL	10	2020/09/15	VB+PS	TH
57O	572 / 573	Intersection Of P575	T	G&W	EX-008	2020/09/11	1730	JL	10	2020/09/15	VB+PS	TH
57P	572 / 573	Intersection Of P570	T	G&W	EX-008	2020/09/11	1731	JL	10	2020/09/15	VB+PS	TH
57Q	566 / 565	Intersection Of P568	T	G&W	EX-008	2020/09/11	1207	JL	10	2020/09/15	VB+PS	TH
57R	566 / 565	Intersection Of P563	T	G&W	EX-008	2020/09/11	1208	JL	10	2020/09/15	VB+PS	TH
57S	566 / 568	38.2m From EEOS	IO	G&W	EX-008	2020/09/11	1206	JL	10	2020/09/15	VB+PS	TH
57T	556 / 555	Intersection Of P558	T	G&W	EX-4037	2020/09/07	1811	JL	10	2020/09/15	VB+PS	TH

DETAIL TYPE:

AD - ANIMAL DAMAGE	DS-# - DESTRUCT SAMPLE NUMBER	IO - INSUFFICIENT OVERLAP	T - THREE PANEL INTERSECTION
ATL - AIR TEST LEAK	EE - EARTHWORK EQUIPMENT DAMAGE	MD - MANUFACTURER/DELIVERY DAMAGE	VL - VACUUM TEST LEAK
BO - FUSION WELDER BURN	EXT - EXTENSION	P - PENETRATION	WR - WRINKLE
CR - CREASE	FM - FISHMOUTH	PT - PRESSURE TEST CUT	WS - WELDER RESTART
D - INSTALLATION DAMAGE	FS - FAILED SEAM LENGTH	SI - SOIL SURFACE IRREGULARITY	OTHER:

TEST METHOD:

AL - AIR LANCE	VB - VAC BOX
PS - POINT STRESS	ST - SPARK TEST

REPAIR TYPE:

G&W - GRIND & WELD	B - BOOT	P - PATCH
HAW - HOT AIR WELD	C - CAP	

REMARKS

QC TECH Thomas Howald

SUPERVISOR Chad Messervey

SUBMISSION DATE 2020/01/05

SHEET NUMBER 105 of 117

GEOMEMBRANE DETAIL & TEST LOG

PROJECT NUMBER CT001401 AREA / LAYER Primary

PROJECT TITLE Victoria Gold Heap Leach Pad Phase 1B

TRIAL SEAMS

#	MACHINE NUMBER	DATE YYYY-MM-DD	TIME	WELD TECH	AIR TEMP °C	PREHEAT TEMP °C	EXTRUDER TEMP °C	PEEL (PPI)					SHEAR (PPI)					CHK'D BY	REMARKS
1	EX-4037	2020/09/07	1500	JL	10	260°C	260°C	121	119	118	132	120	159	142	149	153	164	TH	TT
2	EX-23	2020/09/07	1500	RW	10	260°C	257°C	135	147	124	129	132	168	154	164	170	167	TH	TT
3	EX-008	2020/09/11	1015	JL	10	260°C	260°C	101	99	99	107	110	175	157	179	172	172	TH	TT
4	EX-008	2020/09/11	1400	JL	10	260°C	260°C	111	129	106	103	125	166	149	139	145	161	TH	TT
5	EX-008	2020/09/13	1015	JL	10	260°C	260°C	117	147	166	145	118	179	165	151	153	170	TH	TT
6	EX-008	2020/09/13	1500	JL	10	260°C	260°C	135	110	109	121	101	142	139	146	141	141	TH	TT

DETAIL CODE	PANEL NUMBER(S)	LOCATION DESCRIPTION	DETAIL TYPE	REPAIR TYPE	MACHINE NUMBER	REPAIR DATE YYYY-MM-DD	START TIME	WELD TECH	AIR TEMP °C	TEST DATE YYYY-MM-DD	TEST METH.	QC TECH
58A	556 / 555	Intersection Of P553	T	G&W	EX-4037	2020/09/07	1812	JL	10	2020/09/13	VB+PS	TH
58B	571 / 570	Intersection Of P573	T	G&W	EX-008	2020/09/13	1720	JL	10	2020/09/13	VB+PS	TH
58C	571 / 570	Intersection Of P569	T	G&W	EX-008	2020/09/13	1725	JL	10	2020/09/13	VB+PS	TH
58D	571 /	.8m From WEOS 1m North	D	G&W	EX-008	2020/09/13	1730	JL	10	2020/09/13	VB+PS	TH
58E	571 /	.8m From WEOS 1m South	D	G&W	EX-008	2020/09/13	1731	JL	10	2020/09/13	VB+PS	TH
58F	568 / 569	Intersection Of P570	T	G&W	EX-008	2020/09/13	1748	JL	10	2020/09/13	VB+PS	TH
58G	550 / 551	Intersection Of P553	T	G&W	EX-008	2020/09/13	1700	JL	10	2020/09/13	VB+PS	TH
58H	550 / 551	Intersection Of P548	T	G&W	EX-008	2020/09/13	1706	JL	10	2020/09/13	VB+PS	TH
58I	585 / 584	Intersection Of P582	T	G&W	EX-008	2020/09/11	1450	JL	10	2020/09/15	VB+PS	TH
58J	585 / 854	Intersection Of P588	T	G&W	EX-008	2020/09/14	1220	JL	10	2020/09/15	VB+PS	TH
58K	589 / 588	Intersection Of P585	T	G&W	EX-008	2020/09/14	1230	JL	10	2020/09/15	VB+PS	TH
58L	589 / 588	Intersection Of P591	T	G&W	EX-008	2020/09/14	1242	JL	10	2020/09/15	VB+PS	TH
58M	589 /	.5m From WEOS .2m North	D	P	EX-008	2020/09/14	1240	JL	10	2020/09/15	VB+PS	TH
58N	589 /	.9m From WEOS .3m South	D	G&W	EX-008	2020/09/14	1241	JL	10	2020/09/15	VB+PS	TH
58O	589 / 591	7.5m From WEOS	IO	G&W	EX-008	2020/09/14	1243	JL	10	2020/09/15	VB+PS	TH
58P	591 / 592	Intersection Of P589	T	G&W	EX-008	2020/09/14	1415	JL	10	2020/09/15	VB+PS	TH
58Q	591 / 592	Intersection Of P594	T	G&W	EX-008	2020/09/14	1417	JL	10	2020/09/15	VB+PS	TH
58R	597 / 598	Intersection Of P594	T	G&W	EX-008	2020/09/14	1418	JL	10	2020/09/15	VB+PS	TH
58S	597 / 596	Intersection Of P594	T	P	EX-008	2020/09/14	1300	JL	10	2020/09/15	VB+PS	TH
58T	597 / 596	Intersection Of P600	T	G&W	EX-008	2020/09/14	1301	JL	10	2020/09/15	VB+PS	TH

DETAIL TYPE:

AD - ANIMAL DAMAGE	DS-# - DESTRUCT SAMPLE NUMBER	IO - INSUFFICIENT OVERLAP	T - THREE PANEL INTERSECTION
ATL - AIR TEST LEAK	EE - EARTHWORK EQUIPMENT DAMAGE	MD - MANUFACTURER/DELIVERY DAMAGE	VL - VACUUM TEST LEAK
BO - FUSION WELDER BURN	EXT - EXTENSION	P - PENETRATION	WR - WRINKLE
CR - CREASE	FM - FISHMOUTH	PT - PRESSURE TEST CUT	WS - WELDER RESTART
D - INSTALLATION DAMAGE	FS - FAILED SEAM LENGTH	SI - SOIL SURFACE IRREGULARITY	OTHER:

TEST METHOD:

AL - AIR LANCE	VB - VAC BOX
PS - POINT STRESS	ST - SPARK TEST

REPAIR TYPE:

G&W - GRIND & WELD	B - BOOT	P - PATCH
HAW - HOT AIR WELD	C - CAP	

REMARKS

QC TECH Thomas Howald

SUPERVISOR Chad Messervey

SUBMISSION DATE 2020/01/05

SHEET NUMBER 106 of 117

GEOMEMBRANE DETAIL & TEST LOG

PROJECT NUMBER CT001401 AREA / LAYER Primary

PROJECT TITLE Victoria Gold Heap Leach Pad Phase 1B

TRIAL SEAMS

#	MACHINE NUMBER	DATE YYYY-MM-DD	TIME	WELD TECH	AIR TEMP °C	PREHEAT TEMP °C	EXTRUDER TEMP °C	PEEL (PPI)					SHEAR (PPI)					CHK'D BY	REMARKS
1	EX-008	2020/09/14	940	JL	10	260°C	260°C	130	133	136	132	124	141	168	168	165	165	TH	TT
2	EX-23	2020/09/14	1240	GP	10	260°C	257°C	147	157	147	167	155	172	164	171	177	176	TH	TT
3	EX-35	2020/09/14	1300	RL	10	260°C	257°C	115	117	120	121	119	156	149	148	152	154	TH	TT
4	EX-008	2020/09/14	1400	JL	10	260°C	260°C	143	151	148	145	126	140	179	159	177	172	TH	TT
5	EX-23	2020/09/14	1630	GP	10	260°C	257°C	142	131	145	141	137	158	159	161	158	158	TH	TT
6	EX-35	2020/09/14	1710	RL	10	260°C	257°C	112	127	131	128	132	157	161	163	159	160	TH	TT

DETAIL CODE	PANEL NUMBER(S)	LOCATION DESCRIPTION	DETAIL TYPE	REPAIR TYPE	MACHINE NUMBER	REPAIR DATE YYYY-MM-DD	START TIME	WELD TECH	AIR TEMP °C	TEST DATE YYYY-MM-DD	TEST METH.	QC TECH
A	/											
B	/											
C	/											
D	/											
E	/											
F	/											
G	/											
H	/											
I	/											
J	/											
K	/											
L	/											
M	/											
N	/											
O	/											
P	/											
Q	/											
R	/											
S	/											
T	/											

DETAIL TYPE:

AD - ANIMAL DAMAGE	DS-# - DESTRUCT SAMPLE NUMBER	IO - INSUFFICIENT OVERLAP	T - THREE PANEL INTERSECTION
ATL - AIR TEST LEAK	EE - EARTHWORK EQUIPMENT DAMAGE	MD - MANUFACTURER/DELIVERY DAMAGE	VL - VACUUM TEST LEAK
BO - FUSION WELDER BURN	EXT - EXTENSION	P - PENETRATION	WR - WRINKLE
CR - CREASE	FM - FISHMOUTH	PT - PRESSURE TEST CUT	WS - WELDER RESTART
D - INSTALLATION DAMAGE	FS - FAILED SEAM LENGTH	SI - SOIL SURFACE IRREGULARITY	OTHER:

TEST METHOD:

AL - AIR LANCE	VB - VAC BOX
PS - POINT STRESS	ST - SPARK TEST

REPAIR TYPE:

G&W - GRIND & WELD	B - BOOT	P - PATCH
HAW - HOT AIR WELD	C - CAP	

REMARKS

QC TECH Thomas Howald

SUPERVISOR Chad Messervey

SUBMISSION DATE 2020/01/05

SHEET NUMBER 107 of 117

GEOMEMBRANE DETAIL & TEST LOG

PROJECT NUMBER CT001401 AREA / LAYER Primary

PROJECT TITLE Victoria Gold Heap Leach Pad Phase 1B

TRIAL SEAMS

#	MACHINE NUMBER	DATE YYYY-MM-DD	TIME	WELD TECH	AIR TEMP °C	PREHEAT TEMP °C	EXTRUDER TEMP °C	PEEL (PPI)					SHEAR (PPI)					CHK'D BY	REMARKS
1	EX-008	2020/09/11	1015	JL	10	260°C	260°C	101	99	99	107	110	175	157	179	172	172	TH	TT
2	EX-008	2020/09/11	1400	JL	10	260°C	260°C	111	129	106	103	125	166	149	139	145	161	TH	TT
3	EX-008	2020/09/14	940	JL	10	260°C	260°C	130	133	136	132	124	141	168	168	165	165	TH	TT
4	EX-23	2020/09/14	1240	GP	10	260°C	257°C	147	157	147	167	155	172	164	171	177	176	TH	TT
5	EX-35	2020/09/14	1300	RL	10	260°C	257°C	115	117	120	121	119	156	149	148	152	154	TH	TT
6	EX-008	2020/09/14	1400	JL	10	260°C	260°C	143	151	148	145	126	140	179	159	177	172	TH	TT

DETAIL CODE	PANEL NUMBER(S)	LOCATION DESCRIPTION	DETAIL TYPE	REPAIR TYPE	MACHINE NUMBER	REPAIR DATE YYYY-MM-DD	START TIME	WELD TECH	AIR TEMP °C	TEST DATE YYYY-MM-DD	TEST METH.	QC TECH
59A	582 / 581	Intersection Of P579	T	G&W	EX-008	2020/09/11	1435	JL	10	2020/09/15	VB+PS	TH
59B	581 / 582	Intersection Of P579	T	G&W	EX-008	2020/09/11	1440	JL	10	2020/09/15	VB+PS	TH
59C	582 /	.9m From WEOS	D	G&W	EX-008	2020/09/11	1142	JL	10	2020/09/15	VB+PS	TH
59D	588 / 587	Intersection Of P584	T	G&W	EX-008	2020/09/14	1100	JL	10	2020/09/15	VB+PS	TH
59E	588 / 587	Intersection Of P591	T	G&W	EX-008	2020/09/14	1110	JL	10	2020/09/15	VB+PS	TH
59F	594 / 593	Intersection Of P591	T	G&W	EX-008	2020/09/14	1055	JL	10	2020/09/15	VB+PS	TH
59G	594 / 593	Intersection Of P596	T	G&W	EX-008	2020/09/14	1050	JL	10	2020/09/15	VB+PS	TH
59H	594 /	.5m From WEOS .2m South	D	G&W	EX-008	2020/09/14	1045	JL	10	2020/09/15	VB+PS	TH
59I	600 / 599	Intersection Of P596	T	P	EX-008	2020/09/14	1215	JL	10	2020/09/15	VB+PS	TH
59J	600 / 599	Intersection Of P602	T	G&W	EX-008	2020/09/14	1115	JL	10	2020/09/15	VB+PS	TH
59K	604 / 605	Intersection Of P602	T	G&W	EX-008	2020/09/14	1450	JL	10	2020/09/15	VB+PS	TH
59L	604 / 605	Intersection Of P607	T	G&W	EX-008	2020/09/14	1455	JL	10	2020/09/15	VB+PS	TH
59M	606 / 607	Intersection Of P604	T	G&W	EX-35	2020/09/14	1409	RL	10	2020/09/15	VB+PS	TH
59N	606 / 607	Intersection Of P609	T	G&W	EX-35	2020/09/14	1404	RL	10	2020/09/15	VB+PS	TH
59O	607 /	1m From WEOS	D	P	EX-35	2020/09/14	1407	RL	10	2020/09/15	VB+PS	TH
59P	608 / 609	Intersection Of P606	T	G&W	EX-35	2020/09/14	1336	RL	10	2020/09/15	VB+PS	TH
59Q	608 / 609	Intersection Of P610	T	G&W	EX-35	2020/09/14	1334	RL	10	2020/09/15	VB+PS	TH
59R	610 / 611	Intersection Of P609	T	G&W	EX-35	2020/09/14	1333	RL	10	2020/09/15	VB+PS	TH
59S	610 / 611	Intersection Of P612	T	G&W	EX-35	2020/09/14	1332	RL	10	2020/09/15	VB+PS	TH
59T	611 /	.6m From WEOS 1m South	D	P	EX-35	2020/09/14	1345	RL	10	2020/09/15	VB+PS	TH

DETAIL TYPE:

AD - ANIMAL DAMAGE	DS-# - DESTRUCT SAMPLE NUMBER	IO - INSUFFICIENT OVERLAP	T - THREE PANEL INTERSECTION
ATL - AIR TEST LEAK	EE - EARTHWORK EQUIPMENT DAMAGE	MD - MANUFACTURER/DELIVERY DAMAGE	VL - VACUUM TEST LEAK
BO - FUSION WELDER BURN	EXT - EXTENSION	P - PENETRATION	WR - WRINKLE
CR - CREASE	FM - FISHMOUTH	PT - PRESSURE TEST CUT	WS - WELDER RESTART
D - INSTALLATION DAMAGE	FS - FAILED SEAM LENGTH	SI - SOIL SURFACE IRREGULARITY	OTHER:

TEST METHOD:

AL - AIR LANCE	VB - VAC BOX
PS - POINT STRESS	ST - SPARK TEST

REPAIR TYPE:

G&W - GRIND & WELD	B - BOOT	P - PATCH
HAW - HOT AIR WELD	C - CAP	

REMARKS

QC TECH Thomas Howald

SUPERVISOR Chad Messervey

SUBMISSION DATE 2020/01/05

SHEET NUMBER 108 of 117

GEOMEMBRANE DETAIL & TEST LOG

PROJECT NUMBER CT001401 AREA / LAYER Primary

PROJECT TITLE Victoria Gold Heap Leach Pad Phase 1B

TRIAL SEAMS

#	MACHINE NUMBER	DATE YYYY-MM-DD	TIME	WELD TECH	AIR TEMP °C	PREHEAT TEMP °C	EXTRUDER TEMP °C	PEEL (PPI)					SHEAR (PPI)					CHK'D BY	REMARKS
1	EX-23	2020/09/14	1630	GP	10	260°C	257°C	142	131	145	141	137	158	159	161	158	158	TH	TT
2	EX-35	2020/09/14	1710	RL	10	260°C	257°C	112	127	131	128	132	157	161	163	159	160	TH	TT
3																			
4																			
5																			
6																			

DETAIL CODE	PANEL NUMBER(S)	LOCATION DESCRIPTION	DETAIL TYPE	REPAIR TYPE	MACHINE NUMBER	REPAIR DATE YYYY-MM-DD	START TIME	WELD TECH	AIR TEMP °C	TEST DATE YYYY-MM-DD	TEST METH.	QC TECH
A	/											
B	/											
C	/											
D	/											
E	/											
F	/											
G	/											
H	/											
I	/											
J	/											
K	/											
L	/											
M	/											
N	/											
O	/											
P	/											
Q	/											
R	/											
S	/											
T	/											

DETAIL TYPE:

AD - ANIMAL DAMAGE	DS-# - DESTRUCT SAMPLE NUMBER	IO - INSUFFICIENT OVERLAP	T - THREE PANEL INTERSECTION
ATL - AIR TEST LEAK	EE - EARTHWORK EQUIPMENT DAMAGE	MD - MANUFACTURER/DELIVERY DAMAGE	VL - VACUUM TEST LEAK
BO - FUSION WELDER BURN	EXT - EXTENSION	P - PENETRATION	WR - WRINKLE
CR - CREASE	FM - FISHMOUTH	PT - PRESSURE TEST CUT	WS - WELDER RESTART
D - INSTALLATION DAMAGE	FS - FAILED SEAM LENGTH	SI - SOIL SURFACE IRREGULARITY	OTHER:

TEST METHOD:

AL - AIR LANCE	VB - VAC BOX
PS - POINT STRESS	ST - SPARK TEST

REPAIR TYPE:

G&W - GRIND & WELD	B - BOOT	P - PATCH
HAW - HOT AIR WELD	C - CAP	

REMARKS

QC TECH Thomas Howald

SUPERVISOR Chad Messervey

SUBMISSION DATE 2020/01/05

SHEET NUMBER 109 of 117

GEOMEMBRANE DETAIL & TEST LOG

PROJECT NUMBER CT001401 AREA / LAYER Primary

PROJECT TITLE Victoria Gold Heap Leach Pad Phase 1B

TRIAL SEAMS

#	MACHINE NUMBER	DATE YYYY-MM-DD	TIME	WELD TECH	AIR TEMP °C	PREHEAT TEMP °C	EXTRUDER TEMP °C	PEEL (PPI)					SHEAR (PPI)					CHK'D BY	REMARKS
1	EX-008	2020/09/11	1015	JL	10	260°C	260°C	101	99	99	107	110	175	157	179	172	172	TH	TT
2	EX-008	2020/09/11	1400	JL	10	260°C	260°C	111	129	106	103	125	166	149	139	145	161	TH	TT
3	EX-008	2020/09/13	1015	JL	10	260°C	260°C	117	147	166	145	118	179	165	151	153	170	TH	TT
4	EX-008	2020/09/13	1500	JL	10	260°C	260°C	135	110	109	121	101	142	139	146	141	141	TH	TT
5	EX-008	2020/09/14	940	JL	10	260°C	260°C	130	133	136	132	124	141	168	168	165	165	TH	TT
6	EX-23	2020/09/14	1240	GP	10	260°C	257°C	147	157	147	167	155	172	164	171	177	176	TH	TT

DETAIL CODE	PANEL NUMBER(S)	LOCATION DESCRIPTION	DETAIL TYPE	REPAIR TYPE	MACHINE NUMBER	REPAIR DATE YYYY-MM-DD	START TIME	WELD TECH	AIR TEMP °C	TEST DATE YYYY-MM-DD	TEST METH.	QC TECH
60A	612 / 613	Intersection Of P611	T	G&W	EX-35	2020/09/14	1326	RL	10	2020/09/15	VB+PS	TH
60B	612 / 613	Intersection Of P614	T	G&W	EX-35	2020/09/14	1324	RL	10	2020/09/15	VB+PS	TH
60C	615 / 616	Intersection Of P614	T	G&W	EX-35	2020/09/14	1318	RL	10	2020/09/15	VB+PS	TH
60D	615 / 616	Intersection Of P617	T	G&W	EX-35	2020/09/14	1313	RL	10	2020/09/15	VB+PS	TH
60E	616 /	.3m From WEOS	D	P	EX-35	2020/09/14	1315	RL	10	2020/09/15	VB+PS	TH
60F	616 /	.8m From WEOS	D	G&W	EX-35	2020/09/14	1316	RL	10	2020/09/15	VB+PS	TH
60G	407 /	40m From WEOS	D	G&W	EX-008	2020/09/11	1105	JL	10	2020/09/11	VB+PS	TH
60H	440 /	7m From WEOS	D	G&W	EX-008	2020/09/11	1120	JL	10	2020/09/11	VB+PS	TH
60I	445 /	1m From WEOS	D	G&W	EX-008	2020/09/11	1125	JL	10	2020/09/11	VB+PS	TH
60J	475 /	45m From EEOS	D	G&W	EX-008	2020/09/11	1135	JL	10	2020/09/11	VB+PS	TH
60K	478 /	15m From EEOS	SI	P	EX-008	2020/09/11	1141	JL	10	2020/09/11	VB+PS	TH
60L	596 / 600	6m From WEOS	IO	G&W	EX-008	2020/09/15	1045	JL	10	2020/09/15	VB+PS	TH
60M	603 / 604	Intersection Of P601	DS-287	P	EX-35	2020/09/14	1509	RL	10	2020/09/15	VB+PS	TH
60N	603 / 604	Intersection Of P606	T	P	EX-35	2020/09/14	1510	RL	10	2020/09/15	VB+PS	TH
60O	583 / 584	Intersection Of P581	T	G&W	EX-008	2020/09/14	1750	JL	10	2020/09/15	VB+PS	TH
60P	583 / 584	Intersection Of P586	T	G&W	EX-008	2020/09/14	1755	JL	10	2020/09/15	VB+PS	TH
60Q	581 / 584	40m From WEOS	WS	G&W	EX-008	2020/09/15	1040	JL	10	2020/09/15	VB+PS	TH
60R	586 / 587	Intersection Of P584	T	G&W	EX-008	2020/09/13	1748	JL	10	2020/09/15	VB+PS	TH
60S	586 / 587	Intersection Of P590	T	G&W	EX-008	2020/09/13	1740	JL	10	2020/09/15	VB+PS	TH
60T	590 / 591	Intersection Of P587	T	G&W	EX-008	2020/09/14	1005	JL	10	2020/09/15	VB+PS	TH

DETAIL TYPE:

AD - ANIMAL DAMAGE	DS-# - DESTRUCT SAMPLE NUMBER	IO - INSUFFICIENT OVERLAP	T - THREE PANEL INTERSECTION
ATL - AIR TEST LEAK	EE - EARTHWORK EQUIPMENT DAMAGE	MD - MANUFACTURER/DELIVERY DAMAGE	VL - VACUUM TEST LEAK
BO - FUSION WELDER BURN	EXT - EXTENSION	P - PENETRATION	WR - WRINKLE
CR - CREASE	FM - FISHMOUTH	PT - PRESSURE TEST CUT	WS - WELDER RESTART
D - INSTALLATION DAMAGE	FS - FAILED SEAM LENGTH	SI - SOIL SURFACE IRREGULARITY	OTHER:

TEST METHOD:

AL - AIR LANCE	VB - VAC BOX
PS - POINT STRESS	ST - SPARK TEST

REPAIR TYPE:

G&W - GRIND & WELD	B - BOOT	P - PATCH
HAW - HOT AIR WELD	C - CAP	

REMARKS

QC TECH Thomas Howald

SUPERVISOR Chad Messervey

SUBMISSION DATE 2020/01/05

SHEET NUMBER 110 of 117

GEOMEMBRANE DETAIL & TEST LOG

PROJECT NUMBER CT001401 AREA / LAYER Primary

PROJECT TITLE Victoria Gold Heap Leach Pad Phase 1B

TRIAL SEAMS

#	MACHINE NUMBER	DATE YYYY-MM-DD	TIME	WELD TECH	AIR TEMP °C	PREHEAT TEMP °C	EXTRUDER TEMP °C	PEEL (PPI)					SHEAR (PPI)					CHK'D BY	REMARKS
1	EX-35	2020/09/14	1300	RL	10	260°C	257°C	115	117	120	121	119	156	149	148	152	154	TH	TT
2	EX-008	2020/09/14	1400	JL	10	260°C	260°C	143	151	148	145	126	140	179	159	177	172	TH	TT
3	EX-23	2020/09/14	1630	GP	10	260°C	257°C	142	131	145	141	137	158	159	161	158	158	TH	TT
4	EX-35	2020/09/14	1710	RL	10	260°C	257°C	112	127	131	128	132	157	161	163	159	160	TH	TT
5	EX-008	2020/09/15	800	JL	10	260°C	260°C	138	139	162	159	150	172	167	182	167	169	TH	TT
6	EX-35	2020/09/15	800	GP	10	260°C	257°C	100	128	130	138	100	164	162	159	156	167	TH	TT

DETAIL CODE	PANEL NUMBER(S)	LOCATION DESCRIPTION	DETAIL TYPE	REPAIR TYPE	MACHINE NUMBER	REPAIR DATE YYYY-MM-DD	START TIME	WELD TECH	AIR TEMP °C	TEST DATE YYYY-MM-DD	TEST METH.	QC TECH
A	/											
B	/											
C	/											
D	/											
E	/											
F	/											
G	/											
H	/											
I	/											
J	/											
K	/											
L	/											
M	/											
N	/											
O	/											
P	/											
Q	/											
R	/											
S	/											
T	/											

DETAIL TYPE:

AD - ANIMAL DAMAGE	DS-# - DESTRUCT SAMPLE NUMBER	IO - INSUFFICIENT OVERLAP	T - THREE PANEL INTERSECTION
ATL - AIR TEST LEAK	EE - EARTHWORK EQUIPMENT DAMAGE	MD - MANUFACTURER/DELIVERY DAMAGE	VL - VACUUM TEST LEAK
BO - FUSION WELDER BURN	EXT - EXTENSION	P - PENETRATION	WR - WRINKLE
CR - CREASE	FM - FISHMOUTH	PT - PRESSURE TEST CUT	WS - WELDER RESTART
D - INSTALLATION DAMAGE	FS - FAILED SEAM LENGTH	SI - SOIL SURFACE IRREGULARITY	OTHER:

TEST METHOD:

AL - AIR LANCE	VB - VAC BOX
PS - POINT STRESS	ST - SPARK TEST

REPAIR TYPE:

G&W - GRIND & WELD	B - BOOT	P - PATCH
HAW - HOT AIR WELD	C - CAP	

REMARKS

QC TECH Thomas Howald

SUPERVISOR Chad Messervey

SUBMISSION DATE 2020/01/05

SHEET NUMBER 111 of 117

GEOMEMBRANE DETAIL & TEST LOG

PROJECT NUMBER CT001401 AREA / LAYER Primary

PROJECT TITLE Victoria Gold Heap Leach Pad Phase 1B

TRIAL SEAMS

#	MACHINE NUMBER	DATE YYYY-MM-DD	TIME	WELD TECH	AIR TEMP °C	PREHEAT TEMP °C	EXTRUDER TEMP °C	PEEL (PPI)					SHEAR (PPI)					CHK'D BY	REMARKS
1	EX-008	2020/09/15	800	JL	10	260°C	260°C	138	139	162	159	150	100	128	130	138	100	TH	TT
2	EX-35	2020/09/15	800	GP	10	260°C	257°C	172	167	182	167	169	164	162	159	156	167	TH	TT
3																			
4																			
5																			
6																			

DETAIL CODE	PANEL NUMBER(S)	LOCATION DESCRIPTION	DETAIL TYPE	REPAIR TYPE	MACHINE NUMBER	REPAIR DATE YYYY-MM-DD	START TIME	WELD TECH	AIR TEMP °C	TEST DATE YYYY-MM-DD	TEST METH.	QC TECH
A	/											
B	/											
C	/											
D	/											
E	/											
F	/											
G	/											
H	/											
I	/											
J	/											
K	/											
L	/											
M	/											
N	/											
O	/											
P	/											
Q	/											
R	/											
S	/											
T	/											

DETAIL TYPE:

AD - ANIMAL DAMAGE	DS-# - DESTRUCT SAMPLE NUMBER	IO - INSUFFICIENT OVERLAP	T - THREE PANEL INTERSECTION
ATL - AIR TEST LEAK	EE - EARTHWORK EQUIPMENT DAMAGE	MD - MANUFACTURER/DELIVERY DAMAGE	VL - VACUUM TEST LEAK
BO - FUSION WELDER BURN	EXT - EXTENSION	P - PENETRATION	WR - WRINKLE
CR - CREASE	FM - FISHMOUTH	PT - PRESSURE TEST CUT	WS - WELDER RESTART
D - INSTALLATION DAMAGE	FS - FAILED SEAM LENGTH	SI - SOIL SURFACE IRREGULARITY	OTHER:

TEST METHOD:

AL - AIR LANCE	VB - VAC BOX
PS - POINT STRESS	ST - SPARK TEST

REPAIR TYPE:

G&W - GRIND & WELD	B - BOOT	P - PATCH
HAW - HOT AIR WELD	C - CAP	

REMARKS

QC TECH Thomas Howald

SUPERVISOR Chad Messervey

SUBMISSION DATE 2020/01/05

SHEET NUMBER 112 of 117

GEOMEMBRANE DETAIL & TEST LOG

PROJECT NUMBER CT001401 AREA / LAYER Primary

PROJECT TITLE Victoria Gold Heap Leach Pad Phase 1B

TRIAL SEAMS

#	MACHINE NUMBER	DATE YYYY-MM-DD	TIME	WELD TECH	AIR TEMP °C	PREHEAT TEMP °C	EXTRUDER TEMP °C	PEEL (PPI)					SHEAR (PPI)					CHK'D BY	REMARKS
1	EX-4037	2020/08/27	930	EA	15	262°C	260°C	118	130	126	132	116	154	166	168	160	163	TH	TT
2	EX-008	2020/08/27	930	RW	15	257°C	257°C	110	97	96	98	105	154	141	162	163	157	TH	TT
3	EX-35	2020/08/27	1200	GP	20	260°C	257°C	156	158	148	146	137	180	172	184	176	183	TH	TT
4	EX-4037	2020/08/27	1330	EA	20	262°C	260°C	120	121	134	121	130	165	159	159	159	161	TH	TT
5	EX-008	2020/08/27	1500	RW	20	257°C	257°C	123	129	121	129	130	146	142	148	151	149	TH	TT
6	EX-35	2020/08/27	1620	GP	20	260°C	257°C	131	129	149	135	146	162	167	167	163	161	TH	TT

DETAIL CODE	PANEL NUMBER(S)	LOCATION DESCRIPTION	DETAIL TYPE	REPAIR TYPE	MACHINE NUMBER	REPAIR DATE YYYY-MM-DD	START TIME	WELD TECH	AIR TEMP °C	TEST DATE YYYY-MM-DD	TEST METH.	QC TECH
61A	590 / 591	Intersection Of P593	T	G&W	EX-008	2020/09/14	1008	JL	10	2020/09/15	VB+PS	TH
61B	591 /	2m From WEOS 1m South	D	G&W	EX-008	2020/09/14	1013	JL	10	2020/09/15	VB+PS	TH
61C	591 /	4m From WEOS 1m South	D	G&W	EX-008	2020/09/14	1010	JL	10	2020/09/15	VB+PS	TH
61D	591 /	6m From WEOS 1m South	D	G&W	EX-008	2020/09/14	1111	JL	10	2020/09/15	VB+PS	TH
61E	595 / 596	Intersection Of P593	T	G&W	EX-008	2020/09/13	1802	JL	10	2020/09/15	VB+PS	TH
61F	595 / 596	Intersection Of P599	T	G&W	EX-008	2020/09/13	1800	JL	10	2020/09/15	VB+PS	TH
61G	601 / 602	Intersection Of P599	T	G&W	EX-35	2020/09/14	1440	RL	10	2020/09/15	VB+PS	TH
61H	601 / 602	Intersection Of P604	T	G&W	EX-35	2020/09/14	1434	RL	10	2020/09/15	VB+PS	TH
61I	602 /	.5m From WEOS 1m North	D	P	EX-35	2020/09/14	1438	RL	10	2020/09/15	VB+PS	TH
61J	602 /	.1m From WEOS 1m South	D	G&W	EX-35	2020/09/14	1437	RL	10	2020/09/15	VB+PS	TH
61K	602 /	1m From WEOS 1m South	D	P	EX-35	2020/09/14	1436	RL	10	2020/09/15	VB+PS	TH
61L	602 /	2m From WEOS 1m South	D	G&W	EX-35	2020/09/14	1439	RL	10	2020/09/15	VB+PS	TH
61M	528 / 529	Intersection Of P525	T	G&W	EX-23	2020/09/06	1257	RW	15	2020/09/10	VB+PS	TH
61N	472 / 471	Intersection Of P475	T	G&W	EX-4037	2020/08/27	1415	EA	20	2020/08/27	VB+PS	TH
61O	403 /	Tie into existing	D	P	EX-08	2020/09/28	1510	RL	14	2020/09/28	VB+PS	RL
61P	256 /	Tie into existing	D	P	EX-08	2020/09/28	1545	RL	14	2020/09/28	VB+PS	RL
61Q	251 /	Tie into existing	D	P	EX-08	2020/09/28	1600	RL	14	2020/09/28	VB+PS	RL
61R	211 /	Tie into existing	D	P	EX-08	2020/09/28	1615	RL	14	2020/09/28	VB+PS	RL
61S	208 /	Tie into existing	D	P	EX-08	2020/09/28	1700	RL	14	2020/09/28	VB+PS	RL
61T	208 /	Tie into existing	D	P	EX-08	2020/09/28	1730	RL	14	2020/09/28	VB+PS	RL

DETAIL TYPE:

AD - ANIMAL DAMAGE	DS-# - DESTRUCT SAMPLE NUMBER	IO - INSUFFICIENT OVERLAP	T - THREE PANEL INTERSECTION
ATL - AIR TEST LEAK	EE - EARTHWORK EQUIPMENT DAMAGE	MD - MANUFACTURER/DELIVERY DAMAGE	VL - VACUUM TEST LEAK
BO - FUSION WELDER BURN	EXT - EXTENSION	P - PENETRATION	WR - WRINKLE
CR - CREASE	FM - FISHMOUTH	PT - PRESSURE TEST CUT	WS - WELDER RESTART
D - INSTALLATION DAMAGE	FS - FAILED SEAM LENGTH	SI - SOIL SURFACE IRREGULARITY	OTHER:

TEST METHOD:

AL - AIR LANCE	VB - VAC BOX
PS - POINT STRESS	ST - SPARK TEST

REPAIR TYPE:

G&W - GRIND & WELD	B - BOOT	P - PATCH
HAW - HOT AIR WELD	C - CAP	

REMARKS

QC TECH Thomas Howald

SUPERVISOR Chad Messervey

SUBMISSION DATE 2020/01/05

SHEET NUMBER 113 of 117

GEOMEMBRANE DETAIL & TEST LOG

PROJECT NUMBER CT001401 AREA / LAYER Primary

PROJECT TITLE Victoria Gold Heap Leach Pad Phase 1B

TRIAL SEAMS

#	MACHINE NUMBER	DATE YYYY-MM-DD	TIME	WELD TECH	AIR TEMP °C	PREHEAT TEMP °C	EXTRUDER TEMP °C	PEEL (PPI)					SHEAR (PPI)					CHK'D BY	REMARKS
1	EX-4037	2020/08/27	1700	EA	20	262°C	260°C	115	123	119	123	121	130	148	130	142	126	TH	TT
2	EX-23	2020/09/06	900	RW	10	260°C	257°C	159	155	147	159	147	183	166	170	176	176	TH	TT
3	EX-4037	2020/09/06	900	JL	10	262°C	260°C	120	112	117	114	136	188	166	180	169	172	TH	TT
4	EX-23	2020/09/06	900	GP	10	260°C	257°C	144	142	150	134	134	157	170	176	171	171	TH	TT
5	EX-008	2020/09/13	1015	JL	10	260°C	260°C	117	147	166	145	118	179	165	151	153	170	TH	TT
6	EX-008	2020/09/13	1500	JL	10	260°C	260°C	135	110	109	121	101	142	139	146	141	141	TH	TT

DETAIL CODE	PANEL NUMBER(S)	LOCATION DESCRIPTION	DETAIL TYPE	REPAIR TYPE	MACHINE NUMBER	REPAIR DATE YYYY-MM-DD	START TIME	WELD TECH	AIR TEMP °C	TEST DATE YYYY-MM-DD	TEST METH.	QC TECH
A	/											
B	/											
C	/											
D	/											
E	/											
F	/											
G	/											
H	/											
I	/											
J	/											
K	/											
L	/											
M	/											
N	/											
O	/											
P	/											
Q	/											
R	/											
S	/											
T	/											

DETAIL TYPE:

AD - ANIMAL DAMAGE	DS-# - DESTRUCT SAMPLE NUMBER	IO - INSUFFICIENT OVERLAP	T - THREE PANEL INTERSECTION
ATL - AIR TEST LEAK	EE - EARTHWORK EQUIPMENT DAMAGE	MD - MANUFACTURER/DELIVERY DAMAGE	VL - VACUUM TEST LEAK
BO - FUSION WELDER BURN	EXT - EXTENSION	P - PENETRATION	WR - WRINKLE
CR - CREASE	FM - FISHMOUTH	PT - PRESSURE TEST CUT	WS - WELDER RESTART
D - INSTALLATION DAMAGE	FS - FAILED SEAM LENGTH	SI - SOIL SURFACE IRREGULARITY	OTHER:

TEST METHOD:

AL - AIR LANCE	VB - VAC BOX
PS - POINT STRESS	ST - SPARK TEST

REPAIR TYPE:

G&W - GRIND & WELD	B - BOOT	P - PATCH
HAW - HOT AIR WELD	C - CAP	

REMARKS

QC TECH Thomas Howald

SUPERVISOR Chad Messervey

SUBMISSION DATE 2020/01/05

SHEET NUMBER 114 of 117

GEOMEMBRANE DETAIL & TEST LOG

PROJECT NUMBER CT001401 AREA / LAYER Primary

PROJECT TITLE Victoria Gold Heap Leach Pad Phase 1B

TRIAL SEAMS

#	MACHINE NUMBER	DATE YYYY-MM-DD	TIME	WELD TECH	AIR TEMP °C	PREHEAT TEMP °C	EXTRUDER TEMP °C	PEEL (PPI)					SHEAR (PPI)					CHK'D BY	REMARKS
1	EX-008	2020/09/14	940	JL	10	260°C	260°C	130	133	136	132	124	141	168	168	165	165	TH	TT
2	EX-23	2020/09/14	1240	GP	10	260°C	257°C	147	157	147	167	155	172	164	171	177	176	TH	TT
3	EX-35	2020/09/14	1300	RL	10	260°C	257°C	115	117	120	121	119	156	149	148	152	154	TH	TT
4	EX-008	2020/09/14	1400	JL	10	260°C	260°C	143	151	148	145	126	140	179	159	177	172	TH	TT
5	EX-23	2020/09/14	1630	GP	10	260°C	257°C	142	131	145	141	137	158	159	161	158	158	TH	TT
6	EX-35	2020/09/14	1710	RL	10	260°C	257°C	112	127	131	128	132	157	161	163	159	160	TH	TT

DETAIL CODE	PANEL NUMBER(S)	LOCATION DESCRIPTION	DETAIL TYPE	REPAIR TYPE	MACHINE NUMBER	REPAIR DATE YYYY-MM-DD	START TIME	WELD TECH	AIR TEMP °C	TEST DATE YYYY-MM-DD	TEST METH.	QC TECH
A	/											
B	/											
C	/											
D	/											
E	/											
F	/											
G	/											
H	/											
I	/											
J	/											
K	/											
L	/											
M	/											
N	/											
O	/											
P	/											
Q	/											
R	/											
S	/											
T	/											

DETAIL TYPE:

AD - ANIMAL DAMAGE	DS-# - DESTRUCT SAMPLE NUMBER	IO - INSUFFICIENT OVERLAP	T - THREE PANEL INTERSECTION
ATL - AIR TEST LEAK	EE - EARTHWORK EQUIPMENT DAMAGE	MD - MANUFACTURER/DELIVERY DAMAGE	VL - VACUUM TEST LEAK
BO - FUSION WELDER BURN	EXT - EXTENSION	P - PENETRATION	WR - WRINKLE
CR - CREASE	FM - FISHMOUTH	PT - PRESSURE TEST CUT	WS - WELDER RESTART
D - INSTALLATION DAMAGE	FS - FAILED SEAM LENGTH	SI - SOIL SURFACE IRREGULARITY	OTHER:

TEST METHOD:

AL - AIR LANCE	VB - VAC BOX
PS - POINT STRESS	ST - SPARK TEST

REPAIR TYPE:

G&W - GRIND & WELD	B - BOOT	P - PATCH
HAW - HOT AIR WELD	C - CAP	

REMARKS

QC TECH Thomas Howald

SUPERVISOR Chad Messervey

SUBMISSION DATE 2020/01/05

SHEET NUMBER 115 of 117

GEOMEMBRANE DETAIL & TEST LOG

PROJECT NUMBER CT001401 AREA / LAYER Primary

PROJECT TITLE Victoria Gold Heap Leach Pad Phase 1B

TRIAL SEAMS

#	MACHINE NUMBER	DATE YYYY-MM-DD	TIME	WELD TECH	AIR TEMP °C	PREHEAT TEMP °C	EXTRUDER TEMP °C	PEEL (PPI)					SHEAR (PPI)					CHK'D BY	REMARKS
1	EX -08	2020/09/28	1400	RL	14	260°C	257°C	145	161	152	167	158	181	156	162	167	171	RL	TT
2																			
3																			
4																			
5																			
6																			

DETAIL CODE	PANEL NUMBER(S)	LOCATION DESCRIPTION	DETAIL TYPE	REPAIR TYPE	MACHINE NUMBER	REPAIR DATE YYYY-MM-DD	START TIME	WELD TECH	AIR TEMP °C	TEST DATE YYYY-MM-DD	TEST METH.	QC TECH
A	/											
B	/											
C	/											
D	/											
E	/											
F	/											
G	/											
H	/											
I	/											
J	/											
K	/											
L	/											
M	/											
N	/											
O	/											
P	/											
Q	/											
R	/											
S	/											
T	/											

DETAIL TYPE:

AD - ANIMAL DAMAGE	DS-# - DESTRUCT SAMPLE NUMBER	IO - INSUFFICIENT OVERLAP	T - THREE PANEL INTERSECTION
ATL - AIR TEST LEAK	EE - EARTHWORK EQUIPMENT DAMAGE	MD - MANUFACTURER/DELIVERY DAMAGE	VL - VACUUM TEST LEAK
BO - FUSION WELDER BURN	EXT - EXTENSION	P - PENETRATION	WR - WRINKLE
CR - CREASE	FM - FISHMOUTH	PT - PRESSURE TEST CUT	WS - WELDER RESTART
D - INSTALLATION DAMAGE	FS - FAILED SEAM LENGTH	SI - SOIL SURFACE IRREGULARITY	OTHER:

TEST METHOD:

AL - AIR LANCE	VB - VAC BOX
PS - POINT STRESS	ST - SPARK TEST

REPAIR TYPE:

G&W - GRIND & WELD	B - BOOT	P - PATCH
HAW - HOT AIR WELD	C - CAP	

REMARKS

QC TECH Thomas Howald

SUPERVISOR Chad Messervey

SUBMISSION DATE 2020/01/05

SHEET NUMBER 116 of 117

GEOMEMBRANE DETAIL & TEST LOG

PROJECT NUMBER CT001401 AREA / LAYER Primary

PROJECT TITLE Victoria Gold Heap Leach Pad Phase 1B

TRIAL SEAMS

#	MACHINE NUMBER	DATE YYYY-MM-DD	TIME	WELD TECH	AIR TEMP °C	PREHEAT TEMP °C	EXTRUDER TEMP °C	PEEL (PPI)					SHEAR (PPI)					CHK'D BY	REMARKS
1	EX -08	2020/09/28	1400	RL	14	260°C	257°C	145	161	152	167	158	181	156	162	167	171	RL	TT
2																			
3																			
4																			
5																			
6																			

DETAIL CODE	PANEL NUMBER(S)	LOCATION DESCRIPTION	DETAIL TYPE	REPAIR TYPE	MACHINE NUMBER	REPAIR DATE YYYY-MM-DD	START TIME	WELD TECH	AIR TEMP °C	TEST DATE YYYY-MM-DD	TEST METH.	QC TECH
62A	198 /	Tie into existing	D	P	EX-08	2020/09/28	1630	RL	14	2020/09/28	VB+PS	RL
	/											
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DETAIL TYPE:

AD - ANIMAL DAMAGE	DS-# - DESTRUCT SAMPLE NUMBER	IO - INSUFFICIENT OVERLAP	T - THREE PANEL INTERSECTION
ATL - AIR TEST LEAK	EE - EARTHWORK EQUIPMENT DAMAGE	MD - MANUFACTURER/DELIVERY DAMAGE	VL - VACUUM TEST LEAK
BO - FUSION WELDER BURN	EXT - EXTENSION	P - PENETRATION	WR - WRINKLE
CR - CREASE	FM - FISHMOUTH	PT - PRESSURE TEST CUT	WS - WELDER RESTART
D - INSTALLATION DAMAGE	FS - FAILED SEAM LENGTH	SI - SOIL SURFACE IRREGULARITY	OTHER:

TEST METHOD:

AL - AIR LANCE	VB - VAC BOX
PS - POINT STRESS	ST - SPARK TEST

REPAIR TYPE:

G&W - GRIND & WELD	B - BOOT	P - PATCH
HAW - HOT AIR WELD	C - CAP	

REMARKS

QC TECH Thomas Howald

SUPERVISOR Chad Messervey

SUBMISSION DATE 2020/01/05

SHEET NUMBER 117 of 117

GEOMEMBRANE DESTRUCT LOG

PROJECT NUMBER CT001401
PROJECT TITLE Victoria Gold Heap Leach Pad Phase 1B
AREA / LAYER Primary
3RD PARTY Tetra Tech
ARCHIVE LAYFIELD ☑ OWNER ☑ ENGINEER ☑

DESTRUCT SAMPLE NUMBER	TYPE OF SEAM	PANEL NUMBERS	TEST DATE YYYY-MM-DD	TEST TEMP °C	INITIALS 3RD PARTY PRESENT	INITIALS LAYFIELD PASS	INITIALS 3RD PARTY LAB PASS	INSIDE PEEL STRENGTH (PPI)					OUTSIDE PEEL STRENGTH (PPI)					SHEAR STRENGTH (PPI)				
SAMPLE LOCATION								LOCUS OF BREAK					LOCUS OF BREAK					LOCUS OF BREAK				
DS-1	SPF	2/3	2020/06/05	20	AM	PASS		160	152	159	160	161	157	155	155	153	154	167	158	162	159	162
SEOS								SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	BRK	BRK	BRK	BRK	BRK
DS-2	SPF	3/5	2020/06/05	20	AM	PASS		163	156	156	154	155	161	162	158	163	161	163	165	166	166	163
SEOS								SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	BRK	BRK	BRK	BRK	BRK
DS-3	SPF	5/7	2020/06/05	20	AM	PASS		152	152	149	154	146	157	154	154	158	150	156	150	157	161	157
SEOS								SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	BRK	BRK	BRK	BRK	BRK
DS-4	SPF	8/10	2020/06/07	20	AM	PASS		159	158	166	164	159	167	166	167	165	162	180	179	180	183	180
106m From NEOS								SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	BRK	BRK	BRK	BRK	BRK
DS-5	SPF	12/13	2020/06/07	20	AM	PASS		179	165	167	168	171	155	165	163	157	155	186	182	186	198	181
EEOS								SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	BRK	BRK	BRK	BRK	BRK
DS-6	SPF	12/14	2020/06/07	20	AM	PASS		165	159	156	156	162	151	161	154	151	147	167	156	165	168	157
SEOS								SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	BRK	BRK	BRK	BRK	BRK
DS-7	SPF	14/16	2020/06/07	20	AM	PASS		140	152	144	138	142	160	159	159	159	160	154	164	160	167	158
SEOS								SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	BRK	BRK	BRK	BRK	BRK
DS-8	SPF	16/18	2020/06/07	20	AM	PASS		151	149	155	158	151	168	155	158	156	157	171	170	164	166	170
SEOS								SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	BRK	BRK	BRK	BRK	BRK

TYPE OF SEAM: SPF - SPLIT FUSION SOF - SOLID FUSION SLV - SOLVENT
EXT - EXTRUSION HAF - HOT AIR FUSION

QC TECH Thomas Howald
SUBMITTED BY Chad Messervey
SUBMISSION DATE 2020/01/05
SHEET NUMBER 1 of 37

GEOMEMBRANE DESTRUCT LOG

PROJECT NUMBER CT001401
PROJECT TITLE Victoria Gold Heap Leach Pad Phase 1B
AREA / LAYER Primary
3RD PARTY Tetra Tech
ARCHIVE LAYFIELD ☑ OWNER ☑ ENGINEER ☑

DESTRUCT SAMPLE NUMBER	TYPE OF SEAM	PANEL NUMBERS	TEST DATE YYYY-MM-DD	TEST TEMP °C	INITIALS			INSIDE PEEL STRENGTH (PPI)					OUTSIDE PEEL STRENGTH (PPI)					SHEAR STRENGTH (PPI)				
SAMPLE LOCATION					3RD PARTY PRESENT	LAYFIELD PASS	3RD PARTY LAB PASS	LOCUS OF BREAK					LOCUS OF BREAK					LOCUS OF BREAK				
DS-9	SPF	18/20	2020/06/07	20	AM	PASS		155	153	155	148	149	154	150	158	148	147	173	165	162	163	151
SEOS								SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	BRK	BRK	BRK	BRK	BRK
DS-10	SPF	32/34	2020/06/10	20	AM	PASS		156	155	150	156	151	164	160	154	139	144	167	172	170	173	182
EEOS								SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	BRK	BRK	BRK	BRK	BRK
DS-11	SPF	31/34	2020/06/10	20	AM	PASS		156	143	151	149	142	154	150	156	159	150	165	165	169	168	164
SEOS								SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	BRK	BRK	BRK	BRK	BRK
DS-12	SPF	29/30	2020/06/10	20	AM	PASS		154	155	155	150	146	160	156	158	155	154	174	173	156	163	175
SEOS								SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	BRK	BRK	BRK	BRK	BRK
DS-13	SPF	26/27	2020/06/10	20	AM	PASS		146	142	152	149	146	147	150	155	147	150	162	160	168	168	163
SEOS								SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	BRK	BRK	BRK	BRK	BRK
DS-14	SPF	1/37	2020/06/19	20	AM	FAIL		159	154				153	158								
SEOS																						
DS-15	SPF	37/40	2020/06/19	20	AM	PASS		147	127	155	125	141	159	166	160	155	150	174	170	174	175	175
SEOS								SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	BRK	BRK	BRK	BRK	BRK
DS-16	SPF	40/43	2020/06/19	20	AM	PASS		158	159	158	161	158	153	159	160	162	159	174	170	173	168	158
SEOS								SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	BRK	BRK	BRK	BRK	BRK

TYPE OF SEAM:
SPF - SPLIT FUSION SOF - SOLID FUSION SLV - SOLVENT
EXT - EXTRUSION HAF - HOT AIR FUSION

QC TECH Thomas Howald
SUBMITTED BY Chad Messervey
SUBMISSION DATE 2020/01/05
SHEET NUMBER 2 of 37

GEOMEMBRANE DESTRUCT LOG

PROJECT NUMBER CT001401
PROJECT TITLE Victoria Gold Heap Leach Pad Phase 1B
AREA / LAYER Primary
3RD PARTY Tetra Tech
ARCHIVE LAYFIELD ☑ OWNER ☑ ENGINEER ☑

DESTRUCT SAMPLE NUMBER	TYPE OF SEAM	PANEL NUMBERS	TEST DATE YYYY-MM-DD	TEST TEMP °C	INITIALS			INSIDE PEEL STRENGTH (PPI)					OUTSIDE PEEL STRENGTH (PPI)					SHEAR STRENGTH (PPI)				
SAMPLE LOCATION					3RD PARTY PRESENT	LAYFIELD PASS	3RD PARTY LAB PASS	LOCUS OF BREAK					LOCUS OF BREAK					LOCUS OF BREAK				
DS-17	SPF	45/48	2020/06/19	20	AM	PASS		145	148	157	148	153	155	151	149	146	148	172	178	172	171	171
SEOS								SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	BRK	BRK	BRK	BRK	BRK
DS-18	SPF	53/55	2020/06/19	20	AM	PASS		138	139	139	135	136	142	144	146	139	140	163	161	158	164	156
SEOS								SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	BRK	BRK	BRK	BRK	BRK
DS-19	SPF	55/58	2020/06/19	20	AM	PASS		146	125	148	151	144	146	143	140	139	139	166	161	166	159	161
SEOS								SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	BRK	BRK	BRK	BRK	BRK
DS-20	SPF	45/46	2020/06/19	20	AM	PASS		167	155	163	166	168	155	151	151	152	167	172	177	178	180	187
EEOS								SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	BRK	BRK	BRK	BRK	BRK
DS-21	SPF	50/53	2020/06/19	20	AM	PASS		152	146	149	140	138	145	150	142	140	137	171	168	172	168	172
52.7m FromSEOS								SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	BRK	BRK	BRK	BRK	BRK
DS-22	SPF	48/51	2020/06/19	20	AM	PASS		154	164	156	148	153	147	141	146	150	142	161	161	167	159	161
69m From SEOS								SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	BRK	BRK	BRK	BRK	BRK
DS-23	SPF	43/44	2020/06/19	20	AM	PASS		155	165	168	150	174	161	163	166	157	152	177	176	178	182	170
WEOS								SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	BRK	BRK	BRK	BRK	BRK
DS-24	SPF	41/44	2020/06/19	20	AM	PASS		162	155	161	156	160	148	144	145	148	148	175	169	175	177	171
73.9m From NEOS								SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	BRK	BRK	BRK	BRK	BRK

TYPE OF SEAM: SPF - SPLIT FUSION SOF - SOLID FUSION SLV - SOLVENT
EXT - EXTRUSION HAF - HOT AIR FUSION

QC TECH Thomas Howald
SUBMITTED BY Chad Messervey
SUBMISSION DATE 2020/01/05
SHEET NUMBER 3 of 37

GEOMEMBRANE DESTRUCT LOG

PROJECT NUMBER CT001401
PROJECT TITLE Victoria Gold Heap Leach Pad Phase 1B
AREA / LAYER Primary
3RD PARTY Tetra Tech
ARCHIVE LAYFIELD ☑ OWNER ☑ ENGINEER ☑

DESTRUCT SAMPLE NUMBER	TYPE OF SEAM	PANEL NUMBERS	TEST DATE YYYY-MM-DD	TEST TEMP °C	INITIALS				INSIDE PEEL STRENGTH (PPI)					OUTSIDE PEEL STRENGTH (PPI)					SHEAR STRENGTH (PPI)				
SAMPLE LOCATION					3RD PARTY PRESENT	LAYFIELD PASS	3RD PARTY LAB PASS		LOCUS OF BREAK					LOCUS OF BREAK					LOCUS OF BREAK				
DS-25	SPF	54/56	2020/06/19	20	AM	PASS			140	142	139	138	131	142	148	138	136	136	160	159	165	166	165
78m From NEOS									SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	BRK	BRK	BRK	BRK	BRK
DS-26	SPF	58/60	2020/06/29	20	AM	PASS			159	155	156	149	152	156	148	156	150	153	166	170	168	168	169
SEOS									SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	BRK	BRK	BRK	BRK	BRK
DS-27	SPF	60/63	2020/06/29	20	AM	PASS			145	155	151	147	150	152	142	150	153	148	166	162	169	167	167
SEOS									SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	BRK	BRK	BRK	BRK	BRK
DS-28	SPF	63/66	2020/06/29	20	AM	PASS			138	137	136	136	140	144	155	148	140	149	163	159	162	161	154
SEOS									SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	BRK	BRK	BRK	BRK	BRK
DS-29	SPF	65/66	2020/06/29	20	AM	PASS			151	153	155	152	150	156	152	164	154	153	169	162	167	176	176
WEOS									SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	BRK	BRK	BRK	BRK	BRK
DS-30	SPF	65/63	2020/06/29	20	AM	PASS			137	142	144	141	144	146	142	154	148	153	164	158	162	167	165
SEOS									SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	BRK	BRK	BRK	BRK	BRK
DS-31	SPF	68/70	2020/06/29	20	AM	PASS			158	151	147	150	152	148	141	130	144	141	162	164	168	166	165
SEOS									SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	BRK	BRK	BRK	BRK	BRK
DS-32	SPF	70/72	2020/06/29	20	AM	PASS			133	134	133	133	126	138	145	146	146	135	160	152	162	155	163
SEOS									SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	BRK	BRK	BRK	BRK	BRK

TYPE OF SEAM: SPF - SPLIT FUSION SOF - SOLID FUSION SLV - SOLVENT
EXT - EXTRUSION HAF - HOT AIR FUSION

QC TECH Thomas Howald
SUBMITTED BY Chad Messervey
SUBMISSION DATE 2020/01/05
SHEET NUMBER 4 of 37

GEOMEMBRANE DESTRUCT LOG

PROJECT NUMBER CT001401
PROJECT TITLE Victoria Gold Heap Leach Pad Phase 1B
AREA / LAYER Primary
3RD PARTY Tetra Tech
ARCHIVE LAYFIELD ☑ OWNER ☑ ENGINEER ☑

DESTRUCT SAMPLE NUMBER	TYPE OF SEAM	PANEL NUMBERS	TEST DATE YYYY-MM-DD	TEST TEMP °C	INITIALS 3RD PARTY PRESENT	INITIALS LAYFIELD PASS	INITIALS 3RD PARTY LAB PASS	INSIDE PEEL STRENGTH (PPI)					OUTSIDE PEEL STRENGTH (PPI)					SHEAR STRENGTH (PPI)				
SAMPLE LOCATION								LOCUS OF BREAK					LOCUS OF BREAK					LOCUS OF BREAK				
DS-33	SPF	69/71	2020/06/29	20	AM	PASS		146	145	150	143	141	143	141	142	141	142	154	149	153	157	160
SEOS								SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	BRK	BRK	BRK	BRK	BRK
DS-34	SPF	73/74	2020/06/29	20	AM	PASS		167	157	167	164	158	156	147	142	158	157	178	184	175	180	179
EEOS								SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	BRK	BRK	BRK	BRK	BRK
DS-35	SPF	74/76	2020/06/29	20	AM	PASS		139	133	139	136	140	149	148	142	148	146	148	157	151	150	153
NEOS								SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	BRK	BRK	BRK	BRK	BRK
DS-36	SPF	90/93	2020/07/03	20	AM	PASS		136	134	136	132	134	139	132	140	143	132	160	157	160	159	156
SEOS								SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	BRK	BRK	BRK	BRK	BRK
DS-37	SPF	88/90	2020/07/03	20	AM	PASS		136	142	131	127	133	147	146	147	146	147	161	156	158	150	157
SEOS								SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	BRK	BRK	BRK	BRK	BRK
DS-38	SPF	82/87	2020/07/03	20	AM	PASS		142	139	136	143	136	140	144	137	149	144	165	167	164	159	156
SEOS								SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	BRK	BRK	BRK	BRK	BRK
DS-39	SPF	87/88	2020/07/03	20	AM	PASS		127	139	127	134	145	137	138	136	138	138	160	161	164	161	164
SEOS								SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	BRK	BRK	BRK	BRK	BRK
DS-40	SPF	80/82	2020/07/03	20	AM	PASS		137	139	139	138	141	154	155	151	145	150	166	163	158	162	162
NEOS								SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	BRK	BRK	BRK	BRK	BRK

TYPE OF SEAM:
SPF - SPLIT FUSION SOF - SOLID FUSION SLV - SOLVENT
EXT - EXTRUSION HAF - HOT AIR FUSION

QC TECH Thomas Howald
SUBMITTED BY Chad Messervey
SUBMISSION DATE 2020/01/05
SHEET NUMBER 5 of 37

GEOMEMBRANE DESTRUCT LOG

PROJECT NUMBER CT001401
PROJECT TITLE Victoria Gold Heap Leach Pad Phase 1B
AREA / LAYER Primary
3RD PARTY Tetra Tech
ARCHIVE LAYFIELD ☑ OWNER ☑ ENGINEER ☑

DESTRUCT SAMPLE NUMBER	TYPE OF SEAM	PANEL NUMBERS	TEST DATE YYYY-MM-DD	TEST TEMP °C	INITIALS 3RD PARTY PRESENT	INITIALS LAYFIELD PASS	INITIALS 3RD PARTY LAB PASS	INSIDE PEEL STRENGTH (PPI)					OUTSIDE PEEL STRENGTH (PPI)					SHEAR STRENGTH (PPI)				
SAMPLE LOCATION								LOCUS OF BREAK					LOCUS OF BREAK					LOCUS OF BREAK				
DS-41	SPF	82/83	2020/07/03	20	AM	PASS		155	166	162	145	144	162	160	154	156	153	159	187	172	181	179
WEOS								SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	BRK	BRK	BRK	BRK	BRK
DS-42	SPF	85/87	2020/07/03	20	AM	PASS		188	184	170	177	178	161	168	166	173	157	199	189	186	185	188
WEOS								SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	BRK	BRK	BRK	BRK	BRK
DS-43	SPF	79/81	2020/07/03	20	AM	PASS		142	140	144	149	131	155	153	152	153	145	159	161	163	164	145
NEOS								SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	BRK	BRK	BRK	BRK	BRK
DS-44	SPF	84/86	2020/07/03	20	AM	PASS		141	149	153	143	153	155	145	148	139	154	171	172	163	168	162
NEOS								SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	BRK	BRK	BRK	BRK	BRK
DS-45	SPF	86/89	2020/07/03	20	AM	PASS		153	142	130	149	139	143	138	128	140	143	175	172	178	173	179
NEOS								SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	BRK	BRK	BRK	BRK	BRK
DS-46	SPF	94/96	2020/07/15	20	JB	PASS		133	136	137	127	120	126	125	128	135	134	155	146	155	154	152
NEOS								SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	BRK	BRK	BRK	BRK	BRK
DS-47	SPF	99/95	2020/07/15	20	JB	PASS		139	132	148	148	152	151	151	140	138	129	157	158	154	157	160
SEOS								SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	BRK	BRK	BRK	BRK	BRK
DS-48	SPF	102/99	2020/07/15	20	JB	PASS		136	133	133	131	132	143	143	145	142	139	152	149	153	153	155
SEOS								SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	BRK	BRK	BRK	BRK	BRK

TYPE OF SEAM:
SPF - SPLIT FUSION SOF - SOLID FUSION SLV - SOLVENT
EXT - EXTRUSION HAF - HOT AIR FUSION

QC TECH Thomas Howald
SUBMITTED BY Chad Messervey
SUBMISSION DATE 2020/01/05
SHEET NUMBER 6 of 37

GEOMEMBRANE DESTRUCT LOG

PROJECT NUMBER CT001401
PROJECT TITLE Victoria Gold Heap Leach Pad Phase 1B
AREA / LAYER Primary
3RD PARTY Tetra Tech
ARCHIVE LAYFIELD ☑ OWNER ☑ ENGINEER ☑

DESTRUCT SAMPLE NUMBER	TYPE OF SEAM	PANEL NUMBERS	TEST DATE YYYY-MM-DD	TEST TEMP °C	INITIALS				INSIDE PEEL STRENGTH (PPI)					OUTSIDE PEEL STRENGTH (PPI)					SHEAR STRENGTH (PPI)				
SAMPLE LOCATION					3RD PARTY PRESENT	LAYFIELD PASS	3RD PARTY LAB PASS		LOCUS OF BREAK					LOCUS OF BREAK					LOCUS OF BREAK				
DS-49	SPF	106/104	2020/07/15	20	JB	PASS			158	153	134	135	138	119	136	161	153	145	160	167	172	170	171
SEOS									SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	BRK	BRK	BRK	BRK	BRK
DS-50	SPF	104/102	2020/07/15	20	JB	PASS			129	124	135	131	121	153	149	152	150	149	155	158	159	159	167
SEOS									SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	BRK	BRK	BRK	BRK	BRK
DS-51	SPF	108/109	2020/07/15	20	JB	PASS			158	148	152	160	145	144	154	141	146	147	178	171	178	155	175
WEOS									SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	BRK	BRK	BRK	BRK	BRK
DS-52	SPF	113/116	2020/07/15	20	JB	PASS			146	149	154	142	159	153	162	155	150	143	173	173	172	171	172
SEOS									SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	BRK	BRK	BRK	BRK	BRK
DS-53	SPF	95/121	2020/07/15	20	JB	PASS			137	134	136	134	138	136	134	146	142	142	162	164	162	164	165
SEOS									SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	BRK	BRK	BRK	BRK	BRK
DS-54	SPF	96/122	2020/07/15	20	JB	PASS			145	147	138	142	143	151	146	151	153	149	162	163	165	166	163
NEOS									SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	BRK	BRK	BRK	BRK	BRK
DS-55	SPF	118/119	2020/07/15	20	JB	PASS			144	150	148	149	145	161	158	158	155	159	174	173	173	171	173
SEOS									SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	BRK	BRK	BRK	BRK	BRK
DS-56	SPF	122/125	2020/07/15	20	JB	PASS			153	149	141	154	149	135	136	146	145	139	161	162	169	162	171
NEOS									SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	BRK	BRK	BRK	BRK	BRK

TYPE OF SEAM: SPF - SPLIT FUSION SOF - SOLID FUSION SLV - SOLVENT
EXT - EXTRUSION HAF - HOT AIR FUSION

QC TECH Thomas Howald
SUBMITTED BY Chad Messervey
SUBMISSION DATE 2020/01/05
SHEET NUMBER 7 of 37

GEOMEMBRANE DESTRUCT LOG

PROJECT NUMBER CT001401
PROJECT TITLE Victoria Gold Heap Leach Pad Phase 1B
AREA / LAYER Primary
3RD PARTY Tetra Tech
ARCHIVE LAYFIELD ☑ OWNER ☑ ENGINEER ☑

DESTRUCT SAMPLE NUMBER	TYPE OF SEAM	PANEL NUMBERS	TEST DATE YYYY-MM-DD	TEST TEMP °C	INITIALS			INSIDE PEEL STRENGTH (PPI)					OUTSIDE PEEL STRENGTH (PPI)					SHEAR STRENGTH (PPI)				
SAMPLE LOCATION					3RD PARTY PRESENT	LAYFIELD PASS	3RD PARTY LAB PASS	LOCUS OF BREAK					LOCUS OF BREAK					LOCUS OF BREAK				
DS-57	SPF	125/129	2020/07/15	20	JB	PASS		134	128	128	128	139	147	148	144	150	148	158	155	161	159	162
NEOS								SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	BRK	BRK	BRK	BRK	BRK
DS-58	SPF	135/138	2020/07/15	20	JB	PASS		150	153	156	157	151	156	154	157	158	143	163	165	167	165	166
NEOS								SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	BRK	BRK	BRK	BRK	BRK
DS-59	SPF	138/140	2020/07/15	20	JB	PASS		150	151	151	150	160	157	155	162	158	154	172	173	176	175	176
NEOS								SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	BRK	BRK	BRK	BRK	BRK
DS-60	SPF	143/145	2020/07/16	20	JB	PASS		136	150	153	145	142	157	155	156	157	152	161	166	163	160	165
NEOS								SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	BRK	BRK	BRK	BRK	BRK
DS-61	SPF	145/148	2020/07/16	20	JB	PASS		147	145	151	147	141	138	138	135	134	134	156	153	156	162	164
NEOS								SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	BRK	BRK	BRK	BRK	BRK
DS-62	SPF	149/150	2020/07/16	20	JB	PASS		142	143	147	147	140	143	145	150	144	136	155	158	150	159	145
NEOS								SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	BRK	BRK	BRK	BRK	BRK
DS-63	SPF	93/97	2020/07/18	20	JB	PASS		139	140	151	127	129	147	146	148	147	147	164	164	167	167	161
SEOS								SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	BRK	BRK	BRK	BRK	BRK
DS-64	SPF	97/108	2020/07/18	20	JB	PASS		153	152	151	147	148	158	138	147	146	148	163	157	164	166	167
SEOS								SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	BRK	BRK	BRK	BRK	BRK

TYPE OF SEAM:
SPF - SPLIT FUSION SOF - SOLID FUSION SLV - SOLVENT
EXT - EXTRUSION HAF - HOT AIR FUSION

QC TECH Thomas Howald
SUBMITTED BY Chad Messervey
SUBMISSION DATE 2020/01/05
SHEET NUMBER 8 of 37

GEOMEMBRANE DESTRUCT LOG

PROJECT NUMBER CT001401
PROJECT TITLE Victoria Gold Heap Leach Pad Phase 1B
AREA / LAYER Primary
3RD PARTY Tetra Tech
ARCHIVE LAYFIELD ☑ OWNER ☑ ENGINEER ☑

DESTRUCT SAMPLE NUMBER	TYPE OF SEAM	PANEL NUMBERS	TEST DATE YYYY-MM-DD	TEST TEMP °C	INITIALS				INSIDE PEEL STRENGTH (PPI)					OUTSIDE PEEL STRENGTH (PPI)					SHEAR STRENGTH (PPI)				
SAMPLE LOCATION					3RD PARTY PRESENT	LAYFIELD PASS	3RD PARTY LAB PASS		LOCUS OF BREAK					LOCUS OF BREAK					LOCUS OF BREAK				
DS-65	SPF	108/111	2020/07/18	20	JB	PASS			151	146	135	150	148	137	148	155	138	138	169	165	175	159	168
SEOS									SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	BRK	BRK	BRK	BRK	BRK
DS-66	SPF	131/130	2020/07/18	20	JB	PASS			155	140	145	159	145	149	149	145	148	150	170	171	170	171	178
EEOS									SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	BRK	BRK	BRK	BRK	BRK
DS-67	SPF	130/133	2020/07/18	20	JB	PASS			137	119	122	139	137	139	127	145	141	129	154	155	151	151	151
NEOS									SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	BRK	BRK	BRK	BRK	BRK
DS-68	SPF	139/142	2020/07/18	20	JB	PASS			150	149	150	149	150	153	143	165	143	154	159	155	159	160	158
NEOS									SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	BRK	BRK	BRK	BRK	BRK
DS-69	SPF	142/143	2020/07/18	20	JB	PASS			160	164	155	160	163	157	157	148	158	158	176	171	179	171	188
WEOS									SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	BRK	BRK	BRK	BRK	BRK
DS-70	SPF	145/147	2020/07/18	20	JB	PASS			153	146	150	142	142	152	150	160	149	159	161	161	162	164	162
NEOS									SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	BRK	BRK	BRK	BRK	BRK
DS-71	SPF	147/149	2020/07/18	20	JB	PASS			147	139	143	147	150	145	145	153	147	147	167	166	165	166	160
NEOS									SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	BRK	BRK	BRK	BRK	BRK
DS-72	SPF	152/154	2020/07/18	20	JB	PASS			150	149	150	152	145	152	151	156	156	156	158	157	160	156	158
SEOS									SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	BRK	BRK	BRK	BRK	BRK

TYPE OF SEAM:
SPF - SPLIT FUSION SOF - SOLID FUSION SLV - SOLVENT
EXT - EXTRUSION HAF - HOT AIR FUSION

QC TECH Thomas Howald
SUBMITTED BY Chad Messervey
SUBMISSION DATE 2020/01/05
SHEET NUMBER 9 of 37

GEOMEMBRANE DESTRUCT LOG

PROJECT NUMBER CT001401
PROJECT TITLE Victoria Gold Heap Leach Pad Phase 1B
AREA / LAYER Primary
3RD PARTY Tetra Tech
ARCHIVE LAYFIELD ✓ OWNER ✓ ENGINEER ✓

DESTRUCT SAMPLE NUMBER	TYPE OF SEAM	PANEL NUMBERS	TEST DATE YYYY-MM-DD	TEST TEMP °C	INITIALS				INSIDE PEEL STRENGTH (PPI)					OUTSIDE PEEL STRENGTH (PPI)					SHEAR STRENGTH (PPI)				
SAMPLE LOCATION					3RD PARTY PRESENT	LAYFIELD PASS	3RD PARTY LAB PASS		LOCUS OF BREAK					LOCUS OF BREAK					LOCUS OF BREAK				
DS-73	SPF	193/197	2020/07/26	20	JB	PASS			154	152	150	159	167	165	159	159	158	166	167	162	162	163	168
NEOS									SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	BRK	BRK	BRK	BRK	BRK
DS-74	SPF	190/193	2020/07/26	20	JB	PASS			152	163	149	155	161	154	157	150	152	161	172	165	166	168	172
NEOS									SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	BRK	BRK	BRK	BRK	BRK
DS-75	SPF	191/186	2020/07/26	20	JB	PASS			149	155	159	148	157	152	158	153	144	145	168	163	174	172	171
NEOS									SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	BRK	BRK	BRK	BRK	BRK
DS-76	SPF	187/191	2020/07/26	20	JB	PASS			147	121	147	156	144	149	149	156	149	150	166	165	173	172	172
SEOS									SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	BRK	BRK	BRK	BRK	BRK
DS-77	SPF	183/187	2020/07/26	20	JB	PASS			130	131	122	177	125	157	152	155	156	155	157	157	161	157	153
SEOS									SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	BRK	BRK	BRK	BRK	BRK
DS-78	SPF	177/183	2020/07/26	20	JB	PASS			145	143	147	146	158	140	149	154	149	155	161	160	162	158	154
SEOS									SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	BRK	BRK	BRK	BRK	BRK
DS-79	SPF	177/178	2020/07/26	20	JB	PASS			148	145	160	148	144	153	158	145	161	151	174	170	166	166	173
WEOS									SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	BRK	BRK	BRK	BRK	BRK
DS-80	SPF	173/177	2020/07/26	20	JB	PASS			142	141	143	138	142	141	150	146	147	151	170	162	176	177	169
SEOS									SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	BRK	BRK	BRK	BRK	BRK

TYPE OF SEAM:
SPF - SPLIT FUSION SOF - SOLID FUSION SLV - SOLVENT
EXT - EXTRUSION HAF - HOT AIR FUSION

QC TECH Thomas Howald
SUBMITTED BY Chad Messervey
SUBMISSION DATE 2020/01/05
SHEET NUMBER 10 of 37

GEOMEMBRANE DESTRUCT LOG

PROJECT NUMBER CT001401
PROJECT TITLE Victoria Gold Heap Leach Pad Phase 1B
AREA / LAYER Primary
3RD PARTY Tetra Tech
ARCHIVE LAYFIELD ☑ OWNER ☑ ENGINEER ☑

DESTRUCT SAMPLE NUMBER	TYPE OF SEAM	PANEL NUMBERS	TEST DATE YYYY-MM-DD	TEST TEMP °C	INITIALS 3RD PARTY PRESENT	INITIALS LAYFIELD	PASS 3RD PARTY	LAB PASS	INSIDE PEEL STRENGTH (PPI)					OUTSIDE PEEL STRENGTH (PPI)					SHEAR STRENGTH (PPI)				
SAMPLE LOCATION									LOCUS OF BREAK					LOCUS OF BREAK					LOCUS OF BREAK				
DS-81	SPF	173/174	2020/07/26	20	JB	PASS			155	150	149	153	147	158	154	148	158	153	157	156	171	168	176
WEOS									SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	BRK	BRK	BRK	BRK	BRK
DS-82	SPF	169/173	2020/07/26	20	JB	PASS			153	149	152	149	151	150	151	151	151	144	157	155	163	156	160
SEOS									SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	BRK	BRK	BRK	BRK	BRK
DS-83	SPF	169/170	2020/07/26	20	JB	PASS			151	148	155	142	146	157	163	155	147	149	181	179	177	176	169
WEOS									SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	BRK	BRK	BRK	BRK	BRK
DS-84	SPF	165/169	2020/07/26	20	JB	PASS			146	143	150	154	156	155	151	156	153	155	158	157	166	161	162
SEOS									SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	BRK	BRK	BRK	BRK	BRK
DS-85	SPF	165/169	2020/07/26	20	JB	PASS			154	139	150	149	143	157	152	154	153	154	158	155	161	158	163
NEOS									SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	BRK	BRK	BRK	BRK	BRK
DS-86	SPF	126/165	2020/07/26	20	JB	PASS			147	155	149	126	145	142	140	169	140	137	166	165	170	164	170
NEOS									SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	BRK	BRK	BRK	BRK	BRK
DS-87	SPF	210/214	2020/07/26	20	JB	PASS			149	148	148	147	154	148	149	156	147	147	162	166	164	169	169
NEOS									SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	BRK	BRK	BRK	BRK	BRK
DS-88	SPF	207/210	2020/07/26	20	JB	PASS			145	144	153	147	152	150	150	152	149	149	158	159	161	161	161
NEOS									SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	BRK	BRK	BRK	BRK	BRK

TYPE OF SEAM: SPF - SPLIT FUSION SOF - SOLID FUSION SLV - SOLVENT
EXT - EXTRUSION HAF - HOT AIR FUSION

QC TECH Thomas Howald
SUBMITTED BY Chad Messervey
SUBMISSION DATE 2020/01/05
SHEET NUMBER 11 of 37

GEOMEMBRANE DESTRUCT LOG

PROJECT NUMBER CT001401
PROJECT TITLE Victoria Gold Heap Leach Pad Phase 1B
AREA / LAYER Primary
3RD PARTY Tetra Tech
ARCHIVE LAYFIELD ☑ OWNER ☑ ENGINEER ☑

DESTRUCT SAMPLE NUMBER	TYPE OF SEAM	PANEL NUMBERS	TEST DATE YYYY-MM-DD	TEST TEMP °C	INITIALS				INSIDE PEEL STRENGTH (PPI)					OUTSIDE PEEL STRENGTH (PPI)					SHEAR STRENGTH (PPI)				
SAMPLE LOCATION					3RD PARTY PRESENT	LAYFIELD PASS	3RD PARTY LAB PASS		LOCUS OF BREAK					LOCUS OF BREAK					LOCUS OF BREAK				
DS-89	SPF	208/211	2020/07/26	20	JB	PASS			137	139	140	142	146	150	156	147	153	153	166	167	173	172	173
SEOS									SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	BRK	BRK	BRK	BRK	BRK
DS-90	SPF	205/208	2020/07/26	20	JB	PASS			142	142	146	138	143	151	153	151	148	149	151	151	156	156	152
SEOS									SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	BRK	BRK	BRK	BRK	BRK
DS-91	SPF	202/205	2020/07/26	20	JB	PASS			144	138	143	147	142	153	156	146	144	151	146	149	148	148	150
SEOS									SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	BRK	BRK	BRK	BRK	BRK
DS-92	SPF	204/207	2020/07/26	20	JB	PASS			145	144	143	145	144	136	138	135	138	147	154	145	154	146	158
NEOS									SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	BRK	BRK	BRK	BRK	BRK
DS-93	SPF	201/204	2020/07/26	20	JB	PASS			149	148	150	146	153	153	150	148	153	150	162	162	167	169	168
NEOS									SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	BRK	BRK	BRK	BRK	BRK
DS-94	SPF	198/202	2020/07/26	20	JB	PASS			149	148	149	150	150	150	145	150	150	153	156	148	154	156	153
SEOS									SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	BRK	BRK	BRK	BRK	BRK
DS-95	SPF	197/201	2020/07/26	20	JB	PASS			152	146	152	154	144	148	137	148	132	144	160	158	157	153	161
NEOS									SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	BRK	BRK	BRK	BRK	BRK
DS-96	SPF	195/198	2020/07/26	20	JB	PASS			144	145	147	141	147	145	140	151	144	136	155	155	159	157	159
SEOS									SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	BRK	BRK	BRK	BRK	BRK

TYPE OF SEAM:
SPF - SPLIT FUSION SOF - SOLID FUSION SLV - SOLVENT
EXT - EXTRUSION HAF - HOT AIR FUSION

QC TECH Thomas Howald
SUBMITTED BY Chad Messervey
SUBMISSION DATE 2020/01/05
SHEET NUMBER 12 of 37

GEOMEMBRANE DESTRUCT LOG

PROJECT NUMBER CT001401
PROJECT TITLE Victoria Gold Heap Leach Pad Phase 1B
AREA / LAYER Primary
3RD PARTY Tetra Tech
ARCHIVE LAYFIELD ☑ OWNER ☑ ENGINEER ☑

DESTRUCT SAMPLE NUMBER	TYPE OF SEAM	PANEL NUMBERS	TEST DATE YYYY-MM-DD	TEST TEMP °C	INITIALS 3RD PARTY PRESENT	INITIALS LAYFIELD PASS	INITIALS 3RD PARTY LAB PASS	INSIDE PEEL STRENGTH (PPI)					OUTSIDE PEEL STRENGTH (PPI)					SHEAR STRENGTH (PPI)				
SAMPLE LOCATION								LOCUS OF BREAK					LOCUS OF BREAK					LOCUS OF BREAK				
DS-97	SPF	200/201	2020/08/03	20	AM	PASS		166	134	159	164	142	138	158	154	165	142	156	184	182	186	173
WEOS								SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	BRK	BRK	BRK	BRK	BRK
DS-98	SPF	219/222	2020/08/03	20	AM	PASS		153	151	148	147	146	139	150	137	140	139	165	142	165	141	162
NEOS								SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	BRK	BRK	BRK	BRK	BRK
DS-99	SPF	216/219	2020/08/03	20	AM	PASS		158	162	145	160	138	144	143	149	156	149	146	156	161	164	155
NEOS								SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	BRK	BRK	BRK	BRK	BRK
DS-100	SPF	220/221	2020/08/03	20	AM	PASS		154	153	170	169	122	137	159	142	147	154	178	180	166	171	168
WEOS								SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	BRK	BRK	BRK	BRK	BRK
DS-101	SPF	221/224	2020/08/03	20	AM	PASS		147	138	146	146	146	153	128	143	135	154	156	160	155	163	162
SEOS								SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	BRK	BRK	BRK	BRK	BRK
DS-102	SPF	222/225	2020/08/03	20	AM	PASS		149	160	146	147	147	111	149	118	156	138	156	132	158	147	161
NEOS								SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	BRK	BRK	BRK	BRK	BRK
DS-103	SPF	224/226	2020/08/03	20	AM	PASS		153	140	153	153	156	151	151	154	155	154	150	160	154	149	155
NEOS								SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	BRK	BRK	BRK	BRK	BRK
DS-104	SPF	226/227	2020/08/03	20	AM	PASS		164	135	157	142	140	155	152	124	155	151	186	176	179	177	180
WEOS								SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	BRK	BRK	BRK	BRK	BRK

TYPE OF SEAM:
SPF - SPLIT FUSION SOF - SOLID FUSION SLV - SOLVENT
EXT - EXTRUSION HAF - HOT AIR FUSION

QC TECH Thomas Howald
SUBMITTED BY Chad Messervey
SUBMISSION DATE 2020/01/05
SHEET NUMBER 13 of 37

GEOMEMBRANE DESTRUCT LOG

PROJECT NUMBER CT001401
PROJECT TITLE Victoria Gold Heap Leach Pad Phase 1B
AREA / LAYER Primary
3RD PARTY Tetra Tech
ARCHIVE LAYFIELD ☑ OWNER ☑ ENGINEER ☑

DESTRUCT SAMPLE NUMBER	TYPE OF SEAM	PANEL NUMBERS	TEST DATE YYYY-MM-DD	TEST TEMP °C	INITIALS				INSIDE PEEL STRENGTH (PPI)					OUTSIDE PEEL STRENGTH (PPI)					SHEAR STRENGTH (PPI)				
SAMPLE LOCATION					3RD PARTY PRESENT	LAYFIELD PASS	3RD PARTY LAB PASS		LOCUS OF BREAK					LOCUS OF BREAK					LOCUS OF BREAK				
DS-105	SPF	225/228	2020/08/03	20	AM	PASS			139	160	136	155	156	156	144	155	143	147	156	158	161	164	138
NEOS									SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	BRK	BRK	BRK	BRK	BRK
DS-106	SPF	228/230	2020/08/03	20	AM	PASS			142	150	145	153	147	157	154	149	158	139	141	162	156	164	144
NEOS									SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	BRK	BRK	BRK	BRK	BRK
DS-107	SPF	230/233	2020/08/03	20	AM	PASS			145	150	151	154	144	138	160	121	158	141	163	141	135	145	152
NEOS									SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	BRK	BRK	BRK	BRK	BRK
DS-108	SPF	233/236	2020/08/03	20	AM	PASS			152	154	154	151	150	150	149	158	144	145	152	171	157	168	162
NEOS									SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	BRK	BRK	BRK	BRK	BRK
DS-109	SPF	236/238	2020/08/03	20	AM	PASS			156	157	147	153	152	135	147	156	152	148	162	165	165	158	165
NEOS									SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	BRK	BRK	BRK	BRK	BRK
DS-110	SPF	238/241	2020/08/03	20	AM	PASS			151	146	150	147	149	152	155	146	143	148	150	152	151	160	149
NEOS									SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	BRK	BRK	BRK	BRK	BRK
DS-111	SPF	242/243	2020/08/03	20	AM	PASS			145	145	147	143	143	134	146	133	152	147	167	158	169	156	164
SEOS									SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	BRK	BRK	BRK	BRK	BRK
DS-112	SPF	243/245	2020/08/03	20	AM	PASS			153	155	131	145	150	158	154	158	142	154	154	160	153	166	158
SEOS									SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	BRK	BRK	BRK	BRK	BRK

TYPE OF SEAM:
SPF - SPLIT FUSION SOF - SOLID FUSION SLV - SOLVENT
EXT - EXTRUSION HAF - HOT AIR FUSION

QC TECH Thomas Howald
SUBMITTED BY Chad Messervey
SUBMISSION DATE 2020/01/05
SHEET NUMBER 14 of 37

GEOMEMBRANE DESTRUCT LOG

PROJECT NUMBER CT001401
PROJECT TITLE Victoria Gold Heap Leach Pad Phase 1B
AREA / LAYER Primary
3RD PARTY Tetra Tech
ARCHIVE LAYFIELD ☑ OWNER ☑ ENGINEER ☑

DESTRUCT SAMPLE NUMBER	TYPE OF SEAM	PANEL NUMBERS	TEST DATE YYYY-MM-DD	TEST TEMP °C	INITIALS				INSIDE PEEL STRENGTH (PPI)					OUTSIDE PEEL STRENGTH (PPI)					SHEAR STRENGTH (PPI)				
					3RD PARTY PRESENT	LAYFIELD PASS	3RD PARTY LAB PASS																
SAMPLE LOCATION									LOCUS OF BREAK					LOCUS OF BREAK					LOCUS OF BREAK				
DS-113	SPF	245/246	2020/08/03	20	AM	PASS			144	150	142	149	129	133	137	140	156	146	156	162	162	161	158
SEOS									SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	BRK	BRK	BRK	BRK	BRK
DS-114	SPF	248/250	2020/08/03	20	AM	PASS			153	137	152	134	152	144	152	147	141	153	147	156	153	161	157
SEOS									SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	BRK	BRK	BRK	BRK	BRK
DS-115	SPF	250/251	2020/08/03	20	AM	PASS			141	154	142	141	144	144	148	139	147	154	161	137	161	144	154
SEOS									SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	BRK	BRK	BRK	BRK	BRK
DS-116	SPF	251/253	2020/08/03	20	AM	PASS			148	138	148	145	149	143	144	139	142	141	144	158	144	151	156
SEOS									SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	BRK	BRK	BRK	BRK	BRK
DS-117	SPF	253/255	2020/08/03	20	AM	PASS			114	130	123	128	126	121	136	132	135	125	142	134	140	143	143
SEOS									SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	BRK	BRK	BRK	BRK	BRK
DS-118	SPF	255/256	2020/08/03	20	AM	PASS			130	120	127	105	139	130	135	133	134	135	135	145	135	147	144
SEOS									SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	BRK	BRK	BRK	BRK	BRK
DS-119	SPF	241/260	2020/08/10	20	AM	PASS			148	145	159	126	147	149	151	148	154	136	156	162	157	164	157
NEOS									SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	BRK	BRK	BRK	BRK	BRK
DS-120	SPF	260/263	2020/08/10	20	AM	PASS			149	154	158	157	155	153	155	152	156	158	175	161	176	168	177
NEOS									SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	BRK	BRK	BRK	BRK	BRK

TYPE OF SEAM:
SPF - SPLIT FUSION SOF - SOLID FUSION SLV - SOLVENT
EXT - EXTRUSION HAF - HOT AIR FUSION

QC TECH Thomas Howald
SUBMITTED BY Chad Messervey
SUBMISSION DATE 2020/01/05
SHEET NUMBER 15 of 37

GEOMEMBRANE DESTRUCT LOG

PROJECT NUMBER CT001401
PROJECT TITLE Victoria Gold Heap Leach Pad Phase 1B
AREA / LAYER Primary
3RD PARTY Tetra Tech
ARCHIVE LAYFIELD ☑ OWNER ☑ ENGINEER ☑

DESTRUCT SAMPLE NUMBER	TYPE OF SEAM	PANEL NUMBERS	TEST DATE YYYY-MM-DD	TEST TEMP °C	INITIALS 3RD PARTY PRESENT	INITIALS LAYFIELD PASS	INITIALS 3RD PARTY LAB PASS	INSIDE PEEL STRENGTH (PPI)					OUTSIDE PEEL STRENGTH (PPI)					SHEAR STRENGTH (PPI)				
SAMPLE LOCATION								LOCUS OF BREAK					LOCUS OF BREAK					LOCUS OF BREAK				
DS-121	SPF	263/266	2020/08/10	20	AM	PASS		159	147	150	141	162	152	152	157	156	154	166	173	171	171	166
NEOS								SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	BRK	BRK	BRK	BRK	BRK
DS-122	SPF	266/269	2020/08/10	20	AM	PASS		150	154	154	146	140	145	163	165	146	152	162	164	167	161	171
NEOS								SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	BRK	BRK	BRK	BRK	BRK
DS-123	SPF	256/270	2020/08/10	20	AM	PASS		115	132	160	131	151	158	150	157	151	155	173	175	168	171	153
SEOS								SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	BRK	BRK	BRK	BRK	BRK
DS-124	SPF	269/277	2020/08/10	20	AM	PASS		153	163	165	150	152	132	127	144	138	135	168	164	167	157	166
NEOS								SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	BRK	BRK	BRK	BRK	BRK
DS-125	SPF	270/271	2020/08/10	20	AM	PASS		148	156	168	150	150	160	152	155	160	164	159	170	148	169	160
SEOS								SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	BRK	BRK	BRK	BRK	BRK
DS-126	SPF	271/272	2020/08/10	20	AM	PASS		156	151	161	149	153	158	152	137	147	150	152	172	176	150	174
SEOS								SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	BRK	BRK	BRK	BRK	BRK
DS-127	SPF	272/273	2020/08/10	20	AM	PASS		162	147	162	149	156	139	158	148	152	154	164	167	165	169	164
SEOS								SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	BRK	BRK	BRK	BRK	BRK
DS-128	SPF	273/275	2020/08/10	20	AM	PASS		150	164	162	140	153	162	164	153	163	148	170	175	182	174	177
SEOS								SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	BRK	BRK	BRK	BRK	BRK

TYPE OF SEAM:
SPF - SPLIT FUSION SOF - SOLID FUSION SLV - SOLVENT
EXT - EXTRUSION HAF - HOT AIR FUSION

QC TECH Thomas Howald
SUBMITTED BY Chad Messervey
SUBMISSION DATE 2020/01/05
SHEET NUMBER 16 of 37

GEOMEMBRANE DESTRUCT LOG

PROJECT NUMBER CT001401
PROJECT TITLE Victoria Gold Heap Leach Pad Phase 1B
AREA / LAYER Primary
3RD PARTY Tetra Tech
ARCHIVE LAYFIELD ☑ OWNER ☑ ENGINEER ☑

DESTRUCT SAMPLE NUMBER	TYPE OF SEAM	PANEL NUMBERS	TEST DATE YYYY-MM-DD	TEST TEMP °C	INITIALS 3RD PARTY PRESENT	INITIALS LAYFIELD PASS	INITIALS 3RD PARTY LAB PASS	INSIDE PEEL STRENGTH (PPI)					OUTSIDE PEEL STRENGTH (PPI)					SHEAR STRENGTH (PPI)				
SAMPLE LOCATION								LOCUS OF BREAK					LOCUS OF BREAK					LOCUS OF BREAK				
DS-129	SPF	275/278	2020/08/10	20	AM	PASS		159	155	155	136	154	148	146	151	155	154	161	160	162	170	166
SEOS								SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	BRK	BRK	BRK	BRK	BRK
DS-130	SPF	282/278	2020/08/10	20	AM	PASS		147	139	146	153	146	140	141	138	142	145	168	165	166	164	167
SEOS								SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	BRK	BRK	BRK	BRK	BRK
DS-131	SPF	277/281	2020/08/10	20	AM	PASS		149	156	155	152	156	156	151	155	148	151	149	159	162	165	161
NEOS								SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	BRK	BRK	BRK	BRK	BRK
DS-132	SPF	281/284	2020/08/10	20	AM	PASS		132	125	130	121	125	153	158	146	159	146	162	162	172	170	173
NEOS								SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	BRK	BRK	BRK	BRK	BRK
DS-133	SPF	282/285	2020/08/10	20	AM	PASS		134	125	149	126	145	153	149	137	153	154	144	159	139	158	141
SEOS								SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	BRK	BRK	BRK	BRK	BRK
DS-134	SPF	284/288	2020/08/10	20	AM	PASS		131	156	136	148	151	154	160	158	150	155	166	160	166	153	163
WEOS								SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	BRK	BRK	BRK	BRK	BRK
DS-135	SPF	287/288	2020/08/10	20	AM	PASS		167	150	150	161	158	168	168	165	162	150	173	193	171	184	172
WEOS								SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	BRK	BRK	BRK	BRK	BRK
DS-136	SPF	288/292	2020/08/10	20	AM	PASS		152	152	149	150	153	132	143	136	151	131	159	147	156	150	159
NEOS								SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	BRK	BRK	BRK	BRK	BRK

TYPE OF SEAM: SPF - SPLIT FUSION SOF - SOLID FUSION SLV - SOLVENT
EXT - EXTRUSION HAF - HOT AIR FUSION

QC TECH Thomas Howald
SUBMITTED BY Chad Messervey
SUBMISSION DATE 2020/01/05
SHEET NUMBER 17 of 37

GEOMEMBRANE DESTRUCT LOG

PROJECT NUMBER CT001401
PROJECT TITLE Victoria Gold Heap Leach Pad Phase 1B
AREA / LAYER Primary
3RD PARTY Tetra Tech
ARCHIVE LAYFIELD ☑ OWNER ☑ ENGINEER ☑

DESTRUCT SAMPLE NUMBER	TYPE OF SEAM	PANEL NUMBERS	TEST DATE YYYY-MM-DD	TEST TEMP °C	INITIALS 3RD PARTY PRESENT	INITIALS LAYFIELD PASS	INITIALS 3RD PARTY LAB PASS	INSIDE PEEL STRENGTH (PPI)					OUTSIDE PEEL STRENGTH (PPI)					SHEAR STRENGTH (PPI)				
SAMPLE LOCATION								LOCUS OF BREAK					LOCUS OF BREAK					LOCUS OF BREAK				
DS-137	SPF	285/289	2020/08/10	20	AM	PASS		156	155	158	155	155	155	156	160	156	155	153	164	153	164	139
NEOS								SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	BRK	BRK	BRK	BRK	BRK
DS-138	SPF	289/293	2020/08/10	20	AM	PASS		139	155	144	158	147	154	139	143	154	149	167	158	170	160	171
NEOS								SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	BRK	BRK	BRK	BRK	BRK
DS-139	SPF	292/295	2020/08/10	20	AM	PASS		137	136	139	120	116	146	142	140	139	144	146	156	145	155	153
NEOS								SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	BRK	BRK	BRK	BRK	BRK
DS-140	SPF	342/344	2020/08/13	20	AM	PASS		142	148	137	151	146	153	154	153	137	123	158	162	151	166	155
EEOS								SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	BRK	BRK	BRK	BRK	BRK
DS-141	SPF	325/333	2020/08/13	20	AM	PASS		136	144	144	145	144	152	139	144	146	141	160	162	165	162	163
EEOS								SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	BRK	BRK	BRK	BRK	BRK
DS-142	SPF	333/325	2020/08/13	20	AM	PASS		144	140	148	139	148	145	142	147	117	152	143	162	149	162	152
EEOS								SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	BRK	BRK	BRK	BRK	BRK
DS-143	SPF	343/345	2020/08/13	20	AM	PASS		137	139	136	127	133	149	143	152	144	133	156	148	160	148	152
WEOS								SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	BRK	BRK	BRK	BRK	BRK
DS-144	SPF	336/338	2020/08/13	20	AM	PASS		152	147	142	154	148	158	151	159	144	162	161	169	164	163	170
EEOS								SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	BRK	BRK	BRK	BRK	BRK

TYPE OF SEAM:
SPF - SPLIT FUSION SOF - SOLID FUSION SLV - SOLVENT
EXT - EXTRUSION HAF - HOT AIR FUSION

QC TECH Thomas Howald
SUBMITTED BY Chad Messervey
SUBMISSION DATE 2020/01/05
SHEET NUMBER 18 of 37

GEOMEMBRANE DESTRUCT LOG

PROJECT NUMBER CT001401
PROJECT TITLE Victoria Gold Heap Leach Pad Phase 1B
AREA / LAYER Primary
3RD PARTY Tetra Tech
ARCHIVE LAYFIELD ☑ OWNER ☑ ENGINEER ☑

DESTRUCT SAMPLE NUMBER	TYPE OF SEAM	PANEL NUMBERS	TEST DATE YYYY-MM-DD	TEST TEMP °C	INITIALS 3RD PARTY PRESENT	INITIALS LAYFIELD PASS	INITIALS 3RD PARTY LAB PASS	INSIDE PEEL STRENGTH (PPI)					OUTSIDE PEEL STRENGTH (PPI)					SHEAR STRENGTH (PPI)				
SAMPLE LOCATION								LOCUS OF BREAK					LOCUS OF BREAK					LOCUS OF BREAK				
DS-145	SPF	295/303	2020/08/13	20	AM	PASS		152	142	148	151	138	143	136	127	133	133	156	156	166	154	157
NEOS								SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	BRK	BRK	BRK	BRK	BRK
DS-146	SPF	296/303	2020/08/13	20	AM	PASS		158	164	147	168	161	160	139	152	146	159	161	186	179	192	165
SEOS								SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	BRK	BRK	BRK	BRK	BRK
DS-147	SPF	337/340	2020/08/13	20	AM	PASS		147	132	143	143	131	135	148	148	148	142	145	141	151	145	147
EEOS								SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	BRK	BRK	BRK	BRK	BRK
DS-148	SPF	338/339	2020/08/13	20	AM	PASS		152	148	151	145	160	143	171	172	143	153	180	177	184	181	162
NEOS								SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	BRK	BRK	BRK	BRK	BRK
DS-149	SPF	349/351	2020/08/13	20	AM	PASS		133	130	135	133	127	149	137	117	146	144	156	157	156	152	156
WEOS								SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	BRK	BRK	BRK	BRK	BRK
DS-150	SPF	293/347	2020/08/13	20	AM	PASS		156	156	131	151	138	139	120	138	149	132	155	167	141	169	162
NEOS								SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	BRK	BRK	BRK	BRK	BRK
DS-151	SPF	345/347	2020/08/13	20	AM	PASS		141	142	137	136	143	129	149	147	140	134	153	123	144	131	151
WEOS								SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	BRK	BRK	BRK	BRK	BRK
DS-152	SPF	338/341	2020/08/13	20	AM	PASS		146	149	134	133	144	141	143	135	140	148	141	159	153	161	143
WEOS								SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	BRK	BRK	BRK	BRK	BRK

TYPE OF SEAM: SPF - SPLIT FUSION SOF - SOLID FUSION SLV - SOLVENT
EXT - EXTRUSION HAF - HOT AIR FUSION

QC TECH Thomas Howald
SUBMITTED BY Chad Messervey
SUBMISSION DATE 2020/01/05
SHEET NUMBER 19 of 37

GEOMEMBRANE DESTRUCT LOG

PROJECT NUMBER CT001401
PROJECT TITLE Victoria Gold Heap Leach Pad Phase 1B
AREA / LAYER Primary
3RD PARTY Tetra Tech
ARCHIVE LAYFIELD ✓ OWNER ✓ ENGINEER ✓

DESTRUCT SAMPLE NUMBER	TYPE OF SEAM	PANEL NUMBERS	TEST DATE YYYY-MM-DD	TEST TEMP °C	INITIALS 3RD PARTY PRESENT	INITIALS LAYFIELD PASS	INITIALS 3RD PARTY LAB PASS	INSIDE PEEL STRENGTH (PPI)					OUTSIDE PEEL STRENGTH (PPI)					SHEAR STRENGTH (PPI)				
SAMPLE LOCATION								LOCUS OF BREAK					LOCUS OF BREAK					LOCUS OF BREAK				
DS-153	SPF	301/302	2020/08/13	20	AM	PASS		131	151	152	143	146	134	145	142	122	140	162	156	158	151	158
WEOS								SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	BRK	BRK	BRK	BRK	BRK
DS-154	SPF	306/307	2020/08/13	20	AM	PASS		152	148	131	130	139	124	127	140	105	127	153	162	155	163	158
EEOS								SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	BRK	BRK	BRK	BRK	BRK
DS-155	SPF	317/318	2020/08/13	20	AM	PASS		135	124	130	127	116	123	135	131	125	128	139	147	120	123	137
EEOS								SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	BRK	BRK	BRK	BRK	BRK
DS-156	SPF	326/325	2020/08/13	20	AM	PASS		131	140	130	124	135	119	137	142	128	139	155	164	164	166	154
EEOS								SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	BRK	BRK	BRK	BRK	BRK
DS-157	SPF	350/353	2020/08/13	20	AM	PASS		137	153	143	133	138	131	149	138	143	131	155	143	159	137	151
EEOS								SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	BRK	BRK	BRK	BRK	BRK
DS-158	SPF	340/342	2020/08/13	20	AM	PASS		142	128	139	137	148	137	131	146	121	146	155	164	164	166	154
EEOS								SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	BRK	BRK	BRK	BRK	BRK
DS-159	SPF	335/337	2020/08/13	20	AM	PASS		120	149	146	138	146	141	134	135	152	128	134	146	155	124	149
EEOS								SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	BRK	BRK	BRK	BRK	BRK
DS-160	SPF	344/346	2020/08/13	20	AM	PASS		136	124	123	132	137	145	144	140	143	149	139	155	122	153	140
EEOS								SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	BRK	BRK	BRK	BRK	BRK

TYPE OF SEAM:
SPF - SPLIT FUSION SOF - SOLID FUSION SLV - SOLVENT
EXT - EXTRUSION HAF - HOT AIR FUSION

QC TECH Thomas Howald
SUBMITTED BY Chad Messervey
SUBMISSION DATE 2020/01/05
SHEET NUMBER 20 of 37

GEOMEMBRANE DESTRUCT LOG

PROJECT NUMBER CT001401
PROJECT TITLE Victoria Gold Heap Leach Pad Phase 1B
AREA / LAYER Primary
3RD PARTY Tetra Tech
ARCHIVE LAYFIELD ☑ OWNER ☑ ENGINEER ☑

DESTRUCT SAMPLE NUMBER	TYPE OF SEAM	PANEL NUMBERS	TEST DATE YYYY-MM-DD	TEST TEMP °C	INITIALS 3RD PARTY PRESENT	INITIALS LAYFIELD PASS	INITIALS 3RD PARTY LAB PASS	INSIDE PEEL STRENGTH (PPI)					OUTSIDE PEEL STRENGTH (PPI)					SHEAR STRENGTH (PPI)				
SAMPLE LOCATION								LOCUS OF BREAK					LOCUS OF BREAK					LOCUS OF BREAK				
DS-161	SPF	398/399	2020/08/17	20	AM	PASS		132	138	139	147	146	143	134	136	146	135	151	159	163	162	150
SEOS								SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	BRK	BRK	BRK	BRK	BRK
DS-162	SPF	375/377	2020/08/17	20	AM	PASS		137	137	141	143	139	142	140	136	141	142	153	147	159	149	152
WEOS								SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	BRK	BRK	BRK	BRK	BRK
DS-163	SPF	379/381	2020/08/17	20	AM	PASS		145	155	145	141	143	137	139	139	139	142	152	163	156	160	155
WEOS								SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	BRK	BRK	BRK	BRK	BRK
DS-164	SPF	390/391	2020/08/17	20	AM	PASS		134	144	136	132	131	148	132	140	148	135	156	158	161	159	159
SEOS								SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	BRK	BRK	BRK	BRK	BRK
DS-165	SPF	350/361	2020/08/17	20	AM	PASS		140	134	140	136	147	137	141	138	144	144	145	158	156	159	146
SEOS								SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	BRK	BRK	BRK	BRK	BRK
DS-166	SPF	386/391	2020/08/17	20	AM	PASS		150	143	142	142	147	136	137	136	133	135	156	147	153	159	154
WEOS								SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	BRK	BRK	BRK	BRK	BRK
DS-167	SPF	381/382	2020/08/17	20	AM	PASS		157	157	145	138	160	150	144	157	148	157	160	175	186	184	170
SEOS								SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	BRK	BRK	BRK	BRK	BRK
DS-168	SPF	365/367	2020/08/17	20	AM	PASS		129	138	137	137	135	138	140	132	138	132	163	159	160	156	157
NEOS								SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	BRK	BRK	BRK	BRK	BRK

TYPE OF SEAM:
SPF - SPLIT FUSION SOF - SOLID FUSION SLV - SOLVENT
EXT - EXTRUSION HAF - HOT AIR FUSION

QC TECH Thomas Howald
SUBMITTED BY Chad Messervey
SUBMISSION DATE 2020/01/05
SHEET NUMBER 21 of 37

GEOMEMBRANE DESTRUCT LOG

PROJECT NUMBER CT001401
PROJECT TITLE Victoria Gold Heap Leach Pad Phase 1B
AREA / LAYER Primary
3RD PARTY Tetra Tech
ARCHIVE LAYFIELD ☑ OWNER ☑ ENGINEER ☑

DESTRUCT SAMPLE NUMBER	TYPE OF SEAM	PANEL NUMBERS	TEST DATE YYYY-MM-DD	TEST TEMP °C	INITIALS 3RD PARTY PRESENT	INITIALS LAYFIELD PASS	INITIALS 3RD PARTY LAB PASS	INSIDE PEEL STRENGTH (PPI)					OUTSIDE PEEL STRENGTH (PPI)					SHEAR STRENGTH (PPI)				
SAMPLE LOCATION								LOCUS OF BREAK					LOCUS OF BREAK					LOCUS OF BREAK				
DS-169	SPF	367/368	2020/08/17	20	AM	PASS		161	161	163	145	163	163	145	160	152	164	176	175	169	166	181
NEOS								SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	BRK	BRK	BRK	BRK	BRK
DS-170	SPF	364/366	2020/08/17	20	AM	PASS		138	132	130	147	134	136	140	137	135	133	161	149	157	152	160
NEOS								SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	BRK	BRK	BRK	BRK	BRK
DS-171	SPF	361/364	2020/08/17	20	AM	PASS		144	131	138	139	141	141	124	140	133	128	140	156	150	156	152
NEOS								SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	BRK	BRK	BRK	BRK	BRK
DS-172	SPF	385/386	2020/08/17	20	AM	PASS		123	134	127	132	128	137	137	134	137	144	149	150	152	151	151
WEOS								SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	BRK	BRK	BRK	BRK	BRK
DS-173	SPF	383/385	2020/08/17	20	AM	PASS		139	133	140	153	140	131	139	138	135	141	144	151	145	155	147
WEOS								SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	BRK	BRK	BRK	BRK	BRK
DS-174	SPF	388/392	2020/08/17	20	AM	PASS		145	142	149	142	145	136	129	127	131	127	150	142	149	143	147
SEOS								SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	BRK	BRK	BRK	BRK	BRK
DS-175	SPF	371/373	2020/08/17	20	AM	PASS		135	141	140	129	140	139	120	137	134	145	144	146	145	151	147
WEOS								SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	BRK	BRK	BRK	BRK	BRK
DS-176	SPF	394/395	2020/08/17	20	AM	PASS		136	133	133	145	133	141	132	138	141	132	150	146	149	143	148
SEOS								SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	BRK	BRK	BRK	BRK	BRK

TYPE OF SEAM:
SPF - SPLIT FUSION SOF - SOLID FUSION SLV - SOLVENT
EXT - EXTRUSION HAF - HOT AIR FUSION

QC TECH Thomas Howald
SUBMITTED BY Chad Messervey
SUBMISSION DATE 2020/01/05
SHEET NUMBER 22 of 37

GEOMEMBRANE DESTRUCT LOG

PROJECT NUMBER CT001401
PROJECT TITLE Victoria Gold Heap Leach Pad Phase 1B
AREA / LAYER Primary
3RD PARTY Tetra Tech
ARCHIVE LAYFIELD ✓ OWNER ✓ ENGINEER ✓

DESTRUCT SAMPLE NUMBER	TYPE OF SEAM	PANEL NUMBERS	TEST DATE YYYY-MM-DD	TEST TEMP °C	INITIALS				INSIDE PEEL STRENGTH (PPI)					OUTSIDE PEEL STRENGTH (PPI)					SHEAR STRENGTH (PPI)				
SAMPLE LOCATION					3RD PARTY PRESENT	LAYFIELD PASS	3RD PARTY LAB PASS		LOCUS OF BREAK					LOCUS OF BREAK					LOCUS OF BREAK				
DS-177	SPF	367/369	2020/08/17	20	AM	PASS			153	151	144	147	147	148	143	139	148	142	147	154	149	158	133
SEOS									SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	BRK	BRK	BRK	BRK	BRK
DS-178	SPF	273/403	2020/08/24	20	AM	FAIL			141	131	126	124		129	124	124	130						
EEOS																							
DS-179	SPF	451/454	2020/08/24	20	AM	PASS			130	128	148	132	131	122	131	131	129	128	145	150	144	151	145
EEOS									SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	BRK	BRK	BRK	BRK	BRK
DS-180	SPF	458/461	2020/08/24	20	AM	PASS			143	144	151	133	142	140	144	144	143	145	164	164	163	146	164
WEOS									SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	BRK	BRK	BRK	BRK	BRK
DS-181	SPF	461/464	2020/08/24	20	AM	PASS			149	150	148	145	137	137	153	150	139	149	152	154	155	157	157
WEOS									SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	BRK	BRK	BRK	BRK	BRK
DS-182	SPF	464/467	2020/08/24	20	AM	PASS			155	151	157	159	160	136	157	147	157	155	158	159	162	153	162
WEOS									SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	BRK	BRK	BRK	BRK	BRK
DS-183	SPF	414/417	2020/08/24	20	AM	PASS			145	141	138	145	142	141	146	145	147	145	152	153	149	153	152
EEOS									SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	BRK	BRK	BRK	BRK	BRK
DS-184	SPF	408/411	2020/08/24	20	AM	PASS			135	137	141	138	138	143	136	134	143	137	139	152	149	151	151
EEOS									SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	BRK	BRK	BRK	BRK	BRK

TYPE OF SEAM:
SPF - SPLIT FUSION SOF - SOLID FUSION SLV - SOLVENT
EXT - EXTRUSION HAF - HOT AIR FUSION

QC TECH Thomas Howald
SUBMITTED BY Chad Messervey
SUBMISSION DATE 2020/01/05
SHEET NUMBER 23 of 37

GEOMEMBRANE DESTRUCT LOG

PROJECT NUMBER CT001401
PROJECT TITLE Victoria Gold Heap Leach Pad Phase 1B
AREA / LAYER Primary
3RD PARTY Tetra Tech
ARCHIVE LAYFIELD ☑ OWNER ☑ ENGINEER ☑

DESTRUCT SAMPLE NUMBER	TYPE OF SEAM	PANEL NUMBERS	TEST DATE YYYY-MM-DD	TEST TEMP °C	INITIALS				INSIDE PEEL STRENGTH (PPI)					OUTSIDE PEEL STRENGTH (PPI)					SHEAR STRENGTH (PPI)				
SAMPLE LOCATION					3RD PARTY PRESENT	LAYFIELD PASS	3RD PARTY LAB PASS		LOCUS OF BREAK					LOCUS OF BREAK					LOCUS OF BREAK				
DS-185	SPF	454/457	2020/08/24	20	AM	PASS			137	133	151	150	143	143	145	150	142	147	145	149	153	158	156
EEOS									SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	BRK	BRK	BRK	BRK	BRK
DS-186	SPF	448/451	2020/08/24	20	AM	PASS			146	150	149	147	141	151	141	134	142	140	161	155	159	159	160
EEOS									SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	BRK	BRK	BRK	BRK	BRK
DS-187	SPF	405/408	2020/08/24	20	AM	PASS			131	135	141	128	132	137	133	145	140	136	135	145	128	145	142
EEOS									SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	BRK	BRK	BRK	BRK	BRK
DS-188	SPF	370/405	2020/08/24	20	AM	PASS			146	134	146	137	144	135	141	135	132	125	151	150	155	146	153
EEOS									SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	BRK	BRK	BRK	BRK	BRK
DS-189	SPF	417/420	2020/08/24	20	AM	PASS			132	129	128	133	110	149	147	152	149	140	155	155	145	146	155
EEOS									SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	BRK	BRK	BRK	BRK	BRK
DS-190	SPF	439/442	2020/08/24	20	AM	PASS			152	134	144	140	150	147	137	148	148	146	152	157	162	159	160
EEOS									SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	BRK	BRK	BRK	BRK	BRK
DS-191	SPF	435/439	2020/08/24	20	AM	PASS			134	134	135	125	129	128	136	142	136	139	149	152	154	154	154
EEOS									SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	BRK	BRK	BRK	BRK	BRK
DS-192	SPF	436/440	2020/08/24	20	AM	PASS			128	129	127	129	104	124	140	134	147	132	156	144	142	140	145
WEOS									SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	BRK	BRK	BRK	BRK	BRK

TYPE OF SEAM:
SPF - SPLIT FUSION SOF - SOLID FUSION SLV - SOLVENT
EXT - EXTRUSION HAF - HOT AIR FUSION

QC TECH Thomas Howald
SUBMITTED BY Chad Messervey
SUBMISSION DATE 2020/01/05
SHEET NUMBER 24 of 37

GEOMEMBRANE DESTRUCT LOG

PROJECT NUMBER CT001401
PROJECT TITLE Victoria Gold Heap Leach Pad Phase 1B
AREA / LAYER Primary
3RD PARTY Tetra Tech
ARCHIVE LAYFIELD ☑ OWNER ☑ ENGINEER ☑

DESTRUCT SAMPLE NUMBER	TYPE OF SEAM	PANEL NUMBERS	TEST DATE YYYY-MM-DD	TEST TEMP °C	INITIALS			INSIDE PEEL STRENGTH (PPI)					OUTSIDE PEEL STRENGTH (PPI)					SHEAR STRENGTH (PPI)				
SAMPLE LOCATION					3RD PARTY PRESENT	LAYFIELD PASS	3RD PARTY LAB PASS	LOCUS OF BREAK					LOCUS OF BREAK					LOCUS OF BREAK				
DS-193	SPF	433/436	2020/08/24	20	AM	PASS		144	143	141	133	134	125	131	133	139	133	142	154	154	150	148
WEOS								SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	BRK	BRK	BRK	BRK	BRK
DS-194	SPF	427/430	2020/08/24	20	AM	PASS		148	153	145	151	141	150	137	143	149	127	170	144	171	157	168
WEOS								SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	BRK	BRK	BRK	BRK	BRK
DS-195	SPF	449/452	2020/08/24	20	AM	PASS		133	143	140	140	136	143	142	139	139	137	149	150	148	153	146
WEOS								SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	BRK	BRK	BRK	BRK	BRK
DS-196	SPF	429/432	2020/08/24	20	AM	PASS		139	146	156	145	123	151	142	148	141	144	158	155	159	156	159
EEOS								SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	BRK	BRK	BRK	BRK	BRK
DS-197	SPF	442/445	2020/08/24	20	AM	PASS		127	128	127	128	129	143	146	132	133	118	151	148	154	153	141
EEOS								SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	BRK	BRK	BRK	BRK	BRK
DS-198	SPF	446/449	2020/08/24	20	AM	PASS		138	141	136	142	129	141	129	142	142	156	162	155	163	137	163
WEOS								SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	BRK	BRK	BRK	BRK	BRK
DS-199	SPF	411/414	2020/08/24	20	AM	PASS		146	142	133	130	133	133	127	136	128	134	144	151	147	151	132
EEOS								SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	BRK	BRK	BRK	BRK	BRK
DS-200	SPF	426/429	2020/08/24	20	AM	PASS		139	147	136	148	144	133	145	143	136	146	158	142	159	151	160
EEOS								SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	BRK	BRK	BRK	BRK	BRK

TYPE OF SEAM: SPF - SPLIT FUSION SOF - SOLID FUSION SLV - SOLVENT
EXT - EXTRUSION HAF - HOT AIR FUSION

QC TECH Thomas Howald
SUBMITTED BY Chad Messervey
SUBMISSION DATE 2020/01/05
SHEET NUMBER 25 of 37

GEOMEMBRANE DESTRUCT LOG

PROJECT NUMBER CT001401
PROJECT TITLE Victoria Gold Heap Leach Pad Phase 1B
AREA / LAYER Primary
3RD PARTY Tetra Tech
ARCHIVE LAYFIELD ☑ OWNER ☑ ENGINEER ☑

DESTRUCT SAMPLE NUMBER	TYPE OF SEAM	PANEL NUMBERS	TEST DATE YYYY-MM-DD	TEST TEMP °C	INITIALS			INSIDE PEEL STRENGTH (PPI)					OUTSIDE PEEL STRENGTH (PPI)					SHEAR STRENGTH (PPI)				
SAMPLE LOCATION					3RD PARTY PRESENT	LAYFIELD PASS	3RD PARTY LAB PASS	LOCUS OF BREAK					LOCUS OF BREAK					LOCUS OF BREAK				
DS-201	SPF	403/406	2020/08/24	20	AM	PASS		116	123	120	125	118	132	137	126	138	138	146	155	148	156	150
WEOS								SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	BRK	BRK	BRK	BRK	BRK
DS-202	SPF	452/455	2020/08/24	20	AM	PASS		124	135	128	127	135	132	142	135	134	134	148	144	149	138	148
WEOS								SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	BRK	BRK	BRK	BRK	BRK
DS-203	SPF	409/412	2020/08/24	20	AM	PASS		120	119	112	116	119	143	132	139	130	141	140	157	137	153	144
WEOS								SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	BRK	BRK	BRK	BRK	BRK
DS-204	SPF	424/427	2020/08/24	20	AM	PASS		128	130	119	130	125	118	135	136	138	142	150	146	149	134	149
WEOS								SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	BRK	BRK	BRK	BRK	BRK
DS-205	SPF	440/443	2020/08/24	20	AM	PASS		152	146	148	144	147	138	138	134	139	137	148	155	131	157	144
WEOS								SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	BRK	BRK	BRK	BRK	BRK
DS-206	SPF	421/424	2020/08/24	20	AM	PASS		150	150	149	146	151	130	143	137	140	137	149	137	149	132	147
WEOS								SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	BRK	BRK	BRK	BRK	BRK
DS-207	SPF	418/421	2020/08/24	20	AM	PASS		147	149	146	142	146	146	137	147	116	145	136	151	143	148	146
WEOS								SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	BRK	BRK	BRK	BRK	BRK
DS-208	SPF	412/415	2020/08/24	20	AM	PASS		128	129	123	132	135	130	139	143	133	127	147	143	150	139	148
WEOS								SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	BRK	BRK	BRK	BRK	BRK

TYPE OF SEAM:
SPF - SPLIT FUSION SOF - SOLID FUSION SLV - SOLVENT
EXT - EXTRUSION HAF - HOT AIR FUSION

QC TECH Thomas Howald
SUBMITTED BY Chad Messervey
SUBMISSION DATE 2020/01/05
SHEET NUMBER 26 of 37

GEOMEMBRANE DESTRUCT LOG

PROJECT NUMBER CT001401
PROJECT TITLE Victoria Gold Heap Leach Pad Phase 1B
AREA / LAYER Primary
3RD PARTY Tetra Tech
ARCHIVE LAYFIELD ☑ OWNER ☑ ENGINEER ☑

DESTRUCT SAMPLE NUMBER	TYPE OF SEAM	PANEL NUMBERS	TEST DATE YYYY-MM-DD	TEST TEMP °C	INITIALS				INSIDE PEEL STRENGTH (PPI)					OUTSIDE PEEL STRENGTH (PPI)					SHEAR STRENGTH (PPI)				
SAMPLE LOCATION					3RD PARTY PRESENT	LAYFIELD PASS	3RD PARTY LAB PASS		LOCUS OF BREAK					LOCUS OF BREAK					LOCUS OF BREAK				
DS-209	SPF	455/458	2020/08/24	20	AM	PASS			132	131	128	130	114	129	128	131	130	131	135	144	135	143	140
WEOS									SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	BRK	BRK	BRK	BRK	BRK
DS-210	SPF	422/423	2020/08/27	20	AM	PASS			133	123	151	146	146	135	147	136	148	141	163	170	167	170	164
SEOS									SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	BRK	BRK	BRK	BRK	BRK
DS-211	SPF	423/426	2020/08/27	20	AM	PASS			135	134	137	130	138	138	137	115	135	134	139	146	148	146	145
WEOS									SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	BRK	BRK	BRK	BRK	BRK
DS-212	SPF	443/446	2020/08/27	20	AM	PASS			129	129	130	129	129	141	133	138	135	136	137	142	139	140	139
EEOS									SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	BRK	BRK	BRK	BRK	BRK
DS-213	SPF	446/447	2020/08/27	20	AM	PASS			150	149	146	155	145	162	144	156	163	145	162	165	166	152	163
NEOS									SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	BRK	BRK	BRK	BRK	BRK
DS-214	SPF	427/427	2020/08/27	20	AM	PASS			133	131	132	132	125	140	141	139	138	143	149	144	147	150	150
50m From EEOS									SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	BRK	BRK	BRK	BRK	BRK
DS-215	SPF	409/410	2020/08/27	20	AM	PASS			148	151	168	146	143	154	161	143	141	161	153	170	164	157	168
NEOS									SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	BRK	BRK	BRK	BRK	BRK
DS-216	SPF	406/409	2020/08/27	20	AM	PASS			137	132	116	119	128	134	135	131	138	137	138	144	138	140	138
WEOS									SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	BRK	BRK	BRK	BRK	BRK

TYPE OF SEAM: SPF - SPLIT FUSION SOF - SOLID FUSION SLV - SOLVENT
EXT - EXTRUSION HAF - HOT AIR FUSION

QC TECH Thomas Howald
SUBMITTED BY Chad Messervey
SUBMISSION DATE 2020/01/05
SHEET NUMBER 27 of 37

GEOMEMBRANE DESTRUCT LOG

PROJECT NUMBER CT001401
PROJECT TITLE Victoria Gold Heap Leach Pad Phase 1B
AREA / LAYER Primary
3RD PARTY Tetra Tech
ARCHIVE LAYFIELD ☑ OWNER ☑ ENGINEER ☑

DESTRUCT SAMPLE NUMBER	TYPE OF SEAM	PANEL NUMBERS	TEST DATE YYYY-MM-DD	TEST TEMP °C	INITIALS 3RD PARTY PRESENT	INITIALS LAYFIELD PASS	INITIALS 3RD PARTY LAB PASS	INSIDE PEEL STRENGTH (PPI)					OUTSIDE PEEL STRENGTH (PPI)					SHEAR STRENGTH (PPI)				
SAMPLE LOCATION								LOCUS OF BREAK					LOCUS OF BREAK					LOCUS OF BREAK				
DS-217	SPF	470/473	2020/08/28	20	AM	PASS		150	147	122	141	142	142	151	153	154	152	158	159	164	160	154
EEOS								SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	BRK	BRK	BRK	BRK	BRK
DS-218	SPF	471/474	2020/08/28	20	AM	PASS		150	132	155	154	153	158	139	157	147	155	160	161	157	169	156
WEOS								SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	BRK	BRK	BRK	BRK	BRK
DS-219	SPF	473/476	2020/08/28	20	AM	PASS		144	139	151	149	142	154	132	139	153	150	160	159	156	157	157
EEOS								SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	BRK	BRK	BRK	BRK	BRK
DS-220	SPF	474/477	2020/08/28	20	AM	PASS		159	160	159	156	157	157	158	151	149	157	159	165	157	168	161
WEOS								SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	BRK	BRK	BRK	BRK	BRK
DS-221	SPF	477/480	2020/08/28	20	AM	PASS		142	153	152	152	150	163	156	163	164	154	160	165	164	158	164
WEOS								SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	BRK	BRK	BRK	BRK	BRK
DS-222	SPF	479/482	2020/08/28	20	AM	PASS		143	146	145	142	145	152	147	149	145	149	160	160	154	170	165
EEOS								SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	BRK	BRK	BRK	BRK	BRK
DS-223	SPF	486/489	2020/08/28	20	AM	PASS		154	131	154	156	162	152	149	146	148	156	148	143	153	150	150
WEOS								SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	BRK	BRK	BRK	BRK	BRK
DS-224	SPF	485/488	2020/08/28	20	AM	PASS		141	145	140	137	128	145	146	142	152	142	163	163	167	167	160
EEOS								SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	BRK	BRK	BRK	BRK	BRK

TYPE OF SEAM:
SPF - SPLIT FUSION SOF - SOLID FUSION SLV - SOLVENT
EXT - EXTRUSION HAF - HOT AIR FUSION

QC TECH Thomas Howald
SUBMITTED BY Chad Messervey
SUBMISSION DATE 2020/01/05
SHEET NUMBER 28 of 37

GEOMEMBRANE DESTRUCT LOG

PROJECT NUMBER CT001401
PROJECT TITLE Victoria Gold Heap Leach Pad Phase 1B
AREA / LAYER Primary
3RD PARTY Tetra Tech
ARCHIVE LAYFIELD ☑ OWNER ☑ ENGINEER ☑

DESTRUCT SAMPLE NUMBER	TYPE OF SEAM	PANEL NUMBERS	TEST DATE YYYY-MM-DD	TEST TEMP °C	INITIALS 3RD PARTY PRESENT	INITIALS LAYFIELD PASS	INITIALS 3RD PARTY LAB PASS	INSIDE PEEL STRENGTH (PPI)					OUTSIDE PEEL STRENGTH (PPI)					SHEAR STRENGTH (PPI)				
SAMPLE LOCATION								LOCUS OF BREAK					LOCUS OF BREAK					LOCUS OF BREAK				
DS-225	SPF	483/486	2020/08/28	20	AM	PASS		155	151	149	149	164	150	144	118	143	149	162	160	161	153	157
WEOS								SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	BRK	BRK	BRK	BRK	BRK
DS-226	SPF	482/485	2020/08/28	20	AM	PASS		149	150	150	134	153	150	136	146	150	148	149	159	158	161	149
EEOS								SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	BRK	BRK	BRK	BRK	BRK
DS-227	SPF	480/483	2020/08/28	20	AM	PASS		154	152	152	152	126	150	151	138	148	145	158	142	157	141	153
WEOS								SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	BRK	BRK	BRK	BRK	BRK
DS-228	SPF	502/503	2020/09/07	20	AM	PASS		145	145	150	153	153	160	153	157	162	133	173	175	174	175	172
EEOS								SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	BRK	BRK	BRK	BRK	BRK
DS-229	SPF	521/524	2020/09/07	20	AM	PASS		152	149	152	156	157	146	156	145	150	139	160	158	162	160	161
EEOS								SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	BRK	BRK	BRK	BRK	BRK
DS-230	SPF	496/500	2020/09/07	20	AM	PASS		156	154	155	152	155	156	150	155	155	154	159	162	166	168	166
EEOS								SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	BRK	BRK	BRK	BRK	BRK
DS-231	SPF	496/497	2020/09/07	20	AM	PASS		129	136	169	148	154	163	144	167	141	145	178	175	174	180	172
SEOS								SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	BRK	BRK	BRK	BRK	BRK
DS-232	SPF	500/532	2020/09/07	20	AM	PASS		137	142	154	159	150	160	152	161	163	156	168	168	153	169	157
SEOS								SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	BRK	BRK	BRK	BRK	BRK

TYPE OF SEAM:
SPF - SPLIT FUSION SOF - SOLID FUSION SLV - SOLVENT
EXT - EXTRUSION HAF - HOT AIR FUSION

QC TECH Thomas Howald
SUBMITTED BY Chad Messervey
SUBMISSION DATE 2020/01/05
SHEET NUMBER 29 of 37

GEOMEMBRANE DESTRUCT LOG

PROJECT NUMBER CT001401
PROJECT TITLE Victoria Gold Heap Leach Pad Phase 1B
AREA / LAYER Primary
3RD PARTY Tetra Tech
ARCHIVE LAYFIELD ☑ OWNER ☑ ENGINEER ☑

DESTRUCT SAMPLE NUMBER	TYPE OF SEAM	PANEL NUMBERS	TEST DATE YYYY-MM-DD	TEST TEMP °C	INITIALS			INSIDE PEEL STRENGTH (PPI)					OUTSIDE PEEL STRENGTH (PPI)					SHEAR STRENGTH (PPI)				
SAMPLE LOCATION					3RD PARTY PRESENT	LAYFIELD PASS	3RD PARTY LAB PASS	LOCUS OF BREAK					LOCUS OF BREAK					LOCUS OF BREAK				
DS-233	SPF	532/536	2020/09/07	20	AM	PASS		157	156	156	155	162	158	152	153	145	143	163	164	164	152	156
WEOS								SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	BRK	BRK	BRK	BRK	BRK
DS-234	SPF	491/493	2020/09/07	20	AM	PASS		148	148	140	144	155	138	152	154	151	155	140	163	165	163	151
EEOS								SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	BRK	BRK	BRK	BRK	BRK
DS-235	SPF	499/502	2020/09/07	20	AM	PASS		157	154	145	155	147	153	155	156	149	145	161	160	161	159	158
EEOS								SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	BRK	BRK	BRK	BRK	BRK
DS-236	SPF	495/499	2020/09/07	20	AM	PASS		150	124	146	148	144	158	138	151	148	146	165	165	170	166	170
EEOS								SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	BRK	BRK	BRK	BRK	BRK
DS-237	SPF	493/495	2020/09/07	20	AM	PASS		167	153	167	155	153	157	154	155	151	142	164	164	164	161	166
EEOS								SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	BRK	BRK	BRK	BRK	BRK
DS-238	SPF	526/529	2020/09/07	20	AM	FAIL		147	147	146	145	150	134	147	149	146	151	166	163	168	169	164
EEOS								SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	BRK	BRK	BRK	BRK	BRK
DS-239	SPF	529/531	2020/09/07	20	AM	PASS		165	158	167	153	161	160	137	152	145	154	171	167	168	170	165
EEOS								SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	BRK	BRK	BRK	BRK	BRK
DS-240	SPF	531/535	2020/09/07	20	AM	PASS		142	142	141	144	133	134	148	137	136	138	164	161	165	164	161
EEOS								SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	BRK	BRK	BRK	BRK	BRK

TYPE OF SEAM:
SPF - SPLIT FUSION SOF - SOLID FUSION SLV - SOLVENT
EXT - EXTRUSION HAF - HOT AIR FUSION

QC TECH Thomas Howald
SUBMITTED BY Chad Messervey
SUBMISSION DATE 2020/01/05
SHEET NUMBER 30 of 37

GEOMEMBRANE DESTRUCT LOG

PROJECT NUMBER CT001401
PROJECT TITLE Victoria Gold Heap Leach Pad Phase 1B
AREA / LAYER Primary
3RD PARTY Tetra Tech
ARCHIVE LAYFIELD ☑ OWNER ☑ ENGINEER ☑

DESTRUCT SAMPLE NUMBER	TYPE OF SEAM	PANEL NUMBERS	TEST DATE YYYY-MM-DD	TEST TEMP °C	INITIALS 3RD PARTY PRESENT	INITIALS LAYFIELD PASS	INITIALS 3RD PARTY LAB PASS	INSIDE PEEL STRENGTH (PPI)					OUTSIDE PEEL STRENGTH (PPI)					SHEAR STRENGTH (PPI)				
SAMPLE LOCATION								LOCUS OF BREAK					LOCUS OF BREAK					LOCUS OF BREAK				
DS-241	SPF	535/537	2020/09/07	20	AM	PASS		138	123	145	136	141	140	139	122	142	121	159	159	159	155	156
EEOS								SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	BRK	BRK	BRK	BRK	BRK
DS-242	SPF	524/526	2020/09/07	20	AM	PASS		144	137	146	133	143	150	147	136	134	139	150	164	150	171	157
EEOS								SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	BRK	BRK	BRK	BRK	BRK
DS-243	SPF	509/511	2020/09/07	20	AM	PASS		152	147	132	144	139	144	155	147	151	142	162	152	160	148	155
EEOS								SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	BRK	BRK	BRK	BRK	BRK
DS-244	SPF	517/519	2020/09/07	20	AM	PASS		147	150	153	130	153	156	150	156	144	153	144	154	158	159	144
EEOS								SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	BRK	BRK	BRK	BRK	BRK
DS-245	SPF	519/521	2020/09/07	20	AM	PASS		153	143	151	151	157	154	129	114	148	130	161	156	165	161	165
EEOS								SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	BRK	BRK	BRK	BRK	BRK
DS-246	SPF	506/504	2020/09/07	20	AM	PASS		141	129	145	140	148	148	141	148	148	147	162	169	168	173	163
EEOS								SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	BRK	BRK	BRK	BRK	BRK
DS-247	SPF	513/514	2020/09/07	20	AM	PASS		134	151	147	141	153	157	145	141	142	139	159	151	149	139	151
EEOS								SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	BRK	BRK	BRK	BRK	BRK
DS-248	SPF	539/542	2020/09/13	20	AM	PASS		137	144	140	157	146	137	126	145	140	148	162	162	163	163	164
WEOS								SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	BRK	BRK	BRK	BRK	BRK

TYPE OF SEAM:
SPF - SPLIT FUSION SOF - SOLID FUSION SLV - SOLVENT
EXT - EXTRUSION HAF - HOT AIR FUSION

QC TECH Thomas Howald
SUBMITTED BY Chad Messervey
SUBMISSION DATE 2020/01/05
SHEET NUMBER 31 of 37

GEOMEMBRANE DESTRUCT LOG

PROJECT NUMBER CT001401
PROJECT TITLE Victoria Gold Heap Leach Pad Phase 1B
AREA / LAYER Primary
3RD PARTY Tetra Tech
ARCHIVE LAYFIELD ☑ OWNER ☑ ENGINEER ☑

DESTRUCT SAMPLE NUMBER	TYPE OF SEAM	PANEL NUMBERS	TEST DATE YYYY-MM-DD	TEST TEMP °C	INITIALS			INSIDE PEEL STRENGTH (PPI)					OUTSIDE PEEL STRENGTH (PPI)					SHEAR STRENGTH (PPI)				
SAMPLE LOCATION					3RD PARTY PRESENT	LAYFIELD PASS	3RD PARTY LAB PASS	LOCUS OF BREAK					LOCUS OF BREAK					LOCUS OF BREAK				
DS-249	SPF	539/538	2020/09/13	20	AM	PASS		143	136	147	143	151	143	138	148	150	145	179	174	170	165	172
SEOS								SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	BRK	BRK	BRK	BRK	BRK
DS-250	SPF	549/552	2020/09/13	20	AM	PASS		141	144	135	154	142	145	147	145	144	134	165	163	163	156	161
EEOS								SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	BRK	BRK	BRK	BRK	BRK
DS-251	SPF	559/562	2020/09/13	20	AM	FAIL		154	143	151			141	138	144							
EEOS																						
DS-252	SPF	562/564	2020/09/13	20	AM	PASS		151	143	156	143	148	144	145	149	138	131	157	163	164	164	148
EEOS								SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	BRK	BRK	BRK	BRK	BRK
DS-253	SPF	550/553	2020/09/13	20	AM	PASS		149	151	151	149	138	134	133	144	135	138	155	155	154	154	155
WEOS								SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	BRK	BRK	BRK	BRK	BRK
DS-254	SPF	558/560	2020/09/13	20	AM	PASS		140	147	143	129	128	141	142	116	122	129	150	157	159	159	160
WEOS								SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	BRK	BRK	BRK	BRK	BRK
DS-255	SPF	572/575	2020/09/13	20	AM	PASS		144	143	145	142	142	144	140	140	141	145	162	148	163	164	162
WEOS								SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	BRK	BRK	BRK	BRK	BRK
DS-256	SPF	581/583	2020/09/13	20	AM	PASS		146	134	137	137	142	145	144	142	137	139	156	157	154	159	158
WEOS								SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	BRK	BRK	BRK	BRK	BRK

TYPE OF SEAM: SPF - SPLIT FUSION SOF - SOLID FUSION SLV - SOLVENT
EXT - EXTRUSION HAF - HOT AIR FUSION

QC TECH Thomas Howald
SUBMITTED BY Chad Messervey
SUBMISSION DATE 2020/01/05
SHEET NUMBER 32 of 37

GEOMEMBRANE DESTRUCT LOG

PROJECT NUMBER CT001401
PROJECT TITLE Victoria Gold Heap Leach Pad Phase 1B
AREA / LAYER Primary
3RD PARTY Tetra Tech
ARCHIVE LAYFIELD ☑ OWNER ☑ ENGINEER ☑

DESTRUCT SAMPLE NUMBER	TYPE OF SEAM	PANEL NUMBERS	TEST DATE YYYY-MM-DD	TEST TEMP °C	INITIALS 3RD PARTY PRESENT	INITIALS LAYFIELD PASS	INITIALS 3RD PARTY LAB PASS	INSIDE PEEL STRENGTH (PPI)					OUTSIDE PEEL STRENGTH (PPI)					SHEAR STRENGTH (PPI)				
SAMPLE LOCATION								LOCUS OF BREAK					LOCUS OF BREAK					LOCUS OF BREAK				
DS-257	SPF	578/581	2020/09/13	20	AM	PASS		142	141	145	141	144	136	137	101	135	140	159	158	158	156	156
WEOS								SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	BRK	BRK	BRK	BRK	BRK
DS-258	SPF	575/578	2020/09/13	20	AM	PASS		122	136	137	137	140	148	133	139	137	142	151	154	155	159	152
WEOS								SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	BRK	BRK	BRK	BRK	BRK
DS-259	SPF	571/574	2020/09/13	20	AM	PASS		146	151	149	153	147	131	147	142	146	134	158	147	158	152	154
EEOS								SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	BRK	BRK	BRK	BRK	BRK
DS-260	SPF	553/555	2020/09/13	20	AM	PASS		139	141	135	140	142	146	133	133	133	142	154	157	154	157	156
WEOS								SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	BRK	BRK	BRK	BRK	BRK
DS-261	SPF	555/558	2020/09/13	20	AM	PASS		143	142	142	145	127	143	147	141	138	142	163	161	164	146	163
WEOS								SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	BRK	BRK	BRK	BRK	BRK
DS-262	SPF	560/563	2020/09/13	20	AM	PASS		155	144	149	142	155	139	146	143	145	141	156	160	159	163	160
WEOS								SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	BRK	BRK	BRK	BRK	BRK
DS-263	SPF	574/577	2020/09/13	20	AM	PASS		146	147	135	121	144	123	142	140	137	140	167	165	166	130	166
EEOS								SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	BRK	BRK	BRK	BRK	BRK
DS-264	SPF	567/569	2020/09/13	20	AM	PASS		154	149	138	147	143	139	130	143	126	144	167	166	166	165	156
EEOS								SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	BRK	BRK	BRK	BRK	BRK

TYPE OF SEAM:
SPF - SPLIT FUSION SOF - SOLID FUSION SLV - SOLVENT
EXT - EXTRUSION HAF - HOT AIR FUSION

QC TECH Thomas Howald
SUBMITTED BY Chad Messervey
SUBMISSION DATE 2020/01/05
SHEET NUMBER 33 of 37

GEOMEMBRANE DESTRUCT LOG

PROJECT NUMBER CT001401
PROJECT TITLE Victoria Gold Heap Leach Pad Phase 1B
AREA / LAYER Primary
3RD PARTY Tetra Tech
ARCHIVE LAYFIELD ☑ OWNER ☑ ENGINEER ☑

DESTRUCT SAMPLE NUMBER	TYPE OF SEAM	PANEL NUMBERS	TEST DATE YYYY-MM-DD	TEST TEMP °C	INITIALS 3RD PARTY PRESENT	INITIALS LAYFIELD PASS	INITIALS 3RD PARTY LAB PASS	INSIDE PEEL STRENGTH (PPI)					OUTSIDE PEEL STRENGTH (PPI)					SHEAR STRENGTH (PPI)				
SAMPLE LOCATION								LOCUS OF BREAK					LOCUS OF BREAK					LOCUS OF BREAK				
DS-265	SPF	570/572	2020/09/13	20	AM	PASS		150	141	144	151	149	146	148	141	150	136	165	160	157	158	158
WEOS								SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	BRK	BRK	BRK	BRK	BRK
DS-266	SPF	564/567	2020/09/13	20	AM	PASS		153	150	150	149	146	155	142	146	148	152	158	164	162	166	160
EEOS								SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	BRK	BRK	BRK	BRK	BRK
DS-267	SPF	547/550	2020/09/13	20	AM	PASS		149	140	140	138	142	145	143	139	145	145	161	159	160	154	156
WEOS								SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	BRK	BRK	BRK	BRK	BRK
DS-268	SPF	568/570	2020/09/13	20	AM	PASS		145	141	155	144	150	143	152	138	126	128	163	162	144	156	153
WEOS								SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	BRK	BRK	BRK	BRK	BRK
DS-269	SPF	557/559	2020/09/13	20	AM	PASS		151	144	146	150	144	112	146	137	134	139	162	164	166	165	166
EEOS								SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	BRK	BRK	BRK	BRK	BRK
DS-270	SPF	577/580	2020/09/13	20	AM	PASS		149	148	141	153	146	152	150	152	141	141	163	156	159	167	166
EEOS								SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	BRK	BRK	BRK	BRK	BRK
DS-271	SPF	565/568	2020/09/13	20	AM	PASS		136	143	145	147	140	145	133	147	146	138	165	158	164	133	162
WEOS								SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	BRK	BRK	BRK	BRK	BRK
DS-272	SPF	561/562	2020/09/14	20	AM	PASS		158	153	154	160	171	151	141	142	119	155	177	166	176	163	171
NEOS								SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	BRK	BRK	BRK	BRK	BRK

TYPE OF SEAM:
SPF - SPLIT FUSION SOF - SOLID FUSION SLV - SOLVENT
EXT - EXTRUSION HAF - HOT AIR FUSION

QC TECH Thomas Howald
SUBMITTED BY Chad Messervey
SUBMISSION DATE 2020/01/05
SHEET NUMBER 34 of 37

GEOMEMBRANE DESTRUCT LOG

PROJECT NUMBER CT001401
PROJECT TITLE Victoria Gold Heap Leach Pad Phase 1B
AREA / LAYER Primary
3RD PARTY Tetra Tech
ARCHIVE LAYFIELD ☑ OWNER ☑ ENGINEER ☑

DESTRUCT SAMPLE NUMBER	TYPE OF SEAM	PANEL NUMBERS	TEST DATE YYYY-MM-DD	TEST TEMP °C	INITIALS			INSIDE PEEL STRENGTH (PPI)					OUTSIDE PEEL STRENGTH (PPI)					SHEAR STRENGTH (PPI)				
SAMPLE LOCATION					3RD PARTY PRESENT	LAYFIELD PASS	3RD PARTY LAB PASS	LOCUS OF BREAK					LOCUS OF BREAK					LOCUS OF BREAK				
DS-273	SPF	618/619	2020/09/14	20	AM	PASS		142	133	142	146	147	141	142	142	141	141	157	159	153	160	132
WEOS								SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	BRK	BRK	BRK	BRK	BRK
DS-274	SPF	614/615	2020/09/14	20	AM	PASS		151	142	142	142	151	131	135	143	152	143	164	154	156	163	166
WEOS								SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	BRK	BRK	BRK	BRK	BRK
DS-275	SPF	609/611	2020/09/14	20	AM	PASS		151	149	151	147	150	153	141	143	143	134	156	161	157	162	161
EEOS								SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	BRK	BRK	BRK	BRK	BRK
DS-276	SPF	594/598	2020/09/14	20	AM	PASS		137	142	134	152	144	141	141	140	143	136	156	151	157	153	156
EEOS								SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	BRK	BRK	BRK	BRK	BRK
DS-277	SPF	592/594	2020/09/14	20	AM	PASS		145	148	139	141	143	150	148	143	145	139	148	158	160	159	142
EEOS								SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	BRK	BRK	BRK	BRK	BRK
DS-278	SPF	582/585	2020/09/14	20	AM	PASS		147	147	153	141	138	138	146	135	142	145	165	160	164	159	163
EEOS								SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	BRK	BRK	BRK	BRK	BRK
DS-279	SPF	549/552	2020/09/14	20	AM	PASS		146	138	136	128	137	142	141	139	150	139	159	155	161	164	161
EEOS								SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	BRK	BRK	BRK	BRK	BRK
DS-280	SPF	585/589	2020/09/14	20	AM	PASS		156	159	147	146	150	156	145	153	153	151	169	157	171	159	170
EEOS								SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	BRK	BRK	BRK	BRK	BRK

TYPE OF SEAM:
SPF - SPLIT FUSION SOF - SOLID FUSION SLV - SOLVENT
EXT - EXTRUSION HAF - HOT AIR FUSION

QC TECH Thomas Howald
SUBMITTED BY Chad Messervey
SUBMISSION DATE 2020/01/05
SHEET NUMBER 35 of 37

GEOMEMBRANE DESTRUCT LOG

PROJECT NUMBER CT001401
PROJECT TITLE Victoria Gold Heap Leach Pad Phase 1B
AREA / LAYER Primary
3RD PARTY Tetra Tech
ARCHIVE LAYFIELD ☑ OWNER ☑ ENGINEER ☑

DESTRUCT SAMPLE NUMBER	TYPE OF SEAM	PANEL NUMBERS	TEST DATE YYYY-MM-DD	TEST TEMP °C	INITIALS 3RD PARTY PRESENT	INITIALS LAYFIELD PASS	INITIALS 3RD PARTY LAB PASS	INSIDE PEEL STRENGTH (PPI)					OUTSIDE PEEL STRENGTH (PPI)					SHEAR STRENGTH (PPI)				
SAMPLE LOCATION								LOCUS OF BREAK					LOCUS OF BREAK					LOCUS OF BREAK				
DS-281	SPF	597/600	2020/09/14	20	AM	PASS		141	150	153	146	146	138	142	142	130	136	159	162	159	163	162
EEOS								SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	BRK	BRK	BRK	BRK	BRK
DS-282	SPF	600/602	2020/09/14	20	AM	PASS		144	136	139	138	142	140	148	152	142	148	157	159	160	130	161
EEOS								SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	BRK	BRK	BRK	BRK	BRK
DS-283	SPF	602/605	2020/09/14	20	AM	PASS		149	142	152	149	148	145	144	135	136	138	153	149	153	152	153
EEOS								SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	BRK	BRK	BRK	BRK	BRK
DS-284	SPF	607/609	2020/09/14	20	AM	PASS		145	141	145	143	147	154	139	139	148	142	164	157	163	155	157
EEOS								SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	BRK	BRK	BRK	BRK	BRK
DS-285	SPF	605/607	2020/09/14	20	AM	PASS		140	149	141	140	156	149	142	147	126	116	156	162	157	158	154
EEOS								SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	BRK	BRK	BRK	BRK	BRK
DS-286	SPF	589/592	2020/09/14	20	AM	PASS		151	150	137	148	145	152	130	132	149	137	164	159	163	162	143
EEOS								SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	BRK	BRK	BRK	BRK	BRK
DS-287	SPF	603/604	2020/09/15	20	AM	PASS		136	157	133	151	148	128	153	149	156	139	164	169	160	167	158
NEOS								SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	BRK	BRK	BRK	BRK	BRK
DS-14B	SPF	1/37	2020/06/19	20	AM	PASS		152	146	173	154	149	163	159	159	158	152	184	184	187	185	183
SEOS								SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	BRK	BRK	BRK	BRK	BRK

TYPE OF SEAM:
SPF - SPLIT FUSION SOF - SOLID FUSION SLV - SOLVENT
EXT - EXTRUSION HAF - HOT AIR FUSION

QC TECH Thomas Howald
SUBMITTED BY Chad Messervey
SUBMISSION DATE 2020/01/05
SHEET NUMBER 36 of 37

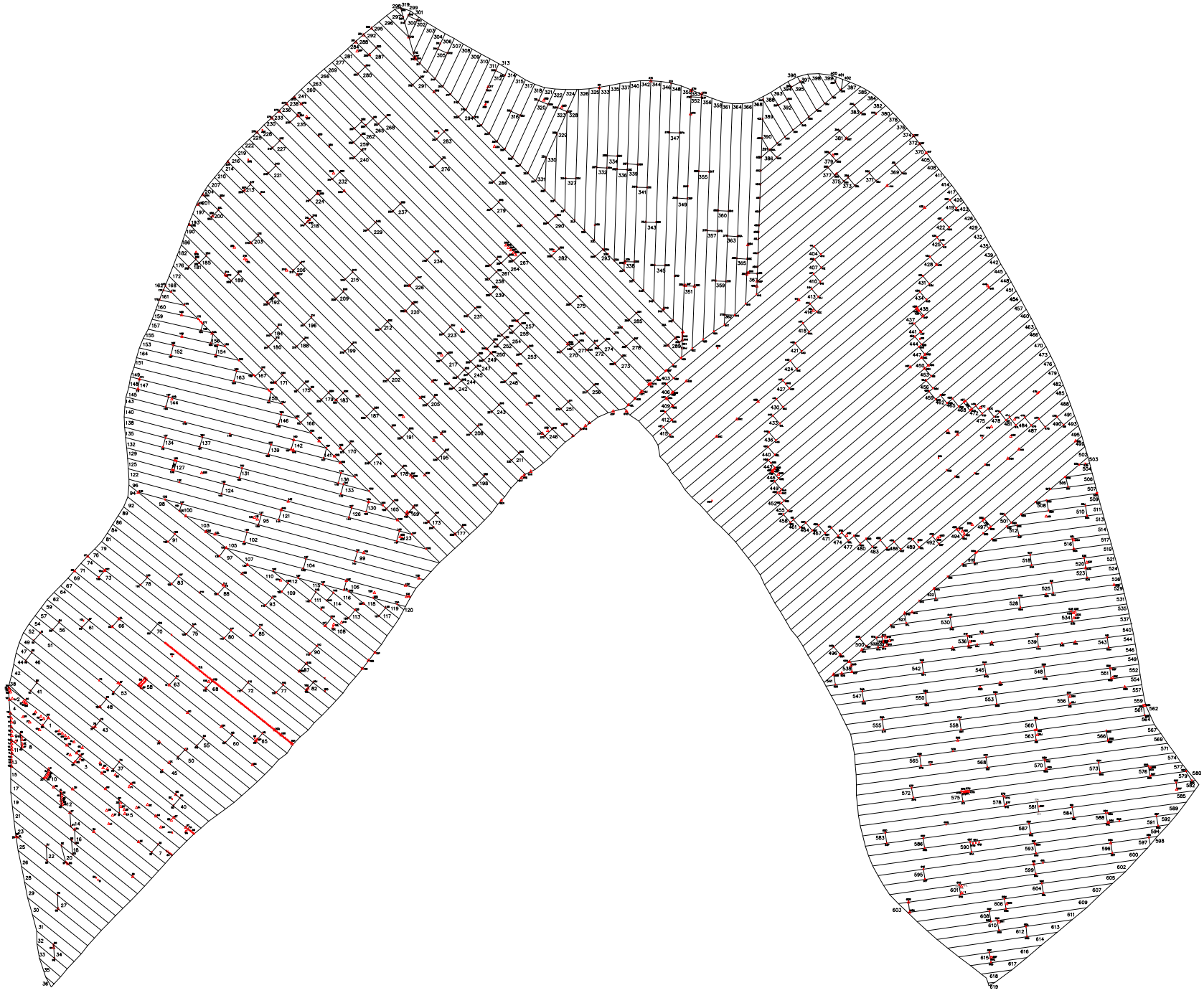
GEOMEMBRANE DESTRUCT LOG

PROJECT NUMBER CT001401
PROJECT TITLE Victoria Gold Heap Leach Pad Phase 1B
AREA / LAYER Primary
3RD PARTY Tetra Tech
ARCHIVE LAYFIELD ☑ OWNER ☑ ENGINEER ☑

DESTRUCT SAMPLE NUMBER	TYPE OF SEAM	PANEL NUMBERS	TEST DATE YYYY-MM-DD	TEST TEMP °C	INITIALS			INSIDE PEEL STRENGTH (PPI)					OUTSIDE PEEL STRENGTH (PPI)					SHEAR STRENGTH (PPI)				
SAMPLE LOCATION					3RD PARTY PRESENT	LAYFIELD PASS	3RD PARTY LAB PASS	LOCUS OF BREAK					LOCUS OF BREAK					LOCUS OF BREAK				
DS-178B	SPF	272/403	2020/08/27	20	AM	PASS		147	154	128	134	145	146	132	150	125	136	152	153	158	157	157
EEOS								SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	BRK	BRK	BRK	BRK	BRK
DS-178C	SPF	275/403	2020/08/27	20	AM	PASS		156	153	151	152	134	157	137	138	146	135	156	154	155	151	145
WEOS								SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	BRK	BRK	BRK	BRK	BRK
DS-238B	SPF	526/529	2020/09/07	20	AM	PASS		167	156	153	150	136	151	162	152	161	155	161	159	162	165	168
3m From EEOS								SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	BRK	BRK	BRK	BRK	BRK
DS-251B	SPF	559/561	2020/09/13	20	AM	PASS		154	158	152	153	153	150	130	147	147	145	158	155	158	158	157
EEOS								SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	BRK	BRK	BRK	BRK	BRK
DS-																						
DS-																						
DS-																						
DS-																						

TYPE OF SEAM: SPF - SPLIT FUSION SOF - SOLID FUSION SLV - SOLVENT
EXT - EXTRUSION HAF - HOT AIR FUSION

QC TECH Thomas Howald
SUBMITTED BY Chad Messervey
SUBMISSION DATE 2020/01/05
SHEET NUMBER 37 of 37



LEGEND

- LINER FIELD SEAM
- XXX EXTRUSION WELD
- PATCH
- P2 PANEL NUMBER
- 1A REPAIR NUMBER
- PIPE PENETRATION

NOTES

REV.	RECORD OF CHANGES	DATE	BY
0	NONE	MM/DD/YY	XX

LAYFIELD

EAGLEL GOLD MINE PHASE IB
EL4280

VICORIA GOLD
DUBLIN GULCH, YUKON

DWG. NUMBER

Quote No.	PROJECT No.
DWG : 1 OF 1	SCALE : N.T.S.
DWN: BM / CHKD: JW	APP'D:
DATE: 10/01/20	REVISION: A

LAYFIELD
ENVIRONMENTAL CONTAINMENT

CERTIFICATE OF FINAL INSPECTION AND ACCEPTANCE

PROJECT NAME: Heap Leach Pad, Phase 1-B
PROJECT NUMBER: CT001401 **DATE:** July 9 2020
OWNER: Victoria Gold.
LOCATION: Eagle Gold Mine, YT

Scope of Installation(s): **THE WORK**
Area/Layer: Primary Area Inspected: ☑ Partial or ☐ Complete
Dimensions: Panels 1-59. Layfield has completed work on Panels 1-59. The area has had Final inspection and can now be turned over to Client

Part 1 – LAYFIELD CANADA LTD.

I, Chad Messervey, a duly appointed representative of Layfield Canada Ltd. (Layfield), have visually observed the installations (as outlined above), and have found the Work to be complete and free of defects and declare that the Work was completed in accordance with the project specifications, Layfield's QC program and the terms and conditions of the contract.

Layfield Representative:
Name: Chad Messervey
Title: Project Supervisor
Date: July 9 2020 **Signature:**

Part 2 – OWNER (or Representative)

I, JAMES BUYCK, a duly appointed representative of TETRA TECH, do hereby take over and accept the installation(s) described above, and confirm that the work has been completed in accordance with the project specifications and the terms of the conditions of the contract.

I have evaluated and measured the work together with the Layfield representative, and agree that the measurements shown are both true and correct, and that the installation has met our approval.

Owners Representative:
Name: JAMES BUYCK
Title: GEOTECHNICAL TECHNICIAN
Company: TETRA TECH
Date: JULY 9, 2020 **Signature:**

Comments: NONE

LAYFIELD
ENVIRONMENTAL CONTAINMENT

CERTIFICATE OF FINAL INSPECTION AND ACCEPTANCE

PROJECT NAME: Heap leach Pad, Phase 1-B
PROJECT NUMBER: CT001401 **DATE:** July 17, 2020
OWNER: Victoria Gold
LOCATION: Eagle Gold Mine, YT

Scope of Installation(s): **THE WORK**
Area/Layer: Primary Area Inspected: ☑ Partial or ☐ Complete
Dimensions: Panels 92-59, Layfield has completed work & tested Panels 92-59, The area has had final inspection and can now be turned over to the client.

Part 1 – LAYFIELD CANADA LTD.

I, Thomas Howald, a duly appointed representative of Layfield Canada Ltd. (Layfield), have visually observed the installations (as outlined above), and have found the Work to be complete and free of defects and declare that the Work was completed in accordance with the project specifications, Layfield's QC program and the terms and conditions of the contract.

Layfield Representative:
Name: Thomas Howald
Title: QC
Date: July 17, 2020 **Signature:**

Part 2 – OWNER (or Representative)

I, JAMES BUYCK, a duly appointed representative of TETRA TECH, do hereby take over and accept the installation(s) described above, and confirm that the work has been completed in accordance with the project specifications and the terms of the conditions of the contract.

I have evaluated and measured the work together with the Layfield representative, and agree that the measurements shown are both true and correct, and that the installation has met our approval.

Owners Representative:
Name: JAMES BUYCK
Title: GEOTECHNICAL TECHNICIAN
Company: TETRA TECH
Date: JULY 17, 2020 **Signature:**

Comments: NONE

LAYFIELD
ENVIRONMENTAL CONTAINMENT

CERTIFICATE OF FINAL INSPECTION AND ACCEPTANCE

PROJECT NAME: Victoria Gold Heap Leach Pad Phase 1B
PROJECT NUMBER: CT00140 **DATE:** 08/20/2020
OWNER: Victoria Gold.
LOCATION: Eagle Gold Mine YT

Scope of Installation(s): **THE WORK**
Area/Layer: Primary Area Inspected: ☑ Partial or ☐ Complete
Dimensions: Layfield has completed the installation of the GCL and liner Panels 93 → 402. The liner has had a final walk off inspection completed. Any deficiencies found have been Repaired. Layfield has completed work in this area

Part 1 – LAYFIELD CANADA LTD.

I, Chad Messervey, a duly appointed representative of Layfield Canada Ltd. (Layfield), have visually observed the installations (as outlined above), and have found the Work to be complete and free of defects and declare that the Work was completed in accordance with the project specifications, Layfield's QC program and the terms and conditions of the contract.

Layfield Representative:
Name: Chad Messervey
Title: Project Supervisor
Date: 08/20/2020 **Signature:**

Part 2 – OWNER (or Representative)

I, Adam Mickey, a duly appointed representative of Tetra Tech, do hereby take over and accept the installation(s) described above, and confirm that the work has been completed in accordance with the project specifications and the terms of the conditions of the contract.

I have evaluated and measured the work together with the Layfield representative, and agree that the measurements shown are both true and correct, and that the installation has met our approval.

Owners Representative:
Name: Adam Mickey
Title: CQA Inspector
Company: Tetra Tech Canada Inc.
Date: Aug 20, 2020 **Signature:**

Comments: Approximately 127,876 m²

LAYFIELD
ENVIRONMENTAL CONTAINMENT

CERTIFICATE OF FINAL INSPECTION AND ACCEPTANCE

PROJECT NAME: Victoria Gold Heap leach Pad Phase 1-B
PROJECT NUMBER: CTO01401 **DATE:**
OWNER: Victoria Gold
LOCATION: Eagle Gold mine Y.T.

Scope of Installation(s): **THE WORK**
Area/Layer: Primary Area Inspected: ☐ Partial or ☑ Complete
Dimensions: Layfield has completed the installation of the GCL & Liner, Panels 403-619. The liner has had a final walk off inspection. Completed any deficienies found & have repaired all damage. Layfield has completed this Job.

Part 1 – LAYFIELD CANADA LTD.

I, Thomas Howald, a duly appointed representative of Layfield Canada Ltd. (Layfield), have visually observed the installations (as outlined above), and have found the Work to be complete and free of defects and declare that the Work was completed in accordance with the project specifications, Layfield's QC program and the terms and conditions of the contract.

Layfield Representative:
Name: Thomas Howald
Title: QC
Date: Sept 15 2020 **Signature:**

Part 2 – OWNER (or Representative)

I, Adam Mickey, a duly appointed representative of Tetra Tech Canada Inc. _____, do hereby take over and accept the installation(s) described above, and confirm that the work has been completed in accordance with the project specifications and the terms of the conditions of the contract.

I have evaluated and measured the work together with the Layfield representative, and agree that the measurements shown are both true and correct, and that the installation has met our approval.

Owners Representative:
Name: Adam Mickey
Title: CQA Inspector
Company: Tetra Tech Canada Inc.
Date: September 15, 2020 **Signature:**

Comments:

Supporting Documents

INVENTORY LOG

PROJECT NUMBER: CT001401
PROJECT TITLE: Victoria Gold Heap Leach Pad Phase 1B
DATE OF INVENTORY: 2020/05/29
PRODUCT TYPE: EL4280
MATERIAL MANUFACTURER: Layfield

#	ROLL NUMBER	MATERIAL DIMENSIONS			REMARKS
		THICKNESS	LENGTH (m)	WIDTH (m)	
1	E0010692-001	80mil	128	6.8	
2	E0010692-002	80mil	128	6.8	
3	E0010692-003	80mil	128	6.8	
4	E0010692-004	80mil	128	6.8	
5	E0010692-005	80mil	128	6.8	
6	E0010692-006	80mil	128	6.8	
7	E0010692-007	80mil	128	6.8	
8	E0010692-008	80mil	128	6.8	
9	E0010692-009	80mil	128	6.8	
10	E0010692-010	80mil	60.5	6.8	Partial
11	E0010692-011	80mil	128	6.8	
12	E0010692-012	80mil	128	6.8	
13	E0010692-013	80mil	128	6.8	
14	E0010692-014	80mil	128	6.8	
15	E0010692-015	80mil	128	6.8	
16	E0010692-016	80mil	128	6.8	
17	E0010692-017	80mil	128	6.8	
18	E0010692-019	80mil	128	6.8	
19	E0010692-020	80mil	128	6.8	
20	E0010692-021	80mil	128	6.8	
21	E0010692-022	80mil	128	6.8	
22	E0010692-023	80mil	128	6.8	
23	E0010692-024	80mil	128	6.8	
24	E0010692-025	80mil	128	6.8	
25	E0010692-026	80mil	128	6.8	
26	E0010692-027	80mil	128	6.8	
27	E0010692-028	80mil	128	6.8	
28	E0010692-029	80mil	128	6.8	
29	E0010692-030	80mil	128	6.8	
30	E0010692-031	80mil	128	6.8	

TOTAL PAGE AREA: 25653 m²

QC TECH: Thomas Howald
SUPERVISOR: Chad Messervey
SUBMISSION DATE: 2020/01/05

INVENTORY LOG

PROJECT NUMBER: CT001401
PROJECT TITLE: Victoria Gold Heap Leach Pad Phase 1B
DATE OF INVENTORY: 2020/05/29
PRODUCT TYPE: EL4280
MATERIAL MANUFACTURER: Layfield

#	ROLL NUMBER	MATERIAL DIMENSIONS			REMARKS
		THICKNESS	LENGTH (m)	WIDTH (m)	
1	E0010692-032	80mil	128	6.8	
2	E0010692-033	80mil	128	6.8	
3	E0010692-034	80mil	128	6.8	
4	E0010692-035	80mil	128	6.8	
5	E0010692-036	80mil	128	6.8	
6	E0010692-037	80mil	128	6.8	
7	E0010693-001	80mil	128	6.8	
8	E0010693-002	80mil	128	6.8	
9	E0010693-003	80mil	128	6.8	
10	E0010693-004	80mil	128	6.8	
11	E0010693-005	80mil	128	6.8	
12	E0010693-006	80mil	128	6.8	
13	E0010693-007	80mil	128	6.8	
14	E0010693-008	80mil	128	6.8	
15	E0010693-009	80mil	128	6.8	
16	E0010693-010	80mil	128	6.8	
17	E0010693-011	80mil	128	6.8	
18	E0010693-012	80mil	128	6.8	
19	E0010693-013	80mil	128	6.8	
20	E0010693-014	80mil	128	6.8	
21	E0010693-015	80mil	128	6.8	
22	E0010693-016	80mil	128	6.8	
23	E0010693-017	80mil	128	6.8	
24	E0010693-018	80mil	128	6.8	
25	E0010693-019	80mil	128	6.8	
26	E0010693-020	80mil	128	6.8	
27	E0010693-021	80mil	128	6.8	
28	E0010693-022	80mil	128	6.8	
29	E0010693-023	80mil	128	6.8	
30	E0010693-024	80mil	128	6.8	

TOTAL PAGE AREA: 26112 m^2

QC TECH: Thomas Howald
SUPERVISOR: Chad Messervey
SUBMISSION DATE: 2020/01/05

INVENTORY LOG

PROJECT NUMBER: CT001401
PROJECT TITLE: Victoria Gold Heap Leach Pad Phase 1B
DATE OF INVENTORY: 2020/05/29
PRODUCT TYPE: EL4280
MATERIAL MANUFACTURER: Layfield

#	ROLL NUMBER	MATERIAL DIMENSIONS			REMARKS
		THICKNESS	LENGTH (m)	WIDTH (m)	
1	E0010693-025	80mil	128	6.8	
2	E0010693-026	80mil	128	6.8	
3	E0010693-027	80mil	128	6.8	
4	E0010693-028	80mil	128	6.8	
5	E0010693-029	80mil	128	6.8	
6	E0010693-030	80mil	128	6.8	
7	E0010693-031	80mil	128	6.8	
8	E0010693-032	80mil	128	6.8	
9	E0010693-033	80mil	128	6.8	
10	E0010693-034	80mil	128	6.8	
11	E0010693-035	80mil	128	6.8	
12	E0010693-036	80mil	128	6.8	
13	E0010694-001	80mil	128	6.8	
14	E0010694-002	80mil	128	6.8	
15	E0010694-003	80mil	128	6.8	
16	E0010694-004	80mil	128	6.8	
17	E0010694-005	80mil	128	6.8	
18	E0010694-006	80mil	128	6.8	
19	E0010694-007	80mil	128	6.8	
20	E0010694-008	80mil	128	6.8	
21	E0010694-009	80mil	128	6.8	
22	E0010694-010	80mil	128	6.8	
23	E0010694-011	80mil	128	6.8	
24	E0010694-012	80mil	128	6.8	
25	E0010694-013	80mil	128	6.8	
26	E0010694-014	80mil	128	6.8	Unused
27	E0010694-015	80mil	128	6.8	
28	E0010694-016	80mil	128	6.8	
29	E0010694-017	80mil	128	6.8	
30	E0010694-018	80mil	128	6.8	

TOTAL PAGE AREA: 26112 m^2

QC TECH: Thomas Howald
SUPERVISOR: Chad Messervey
SUBMISSION DATE: 2020/01/05

INVENTORY LOG

PROJECT NUMBER: CT001401
PROJECT TITLE: Victoria Gold Heap Leach Pad Phase 1B
DATE OF INVENTORY: 2020/05/29
PRODUCT TYPE: EL4280
MATERIAL MANUFACTURER: Layfield

#	ROLL NUMBER	MATERIAL DIMENSIONS			REMARKS
		THICKNESS	LENGTH (m)	WIDTH (m)	
1	E0010694-019	80mil	128	6.8	
2	E0010694-020	80mil	128	6.8	
3	E0010694-021	80mil	128	6.8	
4	E0010694-022	80mil	128	6.8	
5	E0010694-023	80mil	128	6.8	
6	E0010694-024	80mil	128	6.8	
7	E0010694-025	80mil	128	6.8	
8	E0010694-026	80mil	128	6.8	
9	E0010694-027	80mil	128	6.8	
10	E0010694-028	80mil	128	6.8	
11	E0010694-029	80mil	128	6.8	
12	E0010694-030	80mil	128	6.8	
13	E0010694-031	80mil	128	6.8	
14	E0010694-032	80mil	128	6.8	
15	E0010694-033	80mil	128	6.8	
16	E0010694-034	80mil	128	6.8	
17	E0010694-035	80mil	128	6.8	
18	E0010694-036	80mil	128	6.8	
19	E0010695-001	80mil	128	6.8	
20	E0010695-002	80mil	128	6.8	
21	E0010695-003	80mil	128	6.8	
22	E0010695-004	80mil	128	6.8	
23	E0010695-005	80mil	128	6.8	
24	E0010695-006	80mil	128	6.8	
25	E0010695-007	80mil	128	6.8	
26	E0010695-008	80mil	128	6.8	
27	E0010695-009	80mil	128	6.8	
28	E0010695-010	80mil	128	6.8	
29	E0010695-011	80mil	128	6.8	
30	E0010695-012	80mil	128	6.8	

TOTAL PAGE AREA: 26112 m^2

QC TECH: Thomas Howald
SUPERVISOR: Chad Messervey
SUBMISSION DATE: 2020/01/05

INVENTORY LOG

PROJECT NUMBER: CT001401
PROJECT TITLE: Victoria Gold Heap Leach Pad Phase 1B
DATE OF INVENTORY: 2020/05/29
PRODUCT TYPE: EL4280
MATERIAL MANUFACTURER: Layfield

#	ROLL NUMBER	MATERIAL DIMENSIONS			REMARKS
		THICKNESS	LENGTH (m)	WIDTH (m)	
1	E0010695-013	80mil	128	6.8	
2	E0010695-014	80mil	128	6.8	
3	E0010695-015	80mil	128	6.8	
4	E0010695-016	80mil	128	6.8	
5	E0010695-017	80mil	128	6.8	
6	E0010695-018	80mil	128	6.8	
7	E0010695-019	80mil	128	6.8	
8	E0010695-020	80mil	128	6.8	
9	E0010695-021	80mil	128	6.8	
10	E0010695-022	80mil	128	6.8	
11	E0010695-023	80mil	128	6.8	
12	E0010695-024	80mil	128	6.8	
13	E0010695-025	80mil	128	6.8	
14	E0010695-026	80mil	128	6.8	
15	E0010695-027	80mil	128	6.8	
16	E0010695-028	80mil	128	6.8	
17	E0010695-029	80mil	128	6.8	
18	E0010695-030	80mil	128	6.8	
19	E0010695-031	80mil	128	6.8	
20	E0010695-032	80mil	128	6.8	
21	E0010695-033	80mil	128	6.8	
22	E0010695-034	80mil	128	6.8	
23	E0010695-035	80mil	128	6.8	
24	E0010695-036	80mil	128	6.8	
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TOTAL PAGE AREA: 20889.6 m^2

QC TECH: Thomas Howald
SUPERVISOR: Chad Messervey
SUBMISSION DATE: 2020/01/05

INVENTORY LOG

PROJECT NUMBER: CT001401
PROJECT TITLE: Victoria Gold Heap Leach Pad Phase 1B
DATE OF INVENTORY: 2020/06/02
PRODUCT TYPE: GCL
MATERIAL MANUFACTURER: Layfield

#	ROLL NUMBER	MATERIAL DIMENSIONS			REMARKS
		THICKNESS	LENGTH (m)	WIDTH (m)	
1	502346951	NWL-60	45.72	4.72	
2	502346988	NWL-60	45.72	4.72	
3	502346989	NWL-60	45.72	4.72	
4	502347001	NWL-60	45.72	4.72	
5	502347028	NWL-60	45.72	4.72	
6	502347034	NWL-60	45.72	4.72	
7	502347039	NWL-60	45.72	4.72	
8	502347041	NWL-60	45.72	4.72	
9	502347042	NWL-60	45.72	4.72	
10	502347043	NWL-60	45.72	4.72	
11	502347044	NWL-60	45.72	4.72	
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TOTAL PAGE AREA: 2373.782 m^2

QC TECH: Thomas Howald
SUPERVISOR: Chad Messervey
SUBMISSION DATE: 2020/01/05

INVENTORY LOG

PROJECT NUMBER: CT001401
PROJECT TITLE: Victoria Gold Heap Leach Pad Phase 1B
DATE OF INVENTORY: 2020/06/03
PRODUCT TYPE: GCL
MATERIAL MANUFACTURER: Layfield

#	ROLL NUMBER	MATERIAL DIMENSIONS			REMARKS
		THICKNESS	LENGTH (m)	WIDTH (m)	
1	502346941	NWL-60	45.72	4.72	
2	502346947	NWL-60	45.72	4.72	
3	502346953	NWL-60	45.72	4.72	
4	502347036	NWL-60	45.72	4.72	
5	502347037	NWL-60	45.72	4.72	
6	502347038	NWL-60	45.72	4.72	
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TOTAL PAGE AREA: 1294.79 m^2

QC TECH: Thomas Howald
SUPERVISOR: Chad Messervey
SUBMISSION DATE: 2020/01/05

INVENTORY LOG

PROJECT NUMBER: CT001401
PROJECT TITLE: Victoria Gold Heap Leach Pad Phase 1B
DATE OF INVENTORY: 2020/06/04
PRODUCT TYPE: GCL
MATERIAL MANUFACTURER: Layfield

#	ROLL NUMBER	MATERIAL DIMENSIONS			REMARKS
		THICKNESS	LENGTH (m)	WIDTH (m)	
1	502344669	NWL-60	45.72	4.72	
2	502344694	NWL-60	45.72	4.72	
3	502346949	NWL-60	45.72	4.72	
4	502347033	NWL-60	45.72	4.72	
5	502347040	NWL-60	45.72	4.72	
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TOTAL PAGE AREA: 1078.992 m^2

QC TECH: Thomas Howald
SUPERVISOR: Chad Messervey
SUBMISSION DATE: 2020/01/05

INVENTORY LOG

PROJECT NUMBER: CT001401
PROJECT TITLE: Victoria Gold Heap Leach Pad Phase 1B
DATE OF INVENTORY: 2020/06/05
PRODUCT TYPE: GCL
MATERIAL MANUFACTURER: Layfield

#	ROLL NUMBER	MATERIAL DIMENSIONS			REMARKS
		THICKNESS	LENGTH (m)	WIDTH (m)	
1	502344494	NWL-60	45.72	4.72	
2	502344495	NWL-60	45.72	4.72	
3	502344497	NWL-60	45.72	4.72	
4	502344498	NWL-60	45.72	4.72	
5	502344566	NWL-60	45.72	4.72	
6	502344678	NWL-60	45.72	4.72	
7	502344681	NWL-60	45.72	4.72	
8	502344682	NWL-60	45.72	4.72	
9	502344684	NWL-60	45.72	4.72	
10	502344685	NWL-60	45.72	4.72	
11	502344686	NWL-60	45.72	4.72	
12	502344691	NWL-60	45.72	4.72	
13	502344692	NWL-60	45.72	4.72	
14	502346940	NWL-60	45.72	4.72	
15	502346954	NWL-60	45.72	4.72	
16	502346956	NWL-60	45.72	4.72	
17	502346957	NWL-60	45.72	4.72	
18	502346986	NWL-60	45.72	4.72	
19	502346987	NWL-60	45.72	4.72	
20	502347029	NWL-60	45.72	4.72	
21	502347032	NWL-60	45.72	4.72	
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TOTAL PAGE AREA: 4531.766 m^2

QC TECH: Thomas Howald
SUPERVISOR: Chad Messervey
SUBMISSION DATE: 2020/01/05

INVENTORY LOG

PROJECT NUMBER: CT001401
PROJECT TITLE: Victoria Gold Heap Leach Pad Phase 1B
DATE OF INVENTORY: 2020/06/06
PRODUCT TYPE: GCL
MATERIAL MANUFACTURER: Layfield

#	ROLL NUMBER	MATERIAL DIMENSIONS			REMARKS
		THICKNESS	LENGTH (m)	WIDTH (m)	
1	502346945	NWL-60	45.72	4.72	
2	502346946	NWL-60	45.72	4.72	
3	502346950	NWL-60	45.72	4.72	
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TOTAL PAGE AREA: 647.3952 m^2

QC TECH: Thomas Howald
SUPERVISOR: Chad Messervey
SUBMISSION DATE: 2020/01/05

INVENTORY LOG

PROJECT NUMBER: CT001401
PROJECT TITLE: Victoria Gold Heap Leach Pad Phase 1B
DATE OF INVENTORY: 2020/06/08
PRODUCT TYPE: GCL
MATERIAL MANUFACTURER: Layfield

#	ROLL NUMBER	MATERIAL DIMENSIONS			REMARKS
		THICKNESS	LENGTH (m)	WIDTH (m)	
1	502344559	NWL-60	45.72	4.72	
2	502344003	NWL-60	45.72	4.72	
3	502344506	NWL-60	45.72	4.72	
4	502344508	NWL-60	45.72	4.72	
5	502344509	NWL-60	45.72	4.72	
6	502344539	NWL-60	45.72	4.72	
7	502344564	NWL-60	45.72	4.72	
8	502344565	NWL-60	45.72	4.72	
9	502344567	NWL-60	45.72	4.72	
10	502344572	NWL-60	45.72	4.72	
11	502344585	NWL-60	45.72	4.72	
12	502344616	NWL-60	45.72	4.72	
13	502344666	NWL-60	45.72	4.72	
14	502344667	NWL-60	45.72	4.72	
15	502344703	NWL-60	45.72	4.72	
16	502344705	NWL-60	45.72	4.72	
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TOTAL PAGE AREA: 3452.774 m^2

QC TECH: Thomas Howald
SUPERVISOR: Chad Messervey
SUBMISSION DATE: 2020/01/05

INVENTORY LOG

PROJECT NUMBER: CT001401
PROJECT TITLE: Victoria Gold Heap Leach Pad Phase 1B
DATE OF INVENTORY: 2020/06/09
PRODUCT TYPE: GCL
MATERIAL MANUFACTURER: Layfield

#	ROLL NUMBER	MATERIAL DIMENSIONS			REMARKS
		THICKNESS	LENGTH (m)	WIDTH (m)	
1	502344052	NWL-60	45.72	4.72	
2	502344054	NWL-60	45.72	4.72	
3	502344499	NWL-60	45.72	4.72	
4	502344500	NWL-60	45.72	4.72	
5	502344505	NWL-60	45.72	4.72	
6	502344670	NWL-60	45.72	4.72	
7	502344689	NWL-60	45.72	4.72	
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TOTAL PAGE AREA: 1510.589 m^2

QC TECH: Thomas Howald
SUPERVISOR: Chad Messervey
SUBMISSION DATE: 2020/01/05

INVENTORY LOG

PROJECT NUMBER: CT001401
PROJECT TITLE: Victoria Gold Heap Leach Pad Phase 1B
DATE OF INVENTORY: 2020/06/10
PRODUCT TYPE: EL4280
MATERIAL MANUFACTURER: Layfield

#	ROLL NUMBER	MATERIAL DIMENSIONS			REMARKS
		THICKNESS	LENGTH (m)	WIDTH (m)	
1	E0010696-008	80mil	85.3	6.8	Partial, Unused
2	E0010696-014	80mil	128	6.8	
3	E0010696-015	80mil	128	6.8	
4	E0010696-019	80mil	128	6.8	
5	E0010696-020	80mil	128	6.8	
6	E0010696-023	80mil	128	6.8	
7	E0010696-024	80mil	128	6.8	
8	E0010696-025	80mil	128	6.8	
9	E0010696-026	80mil	128	6.8	
10	E0010696-027	80mil	128	6.8	
11	E0010696-030	80mil	128	6.8	
12	E0010696-033	80mil	128	6.8	
13	E0010696-034	80mil	128	6.8	
14	E0010696-035	80mil	128	6.8	
15	E0010696-036	80mil	128	6.8	
16	E0010696-037	80mil	128	6.8	
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TOTAL PAGE AREA: 13636.04 m^2

QC TECH: Thomas Howald
SUPERVISOR: Chad Messervey
SUBMISSION DATE: 2020/01/05

INVENTORY LOG

PROJECT NUMBER: CT001401
PROJECT TITLE: Victoria Gold Heap Leach Pad Phase 1B
DATE OF INVENTORY: 2020/06/14
PRODUCT TYPE: EL4280
MATERIAL MANUFACTURER: Layfield

#	ROLL NUMBER	MATERIAL DIMENSIONS			REMARKS
		THICKNESS	LENGTH (m)	WIDTH (m)	
1	E0010696-001	80mil	128	6.8	
2	E0010696-002	80mil	73.7	6.8	Partial
3	E0010696-004	80mil	128	6.8	
4	E0010696-005	80mil	128	6.8	
5	E0010696-006	80mil	128	6.8	
6	E0010696-007	80mil	128	6.8	
7	E0010696-009	80mil	128	6.8	
8	E0010696-010	80mil	128	6.8	
9	E0010696-011	80mil	128	6.8	
10	E0010696-012	80mil	128	6.8	
11	E0010696-013	80mil	128	6.8	
12	E0010696-016	80mil	128	6.8	
13	E0010696-017	80mil	128	6.8	
14	E0010696-018	80mil	128	6.8	
15	E0010696-021	80mil	128	6.8	
16	E0010696-022	80mil	128	6.8	
17	E0010696-028	80mil	128	6.8	
18	E0010696-029	80mil	128	6.8	
19	E0010696-031	80mil	128	6.8	
20	E0010696-032	80mil	128	6.8	
21	E0010697-001	80mil	128	6.8	
22	E0010697-002	80mil	128	6.8	
23	E0010697-003	80mil	128	6.8	
24	E0010697-004	80mil	128	6.8	
25	E0010697-005	80mil	128	6.8	
26	E0010697-006	80mil	128	6.8	
27	E0010697-007	80mil	128	6.8	
28	E0010697-008	80mil	128	6.8	
29	E0010697-009	80mil	128	6.8	
30	E0010697-010	80mil	128	6.8	

TOTAL PAGE AREA: 25742.76 m^2

QC TECH: Thomas Howald
SUPERVISOR: Chad Messervey
SUBMISSION DATE: 2020/01/05

INVENTORY LOG

PROJECT NUMBER: CT001401
PROJECT TITLE: Victoria Gold Heap Leach Pad Phase 1B
DATE OF INVENTORY: 2020/06/14
PRODUCT TYPE: EL4280
MATERIAL MANUFACTURER: Layfield

#	ROLL NUMBER	MATERIAL DIMENSIONS			REMARKS
		THICKNESS	LENGTH (m)	WIDTH (m)	
1	E0010697-011	80mil	128	6.8	
2	E0010697-012	80mil	128	6.8	
3	E0010697-013	80mil	128	6.8	
4	E0010697-014	80mil	128	6.8	
5	E0010697-015	80mil	128	6.8	
6	E0010697-016	80mil	128	6.8	
7	E0010697-017	80mil	128	6.8	
8	E0010697-018	80mil	128	6.8	
9	E0010697-019	80mil	128	6.8	
10	E0010697-020	80mil	128	6.8	
11	E0010697-021	80mil	128	6.8	
12	E0010697-022	80mil	128	6.8	
13	E0010697-023	80mil	128	6.8	
14	E0010697-024	80mil	128	6.8	
15	E0010697-025	80mil	128	6.8	
16	E0010697-026	80mil	128	6.8	
17	E0010697-027	80mil	128	6.8	
18	E0010697-028	80mil	128	6.8	
19	E0010697-029	80mil	128	6.8	
20	E0010697-030	80mil	128	6.8	
21	E0010697-031	80mil	128	6.8	
22	E0010697-032	80mil	128	6.8	
23	E0010697-033	80mil	128	6.8	
24	E0010697-034	80mil	128	6.8	
25	E0010697-035	80mil	128	6.8	
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TOTAL PAGE AREA: 21760 m^2

QC TECH: Thomas Howald
SUPERVISOR: Chad Messervey
SUBMISSION DATE: 2020/01/05

INVENTORY LOG

PROJECT NUMBER: CT001401
PROJECT TITLE: Victoria Gold Heap Leach Pad Phase 1B
DATE OF INVENTORY: 2020/06/14
PRODUCT TYPE: GCL
MATERIAL MANUFACTURER: Layfield

#	ROLL NUMBER	MATERIAL DIMENSIONS			REMARKS
		THICKNESS	LENGTH (m)	WIDTH (m)	
1	502344489	NWL-60	45.72	4.72	
2	502344503	NWL-60	45.72	4.72	
3	502344504	NWL-60	45.72	4.72	
4	502344615	NWL-60	45.72	4.72	
5	502344661	NWL-60	45.72	4.72	
6	502344697	NWL-60	45.72	4.72	
7	502344714	NWL-60	45.72	4.72	
8	502344715	NWL-60	45.72	4.72	
9	502344717	NWL-60	45.72	4.72	
10	502344718	NWL-60	45.72	4.72	
11	502346952	NWL-60	45.72	4.72	
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TOTAL PAGE AREA: 2373.782 m^2

QC TECH: Thomas Howald
SUPERVISOR: Chad Messervey
SUBMISSION DATE: 2020/01/05

INVENTORY LOG

PROJECT NUMBER: CT001401
PROJECT TITLE: Victoria Gold Heap Leach Pad Phase 1B
DATE OF INVENTORY: 2020/06/15
PRODUCT TYPE: EL4280
MATERIAL MANUFACTURER: Layfield

#	ROLL NUMBER	MATERIAL DIMENSIONS			REMARKS
		THICKNESS	LENGTH (m)	WIDTH (m)	
1	E0010697-036	80mil	128	6.8	
2	E0010698-001	80mil	128	6.8	
3	E0010698-002	80mil	128	6.8	
4	E0010698-003	80mil	128	6.8	
5	E0010698-004	80mil	128	6.8	
6	E0010698-005	80mil	128	6.8	Unused
7	E0010698-006	80mil	128	6.8	
8	E0010698-007	80mil	91.44	6.8	Partial
9	E0010698-008	80mil	128	6.8	
10	E0010698-009	80mil	128	6.8	Unused
11	E0010698-010	80mil	128	6.8	
12	E0010698-011	80mil	128	6.8	
13	E0010698-012	80mil	128	6.8	
14	E0010698-013	80mil	128	6.8	
15	E0010698-014	80mil	128	6.8	
16	E0010698-015	80mil	128	6.8	
17	E0010698-017	80mil	128	6.8	
18	E0010698-018	80mil	128	6.8	
19	E0010698-019	80mil	128	6.8	
20	E0010698-020	80mil	128	6.8	
21	E0010698-021	80mil	128	6.8	
22	E0010698-022	80mil	128	6.8	
23	E0010698-023	80mil	128	6.8	
24	E0010698-024	80mil	128	6.8	
25	E0010698-025	80mil	128	6.8	
26	E0010698-026	80mil	128	6.8	
27	E0010698-027	80mil	128	6.8	
28	E0010698-028	80mil	128	6.8	
29	E0010698-029	80mil	128	6.8	
30	E0010698-030	80mil	128	6.8	

TOTAL PAGE AREA: 25863.39 m^2

QC TECH: Thomas Howald
SUPERVISOR: Chad Messervey
SUBMISSION DATE: 2020/01/05

INVENTORY LOG

PROJECT NUMBER: CT001401
PROJECT TITLE: Victoria Gold Heap Leach Pad Phase 1B
DATE OF INVENTORY: 2020/06/15
PRODUCT TYPE: EL4280
MATERIAL MANUFACTURER: Layfield

#	ROLL NUMBER	MATERIAL DIMENSIONS			REMARKS
		THICKNESS	LENGTH (m)	WIDTH (m)	
1	E0010698-031	80mil	128	6.8	
2	E0010698-032	80mil	128	6.8	
3	E0010698-033	80mil	128	6.8	
4	E0010698-034	80mil	128	6.8	
5	E0010698-035	80mil	128	6.8	
6	E0010698-036	80mil	128	6.8	
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TOTAL PAGE AREA: 5222.4 m^2

QC TECH: Thomas Howald
SUPERVISOR: Chad Messervey
SUBMISSION DATE: 2020/01/05

INVENTORY LOG

PROJECT NUMBER: CT001401
PROJECT TITLE: Victoria Gold Heap Leach Pad Phase 1B
DATE OF INVENTORY: 2020/06/15
PRODUCT TYPE: GCL
MATERIAL MANUFACTURER: Layfield

#	ROLL NUMBER	MATERIAL DIMENSIONS			REMARKS
		THICKNESS	LENGTH (m)	WIDTH (m)	
1	502343898	NWL-60	45.72	4.72	
2	502344142	NWL-60	45.72	4.72	
3	502344159	NWL-60	45.72	4.72	
4	502344160	NWL-60	45.72	4.72	
5	502344163	NWL-60	45.72	4.72	
6	502344581	NWL-60	45.72	4.72	
7	502344659	NWL-60	45.72	4.72	
8	502344660	NWL-60	45.72	4.72	
9	502344679	NWL-60	45.72	4.72	
10	502344680	NWL-60	45.72	4.72	
11	502344701	NWL-60	45.72	4.72	
12	502344702	NWL-60	45.72	4.72	
13	502344704	NWL-60	45.72	4.72	
14	502344706	NWL-60	45.72	4.72	
15	502344716	NWL-60	45.72	4.72	
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TOTAL PAGE AREA: 3236.976 m^2

QC TECH: Thomas Howald
SUPERVISOR: Chad Messervey
SUBMISSION DATE: 2020/01/05

INVENTORY LOG

PROJECT NUMBER: CT001401
PROJECT TITLE: Victoria Gold Heap Leach Pad Phase 1B
DATE OF INVENTORY: 2020/06/16
PRODUCT TYPE: GCL
MATERIAL MANUFACTURER: Layfield

#	ROLL NUMBER	MATERIAL DIMENSIONS			REMARKS
		THICKNESS	LENGTH (m)	WIDTH (m)	
1	0242-347762	NWL-60	45.72	4.72	
2	0242-347840	NWL-60	45.72	4.72	
3	502343886	NWL-60	45.72	4.72	
4	502343895	NWL-60	45.72	4.72	
5	502343896	NWL-60	45.72	4.72	
6	502343897	NWL-60	45.72	4.72	
7	502343901	NWL-60	45.72	4.72	
8	502343904	NWL-60	45.72	4.72	
9	502343905	NWL-60	45.72	4.72	
10	502343924	NWL-60	45.72	4.72	
11	502343926	NWL-60	45.72	4.72	
12	502343937	NWL-60	45.72	4.72	
13	502343942	NWL-60	45.72	4.72	
14	502343946	NWL-60	45.72	4.72	
15	502343956	NWL-60	45.72	4.72	
16	502343957	NWL-60	45.72	4.72	
17	502344151	NWL-60	45.72	4.72	
18	502344154	NWL-60	45.72	4.72	
19	502344156	NWL-60	45.72	4.72	
20	502344158	NWL-60	45.72	4.72	
21	502344173	NWL-60	45.72	4.72	
22	502344176	NWL-60	45.72	4.72	
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TOTAL PAGE AREA: 4747.565 m^2

QC TECH: Thomas Howald
SUPERVISOR: Chad Messervey
SUBMISSION DATE: 2020/01/05

INVENTORY LOG

PROJECT NUMBER: CT001401
PROJECT TITLE: Victoria Gold Heap Leach Pad Phase 1B
DATE OF INVENTORY: 2020/06/18
PRODUCT TYPE: GCL
MATERIAL MANUFACTURER: Layfield

#	ROLL NUMBER	MATERIAL DIMENSIONS			REMARKS
		THICKNESS	LENGTH (m)	WIDTH (m)	
1	502343903	NWL-60	45.72	4.72	
2	502343925	NWL-60	45.72	4.72	
3	502343927	NWL-60	45.72	4.72	
4	502343935	NWL-60	45.72	4.72	
5	502343945	NWL-60	45.72	4.72	
6	502343947	NWL-60	45.72	4.72	
7	502343948	NWL-60	45.72	4.72	
8	502343949	NWL-60	45.72	4.72	
9	502343966	NWL-60	45.72	4.72	
10	502343972	NWL-60	45.72	4.72	
11	502344599	NWL-60	45.72	4.72	
12	502344600	NWL-60	45.72	4.72	
13	502347892	NWL-60	45.72	4.72	
14	502347910	NWL-60	45.72	4.72	
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TOTAL PAGE AREA: 3021.178 m^2

QC TECH: Thomas Howald
SUPERVISOR: Chad Messervey
SUBMISSION DATE: 2020/01/05

INVENTORY LOG

PROJECT NUMBER: CT001401
PROJECT TITLE: Victoria Gold Heap Leach Pad Phase 1B
DATE OF INVENTORY: 2020/06/20
PRODUCT TYPE: EL4280
MATERIAL MANUFACTURER: Layfield

#	ROLL NUMBER	MATERIAL DIMENSIONS			REMARKS
		THICKNESS	LENGTH (m)	WIDTH (m)	
1	E0010699-001	80mil	128	6.8	
2	E0010699-002	80mil	128	6.8	
3	E0010699-003	80mil	128	6.8	
4	E0010699-004	80mil	128	6.8	
5	E0010699-005	80mil	128	6.8	
6	E0010699-006	80mil	128	6.8	
7	E0010699-007	80mil	128	6.8	
8	E0010699-008	80mil	128	6.8	
9	E0010699-009	80mil	128	6.8	
10	E0010699-010	80mil	128	6.8	
11	E0010699-011	80mil	128	6.8	
12	E0010699-012	80mil	128	6.8	
13	E0010699-013	80mil	128	6.8	
14	E0010699-014	80mil	128	6.8	
15	E0010699-015	80mil	128	6.8	
16	E0010699-016	80mil	128	6.8	
17	E0010699-017	80mil	128	6.8	
18	E0010699-018	80mil	128	6.8	
19	E0010699-019	80mil	128	6.8	
20	E0010699-020	80mil	128	6.8	
21	E0010699-021	80mil	128	6.8	
22	E0010699-022	80mil	128	6.8	
23	E0010699-023	80mil	128	6.8	
24	E0010699-024	80mil	128	6.8	
25	E0010699-025	80mil	128	6.8	
26	E0010699-026	80mil	128	6.8	
27	E0010699-027	80mil	128	6.8	
28	E0010699-028	80mil	128	6.8	
29	E0010699-029	80mil	128	6.8	
30	E0010699-030	80mil	128	6.8	

TOTAL PAGE AREA: 26112 m^2

QC TECH: Thomas Howald
SUPERVISOR: Chad Messervey
SUBMISSION DATE: 2020/01/05

INVENTORY LOG

PROJECT NUMBER: CT001401
PROJECT TITLE: Victoria Gold Heap Leach Pad Phase 1B
DATE OF INVENTORY: 2020/06/20
PRODUCT TYPE: EL4280
MATERIAL MANUFACTURER: Layfield

#	ROLL NUMBER	MATERIAL DIMENSIONS			REMARKS
		THICKNESS	LENGTH (m)	WIDTH (m)	
1	E0010699-031	80mil	128	6.8	
2	E0010699-032	80mil	128	6.8	
3	E0010699-033	80mil	128	6.8	
4	E0010699-034	80mil	128	6.8	
5	E0010699-035	80mil	128	6.8	
6	E0010699-036	80mil	128	6.8	
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TOTAL PAGE AREA: 5222.4 m^2

QC TECH: Thomas Howald
SUPERVISOR: Chad Messervey
SUBMISSION DATE: 2020/01/05

INVENTORY LOG

PROJECT NUMBER: CT001401
PROJECT TITLE: Victoria Gold Heap Leach Pad Phase 1B
DATE OF INVENTORY: 2020/06/20
PRODUCT TYPE: GCL
MATERIAL MANUFACTURER: Layfield

#	ROLL NUMBER	MATERIAL DIMENSIONS			REMARKS
		THICKNESS	LENGTH (m)	WIDTH (m)	
1	502343936	NWL-60	45.72	4.72	
2	502343940	NWL-60	45.72	4.72	
3	502343941	NWL-60	45.72	4.72	
4	502343961	NWL-60	45.72	4.72	
5	502343964	NWL-60	45.72	4.72	
6	502343969	NWL-60	45.72	4.72	
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TOTAL PAGE AREA: 1294.79 m^2

QC TECH: Thomas Howald
SUPERVISOR: Chad Messervey
SUBMISSION DATE: 2020/01/05

INVENTORY LOG

PROJECT NUMBER: CT001401
PROJECT TITLE: Victoria Gold Heap Leach Pad Phase 1B
DATE OF INVENTORY: 2020/06/25
PRODUCT TYPE: EL4280
MATERIAL MANUFACTURER: Layfield

#	ROLL NUMBER	MATERIAL DIMENSIONS			REMARKS
		THICKNESS	LENGTH (m)	WIDTH (m)	
1	E0010700-001	80mil	128	6.8	
2	E0010700-002	80mil	128	6.8	
3	E0010700-003	80mil	128	6.8	
4	E0010700-004	80mil	128	6.8	
5	E0010700-005	80mil	128	6.8	
6	E0010700-006	80mil	128	6.8	
7	E0010700-007	80mil	128	6.8	
8	E0010700-008	80mil	128	6.8	
9	E0010700-009	80mil	128	6.8	
10	E0010700-010	80mil	128	6.8	
11	E0010700-011	80mil	128	6.8	
12	E0010700-012	80mil	128	6.8	
13	E0010700-013	80mil	128	6.8	
14	E0010700-014	80mil	128	6.8	
15	E0010700-015	80mil	128	6.8	
16	E0010700-016	80mil	128	6.8	
17	E0010700-017	80mil	128	6.8	
18	E0010700-018	80mil	128	6.8	
19	E0010700-019	80mil	128	6.8	
20	E0010700-020	80mil	128	6.8	
21	E0010700-021	80mil	128	6.8	
22	E0010700-022	80mil	128	6.8	
23	E0010700-023	80mil	128	6.8	
24	E0010700-024	80mil	128	6.8	
25	E0010700-025	80mil	128	6.8	
26	E0010700-026	80mil	128	6.8	
27	E0010700-027	80mil	128	6.8	
28	E0010700-028	80mil	128	6.8	
29	E0010700-029	80mil	128	6.8	
30	E0010700-030	80mil	128	6.8	

TOTAL PAGE AREA: 26112 m^2

QC TECH: Thomas Howald
SUPERVISOR: Chad Messervey
SUBMISSION DATE: 2020/01/05

INVENTORY LOG

PROJECT NUMBER: CT001401
PROJECT TITLE: Victoria Gold Heap Leach Pad Phase 1B
DATE OF INVENTORY: 2020/06/25
PRODUCT TYPE: EL4280
MATERIAL MANUFACTURER: Layfield

#	ROLL NUMBER	MATERIAL DIMENSIONS			REMARKS
		THICKNESS	LENGTH (m)	WIDTH (m)	
1	E0010700-031	80mil	128	6.8	
2	E0010700-034	80mil	128	6.8	
3	E0010700-035	80mil	128	6.8	
4	E0010700-036	80mil	128	6.8	
5	E0010700-037	80mil	128	6.8	
6	E0010700-038	80mil	128	6.8	
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TOTAL PAGE AREA: 5222.4 m^2

QC TECH: Thomas Howald
SUPERVISOR: Chad Messervey
SUBMISSION DATE: 2020/01/05

INVENTORY LOG

PROJECT NUMBER: CT001401
PROJECT TITLE: Victoria Gold Heap Leach Pad Phase 1B
DATE OF INVENTORY: 2020/06/26
PRODUCT TYPE: GCL
MATERIAL MANUFACTURER: Layfield

#	ROLL NUMBER	MATERIAL DIMENSIONS			REMARKS
		THICKNESS	LENGTH (m)	WIDTH (m)	
1	0242-347886	NWL-60	45.72	4.72	
2	0242-347890	NWL-60	45.72	4.72	
3	0242-347898	NWL-60	45.72	4.72	
4	0242-347899	NWL-60	45.72	4.72	
5	502343561	NWL-60	45.72	4.72	
6	502343578	NWL-60	45.72	4.72	
7	502343958	NWL-60	45.72	4.72	
8	502343963	NWL-60	45.72	4.72	
9	502343968	NWL-60	45.72	4.72	
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TOTAL PAGE AREA: 1942.186 m^2

QC TECH: Thomas Howald
SUPERVISOR: Chad Messervey
SUBMISSION DATE: 2020/01/05

INVENTORY LOG

PROJECT NUMBER: CT001401
PROJECT TITLE: Victoria Gold Heap Leach Pad Phase 1B
DATE OF INVENTORY: 2020/06/27
PRODUCT TYPE: GCL
MATERIAL MANUFACTURER: Layfield

#	ROLL NUMBER	MATERIAL DIMENSIONS			REMARKS
		THICKNESS	LENGTH (m)	WIDTH (m)	
1	0242-347788	NWL-60	45.72	4.72	
2	0242-347792	NWL-60	45.72	4.72	
3	0242-347794	NWL-60	45.72	4.72	
4	0242-347797	NWL-60	45.72	4.72	
5	0242-347798	NWL-60	45.72	4.72	
6	0242-347802	NWL-60	45.72	4.72	
7	0242-347860	NWL-60	45.72	4.72	
8	0242-347870	NWL-60	45.72	4.72	
9	0242-347871	NWL-60	45.72	4.72	
10	0242-347885	NWL-60	45.72	4.72	
11	0242-347888	NWL-60	45.72	4.72	
12	0242-347889	NWL-60	45.72	4.72	
13	0242-347893	NWL-60	45.72	4.72	
14	0242-347897	NWL-60	45.72	4.72	
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TOTAL PAGE AREA: 3021.178 m^2

QC TECH: Thomas Howald
SUPERVISOR: Chad Messervey
SUBMISSION DATE: 2020/01/05

INVENTORY LOG

PROJECT NUMBER: CT001401
PROJECT TITLE: Victoria Gold Heap Leach Pad Phase 1B
DATE OF INVENTORY: 2020/06/28
PRODUCT TYPE: GCL
MATERIAL MANUFACTURER: Layfield

#	ROLL NUMBER	MATERIAL DIMENSIONS			REMARKS
		THICKNESS	LENGTH (m)	WIDTH (m)	
1	0242-347793	NWL-60	45.72	4.72	
2	0242-347795	NWL-60	45.72	4.72	
3	0242-347796	NWL-60	45.72	4.72	
4	0242-347799	NWL-60	45.72	4.72	
5	0242-347800	NWL-60	45.72	4.72	
6	0242-347801	NWL-60	45.72	4.72	
7	0242-347803	NWL-60	45.72	4.72	
8	0242-347804	NWL-60	45.72	4.72	
9	0242-347862	NWL-60	45.72	4.72	
10	0242-347863	NWL-60	45.72	4.72	
11	0242-347864	NWL-60	45.72	4.72	
12	502344487	NWL-60	45.72	4.72	
13	502344491	NWL-60	45.72	4.72	
14	502347666	NWL-60	45.72	4.72	
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TOTAL PAGE AREA: 3021.178 m^2

QC TECH: Thomas Howald
SUPERVISOR: Chad Messervey
SUBMISSION DATE: 2020/01/05

INVENTORY LOG

PROJECT NUMBER: CT001401
PROJECT TITLE: Victoria Gold Heap Leach Pad Phase 1B
DATE OF INVENTORY: 2020/06/29
PRODUCT TYPE: GCL
MATERIAL MANUFACTURER: Layfield

#	ROLL NUMBER	MATERIAL DIMENSIONS			REMARKS
		THICKNESS	LENGTH (m)	WIDTH (m)	
1	0242-347614	NWL-60	45.72	4.72	
2	0242-347618	NWL-60	45.72	4.72	
3	0242-347725	NWL-60	45.72	4.72	
4	0242-347727	NWL-60	45.72	4.72	
5	0242-347858	NWL-60	45.72	4.72	
6	0242-347859	NWL-60	45.72	4.72	
7	0242-347861	NWL-60	45.72	4.72	
8	0242-347884	NWL-60	45.72	4.72	
9	502347003	NWL-60	45.72	4.72	
10	502347130	NWL-60	45.72	4.72	
11	502347131	NWL-60	45.72	4.72	
12	502347133	NWL-60	45.72	4.72	
13	502347134	NWL-60	45.72	4.72	
14	502347139	NWL-60	45.72	4.72	
15	502347140	NWL-60	45.72	4.72	
16	502347142	NWL-60	45.72	4.72	
17	502347145	NWL-60	45.72	4.72	
18	502347157	NWL-60	45.72	4.72	
19	502347158	NWL-60	45.72	4.72	
20	502347161	NWL-60	45.72	4.72	
21	502347166	NWL-60	45.72	4.72	
22	502347170	NWL-60	45.72	4.72	
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TOTAL PAGE AREA: 4747.565 m^2

QC TECH: Thomas Howald
SUPERVISOR: Chad Messervey
SUBMISSION DATE: 2020/01/05

INVENTORY LOG

PROJECT NUMBER: CT001401
PROJECT TITLE: Victoria Gold Heap Leach Pad Phase 1B
DATE OF INVENTORY: 2020/06/30
PRODUCT TYPE: GCL
MATERIAL MANUFACTURER: Layfield

#	ROLL NUMBER	MATERIAL DIMENSIONS			REMARKS
		THICKNESS	LENGTH (m)	WIDTH (m)	
1	0242-347722	NWL-60	45.72	4.72	
2	0242-347723	NWL-60	45.72	4.72	
3	0242-347726	NWL-60	45.72	4.72	
4	0242-347734	NWL-60	45.72	4.72	
5	0242-347738	NWL-60	45.72	4.72	
6	502347672	NWL-60	45.72	4.72	
7	502347865	NWL-60	45.72	4.72	
8	502347887	NWL-60	45.72	4.72	
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TOTAL PAGE AREA: 1726.387 m^2

QC TECH: Thomas Howald
SUPERVISOR: Chad Messervey
SUBMISSION DATE: 2020/01/05

INVENTORY LOG

PROJECT NUMBER: CT001401
PROJECT TITLE: Victoria Gold Heap Leach Pad Phase 1B
DATE OF INVENTORY: 2020/07/01
PRODUCT TYPE: GCL
MATERIAL MANUFACTURER: Layfield

#	ROLL NUMBER	MATERIAL DIMENSIONS			REMARKS
		THICKNESS	LENGTH (m)	WIDTH (m)	
1	0242-347724	NWL-60	45.72	4.72	
2	0242-347728	NWL-60	45.72	4.72	
3	0242-347731	NWL-60	45.72	4.72	
4	0242-347732	NWL-60	45.72	4.72	
5	0242-347733	NWL-60	45.72	4.72	
6	0242-347739	NWL-60	45.72	4.72	
7	0242-347740	NWL-60	45.72	4.72	
8	502347132	NWL-60	45.72	4.72	
9	502347141	NWL-60	45.72	4.72	
10	502347143	NWL-60	45.72	4.72	
11	502347144	NWL-60	45.72	4.72	
12	502347147	NWL-60	45.72	4.72	
13	502347148	NWL-60	45.72	4.72	
14	502347149	NWL-60	45.72	4.72	
15	502347150	NWL-60	45.72	4.72	
16	502347151	NWL-60	45.72	4.72	
17	502347159	NWL-60	45.72	4.72	
18	502347160	NWL-60	45.72	4.72	
19	502347164	NWL-60	45.72	4.72	
20	502347167	NWL-60	45.72	4.72	
21	502347172	NWL-60	45.72	4.72	
22	502347175	NWL-60	45.72	4.72	
23	502347627	NWL-60	45.72	4.72	
24	502347634	NWL-60	45.72	4.72	
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TOTAL PAGE AREA: 5179.162 m^2

QC TECH: Thomas Howald
SUPERVISOR: Chad Messervey
SUBMISSION DATE: 2020/01/05

INVENTORY LOG

PROJECT NUMBER: CT001401
PROJECT TITLE: Victoria Gold Heap Leach Pad Phase 1B
DATE OF INVENTORY: 2020/07/02
PRODUCT TYPE: GCL
MATERIAL MANUFACTURER: Layfield

#	ROLL NUMBER	MATERIAL DIMENSIONS			REMARKS
		THICKNESS	LENGTH (m)	WIDTH (m)	
1	0242-347531	NWL-60	45.72	4.72	
2	502346948	NWL-60	45.72	4.72	
3	502346966	NWL-60	45.72	4.72	
4	502346967	NWL-60	45.72	4.72	
5	502346968	NWL-60	45.72	4.72	
6	502346969	NWL-60	45.72	4.72	
7	502347026	NWL-60	45.72	4.72	
8	502347030	NWL-60	45.72	4.72	
9	502347082	NWL-60	45.72	4.72	
10	502347083	NWL-60	45.72	4.72	
11	502347086	NWL-60	45.72	4.72	
12	502347088	NWL-60	45.72	4.72	
13	502347091	NWL-60	45.72	4.72	
14	502347092	NWL-60	45.72	4.72	
15	502347095	NWL-60	45.72	4.72	
16	502347096	NWL-60	45.72	4.72	
17	502347097	NWL-60	45.72	4.72	
18	502347098	NWL-60	45.72	4.72	
19	502347099	NWL-60	45.72	4.72	
20	502347100	NWL-60	45.72	4.72	
21	502347155	NWL-60	45.72	4.72	
22	502347165	NWL-60	45.72	4.72	
23	502347168	NWL-60	45.72	4.72	
24	502347169	NWL-60	45.72	4.72	
25	502347171	NWL-60	45.72	4.72	
26	502347173	NWL-60	45.72	4.72	
27	502347174	NWL-60	45.72	4.72	
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TOTAL PAGE AREA: 5826.557 m^2

QC TECH: Thomas Howald
SUPERVISOR: Chad Messervey
SUBMISSION DATE: 2020/01/05

INVENTORY LOG

PROJECT NUMBER: CT001401
PROJECT TITLE: Victoria Gold Heap Leach Pad Phase 1B
DATE OF INVENTORY: 2020/07/03
PRODUCT TYPE: GCL
MATERIAL MANUFACTURER: Layfield

#	ROLL NUMBER	MATERIAL DIMENSIONS			REMARKS
		THICKNESS	LENGTH (m)	WIDTH (m)	
1	0242-347514	NWL-60	45.72	4.72	
2	0242-347516	NWL-60	45.72	4.72	
3	0242-347517	NWL-60	45.72	4.72	
4	0242-347532	NWL-60	45.72	4.72	
5	502346937	NWL-60	45.72	4.72	
6	502346955	NWL-60	45.72	4.72	
7	502346965	NWL-60	45.72	4.72	
8	502347027	NWL-60	45.72	4.72	
9	502347031	NWL-60	45.72	4.72	
10	502347087	NWL-60	45.72	4.72	
11	502347089	NWL-60	45.72	4.72	
12	502347090	NWL-60	45.72	4.72	
13	502347103	NWL-60	45.72	4.72	
14	502347154	NWL-60	45.72	4.72	
15	502347513	NWL-60	45.72	4.72	
16	502347546	NWL-60	45.72	4.72	
17	502347561	NWL-60	45.72	4.72	
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TOTAL PAGE AREA: 3668.573 m^2

QC TECH: Thomas Howald
SUPERVISOR: Chad Messervey
SUBMISSION DATE: 2020/01/05

INVENTORY LOG

PROJECT NUMBER: CT001401
PROJECT TITLE: Victoria Gold Heap Leach Pad Phase 1B
DATE OF INVENTORY: 2020/07/10
PRODUCT TYPE: GCL
MATERIAL MANUFACTURER: Layfield

#	ROLL NUMBER	MATERIAL DIMENSIONS			REMARKS
		THICKNESS	LENGTH (m)	WIDTH (m)	
1	0242-347515	NWL-60	45.72	4.72	
2	0242-347518	NWL-60	45.72	4.72	
3	0242-347519	NWL-60	45.72	4.72	
4	0242-347520	NWL-60	45.72	4.72	
5	0242-347521	NWL-60	45.72	4.72	
6	0242-347523	NWL-60	45.72	4.72	
7	0242-347525	NWL-60	45.72	4.72	
8	0242-347526	NWL-60	45.72	4.72	
9	0242-347527	NWL-60	45.72	4.72	
10	0242-347529	NWL-60	45.72	4.72	
11	0242-347530	NWL-60	45.72	4.72	
12	0242-347534	NWL-60	45.72	4.72	
13	0242-347536	NWL-60	45.72	4.72	
14	502344554	NWL-60	45.72	4.72	
15	502344555	NWL-60	45.72	4.72	
16	502344560	NWL-60	45.72	4.72	
17	502344563	NWL-60	45.72	4.72	
18	502346996	NWL-60	45.72	4.72	
19	502346997	NWL-60	45.72	4.72	
20	502347101	NWL-60	45.72	4.72	
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TOTAL PAGE AREA: 4315.968 m^2

QC TECH: Thomas Howald
SUPERVISOR: Chad Messervey
SUBMISSION DATE: 2020/01/05
SHEET NUMBER: 35 of 93

INVENTORY LOG

PROJECT NUMBER: CT001401
PROJECT TITLE: Victoria Gold Heap Leach Pad Phase 1B
DATE OF INVENTORY: 2020/07/13
PRODUCT TYPE: GCL
MATERIAL MANUFACTURER: Layfield

#	ROLL NUMBER	MATERIAL DIMENSIONS			REMARKS
		THICKNESS	LENGTH (m)	WIDTH (m)	
1	0242-347524	NWL-60	45.72	4.72	
2	0242-347528	NWL-60	45.72	4.72	
3	0242-347535	NWL-60	45.72	4.72	
4	0242-347537	NWL-60	45.72	4.72	
5	502343999	NWL-60	45.72	4.72	
6	502344004	NWL-60	45.72	4.72	
7	502344005	NWL-60	45.72	4.72	
8	502344008	NWL-60	45.72	4.72	
9	502344488	NWL-60	45.72	4.72	
10	502344519	NWL-60	45.72	4.72	
11	502344535	NWL-60	45.72	4.72	
12	502344544	NWL-60	45.72	4.72	
13	502344545	NWL-60	45.72	4.72	
14	502344546	NWL-60	45.72	4.72	
15	502344549	NWL-60	45.72	4.72	
16	502344556	NWL-60	45.72	4.72	
17	502344557	NWL-60	45.72	4.72	
18	502344561	NWL-60	45.72	4.72	
19	502346938	NWL-60	45.72	4.72	
20	502346939	NWL-60	45.72	4.72	
21	502347102	NWL-60	45.72	4.72	
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TOTAL PAGE AREA: 4531.766 m^2

QC TECH: Thomas Howald
SUPERVISOR: Chad Messervey
SUBMISSION DATE: 2020/01/05

INVENTORY LOG

PROJECT NUMBER: CT001401
PROJECT TITLE: Victoria Gold Heap Leach Pad Phase 1B
DATE OF INVENTORY: 2020/07/14
PRODUCT TYPE: GCL
MATERIAL MANUFACTURER: Layfield

#	ROLL NUMBER	MATERIAL DIMENSIONS			REMARKS
		THICKNESS	LENGTH (m)	WIDTH (m)	
1	502344009	NWL-60	45.72	4.72	
2	502344010	NWL-60	45.72	4.72	
3	502344011	NWL-60	45.72	4.72	
4	502344016	NWL-60	45.72	4.72	
5	502344021	NWL-60	45.72	4.72	
6	502344022	NWL-60	45.72	4.72	
7	502344023	NWL-60	45.72	4.72	
8	502344025	NWL-60	45.72	4.72	
9	502344029	NWL-60	45.72	4.72	
10	502344030	NWL-60	45.72	4.72	
11	502344032	NWL-60	45.72	4.72	
12	502344033	NWL-60	45.72	4.72	
13	502344034	NWL-60	45.72	4.72	
14	502344041	NWL-60	45.72	4.72	
15	502344127	NWL-60	45.72	4.72	
16	502344161	NWL-60	45.72	4.72	
17	502344547	NWL-60	45.72	4.72	
18	502344550	NWL-60	45.72	4.72	
19	502344551	NWL-60	45.72	4.72	
20	502344552	NWL-60	45.72	4.72	
21	502344553	NWL-60	45.72	4.72	
22	502344558	NWL-60	45.72	4.72	
23	502344562	NWL-60	45.72	4.72	
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TOTAL PAGE AREA: 4963.363 m^2

QC TECH: Thomas Howald
SUPERVISOR: Chad Messervey
SUBMISSION DATE: 2020/01/05

INVENTORY LOG

PROJECT NUMBER: CT001401
PROJECT TITLE: Victoria Gold Heap Leach Pad Phase 1B
DATE OF INVENTORY: 2020/07/15
PRODUCT TYPE: GCL
MATERIAL MANUFACTURER: Layfield

#	ROLL NUMBER	MATERIAL DIMENSIONS			REMARKS
		THICKNESS	LENGTH (m)	WIDTH (m)	
1	0242-347626	NWL-60	45.72	4.72	
2	502344576	NWL-60	45.72	4.72	
3	502344582	NWL-60	45.72	4.72	
4	502344607	NWL-60	45.72	4.72	
5	502344609	NWL-60	45.72	4.72	
6	502344657	NWL-60	45.72	4.72	
7	502344664	NWL-60	45.72	4.72	
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TOTAL PAGE AREA: 1510.589 m^2

QC TECH: Thomas Howald
SUPERVISOR: Chad Messervey
SUBMISSION DATE: 2020/01/05

INVENTORY LOG

PROJECT NUMBER: CT001401
PROJECT TITLE: Victoria Gold Heap Leach Pad Phase 1B
DATE OF INVENTORY: 2020/07/16
PRODUCT TYPE: GCL
MATERIAL MANUFACTURER: Layfield

#	ROLL NUMBER	MATERIAL DIMENSIONS			REMARKS
		THICKNESS	LENGTH (m)	WIDTH (m)	
1	502344596	NWL-60	45.72	4.72	
2	502344598	NWL-60	45.72	4.72	
3	502344610	NWL-60	45.72	4.72	
4	502344645	NWL-60	45.72	4.72	
5	502344646	NWL-60	45.72	4.72	
6	502344647	NWL-60	45.72	4.72	
7	502344652	NWL-60	45.72	4.72	
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TOTAL PAGE AREA: 1510.589 m^2

QC TECH: Thomas Howald
SUPERVISOR: Chad Messervey
SUBMISSION DATE: 2020/01/05

INVENTORY LOG

PROJECT NUMBER: CT001401
PROJECT TITLE: Victoria Gold Heap Leach Pad Phase 1B
DATE OF INVENTORY: 2020/07/17
PRODUCT TYPE: GCL
MATERIAL MANUFACTURER: Layfield

#	ROLL NUMBER	MATERIAL DIMENSIONS			REMARKS
		THICKNESS	LENGTH (m)	WIDTH (m)	
1	0242-347556	NWL-60	45.72	4.72	
2	0242-347557	NWL-60	45.72	4.72	
3	0242-347595	NWL-60	45.72	4.72	
4	0242-347611	NWL-60	45.72	4.72	
5	0242-347630	NWL-60	45.72	4.72	
6	0242-347659	NWL-60	45.72	4.72	
7	502344027	NWL-60	45.72	4.72	
8	502344606	NWL-60	45.72	4.72	
9	502344608	NWL-60	45.72	4.72	
10	502344641	NWL-60	45.72	4.72	
11	502344643	NWL-60	45.72	4.72	
12	502344651	NWL-60	45.72	4.72	
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TOTAL PAGE AREA: 2589.581 m^2

QC TECH: Thomas Howald
SUPERVISOR: Chad Messervey
SUBMISSION DATE: 2020/01/05

INVENTORY LOG

PROJECT NUMBER: CT001401
PROJECT TITLE: Victoria Gold Heap Leach Pad Phase 1B
DATE OF INVENTORY: 2020/07/18
PRODUCT TYPE: GCL
MATERIAL MANUFACTURER: Layfield

#	ROLL NUMBER	MATERIAL DIMENSIONS			REMARKS
		THICKNESS	LENGTH (m)	WIDTH (m)	
1	0242-347538	NWL-60	45.72	4.72	
2	0242-347628	NWL-60	45.72	4.72	
3	502344490	NWL-60	45.72	4.72	
4	502344642	NWL-60	45.72	4.72	
5	502344644	NWL-60	45.72	4.72	
6	502344648	NWL-60	45.72	4.72	
7	502344650	NWL-60	45.72	4.72	
8	502344662	NWL-60	45.72	4.72	
9	502344663	NWL-60	45.72	4.72	
10	502344720	NWL-60	45.72	4.72	
11	502347000	NWL-60	45.72	4.72	
12	502347002	NWL-60	45.72	4.72	
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TOTAL PAGE AREA: 2589.581 m^2

QC TECH: Thomas Howald
SUPERVISOR: Chad Messervey
SUBMISSION DATE: 2020/01/05

INVENTORY LOG

PROJECT NUMBER: CT001401
PROJECT TITLE: Victoria Gold Heap Leach Pad Phase 1B
DATE OF INVENTORY: 2020/07/20
PRODUCT TYPE: GCL
MATERIAL MANUFACTURER: Layfield

#	ROLL NUMBER	MATERIAL DIMENSIONS			REMARKS
		THICKNESS	LENGTH (m)	WIDTH (m)	
1	0242-347533	NWL-60	45.72	4.72	
2	0242-347613	NWL-60	45.72	4.72	
3	0242-347617	NWL-60	45.72	4.72	
4	0242-347619	NWL-60	45.72	4.72	
5	0242-347629	NWL-60	45.72	4.72	
6	0242-347635	NWL-60	45.72	4.72	
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TOTAL PAGE AREA: 1294.79 m^2

QC TECH: Thomas Howald
SUPERVISOR: Chad Messervey
SUBMISSION DATE: 2020/01/05

INVENTORY LOG

PROJECT NUMBER: CT001401
PROJECT TITLE: Victoria Gold Heap Leach Pad Phase 1B
DATE OF INVENTORY: 2020/07/21
PRODUCT TYPE: GCL
MATERIAL MANUFACTURER: Layfield

#	ROLL NUMBER	MATERIAL DIMENSIONS			REMARKS
		THICKNESS	LENGTH (m)	WIDTH (m)	
1	0242-347539	NWL-60	45.72	4.72	
2	0242-347541	NWL-60	45.72	4.72	
3	0242-347542	NWL-60	45.72	4.72	
4	0242-347558	NWL-60	45.72	4.72	
5	0242-347585	NWL-60	45.72	4.72	
6	0242-347587	NWL-60	45.72	4.72	
7	0242-347599	NWL-60	45.72	4.72	
8	0242-347638	NWL-60	45.72	4.72	
9	0242-347642	NWL-60	45.72	4.72	
10	0242-347643	NWL-60	45.72	4.72	
11	0242-347644	NWL-60	45.72	4.72	
12	0242-347645	NWL-60	45.72	4.72	
13	0242-347648	NWL-60	45.72	4.72	
14	0242-347649	NWL-60	45.72	4.72	
15	0242-347654	NWL-60	45.72	4.72	
16	0242-347657	NWL-60	45.72	4.72	
17	0242-347660	NWL-60	45.72	4.72	
18	0242-347661	NWL-60	45.72	4.72	
19	502344019	NWL-60	45.72	4.72	
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TOTAL PAGE AREA: 4100.17 m^2

QC TECH: Thomas Howald
SUPERVISOR: Chad Messervey
SUBMISSION DATE: 2020/01/05

INVENTORY LOG

PROJECT NUMBER: CT001401
PROJECT TITLE: Victoria Gold Heap Leach Pad Phase 1B
DATE OF INVENTORY: 2020/07/22
PRODUCT TYPE: GCL
MATERIAL MANUFACTURER: Layfield

#	ROLL NUMBER	MATERIAL DIMENSIONS			REMARKS
		THICKNESS	LENGTH (m)	WIDTH (m)	
1	0242-347522	NWL-60	45.72	4.72	
2	0242-347646	NWL-60	45.72	4.72	
3	0242-347651	NWL-60	45.72	4.72	
4	502344548	NWL-60	45.72	4.72	
5	502344658	NWL-60	45.72	4.72	
6	502347163	NWL-60	45.72	4.72	
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TOTAL PAGE AREA: 1294.79 m^2

QC TECH: Thomas Howald
SUPERVISOR: Chad Messervey
SUBMISSION DATE: 2020/01/05

INVENTORY LOG

PROJECT NUMBER: CT001401
PROJECT TITLE: Victoria Gold Heap Leach Pad Phase 1B
DATE OF INVENTORY: 2020/07/23
PRODUCT TYPE: GCL
MATERIAL MANUFACTURER: Layfield

#	ROLL NUMBER	MATERIAL DIMENSIONS			REMARKS
		THICKNESS	LENGTH (m)	WIDTH (m)	
1	0242-347540	NWL-60	45.72	4.72	
2	0242-347543	NWL-60	45.72	4.72	
3	0242-347544	NWL-60	45.72	4.72	
4	0242-347545	NWL-60	45.72	4.72	
5	0242-347559	NWL-60	45.72	4.72	
6	0242-347601	NWL-60	45.72	4.72	
7	0242-347637	NWL-60	45.72	4.72	
8	0242-347641	NWL-60	45.72	4.72	
9	0242-347647	NWL-60	45.72	4.72	
10	0242-347650	NWL-60	45.72	4.72	
11	0242-347652	NWL-60	45.72	4.72	
12	0242-347653	NWL-60	45.72	4.72	
13	0242-347655	NWL-60	45.72	4.72	
14	0242-347656	NWL-60	45.72	4.72	
15	0242-347658	NWL-60	45.72	4.72	
16	0242-347729	NWL-60	45.72	4.72	
17	0242-347736	NWL-60	45.72	4.72	
18	0242-347780	NWL-60	45.72	4.72	
19	0242-347873	NWL-60	45.72	4.72	
20	0242-347906	NWL-60	45.72	4.72	
21	0242-347907	NWL-60	45.72	4.72	
22	502344133	NWL-60	45.72	4.72	
23	502347603	NWL-60	45.72	4.72	
24	502347670	NWL-60	45.72	4.72	
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TOTAL PAGE AREA: 5179.162 m^2

QC TECH: Thomas Howald
SUPERVISOR: Chad Messervey
SUBMISSION DATE: 2020/01/05

INVENTORY LOG

PROJECT NUMBER: CT001401
PROJECT TITLE: Victoria Gold Heap Leach Pad Phase 1B
DATE OF INVENTORY: 2020/07/24
PRODUCT TYPE: GCL
MATERIAL MANUFACTURER: Layfield

#	ROLL NUMBER	MATERIAL DIMENSIONS			REMARKS
		THICKNESS	LENGTH (m)	WIDTH (m)	
1	0242-347560	NWL-60	45.72	4.72	
2	0242-347562	NWL-60	45.72	4.72	
3	0242-347581	NWL-60	45.72	4.72	
4	0242-347586	NWL-60	45.72	4.72	
5	0242-347591	NWL-60	45.72	4.72	
6	0242-347592	NWL-60	45.72	4.72	
7	0242-347600	NWL-60	45.72	4.72	
8	0242-347612	NWL-60	45.72	4.72	
9	0242-347639	NWL-60	45.72	4.72	
10	0242-347737	NWL-60	45.72	4.72	
11	0242-347769	NWL-60	45.72	4.72	
12	0242-347770	NWL-60	45.72	4.72	
13	0242-347771	NWL-60	45.72	4.72	
14	0242-347772	NWL-60	45.72	4.72	
15	0242-347773	NWL-60	45.72	4.72	
16	0242-347774	NWL-60	45.72	4.72	
17	0242-347775	NWL-60	45.72	4.72	
18	0242-347776	NWL-60	45.72	4.72	
19	0242-347777	NWL-60	45.72	4.72	
20	0242-347778	NWL-60	45.72	4.72	
21	0242-347781	NWL-60	45.72	4.72	
22	0242-347782	NWL-60	45.72	4.72	
23	0242-347783	NWL-60	45.72	4.72	
24	0242-347784	NWL-60	45.72	4.72	
25	0242-347785	NWL-60	45.72	4.72	
26	0242-347786	NWL-60	45.72	4.72	
27	0242-347857	NWL-60	45.72	4.72	
28	0242-347876	NWL-60	45.72	4.72	
29	0242-347877	NWL-60	45.72	4.72	
30	0242-347881	NWL-60	45.72	4.72	

TOTAL PAGE AREA: 6473.952 m^2

QC TECH: Thomas Howald
SUPERVISOR: Chad Messervey
SUBMISSION DATE: 2020/01/05

INVENTORY LOG

PROJECT NUMBER: CT001401
PROJECT TITLE: Victoria Gold Heap Leach Pad Phase 1B
DATE OF INVENTORY: 2020/07/24
PRODUCT TYPE: GCL
MATERIAL MANUFACTURER: Layfield

#	ROLL NUMBER	MATERIAL DIMENSIONS			REMARKS
		THICKNESS	LENGTH (m)	WIDTH (m)	
1	0242-347904	NWL-60	45.72	4.72	
2	0242-347905	NWL-60	45.72	4.72	
3	0242-347908	NWL-60	45.72	4.72	
4	0242-347909	NWL-60	45.72	4.72	
5	502344024	NWL-60	45.72	4.72	
6	502344532	NWL-60	45.72	4.72	
7	502344538	NWL-60	45.72	4.72	
8	502347668	NWL-60	45.72	4.72	
9	502347669	NWL-60	45.72	4.72	
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TOTAL PAGE AREA: 1942.186 m^2

QC TECH: Thomas Howald
SUPERVISOR: Chad Messervey
SUBMISSION DATE: 2020/01/05

INVENTORY LOG

PROJECT NUMBER: CT001401
PROJECT TITLE: Victoria Gold Heap Leach Pad Phase 1B
DATE OF INVENTORY: 2020/07/30
PRODUCT TYPE: GCL
MATERIAL MANUFACTURER: Layfield

#	ROLL NUMBER	MATERIAL DIMENSIONS			REMARKS
		THICKNESS	LENGTH (m)	WIDTH (m)	
1	0242-347073	NWL-60	45.72	4.72	
2	0242-347074	NWL-60	45.72	4.72	
3	0242-347081	NWL-60	45.72	4.72	
4	0242-347758	NWL-60	45.72	4.72	
5	0242-347760	NWL-60	45.72	4.72	
6	0242-347763	NWL-60	45.72	4.72	
7	0242-347766	NWL-60	45.72	4.72	
8	0242-347767	NWL-60	45.72	4.72	
9	0242-347805	NWL-60	45.72	4.72	
10	0242-347812	NWL-60	45.72	4.72	
11	0242-347816	NWL-60	45.72	4.72	
12	0242-347817	NWL-60	45.72	4.72	
13	0242-347820	NWL-60	45.72	4.72	
14	0242-347821	NWL-60	45.72	4.72	
15	0242-347827	NWL-60	45.72	4.72	
16	0242-347838	NWL-60	45.72	4.72	
17	0242-347839	NWL-60	45.72	4.72	
18	0242-347841	NWL-60	45.72	4.72	
19	0242-347842	NWL-60	45.72	4.72	
20	0242-347843	NWL-60	45.72	4.72	
21	0242-347844	NWL-60	45.72	4.72	
22	0242-347849	NWL-60	45.72	4.72	
23	0242-347852	NWL-60	45.72	4.72	
24	0242-347854	NWL-60	45.72	4.72	
25	0242-347855	NWL-60	45.72	4.72	
26	0242-347872	NWL-60	45.72	4.72	
27	0242-347874	NWL-60	45.72	4.72	
28	0242-347875	NWL-60	45.72	4.72	
29	0242-347894	NWL-60	45.72	4.72	
30	0242-347900	NWL-60	45.72	4.72	

TOTAL PAGE AREA: 6473.952 m^2

QC TECH: Thomas Howald
SUPERVISOR: Chad Messervey
SUBMISSION DATE: 2020/01/05

INVENTORY LOG

PROJECT NUMBER: CT001401
PROJECT TITLE: Victoria Gold Heap Leach Pad Phase 1B
DATE OF INVENTORY: 2020/07/30
PRODUCT TYPE: GCL
MATERIAL MANUFACTURER: Layfield

#	ROLL NUMBER	MATERIAL DIMENSIONS			REMARKS
		THICKNESS	LENGTH (m)	WIDTH (m)	
1	0242-347901	NWL-60	45.72	4.72	
2	502347678	NWL-60	45.72	4.72	
3	502347679	NWL-60	45.72	4.72	
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TOTAL PAGE AREA: 647.3952 m^2

QC TECH: Thomas Howald
SUPERVISOR: Chad Messervey
SUBMISSION DATE: 2020/01/05

INVENTORY LOG

PROJECT NUMBER: CT001401
PROJECT TITLE: Victoria Gold Heap Leach Pad Phase 1B
DATE OF INVENTORY: 2020/07/31
PRODUCT TYPE: GCL
MATERIAL MANUFACTURER: Layfield

#	ROLL NUMBER	MATERIAL DIMENSIONS			REMARKS
		THICKNESS	LENGTH (m)	WIDTH (m)	
1	0242-347075	NWL-60	45.72	4.72	
2	0242-347076	NWL-60	45.72	4.72	
3	0242-347077	NWL-60	45.72	4.72	
4	0242-347078	NWL-60	45.72	4.72	
5	0242-347741	NWL-60	45.72	4.72	
6	0242-347744	NWL-60	45.72	4.72	
7	0242-347755	NWL-60	45.72	4.72	
8	0242-347761	NWL-60	45.72	4.72	
9	0242-347808	NWL-60	45.72	4.72	
10	0242-347813	NWL-60	45.72	4.72	
11	0242-347818	NWL-60	45.72	4.72	
12	0242-347822	NWL-60	45.72	4.72	
13	0242-347823	NWL-60	45.72	4.72	
14	0242-347824	NWL-60	45.72	4.72	
15	0242-347829	NWL-60	45.72	4.72	
16	0242-347832	NWL-60	45.72	4.72	
17	0242-347833	NWL-60	45.72	4.72	
18	0242-347845	NWL-60	45.72	4.72	
19	0242-347846	NWL-60	45.72	4.72	
20	0242-347847	NWL-60	45.72	4.72	
21	0242-347850	NWL-60	45.72	4.72	
22	0242-347851	NWL-60	45.72	4.72	
23	0242-347903	NWL-60	45.72	4.72	
24	502347489	NWL-60	45.72	4.72	
25	502347494	NWL-60	45.72	4.72	
26	502347496	NWL-60	45.72	4.72	
27	502347505	NWL-60	45.72	4.72	
28	502347511	NWL-60	45.72	4.72	
29	502347673	NWL-60	45.72	4.72	
30	502347675	NWL-60	45.72	4.72	

TOTAL PAGE AREA: 6473.952 m^2

QC TECH: Thomas Howald
SUPERVISOR: Chad Messervey
SUBMISSION DATE: 2020/01/05

INVENTORY LOG

PROJECT NUMBER: CT001401
PROJECT TITLE: Victoria Gold Heap Leach Pad Phase 1B
DATE OF INVENTORY: 2020/07/31
PRODUCT TYPE: GCL
MATERIAL MANUFACTURER: Layfield

#	ROLL NUMBER	MATERIAL DIMENSIONS			REMARKS
		THICKNESS	LENGTH (m)	WIDTH (m)	
1	502347677	NWL-60	45.72	4.72	
2	502347680	NWL-60	45.72	4.72	
3	502347688	NWL-60	45.72	4.72	
4	502347697	NWL-60	45.72	4.72	
5	502347699	NWL-60	45.72	4.72	
6	502347700	NWL-60	45.72	4.72	
7	502347706	NWL-60	45.72	4.72	
8	502347853	NWL-60	45.72	4.72	
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TOTAL PAGE AREA: 1726.387 m^2

QC TECH: Thomas Howald
SUPERVISOR: Chad Messervey
SUBMISSION DATE: 2020/01/05

INVENTORY LOG

PROJECT NUMBER: CT001401
PROJECT TITLE: Victoria Gold Heap Leach Pad Phase 1B
DATE OF INVENTORY: 2020/08/02
PRODUCT TYPE: GCL
MATERIAL MANUFACTURER: Layfield

#	ROLL NUMBER	MATERIAL DIMENSIONS			REMARKS
		THICKNESS	LENGTH (m)	WIDTH (m)	
1	0242-347079	NWL-60	45.72	4.72	
2	0242-347080	NWL-60	45.72	4.72	
3	0242-347547	NWL-60	45.72	4.72	
4	0242-347747	NWL-60	45.72	4.72	
5	0242-347807	NWL-60	45.72	4.72	
6	0242-347831	NWL-60	45.72	4.72	
7	0242-347848	NWL-60	45.72	4.72	
8	0242-347879	NWL-60	45.72	4.72	
9	0242-347896	NWL-60	45.72	4.72	
10	0242-347902	NWL-60	45.72	4.72	
11	502347506	NWL-60	45.72	4.72	
12	502347689	NWL-60	45.72	4.72	
13	502347691	NWL-60	45.72	4.72	
14	502347703	NWL-60	45.72	4.72	
15	502347856	NWL-60	45.72	4.72	
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TOTAL PAGE AREA: 3236.976 m^2

QC TECH: Thomas Howald
SUPERVISOR: Chad Messervey
SUBMISSION DATE: 2020/01/05

INVENTORY LOG

PROJECT NUMBER: CT001401
PROJECT TITLE: Victoria Gold Heap Leach Pad Phase 1B
DATE OF INVENTORY: 2020/08/03
PRODUCT TYPE: GCL
MATERIAL MANUFACTURER: Layfield

#	ROLL NUMBER	MATERIAL DIMENSIONS			REMARKS
		THICKNESS	LENGTH (m)	WIDTH (m)	
1	0242-347730	NWL-60	45.72	4.72	
2	0242-347743	NWL-60	45.72	4.72	
3	0242-347745	NWL-60	45.72	4.72	
4	0242-347746	NWL-60	45.72	4.72	
5	0242-347751	NWL-60	45.72	4.72	
6	0242-347752	NWL-60	45.72	4.72	
7	0242-347753	NWL-60	45.72	4.72	
8	0242-347754	NWL-60	45.72	4.72	
9	0242-347756	NWL-60	45.72	4.72	
10	0242-347759	NWL-60	45.72	4.72	
11	0242-347764	NWL-60	45.72	4.72	
12	0242-347765	NWL-60	45.72	4.72	
13	0242-347768	NWL-60	45.72	4.72	
14	0242-347787	NWL-60	45.72	4.72	
15	0242-347789	NWL-60	45.72	4.72	
16	0242-347790	NWL-60	45.72	4.72	
17	0242-347791	NWL-60	45.72	4.72	
18	0242-347806	NWL-60	45.72	4.72	
19	0242-347809	NWL-60	45.72	4.72	
20	0242-347811	NWL-60	45.72	4.72	
21	0242-347814	NWL-60	45.72	4.72	
22	0242-347819	NWL-60	45.72	4.72	
23	0242-347826	NWL-60	45.72	4.72	
24	0242-347828	NWL-60	45.72	4.72	
25	0242-347830	NWL-60	45.72	4.72	
26	0242-347835	NWL-60	45.72	4.72	
27	0242-347878	NWL-60	45.72	4.72	
28	0242-347880	NWL-60	45.72	4.72	
29	0242-347895	NWL-60	45.72	4.72	
30	502344516	NWL-60	45.72	4.72	

TOTAL PAGE AREA: 6473.952 m^2

QC TECH: Thomas Howald
SUPERVISOR: Chad Messervey
SUBMISSION DATE: 2020/01/05

INVENTORY LOG

PROJECT NUMBER: CT001401
PROJECT TITLE: Victoria Gold Heap Leach Pad Phase 1B
DATE OF INVENTORY: 2020/08/03
PRODUCT TYPE: GCL
MATERIAL MANUFACTURER: Layfield

#	ROLL NUMBER	MATERIAL DIMENSIONS			REMARKS
		THICKNESS	LENGTH (m)	WIDTH (m)	
1	502344521	NWL-60	45.72	4.72	
2	502344522	NWL-60	45.72	4.72	
3	502344525	NWL-60	45.72	4.72	
4	502344528	NWL-60	45.72	4.72	
5	502347146	NWL-60	45.72	4.72	
6	502347156	NWL-60	45.72	4.72	
7	502347468	NWL-60	45.72	4.72	
8	502347491	NWL-60	45.72	4.72	
9	502347508	NWL-60	45.72	4.72	
10	502347667	NWL-60	45.72	4.72	
11	502347671	NWL-60	45.72	4.72	
12	502347674	NWL-60	45.72	4.72	
13	502347676	NWL-60	45.72	4.72	
14	502347682	NWL-60	45.72	4.72	
15	502347698	NWL-60	45.72	4.72	
16	502347701	NWL-60	45.72	4.72	
17	502347704	NWL-60	45.72	4.72	
18	502347705	NWL-60	45.72	4.72	
19	502347707	NWL-60	45.72	4.72	
20	502347810	NWL-60	45.72	4.72	
21	502347815	NWL-60	45.72	4.72	
22	502347825	NWL-60	45.72	4.72	
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TOTAL PAGE AREA: 4747.565 m^2

QC TECH: Thomas Howald
SUPERVISOR: Chad Messervey
SUBMISSION DATE: 2020/01/05

INVENTORY LOG

PROJECT NUMBER: CT001401
PROJECT TITLE: Victoria Gold Heap Leach Pad Phase 1B
DATE OF INVENTORY: 2020/08/04
PRODUCT TYPE: GCL
MATERIAL MANUFACTURER: Layfield

#	ROLL NUMBER	MATERIAL DIMENSIONS			REMARKS
		THICKNESS	LENGTH (m)	WIDTH (m)	
1	0242-347742	NWL-60	45.72	4.72	
2	0242-347757	NWL-60	45.72	4.72	
3	502318995	NWL-60	45.72	4.72	
4	502344493	NWL-60	45.72	4.72	
5	502344501	NWL-60	45.72	4.72	
6	502344507	NWL-60	45.72	4.72	
7	502344510	NWL-60	45.72	4.72	
8	502344511	NWL-60	45.72	4.72	
9	502344514	NWL-60	45.72	4.72	
10	502344517	NWL-60	45.72	4.72	
11	502344518	NWL-60	45.72	4.72	
12	502344523	NWL-60	45.72	4.72	
13	502344524	NWL-60	45.72	4.72	
14	502344526	NWL-60	45.72	4.72	
15	502344527	NWL-60	45.72	4.72	
16	502344529	NWL-60	45.72	4.72	
17	502344530	NWL-60	45.72	4.72	
18	502344531	NWL-60	45.72	4.72	
19	502344533	NWL-60	45.72	4.72	
20	502344534	NWL-60	45.72	4.72	
21	502344536	NWL-60	45.72	4.72	
22	502344537	NWL-60	45.72	4.72	
23	502347007	NWL-60	45.72	4.72	
24	502347016	NWL-60	45.72	4.72	
25	502347022	NWL-60	45.72	4.72	
26	502347025	NWL-60	45.72	4.72	
27	502347107	NWL-60	45.72	4.72	
28	502347108	NWL-60	45.72	4.72	
29	502347109	NWL-60	45.72	4.72	
30	502347111	NWL-60	45.72	4.72	

TOTAL PAGE AREA: 6473.952 m^2

QC TECH: Thomas Howald
SUPERVISOR: Chad Messervey
SUBMISSION DATE: 2020/01/05

INVENTORY LOG

PROJECT NUMBER: CT001401
PROJECT TITLE: Victoria Gold Heap Leach Pad Phase 1B
DATE OF INVENTORY: 2020/08/04
PRODUCT TYPE: GCL
MATERIAL MANUFACTURER: Layfield

#	ROLL NUMBER	MATERIAL DIMENSIONS			REMARKS
		THICKNESS	LENGTH (m)	WIDTH (m)	
1	502347118	NWL-60	45.72	4.72	
2	502347127	NWL-60	45.72	4.72	
3	502347135	NWL-60	45.72	4.72	
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TOTAL PAGE AREA: 647.3952 m^2

QC TECH: Thomas Howald
SUPERVISOR: Chad Messervey
SUBMISSION DATE: 2020/01/05

INVENTORY LOG

PROJECT NUMBER: CT001401
PROJECT TITLE: Victoria Gold Heap Leach Pad Phase 1B
DATE OF INVENTORY: 2020/08/05
PRODUCT TYPE: GCL
MATERIAL MANUFACTURER: Layfield

#	ROLL NUMBER	MATERIAL DIMENSIONS			REMARKS
		THICKNESS	LENGTH (m)	WIDTH (m)	
1	502343564	NWL-60	45.72	4.72	
2	502343570	NWL-60	45.72	4.72	
3	502343571	NWL-60	45.72	4.72	
4	502343579	NWL-60	45.72	4.72	
5	502343965	NWL-60	45.72	4.72	
6	502344162	NWL-60	45.72	4.72	
7	502344492	NWL-60	45.72	4.72	
8	502344496	NWL-60	45.72	4.72	
9	502344512	NWL-60	45.72	4.72	
10	502344513	NWL-60	45.72	4.72	
11	502344515	NWL-60	45.72	4.72	
12	502344520	NWL-60	45.72	4.72	
13	502344601	NWL-60	45.72	4.72	
14	502344612	NWL-60	45.72	4.72	
15	502344613	NWL-60	45.72	4.72	
16	502344614	NWL-60	45.72	4.72	
17	502346959	NWL-60	45.72	4.72	
18	502347006	NWL-60	45.72	4.72	
19	502347009	NWL-60	45.72	4.72	
20	502347017	NWL-60	45.72	4.72	
21	502347018	NWL-60	45.72	4.72	
22	502347105	NWL-60	45.72	4.72	
23	502347110	NWL-60	45.72	4.72	
24	502347128	NWL-60	45.72	4.72	
25	502347136	NWL-60	45.72	4.72	
26	502347137	NWL-60	45.72	4.72	
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TOTAL PAGE AREA: 5610.758 m^2

QC TECH: Thomas Howald
SUPERVISOR: Chad Messervey
SUBMISSION DATE: 2020/01/05

INVENTORY LOG

PROJECT NUMBER: CT001401
PROJECT TITLE: Victoria Gold Heap Leach Pad Phase 1B
DATE OF INVENTORY: 2020/08/06
PRODUCT TYPE: GCL
MATERIAL MANUFACTURER: Layfield

#	ROLL NUMBER	MATERIAL DIMENSIONS			REMARKS
		THICKNESS	LENGTH (m)	WIDTH (m)	
1	0242-347834	NWL-60	45.72	4.72	
2	502346961	NWL-60	45.72	4.72	
3	502346962	NWL-60	45.72	4.72	
4	502346973	NWL-60	45.72	4.72	
5	502346980	NWL-60	45.72	4.72	
6	502347004	NWL-60	45.72	4.72	
7	502347005	NWL-60	45.72	4.72	
8	502347011	NWL-60	45.72	4.72	
9	502347012	NWL-60	45.72	4.72	
10	502347013	NWL-60	45.72	4.72	
11	502347014	NWL-60	45.72	4.72	
12	502347020	NWL-60	45.72	4.72	
13	502347106	NWL-60	45.72	4.72	
14	502347115	NWL-60	45.72	4.72	
15	502347119	NWL-60	45.72	4.72	
16	502347121	NWL-60	45.72	4.72	
17	502347123	NWL-60	45.72	4.72	
18	502347124	NWL-60	45.72	4.72	
19	502347162	NWL-60	45.72	4.72	
20	502347779	NWL-60	45.72	4.72	
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TOTAL PAGE AREA: 4315.968 m^2

QC TECH: Thomas Howald
SUPERVISOR: Chad Messervey
SUBMISSION DATE: 2020/01/05

INVENTORY LOG

PROJECT NUMBER: CT001401
PROJECT TITLE: Victoria Gold Heap Leach Pad Phase 1B
DATE OF INVENTORY: 2020/08/07
PRODUCT TYPE: GCL
MATERIAL MANUFACTURER: Layfield

#	ROLL NUMBER	MATERIAL DIMENSIONS			REMARKS
		THICKNESS	LENGTH (m)	WIDTH (m)	
1	502343540	NWL-60	45.72	4.72	
2	502343687	NWL-60	45.72	4.72	
3	502346958	NWL-60	45.72	4.72	
4	502346963	NWL-60	45.72	4.72	
5	502346964	NWL-60	45.72	4.72	
6	502346971	NWL-60	45.72	4.72	
7	502346972	NWL-60	45.72	4.72	
8	502346983	NWL-60	45.72	4.72	
9	502346992	NWL-60	45.72	4.72	
10	502346993	NWL-60	45.72	4.72	
11	502346994	NWL-60	45.72	4.72	
12	502346995	NWL-60	45.72	4.72	
13	502347015	NWL-60	45.72	4.72	
14	502347021	NWL-60	45.72	4.72	
15	502347059	NWL-60	45.72	4.72	
16	502347104	NWL-60	45.72	4.72	
17	502347112	NWL-60	45.72	4.72	
18	502347113	NWL-60	45.72	4.72	
19	502347114	NWL-60	45.72	4.72	
20	502347116	NWL-60	45.72	4.72	
21	502347117	NWL-60	45.72	4.72	
22	502347120	NWL-60	45.72	4.72	
23	502347122	NWL-60	45.72	4.72	
24	502347125	NWL-60	45.72	4.72	
25	502347126	NWL-60	45.72	4.72	
26	502347129	NWL-60	45.72	4.72	
27	502347138	NWL-60	45.72	4.72	
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TOTAL PAGE AREA: 5826.557 m^2

QC TECH: Thomas Howald
SUPERVISOR: Chad Messervey
SUBMISSION DATE: 2020/01/05

INVENTORY LOG

PROJECT NUMBER: CT001401
PROJECT TITLE: Victoria Gold Heap Leach Pad Phase 1B
DATE OF INVENTORY: 2020/08/09
PRODUCT TYPE: GCL
MATERIAL MANUFACTURER: Layfield

#	ROLL NUMBER	MATERIAL DIMENSIONS			REMARKS
		THICKNESS	LENGTH (m)	WIDTH (m)	
1	0242-347583	NWL-60	45.72	4.72	
2	502343559	NWL-60	45.72	4.72	
3	502343560	NWL-60	45.72	4.72	
4	502343568	NWL-60	45.72	4.72	
5	502343577	NWL-60	45.72	4.72	
6	502343592	NWL-60	45.72	4.72	
7	502343593	NWL-60	45.72	4.72	
8	502343595	NWL-60	45.72	4.72	
9	502343619	NWL-60	45.72	4.72	
10	502343622	NWL-60	45.72	4.72	
11	502343623	NWL-60	45.72	4.72	
12	502343626	NWL-60	45.72	4.72	
13	502343629	NWL-60	45.72	4.72	
14	502343631	NWL-60	45.72	4.72	
15	502343636	NWL-60	45.72	4.72	
16	502343637	NWL-60	45.72	4.72	
17	502343638	NWL-60	45.72	4.72	
18	502343647	NWL-60	45.72	4.72	
19	502343649	NWL-60	45.72	4.72	
20	502343656	NWL-60	45.72	4.72	
21	502343682	NWL-60	45.72	4.72	
22	502343683	NWL-60	45.72	4.72	
23	502344112	NWL-60	45.72	4.72	
24	502344115	NWL-60	45.72	4.72	
25	502344129	NWL-60	45.72	4.72	
26	502346936	NWL-60	45.72	4.72	
27	502346960	NWL-60	45.72	4.72	
28	502346970	NWL-60	45.72	4.72	
29	502346974	NWL-60	45.72	4.72	
30	502346975	NWL-60	45.72	4.72	

TOTAL PAGE AREA: 6473.952 m^2

QC TECH: Thomas Howald
SUPERVISOR: Chad Messervey
SUBMISSION DATE: 2020/01/05

INVENTORY LOG

PROJECT NUMBER: CT001401
PROJECT TITLE: Victoria Gold Heap Leach Pad Phase 1B
DATE OF INVENTORY: 2020/08/09
PRODUCT TYPE: GCL
MATERIAL MANUFACTURER: Layfield

#	ROLL NUMBER	MATERIAL DIMENSIONS			REMARKS
		THICKNESS	LENGTH (m)	WIDTH (m)	
1	502346976	NWL-60	45.72	4.72	
2	502346977	NWL-60	45.72	4.72	
3	502346978	NWL-60	45.72	4.72	
4	502346979	NWL-60	45.72	4.72	
5	502346981	NWL-60	45.72	4.72	
6	502346991	NWL-60	45.72	4.72	
7	502347008	NWL-60	45.72	4.72	
8	502347019	NWL-60	45.72	4.72	
9	502347024	NWL-60	45.72	4.72	
10	502347055	NWL-60	45.72	4.72	
11	502347060	NWL-60	45.72	4.72	
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TOTAL PAGE AREA: 2373.782 m^2

QC TECH: Thomas Howald
SUPERVISOR: Chad Messervey
SUBMISSION DATE: 2020/01/05

INVENTORY LOG

PROJECT NUMBER: CT001401
PROJECT TITLE: Victoria Gold Heap Leach Pad Phase 1B
DATE OF INVENTORY: 2020/08/11
PRODUCT TYPE: GCL
MATERIAL MANUFACTURER: Layfield

#	ROLL NUMBER	MATERIAL DIMENSIONS			REMARKS
		THICKNESS	LENGTH (m)	WIDTH (m)	
1	502344111	NWL-60	45.72	4.72	
2	502344119	NWL-60	45.72	4.72	
3	502344120	NWL-60	45.72	4.72	
4	502344124	NWL-60	45.72	4.72	
5	502344134	NWL-60	45.72	4.72	
6	502346931	NWL-60	45.72	4.72	
7	502346998	NWL-60	45.72	4.72	
8	502347010	NWL-60	45.72	4.72	
9	502347023	NWL-60	45.72	4.72	
10	502347045	NWL-60	45.72	4.72	
11	502347046	NWL-60	45.72	4.72	
12	502347054	NWL-60	45.72	4.72	
13	502347057	NWL-60	45.72	4.72	
14	502347065	NWL-60	45.72	4.72	
15	502347069	NWL-60	45.72	4.72	
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TOTAL PAGE AREA: 3236.976 m^2

QC TECH: Thomas Howald
SUPERVISOR: Chad Messervey
SUBMISSION DATE: 2020/01/05

INVENTORY LOG

PROJECT NUMBER: CT001401
PROJECT TITLE: Victoria Gold Heap Leach Pad Phase 1B
DATE OF INVENTORY: 2020/08/14
PRODUCT TYPE: GCL
MATERIAL MANUFACTURER: Layfield

#	ROLL NUMBER	MATERIAL DIMENSIONS			REMARKS
		THICKNESS	LENGTH (m)	WIDTH (m)	
1	502343596	NWL-60	45.72	4.72	
2	502343597	NWL-60	45.72	4.72	
3	502343624	NWL-60	45.72	4.72	
4	502343625	NWL-60	45.72	4.72	
5	502343627	NWL-60	45.72	4.72	
6	502343633	NWL-60	45.72	4.72	
7	502343635	NWL-60	45.72	4.72	
8	502343640	NWL-60	45.72	4.72	
9	502344110	NWL-60	45.72	4.72	
10	502346923	NWL-60	45.72	4.72	
11	502346929	NWL-60	45.72	4.72	
12	502346999	NWL-60	45.72	4.72	
13	502347062	NWL-60	45.72	4.72	
14	502347064	NWL-60	45.72	4.72	
15	502347068	NWL-60	45.72	4.72	
16	502347072	NWL-60	45.72	4.72	
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TOTAL PAGE AREA: 3452.774 m^2

QC TECH: Thomas Howald
SUPERVISOR: Chad Messervey
SUBMISSION DATE: 2020/01/05

INVENTORY LOG

PROJECT NUMBER: CT001401
PROJECT TITLE: Victoria Gold Heap Leach Pad Phase 1B
DATE OF INVENTORY: 2020/08/15
PRODUCT TYPE: GCL
MATERIAL MANUFACTURER: Layfield

#	ROLL NUMBER	MATERIAL DIMENSIONS			REMARKS
		THICKNESS	LENGTH (m)	WIDTH (m)	
1	0242-347582	NWL-60	45.72	4.72	
2	0242-347596	NWL-60	45.72	4.72	
3	0242-347602	NWL-60	45.72	4.72	
4	502343609	NWL-60	45.72	4.72	
5	502343628	NWL-60	45.72	4.72	
6	502343634	NWL-60	45.72	4.72	
7	502343642	NWL-60	45.72	4.72	
8	502343643	NWL-60	45.72	4.72	
9	502344114	NWL-60	45.72	4.72	
10	502344116	NWL-60	45.72	4.72	
11	502344118	NWL-60	45.72	4.72	
12	502344121	NWL-60	45.72	4.72	
13	502344122	NWL-60	45.72	4.72	
14	502344130	NWL-60	45.72	4.72	
15	502344131	NWL-60	45.72	4.72	
16	502344135	NWL-60	45.72	4.72	
17	502344136	NWL-60	45.72	4.72	
18	502344597	NWL-60	45.72	4.72	
19	502346924	NWL-60	45.72	4.72	
20	502346926	NWL-60	45.72	4.72	
21	502346932	NWL-60	45.72	4.72	
22	502346933	NWL-60	45.72	4.72	
23	502346934	NWL-60	45.72	4.72	
24	502346984	NWL-60	45.72	4.72	
25	502346985	NWL-60	45.72	4.72	
26	502347047	NWL-60	45.72	4.72	
27	502347049	NWL-60	45.72	4.72	
28	502347051	NWL-60	45.72	4.72	
29	502347056	NWL-60	45.72	4.72	
30	502347063	NWL-60	45.72	4.72	

TOTAL PAGE AREA: 6473.952 m^2

QC TECH: Thomas Howald
SUPERVISOR: Chad Messervey
SUBMISSION DATE: 2020/01/05

INVENTORY LOG

PROJECT NUMBER: CT001401
PROJECT TITLE: Victoria Gold Heap Leach Pad Phase 1B
DATE OF INVENTORY: 2020/08/15
PRODUCT TYPE: GCL
MATERIAL MANUFACTURER: Layfield

#	ROLL NUMBER	MATERIAL DIMENSIONS			REMARKS
		THICKNESS	LENGTH (m)	WIDTH (m)	
1	502347067	NWL-60	45.72	4.72	
2	502347070	NWL-60	45.72	4.72	
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TOTAL PAGE AREA: 431.5968 m^2

QC TECH: Thomas Howald
SUPERVISOR: Chad Messervey
SUBMISSION DATE: 2020/01/05

INVENTORY LOG

PROJECT NUMBER: CT001401
PROJECT TITLE: Victoria Gold Heap Leach Pad Phase 1B
DATE OF INVENTORY: 2020/08/16
PRODUCT TYPE: GCL
MATERIAL MANUFACTURER: Layfield

#	ROLL NUMBER	MATERIAL DIMENSIONS			REMARKS
		THICKNESS	LENGTH (m)	WIDTH (m)	
1	502343605	NWL-60	45.72	4.72	
2	502343606	NWL-60	45.72	4.72	
3	502343621	NWL-60	45.72	4.72	
4	502343644	NWL-60	45.72	4.72	
5	502344017	NWL-60	45.72	4.72	
6	502344028	NWL-60	45.72	4.72	
7	502344602	NWL-60	45.72	4.72	
8	502344604	NWL-60	45.72	4.72	
9	502344611	NWL-60	45.72	4.72	
10	502346990	NWL-60	45.72	4.72	
11	502347048	NWL-60	45.72	4.72	
12	502347053	NWL-60	45.72	4.72	
13	502347061	NWL-60	45.72	4.72	
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TOTAL PAGE AREA: 2805.379 m^2

QC TECH: Thomas Howald
SUPERVISOR: Chad Messervey
SUBMISSION DATE: 2020/01/05

INVENTORY LOG

PROJECT NUMBER: CT001401
PROJECT TITLE: Victoria Gold Heap Leach Pad Phase 1B
DATE OF INVENTORY: 2020/08/17
PRODUCT TYPE: GCL
MATERIAL MANUFACTURER: Layfield

#	ROLL NUMBER	MATERIAL DIMENSIONS			REMARKS
		THICKNESS	LENGTH (m)	WIDTH (m)	
1	502343993	NWL-60	45.72	4.72	
2	502343994	NWL-60	45.72	4.72	
3	502344020	NWL-60	45.72	4.72	
4	502344586	NWL-60	45.72	4.72	
5	502344587	NWL-60	45.72	4.72	
6	502344594	NWL-60	45.72	4.72	
7	502344605	NWL-60	45.72	4.72	
8	502344653	NWL-60	45.72	4.72	
9	502344654	NWL-60	45.72	4.72	
10	502344675	NWL-60	45.72	4.72	
11	502346982	NWL-60	45.72	4.72	
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TOTAL PAGE AREA: 2373.782 m^2

QC TECH: Thomas Howald
SUPERVISOR: Chad Messervey
SUBMISSION DATE: 2020/01/05

INVENTORY LOG

PROJECT NUMBER: CT001401
PROJECT TITLE: Victoria Gold Heap Leach Pad Phase 1B
DATE OF INVENTORY: 2020/08/19
PRODUCT TYPE: GCL
MATERIAL MANUFACTURER: Layfield

#	ROLL NUMBER	MATERIAL DIMENSIONS			REMARKS
		THICKNESS	LENGTH (m)	WIDTH (m)	
1	502343995	NWL-60	45.72	4.72	
2	502343996	NWL-60	45.72	4.72	
3	502343998	NWL-60	45.72	4.72	
4	502344015	NWL-60	45.72	4.72	
5	502344026	NWL-60	45.72	4.72	
6	502344031	NWL-60	45.72	4.72	
7	502344540	NWL-60	45.72	4.72	
8	502344541	NWL-60	45.72	4.72	
9	502344542	NWL-60	45.72	4.72	
10	502344543	NWL-60	45.72	4.72	
11	502344568	NWL-60	45.72	4.72	
12	502344569	NWL-60	45.72	4.72	
13	502344570	NWL-60	45.72	4.72	
14	502344571	NWL-60	45.72	4.72	
15	502344574	NWL-60	45.72	4.72	
16	502344575	NWL-60	45.72	4.72	
17	502344577	NWL-60	45.72	4.72	
18	502344578	NWL-60	45.72	4.72	
19	502344579	NWL-60	45.72	4.72	
20	502344580	NWL-60	45.72	4.72	
21	502344584	NWL-60	45.72	4.72	
22	502344589	NWL-60	45.72	4.72	
23	502344590	NWL-60	45.72	4.72	
24	502344591	NWL-60	45.72	4.72	
25	502344592	NWL-60	45.72	4.72	
26	502344593	NWL-60	45.72	4.72	
27	502344595	NWL-60	45.72	4.72	
28	502344603	NWL-60	45.72	4.72	
29	502344635	NWL-60	45.72	4.72	
30	502344637	NWL-60	45.72	4.72	

TOTAL PAGE AREA: 6473.952 m^2

QC TECH: Thomas Howald
SUPERVISOR: Chad Messervey
SUBMISSION DATE: 2020/01/05

INVENTORY LOG

PROJECT NUMBER: CT001401
PROJECT TITLE: Victoria Gold Heap Leach Pad Phase 1B
DATE OF INVENTORY: 2020/08/19
PRODUCT TYPE: GCL
MATERIAL MANUFACTURER: Layfield

#	ROLL NUMBER	MATERIAL DIMENSIONS			REMARKS
		THICKNESS	LENGTH (m)	WIDTH (m)	
1	502344638	NWL-60	45.72	4.72	
2	502344639	NWL-60	45.72	4.72	
3	502344640	NWL-60	45.72	4.72	
4	502344649	NWL-60	45.72	4.72	
5	502344655	NWL-60	45.72	4.72	
6	502344656	NWL-60	45.72	4.72	
7	502344665	NWL-60	45.72	4.72	
8	502344668	NWL-60	45.72	4.72	
9	502344671	NWL-60	45.72	4.72	
10	502344672	NWL-60	45.72	4.72	
11	502344673	NWL-60	45.72	4.72	
12	502344674	NWL-60	45.72	4.72	
13	502344676	NWL-60	45.72	4.72	
14	502344677	NWL-60	45.72	4.72	
15	502344683	NWL-60	45.72	4.72	
16	502344687	NWL-60	45.72	4.72	
17	502344688	NWL-60	45.72	4.72	
18	502344690	NWL-60	45.72	4.72	
19	502344693	NWL-60	45.72	4.72	
20	502344699	NWL-60	45.72	4.72	
21	502344712	NWL-60	45.72	4.72	
22	502346925	NWL-60	45.72	4.72	
23	502346927	NWL-60	45.72	4.72	
24	502346928	NWL-60	45.72	4.72	
25	502346935	NWL-60	45.72	4.72	
26	502347050	NWL-60	45.72	4.72	
27	502347052	NWL-60	45.72	4.72	
28	502347058	NWL-60	45.72	4.72	
29	502347066	NWL-60	45.72	4.72	
30	502347071	NWL-60	45.72	4.72	

TOTAL PAGE AREA: 6473.952 m^2

QC TECH: Thomas Howald
SUPERVISOR: Chad Messervey
SUBMISSION DATE: 2020/01/05

INVENTORY LOG

PROJECT NUMBER: CT001401
PROJECT TITLE: Victoria Gold Heap Leach Pad Phase 1B
DATE OF INVENTORY: 2020/08/20
PRODUCT TYPE: GCL
MATERIAL MANUFACTURER: Layfield

#	ROLL NUMBER	MATERIAL DIMENSIONS			REMARKS
		THICKNESS	LENGTH (m)	WIDTH (m)	
1	502343888	NWL-60	45.72	4.72	
2	502343891	NWL-60	45.72	4.72	
3	502344113	NWL-60	45.72	4.72	
4	502344117	NWL-60	45.72	4.72	
5	502344125	NWL-60	45.72	4.72	
6	502344126	NWL-60	45.72	4.72	
7	502344573	NWL-60	45.72	4.72	
8	502344583	NWL-60	45.72	4.72	
9	502344696	NWL-60	45.72	4.72	
10	502344700	NWL-60	45.72	4.72	
11	502344710	NWL-60	45.72	4.72	
12	502347084	NWL-60	45.72	4.72	
13	502347085	NWL-60	45.72	4.72	
14	502347093	NWL-60	45.72	4.72	
15	502347094	NWL-60	45.72	4.72	
16	502347469	NWL-60	45.72	4.72	
17	502347471	NWL-60	45.72	4.72	
18	502347472	NWL-60	45.72	4.72	
19	502347473	NWL-60	45.72	4.72	
20	502347475	NWL-60	45.72	4.72	
21	502347478	NWL-60	45.72	4.72	
22	502347479	NWL-60	45.72	4.72	
23	502347480	NWL-60	45.72	4.72	
24	502347481	NWL-60	45.72	4.72	
25	502347482	NWL-60	45.72	4.72	
26	502347484	NWL-60	45.72	4.72	
27	502347485	NWL-60	45.72	4.72	
28	502347486	NWL-60	45.72	4.72	
29	502347487	NWL-60	45.72	4.72	
30	502347488	NWL-60	45.72	4.72	

TOTAL PAGE AREA: 6473.952 m^2

QC TECH: Thomas Howald
SUPERVISOR: Chad Messervey
SUBMISSION DATE: 2020/01/05

INVENTORY LOG

PROJECT NUMBER: CT001401
PROJECT TITLE: Victoria Gold Heap Leach Pad Phase 1B
DATE OF INVENTORY: 2020/08/20
PRODUCT TYPE: GCL
MATERIAL MANUFACTURER: Layfield

#	ROLL NUMBER	MATERIAL DIMENSIONS			REMARKS
		THICKNESS	LENGTH (m)	WIDTH (m)	
1	502347490	NWL-60	45.72	4.72	
2	502347492	NWL-60	45.72	4.72	
3	502347499	NWL-60	45.72	4.72	
4	502347500	NWL-60	45.72	4.72	
5	502347509	NWL-60	45.72	4.72	
6	502347510	NWL-60	45.72	4.72	
7	502347597	NWL-60	45.72	4.72	
8	502347681	NWL-60	45.72	4.72	
9	502347683	NWL-60	45.72	4.72	
10	502347684	NWL-60	45.72	4.72	
11	502347685	NWL-60	45.72	4.72	
12	502347687	NWL-60	45.72	4.72	
13	502347690	NWL-60	45.72	4.72	
14	502347692	NWL-60	45.72	4.72	
15	502347693	NWL-60	45.72	4.72	
16	502347694	NWL-60	45.72	4.72	
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TOTAL PAGE AREA: 3452.774 m^2

QC TECH: Thomas Howald
SUPERVISOR: Chad Messervey
SUBMISSION DATE: 2020/01/05

INVENTORY LOG

PROJECT NUMBER: CT001401
PROJECT TITLE: Victoria Gold Heap Leach Pad Phase 1B
DATE OF INVENTORY: 2020/08/21
PRODUCT TYPE: GCL
MATERIAL MANUFACTURER: Layfield

#	ROLL NUMBER	MATERIAL DIMENSIONS			REMARKS
		THICKNESS	LENGTH (m)	WIDTH (m)	
1	502343902	NWL-60	45.72	4.72	
2	502343907	NWL-60	45.72	4.72	
3	502343909	NWL-60	45.72	4.72	
4	502344012	NWL-60	45.72	4.72	
5	502344013	NWL-60	45.72	4.72	
6	502344014	NWL-60	45.72	4.72	
7	502344035	NWL-60	45.72	4.72	
8	502344036	NWL-60	45.72	4.72	
9	502344037	NWL-60	45.72	4.72	
10	502344038	NWL-60	45.72	4.72	
11	502344039	NWL-60	45.72	4.72	
12	502344040	NWL-60	45.72	4.72	
13	502344059	NWL-60	45.72	4.72	
14	502344066	NWL-60	45.72	4.72	
15	502344069	NWL-60	45.72	4.72	
16	502344070	NWL-60	45.72	4.72	
17	502344071	NWL-60	45.72	4.72	
18	502344073	NWL-60	45.72	4.72	
19	502344152	NWL-60	45.72	4.72	
20	502344172	NWL-60	45.72	4.72	
21	502344468	NWL-60	45.72	4.72	
22	502344617	NWL-60	45.72	4.72	
23	502344618	NWL-60	45.72	4.72	
24	502344695	NWL-60	45.72	4.72	
25	502344711	NWL-60	45.72	4.72	
26	502344713	NWL-60	45.72	4.72	
27	502344719	NWL-60	45.72	4.72	
28	502347467	NWL-60	45.72	4.72	
29	502347470	NWL-60	45.72	4.72	
30	502347474	NWL-60	45.72	4.72	

TOTAL PAGE AREA: 6473.952 m^2

QC TECH: Thomas Howald
SUPERVISOR: Chad Messervey
SUBMISSION DATE: 2020/01/05

INVENTORY LOG

PROJECT NUMBER: CT001401
PROJECT TITLE: Victoria Gold Heap Leach Pad Phase 1B
DATE OF INVENTORY: 2020/08/21
PRODUCT TYPE: GCL
MATERIAL MANUFACTURER: Layfield

#	ROLL NUMBER	MATERIAL DIMENSIONS			REMARKS
		THICKNESS	LENGTH (m)	WIDTH (m)	
1	502347476	NWL-60	45.72	4.72	
2	502347477	NWL-60	45.72	4.72	
3	502347483	NWL-60	45.72	4.72	
4	502347503	NWL-60	45.72	4.72	
5	502347512	NWL-60	45.72	4.72	
6	502347686	NWL-60	45.72	4.72	
7	502347695	NWL-60	45.72	4.72	
8	502347696	NWL-60	45.72	4.72	
9	502347702	NWL-60	45.72	4.72	
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TOTAL PAGE AREA: 1942.186 m^2

QC TECH: Thomas Howald
SUPERVISOR: Chad Messervey
SUBMISSION DATE: 2020/01/05

INVENTORY LOG

PROJECT NUMBER: CT001401
PROJECT TITLE: Victoria Gold Heap Leach Pad Phase 1B
DATE OF INVENTORY: 2020/08/22
PRODUCT TYPE: GCL
MATERIAL MANUFACTURER: Layfield

#	ROLL NUMBER	MATERIAL DIMENSIONS			REMARKS
		THICKNESS	LENGTH (m)	WIDTH (m)	
1	502343885	NWL-60	45.72	4.72	
2	502343892	NWL-60	45.72	4.72	
3	502343893	NWL-60	45.72	4.72	
4	502343894	NWL-60	45.72	4.72	
5	502343899	NWL-60	45.72	4.72	
6	502343900	NWL-60	45.72	4.72	
7	502343906	NWL-60	45.72	4.72	
8	502343908	NWL-60	45.72	4.72	
9	502343910	NWL-60	45.72	4.72	
10	502343929	NWL-60	45.72	4.72	
11	502343934	NWL-60	45.72	4.72	
12	502343950	NWL-60	45.72	4.72	
13	502343951	NWL-60	45.72	4.72	
14	502344061	NWL-60	45.72	4.72	
15	502344063	NWL-60	45.72	4.72	
16	502344065	NWL-60	45.72	4.72	
17	502344153	NWL-60	45.72	4.72	
18	502344165	NWL-60	45.72	4.72	
19	502344166	NWL-60	45.72	4.72	
20	502344167	NWL-60	45.72	4.72	
21	502344168	NWL-60	45.72	4.72	
22	502344169	NWL-60	45.72	4.72	
23	502344170	NWL-60	45.72	4.72	
24	502344171	NWL-60	45.72	4.72	
25	502344174	NWL-60	45.72	4.72	
26	502344175	NWL-60	45.72	4.72	
27	502344622	NWL-60	45.72	4.72	
28	502344623	NWL-60	45.72	4.72	
29	502344624	NWL-60	45.72	4.72	
30	502347497	NWL-60	45.72	4.72	

TOTAL PAGE AREA: 6473.952 m^2

QC TECH: Thomas Howald
SUPERVISOR: Chad Messervey
SUBMISSION DATE: 2020/01/05

INVENTORY LOG

PROJECT NUMBER: CT001401
PROJECT TITLE: Victoria Gold Heap Leach Pad Phase 1B
DATE OF INVENTORY: 2020/08/22
PRODUCT TYPE: GCL
MATERIAL MANUFACTURER: Layfield

#	ROLL NUMBER	MATERIAL DIMENSIONS			REMARKS
		THICKNESS	LENGTH (m)	WIDTH (m)	
1	502347502	NWL-60	45.72	4.72	
2	502347569	NWL-60	45.72	4.72	
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TOTAL PAGE AREA: 431.5968 m^2

QC TECH: Thomas Howald
SUPERVISOR: Chad Messervey
SUBMISSION DATE: 2020/01/05

INVENTORY LOG

PROJECT NUMBER: CT001401
PROJECT TITLE: Victoria Gold Heap Leach Pad Phase 1B
DATE OF INVENTORY: 2020/08/23
PRODUCT TYPE: GCL
MATERIAL MANUFACTURER: Layfield

#	ROLL NUMBER	MATERIAL DIMENSIONS			REMARKS
		THICKNESS	LENGTH (m)	WIDTH (m)	
1	0242-347565	NWL-60	45.72	4.72	
2	0242-347571	NWL-60	45.72	4.72	
3	0242-347576	NWL-60	45.72	4.72	
4	0242-347620	NWL-60	45.72	4.72	
5	502343651	NWL-60	45.72	4.72	
6	502343652	NWL-60	45.72	4.72	
7	502343887	NWL-60	45.72	4.72	
8	502343928	NWL-60	45.72	4.72	
9	502343933	NWL-60	45.72	4.72	
10	502343939	NWL-60	45.72	4.72	
11	502343960	NWL-60	45.72	4.72	
12	502344047	NWL-60	45.72	4.72	
13	502344058	NWL-60	45.72	4.72	
14	502344060	NWL-60	45.72	4.72	
15	502344062	NWL-60	45.72	4.72	
16	502344068	NWL-60	45.72	4.72	
17	502344075	NWL-60	45.72	4.72	
18	502344076	NWL-60	45.72	4.72	
19	502344084	NWL-60	45.72	4.72	
20	502344085	NWL-60	45.72	4.72	
21	502344090	NWL-60	45.72	4.72	
22	502344097	NWL-60	45.72	4.72	
23	502344098	NWL-60	45.72	4.72	
24	502344103	NWL-60	45.72	4.72	
25	502344619	NWL-60	45.72	4.72	
26	502344620	NWL-60	45.72	4.72	
27	502344628	NWL-60	45.72	4.72	
28	502344631	NWL-60	45.72	4.72	
29	502344632	NWL-60	45.72	4.72	
30	502344634	NWL-60	45.72	4.72	

TOTAL PAGE AREA: 6473.952 m^2

QC TECH: Thomas Howald
SUPERVISOR: Chad Messervey
SUBMISSION DATE: 2020/01/05

INVENTORY LOG

PROJECT NUMBER: CT001401
PROJECT TITLE: Victoria Gold Heap Leach Pad Phase 1B
DATE OF INVENTORY: 2020/08/23
PRODUCT TYPE: GCL
MATERIAL MANUFACTURER: Layfield

#	ROLL NUMBER	MATERIAL DIMENSIONS			REMARKS
		THICKNESS	LENGTH (m)	WIDTH (m)	
1	502347493	NWL-60	45.72	4.72	
2	502347504	NWL-60	45.72	4.72	
3	502347507	NWL-60	45.72	4.72	
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TOTAL PAGE AREA: 647.3952 m^2

QC TECH: Thomas Howald
SUPERVISOR: Chad Messervey
SUBMISSION DATE: 2020/01/05

INVENTORY LOG

PROJECT NUMBER: CT001401
PROJECT TITLE: Victoria Gold Heap Leach Pad Phase 1B
DATE OF INVENTORY: 2020/08/24
PRODUCT TYPE: GCL
MATERIAL MANUFACTURER: Layfield

#	ROLL NUMBER	MATERIAL DIMENSIONS			REMARKS
		THICKNESS	LENGTH (m)	WIDTH (m)	
1	502343970	NWL-60	45.72	4.72	
2	502344042	NWL-60	45.72	4.72	
3	502344043	NWL-60	45.72	4.72	
4	502344044	NWL-60	45.72	4.72	
5	502344045	NWL-60	45.72	4.72	
6	502344053	NWL-60	45.72	4.72	
7	502344072	NWL-60	45.72	4.72	
8	502344078	NWL-60	45.72	4.72	
9	502344079	NWL-60	45.72	4.72	
10	502344080	NWL-60	45.72	4.72	
11	502344088	NWL-60	45.72	4.72	
12	502344089	NWL-60	45.72	4.72	
13	502344099	NWL-60	45.72	4.72	
14	502344101	NWL-60	45.72	4.72	
15	502344102	NWL-60	45.72	4.72	
16	502344104	NWL-60	45.72	4.72	
17	502344621	NWL-60	45.72	4.72	
18	502344629	NWL-60	45.72	4.72	
19	502344636	NWL-60	45.72	4.72	
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TOTAL PAGE AREA: 4100.17 m^2

QC TECH: Thomas Howald
SUPERVISOR: Chad Messervey
SUBMISSION DATE: 2020/01/05

INVENTORY LOG

PROJECT NUMBER: CT001401
PROJECT TITLE: Victoria Gold Heap Leach Pad Phase 1B
DATE OF INVENTORY: 2020/08/28
PRODUCT TYPE: GCL
MATERIAL MANUFACTURER: Layfield

#	ROLL NUMBER	MATERIAL DIMENSIONS			REMARKS
		THICKNESS	LENGTH (m)	WIDTH (m)	
1	0242-347552	NWL-60	45.72	4.72	
2	0242-347553	NWL-60	45.72	4.72	
3	0242-347563	NWL-60	45.72	4.72	
4	0242-347570	NWL-60	45.72	4.72	
5	0242-347572	NWL-60	45.72	4.72	
6	0242-347578	NWL-60	45.72	4.72	
7	0242-347579	NWL-60	45.72	4.72	
8	0242-347621	NWL-60	45.72	4.72	
9	0242-347622	NWL-60	45.72	4.72	
10	0242-347623	NWL-60	45.72	4.72	
11	0242-347624	NWL-60	45.72	4.72	
12	0242-347633	NWL-60	45.72	4.72	
13	0242-347636	NWL-60	45.72	4.72	
14	0242-347640	NWL-60	45.72	4.72	
15	0242-347836	NWL-60	45.72	4.72	
16	0242-347837	NWL-60	45.72	4.72	
17	0242-347882	NWL-60	45.72	4.72	
18	502343889	NWL-60	45.72	4.72	
19	502343890	NWL-60	45.72	4.72	
20	502343938	NWL-60	45.72	4.72	
21	502344074	NWL-60	45.72	4.72	
22	502344077	NWL-60	45.72	4.72	
23	502344082	NWL-60	45.72	4.72	
24	502344083	NWL-60	45.72	4.72	
25	502344087	NWL-60	45.72	4.72	
26	502344100	NWL-60	45.72	4.72	
27	502344128	NWL-60	45.72	4.72	
28	502344145	NWL-60	45.72	4.72	
29	502344625	NWL-60	45.72	4.72	
30	502344630	NWL-60	45.72	4.72	

TOTAL PAGE AREA: 6473.952 m^2

QC TECH: Thomas Howald
SUPERVISOR: Chad Messervey
SUBMISSION DATE: 2020/01/05

INVENTORY LOG

PROJECT NUMBER: CT001401
PROJECT TITLE: Victoria Gold Heap Leach Pad Phase 1B
DATE OF INVENTORY: 2020/08/28
PRODUCT TYPE: GCL
MATERIAL MANUFACTURER: Layfield

#	ROLL NUMBER	MATERIAL DIMENSIONS			REMARKS
		THICKNESS	LENGTH (m)	WIDTH (m)	
1	502347495	NWL-60	45.72	4.72	
2	502347501	NWL-60	45.72	4.72	
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TOTAL PAGE AREA: 431.5968 m^2

QC TECH: Thomas Howald
SUPERVISOR: Chad Messervey
SUBMISSION DATE: 2020/01/05

INVENTORY LOG

PROJECT NUMBER: CT001401
PROJECT TITLE: Victoria Gold Heap Leach Pad Phase 1B
DATE OF INVENTORY: 2020/08/29
PRODUCT TYPE: GCL
MATERIAL MANUFACTURER: Layfield

#	ROLL NUMBER	MATERIAL DIMENSIONS			REMARKS
		THICKNESS	LENGTH (m)	WIDTH (m)	
1	0242-347574	NWL-60	45.72	4.72	
2	0242-347593	NWL-60	45.72	4.72	
3	502344048	NWL-60	45.72	4.72	
4	502344049	NWL-60	45.72	4.72	
5	502344051	NWL-60	45.72	4.72	
6	502344056	NWL-60	45.72	4.72	
7	502344081	NWL-60	45.72	4.72	
8	502344086	NWL-60	45.72	4.72	
9	502344096	NWL-60	45.72	4.72	
10	502344132	NWL-60	45.72	4.72	
11	502344137	NWL-60	45.72	4.72	
12	502344138	NWL-60	45.72	4.72	
13	502344140	NWL-60	45.72	4.72	
14	502344141	NWL-60	45.72	4.72	
15	502344143	NWL-60	45.72	4.72	
16	502344144	NWL-60	45.72	4.72	
17	502344146	NWL-60	45.72	4.72	
18	502344147	NWL-60	45.72	4.72	
19	502344148	NWL-60	45.72	4.72	
20	502344149	NWL-60	45.72	4.72	
21	502344150	NWL-60	45.72	4.72	
22	502344155	NWL-60	45.72	4.72	
23	502344164	NWL-60	45.72	4.72	
24	502344721	NWL-60	45.72	4.72	
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TOTAL PAGE AREA: 5179.162 m^2

QC TECH: Thomas Howald
SUPERVISOR: Chad Messervey
SUBMISSION DATE: 2020/01/05

INVENTORY LOG

PROJECT NUMBER: CT001401
PROJECT TITLE: Victoria Gold Heap Leach Pad Phase 1B
DATE OF INVENTORY: 2020/08/30
PRODUCT TYPE: GCL
MATERIAL MANUFACTURER: Layfield

#	ROLL NUMBER	MATERIAL DIMENSIONS			REMARKS
		THICKNESS	LENGTH (m)	WIDTH (m)	
1	0242-347548	NWL-60	45.72	4.72	
2	0242-347549	NWL-60	45.72	4.72	
3	0242-347554	NWL-60	45.72	4.72	
4	0242-347575	NWL-60	45.72	4.72	
5	0242-347577	NWL-60	45.72	4.72	
6	0242-347584	NWL-60	45.72	4.72	
7	0242-347588	NWL-60	45.72	4.72	
8	0242-347589	NWL-60	45.72	4.72	
9	0242-347590	NWL-60	45.72	4.72	
10	0242-347631	NWL-60	45.72	4.72	
11	0242-347632	NWL-60	45.72	4.72	
12	502343962	NWL-60	45.72	4.72	
13	502344000	NWL-60	45.72	4.72	
14	502344001	NWL-60	45.72	4.72	
15	502344002	NWL-60	45.72	4.72	
16	502344006	NWL-60	45.72	4.72	
17	502344007	NWL-60	45.72	4.72	
18	502344018	NWL-60	45.72	4.72	
19	502344046	NWL-60	45.72	4.72	
20	502344050	NWL-60	45.72	4.72	
21	502344055	NWL-60	45.72	4.72	
22	502344057	NWL-60	45.72	4.72	
23	502344064	NWL-60	45.72	4.72	
24	502344067	NWL-60	45.72	4.72	
25	502344105	NWL-60	45.72	4.72	
26	502344626	NWL-60	45.72	4.72	
27	502344627	NWL-60	45.72	4.72	
28	502344633	NWL-60	45.72	4.72	
29	502344698	NWL-60	45.72	4.72	
30	502347498	NWL-60	45.72	4.72	

TOTAL PAGE AREA: 6473.952 m^2

QC TECH: Thomas Howald
SUPERVISOR: Chad Messervey
SUBMISSION DATE: 2020/01/05

INVENTORY LOG

PROJECT NUMBER: CT001401
PROJECT TITLE: Victoria Gold Heap Leach Pad Phase 1B
DATE OF INVENTORY: 2020/09/06
PRODUCT TYPE: GCL
MATERIAL MANUFACTURER: Layfield

#	ROLL NUMBER	MATERIAL DIMENSIONS			REMARKS
		THICKNESS	LENGTH (m)	WIDTH (m)	
1	0242-347555	NWL-60	45.72	4.72	
2	0242-347564	NWL-60	45.72	4.72	
3	0242-347566	NWL-60	45.72	4.72	
4	0242-347567	NWL-60	45.72	4.72	
5	0242-347568	NWL-60	45.72	4.72	
6	0242-347573	NWL-60	45.72	4.72	
7	0242-347580	NWL-60	45.72	4.72	
8	0242-347625	NWL-60	45.72	4.72	
9	0242-347662	NWL-60	45.72	4.72	
10	0242-347663	NWL-60	45.72	4.72	
11	0242-347664	NWL-60	45.72	4.72	
12	0242-347665	NWL-60	45.72	4.72	
13	0242-347708	NWL-60	45.72	4.72	
14	0242-347709	NWL-60	45.72	4.72	
15	0242-347710	NWL-60	45.72	4.72	
16	0242-347711	NWL-60	45.72	4.72	
17	0242-347712	NWL-60	45.72	4.72	
18	0242-347714	NWL-60	45.72	4.72	
19	0242-347716	NWL-60	45.72	4.72	
20	0242-347717	NWL-60	45.72	4.72	
21	0242-347718	NWL-60	45.72	4.72	
22	0242-347720	NWL-60	45.72	4.72	
23	0242-347721	NWL-60	45.72	4.72	
24	502343574	NWL-60	45.72	4.72	
25	502343575	NWL-60	45.72	4.72	
26	502343581	NWL-60	45.72	4.72	
27	502347719	NWL-60	45.72	4.72	
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TOTAL PAGE AREA: 5826.557 m^2

QC TECH: Thomas Howald
SUPERVISOR: Chad Messervey
SUBMISSION DATE: 2020/01/05

INVENTORY LOG

PROJECT NUMBER: CT001401
PROJECT TITLE: Victoria Gold Heap Leach Pad Phase 1B
DATE OF INVENTORY: 2020/09/07
PRODUCT TYPE: GCL
MATERIAL MANUFACTURER: Layfield

#	ROLL NUMBER	MATERIAL DIMENSIONS			REMARKS
		THICKNESS	LENGTH (m)	WIDTH (m)	
1	0242-347551	NWL-60	45.72	4.72	
2	0242-347713	NWL-60	45.72	4.72	
3	502343912	NWL-60	45.72	4.72	
4	502343914	NWL-60	45.72	4.72	
5	502343915	NWL-60	45.72	4.72	
6	502343916	NWL-60	45.72	4.72	
7	502343917	NWL-60	45.72	4.72	
8	502343922	NWL-60	45.72	4.72	
9	502343923	NWL-60	45.72	4.72	
10	502343944	NWL-60	45.72	4.72	
11	502347891	NWL-60	45.72	4.72	
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TOTAL PAGE AREA: 2373.782 m^2

QC TECH: Thomas Howald
SUPERVISOR: Chad Messervey
SUBMISSION DATE: 2020/01/05

INVENTORY LOG

PROJECT NUMBER: CT001401
PROJECT TITLE: Victoria Gold Heap Leach Pad Phase 1B
DATE OF INVENTORY: 2020/09/08
PRODUCT TYPE: GCL
MATERIAL MANUFACTURER: Layfield

#	ROLL NUMBER	MATERIAL DIMENSIONS			REMARKS
		THICKNESS	LENGTH (m)	WIDTH (m)	
1	502343542	NWL-60	45.72	4.72	
2	502343547	NWL-60	45.72	4.72	
3	502343549	NWL-60	45.72	4.72	
4	502343551	NWL-60	45.72	4.72	
5	502343556	NWL-60	45.72	4.72	
6	502343557	NWL-60	45.72	4.72	
7	502343558	NWL-60	45.72	4.72	
8	502343565	NWL-60	45.72	4.72	
9	502343566	NWL-60	45.72	4.72	
10	502343567	NWL-60	45.72	4.72	
11	502343573	NWL-60	45.72	4.72	
12	502343641	NWL-60	45.72	4.72	
13	502343654	NWL-60	45.72	4.72	
14	502343913	NWL-60	45.72	4.72	
15	502343918	NWL-60	45.72	4.72	
16	502343921	NWL-60	45.72	4.72	
17	502343930	NWL-60	45.72	4.72	
18	502343943	NWL-60	45.72	4.72	
19	502343974	NWL-60	45.72	4.72	
20	502343981	NWL-60	45.72	4.72	
21	502343982	NWL-60	45.72	4.72	
22	502343984	NWL-60	45.72	4.72	
23	502343986	NWL-60	45.72	4.72	
24	502343987	NWL-60	45.72	4.72	
25	502343991	NWL-60	45.72	4.72	
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TOTAL PAGE AREA: 5394.96 m^2

QC TECH: Thomas Howald
SUPERVISOR: Chad Messervey
SUBMISSION DATE: 2020/01/05

INVENTORY LOG

PROJECT NUMBER: CT001401
PROJECT TITLE: Victoria Gold Heap Leach Pad Phase 1B
DATE OF INVENTORY: 2020/09/09
PRODUCT TYPE: GCL
MATERIAL MANUFACTURER: Layfield

#	ROLL NUMBER	MATERIAL DIMENSIONS			REMARKS
		THICKNESS	LENGTH (m)	WIDTH (m)	
1	502343541	NWL-60	45.72	4.72	
2	502343544	NWL-60	45.72	4.72	
3	502343548	NWL-60	45.72	4.72	
4	502343550	NWL-60	45.72	4.72	
5	502343552	NWL-60	45.72	4.72	
6	502343553	NWL-60	45.72	4.72	
7	502343554	NWL-60	45.72	4.72	
8	502343555	NWL-60	45.72	4.72	
9	502343562	NWL-60	45.72	4.72	
10	502343563	NWL-60	45.72	4.72	
11	502343569	NWL-60	45.72	4.72	
12	502343572	NWL-60	45.72	4.72	
13	502343576	NWL-60	45.72	4.72	
14	502343580	NWL-60	45.72	4.72	
15	502343639	NWL-60	45.72	4.72	
16	502343653	NWL-60	45.72	4.72	
17	502343655	NWL-60	45.72	4.72	
18	502343911	NWL-60	45.72	4.72	
19	502343919	NWL-60	45.72	4.72	
20	502343920	NWL-60	45.72	4.72	
21	502343931	NWL-60	45.72	4.72	
22	502343932	NWL-60	45.72	4.72	
23	502343952	NWL-60	45.72	4.72	
24	502343973	NWL-60	45.72	4.72	
25	502343975	NWL-60	45.72	4.72	
26	502343976	NWL-60	45.72	4.72	
27	502343977	NWL-60	45.72	4.72	
28	502343978	NWL-60	45.72	4.72	
29	502343979	NWL-60	45.72	4.72	
30	502343983	NWL-60	45.72	4.72	

TOTAL PAGE AREA: 6473.952 m^2

QC TECH: Thomas Howald
SUPERVISOR: Chad Messervey
SUBMISSION DATE: 2020/01/05

INVENTORY LOG

PROJECT NUMBER: CT001401
PROJECT TITLE: Victoria Gold Heap Leach Pad Phase 1B
DATE OF INVENTORY: 2020/09/09
PRODUCT TYPE: GCL
MATERIAL MANUFACTURER: Layfield

#	ROLL NUMBER	MATERIAL DIMENSIONS			REMARKS
		THICKNESS	LENGTH (m)	WIDTH (m)	
1	502343985	NWL-60	45.72	4.72	
2	502343988	NWL-60	45.72	4.72	
3	502343989	NWL-60	45.72	4.72	
4	502343990	NWL-60	45.72	4.72	
5	502343992	NWL-60	45.72	4.72	
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TOTAL PAGE AREA: 1078.992 m^2

QC TECH: Thomas Howald
SUPERVISOR: Chad Messervey
SUBMISSION DATE: 2020/01/05

INVENTORY LOG

PROJECT NUMBER: CT001401
PROJECT TITLE: Victoria Gold Heap Leach Pad Phase 1B
DATE OF INVENTORY: 2020/09/10
PRODUCT TYPE: GCL
MATERIAL MANUFACTURER: Layfield

#	ROLL NUMBER	MATERIAL DIMENSIONS			REMARKS
		THICKNESS	LENGTH (m)	WIDTH (m)	
1	0242-347550	NWL-60	45.72	4.72	
2	0242-347715	NWL-60	45.72	4.72	
3	0242-347883	NWL-60	45.72	4.72	
4	502343632	NWL-60	45.72	4.72	
5	502343650	NWL-60	45.72	4.72	
6	502343658	NWL-60	45.72	4.72	
7	502343659	NWL-60	45.72	4.72	
8	502343667	NWL-60	45.72	4.72	
9	502343668	NWL-60	45.72	4.72	
10	502343955	NWL-60	45.72	4.72	
11	502343959	NWL-60	45.72	4.72	
12	502343967	NWL-60	45.72	4.72	
13	502343971	NWL-60	45.72	4.72	
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TOTAL PAGE AREA: 2805.379 m^2

QC TECH: Thomas Howald
SUPERVISOR: Chad Messervey
SUBMISSION DATE: 2020/01/05

INVENTORY LOG

PROJECT NUMBER: CT001401
PROJECT TITLE: Victoria Gold Heap Leach Pad Phase 1B
DATE OF INVENTORY: 2020/09/11
PRODUCT TYPE: GCL
MATERIAL MANUFACTURER: Layfield

#	ROLL NUMBER	MATERIAL DIMENSIONS			REMARKS
		THICKNESS	LENGTH (m)	WIDTH (m)	
1	502343582	NWL-60	45.72	4.72	
2	502343583	NWL-60	45.72	4.72	
3	502343584	NWL-60	45.72	4.72	
4	502343591	NWL-60	45.72	4.72	
5	502343601	NWL-60	45.72	4.72	
6	502343602	NWL-60	45.72	4.72	
7	502343603	NWL-60	45.72	4.72	
8	502343604	NWL-60	45.72	4.72	
9	502343607	NWL-60	45.72	4.72	
10	502343608	NWL-60	45.72	4.72	
11	502343613	NWL-60	45.72	4.72	
12	502343614	NWL-60	45.72	4.72	
13	502343620	NWL-60	45.72	4.72	
14	502343630	NWL-60	45.72	4.72	
15	502343645	NWL-60	45.72	4.72	
16	502343646	NWL-60	45.72	4.72	
17	502343648	NWL-60	45.72	4.72	
18	502343657	NWL-60	45.72	4.72	
19	502343660	NWL-60	45.72	4.72	
20	502343661	NWL-60	45.72	4.72	
21	502343665	NWL-60	45.72	4.72	
22	502343673	NWL-60	45.72	4.72	
23	502343674	NWL-60	45.72	4.72	
24	502343675	NWL-60	45.72	4.72	
25	502343676	NWL-60	45.72	4.72	
26	502343678	NWL-60	45.72	4.72	
27	502343681	NWL-60	45.72	4.72	
28	502343685	NWL-60	45.72	4.72	
29	502343686	NWL-60	45.72	4.72	
30	502343698	NWL-60	45.72	4.72	

TOTAL PAGE AREA: 6473.952 m^2

QC TECH: Thomas Howald
SUPERVISOR: Chad Messervey
SUBMISSION DATE: 2020/01/05

INVENTORY LOG

PROJECT NUMBER: CT001401
PROJECT TITLE: Victoria Gold Heap Leach Pad Phase 1B
DATE OF INVENTORY: 2020/09/11
PRODUCT TYPE: GCL
MATERIAL MANUFACTURER: Layfield

#	ROLL NUMBER	MATERIAL DIMENSIONS			REMARKS
		THICKNESS	LENGTH (m)	WIDTH (m)	
1	502343699	NWL-60	45.72	4.72	
2	502343700	NWL-60	45.72	4.72	
3	502343701	NWL-60	45.72	4.72	
4	502343702	NWL-60	45.72	4.72	
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TOTAL PAGE AREA: 863.1936 m^2

QC TECH: Thomas Howald
SUPERVISOR: Chad Messervey
SUBMISSION DATE: 2020/01/05

INVENTORY LOG

PROJECT NUMBER: CT001401
PROJECT TITLE: Victoria Gold Heap Leach Pad Phase 1B
DATE OF INVENTORY: 2020/09/12
PRODUCT TYPE: GCL
MATERIAL MANUFACTURER: Layfield

#	ROLL NUMBER	MATERIAL DIMENSIONS			REMARKS
		THICKNESS	LENGTH (m)	WIDTH (m)	
1	502343543	NWL-60	45.72	4.72	
2	502343545	NWL-60	45.72	4.72	
3	502343587	NWL-60	45.72	4.72	
4	502343589	NWL-60	45.72	4.72	
5	502343594	NWL-60	45.72	4.72	
6	502343600	NWL-60	45.72	4.72	
7	502343615	NWL-60	45.72	4.72	
8	502343618	NWL-60	45.72	4.72	
9	502343663	NWL-60	45.72	4.72	
10	502343666	NWL-60	45.72	4.72	
11	502343669	NWL-60	45.72	4.72	
12	502343670	NWL-60	45.72	4.72	
13	502343672	NWL-60	45.72	4.72	
14	502343677	NWL-60	45.72	4.72	
15	502343953	NWL-60	45.72	4.72	
16	502343954	NWL-60	45.72	4.72	
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TOTAL PAGE AREA: 3452.774 m^2

QC TECH: Thomas Howald
SUPERVISOR: Chad Messervey
SUBMISSION DATE: 2020/01/05

INVENTORY LOG

PROJECT NUMBER: CT001401
PROJECT TITLE: Victoria Gold Heap Leach Pad Phase 1B
DATE OF INVENTORY: 2020/09/13
PRODUCT TYPE: GCL
MATERIAL MANUFACTURER: Layfield

#	ROLL NUMBER	MATERIAL DIMENSIONS			REMARKS
		THICKNESS	LENGTH (m)	WIDTH (m)	
1	502343588	NWL-60	45.72	4.72	
2	502343590	NWL-60	45.72	4.72	
3	502343598	NWL-60	45.72	4.72	
4	502343599	NWL-60	45.72	4.72	
5	502343610	NWL-60	45.72	4.72	
6	502343611	NWL-60	45.72	4.72	
7	502343612	NWL-60	45.72	4.72	
8	502343616	NWL-60	45.72	4.72	
9	502343617	NWL-60	45.72	4.72	
10	502343664	NWL-60	45.72	4.72	
11	502343671	NWL-60	45.72	4.72	
12	502343679	NWL-60	45.72	4.72	
13	502343680	NWL-60	45.72	4.72	
14	502343684	NWL-60	45.72	4.72	
15	502343688	NWL-60	45.72	4.72	
16	502343689	NWL-60	45.72	4.72	
17	502343690	NWL-60	45.72	4.72	
18	502343692	NWL-60	45.72	4.72	
19	502343693	NWL-60	45.72	4.72	
20	502343694	NWL-60	45.72	4.72	
21	502343695	NWL-60	45.72	4.72	
22	502343696	NWL-60	45.72	4.72	
23	502343697	NWL-60	45.72	4.72	
24	502343703	NWL-60	45.72	4.72	
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TOTAL PAGE AREA: 5179.162 m^2

QC TECH: Thomas Howald
SUPERVISOR: Chad Messervey
SUBMISSION DATE: 2020/01/05

INVENTORY LOG

PROJECT NUMBER: CT001401
PROJECT TITLE: Victoria Gold Heap Leach Pad Phase 1B
DATE OF INVENTORY: 2020/09/14
PRODUCT TYPE: GCL
MATERIAL MANUFACTURER: Layfield

#	ROLL NUMBER	MATERIAL DIMENSIONS			REMARKS
		THICKNESS	LENGTH (m)	WIDTH (m)	
1	502343546	NWL-60	45.72	4.72	
2	502343585	NWL-60	45.72	4.72	
3	502343586	NWL-60	45.72	4.72	
4	502343662	NWL-60	45.72	4.72	
5	502343691	NWL-60	45.72	4.72	
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TOTAL PAGE AREA: 1078.992 m^2

QC TECH: Thomas Howald
SUPERVISOR: Chad Messervey
SUBMISSION DATE: 2020/01/05

LAYFIELD Leaders in Film & Geosynthetic Technology

Mill Certification Report

Job #	E0010695		
Start Date	4/10/2020	**Customer Name**	EAGLE GOLD - 356006
Req Delivery Date	4/14/2020	**Job Description**	EL4280 270" 80MIL SE TEX-2
Close Date		**Warehouse**	45
		Qty Manufactured	15120 FT

Inspection #	40070	**Job**	E0010695	**Status**	Active	**Result**	Pass
Stock Code	3322708S2A	EL4280 270" 80MIL SE TEX-2		**Inspection Date**	4/11/2020	**Completion Date**	4/14/2020
Notes							

Serial	Result	Core Width (273 in +/- 0.5 in)	Roll Length (ft)	Roll Weight - Net (4164 lbs +/- 0 lbs)	Sheet Width (270 in +/- 2 in)	Roll Area m2	Thickness - Average ASTM D5994 (76 mils min.)
3322708s2a-e0010695-001	Pass	272.50	420	4231.18	269.50	877.926421404682	78.48
3322708s2a-e0010695-002	Pass	272.50	420	4226.18	269.50	877.926421404682	78.97
3322708s2a-e0010695-003	Pass	272.50	420	4241.18	270.00	877.926421404682	80.89
3322708s2a-e0010695-004	Pass	272.50	420	4236.18	270.75	877.926421404682	79.85
3322708s2a-e0010695-005	Pass	272.50	420	4241.18	270.50	877.926421404682	81.7
3322708s2a-e0010695-006	Pass	272.50	420	4236.18	270.25	877.926421404682	81.35
3322708s2a-e0010695-007	Pass	272.25	420	4236.18	270.75	877.926421404682	81.95
3322708s2a-e0010695-008	Pass	272.50	420	4241.18	270.50	877.926421404682	81.1
3322708s2a-e0010695-009	Pass	272.50	420	4236.18	270.75	877.926421404682	79.88
3322708s2a-e0010695-010	Pass	272.50	420	4231.18	271.00	877.926421404682	78.15
3322708s2a-e0010695-011	Pass	272.50	420	4236.18	270.00	877.926421404682	78.59
3322708s2a-e0010695-012	Pass	272.50	420	4236.18	270.50	877.926421404682	77.55
3322708s2a-e0010695-013	Pass	272.50	420	4231.18	270.25	877.926421404682	78.22
3322708s2a-e0010695-014	Pass	272.50	420	4236.18	270.00	877.926421404682	78.67
3322708s2a-e0010695-015	Pass	272.50	420	4236.18	270.00	877.926421404682	78.46
3322708s2a-e0010695-016	Pass	272.50	420	4241.18	269.75	877.926421404682	80.6
3322708s2a-e0010695-017	Pass	272.50	420	4241.18	270.00	877.926421404682	80.85
3322708s2a-e0010695-018	Pass	272.50	420	4246.18	270.50	877.926421404682	80.8
3322708s2a-e0010695-019	Pass	272.50	420	4241.18	270.50	877.926421404682	81.29
3322708s2a-e0010695-020	Pass	272.50	420	4246.18	270.50	877.926421404682	81.5
3322708s2a-e0010695-021	Pass	272.50	420	4231.18	270.75	877.926421404682	81
3322708s2a-e0010695-022	Pass	271.50	420	4241.18	271.00	877.926421404682	79.81
3322708s2a-e0010695-023	Pass	272.00	420	4241.18	270.75	877.926421404682	78.26
3322708s2a-e0010695-024	Pass	272.50	420	4231.18	270.00	877.926421404682	79.02
3322708s2a-e0010695-025	Pass	272.00	420	4241.18	269.75	877.926421404682	78.84

LAYFIELD Leaders in Film & Geosynthetic Technology

Mill Certification Report

Job #	E0010695		
Start Date	4/10/2020	**Customer Name**	EAGLE GOLD - 356006
Req Delivery Date	4/14/2020	**Job Description**	EL4280 270" 80MIL SE TEX-2
Close Date		**Warehouse**	45
		Qty Manufactured	15120 FT

Inspection #	40070	**Job**	E0010695	**Status**	Active	**Result**	Pass
Stock Code	3322708S2A	EL4280 270" 80MIL SE TEX-2		**Inspection Date**	4/11/2020	**Completion Date**	4/14/2020
Notes							

Serial	Thickness - Minimum ASTM D5994 (72 mils min.)	Asperity - Printed Average ASTM D7466 (20 mils to 30 mils)	Asperity - Unprinted Average ASTM D7466 (20 mils to 30 mils)	Tear Strength - MD Average ASTM D1004 (45 lbs min.)	Tear Strength - TD Average ASTM D1004 (45 lbs min.)	Puncture Strength - Average ASTM D4833 (113 lbs min.)	Density ASTM D1505 (0.925 g/cc to 0.939 g/cc)
3322708s2a-e0010695-001	74.2	23.35	25.45	64.2	63.2	125.8	0.935
3322708s2a-e0010695-002	75.4	23.3	23.75	64.2	63.2	125.8	0.935
3322708s2a-e0010695-003	77.5	21	21.65	64.2	63.2	125.8	0.935
3322708s2a-e0010695-004	73	21.7	23.35	64.2	63.2	125.8	0.935
3322708s2a-e0010695-005	79.5	22.95	22.4	64.2	63.2	125.8	0.935
3322708s2a-e0010695-006	79	23.55	24.3	56.4	58.6	141.2	0.935
3322708s2a-e0010695-007	78.5	24.46	24.95	56.4	58.6	141.2	0.935
3322708s2a-e0010695-008	78	24.7	23.5	56.4	58.6	141.2	0.935
3322708s2a-e0010695-009	76.3	25.12	25.5	56.4	58.6	141.2	0.935
3322708s2a-e0010695-010	72.5	25.3	24.85	56.4	58.6	141.2	0.935
3322708s2a-e0010695-011	74.2	23.55	23.35	65.2	62.8	134.2	0.934
3322708s2a-e0010695-012	72.9	24.15	25	65.2	62.8	134.2	0.934
3322708s2a-e0010695-013	74.5	22.65	25.1	65.2	62.8	134.2	0.934
3322708s2a-e0010695-014	74.2	23.05	23.5	65.2	62.8	134.2	0.934
3322708s2a-e0010695-015	75.2	25.12	25.58	65.2	62.8	134.2	0.934
3322708s2a-e0010695-016	77.5	22.55	22.8	57.6	57.4	128.6	0.934
3322708s2a-e0010695-017	77.5	22.25	22.7	57.6	57.4	128.6	0.934
3322708s2a-e0010695-018	77.5	21.95	23.2	57.6	57.4	128.6	0.934
3322708s2a-e0010695-019	79	21.2	21.35	57.6	57.4	128.6	0.934
3322708s2a-e0010695-020	79.5	21.27	21.05	57.6	57.4	128.6	0.934
3322708s2a-e0010695-021	77.5	21.6	21.45	59.4	59.6	138.2	0.935
3322708s2a-e0010695-022	77.6	22	21.25	59.4	59.6	138.2	0.935
3322708s2a-e0010695-023	75.5	23.7	21.6	59.4	59.6	138.2	0.935
3322708s2a-e0010695-024	76	23.25	21.7	59.4	59.6	138.2	0.935
3322708s2a-e0010695-025	75.5	24.15	21.45	59.4	59.6	138.2	0.935

LAYFIELD Leaders in Film & Geosynthetic Technology

Mill Certification Report

Job #	E0010695		
Start Date	4/10/2020	**Customer Name**	EAGLE GOLD - 356006
Req Delivery Date	4/14/2020	**Job Description**	EL4280 270" 80MIL SE TEX-2
Close Date		**Warehouse**	45
		Qty Manufactured	15120 FT

Inspection #	40070	**Job**	E0010695	**Status**	Active	**Result**	Pass
Stock Code	3322708S2A	EL4280 270" 80MIL SE TEX-2		**Inspection Date**	4/11/2020	**Completion Date**	4/14/2020
Notes							

Serial	Carbon Black Content ASTM D4218 (2 % to 3 %)	Carbon Black Dispersion ASTM D5596	OIT - High Pressure ASTM D5885	OIT ASTM D5885	Dimensional stability (0 % to 2 %)
3322708s2a-e0010695-001	2.27	>= 9 in Cat 1 or 2	Pass > 400 mins	Pass > 100 mins	
3322708s2a-e0010695-002	2.27	>= 9 in Cat 1 or 2	Pass > 400 mins	Pass > 100 mins	
3322708s2a-e0010695-003	2.00	>= 9 in Cat 1 or 2	Pass > 400 mins	Pass > 100 mins	
3322708s2a-e0010695-004	2.00	>= 9 in Cat 1 or 2	Pass > 400 mins	Pass > 100 mins	
3322708s2a-e0010695-005	2.00	>= 9 in Cat 1 or 2	Pass > 400 mins	Pass > 100 mins	
3322708s2a-e0010695-006	2.10	>= 9 in Cat 1 or 2	Pass > 400 mins	Pass > 100 mins	
3322708s2a-e0010695-007	2.10	>= 9 in Cat 1 or 2	Pass > 400 mins	Pass > 100 mins	
3322708s2a-e0010695-008	2.10	>= 9 in Cat 1 or 2	Pass > 400 mins	Pass > 100 mins	
3322708s2a-e0010695-009	2.50	>= 9 in Cat 1 or 2	Pass > 400 mins	Pass > 100 mins	
3322708s2a-e0010695-010	2.50	>= 9 in Cat 1 or 2	Pass > 400 mins	Pass > 100 mins	
3322708s2a-e0010695-011	2.48	>= 9 in Cat 1 or 2	Pass > 400 mins	Pass > 100 mins	
3322708s2a-e0010695-012	2.48	>= 9 in Cat 1 or 2	Pass > 400 mins	Pass > 100 mins	
3322708s2a-e0010695-013	2.16	>= 9 in Cat 1 or 2	Pass > 400 mins	Pass > 100 mins	0.00
3322708s2a-e0010695-014	2.16	>= 9 in Cat 1 or 2	Pass > 400 mins	Pass > 100 mins	0.00
3322708s2a-e0010695-015	2.26	>= 9 in Cat 1 or 2	Pass > 400 mins	Pass > 100 mins	0.00
3322708s2a-e0010695-016	2.26	>= 9 in Cat 1 or 2	Pass > 400 mins	Pass > 100 mins	0.00
3322708s2a-e0010695-017	2.30	>= 9 in Cat 1 or 2	Pass > 400 mins	Pass > 100 mins	0.00
3322708s2a-e0010695-018	2.30	>= 9 in Cat 1 or 2	Pass > 400 mins	Pass > 100 mins	0.00
3322708s2a-e0010695-019	2.40	>= 9 in Cat 1 or 2	Pass > 400 mins	Pass > 100 mins	0.00
3322708s2a-e0010695-020	2.40	>= 9 in Cat 1 or 2	Pass > 400 mins	Pass > 100 mins	0.00
3322708s2a-e0010695-021	2.50	>= 9 in Cat 1 or 2	Pass > 400 mins	Pass > 100 mins	0.00
3322708s2a-e0010695-022	2.50	>= 9 in Cat 1 or 2	Pass > 400 mins	Pass > 100 mins	0.00
3322708s2a-e0010695-023	2.08	>= 9 in Cat 1 or 2	Pass > 400 mins	Pass > 100 mins	0.00
3322708s2a-e0010695-024	2.08	>= 9 in Cat 1 or 2	Pass > 400 mins	Pass > 100 mins	0.00
3322708s2a-e0010695-025	2.08	>= 9 in Cat 1 or 2	Pass > 400 mins	Pass > 100 mins	0.00

LAYFIELD Leaders in Film & Geosynthetic Technology

Mill Certification Report

Job #	E0010695		
Start Date	4/10/2020	**Customer Name**	EAGLE GOLD - 356006
Req Delivery Date	4/14/2020	**Job Description**	EL4280 270" 80MIL SE TEX-2
Close Date		**Warehouse**	45
		Qty Manufactured	15120 FT

Inspection #	40070	**Job**	E0010695	**Status**	Active	**Result**	Pass
Stock Code	3322708S2A	EL4280 270" 80MIL SE TEX-2		**Inspection Date**	4/11/2020	**Completion Date**	4/14/2020
Notes							

Serial	Result	Core Width (273 in +/- 0.5 in)	Roll Length (ft)	Roll Weight - Net (4164 lbs +/- 0 lbs)	Sheet Width (270 in +/- 2 in)	Roll Area m2	Thickness - Average ASTM D5994 (76 mils min.)
3322708s2a-e0010695-026	Pass	272.00	420	4226.18	269.50	877.926421404682	78.46
3322708s2a-e0010695-027	Pass	272.00	420	4231.18	269.75	877.926421404682	78.85
3322708s2a-e0010695-028	Pass	273.00	420	4256.18	270.25	877.926421404682	80.35
3322708s2a-e0010695-029	Pass	273.00	420	4256.18	269.75	877.926421404682	80.04
3322708s2a-e0010695-030	Pass	273.00	420	4266.18	270.50	877.926421404682	80.01
3322708s2a-e0010695-031	Pass	273.00	420	4266.18	270.00	877.926421404682	80.15
3322708s2a-e0010695-032	Pass	273.00	420	4256.18	271.00	877.926421404682	80.3
3322708s2a-e0010695-033	Pass	273.00	420	4266.18	270.75	877.926421404682	80.25
3322708s2a-e0010695-034	Pass	272.00	420	4261.18	270.50	877.926421404682	78.61
3322708s2a-e0010695-035	Pass	272.00	420	4281.18	270.00	877.926421404682	79.06
3322708s2a-e0010695-036	Pass	272.00	420	4241.18	269.50	877.926421404682	79.3

LAYFIELD Leaders in Film & Geosynthetic Technology

Mill Certification Report

Job #	E0010695		
Start Date	4/10/2020	**Customer Name**	EAGLE GOLD - 356006
Req Delivery Date	4/14/2020	**Job Description**	EL4280 270" 80MIL SE TEX-2
Close Date		**Warehouse**	45
		Qty Manufactured	15120 FT

Inspection #	40070	**Job**	E0010695	**Status**	Active	**Result**	Pass
Stock Code	3322708S2A	EL4280 270" 80MIL SE TEX-2		**Inspection Date**	4/11/2020	**Completion Date**	4/14/2020
Notes							

Serial	Thickness - Minimum ASTM D5994 (72 mils min.)	Asperity - Printed Average ASTM D7466 (20 mils to 30 mils)	Asperity - Unprinted Average ASTM D7466 (20 mils to 30 mils)	Tear Strength - MD Average ASTM D1004 (45 lbs min.)	Tear Strength - TD Average ASTM D1004 (45 lbs min.)	Puncture Strength - Average ASTM D4833 (113 lbs min.)	Density ASTM D1505 (0.925 g/cc to 0.939 g/cc)
3322708s2a-e0010695-026	75.1	23.85	23	58.6	56.2	127	0.935
3322708s2a-e0010695-027	75.6	24.5	24.15	58.6	56.2	127	0.935
3322708s2a-e0010695-028	77.3	20.9	20.7	58.6	56.2	127	0.935
3322708s2a-e0010695-029	77.7	20.6	20.7	58.6	56.2	127	0.935
3322708s2a-e0010695-030	77.5	20.7	20.9	58.6	56.2	127	0.935
3322708s2a-e0010695-031	77.8	20.5	20.6	59.2	59.2	134.6	0.935
3322708s2a-e0010695-032	78.5	20.8	20.7	59.2	59.2	134.6	0.935
3322708s2a-e0010695-033	77.8	20.5	20.9	59.2	59.2	134.6	0.935
3322708s2a-e0010695-034	73.5	23.45	23.9	59.2	59.2	134.6	0.935
3322708s2a-e0010695-035	75.6	22.8	22.4	59.2	59.2	134.6	0.935
3322708s2a-e0010695-036	76.5	24.85	23.05	59	57.8	144.2	0.935

LAYFIELD Leaders in Film & Geosynthetic Technology

Mill Certification Report

Job #	E0010695		
Start Date	4/10/2020	**Customer Name**	EAGLE GOLD - 356006
Req Delivery Date	4/14/2020	**Job Description**	EL4280 270" 80MIL SE TEX-2
Close Date		**Warehouse**	45
		Qty Manufactured	15120 FT

Inspection #	40070	**Job**	E0010695	**Status**	Active	**Result**	Pass
Stock Code	3322708S2A	EL4280 270" 80MIL SE TEX-2		**Inspection Date**	4/11/2020	**Completion Date**	4/14/2020
Notes							

Serial	Carbon Black Content ASTM D4218 (2 % to 3 %)	Carbon Black Dispersion ASTM D5596	OIT - High Pressure ASTM D5885	OIT ASTM D5885	Dimensional stability (0 % to 2 %)
3322708s2a-e0010695-026	2.38	>= 9 in Cat 1 or 2	Pass > 400 mins	Pass > 100 mins	0.00
3322708s2a-e0010695-027	2.38	>= 9 in Cat 1 or 2	Pass > 400 mins	Pass > 100 mins	0.00
3322708s2a-e0010695-028	2.26	>= 9 in Cat 1 or 2	Pass > 400 mins	Pass > 100 mins	0.00
3322708s2a-e0010695-029	2.26	>= 9 in Cat 1 or 2	Pass > 400 mins	Pass > 100 mins	0.00
3322708s2a-e0010695-030	2.17	>= 9 in Cat 1 or 2	Pass > 400 mins	Pass > 100 mins	0.00
3322708s2a-e0010695-031	2.33	>= 9 in Cat 1 or 2	Pass > 400 mins	Pass > 100 mins	0.00
3322708s2a-e0010695-032	2.33	>= 9 in Cat 1 or 2	Pass > 400 mins	Pass > 100 mins	0.00
3322708s2a-e0010695-033	2.33	>= 9 in Cat 1 or 2	Pass > 400 mins	Pass > 100 mins	0.00
3322708s2a-e0010695-034	2.33	>= 9 in Cat 1 or 2	Pass > 400 mins	Pass > 100 mins	0.00
3322708s2a-e0010695-035	2.33	>= 9 in Cat 1 or 2	Pass > 400 mins	Pass > 100 mins	0.00
3322708s2a-e0010695-036	2.33	>= 9 in Cat 1 or 2	Pass > 400 mins	Pass > 100 mins	0.00

LAYFIELD Leaders in Film & Geosynthetic Technology

Mill Certification Report

Sales Order #	356006
Order Date	2/10/2020
Req Ship Date	4/14/2020

Customer Name EAGLE GOLD PROJECT

45km NE OF VILLAGE OF MAYO, YT
REFER TO ATTACHED SITE MAP AND
ACCESS ROAD POLICY

Inspection #	39765	**Job**	E0010692	**Status**	Active	**Result**	Pass
Stock Code	3322708S2A	EL4280 270" 80MIL SE TEX-2		**Inspection Date**	4/6/2020	**Completion Date**	

Serial	Result	Core Width (273 in +/- 0.5 in)	Roll Length (ft)	Roll Weight - Net (4164 lbs +/- 0 lbs)	Sheet Width (270 in +/- 2 in)	Roll Area m2	Thickness - Average ASTM D5994 (76 mils min.)
3322708s2a-e0010692-001	Pass	273.00	420	4271.2	270.25	877.9	79.4
3322708s2a-e0010692-002	Pass	273.00	420	4261.2	270.00	877.9	79.9
3322708s2a-e0010692-003	Pass	273.50	420	4261.2	270.25	877.9	79.5
3322708s2a-e0010692-004	Pass	273.00	420	4256.2	270.50	877.9	79.9
3322708s2a-e0010692-005	Pass	273.00	420	4256.2	270.25	877.9	80.4
3322708s2a-e0010692-006	Pass	273.00	420	4216.2	270.50	877.9	80.1
3322708s2a-e0010692-007	Pass	273.00	420	4216.2	270.50	877.9	80.3
3322708s2a-e0010692-008	Pass	273.00	420	4211.2	270.50	877.9	80.4
3322708s2a-e0010692-009	Pass	273.00	420	4216.2	270.50	877.9	80.5
3322708s2a-e0010692-010	Pass	273.00	200	1786.2	270.50	418.1	80.0
3322708s2a-e0010692-011	Pass	273.00	420	4221.2	270.75	877.9	80.3
3322708s2a-e0010692-012	Pass	273.00	420	4221.2	270.25	877.9	77.3
3322708s2a-e0010692-013	Pass	273.00	420	4216.2	270.75	877.9	77.9
3322708s2a-e0010692-014	Pass	273.00	420	4216.2	270.75	877.9	78.7
3322708s2a-e0010692-015	Pass	273.00	420	4236.2	270.25	877.9	78.2
3322708s2a-e0010692-016	Pass	273.00	420	4236.2	270.00	877.9	78.9
3322708s2a-e0010692-017	Pass	273.00	420	4231.2	270.00	877.9	79.1
3322708s2a-e0010692-019	Pass	273.00	420	4226.2	270.00	877.9	80.2
3322708s2a-e0010692-020	Pass	273.00	420	4256.2	269.75	877.9	80.6
3322708s2a-e0010692-021	Pass	273.00	420	4251.2	269.75	877.9	80.2
3322708s2a-e0010692-022	Pass	273.00	420	4226.2	270.50	877.9	80.0
3322708s2a-e0010692-023	Pass	273.00	420	4236.2	270.50	877.9	80.3
3322708s2a-e0010692-024	Pass	272.50	420	4236.2	270.00	877.9	79.8

LAYFIELD Leaders in Film & Geosynthetic Technology

Mill Certification Report

Sales Order # 356006
Order Date 2/10/2020
Req Ship Date 4/14/2020

Customer Name EAGLE GOLD PROJECT
45km NE OF VILLAGE OF MAYO, YT
REFER TO ATTACHED SITE MAP AND
ACCESS ROAD POLICY

Inspection #	39765	**Job**	E0010692	**Status**	Active	**Result**	Pass
Stock Code	3322708S2A	EL4280 270" 80MIL SE TEX-2		**Inspection Date**	4/6/2020	**Completion Date**	

Serial	Thickness - Minimum ASTM D5994 (72 mils min.)	Asperity - Printed Average ASTM D7466 (20 mils to 30 mils)	Asperity - Unprinted Average ASTM D7466 (20 mils to 30 mils)	Tear Strength - MD Average ASTM D1004 (45 lbs min.)	Tear Strength - TD Average ASTM D1004 (45 lbs min.)	Puncture Strength - Average ASTM D4833 (113 lbs min.)	Density ASTM D1505 (0.925 g/cc to 0.939 g/cc)
3322708s2a-e0010692-001	76.50	26.6	27.6	63	68	127	0.935
3322708s2a-e0010692-002	77.60	24.2	25.1	63	68	127	0.935
3322708s2a-e0010692-003	77.30	27.6	27.0	63	68	127	0.935
3322708s2a-e0010692-004	73.20	27.1	26.3	63	68	127	0.935
3322708s2a-e0010692-005	77.80	28.8	27.1	63	68	127	0.935
3322708s2a-e0010692-006	78.10	21.9	21.9	60	61	149	0.935
3322708s2a-e0010692-007	78.20	21.1	21.4	60	61	149	0.935
3322708s2a-e0010692-008	79.10	21.0	21.7	60	61	149	0.935
3322708s2a-e0010692-009	78.50	21.6	21.8	60	61	149	0.935
3322708s2a-e0010692-010	75.70	21.2	21.7	60	61	149	0.935
3322708s2a-e0010692-011	79.30	21.1	20.9	60	63	141	0.936
3322708s2a-e0010692-012	74.20	22.2	23.2	60	63	141	0.936
3322708s2a-e0010692-013	72.70	23.7	23.6	60	63	141	0.936
3322708s2a-e0010692-014	75.30	20.5	22.6	60	63	141	0.936
3322708s2a-e0010692-015	72.20	23.0	24.7	60	63	141	0.936
3322708s2a-e0010692-016	75.80	21.6	24.3	60	62	146	0.936
3322708s2a-e0010692-017	72.70	25.5	24.9	60	62	146	0.936
3322708s2a-e0010692-019	79.10	21.4	21.4	60	62	146	0.936
3322708s2a-e0010692-020	77.90	20.7	21.5	60	62	146	0.936
3322708s2a-e0010692-021	76.70	21.2	21.4	56	62	139	0.933
3322708s2a-e0010692-022	76.50	20.5	20.8	56	62	139	0.933
3322708s2a-e0010692-023	79.60	20.7	21.2	56	62	139	0.933
3322708s2a-e0010692-024	74.60	25.3	24.8	56	62	139	0.933

LAYFIELD Leaders in Film & Geosynthetic Technology

Mill Certification Report

Sales Order #	356006		
Order Date	2/10/2020	**Customer Name**	EAGLE GOLD PROJECT
Req Ship Date	4/14/2020		45km NE OF VILLAGE OF MAYO, YT REFER TO ATTACHED SITE MAP AND ACCESS ROAD POLICY

Inspection #	39765	**Job**	E0010692	**Status**	Active	**Result**	Pass
Stock Code	3322708S2A	EL4280 270" 80MIL SE TEX-2		**Inspection Date**	4/6/2020	**Completion Date**	

Serial	Carbon Black Content ASTM D4218 (2 % to 3 %)	Carbon Black Dispersion ASTM D5596	OIT - High Pressure ASTM D5885	OIT ASTM D5885	Dimensional stability (0 % to 2 %)
3322708s2a-e0010692-001	2.19	>= 9 in Cat 1 or 2	Pass > 400 mins	Pass > 100 mins	0.00
3322708s2a-e0010692-002	2.19	>= 9 in Cat 1 or 2	Pass > 400 mins	Pass > 100 mins	0.00
3322708s2a-e0010692-003	2.59	>= 9 in Cat 1 or 2	Pass > 400 mins	Pass > 100 mins	0.00
3322708s2a-e0010692-004	2.59	>= 9 in Cat 1 or 2	Pass > 400 mins	Pass > 100 mins	0.00
3322708s2a-e0010692-005	2.39	>= 9 in Cat 1 or 2	Pass > 400 mins	Pass > 100 mins	0.00
3322708s2a-e0010692-006	2.39	>= 9 in Cat 1 or 2	Pass > 400 mins	Pass > 100 mins	0.00
3322708s2a-e0010692-007	2.02	>= 9 in Cat 1 or 2	Pass > 400 mins	Pass > 100 mins	0.00
3322708s2a-e0010692-008	2.02	>= 9 in Cat 1 or 2	Pass > 400 mins	Pass > 100 mins	0.00
3322708s2a-e0010692-009	2.04	>= 9 in Cat 1 or 2	Pass > 400 mins	Pass > 100 mins	0.00
3322708s2a-e0010692-010	2.04	>= 9 in Cat 1 or 2	Pass > 400 mins	Pass > 100 mins	0.00
3322708s2a-e0010692-011	2.33	>= 9 in Cat 1 or 2	Pass > 400 mins	Pass > 100 mins	0.00
3322708s2a-e0010692-012	2.33	>= 9 in Cat 1 or 2	Pass > 400 mins	Pass > 100 mins	0.00
3322708s2a-e0010692-013	2.42	>= 9 in Cat 1 or 2	Pass > 400 mins	Pass > 100 mins	0.00
3322708s2a-e0010692-014	2.42	>= 9 in Cat 1 or 2	Pass > 400 mins	Pass > 100 mins	0.00
3322708s2a-e0010692-015	2.47	>= 9 in Cat 1 or 2	Pass > 400 mins	Pass > 100 mins	0.00
3322708s2a-e0010692-016	2.47	>= 9 in Cat 1 or 2	Pass > 400 mins	Pass > 100 mins	0.00
3322708s2a-e0010692-017	2.11	>= 9 in Cat 1 or 2	Pass > 400 mins	Pass > 100 mins	0.00
3322708s2a-e0010692-019	2.09	>= 9 in Cat 1 or 2	Pass > 400 mins	Pass > 100 mins	0.00
3322708s2a-e0010692-020	2.09	>= 9 in Cat 1 or 2	Pass > 400 mins	Pass > 100 mins	0.00
3322708s2a-e0010692-021	2.34	>= 9 in Cat 1 or 2	Pass > 400 mins	Pass > 100 mins	0.00
3322708s2a-e0010692-022	2.34	>= 9 in Cat 1 or 2	Pass > 400 mins	Pass > 100 mins	0.00
3322708s2a-e0010692-023	2.24	>= 9 in Cat 1 or 2	Pass > 400 mins	Pass > 100 mins	0.00
3322708s2a-e0010692-024	2.24	>= 9 in Cat 1 or 2	Pass > 400 mins	Pass > 100 mins	0.00

LAYFIELD Leaders in Film & Geosynthetic Technology

Mill Certification Report

Sales Order #	356006
Order Date	2/10/2020
Req Ship Date	4/14/2020

Customer Name EAGLE GOLD PROJECT

45km NE OF VILLAGE OF MAYO, YT
REFER TO ATTACHED SITE MAP AND
ACCESS ROAD POLICY

Inspection #	39765	**Job**	E0010692	**Status**	Active	**Result**	Pass
Stock Code	3322708S2A	EL4280 270" 80MIL SE TEX-2		**Inspection Date**	4/6/2020	**Completion Date**	

Serial	Result	Core Width (273 in +/- 0.5 in)	Roll Length (ft)	Roll Weight - Net (4164 lbs +/- 0 lbs)	Sheet Width (270 in +/- 2 in)	Roll Area m2	Thickness - Average ASTM D5994 (76 mils min.)
3322708s2a-e0010692-025	Pass	272.50	420	4221.2	270.50	877.9	79.3
3322708s2a-e0010692-026	Pass	272.50	420	4231.2	270.25	877.9	78.8
3322708s2a-e0010692-027	Pass	272.50	420	4231.2	270.75	877.9	78.5
3322708s2a-e0010692-028	Pass	272.50	420	4221.2	270.50	877.9	79.1
3322708s2a-e0010692-029	Pass	272.50	420	4236.2	270.75	877.9	77.7
3322708s2a-e0010692-030	Pass	273.00	420	4226.2	269.75	877.9	79.6
3322708s2a-e0010692-031	Pass	273.00	420	4236.2	270.50	877.9	80.2
3322708s2a-e0010692-032	Pass	273.00	420	4236.2	270.00	877.9	79.7
3322708s2a-e0010692-033	Pass	273.00	420	4236.2	270.25	877.9	80.4
3322708s2a-e0010692-034	Pass	273.00	420	4226.2	270.00	877.9	79.8
3322708s2a-e0010692-035	Pass	273.00	420	4226.2	270.25	877.9	80.2
3322708s2a-e0010692-036	Pass	273.00	420	4231.2	270.25	877.9	78.0
3322708s2a-e0010692-037	Pass	272.25	420	4226.2	270.25	877.9	77.5

LAYFIELD Leaders in Film & Geosynthetic Technology

Mill Certification Report

Sales Order # 356006
Order Date 2/10/2020
Req Ship Date 4/14/2020

Customer Name EAGLE GOLD PROJECT
45km NE OF VILLAGE OF MAYO, YT
REFER TO ATTACHED SITE MAP AND
ACCESS ROAD POLICY

Inspection #	39765	**Job**	E0010692	**Status**	Active	**Result**	Pass
Stock Code	3322708S2A	EL4280 270" 80MIL SE TEX-2		**Inspection Date**	4/6/2020	**Completion Date**	

Serial	Thickness - Minimum ASTM D5994 (72 mils min.)	Asperity - Printed Average ASTM D7466 (20 mils to 30 mils)	Asperity - Unprinted Average ASTM D7466 (20 mils to 30 mils)	Tear Strength - MD Average ASTM D1004 (45 lbs min.)	Tear Strength - TD Average ASTM D1004 (45 lbs min.)	Puncture Strength - Average ASTM D4833 (113 lbs min.)	Density ASTM D1505 (0.925 g/cc to 0.939 g/cc)
3322708s2a-e0010692-025	75.20	24.5	24.3	56	62	139	0.933
3322708s2a-e0010692-026	74.60	24.7	23.5	59	58	134	0.933
3322708s2a-e0010692-027	74.70	24.2	24.0	59	58	134	0.933
3322708s2a-e0010692-028	74.30	23.9	23.1	59	58	134	0.933
3322708s2a-e0010692-029	72.20	25.6	24.6	59	58	134	0.933
3322708s2a-e0010692-030	75.80	20.3	20.9	59	58	134	0.933
3322708s2a-e0010692-031	78.60	20.7	21.1	59	60	135	0.932
3322708s2a-e0010692-032	77.10	20.6	20.8	59	60	135	0.932
3322708s2a-e0010692-033	78.60	20.7	20.8	59	60	135	0.932
3322708s2a-e0010692-034	75.80	20.4	20.7	59	60	135	0.932
3322708s2a-e0010692-035	78.90	20.6	20.9	59	60	135	0.932
3322708s2a-e0010692-036	72.30	25.6	24.3	60	58	133	0.932
3322708s2a-e0010692-037	74.10	25.6	23.4	60	58	133	0.932

LAYFIELD Leaders in Film & Geosynthetic Technology

Mill Certification Report

Sales Order # 356006
Order Date 2/10/2020
Req Ship Date 4/14/2020

Customer Name EAGLE GOLD PROJECT

45km NE OF VILLAGE OF MAYO, YT
REFER TO ATTACHED SITE MAP AND
ACCESS ROAD POLICY

Inspection #	39765	**Job**	E0010692	**Status**	Active	**Result**	Pass
Stock Code	3322708S2A	EL4280 270" 80MIL SE TEX-2		**Inspection Date**	4/6/2020	**Completion Date**	

Serial	Carbon Black Content ASTM D4218 (2 % to 3 %)	Carbon Black Dispersion ASTM D5596	OIT - High Pressure ASTM D5885	OIT ASTM D5885	Dimensional stability (0 % to 2 %)
3322708s2a-e0010692-025	2.34	>= 9 in Cat 1 or 2	Pass > 400 mins	Pass > 100 mins	0.00
3322708s2a-e0010692-026	2.34	>= 9 in Cat 1 or 2	Pass > 400 mins	Pass > 100 mins	0.00
3322708s2a-e0010692-027	2.35	>= 9 in Cat 1 or 2	Pass > 400 mins	Pass > 100 mins	0.00
3322708s2a-e0010692-028	2.35	>= 9 in Cat 1 or 2	Pass > 400 mins	Pass > 100 mins	0.00
3322708s2a-e0010692-029	2.30	>= 9 in Cat 1 or 2	Pass > 400 mins	Pass > 100 mins	0.00
3322708s2a-e0010692-030	2.30	>= 9 in Cat 1 or 2	Pass > 400 mins	Pass > 100 mins	0.00
3322708s2a-e0010692-031	2.34	>= 9 in Cat 1 or 2	Pass > 400 mins	Pass > 100 mins	0.00
3322708s2a-e0010692-032	2.34	>= 9 in Cat 1 or 2	Pass > 400 mins	Pass > 100 mins	0.00
3322708s2a-e0010692-033	2.41	>= 9 in Cat 1 or 2	Pass > 400 mins	Pass > 100 mins	0.00
3322708s2a-e0010692-034	2.41	>= 9 in Cat 1 or 2	Pass > 400 mins	Pass > 100 mins	0.00
3322708s2a-e0010692-035	2.33	>= 9 in Cat 1 or 2	Pass > 400 mins	Pass > 100 mins	0.00
3322708s2a-e0010692-036	2.33	>= 9 in Cat 1 or 2	Pass > 400 mins	Pass > 100 mins	0.00
3322708s2a-e0010692-037	2.42	>= 9 in Cat 1 or 2	Pass > 400 mins	Pass > 100 mins	0.00

LAYFIELD Leaders in Film & Geosynthetic Technology

Mill Certification Report

Sales Order #	356006
Order Date	2/10/2020
Req Ship Date	4/14/2020
Customer Name	EAGLE GOLD PROJECT 45km NE OF VILLAGE OF MAYO, YT REFER TO ATTACHED SITE MAP AND ACCESS ROAD POLICY

Inspection #	39864	**Job**	E0010693	**Status**	Active	**Result**	Pass
Stock Code	3322708S2A	EL4280 270" 80MIL SE TEX-2		**Inspection Date**	4/6/2020	**Completion Date**	

Serial	Result	Core Width (273 in +/- 0.5 in)	Roll Length (ft)	Roll Weight - Net (4164 lbs +/- 0 lbs)	Sheet Width (270 in +/- 2 in)	Roll Area m2	Thickness - Average ASTM D5994 (76 mils min.)
3322708s2a-e0010693-001	Pass	272.00	420	4221.2	270.00	877.9	77.3
3322708s2a-e0010693-002	Pass	272.00	420	4221.2	270.50	877.9	77.9
3322708s2a-e0010693-003	Pass	272.00	420	4221.2	270.75	877.9	77.2
3322708s2a-e0010693-004	Pass	272.00	420	4216.2	270.25	877.9	77.7
3322708s2a-e0010693-005	Pass	272.00	420	4221.2	270.00	877.9	79.5
3322708s2a-E0010693-006	Pass	272.00	420	4226.2	269.25	877.9	80.3
3322708s2a-E0010693-007	Pass	272.00	420	4216.2	269.25	877.9	79.6
3322708s2a-e0010693-008	Pass	272.00	420	4216.2	269.50	877.9	79.5
3322708s2a-e0010693-009	Pass	272.00	420	4221.2	269.50	877.9	79.5
3322708s2a-e0010693-010	Pass	272.00	420	4216.2	269.25	877.9	79.3
3322708s2a-e0010693-011	Pass	272.00	420	4216.2	269.50	877.9	79.0
3322708s2a-e0010693-012	Pass	272.50	420	4221.2	269.40	877.9	80.7
3322708S2A-E0010693-013	Pass	272.50	420	4221.2	270.50	877.9	80.7
3322708S2A-E0010693-014	Pass	273.00	420	4231.2	270.40	877.9	80.7
3322708S2A-E0010693-015	Pass	273.00	420	4241.2	270.50	877.9	80.3
3322708S2A-E0010693-016	Pass	273.00	420	4221.2	270.75	877.9	80.2
3322708S2A-E0010693-017	Pass	273.00	420	4221.2	270.70	877.9	80.7
3322708S2A-E0010693-018	Pass	273.00	420	4216.2	269.50	877.9	79.6
3322708S2A-E0010693-019	Pass	272.00	420	4216.2	269.75	877.9	78.2
3322708S2A-E0010693-020	Pass	273.00	420	4226.2	269.50	877.9	79.3
3322708s2a-E0010693-021	Pass	273.00	420	4221.2	269.75	877.9	78.5
3322708s2a-E0010693-022	Pass	273.00	420	4236.2	269.25	877.9	78.3
3322708s2a-E0010693-023	Pass	273.00	420	4241.2	270.00	877.9	78.3

LAYFIELD Leaders in Film & Geosynthetic Technology

Mill Certification Report

Sales Order # 356006
Order Date 2/10/2020
Req Ship Date 4/14/2020

Customer Name EAGLE GOLD PROJECT

45km NE OF VILLAGE OF MAYO, YT
REFER TO ATTACHED SITE MAP AND
ACCESS ROAD POLICY

Inspection #	39864	**Job**	E0010693	**Status**	Active	**Result**	Pass
Stock Code	3322708S2A	EL4280 270" 80MIL SE TEX-2		**Inspection Date**	4/6/2020	**Completion Date**	

Serial	Thickness - Minimum ASTM D5994 (72 mils min.)	Asperity - Printed Average ASTM D7466 (20 mils to 30 mils)	Asperity - Unprinted Average ASTM D7466 (20 mils to 30 mils)	Tear Strength - MD Average ASTM D1004 (45 lbs min.)	Tear Strength - TD Average ASTM D1004 (45 lbs min.)	Puncture Strength - Average ASTM D4833 (113 lbs min.)	Density ASTM D1505 (0.925 g/cc to 0.939 g/cc)
3322708s2a-e0010693-001	72.50	24.0	22.7	56	60	141	0.931
3322708s2a-e0010693-002	75.50	24.7	24.7	56	60	141	0.931
3322708s2a-e0010693-003	72.60	24.1	23.9	56	60	141	0.931
3322708s2a-e0010693-004	72.70	24.0	23.5	56	60	141	0.931
3322708s2a-e0010693-005	72.10	24.1	25.5	56	60	141	0.931
3322708s2a-E0010693-006	75.20	24.8	26.5	66	69	130	0.931
3322708s2a-E0010693-007	76.40	26.2	25.4	66	69	130	0.931
3322708s2a-e0010693-008	74.20	25.7	26.1	66	69	130	0.931
3322708s2a-e0010693-009	75.60	25.9	26.5	66	69	130	0.931
3322708s2a-e0010693-010	75.60	25.3	26.2	66	69	130	0.931
3322708s2a-e0010693-011	75.20	25.0	26.8	62	62	115	0.934
3322708s2a-e0010693-012	77.00	20.3	21.0	62	62	115	0.934
3322708S2A-E0010693-013	77.00	20.1	20.4	62	62	115	0.934
3322708S2A-E0010693-014	77.00	20.6	21.0	62	62	115	0.934
3322708S2A-E0010693-015	77.00	20.4	20.6	62	62	115	0.934
3322708S2A-E0010693-016	77.00	20.4	20.5	62	59	144	0.934
3322708S2A-E0010693-017	78.00	20.2	20.0	62	59	144	0.934
3322708S2A-E0010693-018	77.20	22.4	24.8	62	59	144	0.934
3322708S2A-E0010693-019	74.80	26.3	25.7	62	59	144	0.934
3322708S2A-E0010693-020	76.50	26.0	26.9	62	59	144	0.934
3322708s2a-E0010693-021	75.10	23.7	23.9	61	58	135	0.936
3322708s2a-E0010693-022	75.20	21.0	22.3	61	58	135	0.936
3322708s2a-E0010693-023	74.30	21.2	21.5	61	58	135	0.936

LAYFIELD Leaders in Film & Geosynthetic Technology

Mill Certification Report

Sales Order #	356006
Order Date	2/10/2020
Req Ship Date	4/14/2020
Customer Name	EAGLE GOLD PROJECT 45km NE OF VILLAGE OF MAYO, YT REFER TO ATTACHED SITE MAP AND ACCESS ROAD POLICY

Inspection #	39864	**Job**	E0010693	**Status**	Active	**Result**	Pass
Stock Code	3322708S2A	EL4280 270" 80MIL SE TEX-2		**Inspection Date**	4/6/2020	**Completion Date**	

Serial	Carbon Black Content ASTM D4218 (2 % to 3 %)	Carbon Black Dispersion ASTM D5596	OIT - High Pressure ASTM D5885	OIT ASTM D5885	Dimensional stability (0 % to 2 %)
3322708s2a-e0010693-001	2.58	>= 9 in Cat 1 or 2	Pass > 400 mins	Pass > 100 mins	0.20
3322708s2a-e0010693-002	2.58	>= 9 in Cat 1 or 2	Pass > 400 mins	Pass > 100 mins	0.20
3322708s2a-e0010693-003	2.44	>= 9 in Cat 1 or 2	Pass > 400 mins	Pass > 100 mins	0.20
3322708s2a-e0010693-004	2.44	>= 9 in Cat 1 or 2	Pass > 400 mins	Pass > 100 mins	0.20
3322708s2a-e0010693-005	2.34	>= 9 in Cat 1 or 2	Pass > 400 mins	Pass > 100 mins	0.20
3322708s2a-E0010693-006	2.34	>= 9 in Cat 1 or 2	Pass > 400 mins	Pass > 100 mins	0.20
3322708s2a-E0010693-007	2.30	>= 9 in Cat 1 or 2	Pass > 400 mins	Pass > 100 mins	0.20
3322708s2a-e0010693-008	2.30	>= 9 in Cat 1 or 2	Pass > 400 mins	Pass > 100 mins	0.20
3322708s2a-e0010693-009	2.47	>= 9 in Cat 1 or 2	Pass > 400 mins	Pass > 100 mins	0.20
3322708s2a-e0010693-010	2.47	>= 9 in Cat 1 or 2	Pass > 400 mins	Pass > 100 mins	0.20
3322708s2a-e0010693-011	2.14	>= 9 in Cat 1 or 2	Pass > 400 mins	Pass > 100 mins	0.20
3322708s2a-e0010693-012	2.14	>= 9 in Cat 1 or 2	Pass > 400 mins	Pass > 100 mins	0.20
3322708S2A-E0010693-013	2.13	>= 9 in Cat 1 or 2	Pass > 400 mins	Pass > 100 mins	0.20
3322708S2A-E0010693-014	2.13	>= 9 in Cat 1 or 2	Pass > 400 mins	Pass > 100 mins	0.20
3322708S2A-E0010693-015	2.28	>= 9 in Cat 1 or 2	Pass > 400 mins	Pass > 100 mins	0.20
3322708S2A-E0010693-016	2.28	>= 9 in Cat 1 or 2	Pass > 400 mins	Pass > 100 mins	0.20
3322708S2A-E0010693-017	2.14	>= 9 in Cat 1 or 2	Pass > 400 mins	Pass > 100 mins	0.20
3322708S2A-E0010693-018	2.14	>= 9 in Cat 1 or 2	Pass > 400 mins	Pass > 100 mins	0.20
3322708S2A-E0010693-019	2.40	>= 9 in Cat 1 or 2	Pass > 400 mins	Pass > 100 mins	0.20
3322708S2A-E0010693-020	2.40	>= 9 in Cat 1 or 2	Pass > 400 mins	Pass > 100 mins	0.20
3322708s2a-E0010693-021	2.51	>= 9 in Cat 1 or 2	Pass > 400 mins	Pass > 100 mins	0.20
3322708s2a-E0010693-022	2.51	>= 9 in Cat 1 or 2	Pass > 400 mins	Pass > 100 mins	0.20
3322708s2a-E0010693-023	2.34	>= 9 in Cat 1 or 2	Pass > 400 mins	Pass > 100 mins	0.20

LAYFIELD Leaders in Film & Geosynthetic Technology

Mill Certification Report

Sales Order #	356006
Order Date	2/10/2020
Req Ship Date	4/14/2020

Customer Name EAGLE GOLD PROJECT

45km NE OF VILLAGE OF MAYO, YT
REFER TO ATTACHED SITE MAP AND
ACCESS ROAD POLICY

Inspection #	39864	**Job**	E0010693	**Status**	Active	**Result**	Pass
Stock Code	3322708S2A	EL4280 270" 80MIL SE TEX-2		**Inspection Date**	4/6/2020	**Completion Date**	

Serial	Result	Core Width (273 in +/- 0.5 in)	Roll Length (ft)	Roll Weight - Net (4164 lbs +/- 0 lbs)	Sheet Width (270 in +/- 2 in)	Roll Area m2	Thickness - Average ASTM D5994 (76 mils min.)
3322708s2a-E0010693-024	Pass	273.00	420	4231.2	270.50	877.9	79.0
3322708s2a-E0010693-025	Pass	273.00	420	4231.2	269.25	877.9	80.3
3322708s2a-E0010693-026	Pass	273.00	420	4236.2	270.00	877.9	80.2
3322708s2a-E0010693-027	Pass	273.00	420	4231.2	269.25	877.9	80.9
3322708s2a-E0010693-028	Pass	273.00	420	4241.2	270.25	877.9	80.2
3322708s2a-E0010693-029	Pass	273.00	420	4231.2	270.00	877.9	78.1
3322708s2a-E0010693-030	Pass	273.00	420	4226.2	270.00	877.9	80.1
3322708s2a-e0010693-031	Pass	273.00	420	4226.2	270.25	877.9	79.8
3322708s2a-e0010693-032	Pass	273.00	420	4221.2	270.00	877.9	80.8
3322708s2a-e0010693-033	Pass	273.00	420	4231.2	270.50	877.9	80.4
3322708s2a-e0010693-034	Pass	273.00	420	4231.2	270.25	877.9	79.9
3322708S2A-E0010693-035	Pass	273.00	420	4231.2	270.00	877.9	79.2
3322708S2A-E0010693-036	Pass	273.00	420	4126.2	270.00	877.9	77.6

LAYFIELD Leaders in Film & Geosynthetic Technology

Mill Certification Report

Sales Order #	356006		
Order Date	2/10/2020	**Customer Name**	EAGLE GOLD PROJECT
Req Ship Date	4/14/2020		45km NE OF VILLAGE OF MAYO, YT REFER TO ATTACHED SITE MAP AND ACCESS ROAD POLICY

Inspection #	39864	**Job**	E0010693	**Status**	Active	**Result**	Pass
Stock Code	3322708S2A	EL4280 270" 80MIL SE TEX-2		**Inspection Date**	4/6/2020	**Completion Date**	

Serial	Thickness - Minimum ASTM D5994 (72 mils min.)	Asperity - Printed Average ASTM D7466 (20 mils to 30 mils)	Asperity - Unprinted Average ASTM D7466 (20 mils to 30 mils)	Tear Strength - MD Average ASTM D1004 (45 lbs min.)	Tear Strength - TD Average ASTM D1004 (45 lbs min.)	Puncture Strength - Average ASTM D4833 (113 lbs min.)	Density ASTM D1505 (0.925 g/cc to 0.939 g/cc)
3322708s2a-E0010693-024	74.20	23.3	24.1	61	58	135	0.936
3322708s2a-E0010693-025	72.00	21.5	23.8	61	58	135	0.936
3322708s2a-E0010693-026	72.00	26.0	24.0	60	60	147	0.936
3322708s2a-E0010693-027	75.70	23.9	23.6	60	60	147	0.936
3322708s2a-E0010693-028	72.50	23.7	23.0	60	60	147	0.936
3322708s2a-E0010693-029	72.50	24.6	23.5	60	60	147	0.936
3322708s2a-E0010693-030	75.00	21.5	23.7	60	60	147	0.936
3322708s2a-e0010693-031	75.10	20.4	20.6	62	62	138	0.932
3322708s2a-e0010693-032	79.10	20.7	21.0	62	62	138	0.932
3322708s2a-e0010693-033	78.90	20.2	20.9	62	62	138	0.932
3322708s2a-e0010693-034	77.70	21.1	20.8	62	62	138	0.932
3322708S2A-E0010693-035	76.00	22.7	20.8	62	62	138	0.932
3322708S2A-E0010693-036	73.00	21.0	21.2	62	61	140	0.932

LAYFIELD Leaders in Film & Geosynthetic Technology

Mill Certification Report

Sales Order # 356006
Order Date 2/10/2020
Req Ship Date 4/14/2020

Customer Name EAGLE GOLD PROJECT

45km NE OF VILLAGE OF MAYO, YT
REFER TO ATTACHED SITE MAP AND
ACCESS ROAD POLICY

Inspection #	39864	**Job**	E0010693	**Status**	Active	**Result**	Pass
Stock Code	3322708S2A	EL4280 270" 80MIL SE TEX-2		**Inspection Date**	4/6/2020	**Completion Date**	

Serial	Carbon Black Content ASTM D4218 (2 % to 3 %)	Carbon Black Dispersion ASTM D5596	OIT - High Pressure ASTM D5885	OIT ASTM D5885	Dimensional stability (0 % to 2 %)
3322708s2a-E0010693-024	2.34	>= 9 in Cat 1 or 2	Pass > 400 mins	Pass > 100 mins	0.20
3322708s2a-E0010693-025	2.50	>= 9 in Cat 1 or 2	Pass > 400 mins	Pass > 100 mins	0.20
3322708s2a-E0010693-026	2.50	>= 9 in Cat 1 or 2	Pass > 400 mins	Pass > 100 mins	0.20
3322708s2a-E0010693-027	2.30	>= 9 in Cat 1 or 2	Pass > 400 mins	Pass > 100 mins	0.20
3322708s2a-E0010693-028	2.30	>= 9 in Cat 1 or 2	Pass > 400 mins	Pass > 100 mins	0.20
3322708s2a-E0010693-029	2.10	>= 9 in Cat 1 or 2	Pass > 400 mins	Pass > 100 mins	0.20
3322708s2a-E0010693-030	2.10	>= 9 in Cat 1 or 2	Pass > 400 mins	Pass > 100 mins	0.20
3322708s2a-e0010693-031	2.25	>= 9 in Cat 1 or 2	Pass > 400 mins	Pass > 100 mins	0.20
3322708s2a-e0010693-032	2.25	>= 9 in Cat 1 or 2	Pass > 400 mins	Pass > 100 mins	0.20
3322708s2a-e0010693-033	2.25	>= 9 in Cat 1 or 2	Pass > 400 mins	Pass > 100 mins	0.20
3322708s2a-e0010693-034	2.25	>= 9 in Cat 1 or 2	Pass > 400 mins	Pass > 100 mins	0.20
3322708S2A-E0010693-035	2.41	>= 9 in Cat 1 or 2	Pass > 400 mins	Pass > 100 mins	0.20
3322708S2A-E0010693-036	2.41	>= 9 in Cat 1 or 2	Pass > 400 mins	Pass > 100 mins	0.20

LAYFIELD Leaders in Film & Geosynthetic Technology

Mill Certification Report

Sales Order #	356006
Order Date	2/10/2020
Req Ship Date	4/14/2020

Customer Name EAGLE GOLD PROJECT

45km NE OF VILLAGE OF MAYO, YT
REFER TO ATTACHED SITE MAP AND
ACCESS ROAD POLICY

Inspection #	39958	**Job**	E0010694	**Status**	Active	**Result**	Pass
Stock Code	3322708S2A	EL4280 270" 80MIL SE TEX-2		**Inspection Date**	4/7/2020	**Completion Date**	

Serial	Result	Core Width (273 in +/- 0.5 in)	Roll Length (ft)	Roll Weight - Net (4164 lbs +/- 0 lbs)	Sheet Width (270 in +/- 2 in)	Roll Area m2	Thickness - Average ASTM D5994 (76 mils min.)
3322708s2a-e0010694-001	Pass	272.75	420	4241.2	270.75	877.9	77.9
3322708s2a-e0010694-002	Pass	272.75	420	4236.2	270.00	877.9	78.2
3322708s2a-e0010694-003	Pass	272.75	420	4231.2	270.25	877.9	78.9
3322708s2a-e0010694-004	Pass	272.75	420	4231.2	270.00	877.9	77.9
3322708s2a-e0010694-005	Pass	272.75	420	4231.2	269.75	877.9	78.7
3322708s2a-e0010694-006	Pass	272.75	420	4226.2	269.75	877.9	79.1
3322708s2a-e0010694-007	Pass	272.75	420	4231.2	269.50	877.9	78.7
3322708s2a-e0010694-008	Pass	273.00	420	4226.2	269.50	877.9	80.7
3322708s2a-e0010694-009	Pass	273.00	420	4221.2	270.00	877.9	80.2
3322708s2a-e0010694-010	Pass	273.00	420	4216.2	270.00	877.9	80.1
3322708s2a-e0010694-011	Pass	273.00	420	4226.2	269.25	877.9	80.5
3322708s2a-e0010694-012	Pass	273.00	420	4236.2	269.25	877.9	80.4
3322708s2a-e0010694-013	Pass	273.00	420	4236.2	269.50	877.9	80.0
3322708s2a-e0010694-014	Pass	272.75	420	4231.2	270.25	877.9	77.4
3322708s2a-e0010694-015	Pass	272.75	420	4226.2	270.00	877.9	77.8
3322708s2a-e0010694-016	Pass	272.75	420	4231.2	269.50	877.9	76.3
3322708s2a-e0010694-017	Pass	272.50	420	4216.2	270.00	877.9	77.9
3322708s2a-e0010694-018	Pass	272.50	420	4216.2	270.25	877.9	78.2
3322708s2a-e0010694-019	Pass	272.50	420	4226.2	270.00	877.9	79.1
3322708s2a-e0010694-020	Pass	273.00	420	4201.2	269.25	877.9	78.7
3322708S2A-E0010694-021	Pass	272.50	420	4231.2	269.50	877.9	78.5
3322708s2a-e0010694-022	Pass	272.50	420	4231.2	270.75	877.9	78.4
3322708s2a-e0010694-023	Pass	272.50	420	4236.2	269.50	877.9	78.9

LAYFIELD Leaders in Film & Geosynthetic Technology

Mill Certification Report

Sales Order # 356006
Order Date 2/10/2020
Req Ship Date 4/14/2020

Customer Name EAGLE GOLD PROJECT

45km NE OF VILLAGE OF MAYO, YT
REFER TO ATTACHED SITE MAP AND
ACCESS ROAD POLICY

Inspection #	39958	Job	E0010694	Status	Active	Result	Pass
Stock Code	3322708S2A	EL4280 270" 80MIL SE TEX-2		Inspection Date	4/7/2020	Completion Date	

Serial	Thickness - Minimum ASTM D5994 (72 mils min.)	Asperity - Printed Average ASTM D7466 (20 mils to 30 mils)	Asperity - Unprinted Average ASTM D7466 (20 mils to 30 mils)	Tear Strength - MD Average ASTM D1004 (45 lbs min.)	Tear Strength - TD Average ASTM D1004 (45 lbs min.)	Puncture Strength - Average ASTM D4833 (113 lbs min.)	Density ASTM D1505 (0.925 g/cc to 0.939 g/cc)
3322708s2a-e0010694-001	72.60	23.5	25.0	58	59	132	0.935
3322708s2a-e0010694-002	74.60	24.6	23.9	58	59	132	0.935
3322708s2a-e0010694-003	73.80	23.8	24.9	58	59	132	0.935
3322708s2a-e0010694-004	72.90	24.7	23.0	58	59	132	0.935
3322708s2a-e0010694-005	73.60	25.4	24.8	58	59	132	0.935
3322708s2a-e0010694-006	76.30	24.4	24.9	59	63	138	0.935
3322708s2a-e0010694-007	74.60	25.0	24.7	59	63	138	0.935
3322708s2a-e0010694-008	78.90	20.5	21.3	59	63	138	0.935
3322708s2a-e0010694-009	78.20	20.3	20.8	59	63	138	0.935
3322708s2a-e0010694-010	77.00	20.5	20.8	59	63	138	0.935
3322708s2a-e0010694-011	78.90	20.6	21.1	56	60	134	0.934
3322708s2a-e0010694-012	77.50	20.9	20.7	56	60	134	0.934
3322708s2a-e0010694-013	77.60	20.5	20.8	56	60	134	0.934
3322708s2a-e0010694-014	73.20	24.4	24.7	56	60	134	0.934
3322708s2a-e0010694-015	73.60	24.5	25.5	56	60	134	0.934
3322708s2a-e0010694-016	73.00	23.3	22.1	60	58	133	0.934
3322708s2a-e0010694-017	73.20	22.8	22.9	60	58	133	0.934
3322708s2a-e0010694-018	73.10	24.3	21.0	60	58	133	0.934
3322708s2a-e0010694-019	74.60	22.9	22.4	60	58	133	0.934
3322708s2a-e0010694-020	74.50	25.7	25.0	60	58	133	0.934
3322708S2A-E0010694-021	75.20	23.4	23.5	64	63	139	0.936
3322708s2a-e0010694-022	74.30	23.9	23.9	64	63	139	0.936
3322708s2a-e0010694-023	75.20	23.5	23.8	64	63	139	0.936

LAYFIELD Leaders in Film & Geosynthetic Technology

Mill Certification Report

Sales Order # 356006
Order Date 2/10/2020
Req Ship Date 4/14/2020

Customer Name EAGLE GOLD PROJECT
45km NE OF VILLAGE OF MAYO, YT
REFER TO ATTACHED SITE MAP AND
ACCESS ROAD POLICY

Inspection #	39958	**Job**	E0010694	**Status**	Active	**Result**	Pass
Stock Code	3322708S2A	EL4280 270" 80MIL SE TEX-2		**Inspection Date**	4/7/2020	**Completion Date**	

Serial	Carbon Black Content ASTM D4218 (2 % to 3 %)	Carbon Black Dispersion ASTM D5596	OIT - High Pressure ASTM D5885	OIT ASTM D5885	Dimensional stability (0 % to 2 %)
3322708s2a-e0010694-001	2.41	>= 9 in Cat 1 or 2	Pass > 400 mins	Pass > 100 mins	0.30
3322708s2a-e0010694-002	2.41	>= 9 in Cat 1 or 2	Pass > 400 mins	Pass > 100 mins	0.30
3322708s2a-e0010694-003	2.17	>= 9 in Cat 1 or 2	Pass > 400 mins	Pass > 100 mins	0.30
3322708s2a-e0010694-004	2.17	>= 9 in Cat 1 or 2	Pass > 400 mins	Pass > 100 mins	0.30
3322708s2a-e0010694-005	2.26	>= 9 in Cat 1 or 2	Pass > 400 mins	Pass > 100 mins	0.30
3322708s2a-e0010694-006	2.26	>= 9 in Cat 1 or 2	Pass > 400 mins	Pass > 100 mins	0.30
3322708s2a-e0010694-007	2.07	>= 9 in Cat 1 or 2	Pass > 400 mins	Pass > 100 mins	0.30
3322708s2a-e0010694-008	2.07	>= 9 in Cat 1 or 2	Pass > 400 mins	Pass > 100 mins	0.30
3322708s2a-e0010694-009	2.41	>= 9 in Cat 1 or 2	Pass > 400 mins	Pass > 100 mins	0.30
3322708s2a-e0010694-010	2.41	>= 9 in Cat 1 or 2	Pass > 400 mins	Pass > 100 mins	0.30
3322708s2a-e0010694-011	2.18	>= 9 in Cat 1 or 2	Pass > 400 mins	Pass > 100 mins	0.30
3322708s2a-e0010694-012	2.18	>= 9 in Cat 1 or 2	Pass > 400 mins	Pass > 100 mins	0.30
3322708s2a-e0010694-013	2.24	>= 9 in Cat 1 or 2	Pass > 400 mins	Pass > 100 mins	0.30
3322708s2a-e0010694-014	2.24	>= 9 in Cat 1 or 2	Pass > 400 mins	Pass > 100 mins	0.30
3322708s2a-e0010694-015	2.18	>= 9 in Cat 1 or 2	Pass > 400 mins	Pass > 100 mins	0.30
3322708s2a-e0010694-016	2.18	>= 9 in Cat 1 or 2	Pass > 400 mins	Pass > 100 mins	0.30
3322708s2a-e0010694-017	2.11	>= 9 in Cat 1 or 2	Pass > 400 mins	Pass > 100 mins	0.30
3322708s2a-e0010694-018	2.11	>= 9 in Cat 1 or 2	Pass > 400 mins	Pass > 100 mins	0.30
3322708s2a-e0010694-019	2.13	>= 9 in Cat 1 or 2	Pass > 400 mins	Pass > 100 mins	0.30
3322708s2a-e0010694-020	2.13	>= 9 in Cat 1 or 2	Pass > 400 mins	Pass > 100 mins	0.30
3322708S2A-E0010694-021	2.03	>= 9 in Cat 1 or 2	Pass > 400 mins	Pass > 100 mins	0.30
3322708s2a-e0010694-022	2.03	>= 9 in Cat 1 or 2	Pass > 400 mins	Pass > 100 mins	0.30
3322708s2a-e0010694-023	2.32	>= 9 in Cat 1 or 2	Pass > 400 mins	Pass > 100 mins	0.30

LAYFIELD Leaders in Film & Geosynthetic Technology

Mill Certification Report

Sales Order #	356006
Order Date	2/10/2020
Req Ship Date	4/14/2020

Customer Name EAGLE GOLD PROJECT

45km NE OF VILLAGE OF MAYO, YT
REFER TO ATTACHED SITE MAP AND
ACCESS ROAD POLICY

Inspection #	39958	**Job**	E0010694	**Status**	Active	**Result**	Pass
Stock Code	3322708S2A	EL4280 270" 80MIL SE TEX-2		**Inspection Date**	4/7/2020	**Completion Date**	

Serial	Result	Core Width (273 in +/- 0.5 in)	Roll Length (ft)	Roll Weight - Net (4164 lbs +/- 0 lbs)	Sheet Width (270 in +/- 2 in)	Roll Area m2	Thickness - Average ASTM D5994 (76 mils min.)
3322708s2a-e0010694-024	Pass	272.50	420	4226.2	269.75	877.9	78.7
3322708s2a-e0010694-025	Pass	72.50	420	4226.2	269.25	877.9	78.3
3322708s2a-e0010694-026	Pass	272.50	420	4231.2	270.00	877.9	78.4
3322708s2a-e0010694-027	Pass	272.50	420	4236.2	271.75	877.9	78.8
3322708s2a-e0010694-028	Pass	272.50	420	4231.2	271.00	877.9	78.5
3322708s2a-e0010694-029	Pass	272.50	420	4236.2	271.00	877.9	80.8
3322708s2a-e0010694-030	Pass	272.50	420	4241.2	270.25	877.9	80.7
3322708s2a-e0010694-031	Pass	272.50	420	4231.2	269.75	877.9	80.7
3322708s2a-e0010694-032	Pass	272.50	420	4231.2	270.00	877.9	81.1
3322708s2a-e0010694-033	Pass	272.50	420	4226.2	269.25	877.9	78.9
3322708s2a-e0010694-034	Pass	272.50	420	4226.2	269.25	877.9	78.0
3322708s2a-e0010694-035	Pass	272.50	420	4231.2	270.00	877.9	77.9
3322708s2a-e0010694-036	Pass	272.50	420	4226.2	269.50	877.9	78.2

LAYFIELD Leaders in Film & Geosynthetic Technology

Mill Certification Report

Sales Order # 356006
Order Date 2/10/2020
Req Ship Date 4/14/2020

Customer Name EAGLE GOLD PROJECT
45km NE OF VILLAGE OF MAYO, YT
REFER TO ATTACHED SITE MAP AND
ACCESS ROAD POLICY

Inspection #	39958	**Job**	E0010694	**Status**	Active	**Result**	Pass
Stock Code	3322708S2A	EL4280 270" 80MIL SE TEX-2		**Inspection Date**	4/7/2020	**Completion Date**	

Serial	Thickness - Minimum ASTM D5994 (72 mils min.)	Asperity - Printed Average ASTM D7466 (20 mils to 30 mils)	Asperity - Unprinted Average ASTM D7466 (20 mils to 30 mils)	Tear Strength - MD Average ASTM D1004 (45 lbs min.)	Tear Strength - TD Average ASTM D1004 (45 lbs min.)	Puncture Strength - Average ASTM D4833 (113 lbs min.)	Density ASTM D1505 (0.925 g/cc to 0.939 g/cc)
3322708s2a-e0010694-024	74.20	22.2	23.9	64	63	139	0.936
3322708s2a-e0010694-025	74.20	23.6	23.5	64	63	139	0.936
3322708s2a-e0010694-026	74.10	22.0	23.8	62	67	124	0.936
3322708s2a-e0010694-027	74.00	22.1	21.7	62	67	124	0.936
3322708s2a-e0010694-028	72.60	23.6	23.5	62	67	124	0.936
3322708s2a-e0010694-029	77.50	24.0	23.4	62	67	124	0.936
3322708s2a-e0010694-030	73.50	22.4	23.0	62	67	124	0.936
3322708s2a-e0010694-031	76.50	23.4	23.3	59	60	138	0.934
3322708s2a-e0010694-032	77.90	23.3	24.4	59	60	138	0.934
3322708s2a-e0010694-033	75.30	24.0	23.6	59	60	138	0.934
3322708s2a-e0010694-034	74.20	22.8	22.8	59	60	138	0.934
3322708s2a-e0010694-035	74.20	23.6	23.8	59	60	138	0.934
3322708s2a-e0010694-036	74.20	21.8	23.5	59	56	125	0.934

LAYFIELD Leaders in Film & Geosynthetic Technology

Mill Certification Report

Sales Order # 356006
Order Date 2/10/2020
Req Ship Date 4/14/2020

Customer Name EAGLE GOLD PROJECT

45km NE OF VILLAGE OF MAYO, YT
REFER TO ATTACHED SITE MAP AND
ACCESS ROAD POLICY

Inspection #	39958	**Job**	E0010694	**Status**	Active	**Result**	Pass
Stock Code	3322708S2A	EL4280 270" 80MIL SE TEX-2		**Inspection Date**	4/7/2020	**Completion Date**	

Serial	Carbon Black Content ASTM D4218 (2 % to 3 %)	Carbon Black Dispersion ASTM D5596	OIT - High Pressure ASTM D5885	OIT ASTM D5885	Dimensional stability (0 % to 2 %)
3322708s2a-e0010694-024	2.32	>= 9 in Cat 1 or 2	Pass > 400 mins	Pass > 100 mins	0.30
3322708s2a-e0010694-025	2.04	>= 9 in Cat 1 or 2	Pass > 400 mins	Pass > 100 mins	0.30
3322708s2a-e0010694-026	2.04	>= 9 in Cat 1 or 2	Pass > 400 mins	Pass > 100 mins	0.30
3322708s2a-e0010694-027	2.80	>= 9 in Cat 1 or 2	Pass > 400 mins	Pass > 100 mins	0.30
3322708s2a-e0010694-028	2.80	>= 9 in Cat 1 or 2	Pass > 400 mins	Pass > 100 mins	0.30
3322708s2a-e0010694-029	2.20	>= 9 in Cat 1 or 2	Pass > 400 mins	Pass > 100 mins	0.30
3322708s2a-e0010694-030	2.20	>= 9 in Cat 1 or 2	Pass > 400 mins	Pass > 100 mins	0.30
3322708s2a-e0010694-031	2.40	>= 9 in Cat 1 or 2	Pass > 400 mins	Pass > 100 mins	0.30
3322708s2a-e0010694-032	2.40	>= 9 in Cat 1 or 2	Pass > 400 mins	Pass > 100 mins	0.30
3322708s2a-e0010694-033	2.33	>= 9 in Cat 1 or 2	Pass > 400 mins	Pass > 100 mins	0.30
3322708s2a-e0010694-034	2.33	>= 9 in Cat 1 or 2	Pass > 400 mins	Pass > 100 mins	0.30
3322708s2a-e0010694-035	2.29	>= 9 in Cat 1 or 2	Pass > 400 mins	Pass > 100 mins	0.30
3322708s2a-e0010694-036	2.29	>= 9 in Cat 1 or 2	Pass > 400 mins	Pass > 100 mins	0.30

LAYFIELD Leaders in Film & Geosynthetic Technology

Mill Certification Report

Sales Order #	356007
Order Date	2/10/2020
Req Ship Date	6/18/2020
Customer Name	EAGLE GOLD PROJECT 45km NE OF VILLAGE OF MAYO, YT REFER TO ATTACHED SITE MAP AND ACCESS ROAD POLICY

Inspection #	40823	**Job**	E0010696	**Status**	Active	**Result**	Pass
Stock Code	3322708S2A	EL4280 270" 80MIL SE TEX-2		**Inspection Date**	5/27/2020	**Completion Date**	

Serial	Carbon Black Content ASTM D4218 (2 % to 3 %)	Carbon Black Dispersion ASTM D5596	OIT - High Pressure ASTM D5885	OIT ASTM D5885	Dimensional stability (0 % to 2 %)
3322708S2A-E0010696-001	2.36	>= 9 in Cat 1 or 2	Pass > 400 mins	Pass > 100 mins	0.00
3322708S2A-E0010696-002	2.36	>= 9 in Cat 1 or 2	Pass > 400 mins	Pass > 100 mins	0.00
3322708S2A-E0010696-004	2.27	>= 9 in Cat 1 or 2	Pass > 400 mins	Pass > 100 mins	0.00
3322708S2A-E0010696-005	2.93	>= 9 in Cat 1 or 2	Pass > 400 mins	Pass > 100 mins	0.00
3322708S2A-E0010696-006	2.93	>= 9 in Cat 1 or 2	Pass > 400 mins	Pass > 100 mins	0.00
3322708S2A-E0010696-007	2.30	>= 9 in Cat 1 or 2	Pass > 400 mins	Pass > 100 mins	0.00
3322708S2A-E0010696-008	2.30	>= 9 in Cat 1 or 2	Pass > 400 mins	Pass > 100 mins	0.00
3322708S2A-E0010696-009	2.29	>= 9 in Cat 1 or 2	Pass > 400 mins	Pass > 100 mins	0.00
3322708S2A-E0010696-010	2.29	>= 9 in Cat 1 or 2	Pass > 400 mins	Pass > 100 mins	0.00
3322708S2A-E0010696-011	2.45	>= 9 in Cat 1 or 2	Pass > 400 mins	Pass > 100 mins	0.00
3322708S2A-E0010696-012	2.45	>= 9 in Cat 1 or 2	Pass > 400 mins	Pass > 100 mins	0.00
3322708S2A-E0010696-013	2.22	>= 9 in Cat 1 or 2	Pass > 400 mins	Pass > 100 mins	0.00
3322708S2A-E0010696-014	2.22	>= 9 in Cat 1 or 2	Pass > 400 mins	Pass > 100 mins	0.00
3322708S2A-E0010696-015	2.15	>= 9 in Cat 1 or 2	Pass > 400 mins	Pass > 100 mins	0.00
3322708S2A-E0010696-016	2.15	>= 9 in Cat 1 or 2	Pass > 400 mins	Pass > 100 mins	0.00
3322708S2A-E0010696-017	2.23	>= 9 in Cat 1 or 2	Pass > 400 mins	Pass > 100 mins	0.00
3322708S2A-E0010696-018	2.23	>= 9 in Cat 1 or 2	Pass > 400 mins	Pass > 100 mins	0.00
3322708S2A-E0010696-019	2.35	>= 9 in Cat 1 or 2	Pass > 400 mins	Pass > 100 mins	0.00
3322708S2A-E0010696-020	2.35	>= 9 in Cat 1 or 2	Pass > 400 mins	Pass > 100 mins	0.00
3322708S2A-E0010696-021	2.48	>= 9 in Cat 1 or 2	Pass > 400 mins	Pass > 100 mins	0.00
3322708S2A-E0010696-022	2.48	>= 9 in Cat 1 or 2	Pass > 400 mins	Pass > 100 mins	0.00
3322708S2A-E0010696-023	2.56	>= 9 in Cat 1 or 2	Pass > 400 mins	Pass > 100 mins	0.00
3322708S2A-E0010696-024	2.56	>= 9 in Cat 1 or 2	Pass > 400 mins	Pass > 100 mins	0.00

LAYFIELD Leaders in Film & Geosynthetic Technology

Mill Certification Report

Sales Order #	356007
Order Date	2/10/2020
Req Ship Date	6/18/2020

Customer Name EAGLE GOLD PROJECT

45km NE OF VILLAGE OF MAYO, YT
REFER TO ATTACHED SITE MAP
AND ACCESS ROAD POLICY

Inspection #	40823	**Job**	E0010696	**Status**	Active	**Result**	Pass
Stock Code	3322708S2A	EL4280 270" 80MIL SE TEX-2		**Inspection Date**	5/27/2020	**Completion Date**	

Serial	Result	Core Width (273 in +/- 0.5 in)	Roll Length (ft)	Roll Weight - Net (4164 lbs +/- 0 lbs)	Sheet Width (270 in +/- 2 in)	Roll Area m2	Thickness - Average ASTM D5994 (76 mils min.)
3322708S2A-E0010696-025	Pass	272.50	420	4201.2	270.75	877.9	78.9
3322708S2A-E0010696-026	Pass	273.00	420	4201.2	271.00	877.9	78.6
3322708S2A-E0010696-027	Pass	273.00	420	4201.2	270.50	877.9	79.6
3322708S2A-E0010696-028	Pass	273.00	420	4191.2	270.50	877.9	80.1
3322708S2A-E0010696-029	Pass	273.00	420	4191.2	271.00	877.9	82.4
3322708S2A-E0010696-030	Pass	273.00	420	4201.2	271.00	877.9	80.0
3322708S2A-E0010696-031	Pass	273.00	420	4161.2	270.50	877.9	81.6
3322708S2A-E0010696-032	Pass	273.00	420	4156.2	271.00	877.9	82.0
3322708S2A-E0010696-033	Pass	272.50	420	4156.2	270.75	877.9	78.1
3322708S2A-E0010696-034	Pass	272.50	420	4166.2	270.75	877.9	78.6
3322708S2A-E0010696-035	Pass	272.50	420	4241.2	270.75	877.9	80.4
3322708S2A-E0010696-036	Pass	272.50	420	4211.2	270.75	877.9	78.6
3322708S2A-E0010696-037	Pass	272.50	420	4211.2	269.75	877.9	79.4

LAYFIELD Leaders in Film & Geosynthetic Technology

Mill Certification Report

Sales Order # 356007
Order Date 2/10/2020
Req Ship Date 6/18/2020

Customer Name EAGLE GOLD PROJECT
45km NE OF VILLAGE OF MAYO, YT
REFER TO ATTACHED SITE MAP
AND ACCESS ROAD POLICY

Inspection #	40823	**Job**	E0010696	**Status**	Active	**Result**	Pass
Stock Code	3322708S2A	EL4280 270" 80MIL SE TEX-2		**Inspection Date**	5/27/2020	**Completion Date**	

Serial	Thickness - Minimum ASTM D5994 (72 mils min.)	Asperity - Printed Average ASTM D7466 (20 mils to 30 mils)	Asperity - Unprinted Average ASTM D7466 (20 mils to 30 mils)	Tear Strength - MD Average ASTM D1004 (45 lbs min.)	Tear Strength - TD Average ASTM D1004 (45 lbs min.)	Puncture Strength - Average ASTM D4833 (113 lbs min.)	Density ASTM D1505 (0.925 g/cc to 0.939 g/cc)
3322708S2A-E0010696-025	75.80	24.5	27.9	63	63	126	0.934
3322708S2A-E0010696-026	74.00	26.2	25.6	64	62	141	0.934
3322708S2A-E0010696-027	75.40	26.1	24.2	64	62	141	0.934
3322708S2A-E0010696-028	77.90	26.3	25.5	64	62	141	0.934
3322708S2A-E0010696-029	79.00	21.3	21.1	64	62	141	0.934
3322708S2A-E0010696-030	72.90	27.1	26.4	64	62	141	0.934
3322708S2A-E0010696-031	79.00	20.6	20.6	63	64	145	0.932
3322708S2A-E0010696-032	74.40	26.7	24.9	63	64	145	0.932
3322708S2A-E0010696-033	75.40	24.2	27.0	63	64	145	0.932
3322708S2A-E0010696-034	76.40	27.0	27.1	63	64	145	0.932
3322708S2A-E0010696-035	77.60	26.2	27.6	63	64	145	0.932
3322708S2A-E0010696-036	75.10	24.0	26.6	64	65	131	0.932
3322708S2A-E0010696-037	76.30	26.0	26.5	64	65	131	0.932

LAYFIELD Leaders in Film & Geosynthetic Technology

Mill Certification Report

Sales Order #	356007
Order Date	2/10/2020
Req Ship Date	6/18/2020
Customer Name	EAGLE GOLD PROJECT 45km NE OF VILLAGE OF MAYO, YT REFER TO ATTACHED SITE MAP AND ACCESS ROAD POLICY

Inspection #	40823	**Job**	E0010696	**Status**	Active	**Result**	Pass
Stock Code	3322708S2A	EL4280 270" 80MIL SE TEX-2		**Inspection Date**	5/27/2020	**Completion Date**	

Serial	Carbon Black Content ASTM D4218 (2 % to 3 %)	Carbon Black Dispersion ASTM D5596	OIT - High Pressure ASTM D5885	OIT ASTM D5885	Dimensional stability (0 % to 2 %)
3322708S2A-E0010696-025	2.01	>= 9 in Cat 1 or 2	Pass > 400 mins	Pass > 100 mins	0.00
3322708S2A-E0010696-026	2.01	>= 9 in Cat 1 or 2	Pass > 400 mins	Pass > 100 mins	0.00
3322708S2A-E0010696-027	2.01	>= 9 in Cat 1 or 2	Pass > 400 mins	Pass > 100 mins	0.00
3322708S2A-E0010696-028	2.01	>= 9 in Cat 1 or 2	Pass > 400 mins	Pass > 100 mins	0.00
3322708S2A-E0010696-029	2.05	>= 9 in Cat 1 or 2	Pass > 400 mins	Pass > 100 mins	0.00
3322708S2A-E0010696-030	2.05	>= 9 in Cat 1 or 2	Pass > 400 mins	Pass > 100 mins	0.00
3322708S2A-E0010696-031	2.10	>= 9 in Cat 1 or 2	Pass > 400 mins	Pass > 100 mins	0.00
3322708S2A-E0010696-032	2.10	>= 9 in Cat 1 or 2	Pass > 400 mins	Pass > 100 mins	0.00
3322708S2A-E0010696-033	2.37	>= 9 in Cat 1 or 2	Pass > 400 mins	Pass > 100 mins	0.00
3322708S2A-E0010696-034	2.37	>= 9 in Cat 1 or 2	Pass > 400 mins	Pass > 100 mins	0.00
3322708S2A-E0010696-035	2.05	>= 9 in Cat 1 or 2	Pass > 400 mins	Pass > 100 mins	0.00
3322708S2A-E0010696-036	2.05	>= 9 in Cat 1 or 2	Pass > 400 mins	Pass > 100 mins	0.00
3322708S2A-E0010696-037	2.23	>= 9 in Cat 1 or 2	Pass > 400 mins	Pass > 100 mins	0.00

LAYFIELD Leaders in Film & Geosynthetic Technology

Mill Certification Report

Sales Order #	356007
Order Date	2/10/2020
Req Ship Date	6/18/2020

Customer Name EAGLE GOLD PROJECT

45km NE OF VILLAGE OF MAYO, YT
REFER TO ATTACHED SITE MAP
AND ACCESS ROAD POLICY

Inspection #	40947	**Job**	E0010697	**Status**	Active	**Result**	Pass
Stock Code	3322708S2A	EL4280 270" 80MIL SE TEX-2		**Inspection Date**	6/4/2020	**Completion Date**	

Serial	Result	Core Width (273 in +/- 0.5 in)	Roll Length (ft)	Roll Weight - Net (4164 lbs +/- 0 lbs)	Sheet Width (270 in +/- 2 in)	Roll Area m2	Thickness - Average ASTM D5994 (76 mils min.)
3322708S2A-E0010697-001	Pass	273.00	420	4201.2	271.00	877.9	78.2
3322708S2A-E0010697-002	Pass	273.00	420	4201.2	270.50	877.9	83.1
3322708S2A-E0010697-003	Pass	273.00	420	4206.2	271.00	877.9	81.4
3322708S2A-E0010697-004	Pass	273.00	420	4206.2	271.00	877.9	81.9
3322708S2A-E0010697-005	Pass	273.00	420	4201.2	271.00	877.9	81.5
3322708S2A-E0010697-006	Pass	273.00	420	4201.2	270.75	877.9	81.6
3322708S2A-E0010697-007	Pass	273.00	420	4196.2	271.00	877.9	80.3
3322708S2A-E0010697-008	Pass	273.00	420	4196.2	271.00	877.9	79.8
3322708S2A-E0010697-009	Pass	273.00	420	4201.2	270.75	877.9	79.6
3322708S2A-E0010697-010	Pass	272.50	420	4201.2	270.75	877.9	79.3
3322708S2A-E0010697-011	Pass	273.00	420	4201.2	270.75	877.9	81.0
3322708S2A-E0010697-012	Pass	273.00	420	4196.2	270.50	877.9	81.1
3322708S2A-E0010697-013	Pass	273.00	420	4201.2	270.75	877.9	80.6
3322708S2A-E0010697-014	Pass	272.50	420	4206.2	270.75	877.9	80.0
3322708S2A-E0010697-015	Pass	273.00	420	4206.2	270.50	877.9	80.7
3322708S2A-E0010697-016	Pass	273.00	420	4201.2	271.00	877.9	82.3
3322708S2A-E0010697-017	Pass	273.00	420	4201.2	271.00	877.9	82.9
3322708S2A-E0010697-018	Pass	273.00	420	4201.2	271.00	877.9	82.1
3322708S2A-E0010697-019	Pass	273.00	420	4201.2	271.00	877.9	81.6
3322708S2A-E0010697-020	Pass	273.00	420	4186.2	271.00	877.9	82.8
3322708S2A-E0010697-021	Pass	272.50	420	4191.2	270.75	877.9	78.1
3322708S2A-E0010697-022	Pass	272.50	420	4191.2	270.75	877.9	78.9
3322708S2A-E0010697-023	Pass	272.50	420	4196.2	270.75	877.9	80.1

LAYFIELD Leaders in Film & Geosynthetic Technology

Mill Certification Report

Sales Order #	356007
Order Date	2/10/2020
Req Ship Date	6/18/2020
Customer Name	EAGLE GOLD PROJECT 45km NE OF VILLAGE OF MAYO, YT REFER TO ATTACHED SITE MAP AND ACCESS ROAD POLICY

Inspection #	40947	**Job**	E0010697	**Status**	Active	**Result**	Pass
Stock Code	3322708S2A	EL4280 270" 80MIL SE TEX-2		**Inspection Date**	6/4/2020	**Completion Date**	

Serial	Thickness - Minimum ASTM D5994 (72 mils min.)	Asperity - Printed Average ASTM D7466 (20 mils to 30 mils)	Asperity - Unprinted Average ASTM D7466 (20 mils to 30 mils)	Tear Strength - MD Average ASTM D1004 (45 lbs min.)	Tear Strength - TD Average ASTM D1004 (45 lbs min.)	Puncture Strength - Average ASTM D4833 (113 lbs min.)	Density ASTM D1505 (0.925 g/cc to 0.939 g/cc)
3322708S2A-E0010697-001	75.60	25.8	26.7	65	66	126	0.934
3322708S2A-E0010697-002	74.80	27.3	25.1	65	66	126	0.934
3322708S2A-E0010697-003	78.00	21.2	20.6	65	66	126	0.934
3322708S2A-E0010697-004	77.10	25.6	24.9	65	66	126	0.934
3322708S2A-E0010697-005	76.80	26.0	25.5	65	66	126	0.934
3322708S2A-E0010697-006	78.20	26.4	24.0	59	63	139	0.934
3322708S2A-E0010697-007	76.80	26.9	25.2	59	63	139	0.934
3322708S2A-E0010697-008	76.50	25.2	24.7	59	63	139	0.934
3322708S2A-E0010697-009	76.50	25.4	27.9	59	63	139	0.934
3322708S2A-E0010697-010	77.50	24.7	22.6	59	63	139	0.934
3322708S2A-E0010697-011	77.30	24.0	24.8	63	67	128	0.934
3322708S2A-E0010697-012	78.50	26.7	23.9	63	67	128	0.934
3322708S2A-E0010697-013	78.30	26.6	26.2	63	67	128	0.934
3322708S2A-E0010697-014	77.30	24.3	23.7	63	67	128	0.934
3322708S2A-E0010697-015	78.70	24.9	26.4	63	67	128	0.934
3322708S2A-E0010697-016	75.40	23.3	25.4	64	66	145	0.934
3322708S2A-E0010697-017	73.10	23.8	26.0	64	66	145	0.934
3322708S2A-E0010697-018	75.90	25.4	25.3	64	66	145	0.934
3322708S2A-E0010697-019	76.70	24.9	26.8	64	66	145	0.934
3322708S2A-E0010697-020	79.90	25.7	26.3	64	66	145	0.934
3322708S2A-E0010697-021	75.20	23.7	24.4	55	57	129	0.933
3322708S2A-E0010697-022	73.40	23.6	24.1	55	57	129	0.933
3322708S2A-E0010697-023	76.80	22.9	24.3	55	57	129	0.933

LAYFIELD Leaders in Film & Geosynthetic Technology

Mill Certification Report

Sales Order #	356007
Order Date	2/10/2020
Req Ship Date	6/18/2020
Customer Name	EAGLE GOLD PROJECT 45km NE OF VILLAGE OF MAYO, YT REFER TO ATTACHED SITE MAP AND ACCESS ROAD POLICY

Inspection #	40947	**Job**	E0010697	**Status**	Active	**Result**	Pass
Stock Code	3322708S2A	EL4280 270" 80MIL SE TEX-2		**Inspection Date**	6/4/2020	**Completion Date**	

Serial	Carbon Black Content ASTM D4218 (2 % to 3 %)	Carbon Black Dispersion ASTM D5596	OIT - High Pressure ASTM D5885	OIT ASTM D5885	Dimensional stability (0 % to 2 %)
3322708S2A-E0010697-001	2.43	>= 9 in Cat 1 or 2	Pass > 400 mins	Pass > 100 mins	0.00
3322708S2A-E0010697-002	2.43	>= 9 in Cat 1 or 2	Pass > 400 mins	Pass > 100 mins	0.00
3322708S2A-E0010697-003	2.41	>= 9 in Cat 1 or 2	Pass > 400 mins	Pass > 100 mins	0.00
3322708S2A-E0010697-004	2.41	>= 9 in Cat 1 or 2	Pass > 400 mins	Pass > 100 mins	0.00
3322708S2A-E0010697-005	2.56	>= 9 in Cat 1 or 2	Pass > 400 mins	Pass > 100 mins	0.00
3322708S2A-E0010697-006	2.56	>= 9 in Cat 1 or 2	Pass > 400 mins	Pass > 100 mins	0.00
3322708S2A-E0010697-007	2.50	>= 9 in Cat 1 or 2	Pass > 400 mins	Pass > 100 mins	0.00
3322708S2A-E0010697-008	2.50	>= 9 in Cat 1 or 2	Pass > 400 mins	Pass > 100 mins	0.00
3322708S2A-E0010697-009	2.39	>= 9 in Cat 1 or 2	Pass > 400 mins	Pass > 100 mins	0.00
3322708S2A-E0010697-010	2.39	>= 9 in Cat 1 or 2	Pass > 400 mins	Pass > 100 mins	0.00
3322708S2A-E0010697-011	2.67	>= 9 in Cat 1 or 2	Pass > 400 mins	Pass > 100 mins	0.00
3322708S2A-E0010697-012	2.67	>= 9 in Cat 1 or 2	Pass > 400 mins	Pass > 100 mins	0.00
3322708S2A-E0010697-013	2.44	>= 9 in Cat 1 or 2	Pass > 400 mins	Pass > 100 mins	0.00
3322708S2A-E0010697-014	2.44	>= 9 in Cat 1 or 2	Pass > 400 mins	Pass > 100 mins	0.00
3322708S2A-E0010697-015	2.30	>= 9 in Cat 1 or 2	Pass > 400 mins	Pass > 100 mins	0.00
3322708S2A-E0010697-016	2.30	>= 9 in Cat 1 or 2	Pass > 400 mins	Pass > 100 mins	0.00
3322708S2A-E0010697-017	2.19	>= 9 in Cat 1 or 2	Pass > 400 mins	Pass > 100 mins	0.00
3322708S2A-E0010697-018	2.19	>= 9 in Cat 1 or 2	Pass > 400 mins	Pass > 100 mins	0.00
3322708S2A-E0010697-019	2.82	>= 9 in Cat 1 or 2	Pass > 400 mins	Pass > 100 mins	0.00
3322708S2A-E0010697-020	2.82	>= 9 in Cat 1 or 2	Pass > 400 mins	Pass > 100 mins	0.00
3322708S2A-E0010697-021	2.38	>= 9 in Cat 1 or 2	Pass > 400 mins	Pass > 100 mins	0.00
3322708S2A-E0010697-022	2.38	>= 9 in Cat 1 or 2	Pass > 400 mins	Pass > 100 mins	0.00
3322708S2A-E0010697-023	2.37	>= 9 in Cat 1 or 2	Pass > 400 mins	Pass > 100 mins	0.00

LAYFIELD Leaders in Film & Geosynthetic Technology

Mill Certification Report

Sales Order #	356007
Order Date	2/10/2020
Req Ship Date	6/18/2020

Customer Name EAGLE GOLD PROJECT

45km NE OF VILLAGE OF MAYO, YT
REFER TO ATTACHED SITE MAP
AND ACCESS ROAD POLICY

Inspection #	40947	**Job**	E0010697	**Status**	Active	**Result**	Pass
Stock Code	3322708S2A	EL4280 270" 80MIL SE TEX-2		**Inspection Date**	6/4/2020	**Completion Date**	

Serial	Result	Core Width (273 in +/- 0.5 in)	Roll Length (ft)	Roll Weight - Net (4164 lbs +/- 0 lbs)	Sheet Width (270 in +/- 2 in)	Roll Area m2	Thickness - Average ASTM D5994 (76 mils min.)
3322708S2A-E0010697-024	Pass	273.00	420	4196.2	271.00	877.9	78.6
3322708S2A-E0010697-025	Pass	273.00	420	4186.2	270.50	877.9	78.8
3322708S2A-E0010697-026	Pass	273.00	420	4206.2	270.75	877.9	79.2
3322708S2A-E0010697-027	Pass	272.50	420	4206.2	270.75	877.9	79.7
3322708S2A-E0010697-028	Pass	272.50	420	4151.2	270.00	877.9	80.2
3322708S2A-E0010697-029	Pass	272.50	420	4151.2	270.75	877.9	80.1
3322708S2A-E0010697-030	Pass	272.50	420	4156.2	270.00	877.9	79.4
3322708S2A-E0010697-031	Pass	272.50	420	4151.2	270.50	877.9	80.6
3322708S2A-E0010697-032	Pass	272.50	420	4141.2	270.50	877.9	77.8
3322708S2A-E0010697-033	Pass	272.50	420	4141.2	269.00	877.9	79.5
3322708S2A-E0010697-034	Pass	273.00	420	4146.2	270.00	877.9	79.1
3322708S2A-E0010697-035	Pass	270.00	420	4141.2	270.00	877.9	83.8
3322708S2A-E0010697-036	Pass	273.00	420	4141.2	269.50	877.9	78.2

LAYFIELD Leaders in Film & Geosynthetic Technology

Mill Certification Report

Sales Order # 356007
Order Date 2/10/2020
Req Ship Date 6/18/2020

Customer Name EAGLE GOLD PROJECT
45km NE OF VILLAGE OF MAYO, YT
REFER TO ATTACHED SITE MAP
AND ACCESS ROAD POLICY

Inspection #	40947	**Job**	E0010697	**Status**	Active	**Result**	Pass
Stock Code	3322708S2A	EL4280 270" 80MIL SE TEX-2		**Inspection Date**	6/4/2020	**Completion Date**	

Serial	Thickness - Minimum ASTM D5994 (72 mils min.)	Asperity - Printed Average ASTM D7466 (20 mils to 30 mils)	Asperity - Unprinted Average ASTM D7466 (20 mils to 30 mils)	Tear Strength - MD Average ASTM D1004 (45 lbs min.)	Tear Strength - TD Average ASTM D1004 (45 lbs min.)	Puncture Strength - Average ASTM D4833 (113 lbs min.)	Density ASTM D1505 (0.925 g/cc to 0.939 g/cc)
3322708S2A-E0010697-024	73.50	23.7	23.7	55	57	129	0.933
3322708S2A-E0010697-025	73.40	23.3	24.5	55	57	129	0.933
3322708S2A-E0010697-026	75.60	23.3	24.9	59	60	132	0.933
3322708S2A-E0010697-027	75.60	24.6	23.9	59	60	132	0.933
3322708S2A-E0010697-028	76.30	24.3	24.5	59	60	132	0.933
3322708S2A-E0010697-029	77.30	24.4	23.5	59	60	132	0.933
3322708S2A-E0010697-030	76.50	25.1	24.3	59	60	132	0.933
3322708S2A-E0010697-031	77.50	27.5	25.7	58	61	138	0.933
3322708S2A-E0010697-032	74.70	26.2	26.1	58	61	138	0.933
3322708S2A-E0010697-033	74.80	27.7	26.6	58	61	138	0.933
3322708S2A-E0010697-034	75.30	24.3	24.1	58	61	138	0.933
3322708S2A-E0010697-035	77.50	25.9	26.2	58	61	138	0.933
3322708S2A-E0010697-036	76.00	25.0	25.3	68	67	137	0.933

LAYFIELD Leaders in Film & Geosynthetic Technology

Mill Certification Report

Sales Order #	356007
Order Date	2/10/2020
Req Ship Date	6/18/2020
Customer Name	EAGLE GOLD PROJECT 45km NE OF VILLAGE OF MAYO, YT REFER TO ATTACHED SITE MAP AND ACCESS ROAD POLICY

Inspection #	40947	**Job**	E0010697	**Status**	Active	**Result**	Pass
Stock Code	3322708S2A	EL4280 270" 80MIL SE TEX-2		**Inspection Date**	6/4/2020	**Completion Date**	

Serial	Carbon Black Content ASTM D4218 (2 % to 3 %)	Carbon Black Dispersion ASTM D5596	OIT - High Pressure ASTM D5885	OIT ASTM D5885	Dimensional stability (0 % to 2 %)
3322708S2A-E0010697-024	2.37	>= 9 in Cat 1 or 2	Pass > 400 mins	Pass > 100 mins	0.00
3322708S2A-E0010697-025	2.70	>= 9 in Cat 1 or 2	Pass > 400 mins	Pass > 100 mins	0.00
3322708S2A-E0010697-026	2.70	>= 9 in Cat 1 or 2	Pass > 400 mins	Pass > 100 mins	0.00
3322708S2A-E0010697-027	2.17	>= 9 in Cat 1 or 2	Pass > 400 mins	Pass > 100 mins	0.00
3322708S2A-E0010697-028	2.17	>= 9 in Cat 1 or 2	Pass > 400 mins	Pass > 100 mins	0.00
3322708S2A-E0010697-029	2.39	>= 9 in Cat 1 or 2	Pass > 400 mins	Pass > 100 mins	0.00
3322708S2A-E0010697-030	2.39	>= 9 in Cat 1 or 2	Pass > 400 mins	Pass > 100 mins	0.00
3322708S2A-E0010697-031	2.46	>= 9 in Cat 1 or 2	Pass > 400 mins	Pass > 100 mins	0.00
3322708S2A-E0010697-032	2.46	>= 9 in Cat 1 or 2	Pass > 400 mins	Pass > 100 mins	0.00
3322708S2A-E0010697-033	2.24	>= 9 in Cat 1 or 2	Pass > 400 mins	Pass > 100 mins	0.00
3322708S2A-E0010697-034	2.24	>= 9 in Cat 1 or 2	Pass > 400 mins	Pass > 100 mins	0.00
3322708S2A-E0010697-035	2.43	>= 9 in Cat 1 or 2	Pass > 400 mins	Pass > 100 mins	0.00
3322708S2A-E0010697-036	2.43	>= 9 in Cat 1 or 2	Pass > 400 mins	Pass > 100 mins	0.00

LAYFIELD Leaders in Film & Geosynthetic Technology

Mill Certification Report

Sales Order #	356007
Order Date	2/10/2020
Req Ship Date	6/18/2020

Customer Name EAGLE GOLD PROJECT

45km NE OF VILLAGE OF MAYO, YT
REFER TO ATTACHED SITE MAP
AND ACCESS ROAD POLICY

Inspection #	41013	**Job**	E0010698	**Status**	Active	**Result**	Pass
Stock Code	3322708S2A	EL4280 270" 80MIL SE TEX-2		**Inspection Date**	6/8/2020	**Completion Date**	

Serial	Result	Core Width (273 in +/- 0.5 in)	Roll Length (ft)	Roll Weight - Net (4164 lbs +/- 0 lbs)	Sheet Width (270 in +/- 2 in)	Roll Area m2	Thickness - Average ASTM D5994 (76 mils min.)
3322708S2A-E0010698-001	Pass	273.00	420	4136.2	269.00	877.9	80.0
3322708S2A-E0010698-002	Pass	273.00	420	4151.2	269.50	877.9	79.0
3322708S2A-E0010698-003	Pass	273.00	420	4161.2	270.50	877.9	80.6
3322708S2A-E0010698-004	Pass	273.00	420	4176.2	270.50	877.9	79.2
3322708S2A-E0010698-005	Pass	272.50	420	4181.2	269.50	877.9	80.4
3322708S2A-E0010698-006	Pass	273.00	420	4181.2	268.50	877.9	79.9
3322708S2A-E0010698-007	Pass	272.50	300	2956.2	269.75	627.1	79.6
3322708S2A-E0010698-008	Pass	273.00	420	4166.2	270.00	877.9	79.9
3322708S2A-E0010698-009	Pass	273.00	420	4161.2	270.00	877.9	79.5
3322708S2A-E0010698-010	Pass	273.00	420	4156.2	270.50	877.9	80.0
3322708S2A-E0010698-011	Pass	272.50	420	4121.2	270.50	877.9	79.2
3322708S2A-E0010698-012	Pass	272.50	420	4121.2	270.50	877.9	78.8
3322708S2A-E0010698-013	Pass	272.50	420	4151.2	269.25	877.9	79.4
3322708S2A-E0010698-014	Pass	272.50	420	4161.2	270.50	877.9	82.1
3322708S2A-E0010698-015	Pass	272.50	420	4166.2	270.00	877.9	78.5
3322708S2A-E0010698-017	Pass	272.50	420	4171.2	270.00	877.9	79.1
3322708S2A-E0010698-018	Pass	273.00	420	4171.2	271.00	877.9	83.6
3322708S2A-E0010698-019	Pass	273.00	420	4176.2	270.75	877.9	80.5
3322708S2A-E0010698-020	Pass	273.00	420	4166.2	270.75	877.9	82.7
3322708S2A-E0010698-021	Pass	273.00	420	4156.2	270.75	877.9	80.9
3322708S2A-E0010698-022	Pass	273.00	420	4151.2	271.00	877.9	82.9
3322708S2A-E0010698-023	Pass	273.00	420	4161.2	271.00	877.9	82.1
3322708S2A-E0010698-024	Pass	272.50	420	4166.2	271.00	877.9	78.8

LAYFIELD Leaders in Film & Geosynthetic Technology

Mill Certification Report

Sales Order #	356007
Order Date	2/10/2020
Req Ship Date	6/18/2020
Customer Name	EAGLE GOLD PROJECT 45km NE OF VILLAGE OF MAYO, YT REFER TO ATTACHED SITE MAP AND ACCESS ROAD POLICY

Inspection #	41013	**Job**	E0010698	**Status**	Active	**Result**	Pass
Stock Code	3322708S2A	EL4280 270" 80MIL SE TEX-2		**Inspection Date**	6/8/2020	**Completion Date**	

Serial	Thickness - Minimum ASTM D5994 (72 mils min.)	Asperity - Printed Average ASTM D7466 (20 mils to 30 mils)	Asperity - Unprinted Average ASTM D7466 (20 mils to 30 mils)	Tear Strength - MD Average ASTM D1004 (45 lbs min.)	Tear Strength - TD Average ASTM D1004 (45 lbs min.)	Puncture Strength - Average ASTM D4833 (113 lbs min.)	Density ASTM D1505 (0.925 g/cc to 0.939 g/cc)
3322708S2A-E0010698-001	74.00	25.2	25.5	64	66	129	0.934
3322708S2A-E0010698-002	76.00	25.5	25.8	64	66	129	0.934
3322708S2A-E0010698-003	76.80	21.5	22.6	64	66	129	0.934
3322708S2A-E0010698-004	74.10	26.1	25.9	64	66	129	0.934
3322708S2A-E0010698-005	75.80	26.6	25.3	64	66	129	0.934
3322708S2A-E0010698-006	77.80	25.2	24.1	67	65	135	0.934
3322708S2A-E0010698-007	78.30	25.0	23.7	67	65	135	0.934
3322708S2A-E0010698-008	75.90	26.2	23.6	67	65	135	0.934
3322708S2A-E0010698-009	76.50	23.8	22.8	67	65	135	0.934
3322708S2A-E0010698-010	78.30	24.9	22.9	67	65	135	0.934
3322708S2A-E0010698-011	76.50	26.4	22.6	61	65	134	0.933
3322708S2A-E0010698-012	75.60	25.7	23.6	61	65	134	0.933
3322708S2A-E0010698-013	76.50	24.9	24.7	61	65	134	0.933
3322708S2A-E0010698-014	78.10	20.9	27.9	61	65	134	0.933
3322708S2A-E0010698-015	75.60	25.3	23.7	61	65	134	0.933
3322708S2A-E0010698-017	76.30	25.2	24.4	66	66	132	0.933
3322708S2A-E0010698-018	77.10	25.5	26.6	66	66	132	0.933
3322708S2A-E0010698-019	74.60	25.4	26.3	66	66	132	0.933
3322708S2A-E0010698-020	79.60	25.1	26.1	66	66	132	0.933
3322708S2A-E0010698-021	72.70	25.7	26.0	62	66	139	0.936
3322708S2A-E0010698-022	77.60	24.4	26.5	62	66	139	0.936
3322708S2A-E0010698-023	73.50	24.9	26.7	62	66	139	0.936
3322708S2A-E0010698-024	75.50	26.8	25.9	62	66	139	0.936

LAYFIELD Leaders in Film & Geosynthetic Technology

Mill Certification Report

Sales Order #	356007
Order Date	2/10/2020
Req Ship Date	6/18/2020
Customer Name	EAGLE GOLD PROJECT 45km NE OF VILLAGE OF MAYO, YT REFER TO ATTACHED SITE MAP AND ACCESS ROAD POLICY

Inspection #	41013	**Job**	E0010698	**Status**	Active	**Result**	Pass
Stock Code	3322708S2A	EL4280 270" 80MIL SE TEX-2		**Inspection Date**	6/8/2020	**Completion Date**	

Serial	Carbon Black Content ASTM D4218 (2 % to 3 %)	Carbon Black Dispersion ASTM D5596	OIT - High Pressure ASTM D5885	OIT ASTM D5885	Dimensional stability (0 % to 2 %)
3322708S2A-E0010698-001	2.20	>= 9 in Cat 1 or 2	Pass > 400 mins	Pass > 100 mins	0.39
3322708S2A-E0010698-002	2.20	>= 9 in Cat 1 or 2	Pass > 400 mins	Pass > 100 mins	0.39
3322708S2A-E0010698-003	2.39	>= 9 in Cat 1 or 2	Pass > 400 mins	Pass > 100 mins	0.39
3322708S2A-E0010698-004	2.39	>= 9 in Cat 1 or 2	Pass > 400 mins	Pass > 100 mins	0.39
3322708S2A-E0010698-005	2.08	>= 9 in Cat 1 or 2	Pass > 400 mins	Pass > 100 mins	0.39
3322708S2A-E0010698-006	2.08	>= 9 in Cat 1 or 2	Pass > 400 mins	Pass > 100 mins	0.39
3322708S2A-E0010698-007	2.23	>= 9 in Cat 1 or 2	Pass > 400 mins	Pass > 100 mins	0.39
3322708S2A-E0010698-008	2.23	>= 9 in Cat 1 or 2	Pass > 400 mins	Pass > 100 mins	0.39
3322708S2A-E0010698-009	2.23	>= 9 in Cat 1 or 2	Pass > 400 mins	Pass > 100 mins	0.39
3322708S2A-E0010698-010	2.23	>= 9 in Cat 1 or 2	Pass > 400 mins	Pass > 100 mins	0.39
3322708S2A-E0010698-011	2.16	>= 9 in Cat 1 or 2	Pass > 400 mins	Pass > 100 mins	0.39
3322708S2A-E0010698-012	2.16	>= 9 in Cat 1 or 2	Pass > 400 mins	Pass > 100 mins	0.39
3322708S2A-E0010698-013	2.30	>= 9 in Cat 1 or 2	Pass > 400 mins	Pass > 100 mins	0.39
3322708S2A-E0010698-014	2.30	>= 9 in Cat 1 or 2	Pass > 400 mins	Pass > 100 mins	0.39
3322708S2A-E0010698-015	2.25	>= 9 in Cat 1 or 2	Pass > 400 mins	Pass > 100 mins	0.39
3322708S2A-E0010698-017	2.34	>= 9 in Cat 1 or 2	Pass > 400 mins	Pass > 100 mins	0.39
3322708S2A-E0010698-018	2.34	>= 9 in Cat 1 or 2	Pass > 400 mins	Pass > 100 mins	0.39
3322708S2A-E0010698-019	2.51	>= 9 in Cat 1 or 2	Pass > 400 mins	Pass > 100 mins	0.39
3322708S2A-E0010698-020	2.51	>= 9 in Cat 1 or 2	Pass > 400 mins	Pass > 100 mins	0.39
3322708S2A-E0010698-021	2.35	>= 9 in Cat 1 or 2	Pass > 400 mins	Pass > 100 mins	0.39
3322708S2A-E0010698-022	2.35	>= 9 in Cat 1 or 2	Pass > 400 mins	Pass > 100 mins	0.39
3322708S2A-E0010698-023	2.71	>= 9 in Cat 1 or 2	Pass > 400 mins	Pass > 100 mins	0.39
3322708S2A-E0010698-024	2.71	>= 9 in Cat 1 or 2	Pass > 400 mins	Pass > 100 mins	0.39

LAYFIELD Leaders in Film & Geosynthetic Technology

Mill Certification Report

Sales Order #	356007
Order Date	2/10/2020
Req Ship Date	6/18/2020

Customer Name EAGLE GOLD PROJECT

45km NE OF VILLAGE OF MAYO, YT
REFER TO ATTACHED SITE MAP
AND ACCESS ROAD POLICY

Inspection #	41013	**Job**	E0010698	**Status**	Active	**Result**	Pass
Stock Code	3322708S2A	EL4280 270" 80MIL SE TEX-2		**Inspection Date**	6/8/2020	**Completion Date**	

Serial	Result	Core Width (273 in +/- 0.5 in)	Roll Length (ft)	Roll Weight - Net (4164 lbs +/- 0 lbs)	Sheet Width (270 in +/- 2 in)	Roll Area m2	Thickness - Average ASTM D5994 (76 mils min.)
3322708S2A-E0010698-025	Pass	272.50	420	4171.2	271.00	877.9	79.9
3322708S2A-E0010698-026	Pass	272.50	420	4156.2	270.25	877.9	79.6
3322708S2A-E0010698-027	Pass	272.50	420	4151.2	269.25	877.9	78.8
3322708S2A-E0010698-028	Pass	272.50	420	4161.2	269.00	877.9	77.7
3322708S2A-E0010698-029	Pass	272.50	420	4161.2	269.25	877.9	78.8
3322708S2A-E0010698-030	Pass	273.00	420	4196.2	269.00	877.9	80.7
3322708S2A-E0010698-031	Pass	273.00	420	4201.2	270.00	877.9	80.9
3322708S2A-E0010698-032	Pass	273.00	420	4196.2	271.00	877.9	81.2
3322708S2A-E0010698-033	Pass	273.00	420	4191.2	269.25	877.9	83.3
3322708S2A-E0010698-034	Pass	273.00	420	4191.2	271.00	877.9	81.2
3322708S2A-E0010698-035	Pass	273.00	420	4191.2	269.75	877.9	83.0
3322708S2A-E0010698-036	Pass	272.50	420	4181.2	269.75	877.9	80.0

LAYFIELD Leaders in Film & Geosynthetic Technology

Mill Certification Report

Sales Order # 356007
Order Date 2/10/2020
Req Ship Date 6/18/2020

Customer Name EAGLE GOLD PROJECT
45km NE OF VILLAGE OF MAYO, YT
REFER TO ATTACHED SITE MAP
AND ACCESS ROAD POLICY

Inspection #	41013	**Job**	E0010698	**Status**	Active	**Result**	Pass
Stock Code	3322708S2A	EL4280 270" 80MIL SE TEX-2		**Inspection Date**	6/8/2020	**Completion Date**	

Serial	Thickness - Minimum ASTM D5994 (72 mils min.)	Asperity - Printed Average ASTM D7466 (20 mils to 30 mils)	Asperity - Unprinted Average ASTM D7466 (20 mils to 30 mils)	Tear Strength - MD Average ASTM D1004 (45 lbs min.)	Tear Strength - TD Average ASTM D1004 (45 lbs min.)	Puncture Strength - Average ASTM D4833 (113 lbs min.)	Density ASTM D1505 (0.925 g/cc to 0.939 g/cc)
3322708S2A-E0010698-025	76.30	27.0	26.6	62	66	139	0.936
3322708S2A-E0010698-026	77.50	24.7	25.1	64	70	131	0.936
3322708S2A-E0010698-027	75.40	25.2	25.5	64	70	131	0.936
3322708S2A-E0010698-028	74.50	24.8	24.6	64	70	131	0.936
3322708S2A-E0010698-029	75.50	25.5	25.5	64	70	131	0.936
3322708S2A-E0010698-030	76.60	24.4	26.5	64	70	131	0.936
3322708S2A-E0010698-031	75.00	23.8	27.3	61	61	128	0.932
3322708S2A-E0010698-032	76.70	25.5	25.3	61	61	128	0.932
3322708S2A-E0010698-033	81.20	24.8	25.8	61	61	128	0.932
3322708S2A-E0010698-034	74.70	26.3	26.3	61	61	128	0.932
3322708S2A-E0010698-035	76.50	26.8	22.4	61	61	128	0.932
3322708S2A-E0010698-036	73.60	24.1	24.9	58	65	126	0.932

LAYFIELD Leaders in Film & Geosynthetic Technology

Mill Certification Report

Sales Order #	356007
Order Date	2/10/2020
Req Ship Date	6/18/2020
Customer Name	EAGLE GOLD PROJECT 45km NE OF VILLAGE OF MAYO, YT REFER TO ATTACHED SITE MAP AND ACCESS ROAD POLICY

Inspection #	41013	**Job**	E0010698	**Status**	Active	**Result**	Pass
Stock Code	3322708S2A	EL4280 270" 80MIL SE TEX-2		**Inspection Date**	6/8/2020	**Completion Date**	

Serial	Carbon Black Content ASTM D4218 (2 % to 3 %)	Carbon Black Dispersion ASTM D5596	OIT - High Pressure ASTM D5885	OIT ASTM D5885	Dimensional stability (0 % to 2 %)
3322708S2A-E0010698-025	2.43	>= 9 in Cat 1 or 2	Pass > 400 mins	Pass > 100 mins	0.39
3322708S2A-E0010698-026	2.43	>= 9 in Cat 1 or 2	Pass > 400 mins	Pass > 100 mins	0.39
3322708S2A-E0010698-027	2.31	>= 9 in Cat 1 or 2	Pass > 400 mins	Pass > 100 mins	0.39
3322708S2A-E0010698-028	2.31	>= 9 in Cat 1 or 2	Pass > 400 mins	Pass > 100 mins	0.39
3322708S2A-E0010698-029	2.24	>= 9 in Cat 1 or 2	Pass > 400 mins	Pass > 100 mins	0.39
3322708S2A-E0010698-030	2.24	>= 9 in Cat 1 or 2	Pass > 400 mins	Pass > 100 mins	0.39
3322708S2A-E0010698-031	2.48	>= 9 in Cat 1 or 2	Pass > 400 mins	Pass > 100 mins	0.39
3322708S2A-E0010698-032	2.48	>= 9 in Cat 1 or 2	Pass > 400 mins	Pass > 100 mins	0.39
3322708S2A-E0010698-033	2.49	>= 9 in Cat 1 or 2	Pass > 400 mins	Pass > 100 mins	0.39
3322708S2A-E0010698-034	2.49	>= 9 in Cat 1 or 2	Pass > 400 mins	Pass > 100 mins	0.39
3322708S2A-E0010698-035	2.32	>= 9 in Cat 1 or 2	Pass > 400 mins	Pass > 100 mins	0.39
3322708S2A-E0010698-036	2.32	>= 9 in Cat 1 or 2	Pass > 400 mins	Pass > 100 mins	0.39

LAYFIELD Leaders in Film & Geosynthetic Technology

Mill Certification Report

Sales Order #	356007
Order Date	2/10/2020
Req Ship Date	6/18/2020

Customer Name EAGLE GOLD PROJECT

45km NE OF VILLAGE OF MAYO, YT
REFER TO ATTACHED SITE MAP
AND ACCESS ROAD POLICY

Inspection #	41064	**Job**	E0010699	**Status**	Active	**Result**	Pass
Stock Code	3322708S2A	EL4280 270" 80MIL SE TEX-2		**Inspection Date**	6/11/2020	**Completion Date**	

Serial	Result	Core Width (273 in +/- 0.5 in)	Roll Length (ft)	Roll Weight - Net (4164 lbs +/- 0 lbs)	Sheet Width (270 in +/- 2 in)	Roll Area m2	Thickness - Average ASTM D5994 (76 mils min.)
3322708S2A-E0010699-001	Pass	272.50	420	4191.2	270.50	877.9	78.8
3322708S2A-E0010699-002	Pass	272.50	420	4176.2	270.75	877.9	77.8
3322708S2A-E0010699-003	Pass	272.50	420	4176.2	270.75	877.9	77.7
3322708S2A-E0010699-004	Pass	272.50	420	4176.2	270.25	877.9	78.2
3322708S2A-E0010699-005	Pass	272.50	420	4181.2	270.25	877.9	78.3
3322708S2A-E0010699-006	Pass	272.50	420	4181.2	270.50	877.9	78.4
3322708S2A-E0010699-007	Pass	272.50	420	4201.2	270.50	877.9	80.0
3322708S2A-E0010699-008	Pass	272.50	420	4191.2	270.25	877.9	80.2
3322708S2A-E0010699-009	Pass	272.50	420	4191.2	271.00	877.9	80.2
3322708S2A-E0010699-010	Pass	272.50	420	4191.2	270.75	877.9	79.2
3322708S2A-E0010699-011	Pass	272.50	420	4196.2	270.75	877.9	80.2
3322708S2A-E0010699-012	Pass	272.50	420	4186.2	270.00	877.9	80.3
3322708S2A-E0010699-013	Pass	273.00	420	4196.2	270.50	877.9	80.6
3322708S2A-E0010699-014	Pass	273.00	420	4196.2	270.50	877.9	81.0
3322708S2A-E0010699-015	Pass	273.00	420	4191.2	270.00	877.9	79.8
3322708S2A-E0010699-016	Pass	272.50	420	4186.2	270.25	877.9	79.6
3322708S2A-E0010699-017	Pass	272.50	420	4201.2	270.50	877.9	79.2
3322708S2A-E0010699-018	Pass	272.50	420	4201.2	271.00	877.9	79.6
3322708S2A-E0010699-019	Pass	272.50	420	4196.2	270.00	877.9	79.5
3322708S2A-E0010699-020	Pass	271.50	420	4196.2	270.75	877.9	79.8
3322708S2A-E0010699-021	Pass	271.50	420	4191.2	270.50	877.9	79.7
3322708S2A-E0010699-022	Pass	272.50	420	4206.2	271.25	877.9	80.1
3322708S2A-E0010699-023	Pass	272.50	420	4201.2	270.50	877.9	80.3

LAYFIELD Leaders in Film & Geosynthetic Technology

Mill Certification Report

Sales Order #	356007
Order Date	2/10/2020
Req Ship Date	6/18/2020
Customer Name	EAGLE GOLD PROJECT 45km NE OF VILLAGE OF MAYO, YT REFER TO ATTACHED SITE MAP AND ACCESS ROAD POLICY

Inspection #	41064	**Job**	E0010699	**Status**	Active	**Result**	Pass
Stock Code	3322708S2A		EL4280 270" 80MIL SE TEX-2	**Inspection Date**	6/11/2020	**Completion Date**	

Serial	Thickness - Minimum ASTM D5994 (72 mils min.)	Asperity - Printed Average ASTM D7466 (20 mils to 30 mils)	Asperity - Unprinted Average ASTM D7466 (20 mils to 30 mils)	Tear Strength - MD Average ASTM D1004 (45 lbs min.)	Tear Strength - TD Average ASTM D1004 (45 lbs min.)	Puncture Strength - Average ASTM D4833 (113 lbs min.)	Density ASTM D1505 (0.925 g/cc to 0.939 g/cc)
3322708S2A-E0010699-001	73.50	25.2	23.8	58	61	131	0.929
3322708S2A-E0010699-002	73.90	24.5	25.3	58	61	131	0.929
3322708S2A-E0010699-003	72.00	24.9	25.3	58	61	131	0.929
3322708S2A-E0010699-004	73.90	23.8	24.7	58	61	131	0.929
3322708S2A-E0010699-005	74.30	24.0	25.4	58	61	131	0.929
3322708S2A-E0010699-006	75.30	24.7	24.2	59	59	131	0.929
3322708S2A-E0010699-007	77.30	24.0	24.4	59	59	131	0.929
3322708S2A-E0010699-008	76.70	25.0	24.5	59	59	131	0.929
3322708S2A-E0010699-009	76.40	24.8	23.7	59	59	131	0.929
3322708S2A-E0010699-010	76.80	24.7	24.0	59	59	131	0.929
3322708S2A-E0010699-011	77.70	24.8	23.9	62	65	147	0.935
3322708S2A-E0010699-012	77.30	24.6	23.5	62	65	147	0.935
3322708S2A-E0010699-013	76.70	23.5	25.0	62	65	147	0.935
3322708S2A-E0010699-014	74.50	23.4	24.7	62	65	147	0.935
3322708S2A-E0010699-015	74.30	23.3	25.4	62	65	147	0.935
3322708S2A-E0010699-016	75.30	21.8	24.9	60	63	135	0.935
3322708S2A-E0010699-017	74.90	23.4	25.3	60	63	135	0.935
3322708S2A-E0010699-018	74.60	23.6	24.9	60	63	135	0.935
3322708S2A-E0010699-019	75.40	24.5	24.4	60	63	135	0.935
3322708S2A-E0010699-020	76.40	24.4	24.5	60	63	135	0.935
3322708S2A-E0010699-021	77.90	24.5	24.2	61	63	141	0.934
3322708S2A-E0010699-022	75.60	24.2	24.3	61	63	141	0.934
3322708S2A-E0010699-023	78.00	24.0	24.0	61	63	141	0.934

LAYFIELD Leaders in Film & Geosynthetic Technology

Mill Certification Report

Sales Order #	356007
Order Date	2/10/2020
Req Ship Date	6/18/2020
Customer Name	EAGLE GOLD PROJECT 45km NE OF VILLAGE OF MAYO, YT REFER TO ATTACHED SITE MAP AND ACCESS ROAD POLICY

Inspection #	41064	**Job**	E0010699	**Status**	Active	**Result**	Pass
Stock Code	3322708S2A	EL4280 270" 80MIL SE TEX-2		**Inspection Date**	6/11/2020	**Completion Date**	

Serial	Carbon Black Content ASTM D4218 (2 % to 3 %)	Carbon Black Dispersion ASTM D5596	OIT - High Pressure ASTM D5885	OIT ASTM D5885	Dimensional stability (0 % to 2 %)
3322708S2A-E0010699-001	2.38	>= 9 in Cat 1 or 2	Pass > 400 mins	Pass > 100 mins	0.00
3322708S2A-E0010699-002	2.38	>= 9 in Cat 1 or 2	Pass > 400 mins	Pass > 100 mins	0.00
3322708S2A-E0010699-003	2.51	>= 9 in Cat 1 or 2	Pass > 400 mins	Pass > 100 mins	0.00
3322708S2A-E0010699-004	2.51	>= 9 in Cat 1 or 2	Pass > 400 mins	Pass > 100 mins	0.00
3322708S2A-E0010699-005	2.42	>= 9 in Cat 1 or 2	Pass > 400 mins	Pass > 100 mins	0.00
3322708S2A-E0010699-006	2.42	>= 9 in Cat 1 or 2	Pass > 400 mins	Pass > 100 mins	0.00
3322708S2A-E0010699-007	2.55	>= 9 in Cat 1 or 2	Pass > 400 mins	Pass > 100 mins	0.00
3322708S2A-E0010699-008	2.55	>= 9 in Cat 1 or 2	Pass > 400 mins	Pass > 100 mins	0.00
3322708S2A-E0010699-009	2.30	>= 9 in Cat 1 or 2	Pass > 400 mins	Pass > 100 mins	0.00
3322708S2A-E0010699-010	2.30	>= 9 in Cat 1 or 2	Pass > 400 mins	Pass > 100 mins	0.00
3322708S2A-E0010699-011	2.39	>= 9 in Cat 1 or 2	Pass > 400 mins	Pass > 100 mins	0.00
3322708S2A-E0010699-012	2.39	>= 9 in Cat 1 or 2	Pass > 400 mins	Pass > 100 mins	0.00
3322708S2A-E0010699-013	2.04	>= 9 in Cat 1 or 2	Pass > 400 mins	Pass > 100 mins	0.00
3322708S2A-E0010699-014	2.04	>= 9 in Cat 1 or 2	Pass > 400 mins	Pass > 100 mins	0.00
3322708S2A-E0010699-015	2.45	>= 9 in Cat 1 or 2	Pass > 400 mins	Pass > 100 mins	0.00
3322708S2A-E0010699-016	2.45	>= 9 in Cat 1 or 2	Pass > 400 mins	Pass > 100 mins	0.00
3322708S2A-E0010699-017	2.29	>= 9 in Cat 1 or 2	Pass > 400 mins	Pass > 100 mins	0.00
3322708S2A-E0010699-018	2.29	>= 9 in Cat 1 or 2	Pass > 400 mins	Pass > 100 mins	0.00
3322708S2A-E0010699-019	2.39	>= 9 in Cat 1 or 2	Pass > 400 mins	Pass > 100 mins	0.00
3322708S2A-E0010699-020	2.39	>= 9 in Cat 1 or 2	Pass > 400 mins	Pass > 100 mins	0.00
3322708S2A-E0010699-021	2.31	>= 9 in Cat 1 or 2	Pass > 400 mins	Pass > 100 mins	0.00
3322708S2A-E0010699-022	2.31	>= 9 in Cat 1 or 2	Pass > 400 mins	Pass > 100 mins	0.00
3322708S2A-E0010699-023	2.31	>= 9 in Cat 1 or 2	Pass > 400 mins	Pass > 100 mins	0.00

LAYFIELD Leaders in Film & Geosynthetic Technology

Mill Certification Report

Sales Order #	356007
Order Date	2/10/2020
Req Ship Date	6/18/2020

Customer Name EAGLE GOLD PROJECT

45km NE OF VILLAGE OF MAYO, YT
REFER TO ATTACHED SITE MAP
AND ACCESS ROAD POLICY

Inspection #	41064	**Job**	E0010699	**Status**	Active	**Result**	Pass
Stock Code	3322708S2A	EL4280 270" 80MIL SE TEX-2		**Inspection Date**	6/11/2020	**Completion Date**	

Serial	Result	Core Width (273 in +/- 0.5 in)	Roll Length (ft)	Roll Weight - Net (4164 lbs +/- 0 lbs)	Sheet Width (270 in +/- 2 in)	Roll Area m2	Thickness - Average ASTM D5994 (76 mils min.)
3322708S2A-E0010699-024	Pass	272.50	420	4201.2	270.25	877.9	79.7
3322708S2A-E0010699-025	Pass	272.50	420	4196.2	270.00	877.9	80.4
3322708S2A-E0010699-026	Pass	273.00	420	4191.2	270.50	877.9	80.2
3322708S2A-E0010699-027	Pass	273.00	420	4181.2	270.50	877.9	80.6
3322708S2A-E0010699-028	Pass	272.50	420	4191.2	270.75	877.9	79.4
3322708S2A-E0010699-029	Pass	273.00	420	4196.2	270.50	877.9	80.3
3322708S2A-E0010699-030	Pass	273.00	420	4211.2	270.00	877.9	80.1
3322708S2A-E0010699-031	Pass	273.00	420	4206.2	271.00	877.9	81.5
3322708S2A-E0010699-032	Pass	272.50	420	4201.2	270.00	877.9	79.8
3322708S2A-E0010699-033	Pass	272.50	420	4201.2	270.50	877.9	79.8
3322708S2A-E0010699-034	Pass	272.50	420	4206.2	270.00	877.9	80.3
3322708S2A-E0010699-035	Pass	272.50	420	4196.2	270.50	877.9	80.3
3322708S2A-E0010699-036	Pass	272.50	420	4201.2	271.00	877.9	80.0

LAYFIELD Leaders in Film & Geosynthetic Technology

Mill Certification Report

Sales Order # 356007
Order Date 2/10/2020
Req Ship Date 6/18/2020

Customer Name EAGLE GOLD PROJECT
45km NE OF VILLAGE OF MAYO, YT
REFER TO ATTACHED SITE MAP
AND ACCESS ROAD POLICY

Inspection #	41064	Job	E0010699	Status	Active	Result	Pass
Stock Code	3322708S2A	EL4280 270" 80MIL SE TEX-2		Inspection Date	6/11/2020	Completion Date	

Serial	Thickness - Minimum ASTM D5994 (72 mils min.)	Asperity - Printed Average ASTM D7466 (20 mils to 30 mils)	Asperity - Unprinted Average ASTM D7466 (20 mils to 30 mils)	Tear Strength - MD Average ASTM D1004 (45 lbs min.)	Tear Strength - TD Average ASTM D1004 (45 lbs min.)	Puncture Strength - Average ASTM D4833 (113 lbs min.)	Density ASTM D1505 (0.925 g/cc to 0.939 g/cc)
3322708S2A-E0010699-024	76.40	24.5	24.3	61	63	141	0.934
3322708S2A-E0010699-025	78.40	24.3	23.9	61	63	141	0.934
3322708S2A-E0010699-026	74.50	23.4	26.1	68	70	147	0.934
3322708S2A-E0010699-027	73.00	25.2	25.1	68	70	147	0.934
3322708S2A-E0010699-028	74.90	23.8	25.1	68	70	147	0.934
3322708S2A-E0010699-029	76.40	24.8	25.0	68	70	147	0.934
3322708S2A-E0010699-030	73.50	24.4	25.7	68	70	147	0.934
3322708S2A-E0010699-031	75.30	24.4	25.6	65	64	137	0.935
3322708S2A-E0010699-032	76.70	24.8	23.6	65	64	137	0.935
3322708S2A-E0010699-033	76.30	24.3	24.0	65	64	137	0.935
3322708S2A-E0010699-034	76.50	23.9	24.4	65	64	137	0.935
3322708S2A-E0010699-035	78.20	21.8	24.3	65	64	137	0.935
3322708S2A-E0010699-036	72.50	24.5	24.1	68	62	145	0.935

LAYFIELD Leaders in Film & Geosynthetic Technology

Mill Certification Report

Sales Order # 356007
Order Date 2/10/2020
Req Ship Date 6/18/2020

Customer Name EAGLE GOLD PROJECT
45km NE OF VILLAGE OF MAYO, YT
REFER TO ATTACHED SITE MAP
AND ACCESS ROAD POLICY

Inspection #	41064	**Job**	E0010699	**Status**	Active	**Result**	Pass
Stock Code	3322708S2A	EL4280 270" 80MIL SE TEX-2		**Inspection Date**	6/11/2020	**Completion Date**	

Serial	Carbon Black Content ASTM D4218 (2 % to 3 %)	Carbon Black Dispersion ASTM D5596	OIT - High Pressure ASTM D5885	OIT ASTM D5885	Dimensional stability (0 % to 2 %)
3322708S2A-E0010699-024	2.31	>= 9 in Cat 1 or 2	Pass > 400 mins	Pass > 100 mins	0.00
3322708S2A-E0010699-025	2.30	>= 9 in Cat 1 or 2	Pass > 400 mins	Pass > 100 mins	0.00
3322708S2A-E0010699-026	2.30	>= 9 in Cat 1 or 2	Pass > 400 mins	Pass > 100 mins	0.00
3322708S2A-E0010699-027	2.46	>= 9 in Cat 1 or 2	Pass > 400 mins	Pass > 100 mins	0.00
3322708S2A-E0010699-028	2.46	>= 9 in Cat 1 or 2	Pass > 400 mins	Pass > 100 mins	0.00
3322708S2A-E0010699-029	2.30	>= 9 in Cat 1 or 2	Pass > 400 mins	Pass > 100 mins	0.00
3322708S2A-E0010699-030	2.30	>= 9 in Cat 1 or 2	Pass > 400 mins	Pass > 100 mins	0.00
3322708S2A-E0010699-031	2.37	>= 9 in Cat 1 or 2	Pass > 400 mins	Pass > 100 mins	0.00
3322708S2A-E0010699-032	2.37	>= 9 in Cat 1 or 2	Pass > 400 mins	Pass > 100 mins	0.00
3322708S2A-E0010699-033	2.23	>= 9 in Cat 1 or 2	Pass > 400 mins	Pass > 100 mins	0.00
3322708S2A-E0010699-034	2.23	>= 9 in Cat 1 or 2	Pass > 400 mins	Pass > 100 mins	0.00
3322708S2A-E0010699-035	2.46	>= 9 in Cat 1 or 2	Pass > 400 mins	Pass > 100 mins	0.00
3322708S2A-E0010699-036	2.46	>= 9 in Cat 1 or 2	Pass > 400 mins	Pass > 100 mins	0.00

LAYFIELD Leaders in Film & Geosynthetic Technology

Mill Certification Report

Sales Order #	356007
Order Date	2/10/2020
Req Ship Date	6/18/2020

Customer Name EAGLE GOLD PROJECT

45km NE OF VILLAGE OF MAYO, YT
REFER TO ATTACHED SITE MAP
AND ACCESS ROAD POLICY

Inspection #	41065	**Job**	E0010700	**Status**	Active	**Result**	Undetermined
Stock Code	3322708S2A	EL4280 270" 80MIL SE TEX-2		**Inspection Date**	6/11/2020	**Completion Date**	

Serial	Result	Core Width (273 in +/- 0.5 in)	Roll Length (ft)	Roll Weight - Net (4164 lbs +/- 0 lbs)	Sheet Width (270 in +/- 2 in)	Roll Area m2	Thickness - Average ASTM D5994 (76 mils min.)
3322708S2A-E0010700-001	Pass	272.50	420	4206.2	269.75	877.9	80.1
3322708S2A-E0010700-002	Pass	272.50	420	4201.2	271.00	877.9	82.9
3322708S2A-E0010700-003	Pass	273.00	420	4191.2	271.00	877.9	81.3
3322708S2A-E0010700-004	Pass	273.00	420	4201.2	271.00	877.9	80.5
3322708S2A-E0010700-005	Pass	273.00	420	4196.2	271.00	877.9	81.1
3322708S2A-E0010700-006	Pass	273.00	420	4186.2	270.75	877.9	81.4
3322708S2A-E0010700-007	Pass	273.00	420	4201.2	270.75	877.9	80.8
3322708S2A-E0010700-008	Pass	273.00	420	4191.2	269.25	877.9	81.6
3322708S2A-E0010700-009	Pass	272.50	420	4191.2	270.50	877.9	79.3
3322708S2A-E0010700-010	Pass	272.50	420	4196.2	270.25	877.9	79.4
3322708S2A-E0010700-011	Pass	272.50	420	4191.2	270.75	877.9	80.3
3322708S2A-E0010700-012	Pass	272.50	420	4186.2	270.75	877.9	79.9
3322708S2A-E0010700-013	Pass	272.50	420	4191.2	271.00	877.9	80.4
3322708S2A-E0010700-014	Pass	272.50	420	4196.2	270.75	877.9	79.3
3322708S2A-E0010700-015	Pass	273.00	420	4196.2	271.00	877.9	81.0
3322708S2A-E0010700-016	Pass	273.00	420	4191.2	271.50	877.9	80.8
3322708S2A-E0010700-017	Pass	273.00	420	4196.2	271.00	877.9	82.7
3322708S2A-E0010700-018	Pass	273.00	420	4196.2	270.50	877.9	78.6
3322708S2A-E0010700-019	Pass	273.00	420	4196.2	271.00	877.9	81.5
3322708S2A-E0010700-020	Pass	273.00	420	4201.2	270.75	877.9	78.8
3322708S2A-E0010700-021	Pass	273.00	420	4201.2	270.50	877.9	81.0
3322708S2A-E0010700-022	Pass	272.50	420	4201.2	271.00	877.9	79.9
3322708S2A-E0010700-023	Pass	272.50	420	4206.2	271.00	877.9	80.7

LAYFIELD Leaders in Film & Geosynthetic Technology

Mill Certification Report

Sales Order #	356007
Order Date	2/10/2020
Req Ship Date	6/18/2020
Customer Name	EAGLE GOLD PROJECT 45km NE OF VILLAGE OF MAYO, YT REFER TO ATTACHED SITE MAP AND ACCESS ROAD POLICY

Inspection #	41065	**Job**	E0010700	**Status**	Active	**Result**	Undetermined
Stock Code	3322708S2A	EL4280 270" 80MIL SE TEX-2		**Inspection Date**	6/11/2020	**Completion Date**	

Serial	Thickness - Minimum ASTM D5994 (72 mils min.)	Asperity - Printed Average ASTM D7466 (20 mils to 30 mils)	Asperity - Unprinted Average ASTM D7466 (20 mils to 30 mils)	Tear Strength - MD Average ASTM D1004 (45 lbs min.)	Tear Strength - TD Average ASTM D1004 (45 lbs min.)	Puncture Strength - Average ASTM D4833 (113 lbs min.)	Density ASTM D1505 (0.925 g/cc to 0.939 g/cc)
3322708S2A-E0010700-001	76.50	24.4	24.4	61	62	141	0.933
3322708S2A-E0010700-002	79.30	24.3	26.5	61	62	141	0.933
3322708S2A-E0010700-003	77.30	26.0	25.6	61	62	141	0.933
3322708S2A-E0010700-004	74.10	23.3	24.5	61	62	141	0.933
3322708S2A-E0010700-005	77.00	20.9	21.2	61	62	141	0.933
3322708S2A-E0010700-006	77.20	24.4	25.5	60	59	138	0.933
3322708S2A-E0010700-007	76.00	20.2	21.1	60	59	138	0.933
3322708S2A-E0010700-008	73.30	25.4	25.2	60	59	138	0.933
3322708S2A-E0010700-009	77.60	26.2	24.4	60	59	138	0.933
3322708S2A-E0010700-010	77.60	25.9	25.5	60	59	138	0.933
3322708S2A-E0010700-011	78.50	25.1	23.7	64	63	126	0.934
3322708S2A-E0010700-012	77.40	26.2	24.1	64	63	126	0.934
3322708S2A-E0010700-013	77.80	25.6	22.9	64	63	126	0.934
3322708S2A-E0010700-014	77.40	25.2	23.8	64	63	126	0.934
3322708S2A-E0010700-015	74.60	24.0	25.0	64	63	126	0.934
3322708S2A-E0010700-016	74.80	23.2	25.7	62	65	138	0.934
3322708S2A-E0010700-017	79.20	23.8	25.3	62	65	138	0.934
3322708S2A-E0010700-018	72.50	23.7	26.3	62	65	138	0.934
3322708S2A-E0010700-019	76.20	23.3	26.1	62	65	138	0.934
3322708S2A-E0010700-020	75.50	24.2	25.8	62	65	138	0.934
3322708S2A-E0010700-021	78.90	25.2	25.6	64	62	134	0.934
3322708S2A-E0010700-022	77.60	24.9	23.7	64	62	134	0.934
3322708S2A-E0010700-023	77.50	26.0	24.5	64	62	134	0.934

LAYFIELD Leaders in Film & Geosynthetic Technology

Mill Certification Report

Sales Order #	356007
Order Date	2/10/2020
Req Ship Date	6/18/2020
Customer Name	EAGLE GOLD PROJECT 45km NE OF VILLAGE OF MAYO, YT REFER TO ATTACHED SITE MAP AND ACCESS ROAD POLICY

Inspection #	41065	**Job**	E0010700	**Status**	Active	**Result**	Undetermined
Stock Code	3322708S2A	EL4280 270" 80MIL SE TEX-2		**Inspection Date**	6/11/2020	**Completion Date**	

Serial	Carbon Black Content ASTM D4218 (2 % to 3 %)	Carbon Black Dispersion ASTM D5596	OIT - High Pressure ASTM D5885	OIT ASTM D5885	Dimensional stability (0 % to 2 %)
3322708S2A-E0010700-001	2.39	>= 9 in Cat 1 or 2	Pass > 400 mins	Pass > 100 mins	0.00
3322708S2A-E0010700-002	2.39	>= 9 in Cat 1 or 2	Pass > 400 mins	Pass > 100 mins	0.00
3322708S2A-E0010700-003	2.64	>= 9 in Cat 1 or 2	Pass > 400 mins	Pass > 100 mins	0.00
3322708S2A-E0010700-004	2.64	>= 9 in Cat 1 or 2	Pass > 400 mins	Pass > 100 mins	0.00
3322708S2A-E0010700-005	2.18	>= 9 in Cat 1 or 2	Pass > 400 mins	Pass > 100 mins	0.00
3322708S2A-E0010700-006	2.18	>= 9 in Cat 1 or 2	Pass > 400 mins	Pass > 100 mins	0.00
3322708S2A-E0010700-007	2.23	>= 9 in Cat 1 or 2	Pass > 400 mins	Pass > 100 mins	0.00
3322708S2A-E0010700-008	2.23	>= 9 in Cat 1 or 2	Pass > 400 mins	Pass > 100 mins	0.00
3322708S2A-E0010700-009	2.26	>= 9 in Cat 1 or 2	Pass > 400 mins	Pass > 100 mins	0.00
3322708S2A-E0010700-010	2.26	>= 9 in Cat 1 or 2	Pass > 400 mins	Pass > 100 mins	0.00
3322708S2A-E0010700-011	2.44	>= 9 in Cat 1 or 2	Pass > 400 mins	Pass > 100 mins	0.00
3322708S2A-E0010700-012	2.44	>= 9 in Cat 1 or 2	Pass > 400 mins	Pass > 100 mins	0.00
3322708S2A-E0010700-013	2.26	>= 9 in Cat 1 or 2	Pass > 400 mins	Pass > 100 mins	0.00
3322708S2A-E0010700-014	2.26	>= 9 in Cat 1 or 2	Pass > 400 mins	Pass > 100 mins	0.00
3322708S2A-E0010700-015	2.11	>= 9 in Cat 1 or 2	Pass > 400 mins	Pass > 100 mins	0.00
3322708S2A-E0010700-016	2.11	>= 9 in Cat 1 or 2	Pass > 400 mins	Pass > 100 mins	0.00
3322708S2A-E0010700-017	2.10	>= 9 in Cat 1 or 2	Pass > 400 mins	Pass > 100 mins	0.00
3322708S2A-E0010700-018	2.10	>= 9 in Cat 1 or 2	Pass > 400 mins	Pass > 100 mins	0.00
3322708S2A-E0010700-019	2.09	>= 9 in Cat 1 or 2	Pass > 400 mins	Pass > 100 mins	0.00
3322708S2A-E0010700-020	2.09	>= 9 in Cat 1 or 2	Pass > 400 mins	Pass > 100 mins	0.00
3322708S2A-E0010700-021	2.54	>= 9 in Cat 1 or 2	Pass > 400 mins	Pass > 100 mins	0.00
3322708S2A-E0010700-022	2.54	>= 9 in Cat 1 or 2	Pass > 400 mins	Pass > 100 mins	0.00
3322708S2A-E0010700-023	2.31	>= 9 in Cat 1 or 2	Pass > 400 mins	Pass > 100 mins	0.00

LAYFIELD Leaders in Film & Geosynthetic Technology

Mill Certification Report

Sales Order #	356007
Order Date	2/10/2020
Req Ship Date	6/18/2020

Customer Name EAGLE GOLD PROJECT

45km NE OF VILLAGE OF MAYO, YT
REFER TO ATTACHED SITE MAP
AND ACCESS ROAD POLICY

Inspection #	41065	**Job**	E0010700	**Status**	Active	**Result**	Undetermined
Stock Code	3322708S2A	EL4280 270" 80MIL SE TEX-2		**Inspection Date**	6/11/2020	**Completion Date**	

Serial	Result	Core Width (273 in +/- 0.5 in)	Roll Length (ft)	Roll Weight - Net (4164 lbs +/- 0 lbs)	Sheet Width (270 in +/- 2 in)	Roll Area m2	Thickness - Average ASTM D5994 (76 mils min.)
3322708S2A-E0010700-024	Pass	272.50	420	4196.2	270.75	877.9	81.2
3322708S2A-E0010700-025	Pass	272.50	420	4196.2	271.00	877.9	81.5
3322708S2A-E0010700-026	Pass	272.50	420	4191.2	270.75	877.9	81.4
3322708S2A-E0010700-027	Pass	272.50	420	4196.2	271.00	877.9	79.8
3322708S2A-E0010700-028	Pass	272.50	420	4181.2	270.50	877.9	79.8
3322708S2A-E0010700-029	Pass	272.50	420	4191.2	270.25	877.9	78.5
3322708S2A-E0010700-030	Pass	272.50	420	4181.2	271.00	877.9	78.8
3322708S2A-E0010700-031	Pass	272.50	420	4186.2	270.25	877.9	78.9
3322708S2A-E0010700-034	Pass	273.00	420	4181.2	270.75	877.9	79.4
3322708S2A-E0010700-035	Pass	273.00	420	4181.2	271.25	877.9	79.1
3322708S2A-E0010700-036	Pass	270.00	420	4176.2	270.00	877.9	81.3
3322708S2A-E0010700-037	Pass	273.00	420	4176.2	270.75	877.9	80.6
3322708S2A-E0010700-038	Pass	273.00	420	4176.2	270.50	877.9	79.8

LAYFIELD Leaders in Film & Geosynthetic Technology

Mill Certification Report

Sales Order # 356007
Order Date 2/10/2020
Req Ship Date 6/18/2020

Customer Name EAGLE GOLD PROJECT
45km NE OF VILLAGE OF MAYO, YT
REFER TO ATTACHED SITE MAP
AND ACCESS ROAD POLICY

Inspection #	41065	**Job**	E0010700	**Status**	Active	**Result**	Undetermined
Stock Code	3322708S2A	EL4280 270" 80MIL SE TEX-2		**Inspection Date**	6/11/2020	**Completion Date**	

Serial	Thickness - Minimum ASTM D5994 (72 mils min.)	Asperity - Printed Average ASTM D7466 (20 mils to 30 mils)	Asperity - Unprinted Average ASTM D7466 (20 mils to 30 mils)	Tear Strength - MD Average ASTM D1004 (45 lbs min.)	Tear Strength - TD Average ASTM D1004 (45 lbs min.)	Puncture Strength - Average ASTM D4833 (113 lbs min.)	Density ASTM D1505 (0.925 g/cc to 0.939 g/cc)
3322708S2A-E0010700-024	79.50	26.2	25.4	64	62	134	0.934
3322708S2A-E0010700-025	79.40	26.2	23.7	64	62	134	0.934
3322708S2A-E0010700-026	78.50	26.7	24.7	68	65	138	0.934
3322708S2A-E0010700-027	77.60	26.3	22.8	68	65	138	0.934
3322708S2A-E0010700-028	74.40	23.2	24.6	68	65	138	0.934
3322708S2A-E0010700-029	74.60	22.6	24.2	68	65	138	0.934
3322708S2A-E0010700-030	75.40	23.0	23.7	68	65	138	0.934
3322708S2A-E0010700-031	76.40	23.7	24.7	55	56	130	0.934
3322708S2A-E0010700-034	76.70	23.0	21.6	55	56	130	0.934
3322708S2A-E0010700-035	75.00	21.0	22.5	55	56	130	0.934
3322708S2A-E0010700-036	78.50	23.2	22.2	65	66	141	0.934
3322708S2A-E0010700-037	76.50	21.7	22.8	65	66	141	0.934
3322708S2A-E0010700-038	77.50	22.7	22.9	65	66	141	0.934

LAYFIELD Leaders in Film & Geosynthetic Technology

Mill Certification Report

Sales Order #	356007
Order Date	2/10/2020
Req Ship Date	6/18/2020
Customer Name	EAGLE GOLD PROJECT 45km NE OF VILLAGE OF MAYO, YT REFER TO ATTACHED SITE MAP AND ACCESS ROAD POLICY

Inspection #	41065	**Job**	E0010700	**Status**	Active	**Result**	Undetermined
Stock Code	3322708S2A	EL4280 270" 80MIL SE TEX-2		**Inspection Date**	6/11/2020	**Completion Date**	

Serial	Carbon Black Content ASTM D4218 (2 % to 3 %)	Carbon Black Dispersion ASTM D5596	OIT - High Pressure ASTM D5885	OIT ASTM D5885	Dimensional stability (0 % to 2 %)
3322708S2A-E0010700-024	2.31	>= 9 in Cat 1 or 2	Pass > 400 mins	Pass > 100 mins	0.00
3322708S2A-E0010700-025	2.50	>= 9 in Cat 1 or 2	Pass > 400 mins	Pass > 100 mins	0.00
3322708S2A-E0010700-026	2.50	>= 9 in Cat 1 or 2	Pass > 400 mins	Pass > 100 mins	0.00
3322708S2A-E0010700-027	2.39	>= 9 in Cat 1 or 2	Pass > 400 mins	Pass > 100 mins	0.00
3322708S2A-E0010700-028	2.39	>= 9 in Cat 1 or 2	Pass > 400 mins	Pass > 100 mins	0.00
3322708S2A-E0010700-029	2.16	>= 9 in Cat 1 or 2	Pass > 400 mins	Pass > 100 mins	0.00
3322708S2A-E0010700-030	2.16	>= 9 in Cat 1 or 2	Pass > 400 mins	Pass > 100 mins	0.00
3322708S2A-E0010700-031	2.28	>= 9 in Cat 1 or 2	Pass > 400 mins	Pass > 100 mins	0.00
3322708S2A-E0010700-034	2.34	>= 9 in Cat 1 or 2	Pass > 400 mins	Pass > 100 mins	0.00
3322708S2A-E0010700-035	2.08	>= 9 in Cat 1 or 2	Pass > 400 mins	Pass > 100 mins	0.00
3322708S2A-E0010700-036	2.08	>= 9 in Cat 1 or 2	Pass > 400 mins	Pass > 100 mins	0.00
3322708S2A-E0010700-037	2.40	>= 9 in Cat 1 or 2	Pass > 400 mins	Pass > 100 mins	0.00
3322708S2A-E0010700-038	2.40	>= 9 in Cat 1 or 2	Pass > 400 mins	Pass > 100 mins	0.00

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Solmax Geosynthetics, LLC

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Sales Order No.	***Customer Name***	***Project Location***	***Product Name***	***BOL Number***
SO-089208	Layfield Canada Ltd	CA	BLI-075-06N-06W-D-60	

Roll Number	ASTM D4632 Grab Strength (lbs)	ASTM D4632 Peel Strength (lbs)	ASTM D6768 Tensile Strength (ppi)	ASTM D6496 Peel Strength (ppi)	ASTM D5993 Clay Content @ 0% Moisture (lbs/sf)	ASTM D5890 Free Swell (ml/2g)	ASTM D2216 Moisture Content (%)	ASTM D5891 Fluid Loss (ml)
502346923	244	90	64.5	18.6	1.19	31.5	10.7	13.8
502346924	244	90	64.5	18.6	1.19	30.0	10.9	12.6
502346925	244	90	64.5	18.6	1.19	30.0	10.9	12.6
502346926	244	90	64.5	18.6	1.19	30.0	10.9	12.6
502346927	244	90	64.5	18.6	1.19	32.5	9.0	13.0
502346928	244	90	64.5	18.6	1.19	32.5	9.0	13.0
502346929	244	90	64.5	18.6	1.19	32.5	9.0	13.0
502346931	244	90	64.5	18.6	1.19	32.5	9.0	13.0
502346932	244	90	64.5	18.6	1.19	32.5	9.0	13.0
502346933	244	90	64.5	18.6	1.19	32.5	9.0	13.0
502346934	244	90	64.5	18.6	1.19	32.5	9.0	13.0
502346935	244	90	64.5	18.6	1.19	32.5	9.0	13.0
502346936	244	90	64.5	18.6	1.19	32.5	9.0	13.0
502346937	244	90	64.5	18.6	1.19	32.5	9.0	13.0
502346938	244	90	64.5	18.6	1.19	32.5	9.0	13.0
502346939	341	75	82.2	15.6	0.88	32.5	9.0	13.0
502346940	341	75	82.2	15.6	0.88	32.5	9.0	13.0
502346941	341	75	82.2	15.6	0.88	32.5	9.0	13.0
502346945	341	75	82.2	15.6	0.88	32.5	9.0	13.0
502346946	341	75	82.2	15.6	0.88	32.5	9.0	13.0
502346947	341	75	82.2	15.6	0.88	32.5	9.0	13.0
502346948	341	75	82.2	15.6	0.88	32.5	9.0	13.0
502346949	341	75	82.2	15.6	0.88	32.5	9.0	13.0
502346950	341	75	82.2	15.6	0.88	32.5	9.0	13.0
502346951	341	75	82.2	15.6	0.88	32.5	9.0	13.0
502346952	341	75	82.2	15.6	0.88	32.5	9.0	13.0
502346953	341	75	82.2	15.6	0.88	32.5	9.0	13.0
502346954	341	75	82.2	15.6	0.88	32.5	9.0	13.0
502346955	274	79	78.0	17.0	0.80	32.5	9.0	13.0
502346956	274	79	78.0	17.0	0.80	34.0	9.7	13.4
502346957	274	79	78.0	17.0	0.80	34.0	9.7	13.4
502346958	274	79	78.0	17.0	0.80	34.0	9.7	13.4
502346959	274	79	78.0	17.0	0.80	34.0	9.7	13.4
502346960	274	79	78.0	17.0	0.80	34.0	9.7	13.4

SOLMAX

Solmax Geosynthetics, LLC

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Sales Order No.	*Customer Name*	*Project Location*	*Product Name*	*BOL Number*
SO-089208	Layfield Canada Ltd	CA	BLI-075-06N-06W-D-60	

Roll Number	ASTM D4632 Grab Strength (lbs)	ASTM D4632 Peel Strength (lbs)	ASTM D6768 Tensile Strength (ppi)	ASTM D6496 Peel Strength (ppi)	ASTM D5993 Clay Content @ 0% Moisture (lbs/sf)	ASTM D5890 Free Swell (ml/2g)	ASTM D2216 Moisture Content (%)	ASTM D5891 Fluid Loss (ml)
502346961	274	79	78.0	17.0	0.80	34.0	9.7	13.4
502346962	274	79	78.0	17.0	0.80	34.0	9.7	13.4
502346963	274	79	78.0	17.0	0.80	34.0	9.7	13.4
502346964	274	79	78.0	17.0	0.80	34.0	9.7	13.4
502346965	274	79	78.0	17.0	0.80	34.0	9.7	13.4
502346966	274	79	78.0	17.0	0.80	34.0	9.7	13.4
502346967	274	79	78.0	17.0	0.80	34.0	9.7	13.4
502346968	274	79	78.0	17.0	0.80	34.0	9.7	13.4
502346969	274	79	78.0	17.0	0.80	34.0	9.7	13.4
502346970	274	79	78.0	17.0	0.80	34.0	9.7	13.4
502346971	333	92	80.2	19.7	0.83	34.0	9.7	13.4
502346972	333	92	80.2	19.7	0.83	34.0	9.7	13.4
502346973	333	92	80.2	19.7	0.83	34.0	9.7	13.4
502346974	333	92	80.2	19.7	0.83	34.0	9.7	13.4
502346975	333	92	80.2	19.7	0.83	34.0	9.7	13.4
502346976	333	92	80.2	19.7	0.83	34.0	9.7	13.4
502346977	333	92	80.2	19.7	0.83	34.0	9.7	13.4
502346978	333	92	80.2	19.7	0.83	34.0	9.7	13.4
502346979	333	92	80.2	19.7	0.83	34.0	9.7	13.4
502346980	333	92	80.2	19.7	0.83	34.0	9.7	13.4
502346981	333	92	80.2	19.7	0.83	34.0	9.7	13.4
502346982	333	92	80.2	19.7	0.83	34.0	9.7	13.4
502346983	333	92	80.2	19.7	0.83	34.0	9.7	13.4
502346984	333	92	80.2	19.7	0.83	35.0	9.2	12.6
502346985	333	92	80.2	19.7	0.83	35.0	9.2	12.6
502346986	333	92	80.2	19.7	0.83	35.0	9.2	12.6
502346987	289	120	75.4	23.5	0.81	35.0	9.2	12.6
502346988	289	120	75.4	23.5	0.81	35.0	9.2	12.6
502346989	289	120	75.4	23.5	0.81	35.0	9.2	12.6
502346990	289	120	75.4	23.5	0.81	35.0	9.2	12.6
502346991	289	120	75.4	23.5	0.81	35.0	9.2	12.6
502346992	289	120	75.4	23.5	0.81	35.0	9.2	12.6
502346993	289	120	75.4	23.5	0.81	35.0	9.2	12.6
502346994	289	120	75.4	23.5	0.81	35.0	9.2	12.6

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SO-089208	Layfield Canada Ltd	CA	BLI-075-06N-06W-D-60	

Roll Number	ASTM D4632 Grab Strength (lbs)	ASTM D4632 Peel Strength (lbs)	ASTM D6768 Tensile Strength (ppi)	ASTM D6496 Peel Strength (ppi)	ASTM D5993 Clay Content @ 0% Moisture (lbs/sf)	ASTM D5890 Free Swell (ml/2g)	ASTM D2216 Moisture Content (%)	ASTM D5891 Fluid Loss (ml)
502346995	289	120	75.4	23.5	0.81	35.0	9.2	12.6
502346996	289	120	75.4	23.5	0.81	35.0	9.2	12.6
502346997	289	120	75.4	23.5	0.81	35.0	9.2	12.6
502346998	289	120	75.4	23.5	0.81	35.0	9.2	12.6
502346999	289	120	75.4	23.5	0.81	35.0	9.2	12.6
502347000	289	120	75.4	23.5	0.81	35.0	9.2	12.6
502347001	289	120	75.4	23.5	0.81	35.0	9.2	12.6
502347002	289	120	75.4	23.5	0.81	35.0	9.2	12.6
502347003	320	110	82.2	23.3	0.79	35.0	9.2	12.6
502347004	320	110	82.2	23.3	0.79	35.0	9.2	12.6
502347005	320	110	82.2	23.3	0.79	35.0	9.2	12.6
502347006	320	110	82.2	23.3	0.79	35.0	9.2	12.6
502347007	320	110	82.2	23.3	0.79	35.0	9.2	12.6
502347008	320	110	82.2	23.3	0.79	35.0	9.2	12.6
502347009	320	110	82.2	23.3	0.79	35.0	9.2	12.6
502347010	320	110	82.2	23.3	0.79	35.0	9.2	12.6
502347011	320	110	82.2	23.3	0.79	35.0	9.2	12.6
502347012	320	110	82.2	23.3	0.79	35.0	9.2	12.6
502347013	320	110	82.2	23.3	0.79	35.0	9.2	12.6
502347014	320	110	82.2	23.3	0.79	35.0	8.7	13.0
502347015	320	110	82.2	23.3	0.79	35.0	8.7	13.0
502347016	320	110	82.2	23.3	0.79	35.0	8.7	13.0
502347017	320	110	82.2	23.3	0.79	35.0	8.7	13.0
502347018	341	98	87.0	21.5	0.80	35.0	8.7	13.0
502347019	341	98	87.0	21.5	0.80	35.0	8.7	13.0
502347020	341	98	87.0	21.5	0.80	35.0	8.7	13.0
502347021	341	98	87.0	21.5	0.80	35.0	8.7	13.0
502347022	341	98	87.0	21.5	0.80	35.0	8.7	13.0
502347023	341	98	87.0	21.5	0.80	35.0	8.7	13.0
502347024	341	98	87.0	21.5	0.80	35.0	8.7	13.0
502347025	341	98	87.0	21.5	0.80	35.0	8.7	13.0
502347026	341	98	87.0	21.5	0.80	35.0	8.7	13.0
502347027	341	98	87.0	21.5	0.80	35.0	8.7	13.0
502347028	341	98	87.0	21.5	0.80	35.0	8.7	13.0

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SO-089208	Layfield Canada Ltd	CA	BLI-075-06N-06W-D-60	

Roll Number	ASTM D4632 Grab Strength (lbs)	ASTM D4632 Peel Strength (lbs)	ASTM D6768 Tensile Strength (ppi)	ASTM D6496 Peel Strength (ppi)	ASTM D5993 Clay Content @ 0% Moisture (lbs/sf)	ASTM D5890 Free Swell (ml/2g)	ASTM D2216 Moisture Content (%)	ASTM D5891 Fluid Loss (ml)
502347029	341	98	87.0	21.5	0.80	35.0	8.7	13.0
502347030	341	98	87.0	21.5	0.80	35.0	8.7	13.0
502347031	341	98	87.0	21.5	0.80	35.0	8.7	13.0
502347032	341	98	87.0	21.5	0.80	35.0	8.7	13.0
502347033	341	98	87.0	21.5	0.80	35.0	8.7	13.0
502347034	341	98	87.0	21.5	0.80	35.0	8.7	13.0
502347036	336	114	81.7	23.5	0.85	35.0	8.7	13.0
502347037	336	114	81.7	23.5	0.85	35.0	8.7	13.0
502347038	336	114	81.7	23.5	0.85	35.0	8.7	13.0
502347039	336	114	81.7	23.5	0.85	35.0	8.7	13.0
502347040	336	114	81.7	23.5	0.85	35.0	8.7	13.0
502347041	336	114	81.7	23.5	0.85	34.5	9.2	13.4
502347042	336	114	81.7	23.5	0.85	34.5	9.2	13.4
502347043	336	114	81.7	23.5	0.85	34.5	9.2	13.4
502347044	336	114	81.7	23.5	0.85	34.5	9.2	13.4
502347045	336	114	81.7	23.5	0.85	34.5	9.2	13.4
502347046	336	114	81.7	23.5	0.85	34.5	9.2	13.4
502347047	336	114	81.7	23.5	0.85	34.5	9.2	13.4
502347048	336	114	81.7	23.5	0.85	34.5	9.2	13.4
502347049	336	114	81.7	23.5	0.85	34.5	9.2	13.4
502347050	336	114	81.7	23.5	0.85	34.5	9.2	13.4
502347051	336	114	81.7	23.5	0.85	34.5	9.2	13.4
502347052	337	99	68.4	18.5	0.79	34.5	9.2	13.4
502347053	337	99	68.4	18.5	0.79	34.5	9.2	13.4
502347054	337	99	68.4	18.5	0.79	34.5	9.2	13.4
502347055	337	99	68.4	18.5	0.79	34.5	9.2	13.4
502347056	337	99	68.4	18.5	0.79	34.5	9.2	13.4
502347057	337	99	68.4	18.5	0.79	34.5	9.2	13.4
502347058	337	99	68.4	18.5	0.79	34.5	9.2	13.4
502347059	337	99	68.4	18.5	0.79	34.5	9.2	13.4
502347060	337	99	68.4	18.5	0.79	34.5	9.2	13.4
502347061	337	99	68.4	18.5	0.79	34.5	9.2	13.4
502347062	337	99	68.4	18.5	0.79	34.5	9.2	13.4
502347063	337	99	68.4	18.5	0.79	34.5	9.2	13.4

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SO-089208	Layfield Canada Ltd	CA	BLI-075-06N-06W-D-60	

Roll Number	ASTM D4632 Grab Strength (lbs)	ASTM D4632 Peel Strength (lbs)	ASTM D6768 Tensile Strength (ppi)	ASTM D6496 Peel Strength (ppi)	ASTM D5993 Clay Content @ 0% Moisture (lbs/sf)	ASTM D5890 Free Swell (ml/2g)	ASTM D2216 Moisture Content (%)	ASTM D5891 Fluid Loss (ml)
502347064	337	99	68.4	18.5	0.79	34.5	9.2	13.4
502347065	337	99	68.4	18.5	0.79	34.5	9.2	13.4
502347066	337	99	68.4	18.5	0.79	34.5	9.2	13.4
502347067	337	99	68.4	18.5	0.79	34.5	9.2	13.4
502347068	272	110	65.0	22.5	0.80	33.0	8.8	13.6
502347069	272	110	65.0	22.5	0.80	33.0	8.8	13.6
502347070	272	110	65.0	22.5	0.80	33.0	8.8	13.6
502347071	272	110	65.0	22.5	0.80	33.0	8.8	13.6
502347072	272	110	65.0	22.5	0.80	33.0	8.8	13.6
502347073	272	110	65.0	22.5	0.80	33.0	8.8	13.6
502347074	272	110	65.0	22.5	0.80	33.0	8.8	13.6
502347075	272	110	65.0	22.5	0.80	33.0	8.8	13.6
502347076	272	110	65.0	22.5	0.80	33.0	8.8	13.6
502347077	272	110	65.0	22.5	0.80	33.0	8.8	13.6
502347078	272	110	65.0	22.5	0.80	33.0	8.8	13.6
502347079	272	110	65.0	22.5	0.80	33.0	8.8	13.6
502347080	272	110	65.0	22.5	0.80	33.0	8.8	13.6
502347081	272	110	65.0	22.5	0.80	33.0	8.8	13.6
502347082	272	110	65.0	22.5	0.80	33.0	8.8	13.6
502347083	272	110	65.0	22.5	0.80	33.0	8.8	13.6
502347084	301	87	68.2	17.8	0.85	33.0	8.8	13.6
502347085	301	87	68.2	17.8	0.85	33.0	8.8	13.6
502347086	301	87	68.2	17.8	0.85	33.0	8.8	13.6
502347087	301	87	68.2	17.8	0.85	33.0	8.8	13.6
502347088	301	87	68.2	17.8	0.85	33.0	8.8	13.6
502347089	301	87	68.2	17.8	0.85	33.0	8.8	13.6
502347090	301	87	68.2	17.8	0.85	33.0	8.8	13.6
502347091	301	87	68.2	17.8	0.85	33.0	8.8	13.6
502347092	301	87	68.2	17.8	0.85	33.0	8.8	13.6
502347093	301	87	68.2	17.8	0.85	33.0	8.8	13.6
502347094	301	87	68.2	17.8	0.85	33.0	8.8	13.6
502347095	301	87	68.2	17.8	0.85	33.0	8.8	13.6
502347096	301	87	68.2	17.8	0.85	33.0	8.8	13.6
502347097	301	87	68.2	17.8	0.85	33.0	8.8	13.6

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SO-089208	Layfield Canada Ltd	CA	BLI-075-06N-06W-D-60	

Roll Number	ASTM D4632 Grab Strength (lbs)	ASTM D4632 Peel Strength (lbs)	ASTM D6768 Tensile Strength (ppi)	ASTM D6496 Peel Strength (ppi)	ASTM D5993 Clay Content @ 0% Moisture (lbs/sf)	ASTM D5890 Free Swell (ml/2g)	ASTM D2216 Moisture Content (%)	ASTM D5891 Fluid Loss (ml)
502347098	301	87	68.2	17.8	0.85	33.0	8.8	13.6
502347099	301	87	68.2	17.8	0.85	37.5	9.9	11.2
502347100	268	94	64.4	17.7	0.79	37.5	9.9	11.2
502347101	268	94	64.4	17.7	0.79	37.5	9.9	11.2
502347102	268	94	64.4	17.7	0.79	37.5	9.9	11.2
502347103	268	94	64.4	17.7	0.79	37.5	9.9	11.2
502347104	268	94	64.4	17.7	0.79	37.5	9.9	11.2
502347105	268	94	64.4	17.7	0.79	37.5	9.9	11.2
502347106	268	94	64.4	17.7	0.79	37.5	9.9	11.2
502347107	268	94	64.4	17.7	0.79	37.5	9.9	11.2
502347108	268	94	64.4	17.7	0.79	37.5	9.9	11.2
502347109	268	94	64.4	17.7	0.79	37.5	9.9	11.2
502347110	268	94	64.4	17.7	0.79	37.5	9.9	11.2
502347111	268	94	64.4	17.7	0.79	37.5	9.9	11.2
502347112	268	94	64.4	17.7	0.79	37.5	9.9	11.2
502347113	268	94	64.4	17.7	0.79	37.5	9.9	11.2
502347114	268	94	64.4	17.7	0.79	37.5	9.9	11.2
502347115	268	94	64.4	17.7	0.79	37.5	9.9	11.2
502347116	327	94	78.8	15.2	0.81	37.5	9.9	11.2
502347117	327	94	78.8	15.2	0.81	37.5	9.9	11.2
502347118	327	94	78.8	15.2	0.81	37.5	9.9	11.2
502347119	327	94	78.8	15.2	0.81	37.5	9.9	11.2
502347120	327	94	78.8	15.2	0.81	37.5	9.9	11.2
502347121	327	94	78.8	15.2	0.81	37.5	9.9	11.2
502347122	327	94	78.8	15.2	0.81	37.5	9.9	11.2
502347123	327	94	78.8	15.2	0.81	37.5	9.9	11.2
502347124	327	94	78.8	15.2	0.81	37.5	9.9	11.2
502347125	327	94	78.8	15.2	0.81	37.5	9.9	11.2
502347126	327	94	78.8	15.2	0.81	37.5	9.9	11.2
502347127	327	94	78.8	15.2	0.81	37.5	9.9	11.2
502347128	327	94	78.8	15.2	0.81	37.5	9.9	11.2
502347129	327	94	78.8	15.2	0.81	35.5	8.3	14.2
502347130	327	94	78.8	15.2	0.81	35.5	8.3	14.2
502347131	327	94	78.8	15.2	0.81	35.5	8.3	14.2

SOLMAX

Solmax Geosynthetics, LLC

ROLL TEST DATA REPORT



Report Date: Sep/8/2020

Sales Order No.	***Customer Name***	***Project Location***	***Product Name***	***BOL Number***
SO-089208	Layfield Canada Ltd	CA	BLI-075-06N-06W-D-60	

Roll Number	ASTM D4632 Grab Strength (lbs)	ASTM D4632 Peel Strength (lbs)	ASTM D6768 Tensile Strength (ppi)	ASTM D6496 Peel Strength (ppi)	ASTM D5993 Clay Content @ 0% Moisture (lbs/sf)	ASTM D5890 Free Swell (ml/2g)	ASTM D2216 Moisture Content (%)	ASTM D5891 Fluid Loss (ml)
502347132	295	83	74.6	18.0	0.84	35.5	8.3	14.2
502347133	295	83	74.6	18.0	0.84	35.5	8.3	14.2
502347134	295	83	74.6	18.0	0.84	35.5	8.3	14.2
502347135	295	83	74.6	18.0	0.84	35.5	8.3	14.2
502347136	295	83	74.6	18.0	0.84	35.5	8.3	14.2
502347137	295	83	74.6	18.0	0.84	35.5	8.3	14.2
502347138	295	83	74.6	18.0	0.84	35.5	8.3	14.2
502347139	295	83	74.6	18.0	0.84	35.5	8.3	14.2
502347140	295	83	74.6	18.0	0.84	35.5	8.3	14.2
502347141	295	83	74.6	18.0	0.84	35.5	8.3	14.2
502347142	295	83	74.6	18.0	0.84	35.5	8.3	14.2
502347143	295	83	74.6	18.0	0.84	35.5	8.3	14.2
502347144	295	83	74.6	18.0	0.84	35.5	8.3	14.2
502347145	295	83	74.6	18.0	0.84	35.5	8.3	14.2
502347146	295	83	74.6	18.0	0.84	35.5	8.3	14.2
502347147	295	83	74.6	18.0	0.84	35.5	8.3	14.2
502347148	314	92	78.0	18.9	0.83	35.5	8.3	14.2
502347149	314	92	78.0	18.9	0.83	35.5	8.3	14.2
502347150	314	92	78.0	18.9	0.83	35.5	8.3	14.2
502347151	314	92	78.0	18.9	0.83	35.5	8.3	14.2
502347154	314	92	78.0	18.9	0.83	35.5	8.3	14.2
502347155	314	92	78.0	18.9	0.83	35.5	8.3	14.2
502347156	314	92	78.0	18.9	0.83	35.5	8.3	14.2
502347157	314	92	78.0	18.9	0.83	35.5	8.3	14.2
502347158	314	92	78.0	18.9	0.83	35.5	8.3	14.2
502347159	314	92	78.0	18.9	0.83	36.0	8.2	13.4
502347160	314	92	78.0	18.9	0.83	36.0	8.2	13.4
502347161	314	92	78.0	18.9	0.83	36.0	8.2	13.4
502347162	314	92	78.0	18.9	0.83	36.0	8.2	13.4
502347163	314	92	78.0	18.9	0.83	36.0	8.2	13.4
502347164	281	76	77.9	16.3	0.81	36.0	8.2	13.4
502347165	281	76	77.9	16.3	0.81	36.0	8.2	13.4
502347166	281	76	77.9	16.3	0.81	36.0	8.2	13.4
502347167	281	76	77.9	16.3	0.81	36.0	8.2	13.4

SOLMAX

Solmax Geosynthetics, LLC

ROLL TEST DATA REPORT

SOLMAX QC APPROVED

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Sales Order No.	*Customer Name*	*Project Location*	*Product Name*	*BOL Number*
SO-089208	Layfield Canada Ltd	CA	BLI-075-06N-06W-D-60	

Roll Number	ASTM D4632 Grab Strength (lbs)	ASTM D4632 Peel Strength (lbs)	ASTM D6768 Tensile Strength (ppi)	ASTM D6496 Peel Strength (ppi)	ASTM D5993 Clay Content @ 0% Moisture (lbs/sf)	ASTM D5890 Free Swell (ml/2g)	ASTM D2216 Moisture Content (%)	ASTM D5891 Fluid Loss (ml)
502347168	281	76	77.9	16.3	0.81	36.0	8.2	13.4
502347169	281	76	77.9	16.3	0.81	36.0	8.2	13.4
502347170	281	76	77.9	16.3	0.81	36.0	8.2	13.4
502347171	281	76	77.9	16.3	0.81	36.0	8.2	13.4
502347172	281	76	77.9	16.3	0.81	36.0	8.2	13.4
502347173	281	76	77.9	16.3	0.81	36.0	8.2	13.4
502347174	281	76	77.9	16.3	0.81	36.0	8.2	13.4
502347175	281	76	77.9	16.3	0.81	36.0	8.2	13.4
502347467	323	96	82.5	21.5	0.85	35.0	9.1	12.0
502347468	323	96	82.5	21.5	0.85	35.0	9.1	12.0
502347469	323	96	82.5	21.5	0.85	35.0	9.1	12.0
502347470	323	96	82.5	21.5	0.85	35.0	9.1	12.0
502347471	323	96	82.5	21.5	0.85	35.0	9.1	12.0
502347472	323	96	82.5	21.5	0.85	30.0	10.9	12.6
502347473	323	96	82.5	21.5	0.85	30.0	10.9	12.6
502347474	323	96	82.5	21.5	0.85	30.0	10.9	12.6
502347475	323	96	82.5	21.5	0.85	30.0	10.9	12.6
502347476	323	96	82.5	21.5	0.85	30.0	10.9	12.6
502347477	323	96	82.5	21.5	0.85	30.0	10.9	12.6
502347478	323	96	82.5	21.5	0.85	30.0	10.9	12.6
502347479	323	96	82.5	21.5	0.85	30.0	10.9	12.6
502347480	323	96	82.5	21.5	0.85	30.0	10.9	12.6
502347481	323	96	82.5	21.5	0.85	30.0	10.9	12.6
502347482	323	96	82.5	21.5	0.85	30.0	10.9	12.6
502347483	311	97	79.0	19.9	0.83	30.0	10.9	12.6
502347484	311	97	79.0	19.9	0.83	30.0	10.9	12.6
502347485	311	97	79.0	19.9	0.83	30.0	10.9	12.6
502347486	311	97	79.0	19.9	0.83	30.0	10.9	12.6
502347487	311	97	79.0	19.9	0.83	30.0	10.9	12.6
502347488	311	97	79.0	19.9	0.83	32.0	10.0	13.4
502347489	311	97	79.0	19.9	0.83	32.0	10.0	13.4
502347490	311	97	79.0	19.9	0.83	32.0	10.0	13.4
502347491	311	97	79.0	19.9	0.83	32.0	10.0	13.4
502347492	311	97	79.0	19.9	0.83	32.0	10.0	13.4

SOLMAX

Solmax Geosynthetics, LLC

ROLL TEST DATA REPORT

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Sales Order No.	*Customer Name*	*Project Location*	*Product Name*	*BOL Number*
SO-089208	Layfield Canada Ltd	CA	BLI-075-06N-06W-D-60	

Roll Number	ASTM D4632 Grab Strength (lbs)	ASTM D4632 Peel Strength (lbs)	ASTM D6768 Tensile Strength (ppi)	ASTM D6496 Peel Strength (ppi)	ASTM D5993 Clay Content @ 0% Moisture (lbs/sf)	ASTM D5890 Free Swell (ml/2g)	ASTM D2216 Moisture Content (%)	ASTM D5891 Fluid Loss (ml)
502347493	311	97	79.0	19.9	0.83	32.0	10.0	13.4
502347494	311	97	79.0	19.9	0.83	32.0	10.0	13.4
502347495	311	97	79.0	19.9	0.83	32.0	10.0	13.4
502347496	311	97	79.0	19.9	0.83	32.0	10.0	13.4
502347497	311	97	79.0	19.9	0.83	32.0	10.0	13.4
502347498	311	97	79.0	19.9	0.83	32.0	10.0	13.4
502347499	353	97	77.1	20.6	0.79	32.0	10.0	13.4
502347500	353	97	77.1	20.6	0.79	32.0	10.0	13.4
502347501	353	97	77.1	20.6	0.79	32.0	10.0	13.4
502347502	353	97	77.1	20.6	0.79	32.0	10.0	13.4
502347503	353	97	77.1	20.6	0.79	32.0	10.0	13.4
502347504	353	97	77.1	20.6	0.79	32.0	10.0	13.4
502347505	353	97	77.1	20.6	0.79	32.0	10.0	13.4
502347506	353	97	77.1	20.6	0.79	32.0	10.0	13.4
502347507	353	97	77.1	20.6	0.79	32.0	10.0	13.4
502347508	353	97	77.1	20.6	0.79	32.0	10.0	13.4
502347509	353	97	77.1	20.6	0.79	32.0	10.0	13.4
502347510	353	97	77.1	20.6	0.79	32.0	10.0	13.4
502347511	353	97	77.1	20.6	0.79	32.0	10.0	13.4
502347512	353	97	77.1	20.6	0.79	32.0	10.0	13.4
502347513	353	97	77.1	20.6	0.79	32.0	10.0	13.4
502347514	353	97	77.1	20.6	0.79	32.0	10.0	13.4
502347515	373	80	81.2	17.0	0.79	32.0	10.0	13.4
502347516	373	80	81.2	17.0	0.79	32.0	10.0	13.4
502347517	373	80	81.2	17.0	0.79	32.0	10.0	13.4
502347518	373	80	81.2	17.0	0.79	32.0	10.0	13.4
502347519	373	80	81.2	17.0	0.79	32.5	9.1	13.8
502347520	373	80	81.2	17.0	0.79	32.5	9.1	13.8
502347521	373	80	81.2	17.0	0.79	32.5	9.1	13.8
502347522	373	80	81.2	17.0	0.79	32.5	9.1	13.8
502347523	373	80	81.2	17.0	0.79	32.5	9.1	13.8
502347524	373	80	81.2	17.0	0.79	32.5	9.1	13.8
502347525	373	80	81.2	17.0	0.79	32.5	9.1	13.8
502347526	373	80	81.2	17.0	0.79	32.5	9.1	13.8

SOLMAX

Solmax Geosynthetics, LLC

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Sales Order No.	*Customer Name*	*Project Location*	*Product Name*	*BOL Number*
SO-089208	Layfield Canada Ltd	CA	BLI-075-06N-06W-D-60	

Roll Number	ASTM D4632 Grab Strength (lbs)	ASTM D4632 Peel Strength (lbs)	ASTM D6768 Tensile Strength (ppi)	ASTM D6496 Peel Strength (ppi)	ASTM D5993 Clay Content @ 0% Moisture (lbs/sf)	ASTM D5890 Free Swell (ml/2g)	ASTM D2216 Moisture Content (%)	ASTM D5891 Fluid Loss (ml)
502347527	373	80	81.2	17.0	0.79	32.5	9.1	13.8
502347528	373	80	81.2	17.0	0.79	32.5	9.1	13.8
502347529	373	80	81.2	17.0	0.79	32.5	9.1	13.8
502347530	373	80	81.2	17.0	0.79	32.5	9.1	13.8
502347531	367	83	85.1	17.0	0.79	32.5	9.1	13.8
502347532	367	83	85.1	17.0	0.79	32.5	9.1	13.8
502347533	367	83	85.1	17.0	0.79	32.5	9.1	13.8
502347534	367	83	85.1	17.0	0.79	32.5	9.1	13.8
502347535	367	83	85.1	17.0	0.79	32.5	9.1	13.8
502347536	367	83	85.1	17.0	0.79	32.5	9.1	13.8
502347537	367	83	85.1	17.0	0.79	32.5	9.1	13.8
502347538	367	83	85.1	17.0	0.79	32.5	9.1	13.8
502347539	367	83	85.1	17.0	0.79	32.5	9.1	13.8
502347540	367	83	85.1	17.0	0.79	32.5	9.1	13.8
502347541	367	83	85.1	17.0	0.79	32.5	9.1	13.8
502347542	367	83	85.1	17.0	0.79	32.5	9.1	13.8
502347543	367	83	85.1	17.0	0.79	32.5	9.1	13.8
502347544	367	83	85.1	17.0	0.79	32.5	9.1	13.8
502347545	367	83	85.1	17.0	0.79	32.5	9.1	13.8
502347546	367	83	85.1	17.0	0.79	32.5	9.1	13.8
502347547	311	76	80.2	15.9	0.79	32.5	9.1	13.8
502347548	311	76	80.2	15.9	0.79	32.5	9.1	13.8
502347549	311	76	80.2	15.9	0.79	32.5	9.1	13.8
502347550	311	76	80.2	15.9	0.79	33.0	10.7	13.0
502347551	311	76	80.2	15.9	0.79	33.0	10.7	13.0
502347552	311	76	80.2	15.9	0.79	33.0	10.7	13.0
502347553	311	76	80.2	15.9	0.79	33.0	10.7	13.0
502347554	311	76	80.2	15.9	0.79	33.0	10.7	13.0
502347555	311	76	80.2	15.9	0.79	33.0	10.7	13.0
502347556	311	76	80.2	15.9	0.79	33.0	10.7	13.0
502347557	311	76	80.2	15.9	0.79	33.0	10.7	13.0
502347558	311	76	80.2	15.9	0.79	33.0	10.7	13.0
502347559	311	76	80.2	15.9	0.79	33.0	10.7	13.0
502347560	311	76	80.2	15.9	0.79	33.0	10.7	13.0

SOLMAX

Solmax Geosynthetics, LLC

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Sales Order No.	*Customer Name*	*Project Location*	*Product Name*	*BOL Number*
SO-089208	Layfield Canada Ltd	CA	BLI-075-06N-06W-D-60	

Roll Number	ASTM D4632 Grab Strength (lbs)	ASTM D4632 Peel Strength (lbs)	ASTM D6768 Tensile Strength (ppi)	ASTM D6496 Peel Strength (ppi)	ASTM D5993 Clay Content @ 0% Moisture (lbs/sf)	ASTM D5890 Free Swell (ml/2g)	ASTM D2216 Moisture Content (%)	ASTM D5891 Fluid Loss (ml)
502347561	311	76	80.2	15.9	0.79	33.0	10.7	13.0
502347562	311	76	80.2	15.9	0.79	33.0	10.7	13.0
502347563	368	92	75.0	19.6	0.75	33.0	10.7	13.0
502347564	368	92	75.0	19.6	0.75	33.0	10.7	13.0
502347565	368	92	75.0	19.6	0.75	33.0	10.7	13.0
502347566	368	92	75.0	19.6	0.75	33.0	10.7	13.0
502347567	368	92	75.0	19.6	0.75	33.0	10.7	13.0
502347568	368	92	75.0	19.6	0.75	33.0	10.7	13.0
502347569	368	92	75.0	19.6	0.75	33.0	10.7	13.0
502347570	368	92	75.0	19.6	0.75	33.0	10.7	13.0
502347571	368	92	75.0	19.6	0.75	33.0	10.7	13.0
502347572	368	92	75.0	19.6	0.75	33.0	10.7	13.0
502347573	368	92	75.0	19.6	0.75	33.0	10.7	13.0
502347574	368	92	75.0	19.6	0.75	33.0	10.7	13.0
502347575	368	92	75.0	19.6	0.75	33.0	10.7	13.0
502347576	368	92	75.0	19.6	0.75	33.0	10.7	13.0
502347577	368	92	75.0	19.6	0.75	34.5	10.3	11.8
502347578	368	92	75.0	19.6	0.75	34.5	10.3	11.8
502347579	311	79	79.9	15.8	0.84	34.5	10.3	11.8
502347580	311	79	79.9	15.8	0.84	34.5	10.3	11.8
502347581	311	79	79.9	15.8	0.84	34.5	10.3	11.8
502347582	311	79	79.9	15.8	0.84	34.5	10.3	11.8
502347583	311	79	79.9	15.8	0.84	34.5	10.3	11.8
502347584	311	79	79.9	15.8	0.84	34.5	10.3	11.8
502347585	311	79	79.9	15.8	0.84	34.5	10.3	11.8
502347586	311	79	79.9	15.8	0.84	34.5	10.3	11.8
502347587	311	79	79.9	15.8	0.84	34.5	10.3	11.8
502347588	311	79	79.9	15.8	0.84	34.5	10.3	11.8
502347589	311	79	79.9	15.8	0.84	34.5	10.3	11.8
502347590	311	79	79.9	15.8	0.84	34.5	10.3	11.8
502347591	311	79	79.9	15.8	0.84	34.5	10.3	11.8
502347592	311	79	79.9	15.8	0.84	34.5	10.3	11.8
502347593	311	79	79.9	15.8	0.84	34.5	10.3	11.8
502347595	327	81	76.0	17.4	0.89	32.0	10.3	13.0

SOLMAX

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SO-089208	Layfield Canada Ltd	CA	BLI-075-06N-06W-D-60	

Roll Number	ASTM D4632 Grab Strength (lbs)	ASTM D4632 Peel Strength (lbs)	ASTM D6768 Tensile Strength (ppi)	ASTM D6496 Peel Strength (ppi)	ASTM D5993 Clay Content @ 0% Moisture (lbs/sf)	ASTM D5890 Free Swell (ml/2g)	ASTM D2216 Moisture Content (%)	ASTM D5891 Fluid Loss (ml)
502347596	327	81	76.0	17.4	0.89	32.0	10.3	13.0
502347597	327	81	76.0	17.4	0.89	32.0	10.3	13.0
502347599	327	81	76.0	17.4	0.89	32.0	10.3	13.0
502347600	327	81	76.0	17.4	0.89	32.0	10.3	13.0
502347601	327	81	76.0	17.4	0.89	32.0	10.3	13.0
502347602	327	81	76.0	17.4	0.89	32.0	10.3	13.0
502347603	327	81	76.0	17.4	0.89	32.0	10.3	13.0
502347611	347	99	87.9	20.6	0.83	32.0	10.3	13.0
502347612	347	99	87.9	20.6	0.83	32.0	10.3	13.0
502347613	347	99	87.9	20.6	0.83	32.0	10.3	13.0
502347614	347	99	87.9	20.6	0.83	32.0	10.3	13.0
502347617	347	99	87.9	20.6	0.83	32.0	10.3	13.0
502347618	347	99	87.9	20.6	0.83	32.0	10.3	13.0
502347619	347	99	87.9	20.6	0.83	32.0	10.3	13.0
502347620	347	99	87.9	20.6	0.83	32.0	10.3	13.0
502347621	347	99	87.9	20.6	0.83	32.0	10.3	13.0
502347622	347	99	87.9	20.6	0.83	32.0	10.3	13.0
502347623	347	99	87.9	20.6	0.83	32.0	10.3	13.0
502347624	347	99	87.9	20.6	0.83	32.0	10.3	13.0
502347625	347	99	87.9	20.6	0.83	32.0	10.3	13.0
502347626	347	99	87.9	20.6	0.83	35.0	9.0	13.0
502347627	363	77	86.4	16.5	0.82	35.0	9.0	13.0
502347628	363	77	86.4	16.5	0.82	35.0	9.0	13.0
502347629	363	77	86.4	16.5	0.82	35.0	9.0	13.0
502347630	363	77	86.4	16.5	0.82	35.0	9.0	13.0
502347631	363	77	86.4	16.5	0.82	35.0	9.0	13.0
502347632	363	77	86.4	16.5	0.82	35.0	9.0	13.0
502347633	363	77	86.4	16.5	0.82	35.0	9.0	13.0
502347634	363	77	86.4	16.5	0.82	35.0	9.0	13.0
502347635	363	77	86.4	16.5	0.82	35.0	9.0	13.0
502347636	363	77	86.4	16.5	0.82	35.0	9.0	13.0
502347637	363	77	86.4	16.5	0.82	35.0	9.0	13.0
502347638	363	77	86.4	16.5	0.82	35.0	9.0	13.0
502347639	363	77	86.4	16.5	0.82	35.0	9.0	13.0

SOLMAX

Solmax Geosynthetics, LLC

ROLL TEST DATA REPORT

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Sales Order No.	*Customer Name*	*Project Location*	*Product Name*	*BOL Number*
SO-089208	Layfield Canada Ltd	CA	BLI-075-06N-06W-D-60	

Roll Number	ASTM D4632 Grab Strength (lbs)	ASTM D4632 Peel Strength (lbs)	ASTM D6768 Tensile Strength (ppi)	ASTM D6496 Peel Strength (ppi)	ASTM D5993 Clay Content @ 0% Moisture (lbs/sf)	ASTM D5890 Free Swell (ml/2g)	ASTM D2216 Moisture Content (%)	ASTM D5891 Fluid Loss (ml)
502347640	363	77	86.4	16.5	0.82	35.0	9.0	13.0
502347641	363	77	86.4	16.5	0.82	35.0	9.0	13.0
502347642	363	77	86.4	16.5	0.82	35.0	9.0	13.0
502347643	294	85	66.6	17.6	0.80	35.0	9.0	13.0
502347644	294	85	66.6	17.6	0.80	35.0	9.0	13.0
502347645	294	85	66.6	17.6	0.80	35.0	9.0	13.0
502347646	294	85	66.6	17.6	0.80	35.0	9.0	13.0
502347647	294	85	66.6	17.6	0.80	35.0	9.0	13.0
502347648	294	85	66.6	17.6	0.80	35.0	9.0	13.0
502347649	294	85	66.6	17.6	0.80	35.0	9.0	13.0
502347650	294	85	66.6	17.6	0.80	35.0	9.0	13.0
502347651	294	85	66.6	17.6	0.80	35.0	9.0	13.0
502347652	294	85	66.6	17.6	0.80	35.0	9.0	13.0
502347653	294	85	66.6	17.6	0.80	35.0	9.0	13.0
502347654	294	85	66.6	17.6	0.80	35.0	9.0	13.0
502347655	294	85	66.6	17.6	0.80	35.0	9.0	13.0
502347656	294	85	66.6	17.6	0.80	35.0	9.0	13.0
502347657	294	85	66.6	17.6	0.80	34.0	10.1	13.0
502347658	294	85	66.6	17.6	0.80	34.0	10.1	13.0
502347659	395	79	84.6	16.5	0.78	34.0	10.1	13.0
502347660	395	79	84.6	16.5	0.78	34.0	10.1	13.0
502347661	395	79	84.6	16.5	0.78	34.0	10.1	13.0
502347662	395	79	84.6	16.5	0.78	34.0	10.1	13.0
502347663	395	79	84.6	16.5	0.78	34.0	10.1	13.0
502347664	395	79	84.6	16.5	0.78	34.0	10.1	13.0
502347665	395	79	84.6	16.5	0.78	34.0	10.1	13.0
502347666	395	79	84.6	16.5	0.78	34.0	10.1	13.0
502347667	395	79	84.6	16.5	0.78	34.0	10.1	13.0
502347668	395	79	84.6	16.5	0.78	34.0	10.1	13.0
502347669	395	79	84.6	16.5	0.78	34.0	10.1	13.0
502347670	395	79	84.6	16.5	0.78	34.0	10.1	13.0
502347671	395	79	84.6	16.5	0.78	34.0	10.1	13.0
502347672	395	79	84.6	16.5	0.78	34.0	10.1	13.0
502347673	395	79	84.6	16.5	0.78	34.0	10.1	13.0

SOLMAX

Solmax Geosynthetics, LLC

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Sales Order No.	***Customer Name***	***Project Location***	***Product Name***	***BOL Number***
SO-089208	Layfield Canada Ltd	CA	BLI-075-06N-06W-D-60	

Roll Number	ASTM D4632 Grab Strength (lbs)	ASTM D4632 Peel Strength (lbs)	ASTM D6768 Tensile Strength (ppi)	ASTM D6496 Peel Strength (ppi)	ASTM D5993 Clay Content @ 0% Moisture (lbs/sf)	ASTM D5890 Free Swell (ml/2g)	ASTM D2216 Moisture Content (%)	ASTM D5891 Fluid Loss (ml)
502347674	395	79	84.6	16.5	0.78	34.0	10.1	13.0
502347675	343	98	84.1	19.1	0.78	34.0	10.1	13.0
502347676	343	98	84.1	19.1	0.78	34.0	10.1	13.0
502347677	343	98	84.1	19.1	0.78	34.0	10.1	13.0
502347678	343	98	84.1	19.1	0.78	34.0	10.1	13.0
502347679	343	98	84.1	19.1	0.78	34.0	10.1	13.0
502347680	343	98	84.1	19.1	0.78	34.0	10.1	13.0
502347681	343	98	84.1	19.1	0.78	34.0	10.1	13.0
502347682	343	98	84.1	19.1	0.78	34.0	10.1	13.0
502347683	343	98	84.1	19.1	0.78	34.0	10.1	13.0
502347684	343	98	84.1	19.1	0.78	34.0	10.1	13.0
502347685	343	98	84.1	19.1	0.78	34.5	9.9	14.0
502347686	343	98	84.1	19.1	0.78	34.5	9.9	14.0
502347687	343	98	84.1	19.1	0.78	34.5	9.9	14.0
502347688	343	98	84.1	19.1	0.78	34.5	9.9	14.0
502347689	343	98	84.1	19.1	0.78	34.5	9.9	14.0
502347690	343	98	84.1	19.1	0.78	34.5	9.9	14.0
502347691	290	90	70.5	19.5	0.83	34.5	9.9	14.0
502347692	290	90	70.5	19.5	0.83	34.5	9.9	14.0
502347693	290	90	70.5	19.5	0.83	34.5	9.9	14.0
502347694	290	90	70.5	19.5	0.83	34.5	9.9	14.0
502347695	290	90	70.5	19.5	0.83	34.5	9.9	14.0
502347696	290	90	70.5	19.5	0.83	34.5	9.9	14.0
502347697	290	90	70.5	19.5	0.83	34.5	9.9	14.0
502347698	290	90	70.5	19.5	0.83	34.5	9.9	14.0
502347699	290	90	70.5	19.5	0.83	34.5	9.9	14.0
502347700	290	90	70.5	19.5	0.83	34.5	9.9	14.0
502347701	290	90	70.5	19.5	0.83	34.5	9.9	14.0
502347702	290	90	70.5	19.5	0.83	34.5	9.9	14.0
502347703	290	90	70.5	19.5	0.83	34.5	9.9	14.0
502347704	290	90	70.5	19.5	0.83	34.5	9.9	14.0
502347705	290	90	70.5	19.5	0.83	34.5	9.9	14.0
502347706	290	90	70.5	19.5	0.83	34.5	9.9	14.0
502347707	307	94	57.6	19.7	0.80	34.5	9.9	14.0

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Solmax Geosynthetics, LLC

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Sales Order No.	*Customer Name*	*Project Location*	*Product Name*	*BOL Number*
SO-089208	Layfield Canada Ltd	CA	BLI-075-06N-06W-D-60	

Roll Number	ASTM D4632 Grab Strength (lbs)	ASTM D4632 Peel Strength (lbs)	ASTM D6768 Tensile Strength (ppi)	ASTM D6496 Peel Strength (ppi)	ASTM D5993 Clay Content @ 0% Moisture (lbs/sf)	ASTM D5890 Free Swell (ml/2g)	ASTM D2216 Moisture Content (%)	ASTM D5891 Fluid Loss (ml)
502347708	307	94	57.6	19.7	0.80	34.5	9.9	14.0
502347709	307	94	57.6	19.7	0.80	34.5	9.9	14.0
502347710	307	94	57.6	19.7	0.80	34.5	9.9	14.0
502347711	307	94	57.6	19.7	0.80	34.5	9.9	14.0
502347712	307	94	57.6	19.7	0.80	34.5	9.9	14.0
502347713	307	94	57.6	19.7	0.80	34.5	9.9	14.0
502347714	307	94	57.6	19.7	0.80	34.5	9.9	14.0
502347715	307	94	57.6	19.7	0.80	34.5	9.9	14.0
502347716	307	94	57.6	19.7	0.80	33.0	10.7	13.4
502347717	307	94	57.6	19.7	0.80	33.0	10.7	13.4
502347718	307	94	57.6	19.7	0.80	33.0	10.7	13.4
502347719	307	94	57.6	19.7	0.80	33.0	10.7	13.4
502347720	307	94	57.6	19.7	0.80	33.0	10.7	13.4
502347721	307	94	57.6	19.7	0.80	33.0	10.7	13.4
502347722	307	94	57.6	19.7	0.80	33.0	10.7	13.4
502347723	339	99	74.3	22.9	0.81	33.0	10.7	13.4
502347724	339	99	74.3	22.9	0.81	33.0	10.7	13.4
502347725	339	99	74.3	22.9	0.81	33.0	10.7	13.4
502347726	339	99	74.3	22.9	0.81	33.0	10.7	13.4
502347727	339	99	74.3	22.9	0.81	33.0	10.7	13.4
502347728	339	99	74.3	22.9	0.81	33.0	10.7	13.4
502347729	339	99	74.3	22.9	0.81	33.0	10.7	13.4
502347730	339	99	74.3	22.9	0.81	33.0	10.7	13.4
502347731	339	99	74.3	22.9	0.81	33.0	10.7	13.4
502347732	339	99	74.3	22.9	0.81	33.0	10.7	13.4
502347733	339	99	74.3	22.9	0.81	33.0	10.7	13.4
502347734	339	99	74.3	22.9	0.81	33.0	10.7	13.4
502347736	339	99	74.3	22.9	0.81	33.0	10.7	13.4
502347737	339	99	74.3	22.9	0.81	33.0	10.7	13.4
502347738	339	99	74.3	22.9	0.81	33.0	10.7	13.4
502347739	339	99	74.3	22.9	0.81	33.0	10.7	13.4
502347740	355	110	84.3	24.7	0.79	33.0	10.7	13.4
502347741	355	110	84.3	24.7	0.79	33.0	10.7	13.4
502347742	355	110	84.3	24.7	0.79	33.0	10.7	13.4

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Sales Order No.	*Customer Name*	*Project Location*	*Product Name*	*BOL Number*
SO-089208	Layfield Canada Ltd	CA	BLI-075-06N-06W-D-60	

Roll Number	ASTM D4632 Grab Strength (lbs)	ASTM D4632 Peel Strength (lbs)	ASTM D6768 Tensile Strength (ppi)	ASTM D6496 Peel Strength (ppi)	ASTM D5993 Clay Content @ 0% Moisture (lbs/sf)	ASTM D5890 Free Swell (ml/2g)	ASTM D2216 Moisture Content (%)	ASTM D5891 Fluid Loss (ml)
502347743	355	110	84.3	24.7	0.79	33.0	10.7	13.4
502347744	355	110	84.3	24.7	0.79	33.0	10.7	13.4
502347745	355	110	84.3	24.7	0.79	33.0	10.7	13.4
502347746	355	110	84.3	24.7	0.79	33.0	10.7	13.4
502347747	355	110	84.3	24.7	0.79	32.5	10.3	13.2
502347751	355	110	84.3	24.7	0.79	32.5	10.3	13.2
502347752	355	110	84.3	24.7	0.79	32.5	10.3	13.2
502347753	355	110	84.3	24.7	0.79	32.5	10.3	13.2
502347754	355	110	84.3	24.7	0.79	32.5	10.3	13.2
502347755	355	110	84.3	24.7	0.79	32.5	10.3	13.2
502347756	284	90	71.8	18.4	0.80	32.5	10.3	13.2
502347757	284	90	71.8	18.4	0.80	32.5	10.3	13.2
502347758	284	90	71.8	18.4	0.80	32.5	10.3	13.2
502347759	284	90	71.8	18.4	0.80	32.5	10.3	13.2
502347760	284	90	71.8	18.4	0.80	32.5	10.3	13.2
502347761	284	90	71.8	18.4	0.80	32.5	10.3	13.2
502347762	284	90	71.8	18.4	0.80	32.5	10.3	13.2
502347763	284	90	71.8	18.4	0.80	32.5	10.3	13.2
502347764	284	90	71.8	18.4	0.80	32.5	10.3	13.2
502347765	284	90	71.8	18.4	0.80	32.5	10.3	13.2
502347766	284	90	71.8	18.4	0.80	32.5	10.3	13.2
502347767	284	90	71.8	18.4	0.80	32.5	10.3	13.2
502347768	284	90	71.8	18.4	0.80	32.5	10.3	13.2
502347769	284	90	71.8	18.4	0.80	32.5	10.3	13.2
502347770	284	90	71.8	18.4	0.80	32.5	10.3	13.2
502347771	284	90	71.8	18.4	0.80	32.5	10.3	13.2
502347772	253	80	79.6	16.0	0.84	32.5	10.3	13.2
502347773	253	80	79.6	16.0	0.84	32.5	10.3	13.2
502347774	253	80	79.6	16.0	0.84	32.5	10.3	13.2
502347775	253	80	79.6	16.0	0.84	32.5	10.3	13.2
502347776	253	80	79.6	16.0	0.84	32.5	10.3	13.2
502347777	253	80	79.6	16.0	0.84	34.0	10.2	13.8
502347778	253	80	79.6	16.0	0.84	34.0	10.2	13.8
502347779	253	80	79.6	16.0	0.84	34.0	10.2	13.8

SOLMAX

Solmax Geosynthetics, LLC

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SO-089208	Layfield Canada Ltd	CA	BLI-075-06N-06W-D-60	

Roll Number	ASTM D4632 Grab Strength (lbs)	ASTM D4632 Peel Strength (lbs)	ASTM D6768 Tensile Strength (ppi)	ASTM D6496 Peel Strength (ppi)	ASTM D5993 Clay Content @ 0% Moisture (lbs/sf)	ASTM D5890 Free Swell (ml/2g)	ASTM D2216 Moisture Content (%)	ASTM D5891 Fluid Loss (ml)
502347780	253	80	79.6	16.0	0.84	34.0	10.2	13.8
502347781	253	80	79.6	16.0	0.84	34.0	10.2	13.8
502347782	253	80	79.6	16.0	0.84	34.0	10.2	13.8
502347783	253	80	79.6	16.0	0.84	34.0	10.2	13.8
502347784	253	80	79.6	16.0	0.84	34.0	10.2	13.8
502347785	253	80	79.6	16.0	0.84	34.0	10.2	13.8
502347786	253	80	79.6	16.0	0.84	34.0	10.2	13.8
502347787	253	80	79.6	16.0	0.84	34.0	10.2	13.8
502347788	326	87	84.2	17.4	0.78	34.0	10.2	13.8
502347789	326	87	84.2	17.4	0.78	34.0	10.2	13.8
502347790	326	87	84.2	17.4	0.78	34.0	10.2	13.8
502347791	326	87	84.2	17.4	0.78	34.0	10.2	13.8
502347792	326	87	84.2	17.4	0.78	34.0	10.2	13.8
502347793	326	87	84.2	17.4	0.78	34.0	10.2	13.8
502347794	326	87	84.2	17.4	0.78	34.0	10.2	13.8
502347795	326	87	84.2	17.4	0.78	34.0	10.2	13.8
502347796	326	87	84.2	17.4	0.78	34.0	10.2	13.8
502347797	326	87	84.2	17.4	0.78	34.0	10.2	13.8
502347798	326	87	84.2	17.4	0.78	34.0	10.2	13.8
502347799	326	87	84.2	17.4	0.78	34.0	10.2	13.8
502347800	326	87	84.2	17.4	0.78	34.0	10.2	13.8
502347801	326	87	84.2	17.4	0.78	34.0	10.2	13.8
502347802	326	87	84.2	17.4	0.78	34.0	10.2	13.8
502347803	326	87	84.2	17.4	0.78	34.0	10.2	13.8
502347804	299	95	74.9	19.6	0.76	34.0	10.2	13.8
502347805	299	95	74.9	19.6	0.76	34.0	10.2	13.8
502347806	299	95	74.9	19.6	0.76	34.0	10.2	13.8
502347807	299	95	74.9	19.6	0.76	34.0	10.2	13.8
502347808	299	95	74.9	19.6	0.76	31.5	9.8	13.6
502347809	299	95	74.9	19.6	0.76	31.5	9.8	13.6
502347810	299	95	74.9	19.6	0.76	31.5	9.8	13.6
502347811	299	95	74.9	19.6	0.76	31.5	9.8	13.6
502347812	299	95	74.9	19.6	0.76	31.5	9.8	13.6
502347813	299	95	74.9	19.6	0.76	31.5	9.8	13.6

SOLMAX

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SO-089208	Layfield Canada Ltd	CA	BLI-075-06N-06W-D-60	

Roll Number	ASTM D4632 Grab Strength (lbs)	ASTM D4632 Peel Strength (lbs)	ASTM D6768 Tensile Strength (ppi)	ASTM D6496 Peel Strength (ppi)	ASTM D5993 Clay Content @ 0% Moisture (lbs/sf)	ASTM D5890 Free Swell (ml/2g)	ASTM D2216 Moisture Content (%)	ASTM D5891 Fluid Loss (ml)
502347814	299	95	74.9	19.6	0.76	31.5	9.8	13.6
502347815	299	95	74.9	19.6	0.76	31.5	9.8	13.6
502347816	299	95	74.9	19.6	0.76	31.5	9.8	13.6
502347817	299	95	74.9	19.6	0.76	31.5	9.8	13.6
502347818	299	95	74.9	19.6	0.76	31.5	9.8	13.6
502347819	299	95	74.9	19.6	0.76	31.5	9.8	13.6
502347820	271	100	67.1	22.1	0.84	31.5	9.8	13.6
502347821	271	100	67.1	22.1	0.84	31.5	9.8	13.6
502347822	271	100	67.1	22.1	0.84	31.5	9.8	13.6
502347823	271	100	67.1	22.1	0.84	31.5	9.8	13.6
502347824	271	100	67.1	22.1	0.84	31.5	9.8	13.6
502347825	271	100	67.1	22.1	0.84	31.5	9.8	13.6
502347826	271	100	67.1	22.1	0.84	31.5	9.8	13.6
502347827	271	100	67.1	22.1	0.84	31.5	9.8	13.6
502347828	271	100	67.1	22.1	0.84	31.5	9.8	13.6
502347829	271	100	67.1	22.1	0.84	31.5	9.8	13.6
502347830	271	100	67.1	22.1	0.84	31.5	9.8	13.6
502347831	271	100	67.1	22.1	0.84	31.5	9.8	13.6
502347832	271	100	67.1	22.1	0.84	31.5	9.8	13.6
502347833	271	100	67.1	22.1	0.84	31.5	9.8	13.6
502347834	271	100	67.1	22.1	0.84	31.5	9.8	13.6
502347835	271	100	67.1	22.1	0.84	31.5	9.8	13.6
502347836	320	88	78.4	17.3	0.83	31.5	9.8	13.6
502347837	320	88	78.4	17.3	0.83	31.5	9.8	13.6
502347838	320	88	78.4	17.3	0.83	33.0	10.0	13.2
502347839	320	88	78.4	17.3	0.83	33.0	10.0	13.2
502347840	320	88	78.4	17.3	0.83	33.0	10.0	13.2
502347841	320	88	78.4	17.3	0.83	33.0	10.0	13.2
502347842	320	88	78.4	17.3	0.83	33.0	10.0	13.2
502347843	320	88	78.4	17.3	0.83	33.0	10.0	13.2
502347844	320	88	78.4	17.3	0.83	33.0	10.0	13.2
502347845	320	88	78.4	17.3	0.83	33.0	10.0	13.2
502347846	320	88	78.4	17.3	0.83	33.0	10.0	13.2
502347847	320	88	78.4	17.3	0.83	33.0	10.0	13.2

SOLMAX

Solmax Geosynthetics, LLC

ROLL TEST DATA REPORT

SOLMAX QC APPROVED

Report Date: Sep/8/2020

Sales Order No.	*Customer Name*	*Project Location*	*Product Name*	*BOL Number*
SO-089208	Layfield Canada Ltd	CA	BLI-075-06N-06W-D-60	

Roll Number	ASTM D4632 Grab Strength (lbs)	ASTM D4632 Peel Strength (lbs)	ASTM D6768 Tensile Strength (ppi)	ASTM D6496 Peel Strength (ppi)	ASTM D5993 Clay Content @ 0% Moisture (lbs/sf)	ASTM D5890 Free Swell (ml/2g)	ASTM D2216 Moisture Content (%)	ASTM D5891 Fluid Loss (ml)
502347848	320	88	78.4	17.3	0.83	33.0	10.0	13.2
502347849	320	88	78.4	17.3	0.83	33.0	10.0	13.2
502347850	320	88	78.4	17.3	0.83	33.0	10.0	13.2
502347851	320	88	78.4	17.3	0.83	33.0	10.0	13.2
502347852	336	92	80.2	15.3	0.80	33.0	10.0	13.2
502347853	336	92	80.2	15.3	0.80	33.0	10.0	13.2
502347854	336	92	80.2	15.3	0.80	33.0	10.0	13.2
502347855	336	92	80.2	15.3	0.80	33.0	10.0	13.2
502347856	336	92	80.2	15.3	0.80	33.0	10.0	13.2
502347857	336	92	80.2	15.3	0.80	33.0	10.0	13.2
502347858	336	92	80.2	15.3	0.80	33.0	10.0	13.2
502347859	336	92	80.2	15.3	0.80	33.0	10.0	13.2
502347860	336	92	80.2	15.3	0.80	33.0	10.0	13.2
502347861	336	92	80.2	15.3	0.80	33.0	10.0	13.2
502347862	336	92	80.2	15.3	0.80	33.0	10.0	13.2
502347863	336	92	80.2	15.3	0.80	33.0	10.0	13.2
502347864	336	92	80.2	15.3	0.80	33.0	10.0	13.2
502347865	336	92	80.2	15.3	0.80	33.0	10.0	13.2
502347870	346	98	72.5	20.9	0.82	34.0	10.6	13.0
502347871	346	98	72.5	20.9	0.82	34.0	10.6	13.0
502347872	346	98	72.5	20.9	0.82	34.0	10.6	13.0
502347873	346	98	72.5	20.9	0.82	34.0	10.6	13.0
502347874	346	98	72.5	20.9	0.82	34.0	10.6	13.0
502347875	346	98	72.5	20.9	0.82	34.0	10.6	13.0
502347876	346	98	72.5	20.9	0.82	34.0	10.6	13.0
502347877	346	98	72.5	20.9	0.82	34.0	10.6	13.0
502347878	346	98	72.5	20.9	0.82	34.0	10.6	13.0
502347879	346	98	72.5	20.9	0.82	34.0	10.6	13.0
502347880	346	98	72.5	20.9	0.82	34.0	10.6	13.0
502347881	346	98	72.5	20.9	0.82	34.0	10.6	13.0
502347882	346	98	72.5	20.9	0.82	34.0	10.6	13.0
502347883	346	98	72.5	20.9	0.82	34.0	10.6	13.0
502347884	346	98	72.5	20.9	0.82	34.0	10.6	13.0
502347885	346	98	72.5	20.9	0.82	34.0	10.6	13.0

SOLMAX

Solmax Geosynthetics, LLC

ROLL TEST DATA REPORT

SOLMAX QC APPROVED

Report Date: Sep/8/2020

Sales Order No.	Customer Name	Project Location	Product Name	BOL Number
SO-089208	Layfield Canada Ltd	CA	BLI-075-06N-06W-D-60	

Roll Number	ASTM D4632 Grab Strength (lbs)	ASTM D4632 Peel Strength (lbs)	ASTM D6768 Tensile Strength (ppi)	ASTM D6496 Peel Strength (ppi)	ASTM D5993 Clay Content @ 0% Moisture (lbs/sf)	ASTM D5890 Free Swell (ml/2g)	ASTM D2216 Moisture Content (%)	ASTM D5891 Fluid Loss (ml)
502347886	342	108	88.2	22.2	0.81	34.0	10.6	13.0
502347887	342	108	88.2	22.2	0.81	34.0	10.6	13.0
502347888	342	108	88.2	22.2	0.81	34.0	10.6	13.0
502347889	342	108	88.2	22.2	0.81	34.0	10.6	13.0
502347890	342	108	88.2	22.2	0.81	34.0	10.6	13.0
502347891	342	108	88.2	22.2	0.81	34.0	10.6	13.0
502347892	342	108	88.2	22.2	0.81	34.0	10.6	13.0
502347893	342	108	88.2	22.2	0.81	34.0	10.6	13.0
502347894	342	108	88.2	22.2	0.81	34.0	10.6	13.0
502347895	342	108	88.2	22.2	0.81	34.0	10.6	13.0
502347896	342	108	88.2	22.2	0.81	34.0	10.6	13.0
502347897	342	108	88.2	22.2	0.81	34.0	10.6	13.0
502347898	342	108	88.2	22.2	0.81	34.0	10.6	13.0
502347899	342	108	88.2	22.2	0.81	32.0	10.5	13.8
502347900	342	108	88.2	22.2	0.81	32.0	10.5	13.8
502347901	342	108	88.2	22.2	0.81	32.0	10.5	13.8
502347902	331	100	76.1	21.9	0.83	32.0	10.5	13.8
502347903	331	100	76.1	21.9	0.83	32.0	10.5	13.8
502347904	331	100	76.1	21.9	0.83	32.0	10.5	13.8
502347905	331	100	76.1	21.9	0.83	32.0	10.5	13.8
502347906	331	100	76.1	21.9	0.83	32.0	10.5	13.8
502347907	331	100	76.1	21.9	0.83	32.0	10.5	13.8
502347908	331	100	76.1	21.9	0.83	32.0	10.5	13.8
502347909	331	100	76.1	21.9	0.83	32.0	10.5	13.8
502347910	331	100	76.1	21.9	0.83	32.0	10.5	13.8

Laboratory Manager

This test report shall not be reproduced, except in full, without written approval of the laboratory.

Report Date
3/18/2020

SOLMAX

BentoLiner Manufacturing Certification

Sales Order: 88708

Customer: Layfield Canada Ltd

Project: Layfield CA / Eagle Gold Mine

Product Type: BLI-075-06N-06W-D-60 BentoLiner NWL

The GCL purchased and shipped for the above referenced project does meet or exceed the project specifications.

The GCL supplied to this project has been continuously inspected for the presence of needles and is certified to be needle free.

Chuck Taylor
Laboratory Technician

Roll Allocation List

Sales Order SO-088708
Customer Name Layfield Canada Ltd
Project Name Layfield CA / Eagle Gold Mine

Serial number	Item Number	Daily lot	Roll width	Clay	Length
502343540	BLI-075-06N-06W-D-60	20031612	15.50	1030220C	150.00
502343541	BLI-075-06N-06W-D-60	20031612	15.50	1030220C	150.00
502343542	BLI-075-06N-06W-D-60	20031612	15.50	1030220C	150.00
502343543	BLI-075-06N-06W-D-60	20031612	15.50	1030220C	150.00
502343544	BLI-075-06N-06W-D-60	20031612	15.50	1030220C	150.00
502343545	BLI-075-06N-06W-D-60	20031612	15.50	1030220C	150.00
502343546	BLI-075-06N-06W-D-60	20031612	15.50	1030220C	150.00
502343547	BLI-075-06N-06W-D-60	20031612	15.50	1030220C	150.00
502343548	BLI-075-06N-06W-D-60	20031612	15.50	1030220C	150.00
502343549	BLI-075-06N-06W-D-60	20031612	15.50	1030220C	150.00
502343550	BLI-075-06N-06W-D-60	20031612	15.50	1030220C	150.00
502343551	BLI-075-06N-06W-D-60	20031612	15.50	1030220C	150.00
502343552	BLI-075-06N-06W-D-60	20031612	15.50	1030220C	150.00
502343553	BLI-075-06N-06W-D-60	20031612	15.50	1030220C	150.00
502343554	BLI-075-06N-06W-D-60	20031612	15.50	1030220C	150.00
502343555	BLI-075-06N-06W-D-60	20031612	15.50	1030220C	150.00
502343556	BLI-075-06N-06W-D-60	20031612	15.50	1030220C	150.00
502343557	BLI-075-06N-06W-D-60	20031612	15.50	1030220C	150.00
502343558	BLI-075-06N-06W-D-60	20031612	15.50	1030220C	150.00
502343559	BLI-075-06N-06W-D-60	20031612	15.50	1030220D	150.00
502343560	BLI-075-06N-06W-D-60	20031612	15.50	1030220D	150.00
502343561	BLI-075-06N-06W-D-60	20031612	15.50	1030220D	150.00
502343562	BLI-075-06N-06W-D-60	20031612	15.50	1030220D	150.00
502343563	BLI-075-06N-06W-D-60	20031612	15.50	1030220D	150.00
502343564	BLI-075-06N-06W-D-60	20031612	15.50	1030220D	150.00
502343565	BLI-075-06N-06W-D-60	20031612	15.50	1030220D	150.00
502343566	BLI-075-06N-06W-D-60	20031612	15.50	1030220D	150.00
502343567	BLI-075-06N-06W-D-60	20031612	15.50	1030220D	150.00
502343568	BLI-075-06N-06W-D-60	20031612	15.50	1030220D	150.00
502343569	BLI-075-06N-06W-D-60	20031612	15.50	1030220D	150.00
502343570	BLI-075-06N-06W-D-60	20031612	15.50	1030220D	150.00
502343571	BLI-075-06N-06W-D-60	20031612	15.50	1030220D	150.00
502343572	BLI-075-06N-06W-D-60	20031612	15.50	1030220D	150.00
502343573	BLI-075-06N-06W-D-60	20031612	15.50	1030220D	150.00
502343574	BLI-075-06N-06W-D-60	20031612	15.50	1030220D	150.00
502343575	BLI-075-06N-06W-D-60	20031612	15.50	1030220D	150.00
502343576	BLI-075-06N-06W-D-60	20031612	15.50	1030220D	150.00
502343577	BLI-075-06N-06W-D-60	20031612	15.50	1030220D	150.00
502343578	BLI-075-06N-06W-D-60	20031612	15.50	1030220D	150.00
502343579	BLI-075-06N-06W-D-60	20031612	15.50	1030220D	150.00
502343580	BLI-075-06N-06W-D-60	20031612	15.50	1030220D	150.00
502343581	BLI-075-06N-06W-D-60	20031612	15.50	1030220D	150.00
502343582	BLI-075-06N-06W-D-60	20031612	15.50	1030220D	150.00
502343583	BLI-075-06N-06W-D-60	20031612	15.50	1030220D	150.00
502343584	BLI-075-06N-06W-D-60	20031612	15.50	1030220D	150.00
502343585	BLI-075-06N-06W-D-60	20031612	15.50	1030220D	150.00
502343586	BLI-075-06N-06W-D-60	20031612	15.50	1030220D	150.00
502343587	BLI-075-06N-06W-D-60	20031612	15.50	1030220D	150.00
502343588	BLI-075-06N-06W-D-60	20031612	15.50	1030520B	150.00
502343589	BLI-075-06N-06W-D-60	20031612	15.50	1030520B	150.00
502343590	BLI-075-06N-06W-D-60	20031612	15.50	1030520B	150.00
502343591	BLI-075-06N-06W-D-60	20031612	15.50	1030520B	150.00
502343592	BLI-075-06N-06W-D-60	20031612	15.50	1030520B	150.00
502343593	BLI-075-06N-06W-D-60	20031612	15.50	1030520B	150.00
502343594	BLI-075-06N-06W-D-60	20031612	15.50	1030520B	150.00
502343595	BLI-075-06N-06W-D-60	20031612	15.50	1030520B	150.00
502343596	BLI-075-06N-06W-D-60	20031612	15.50	1030520B	150.00
502343597	BLI-075-06N-06W-D-60	20031612	15.50	1030520B	150.00
502343598	BLI-075-06N-06W-D-60	20031612	15.50	1030520B	150.00
502343599	BLI-075-06N-06W-D-60	20031612	15.50	1030520B	150.00

Roll Allocation List

Sales Order SO-088708
Customer Name Layfield Canada Ltd
Project Name Layfield CA / Eagle Gold Mine

Serial number	Item Number	Daily lot	Roll width	Clay	Length
502343600	BLI-075-06N-06W-D-60	20031612	15.50	1030520B	150.00
502343601	BLI-075-06N-06W-D-60	20031612	15.50	1030520B	150.00
502343602	BLI-075-06N-06W-D-60	20031612	15.50	1030520B	150.00
502343603	BLI-075-06N-06W-D-60	20031612	15.50	1030520B	150.00
502343604	BLI-075-06N-06W-D-60	20031612	15.50	1030520B	150.00
502343605	BLI-075-06N-06W-D-60	20031612	15.50	1030520B	150.00
502343606	BLI-075-06N-06W-D-60	20031612	15.50	1030520B	150.00
502343607	BLI-075-06N-06W-D-60	20031612	15.50	1030520B	150.00
502343608	BLI-075-06N-06W-D-60	20031612	15.50	1030520B	150.00
502343609	BLI-075-06N-06W-D-60	20031612	15.50	1030520B	150.00
502343610	BLI-075-06N-06W-D-60	20031612	15.50	1030520B	150.00
502343611	BLI-075-06N-06W-D-60	20031612	15.50	1030520B	150.00
502343612	BLI-075-06N-06W-D-60	20031612	15.50	1030520B	150.00
502343613	BLI-075-06N-06W-D-60	20031612	15.50	1030520B	150.00
502343614	BLI-075-06N-06W-D-60	20031612	15.50	1030520B	150.00
502343615	BLI-075-06N-06W-D-60	20031612	15.50	1030520B	150.00
502343616	BLI-075-06N-06W-D-60	20031612	15.50	1030520B	150.00
502343617	BLI-075-06N-06W-D-60	20031612	15.50	1030520B	150.00
502343618	BLI-075-06N-06W-D-60	20031612	15.50	1030520C	150.00
502343619	BLI-075-06N-06W-D-60	20031612	15.50	1030520C	150.00
502343620	BLI-075-06N-06W-D-60	20031612	15.50	1030520C	150.00
502343621	BLI-075-06N-06W-D-60	20031612	15.50	1030520C	150.00
502343622	BLI-075-06N-06W-D-60	20031612	15.50	1030520C	150.00
502343623	BLI-075-06N-06W-D-60	20031612	15.50	1030520C	150.00
502343624	BLI-075-06N-06W-D-60	20031612	15.50	1030520C	150.00
502343625	BLI-075-06N-06W-D-60	20031612	15.50	1030520C	150.00
502343626	BLI-075-06N-06W-D-60	20031712	15.50	1030520C	150.00
502343627	BLI-075-06N-06W-D-60	20031712	15.50	1030520C	150.00
502343628	BLI-075-06N-06W-D-60	20031712	15.50	1030520C	150.00
502343629	BLI-075-06N-06W-D-60	20031712	15.50	1030520C	150.00
502343630	BLI-075-06N-06W-D-60	20031712	15.50	1030520C	150.00
502343631	BLI-075-06N-06W-D-60	20031712	15.50	1030520C	150.00
502343632	BLI-075-06N-06W-D-60	20031712	15.50	1030520C	150.00
502343633	BLI-075-06N-06W-D-60	20031712	15.50	1030520C	150.00
502343634	BLI-075-06N-06W-D-60	20031712	15.50	1030520C	150.00
502343635	BLI-075-06N-06W-D-60	20031712	15.50	1030520C	150.00
502343636	BLI-075-06N-06W-D-60	20031712	15.50	1030520C	150.00
502343637	BLI-075-06N-06W-D-60	20031712	15.50	1030520C	150.00
502343638	BLI-075-06N-06W-D-60	20031712	15.50	1030520C	150.00
502343639	BLI-075-06N-06W-D-60	20031712	15.50	1030520C	150.00
502343640	BLI-075-06N-06W-D-60	20031712	15.50	1030520C	150.00
502343641	BLI-075-06N-06W-D-60	20031712	15.50	1030520C	150.00
502343642	BLI-075-06N-06W-D-60	20031712	15.50	1030520C	150.00
502343643	BLI-075-06N-06W-D-60	20031712	15.50	1030520C	150.00
502343644	BLI-075-06N-06W-D-60	20031712	15.50	1030520C	150.00
502343645	BLI-075-06N-06W-D-60	20031712	15.50	1030520C	150.00
502343646	BLI-075-06N-06W-D-60	20031712	15.50	1030520C	150.00
502343647	BLI-075-06N-06W-D-60	20031712	15.50	1030520C	150.00
502343648	BLI-075-06N-06W-D-60	20031712	15.50	1030520C	150.00
502343649	BLI-075-06N-06W-D-60	20031712	15.50	1030520D	150.00
502343650	BLI-075-06N-06W-D-60	20031712	15.50	1030520D	150.00
502343651	BLI-075-06N-06W-D-60	20031712	15.50	1030520D	150.00
502343652	BLI-075-06N-06W-D-60	20031712	15.50	1030520D	150.00
502343653	BLI-075-06N-06W-D-60	20031712	15.50	1030520D	150.00
502343654	BLI-075-06N-06W-D-60	20031712	15.50	1030520D	150.00
502343655	BLI-075-06N-06W-D-60	20031712	15.50	1030520D	150.00
502343656	BLI-075-06N-06W-D-60	20031712	15.50	1030520D	150.00
502343657	BLI-075-06N-06W-D-60	20031712	15.50	1030520D	150.00
502343658	BLI-075-06N-06W-D-60	20031712	15.50	1030520D	150.00
502343659	BLI-075-06N-06W-D-60	20031712	15.50	1030520D	150.00

Roll Allocation List

Sales Order SO-088708
Customer Name Layfield Canada Ltd
Project Name Layfield CA / Eagle Gold Mine

Serial number	Item Number	Daily lot	Roll width	Clay	Length
502343660	BLI-075-06N-06W-D-60	20031712	15.50	1030520D	150.00
502343661	BLI-075-06N-06W-D-60	20031712	15.50	1030520D	150.00
502343662	BLI-075-06N-06W-D-60	20031712	15.50	1030520D	150.00
502343663	BLI-075-06N-06W-D-60	20031712	15.50	1030520D	150.00
502343664	BLI-075-06N-06W-D-60	20031712	15.50	1030520D	150.00
502343665	BLI-075-06N-06W-D-60	20031712	15.50	1030520D	150.00
502343666	BLI-075-06N-06W-D-60	20031712	15.50	1030520D	150.00
502343667	BLI-075-06N-06W-D-60	20031712	15.50	1030520D	150.00
502343668	BLI-075-06N-06W-D-60	20031712	15.50	1030520D	150.00
502343669	BLI-075-06N-06W-D-60	20031712	15.50	1030520D	150.00
502343670	BLI-075-06N-06W-D-60	20031712	15.50	1030520D	150.00
502343671	BLI-075-06N-06W-D-60	20031712	15.50	1030520D	134.00
502343672	BLI-075-06N-06W-D-60	20031712	15.50	1030520D	150.00
502343673	BLI-075-06N-06W-D-60	20031712	15.50	1030520D	150.00
502343674	BLI-075-06N-06W-D-60	20031712	15.50	1030520D	150.00
502343675	BLI-075-06N-06W-D-60	20031712	15.50	1030520D	150.00
502343676	BLI-075-06N-06W-D-60	20031712	15.50	1030520D	150.00
502343677	BLI-075-06N-06W-D-60	20031712	15.50	1030520D	150.00
502343678	BLI-075-06N-06W-D-60	20031712	15.50	1031020A	150.00
502343679	BLI-075-06N-06W-D-60	20031712	15.50	1031020A	150.00
502343680	BLI-075-06N-06W-D-60	20031712	15.50	1031020A	150.00
502343681	BLI-075-06N-06W-D-60	20031712	15.50	1031020A	150.00
502343682	BLI-075-06N-06W-D-60	20031712	15.50	1031020A	150.00
502343683	BLI-075-06N-06W-D-60	20031712	15.50	1031020A	150.00
502343684	BLI-075-06N-06W-D-60	20031712	15.50	1031020A	150.00
502343685	BLI-075-06N-06W-D-60	20031712	15.50	1031020A	150.00
502343686	BLI-075-06N-06W-D-60	20031712	15.50	1031020A	150.00
502343687	BLI-075-06N-06W-D-60	20031712	15.50	1031020A	150.00
502343688	BLI-075-06N-06W-D-60	20031712	15.50	1031020A	150.00
502343689	BLI-075-06N-06W-D-60	20031712	15.50	1031020A	150.00
502343690	BLI-075-06N-06W-D-60	20031712	15.50	1031020A	150.00
502343691	BLI-075-06N-06W-D-60	20031712	15.50	1031020A	150.00
502343692	BLI-075-06N-06W-D-60	20031712	15.50	1031020A	150.00
502343693	BLI-075-06N-06W-D-60	20031712	15.50	1031020A	150.00
502343694	BLI-075-06N-06W-D-60	20031712	15.50	1031020A	150.00
502343695	BLI-075-06N-06W-D-60	20031712	15.50	1031020A	150.00
502343696	BLI-075-06N-06W-D-60	20031712	15.50	1031020A	150.00
502343697	BLI-075-06N-06W-D-60	20031712	15.50	1031020A	150.00
502343698	BLI-075-06N-06W-D-60	20031712	15.50	1031020A	150.00
502343699	BLI-075-06N-06W-D-60	20031712	15.50	1031020A	150.00
502343700	BLI-075-06N-06W-D-60	20031712	15.50	1031020A	150.00
502343701	BLI-075-06N-06W-D-60	20031712	15.50	1031020A	150.00
502343702	BLI-075-06N-06W-D-60	20031712	15.50	1031020A	150.00
502343703	BLI-075-06N-06W-D-60	20031712	15.50	1031020A	128.00

SOLMAX

Solmax Geosynthetics, LLC

ROLL TEST DATA REPORT

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Sales Order No.	***Customer Name***	***Project Location***	***Product Name***	***BOL Number***
SO-088708	Layfield Canada Ltd	CA	BLI-075-06N-06W-D-60	

Roll Number	ASTM D4632 Grab Strength (lbs)	ASTM D4632 Peel Strength (lbs)	ASTM D6768 Tensile Strength (ppi)	ASTM D6496 Peel Strength (ppi)	ASTM D5993 Clay Content @ 0% Moisture (lbs/sf)	ASTM D5890 Free Swell (ml/2g)	ASTM D2216 Moisture Content (%)	ASTM D5891 Fluid Loss (ml)
502343540	334	106	74.4	23.0	0.82	37.0	9.5	14.6
502343541	292	87	76.2	17.1	0.82	37.0	9.5	14.6
502343542	292	87	76.2	17.1	0.82	37.0	9.5	14.6
502343543	292	87	76.2	17.1	0.82	37.0	9.5	14.6
502343544	292	87	76.2	17.1	0.82	37.0	9.5	14.6
502343545	292	87	76.2	17.1	0.82	37.0	9.5	14.6
502343546	292	87	76.2	17.1	0.82	37.0	9.5	14.6
502343547	292	87	76.2	17.1	0.82	37.0	9.5	14.6
502343548	292	87	76.2	17.1	0.82	37.0	9.5	14.6
502343549	292	87	76.2	17.1	0.82	37.0	9.5	14.6
502343550	292	87	76.2	17.1	0.82	37.0	9.5	14.6
502343551	292	87	76.2	17.1	0.82	37.0	9.5	14.6
502343552	292	87	76.2	17.1	0.82	37.0	9.5	14.6
502343553	292	87	76.2	17.1	0.82	37.0	9.5	14.6
502343554	292	87	76.2	17.1	0.82	37.0	9.5	14.6
502343555	292	87	76.2	17.1	0.82	37.0	9.5	14.6
502343556	292	87	76.2	17.1	0.82	37.0	9.5	14.6
502343557	265	98	79.5	19.9	0.84	37.0	9.5	14.6
502343558	265	98	79.5	19.9	0.84	37.0	9.5	14.6
502343559	265	98	79.5	19.9	0.84	36.0	9.5	13.8
502343560	265	98	79.5	19.9	0.84	36.0	9.5	13.8
502343561	298	98	73.0	21.5	0.84	36.0	9.5	13.8
502343562	298	98	73.0	21.5	0.84	36.0	9.5	13.8
502343563	298	98	73.0	21.5	0.84	36.0	9.5	13.8
502343564	298	98	73.0	21.5	0.84	36.0	9.5	13.8
502343565	298	98	73.0	21.5	0.84	36.0	9.5	13.8
502343566	298	98	73.0	21.5	0.84	36.0	9.5	13.8
502343567	298	98	73.0	21.5	0.84	36.0	9.5	13.8
502343568	298	98	73.0	21.5	0.84	36.0	9.5	13.8
502343569	298	98	73.0	21.5	0.84	36.0	9.5	13.8
502343570	298	98	73.0	21.5	0.84	36.0	9.5	13.8
502343571	298	98	73.0	21.5	0.84	36.0	9.5	13.8
502343572	298	98	73.0	21.5	0.84	36.0	9.5	13.8
502343573	298	98	73.0	21.5	0.84	36.0	9.5	13.8

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Sales Order No.	***Customer Name***	***Project Location***	***Product Name***	***BOL Number***
SO-088708	Layfield Canada Ltd	CA	BLI-075-06N-06W-D-60	

Roll Number	ASTM D4632 Grab Strength (lbs)	ASTM D4632 Peel Strength (lbs)	ASTM D6768 Tensile Strength (ppi)	ASTM D6496 Peel Strength (ppi)	ASTM D5993 Clay Content @ 0% Moisture (lbs/sf)	ASTM D5890 Free Swell (ml/2g)	ASTM D2216 Moisture Content (%)	ASTM D5891 Fluid Loss (ml)
502343574	298	98	73.0	21.5	0.84	36.0	9.5	13.8
502343575	298	98	73.0	21.5	0.84	36.0	9.5	13.8
502343576	298	98	73.0	21.5	0.84	36.0	9.5	13.8
502343577	281	95	68.6	21.1	0.83	36.0	9.5	13.8
502343578	281	95	68.6	21.1	0.83	36.0	9.5	13.8
502343579	281	95	68.6	21.1	0.83	36.0	9.5	13.8
502343580	281	95	68.6	21.1	0.83	36.0	9.5	13.8
502343581	281	95	68.6	21.1	0.83	36.0	9.5	13.8
502343582	281	95	68.6	21.1	0.83	36.0	9.5	13.8
502343583	281	95	68.6	21.1	0.83	36.0	9.5	13.8
502343584	281	95	68.6	21.1	0.83	36.0	9.5	13.8
502343585	281	95	68.6	21.1	0.83	36.0	9.5	13.8
502343586	281	95	68.6	21.1	0.83	36.0	9.5	13.8
502343587	281	95	68.6	21.1	0.83	36.0	9.5	13.8
502343588	281	95	68.6	21.1	0.83	32.0	10.0	14.8
502343589	281	95	68.6	21.1	0.83	32.0	10.0	14.8
502343590	281	95	68.6	21.1	0.83	32.0	10.0	14.8
502343591	281	95	68.6	21.1	0.83	32.0	10.0	14.8
502343592	281	95	68.6	21.1	0.83	32.0	10.0	14.8
502343593	279	88	70.8	19.3	0.82	32.0	10.0	14.8
502343594	279	88	70.8	19.3	0.82	32.0	10.0	14.8
502343595	279	88	70.8	19.3	0.82	32.0	10.0	14.8
502343596	279	88	70.8	19.3	0.82	32.0	10.0	14.8
502343597	279	88	70.8	19.3	0.82	32.0	10.0	14.8
502343598	279	88	70.8	19.3	0.82	32.0	10.0	14.8
502343599	279	88	70.8	19.3	0.82	32.0	10.0	14.8
502343600	279	88	70.8	19.3	0.82	32.0	10.0	14.8
502343601	279	88	70.8	19.3	0.82	32.0	10.0	14.8
502343602	279	88	70.8	19.3	0.82	32.0	10.0	14.8
502343603	279	88	70.8	19.3	0.82	32.0	10.0	14.8
502343604	279	88	70.8	19.3	0.82	32.0	10.0	14.8
502343605	279	88	70.8	19.3	0.82	32.0	10.0	14.8
502343606	279	88	70.8	19.3	0.82	32.0	10.0	14.8
502343607	279	88	70.8	19.3	0.82	32.0	10.0	14.8

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Sales Order No.	***Customer Name***	***Project Location***	***Product Name***	***BOL Number***
SO-088708	Layfield Canada Ltd	CA	BLI-075-06N-06W-D-60	

Roll Number	ASTM D4632 Grab Strength (lbs)	ASTM D4632 Peel Strength (lbs)	ASTM D6768 Tensile Strength (ppi)	ASTM D6496 Peel Strength (ppi)	ASTM D5993 Clay Content @ 0% Moisture (lbs/sf)	ASTM D5890 Free Swell (ml/2g)	ASTM D2216 Moisture Content (%)	ASTM D5891 Fluid Loss (ml)
502343608	279	88	70.8	19.3	0.82	32.0	10.0	14.8
502343609	255	100	64.7	20.8	0.82	32.0	10.0	14.8
502343610	255	100	64.7	20.8	0.82	32.0	10.0	14.8
502343611	255	100	64.7	20.8	0.82	32.0	10.0	14.8
502343612	255	100	64.7	20.8	0.82	32.0	10.0	14.8
502343613	255	100	64.7	20.8	0.82	32.0	10.0	14.8
502343614	255	100	64.7	20.8	0.82	32.0	10.0	14.8
502343615	255	100	64.7	20.8	0.82	32.0	10.0	14.8
502343616	255	100	64.7	20.8	0.82	32.0	10.0	14.8
502343617	255	100	64.7	20.8	0.82	32.0	10.0	14.8
502343618	255	100	64.7	20.8	0.82	30.0	10.0	14.8
502343619	255	100	64.7	20.8	0.82	30.0	10.0	14.8
502343620	255	100	64.7	20.8	0.82	30.0	10.0	14.8
502343621	255	100	64.7	20.8	0.82	30.0	10.0	14.8
502343622	255	100	64.7	20.8	0.82	30.0	10.0	14.8
502343623	255	100	64.7	20.8	0.82	30.0	10.0	14.8
502343624	255	100	64.7	20.8	0.82	30.0	10.0	14.8
502343625	231	89	65.9	17.5	0.84	30.0	10.0	14.8
502343626	231	89	65.9	17.5	0.84	30.0	10.0	14.8
502343627	231	89	65.9	17.5	0.84	30.0	10.0	14.8
502343628	231	89	65.9	17.5	0.84	30.0	10.0	14.8
502343629	231	89	65.9	17.5	0.84	30.0	10.0	14.8
502343630	231	89	65.9	17.5	0.84	30.0	10.0	14.8
502343631	231	89	65.9	17.5	0.84	30.0	10.0	14.8
502343632	231	89	65.9	17.5	0.84	30.0	10.0	14.8
502343633	231	89	65.9	17.5	0.84	30.0	10.0	14.8
502343634	231	89	65.9	17.5	0.84	30.0	10.0	14.8
502343635	231	89	65.9	17.5	0.84	30.0	10.0	14.8
502343636	231	89	65.9	17.5	0.84	30.0	10.0	14.8
502343637	231	89	65.9	17.5	0.84	30.0	10.0	14.8
502343638	231	89	65.9	17.5	0.84	30.0	10.0	14.8
502343639	231	89	65.9	17.5	0.84	30.0	10.0	14.8
502343640	231	89	65.9	17.5	0.84	30.0	10.0	14.8
502343641	329	86	74.7	18.9	0.85	30.0	10.0	14.8

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Sales Order No.	***Customer Name***	***Project Location***	***Product Name***	***BOL Number***
SO-088708	Layfield Canada Ltd	CA	BLI-075-06N-06W-D-60	

Roll Number	ASTM D4632 Grab Strength (lbs)	ASTM D4632 Peel Strength (lbs)	ASTM D6768 Tensile Strength (ppi)	ASTM D6496 Peel Strength (ppi)	ASTM D5993 Clay Content @ 0% Moisture (lbs/sf)	ASTM D5890 Free Swell (ml/2g)	ASTM D2216 Moisture Content (%)	ASTM D5891 Fluid Loss (ml)
502343642	329	86	74.7	18.9	0.85	30.0	10.0	14.8
502343643	329	86	74.7	18.9	0.85	30.0	10.0	14.8
502343644	329	86	74.7	18.9	0.85	30.0	10.0	14.8
502343645	256	88	60.9	18.0	0.79	30.0	10.0	14.8
502343646	256	88	60.9	18.0	0.79	30.0	10.0	14.8
502343647	256	88	60.9	18.0	0.79	30.0	10.0	14.8
502343648	256	88	60.9	18.0	0.79	30.0	10.0	14.8
502343649	256	88	60.9	18.0	0.79	29.0	8.9	15.0
502343650	256	88	60.9	18.0	0.79	29.0	8.9	15.0
502343651	256	88	60.9	18.0	0.79	29.0	8.9	15.0
502343652	256	88	60.9	18.0	0.79	29.0	8.9	15.0
502343653	256	88	60.9	18.0	0.79	29.0	8.9	15.0
502343654	256	88	60.9	18.0	0.79	29.0	8.9	15.0
502343655	256	88	60.9	18.0	0.79	29.0	8.9	15.0
502343656	256	88	60.9	18.0	0.79	29.0	8.9	15.0
502343657	256	88	60.9	18.0	0.79	29.0	8.9	15.0
502343658	256	88	60.9	18.0	0.79	29.0	8.9	15.0
502343659	256	88	60.9	18.0	0.79	29.0	8.9	15.0
502343660	256	88	60.9	18.0	0.79	29.0	8.9	15.0
502343661	355	84	85.5	17.4	0.83	29.0	8.9	15.0
502343662	355	84	85.5	17.4	0.83	29.0	8.9	15.0
502343663	355	84	85.5	17.4	0.83	29.0	8.9	15.0
502343664	355	84	85.5	17.4	0.83	29.0	8.9	15.0
502343665	355	84	85.5	17.4	0.83	29.0	8.9	15.0
502343666	355	84	85.5	17.4	0.83	29.0	8.9	15.0
502343667	355	84	85.5	17.4	0.83	29.0	8.9	15.0
502343668	355	84	85.5	17.4	0.83	29.0	8.9	15.0
502343669	355	84	85.5	17.4	0.83	29.0	8.9	15.0
502343670	355	84	85.5	17.4	0.83	29.0	8.9	15.0
502343671	355	84	85.5	17.4	0.83	29.0	8.9	15.0
502343672	355	84	85.5	17.4	0.83	29.0	8.9	15.0
502343673	355	84	85.5	17.4	0.83	29.0	8.9	15.0
502343674	355	84	85.5	17.4	0.83	29.0	8.9	15.0
502343675	355	84	85.5	17.4	0.83	29.0	8.9	15.0

SOLMAX

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Sales Order No.	*Customer Name*	*Project Location*	*Product Name*	*BOL Number*
SO-088708	Layfield Canada Ltd	CA	BLI-075-06N-06W-D-60	

Roll Number	ASTM D4632 Grab Strength (lbs)	ASTM D4632 Peel Strength (lbs)	ASTM D6768 Tensile Strength (ppi)	ASTM D6496 Peel Strength (ppi)	ASTM D5993 Clay Content @ 0% Moisture (lbs/sf)	ASTM D5890 Free Swell (ml/2g)	ASTM D2216 Moisture Content (%)	ASTM D5891 Fluid Loss (ml)
502343676	355	84	85.5	17.4	0.83	29.0	8.9	15.0
502343677	282	110	72.7	22.8	0.87	29.0	8.9	15.0
502343678	282	110	72.7	22.8	0.87	30.0	10.5	14.0
502343679	282	110	72.7	22.8	0.87	30.0	10.5	14.0
502343680	282	110	72.7	22.8	0.87	30.0	10.5	14.0
502343681	282	110	72.7	22.8	0.87	30.0	10.5	14.0
502343682	282	110	72.7	22.8	0.87	30.0	10.5	14.0
502343683	282	110	72.7	22.8	0.87	30.0	10.5	14.0
502343684	282	110	72.7	22.8	0.87	30.0	10.5	14.0
502343685	282	110	72.7	22.8	0.87	30.0	10.5	14.0
502343686	282	110	72.7	22.8	0.87	30.0	10.5	14.0
502343687	282	110	72.7	22.8	0.87	30.0	10.5	14.0
502343688	282	110	72.7	22.8	0.87	30.0	10.5	14.0
502343689	282	110	72.7	22.8	0.87	30.0	10.5	14.0
502343690	282	110	72.7	22.8	0.87	30.0	10.5	14.0
502343691	282	110	72.7	22.8	0.87	30.0	10.5	14.0
502343692	282	110	72.7	22.8	0.87	30.0	10.5	14.0
502343693	306	79	73.4	16.5	0.88	30.0	10.5	14.0
502343694	306	79	73.4	16.5	0.88	30.0	10.5	14.0
502343695	306	79	73.4	16.5	0.88	30.0	10.5	14.0
502343696	306	79	73.4	16.5	0.88	30.0	10.5	14.0
502343697	306	79	73.4	16.5	0.88	30.0	10.5	14.0
502343698	306	79	73.4	16.5	0.88	30.0	10.5	14.0
502343699	306	79	73.4	16.5	0.88	30.0	10.5	14.0
502343700	306	79	73.4	16.5	0.88	30.0	10.5	14.0
502343701	306	79	73.4	16.5	0.88	30.0	10.5	14.0
502343702	306	79	73.4	16.5	0.88	30.0	10.5	14.0
502343703	306	79	73.4	16.5	0.88	30.0	10.5	14.0

Laboratory Manager _____

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GSE BENTOLINER

CERTIFICATE OF ANALYSIS 2020

PRODUCT : NATIONAL® 30

SHIPPED FROM: **BENTONITE PERFORMANCE MINERALS LLC**
554 US HWY 212
COLONY PLANT
BELLE FOURCHE, S.D. 57717

BOL #	LOAD DATE	**LOT CODE**	% MOIST **12 MAX**	Mesh % + 20 **15 MAX**	Mesh % - 200 **10 MAX**	FL **18 MAX**	MBC MEQ **70 MIN**	SWELL INDEX **25 MIN**	PWA **750 MIN**
B0004390456	**03-04-20**	**1030220C**	**8.7**	**0.20**	**3.10**	**14.4**	**118**	**33**	**1058**

MARCH		% MOIST **12 MAX**	Mesh % + 20 **15 MAX**	Mesh % - 200 **10 MAX**	FL **18 MAX**	MBC meq **70 MIN**	SWELL INDEX **25 MIN**	PWA **750 MIN**
No. of CARS **4**	M AVG	**9.18**	**0.52**	**5.18**	**14.75**	**114.50**	**30.50**	**998.00**
	STD DEV	**0.44**	**0.57**	**1.83**	**0.41**	**2.18**	**1.50**	**45.44**

YTD		% MOIST **12 MAX**	Mesh % + 20 **15 MAX**	Mesh % - 200 **10 MAX**	FL **18 MAX**	MBC meq **70 MIN**	SWELL INDEX **25 MIN**	PWA **750 MIN**
No. of CARS **40**	M AVG	**8.81**	**0.64**	**4.30**	**13.76**	**112.39**	**30.80**	**959.78**
	STD DEV	**0.65**	**1.94**	**1.65**	**0.81**	**2.90**	**1.33**	**145.04**

SOLD TO: **GSE CLAY LINING TECHNOLOGY, Co.**
3150 FIRST AVENUE
SPEARFISH, SD 57783

Attn: **Bob Stadler (rstadler@gseworld.com)**
Chuck Taylor (ctaylor@gseworld.com)
Cheryl Hofer (chofer@gseworld.com)
(ezimmel@gseworld.com)

SHIPPED TO: **GSE CLAY LINING TECHNOLOGY, Co.**
3150 FIRST AVENUE
SPEARFISH, SD 57783

CC: Thomas Anderson
Jason Tawse

For any questions contact.
Q.A. SUPERVISOR
Tucker Goodvin

Prepared by: TO
03/04/20

GSE BENTOLINER

CERTIFICATE OF ANALYSIS 2020

PRODUCT : NATIONAL® 30

SHIPPED FROM: **BENTONITE PERFORMANCE MINERALS LLC**
554 US HWY 212
COLONY PLANT
BELLE FOURCHE, S.D. 57717

BOL #	LOAD DATE	LOT CODE	% MOIST 12 MAX	Mesh % + 20 15 MAX	Mesh % - 200 10 MAX	FL 18 MAX	MBC MEQ 70 MIN	SWELL INDEX 25 MIN	PWA 750 MIN
B0004390458	**03-04-20**	**1030220D**	**9.3**	**0.33**	**4.32**	**14.8**	**120**	**32**	**1031**

MARCH		% MOIST 12 MAX	Mesh % + 20 15 MAX	Mesh % - 200 10 MAX	FL 18 MAX	MBC meq 70 MIN	SWELL INDEX 25 MIN	PWA 750 MIN
No. of CARS	M AVG	**9.20**	**0.48**	**5.01**	**14.76**	**115.60**	**30.80**	**1004.60**
5	STD DEV	**0.40**	**0.51**	**1.67**	**0.37**	**2.94**	**1.47**	**42.73**

YTD		% MOIST 12 MAX	Mesh % + 20 15 MAX	Mesh % - 200 10 MAX	FL 18 MAX	MBC meq 70 MIN	SWELL INDEX 25 MIN	PWA 750 MIN
No. of CARS	M AVG	**8.83**	**0.64**	**4.30**	**13.78**	**112.57**	**30.83**	**961.48**
41	STD DEV	**0.65**	**1.92**	**1.63**	**0.82**	**3.09**	**1.33**	**143.71**

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(ezimmel@gseworld.com)

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3150 FIRST AVENUE
SPEARFISH, SD 57783

Prepared by: TO
03/05/20

CC: Thomas Anderson
Jason Tawse

GSE BENTOLINER

CERTIFICATE OF ANALYSIS 2020

PRODUCT : NATIONAL® 30

SHIPPED FROM: **BENTONITE PERFORMANCE MINERALS LLC**
554 US HWY 212
COLONY PLANT
BELLE FOURCHE, S.D. 57717

BOL #	LOAD DATE	LOT CODE	% MOIST 12 MAX	Mesh % + 20 15 MAX	Mesh % - 200 10 MAX	FL 18 MAX	MBC MEQ 70 MIN	SWELL INDEX 25 MIN	PWA 750 MIN
B0004390462	**03-05-20**	**1030520B**	**9.2**	**0.24**	**2.87**	**14.2**	**112**	**32**	**1021**

MARCH		% MOIST 12 MAX	Mesh % + 20 15 MAX	Mesh % - 200 10 MAX	FL 18 MAX	MBC meq 70 MIN	SWELL INDEX 25 MIN	PWA 750 MIN
No. of CARS	M AVG	**9.19**	**0.40**	**4.43**	**14.74**	**116.00**	**31.57**	**1006.29**
7	STD DEV	**0.34**	**0.45**	**1.68**	**0.41**	**3.70**	**1.92**	**36.64**

YTD		% MOIST 12 MAX	Mesh % + 20 15 MAX	Mesh % - 200 10 MAX	FL 18 MAX	MBC meq 70 MIN	SWELL INDEX 25 MIN	PWA 750 MIN
No. of CARS	M AVG	**8.84**	**0.62**	**4.24**	**13.82**	**112.77**	**30.95**	**963.70**
43	STD DEV	**0.64**	**1.87**	**1.62**	**0.83**	**3.34**	**1.45**	**140.80**

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Cheryl Hofer (chofer@gseworld.com)
(ezimmel@gseworld.com)

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3150 FIRST AVENUE
SPEARFISH, SD 57783

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Jason Tawse

For any questions contact.
Q.A. SUPERVISOR
Tucker Goodvin

Prepared by: TO
03/05/20

GSE BENTOLINER

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PRODUCT : NATIONAL® 30

SHIPPED FROM: **BENTONITE PERFORMANCE MINERALS LLC**
554 US HWY 212
COLONY PLANT
BELLE FOURCHE, S.D. 57717

BOL #	LOAD DATE	LOT CODE	% MOIST 12 MAX	Mesh % + 20 15 MAX	Mesh % - 200 10 MAX	FL 18 MAX	MBC MEQ 70 MIN	SWELL INDEX 25 MIN	PWA 750 MIN
B0004390463	**03-06-20**	**1030520C**	**8.5**	**0.05**	**2.58**	**14.0**	**116**	**32**	**976**

MARCH		% MOIST 12 MAX	Mesh % + 20 15 MAX	Mesh % - 200 10 MAX	FL 18 MAX	MBC meq 70 MIN	SWELL INDEX 25 MIN	PWA 750 MIN
No. of CARS	M AVG	**9.10**	**0.35**	**4.20**	**14.65**	**116.00**	**31.63**	**1002.50**
8	STD DEV	**0.39**	**0.44**	**1.69**	**0.46**	**3.46**	**1.80**	**35.71**

YTD		% MOIST 12 MAX	Mesh % + 20 15 MAX	Mesh % - 200 10 MAX	FL 18 MAX	MBC meq 70 MIN	SWELL INDEX 25 MIN	PWA 750 MIN
No. of CARS	M AVG	**8.83**	**0.60**	**4.21**	**13.83**	**112.84**	**30.98**	**963.98**
44	STD DEV	**0.63**	**1.85**	**1.62**	**0.82**	**3.33**	**1.44**	**139.23**

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Cheryl Hofer (chofer@gseworld.com)
(ezimmel@gseworld.com)

SHIPPED TO: **GSE CLAY LINING TECHNOLOGY, Co.**
3150 FIRST AVENUE
SPEARFISH, SD 57783

CC: Thomas Anderson
Jason Tawse

For any questions contact.
Q.A. SUPERVISOR
Tucker Goodvin

Prepared by: TO
03/06/20

GSE BENTOLINER

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COLONY PLANT
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BOL #	LOAD DATE	LOT CODE	% MOIST 12 MAX	Mesh % + 20 15 MAX	Mesh % - 200 10 MAX	FL 18 MAX	MBC MEQ 70 MIN	SWELL INDEX 25 MIN	PWA 750 MIN
B0004390464	**03-06-20**	**1030520D**	**8.1**	**0.26**	**1.30**	**13.6**	**114**	**33**	**1076**

MARCH		% MOIST 12 MAX	Mesh % + 20 15 MAX	Mesh % - 200 10 MAX	FL 18 MAX	MBC meq 70 MIN	SWELL INDEX 25 MIN	PWA 750 MIN
No. of CARS	M AVG	**8.99**	**0.34**	**3.88**	**14.53**	**115.78**	**31.78**	**1010.67**
9	STD DEV	**0.48**	**0.42**	**1.83**	**0.54**	**3.33**	**1.75**	**40.83**

YTD		% MOIST 12 MAX	Mesh % + 20 15 MAX	Mesh % - 200 10 MAX	FL 18 MAX	MBC meq 70 MIN	SWELL INDEX 25 MIN	PWA 750 MIN
No. of CARS	M AVG	**8.82**	**0.60**	**4.14**	**13.82**	**112.87**	**31.02**	**966.41**
45	STD DEV	**0.63**	**1.84**	**1.65**	**0.81**	**3.30**	**1.45**	**138.68**

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Cheryl Hofer (chofer@gseworld.com)
(ezimmel@gseworld.com)

SHIPPED TO: **GSE CLAY LINING TECHNOLOGY, Co.**
3150 FIRST AVENUE
SPEARFISH, SD 57783

CC: Thomas Anderson
Jason Tawse

For any questions contact.
Q.A. SUPERVISOR
Tucker Goodvin

Prepared by: TO
03/07/20

GSE BENTOLINER

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BOL #	LOAD DATE	LOT CODE	% MOIST 12 MAX	Mesh % + 20 15 MAX	Mesh % - 200 10 MAX	FL 18 MAX	MBC MEQ 70 MIN	SWELL INDEX 25 MIN	PWA 750 MIN
B0004390466	**03-10-20**	**1031020A**	**9.2**	**0.20**	**2.06**	**13.8**	**112**	**34**	**1059**

MARCH		% MOIST 12 MAX	Mesh % + 20 15 MAX	Mesh % - 200 10 MAX	FL 18 MAX	MBC meq 70 MIN	SWELL INDEX 25 MIN	PWA 750 MIN
No. of CARS	M AVG	**9.01**	**0.33**	**3.70**	**14.46**	**115.40**	**32.00**	**1015.50**
10	STD DEV	**0.46**	**0.40**	**1.82**	**0.56**	**3.35**	**1.79**	**41.36**

YTD		% MOIST 12 MAX	Mesh % + 20 15 MAX	Mesh % - 200 10 MAX	FL 18 MAX	MBC meq 70 MIN	SWELL INDEX 25 MIN	PWA 750 MIN
No. of CARS	M AVG	**8.83**	**0.59**	**4.10**	**13.82**	**112.85**	**31.09**	**968.38**
46	STD DEV	**0.63**	**1.82**	**1.66**	**0.80**	**3.27**	**1.50**	**137.84**

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Q.A. SUPERVISOR
Tucker Goodvin

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Chuck Taylor (ctaylor@gseworld.com)
Cheryl Hofer (chofer@gseworld.com)
(ezimmel@gseworld.com)

SHIPPED TO: **GSE CLAY LINING TECHNOLOGY, Co.**
3150 FIRST AVENUE
SPEARFISH, SD 57783

Prepared by: TO
03/10/20

CC: Thomas Anderson
Jason Tawse

Report Date
3/26/2020

SOLMAX

BentoLiner Manufacturing Certification

Sales Order: 88708

Customer: Layfield Canada Ltd

Project: Layfield CA / Eagle Gold Mine

Product Type: BLI-075-06N-06W-D-60 BentoLiner NWL

The GCL purchased and shipped for the above referenced project does meet or exceed the project specifications.

The GCL supplied to this project has been continuously inspected for the presence of needles and is certified to be needle free.

Chuck Taylor
Laboratory Technician

Roll Allocation List

Sales Order SO-088708
Customer Name Layfield Canada Ltd
Project Name Layfield CA / Eagle Gold Mine

Serial number	Item Number	Daily lot	Roll width	Clay	Length
502343885	BLI-075-06N-06W-D-60	20032312	15.50	1031320C	150.00
502343886	BLI-075-06N-06W-D-60	20032312	15.50	1031320C	150.00
502343887	BLI-075-06N-06W-D-60	20032312	15.50	1031320C	150.00
502343888	BLI-075-06N-06W-D-60	20032312	15.50	1031320C	150.00
502343889	BLI-075-06N-06W-D-60	20032312	15.50	1031320C	150.00
502343890	BLI-075-06N-06W-D-60	20032312	15.50	1031320C	150.00
502343891	BLI-075-06N-06W-D-60	20032312	15.50	1031320D	150.00
502343892	BLI-075-06N-06W-D-60	20032312	15.50	1031320D	150.00
502343893	BLI-075-06N-06W-D-60	20032312	15.50	1031320D	150.00
502343894	BLI-075-06N-06W-D-60	20032312	15.50	1031320D	150.00
502343895	BLI-075-06N-06W-D-60	20032312	15.50	1031320D	150.00
502343896	BLI-075-06N-06W-D-60	20032312	15.50	1031320D	150.00
502343897	BLI-075-06N-06W-D-60	20032312	15.50	1031320D	150.00
502343898	BLI-075-06N-06W-D-60	20032312	15.50	1031320D	150.00
502343899	BLI-075-06N-06W-D-60	20032312	15.50	1031320D	150.00
502343900	BLI-075-06N-06W-D-60	20032312	15.50	1031320D	150.00
502343901	BLI-075-06N-06W-D-60	20032312	15.50	1031320D	150.00
502343902	BLI-075-06N-06W-D-60	20032312	15.50	1031320D	150.00
502343903	BLI-075-06N-06W-D-60	20032312	15.50	1031320D	150.00
502343904	BLI-075-06N-06W-D-60	20032312	15.50	1031320D	150.00
502343905	BLI-075-06N-06W-D-60	20032312	15.50	1031320D	150.00
502343906	BLI-075-06N-06W-D-60	20032312	15.50	1031320D	150.00
502343907	BLI-075-06N-06W-D-60	20032312	15.50	1031320D	150.00
502343908	BLI-075-06N-06W-D-60	20032312	15.50	1031320D	150.00
502343909	BLI-075-06N-06W-D-60	20032312	15.50	1031320D	150.00
502343910	BLI-075-06N-06W-D-60	20032312	15.50	1031320D	150.00
502343911	BLI-075-06N-06W-D-60	20032312	15.50	1031320D	150.00
502343912	BLI-075-06N-06W-D-60	20032312	15.50	1031320D	150.00
502343913	BLI-075-06N-06W-D-60	20032312	15.50	1031320D	150.00
502343914	BLI-075-06N-06W-D-60	20032312	15.50	1031320D	150.00
502343915	BLI-075-06N-06W-D-60	20032312	15.50	1031320D	150.00
502343916	BLI-075-06N-06W-D-60	20032312	15.50	1031320D	150.00
502343917	BLI-075-06N-06W-D-60	20032312	15.50	1031320D	150.00
502343918	BLI-075-06N-06W-D-60	20032312	15.50	1031320D	150.00
502343919	BLI-075-06N-06W-D-60	20032312	15.50	1031320D	150.00
502343920	BLI-075-06N-06W-D-60	20032312	15.50	1031320D	150.00
502343921	BLI-075-06N-06W-D-60	20032312	15.50	1031320D	150.00
502343922	BLI-075-06N-06W-D-60	20032312	15.50	1031520A	150.00
502343923	BLI-075-06N-06W-D-60	20032312	15.50	1031520A	150.00
502343924	BLI-075-06N-06W-D-60	20032312	15.50	1031520A	150.00
502343925	BLI-075-06N-06W-D-60	20032312	15.50	1031520A	150.00
502343926	BLI-075-06N-06W-D-60	20032312	15.50	1031520A	150.00
502343927	BLI-075-06N-06W-D-60	20032312	15.50	1031520A	150.00
502343928	BLI-075-06N-06W-D-60	20032312	15.50	1031520A	150.00
502343929	BLI-075-06N-06W-D-60	20032312	15.50	1031520A	150.00
502343930	BLI-075-06N-06W-D-60	20032312	15.50	1031520A	150.00
502343931	BLI-075-06N-06W-D-60	20032312	15.50	1031520A	150.00
502343932	BLI-075-06N-06W-D-60	20032312	15.50	1031520A	150.00
502343933	BLI-075-06N-06W-D-60	20032312	15.50	1031520A	150.00
502343934	BLI-075-06N-06W-D-60	20032312	15.50	1031520A	150.00
502343935	BLI-075-06N-06W-D-60	20032312	15.50	1031520A	150.00
502343936	BLI-075-06N-06W-D-60	20032312	15.50	1031520A	150.00
502343937	BLI-075-06N-06W-D-60	20032312	15.50	1031520A	150.00
502343938	BLI-075-06N-06W-D-60	20032312	15.50	1031520A	150.00
502343939	BLI-075-06N-06W-D-60	20032312	15.50	1031520A	150.00
502343940	BLI-075-06N-06W-D-60	20032312	15.50	1031520A	150.00
502343941	BLI-075-06N-06W-D-60	20032312	15.50	1031520A	150.00
502343942	BLI-075-06N-06W-D-60	20032312	15.50	1031520A	150.00
502343943	BLI-075-06N-06W-D-60	20032312	15.50	1031520A	150.00
502343944	BLI-075-06N-06W-D-60	20032312	15.50	1031520A	150.00

Roll Allocation List

Sales Order SO-088708
Customer Name Layfield Canada Ltd
Project Name Layfield CA / Eagle Gold Mine

Serial number	Item Number	Daily lot	Roll width	Clay	Length
502343945	BLI-075-06N-06W-D-60	20032312	15.50	1031520A	150.00
502343946	BLI-075-06N-06W-D-60	20032312	15.50	1031520A	150.00
502343947	BLI-075-06N-06W-D-60	20032312	15.50	1031520A	150.00
502343948	BLI-075-06N-06W-D-60	20032312	15.50	1031520A	150.00
502343949	BLI-075-06N-06W-D-60	20032312	15.50	1031520A	150.00
502343950	BLI-075-06N-06W-D-60	20032312	15.50	1031520A	150.00
502343951	BLI-075-06N-06W-D-60	20032312	15.50	1031520A	150.00
502343952	BLI-075-06N-06W-D-60	20032312	15.50	1031520A	150.00
502343953	BLI-075-06N-06W-D-60	20032312	15.50	1031520B	150.00
502343954	BLI-075-06N-06W-D-60	20032312	15.50	1031520B	150.00
502343955	BLI-075-06N-06W-D-60	20032312	15.50	1031520B	150.00
502343956	BLI-075-06N-06W-D-60	20032312	15.50	1031520B	150.00
502343957	BLI-075-06N-06W-D-60	20032312	15.50	1031520B	150.00
502343958	BLI-075-06N-06W-D-60	20032312	15.50	1031520B	150.00
502343959	BLI-075-06N-06W-D-60	20032312	15.50	1031520B	150.00
502343960	BLI-075-06N-06W-D-60	20032312	15.50	1031520B	150.00
502343961	BLI-075-06N-06W-D-60	20032312	15.50	1031520B	150.00
502343962	BLI-075-06N-06W-D-60	20032312	15.50	1031520B	150.00
502343963	BLI-075-06N-06W-D-60	20032312	15.50	1031520B	150.00
502343964	BLI-075-06N-06W-D-60	20032312	15.50	1031520B	150.00
502343965	BLI-075-06N-06W-D-60	20032312	15.50	1031520B	150.00
502343966	BLI-075-06N-06W-D-60	20032312	15.50	1031520B	150.00
502343967	BLI-075-06N-06W-D-60	20032312	15.50	1031520B	150.00
502343968	BLI-075-06N-06W-D-60	20032312	15.50	1031520B	150.00
502343969	BLI-075-06N-06W-D-60	20032312	15.50	1031520B	150.00
502343970	BLI-075-06N-06W-D-60	20032312	15.50	1031520B	150.00
502343971	BLI-075-06N-06W-D-60	20032412	15.50	1031520B	150.00
502343972	BLI-075-06N-06W-D-60	20032412	15.50	1031520B	150.00
502343973	BLI-075-06N-06W-D-60	20032412	15.50	1031520B	150.00
502343974	BLI-075-06N-06W-D-60	20032412	15.50	1031520B	150.00
502343975	BLI-075-06N-06W-D-60	20032412	15.50	1031520B	150.00
502343976	BLI-075-06N-06W-D-60	20032412	15.50	1031520B	150.00
502343977	BLI-075-06N-06W-D-60	20032412	15.50	1031520B	100.00
502343978	BLI-075-06N-06W-D-60	20032412	15.50	1031520B	150.00
502343979	BLI-075-06N-06W-D-60	20032412	15.50	1031520B	150.00
502343981	BLI-075-06N-06W-D-60	20032412	15.50	1031520B	150.00
502343982	BLI-075-06N-06W-D-60	20032412	15.50	1031520B	150.00
502343983	BLI-075-06N-06W-D-60	20032412	15.50	1031520C	150.00
502343984	BLI-075-06N-06W-D-60	20032412	15.50	1031520C	150.00
502343985	BLI-075-06N-06W-D-60	20032412	15.50	1031520C	150.00
502343986	BLI-075-06N-06W-D-60	20032412	15.50	1031520C	150.00
502343987	BLI-075-06N-06W-D-60	20032412	15.50	1031520C	150.00
502343988	BLI-075-06N-06W-D-60	20032412	15.50	1031520C	150.00
502343989	BLI-075-06N-06W-D-60	20032412	15.50	1031520C	150.00
502343990	BLI-075-06N-06W-D-60	20032412	15.50	1031520C	150.00
502343991	BLI-075-06N-06W-D-60	20032412	15.50	1031520C	150.00
502343992	BLI-075-06N-06W-D-60	20032412	15.50	1031520C	150.00
502343993	BLI-075-06N-06W-D-60	20032412	15.50	1031520C	150.00
502343994	BLI-075-06N-06W-D-60	20032412	15.50	1031520C	150.00
502343995	BLI-075-06N-06W-D-60	20032412	15.50	1031520C	150.00
502343996	BLI-075-06N-06W-D-60	20032412	15.50	1031520C	150.00
502343998	BLI-075-06N-06W-D-60	20032412	15.50	1031520C	150.00
502343999	BLI-075-06N-06W-D-60	20032412	15.50	1031520C	150.00
502344000	BLI-075-06N-06W-D-60	20032412	15.50	1031520C	150.00
502344001	BLI-075-06N-06W-D-60	20032412	15.50	1031520C	150.00
502344002	BLI-075-06N-06W-D-60	20032412	15.50	1031520C	150.00
502344003	BLI-075-06N-06W-D-60	20032412	15.50	1031520C	150.00
502344004	BLI-075-06N-06W-D-60	20032412	15.50	1031520C	150.00
502344005	BLI-075-06N-06W-D-60	20032412	15.50	1031520C	150.00
502344006	BLI-075-06N-06W-D-60	20032412	15.50	1031520C	150.00

Roll Allocation List

Sales Order SO-088708
Customer Name Layfield Canada Ltd
Project Name Layfield CA / Eagle Gold Mine

Serial number	Item Number	Daily lot	Roll width	Clay	Length
502344007	BLI-075-06N-06W-D-60	20032412	15.50	1031520C	150.00
502344008	BLI-075-06N-06W-D-60	20032412	15.50	1031520C	150.00
502344009	BLI-075-06N-06W-D-60	20032412	15.50	1031520C	150.00
502344010	BLI-075-06N-06W-D-60	20032412	15.50	1031520C	150.00
502344011	BLI-075-06N-06W-D-60	20032412	15.50	1031520C	150.00
502344012	BLI-075-06N-06W-D-60	20032412	15.50	1031520C	150.00
502344013	BLI-075-06N-06W-D-60	20032412	15.50	1031520C	150.00
502344014	BLI-075-06N-06W-D-60	20032412	15.50	1031520C	150.00
502344015	BLI-075-06N-06W-D-60	20032412	15.50	1032220A	150.00
502344016	BLI-075-06N-06W-D-60	20032412	15.50	1032220A	150.00
502344017	BLI-075-06N-06W-D-60	20032412	15.50	1032220A	150.00
502344018	BLI-075-06N-06W-D-60	20032412	15.50	1032220A	150.00
502344019	BLI-075-06N-06W-D-60	20032412	15.50	1032220A	150.00
502344020	BLI-075-06N-06W-D-60	20032412	15.50	1032220A	150.00
502344021	BLI-075-06N-06W-D-60	20032412	15.50	1032220A	150.00
502344022	BLI-075-06N-06W-D-60	20032412	15.50	1032220A	150.00
502344023	BLI-075-06N-06W-D-60	20032412	15.50	1032220A	150.00
502344024	BLI-075-06N-06W-D-60	20032412	15.50	1032220A	150.00
502344025	BLI-075-06N-06W-D-60	20032412	15.50	1032220A	150.00
502344026	BLI-075-06N-06W-D-60	20032412	15.50	1032220A	150.00
502344027	BLI-075-06N-06W-D-60	20032412	15.50	1032220A	150.00
502344028	BLI-075-06N-06W-D-60	20032412	15.50	1032220A	150.00
502344029	BLI-075-06N-06W-D-60	20032412	15.50	1032220A	150.00
502344030	BLI-075-06N-06W-D-60	20032412	15.50	1032220A	150.00
502344031	BLI-075-06N-06W-D-60	20032412	15.50	1032220A	150.00
502344032	BLI-075-06N-06W-D-60	20032412	15.50	1032220A	150.00
502344033	BLI-075-06N-06W-D-60	20032412	15.50	1032220A	150.00
502344034	BLI-075-06N-06W-D-60	20032412	15.50	1032220A	150.00
502344035	BLI-075-06N-06W-D-60	20032412	15.50	1032220A	150.00
502344036	BLI-075-06N-06W-D-60	20032412	15.50	1032220A	150.00
502344037	BLI-075-06N-06W-D-60	20032412	15.50	1032220A	150.00
502344038	BLI-075-06N-06W-D-60	20032412	15.50	1032220A	150.00
502344039	BLI-075-06N-06W-D-60	20032412	15.50	1032220A	150.00
502344040	BLI-075-06N-06W-D-60	20032412	15.50	1032220A	150.00
502344041	BLI-075-06N-06W-D-60	20032412	15.50	1032220A	150.00
502344042	BLI-075-06N-06W-D-60	20032412	15.50	1032220A	150.00
502344043	BLI-075-06N-06W-D-60	20032412	15.50	1032220B	150.00
502344044	BLI-075-06N-06W-D-60	20032412	15.50	1032220B	150.00
502344045	BLI-075-06N-06W-D-60	20032412	15.50	1032220B	150.00
502344046	BLI-075-06N-06W-D-60	20032412	15.50	1032220B	150.00
502344047	BLI-075-06N-06W-D-60	20032412	15.50	1032220B	150.00
502344048	BLI-075-06N-06W-D-60	20032412	15.50	1032220B	150.00
502344049	BLI-075-06N-06W-D-60	20032412	15.50	1032220B	150.00
502344050	BLI-075-06N-06W-D-60	20032412	15.50	1032220B	150.00
502344051	BLI-075-06N-06W-D-60	20032412	15.50	1032220B	150.00
502344052	BLI-075-06N-06W-D-60	20032412	15.50	1032220B	150.00
502344053	BLI-075-06N-06W-D-60	20032412	15.50	1032220B	150.00
502344054	BLI-075-06N-06W-D-60	20032412	15.50	1032220B	150.00
502344055	BLI-075-06N-06W-D-60	20032412	15.50	1032220B	150.00
502344056	BLI-075-06N-06W-D-60	20032412	15.50	1032220B	150.00
502344057	BLI-075-06N-06W-D-60	20032412	15.50	1032220B	150.00
502344058	BLI-075-06N-06W-D-60	20032412	15.50	1032220B	150.00

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Solmax Geosynthetics, LLC

ROLL TEST DATA REPORT

Report Date: Mar/26/2020

Sales Order No.	*Customer Name*	*Project Location*	*Product Name*	*BOL Number*
SO-088708	Layfield Canada Ltd	CA	BLI-075-06N-06W-D-60	

Roll Number	ASTM D4632 Grab Strength (N)	ASTM D4632 Peel Strength (N)	ASTM D6768 Tensile Strength (kN/m)	ASTM D6496 Peel Strength (N/m)	ASTM D5993 Clay Content @ 0% Moisture (kg/m²)	ASTM D5890 Free Swell (ml/2g)	ASTM D2216 Moisture Content (%)	ASTM D5891 Fluid Loss (ml)
502343885	1281	356	13.2	2767	4.05	33	10.6	13.8
502343886	1281	356	13.2	2767	4.05	33	10.6	13.8
502343887	1281	356	13.2	2767	4.05	33	10.6	13.8
502343888	1281	356	13.2	2767	4.05	33	10.6	13.8
502343889	1281	356	13.2	2767	4.05	33	10.6	13.8
502343890	1281	356	13.2	2767	4.05	33	10.6	13.8
502343891	1281	356	13.2	2767	4.05	36	10.4	12.2
502343892	1281	356	13.2	2767	4.05	36	10.4	12.2
502343893	1281	356	13.2	2767	4.05	36	10.4	12.2
502343894	1392	489	12.3	4343	3.95	36	10.4	12.2
502343895	1392	489	12.3	4343	3.95	36	10.4	12.2
502343896	1392	489	12.3	4343	3.95	36	10.4	12.2
502343897	1392	489	12.3	4343	3.95	36	10.4	12.2
502343898	1392	489	12.3	4343	3.95	36	10.4	12.2
502343899	1392	489	12.3	4343	3.95	36	10.4	12.2
502343900	1392	489	12.3	4343	3.95	36	10.4	12.2
502343901	1392	489	12.3	4343	3.95	36	10.4	12.2
502343902	1392	489	12.3	4343	3.95	36	10.4	12.2
502343903	1392	489	12.3	4343	3.95	36	10.4	12.2
502343904	1392	489	12.3	4343	3.95	36	10.4	12.2
502343905	1392	489	12.3	4343	3.95	36	10.4	12.2
502343906	1392	489	12.3	4343	3.95	36	10.4	12.2
502343907	1392	489	12.3	4343	3.95	36	10.4	12.2
502343908	1392	489	12.3	4343	3.95	36	10.4	12.2
502343909	1415	334	13.1	2697	3.87	36	10.4	12.2
502343910	1415	334	13.1	2697	3.87	36	10.4	12.2
502343911	1415	334	13.1	2697	3.87	36	10.4	12.2
502343912	1415	334	13.1	2697	3.87	36	10.4	12.2
502343913	1415	334	13.1	2697	3.87	36	10.4	12.2
502343914	1415	334	13.1	2697	3.87	36	10.4	12.2
502343915	1415	334	13.1	2697	3.87	36	10.4	12.2
502343916	1415	334	13.1	2697	3.87	36	10.4	12.2
502343917	1415	334	13.1	2697	3.87	36	10.4	12.2
502343918	1415	334	13.1	2697	3.87	36	10.4	12.2

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Solmax Geosynthetics, LLC

ROLL TEST DATA REPORT

SOLMAX QC APPROVED

Report Date: Mar/26/2020

Sales Order No.	*Customer Name*	*Project Location*	*Product Name*	*BOL Number*
SO-088708	Layfield Canada Ltd	CA	BLI-075-06N-06W-D-60	

Roll Number	ASTM D4632 Grab Strength (N)	ASTM D4632 Peel Strength (N)	ASTM D6768 Tensile Strength (kN/m)	ASTM D6496 Peel Strength (N/m)	ASTM D5993 Clay Content @ 0% Moisture (kg/m²)	ASTM D5890 Free Swell (ml/2g)	ASTM D2216 Moisture Content (%)	ASTM D5891 Fluid Loss (ml)
502343919	1415	334	13.1	2697	3.87	36	10.4	12.2
502343920	1415	334	13.1	2697	3.87	36	10.4	12.2
502343921	1415	334	13.1	2697	3.87	36	10.4	12.2
502343922	1415	334	13.1	2697	3.87	34	11.3	13.2
502343923	1415	334	13.1	2697	3.87	34	11.3	13.2
502343924	1415	334	13.1	2697	3.87	34	11.3	13.2
502343925	1415	369	12.6	3100	3.92	34	11.3	13.2
502343926	1415	369	12.6	3100	3.92	34	11.3	13.2
502343927	1415	369	12.6	3100	3.92	34	11.3	13.2
502343928	1415	369	12.6	3100	3.92	34	11.3	13.2
502343929	1415	369	12.6	3100	3.92	34	11.3	13.2
502343930	1415	369	12.6	3100	3.92	34	11.3	13.2
502343931	1415	369	12.6	3100	3.92	34	11.3	13.2
502343932	1415	369	12.6	3100	3.92	34	11.3	13.2
502343933	1415	369	12.6	3100	3.92	34	11.3	13.2
502343934	1415	369	12.6	3100	3.92	34	11.3	13.2
502343935	1415	369	12.6	3100	3.92	34	11.3	13.2
502343936	1415	369	12.6	3100	3.92	34	11.3	13.2
502343937	1415	369	12.6	3100	3.92	34	11.3	13.2
502343938	1415	369	12.6	3100	3.92	34	11.3	13.2
502343939	1415	369	12.6	3100	3.92	34	11.3	13.2
502343940	1415	369	12.6	3100	3.92	34	11.3	13.2
502343941	1561	387	13.8	3135	4.07	34	11.3	13.2
502343942	1561	387	13.8	3135	4.07	34	11.3	13.2
502343943	1561	387	13.8	3135	4.07	34	11.3	13.2
502343944	1561	387	13.8	3135	4.07	34	11.3	13.2
502343945	1561	387	13.8	3135	4.07	34	11.3	13.2
502343946	1561	387	13.8	3135	4.07	34	11.3	13.2
502343947	1561	387	13.8	3135	4.07	34	11.3	13.2
502343948	1561	387	13.8	3135	4.07	34	11.3	13.2
502343949	1561	387	13.8	3135	4.07	34	11.3	13.2
502343950	1561	387	13.8	3135	4.07	34	11.3	13.2
502343951	1561	387	13.8	3135	4.07	34	11.3	13.2
502343952	1561	387	13.8	3135	4.07	34	11.3	13.2

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Solmax Geosynthetics, LLC

ROLL TEST DATA REPORT

SOLMAX QC APPROVED

Report Date: Mar/26/2020

Sales Order No.	*Customer Name*	*Project Location*	*Product Name*	*BOL Number*
SO-088708	Layfield Canada Ltd	CA	BLI-075-06N-06W-D-60	

Roll Number	ASTM D4632 Grab Strength (N)	ASTM D4632 Peel Strength (N)	ASTM D6768 Tensile Strength (kN/m)	ASTM D6496 Peel Strength (N/m)	ASTM D5993 Clay Content @ 0% Moisture (kg/m²)	ASTM D5890 Free Swell (ml/2g)	ASTM D2216 Moisture Content (%)	ASTM D5891 Fluid Loss (ml)
502343953	1561	387	13.8	3135	4.07	33	11.7	13.0
502343954	1561	387	13.8	3135	4.07	33	11.7	13.0
502343955	1561	387	13.8	3135	4.07	33	11.7	13.0
502343956	1561	387	13.8	3135	4.07	33	11.7	13.0
502343957	1339	445	12.8	3432	3.91	33	11.7	13.0
502343958	1339	445	12.8	3432	3.91	33	11.7	13.0
502343959	1339	445	12.8	3432	3.91	33	11.7	13.0
502343960	1339	445	12.8	3432	3.91	33	11.7	13.0
502343961	1339	445	12.8	3432	3.91	33	11.7	13.0
502343962	1339	445	12.8	3432	3.91	33	11.7	13.0
502343963	1339	445	12.8	3432	3.91	33	11.7	13.0
502343964	1339	445	12.8	3432	3.91	33	11.7	13.0
502343965	1339	445	12.8	3432	3.91	33	11.7	13.0
502343966	1339	445	12.8	3432	3.91	33	11.7	13.0
502343967	1339	445	12.8	3432	3.91	33	11.7	13.0
502343968	1339	445	12.8	3432	3.91	33	11.7	13.0
502343969	1339	445	12.8	3432	3.91	33	11.7	13.0
502343970	1339	445	12.8	3432	3.91	33	11.7	13.0
502343971	1339	445	12.8	3432	3.91	33	11.7	13.0
502343972	1570	360	14.1	2942	3.88	33	11.7	13.0
502343973	1570	360	14.1	2942	3.88	33	11.7	13.0
502343974	1570	360	14.1	2942	3.88	33	11.7	13.0
502343975	1570	360	14.1	2942	3.88	33	11.7	13.0
502343976	1570	360	14.1	2942	3.88	33	11.7	13.0
502343977	1570	360	14.1	2942	3.88	33	11.7	13.0
502343978	1570	360	14.1	2942	3.88	33	11.7	13.0
502343979	1570	360	14.1	2942	3.88	33	11.7	13.0
502343981	1570	360	14.1	2942	3.88	33	11.7	13.0
502343982	1570	360	14.1	2942	3.88	33	11.7	13.0
502343983	1570	360	14.1	2942	3.88	30	11.4	14.0
502343984	1570	360	14.1	2942	3.88	30	11.4	14.0
502343985	1570	360	14.1	2942	3.88	30	11.4	14.0
502343986	1570	360	14.1	2942	3.88	30	11.4	14.0
502343987	1570	360	14.1	2942	3.88	30	11.4	14.0

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Solmax Geosynthetics, LLC

ROLL TEST DATA REPORT

SOLMAX QC APPROVED

Report Date: Mar/26/2020

Sales Order No.	*Customer Name*	*Project Location*	*Product Name*	*BOL Number*
SO-088708	Layfield Canada Ltd	CA	BLI-075-06N-06W-D-60	

Roll Number	ASTM D4632 Grab Strength (N)	ASTM D4632 Peel Strength (N)	ASTM D6768 Tensile Strength (kN/m)	ASTM D6496 Peel Strength (N/m)	ASTM D5993 Clay Content @ 0% Moisture (kg/m²)	ASTM D5890 Free Swell (ml/2g)	ASTM D2216 Moisture Content (%)	ASTM D5891 Fluid Loss (ml)
502343988	1450	338	13.9	2732	4.23	30	11.4	14.0
502343989	1450	338	13.9	2732	4.23	30	11.4	14.0
502343990	1450	338	13.9	2732	4.23	30	11.4	14.0
502343991	1450	338	13.9	2732	4.23	30	11.4	14.0
502343992	1450	338	13.9	2732	4.23	30	11.4	14.0
502343993	1450	338	13.9	2732	4.23	30	11.4	14.0
502343994	1450	338	13.9	2732	4.23	30	11.4	14.0
502343995	1450	338	13.9	2732	4.23	30	11.4	14.0
502343996	1450	338	13.9	2732	4.23	30	11.4	14.0
502343998	1450	338	13.9	2732	4.23	30	11.4	14.0
502343999	1450	338	13.9	2732	4.23	30	11.4	14.0
502344000	1450	338	13.9	2732	4.23	30	11.4	14.0
502344001	1450	338	13.9	2732	4.23	30	11.4	14.0
502344002	1450	338	13.9	2732	4.23	30	11.4	14.0
502344003	1450	338	13.9	2732	4.23	30	11.4	14.0
502344004	1495	369	15.0	2977	4.07	30	11.4	14.0
502344005	1495	369	15.0	2977	4.07	30	11.4	14.0
502344006	1495	369	15.0	2977	4.07	30	11.4	14.0
502344007	1495	369	15.0	2977	4.07	30	11.4	14.0
502344008	1495	369	15.0	2977	4.07	30	11.4	14.0
502344009	1495	369	15.0	2977	4.07	30	11.4	14.0
502344010	1495	369	15.0	2977	4.07	30	11.4	14.0
502344011	1495	369	15.0	2977	4.07	30	11.4	14.0
502344012	1495	369	15.0	2977	4.07	30	11.4	14.0
502344013	1495	369	15.0	2977	4.07	30	11.4	14.0
502344014	1495	369	15.0	2977	4.07	30	11.4	14.0
502344015	1495	369	15.0	2977	4.07	32	9.8	12.8
502344016	1495	369	15.0	2977	4.07	32	9.8	12.8
502344017	1495	369	15.0	2977	4.07	32	9.8	12.8
502344018	1495	369	15.0	2977	4.07	32	9.8	12.8
502344019	1495	369	15.0	2977	4.07	32	9.8	12.8
502344020	1357	409	12.6	3853	3.93	32	9.8	12.8
502344021	1357	409	12.6	3853	3.93	32	9.8	12.8
502344022	1357	409	12.6	3853	3.93	32	9.8	12.8

SOLMAX

Solmax Geosynthetics, LLC

ROLL TEST DATA REPORT

SOLMAX QC APPROVED

Report Date: Mar/26/2020

Sales Order No.	Customer Name	Project Location	Product Name	BOL Number
SO-088708	Layfield Canada Ltd	CA	BLI-075-06N-06W-D-60	

Roll Number	ASTM D4632 Grab Strength (N)	ASTM D4632 Peel Strength (N)	ASTM D6768 Tensile Strength (kN/m)	ASTM D6496 Peel Strength (N/m)	ASTM D5993 Clay Content @ 0% Moisture (kg/m²)	ASTM D5890 Free Swell (ml/2g)	ASTM D2216 Moisture Content (%)	ASTM D5891 Fluid Loss (ml)
502344023	1357	409	12.6	3853	3.93	32	9.8	12.8
502344024	1357	409	12.6	3853	3.93	32	9.8	12.8
502344025	1357	409	12.6	3853	3.93	32	9.8	12.8
502344026	1357	409	12.6	3853	3.93	32	9.8	12.8
502344027	1357	409	12.6	3853	3.93	32	9.8	12.8
502344028	1357	409	12.6	3853	3.93	32	9.8	12.8
502344029	1357	409	12.6	3853	3.93	32	9.8	12.8
502344030	1357	409	12.6	3853	3.93	32	9.8	12.8
502344031	1357	409	12.6	3853	3.93	32	9.8	12.8
502344032	1357	409	12.6	3853	3.93	32	9.8	12.8
502344033	1357	409	12.6	3853	3.93	32	9.8	12.8
502344034	1357	409	12.6	3853	3.93	32	9.8	12.8
502344035	1357	409	12.6	3853	3.93	32	9.8	12.8
502344036	1535	489	14.6	4133	3.97	32	9.8	12.8
502344037	1535	489	14.6	4133	3.97	32	9.8	12.8
502344038	1535	489	14.6	4133	3.97	32	9.8	12.8
502344039	1535	489	14.6	4133	3.97	32	9.8	12.8
502344040	1535	489	14.6	4133	3.97	32	9.8	12.8
502344041	1535	489	14.6	4133	3.97	32	9.8	12.8
502344042	1535	489	14.6	4133	3.97	32	9.8	12.8
502344043	1535	489	14.6	4133	3.97	35	8.8	12.2
502344044	1535	489	14.6	4133	3.97	35	8.8	12.2
502344045	1535	489	14.6	4133	3.97	35	8.8	12.2
502344046	1535	489	14.6	4133	3.97	35	8.8	12.2
502344047	1535	489	14.6	4133	3.97	35	8.8	12.2
502344048	1535	489	14.6	4133	3.97	35	8.8	12.2
502344049	1535	489	14.6	4133	3.97	35	8.8	12.2
502344050	1535	489	14.6	4133	3.97	35	8.8	12.2
502344051	1397	383	14.6	3030	4.02	35	8.8	12.2
502344052	1397	383	14.6	3030	4.02	35	8.8	12.2
502344053	1397	383	14.6	3030	4.02	35	8.8	12.2
502344054	1397	383	14.6	3030	4.02	35	8.8	12.2
502344055	1397	383	14.6	3030	4.02	35	8.8	12.2
502344056	1397	383	14.6	3030	4.02	35	8.8	12.2

SOLMAX

Solmax Geosynthetics, LLC

ROLL TEST DATA REPORT

SOLMAX QC APPROVED

Report Date: Mar/26/2020

Sales Order No.	Customer Name	Project Location	Product Name	BOL Number
SO-088708	Layfield Canada Ltd	CA	BLI-075-06N-06W-D-60	

Roll Number	ASTM D4632 Grab Strength (N)	ASTM D4632 Peel Strength (N)	ASTM D6768 Tensile Strength (kN/m)	ASTM D6496 Peel Strength (N/m)	ASTM D5993 Clay Content @ 0% Moisture (kg/m²)	ASTM D5890 Free Swell (ml/2g)	ASTM D2216 Moisture Content (%)	ASTM D5891 Fluid Loss (ml)
502344057	1397	383	14.6	3030	4.02	35	8.8	12.2
502344058	1397	383	14.6	3030	4.02	35	8.8	12.2

Laboratory Manager _____

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GSE BENTOLINER

CERTIFICATE OF ANALYSIS 2020

PRODUCT : NATIONAL® 30

SHIPPED FROM: **BENTONITE PERFORMANCE MINERALS LLC**
554 US HWY 212
COLONY PLANT
BELLE FOURCHE, S.D. 57717

BOL #	LOAD DATE	**LOT CODE**	% MOIST **12 MAX**	Mesh % + 20 **15 MAX**	Mesh % - 200 **10 MAX**	FL **18 MAX**	MBC MEQ **70 MIN**	SWELL INDEX **25 MIN**	PWA **750 MIN**
B0004397960	**03-14-20**	**1031320C**	**9.4**	**0.72**	**5.04**	**13.8**	**114**	**34**	**1021**

MARCH		% MOIST **12 MAX**	Mesh % + 20 **15 MAX**	Mesh % - 200 **10 MAX**	FL **18 MAX**	MBC meq **70 MIN**	SWELL INDEX **25 MIN**	PWA **750 MIN**
No. of CARS **16**	M AVG	**8.96**	**0.31**	**3.90**	**14.23**	**115.25**	**32.56**	**1027.75**
	STD DEV	**0.46**	**0.34**	**1.67**	**0.62**	**2.99**	**2.09**	**42.59**

YTD		% MOIST **12 MAX**	Mesh % + 20 **15 MAX**	Mesh % - 200 **10 MAX**	FL **18 MAX**	MBC meq **70 MIN**	SWELL INDEX **25 MIN**	PWA **750 MIN**
No. of CARS **52**	M AVG	**8.83**	**0.55**	**4.11**	**13.82**	**113.09**	**31.36**	**977.42**
	STD DEV	**0.61**	**1.72**	**1.63**	**0.78**	**3.24**	**1.77**	**132.81**

SOLD TO: **GSE CLAY LINING TECHNOLOGY, Co.**
3150 FIRST AVENUE
SPEARFISH, SD 57783

For any questions contact.
Q.A. SUPERVISOR
Tucker Goodvin

Attn: **Bob Stadler (rstadler@gseworld.com)**
Chuck Taylor (ctaylor@gseworld.com)
Cheryl Hofer (chofer@gseworld.com)
(ezimmel@gseworld.com)

SHIPPED TO: **GSE CLAY LINING TECHNOLOGY, Co.**
3150 FIRST AVENUE
SPEARFISH, SD 57783

Prepared by: TO
03/14/20

CC: Thomas Anderson
Jason Tawse

GSE BENTOLINER

CERTIFICATE OF ANALYSIS 2020

PRODUCT : NATIONAL® 30

SHIPPED FROM: **BENTONITE PERFORMANCE MINERALS LLC**
554 US HWY 212
COLONY PLANT
BELLE FOURCHE, S.D. 57717

BOL #	LOAD DATE	LOT CODE	% MOIST 12 MAX	Mesh % + 20 15 MAX	Mesh % - 200 10 MAX	FL 18 MAX	MBC MEQ 70 MIN	SWELL INDEX 25 MIN	PWA 750 MIN
B0004397961	**03-14-20**	**1031320D**	**9.2**	**0.16**	**3.93**	**14.6**	**114**	**30**	**997**
B0004397962	**03-15-20**	**1031520A**	**9.7**	**0.21**	**5.43**	**13.0**	**114**	**32**	**979**

MARCH		% MOIST 12 MAX	Mesh % + 20 15 MAX	Mesh % - 200 10 MAX	FL 18 MAX	MBC meq 70 MIN	SWELL INDEX 25 MIN	PWA 750 MIN
No. of CARS	M AVG	**9.01**	**0.29**	**3.98**	**14.18**	**115.11**	**32.39**	**1023.33**
18	STD DEV	**0.46**	**0.32**	**1.61**	**0.66**	**2.85**	**2.06**	**42.16**

YTD		% MOIST 12 MAX	Mesh % + 20 15 MAX	Mesh % - 200 10 MAX	FL 18 MAX	MBC meq 70 MIN	SWELL INDEX 25 MIN	PWA 750 MIN
No. of CARS	M AVG	**8.85**	**0.54**	**4.13**	**13.82**	**113.13**	**31.35**	**977.80**
54	STD DEV	**0.61**	**1.69**	**1.61**	**0.78**	**3.19**	**1.75**	**130.40**

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Cheryl Hofer (chofer@gseworld.com)
(ezimmel@gseworld.com)

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3150 FIRST AVENUE
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Prepared by: TO
03/15/20

CC: Thomas Anderson
Jason Tawse

GSE BENTOLINER

CERTIFICATE OF ANALYSIS 2020

PRODUCT : NATIONAL® 30

SHIPPED FROM: **BENTONITE PERFORMANCE MINERALS LLC**
554 US HWY 212
COLONY PLANT
BELLE FOURCHE, S.D. 57717

BOL #	LOAD DATE	LOT CODE	% MOIST 12 MAX	Mesh % + 20 15 MAX	Mesh % - 200 10 MAX	FL 18 MAX	MBC MEQ 70 MIN	SWELL INDEX 25 MIN	PWA 750 MIN
B0004397964	**03-15-20**	**1031520B**	**10.0**	**0.25**	**4.77**	**14.0**	**112**	**30**	**1020**

MARCH		% MOIST 12 MAX	Mesh % + 20 15 MAX	Mesh % - 200 10 MAX	FL 18 MAX	MBC meq 70 MIN	SWELL INDEX 25 MIN	PWA 750 MIN
No. of CARS	M AVG	**9.06**	**0.29**	**4.02**	**14.17**	**114.95**	**32.26**	**1023.16**
19	STD DEV	**0.50**	**0.32**	**1.58**	**0.64**	**2.86**	**2.07**	**41.04**

YTD		% MOIST 12 MAX	Mesh % + 20 15 MAX	Mesh % - 200 10 MAX	FL 18 MAX	MBC meq 70 MIN	SWELL INDEX 25 MIN	PWA 750 MIN
No. of CARS	M AVG	**8.87**	**0.53**	**4.15**	**13.83**	**113.11**	**31.32**	**978.55**
55	STD DEV	**0.63**	**1.67**	**1.60**	**0.77**	**3.16**	**1.74**	**129.35**

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Cheryl Hofer (chofer@gseworld.com)
(ezimmel@gseworld.com)

SHIPPED TO: **GSE CLAY LINING TECHNOLOGY, Co.**
3150 FIRST AVENUE
SPEARFISH, SD 57783

CC: Thomas Anderson
Jason Tawse

For any questions contact.
Q.A. SUPERVISOR
Tucker Goodvin

Prepared by: TO
03/16/20

GSE BENTOLINER

CERTIFICATE OF ANALYSIS 2020

PRODUCT : NATIONAL® 30

SHIPPED FROM: **BENTONITE PERFORMANCE MINERALS LLC**
554 US HWY 212
COLONY PLANT
BELLE FOURCHE, S.D. 57717

BOL #	LOAD DATE	LOT CODE	% MOIST 12 MAX	Mesh % + 20 15 MAX	Mesh % - 200 10 MAX	FL 18 MAX	MBC MEQ 70 MIN	SWELL INDEX 25 MIN	PWA 750 MIN
B0004397965	**03-16-20**	**1031520C**	**9.9**	**0.22**	**4.85**	**13.6**	**114**	**33**	**1034**

MARCH		% MOIST 12 MAX	Mesh % + 20 15 MAX	Mesh % - 200 10 MAX	FL 18 MAX	MBC meq 70 MIN	SWELL INDEX 25 MIN	PWA 750 MIN
No. of CARS **20**	M AVG	**9.11**	**0.29**	**4.07**	**14.14**	**114.90**	**32.30**	**1023.70**
	STD DEV	**0.52**	**0.31**	**1.55**	**0.64**	**2.79**	**2.03**	**40.07**

YTD		% MOIST 12 MAX	Mesh % + 20 15 MAX	Mesh % - 200 10 MAX	FL 18 MAX	MBC meq 70 MIN	SWELL INDEX 25 MIN	PWA 750 MIN
No. of CARS **56**	M AVG	**8.89**	**0.53**	**4.16**	**13.82**	**113.12**	**31.35**	**979.53**
	STD DEV	**0.63**	**1.66**	**1.58**	**0.76**	**3.13**	**1.74**	**128.42**

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Cheryl Hofer (chofer@gseworld.com)
(ezimmel@gseworld.com)

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3150 FIRST AVENUE
SPEARFISH, SD 57783

CC: Thomas Anderson
Jason Tawse

For any questions contact.
Q.A. SUPERVISOR
Tucker Goodvin

Prepared by: TO
03/16/20

GSE BENTOLINER

CERTIFICATE OF ANALYSIS 2020

PRODUCT : NATIONAL® 30

SHIPPED FRO **BENTONITE PERFORMANCE MINERALS LLC**
554 US HWY 212
COLONY PLANT
BELLE FOURCHE, S.D. 57717

BOL #	LOAD DATE	LOT CODE	% MOIST 12 MAX	Mesh % + 20 15 MAX	Mesh % - 200 10 MAX	FL 18 MAX	MBC MEQ 70 MIN	SWELL INDEX 25 MIN	PWA 750 MIN
B0004402567	**03-22-20**	**1032220A**	**9.0**	**0.02**	**7.19**	**13.4**	**112**	**31**	**1017**

MARCH		% MOIST 12 MAX	Mesh % + 20 15 MAX	Mesh % - 200 10 MAX	0 FL 18 MAX	MBC meq 70 MIN	SWELL INDEX 25 MIN	PWA 750 MIN	DATE 03-*
No. of CARS	M AVG	**9.02**	**0.36**	**4.10**	**14.05**	**115.16**	**32.13**	**1020.45**	
31	STD DEV	**0.55**	**0.75**	**1.52**	**0.61**	**2.68**	**1.93**	**38.26**	

YTD		% MOIST 12 MAX	Mesh % + 20 15 MAX	Mesh % - 200 10 MAX	0 FL 18 MAX	MBC meq 70 MIN	SWELL INDEX 25 MIN	PWA 750 MIN	DATE *-*
No. of CARS	M AVG	**8.90**	**0.53**	**4.18**	**13.84**	**113.90**	**31.57**	**985.67**	
66	STD DEV	**0.62**	**1.60**	**1.58**	**0.69**	**3.14**	**1.81**	**126.95**	

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Cheryl Hofer (chofer@gseworld.com)
(ezimmel@gseworld.com)

SHIPPED TO: **GSE CLAY LINING TECHNOLOGY, Co.**
3150 FIRST AVENUE
SPEARFISH, SD 57783

CC: Thomas Anderson
Jason Tawse
File
Thomas Cortner

For any questions contact.
Q.A. SUPERVISOR
Tucker Goodvin

Prepared by: TO
03/25/20

GSE BENTOLINER

CERTIFICATE OF ANALYSIS 2020

PRODUCT : NATIONAL® 30

SHIPPED FRO **BENTONITE PERFORMANCE MINERALS LLC**
554 US HWY 212
COLONY PLANT
BELLE FOURCHE, S.D. 57717

BOL #	LOAD DATE	LOT CODE	% MOIST 12 MAX	Mesh % + 20 15 MAX	Mesh % - 200 10 MAX	FL 18 MAX	MBC MEQ 70 MIN	SWELL INDEX 25 MIN	PWA 750 MIN
B0004402568	**03-22-20**	**1032220B**	**8.2**	**0.97**	**1.80**	**13.4**	**118**	**32**	**1072**

MARCH		% MOIST 12 MAX	Mesh % + 20 15 MAX	Mesh % - 200 10 MAX	0 FL 18 MAX	MBC meq 70 MIN	SWELL INDEX 25 MIN	PWA 750 MIN	DATE 03-*
No. of CARS **32**	M AVG	**8.99**	**0.38**	**4.03**	**14.03**	**115.25**	**32.13**	**1022.06**	
	STD DEV	**0.56**	**0.75**	**1.55**	**0.61**	**2.68**	**1.90**	**38.71**	

YTD		% MOIST 12 MAX	Mesh % + 20 15 MAX	Mesh % - 200 10 MAX	0 FL 18 MAX	MBC meq 70 MIN	SWELL INDEX 25 MIN	PWA 750 MIN	DATE *-*
No. of CARS **67**	M AVG	**8.89**	**0.53**	**4.14**	**13.83**	**113.97**	**31.58**	**987.14**	
	STD DEV	**0.62**	**1.59**	**1.60**	**0.69**	**3.16**	**1.80**	**126.36**	

SOLD TO: **GSE CLAY LINING TECHNOLOGY, Co.**
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SHIPPED TO: **GSE CLAY LINING TECHNOLOGY, Co.**
3150 FIRST AVENUE
SPEARFISH, SD 57783

Prepared by: TO
03/25/20

CC: Thomas Anderson
Jason Tawse
File
Thomas Cortner

Report Date
3/27/2020

SOLMAX

BentoLiner Manufacturing Certification

Sales Order: 88708

Customer: Layfield Canada Ltd

Project: Layfield CA / Eagle Gold Mine

Product Type: BLI-075-06N-06W-D-60 BentoLiner NWL

The GCL purchased and shipped for the above referenced project does meet or exceed the project specifications.

The GCL supplied to this project has been continuously inspected for the presence of needles and is certified to be needle free.

Chuck Taylor
Laboratory Technician

Roll Allocation List

Sales Order SO-088708
Customer Name Layfield Canada Ltd
Project Name Layfield CA / Eagle Gold Mine

Serial number	Item Number	Daily lot	Roll width	Clay	Length
502344059	BLI-075-06N-06W-D-60	20032512	15.50	1032220B	150.00
502344060	BLI-075-06N-06W-D-60	20032512	15.50	1032220B	150.00
502344061	BLI-075-06N-06W-D-60	20032512	15.50	1032220B	150.00
502344062	BLI-075-06N-06W-D-60	20032512	15.50	1032220B	150.00
502344063	BLI-075-06N-06W-D-60	20032512	15.50	1032220B	150.00
502344064	BLI-075-06N-06W-D-60	20032512	15.50	1032220B	150.00
502344065	BLI-075-06N-06W-D-60	20032512	15.50	1032220B	150.00
502344066	BLI-075-06N-06W-D-60	20032512	15.50	1032220B	150.00
502344067	BLI-075-06N-06W-D-60	20032512	15.50	1032220B	150.00
502344068	BLI-075-06N-06W-D-60	20032512	15.50	1032220B	150.00
502344069	BLI-075-06N-06W-D-60	20032512	15.50	1032220B	150.00
502344070	BLI-075-06N-06W-D-60	20032512	15.50	1032220B	150.00
502344071	BLI-075-06N-06W-D-60	20032512	15.50	1032220B	150.00
502344072	BLI-075-06N-06W-D-60	20032512	15.50	1032220B	150.00
502344073	BLI-075-06N-06W-D-60	20032512	15.50	1032220C	150.00
502344074	BLI-075-06N-06W-D-60	20032512	15.50	1032220C	150.00
502344075	BLI-075-06N-06W-D-60	20032512	15.50	1032220C	150.00
502344076	BLI-075-06N-06W-D-60	20032512	15.50	1032220C	150.00
502344077	BLI-075-06N-06W-D-60	20032512	15.50	1032220C	150.00
502344078	BLI-075-06N-06W-D-60	20032512	15.50	1032220C	150.00
502344079	BLI-075-06N-06W-D-60	20032512	15.50	1032220C	150.00
502344080	BLI-075-06N-06W-D-60	20032512	15.50	1032220C	150.00
502344081	BLI-075-06N-06W-D-60	20032512	15.50	1032220C	150.00
502344082	BLI-075-06N-06W-D-60	20032512	15.50	1032220C	150.00
502344083	BLI-075-06N-06W-D-60	20032512	15.50	1032220C	150.00
502344084	BLI-075-06N-06W-D-60	20032512	15.50	1032220C	150.00
502344085	BLI-075-06N-06W-D-60	20032512	15.50	1032220C	150.00
502344086	BLI-075-06N-06W-D-60	20032512	15.50	1032220C	150.00
502344087	BLI-075-06N-06W-D-60	20032512	15.50	1032220C	150.00
502344088	BLI-075-06N-06W-D-60	20032512	15.50	1032220C	150.00
502344089	BLI-075-06N-06W-D-60	20032512	15.50	1032220C	150.00
502344090	BLI-075-06N-06W-D-60	20032512	15.50	1032220C	150.00
502344096	BLI-075-06N-06W-D-60	20032512	15.50	1032220C	150.00
502344097	BLI-075-06N-06W-D-60	20032512	15.50	1032220C	118.00
502344098	BLI-075-06N-06W-D-60	20032512	15.50	1032220C	150.00
502344099	BLI-075-06N-06W-D-60	20032512	15.50	1032220C	150.00
502344100	BLI-075-06N-06W-D-60	20032512	15.50	1032220C	150.00
502344101	BLI-075-06N-06W-D-60	20032512	15.50	1032220C	150.00
502344102	BLI-075-06N-06W-D-60	20032512	15.50	1032220C	150.00
502344103	BLI-075-06N-06W-D-60	20032512	15.50	1032220C	150.00
502344104	BLI-075-06N-06W-D-60	20032512	15.50	1031520D	150.00
502344105	BLI-075-06N-06W-D-60	20032512	15.50	1031520D	150.00
502344110	BLI-075-06N-06W-D-60	20032512	15.50	1031520D	150.00
502344111	BLI-075-06N-06W-D-60	20032512	15.50	1031520D	150.00
502344112	BLI-075-06N-06W-D-60	20032512	15.50	1031520D	150.00
502344113	BLI-075-06N-06W-D-60	20032512	15.50	1031520D	150.00
502344114	BLI-075-06N-06W-D-60	20032512	15.50	1031520D	150.00
502344115	BLI-075-06N-06W-D-60	20032512	15.50	1031520D	150.00
502344116	BLI-075-06N-06W-D-60	20032512	15.50	1031520D	150.00
502344117	BLI-075-06N-06W-D-60	20032512	15.50	1031520D	150.00
502344118	BLI-075-06N-06W-D-60	20032512	15.50	1031520D	150.00
502344119	BLI-075-06N-06W-D-60	20032512	15.50	1031520D	150.00
502344120	BLI-075-06N-06W-D-60	20032512	15.50	1031520D	150.00
502344121	BLI-075-06N-06W-D-60	20032512	15.50	1031520D	150.00
502344122	BLI-075-06N-06W-D-60	20032512	15.50	1031520D	150.00
502344124	BLI-075-06N-06W-D-60	20032512	15.50	1031520D	150.00
502344125	BLI-075-06N-06W-D-60	20032512	15.50	1031520D	150.00
502344126	BLI-075-06N-06W-D-60	20032512	15.50	1031520D	150.00
502344127	BLI-075-06N-06W-D-60	20032512	15.50	1031520D	150.00
502344128	BLI-075-06N-06W-D-60	20032512	15.50	1031520D	150.00

Roll Allocation List

Sales Order SO-088708
Customer Name Layfield Canada Ltd
Project Name Layfield CA / Eagle Gold Mine

Serial number	Item Number	Daily lot	Roll width	Clay	Length
502344129	BLI-075-06N-06W-D-60	20032512	15.50	1031520D	150.00
502344130	BLI-075-06N-06W-D-60	20032512	15.50	1031520D	150.00
502344131	BLI-075-06N-06W-D-60	20032512	15.50	1031520D	150.00
502344132	BLI-075-06N-06W-D-60	20032512	15.50	1031520D	150.00
502344133	BLI-075-06N-06W-D-60	20032512	15.50	1031520D	150.00
502344134	BLI-075-06N-06W-D-60	20032512	15.50	1031520D	150.00
502344135	BLI-075-06N-06W-D-60	20032512	15.50	1031520D	150.00
502344136	BLI-075-06N-06W-D-60	20032512	15.50	1031520D	150.00
502344137	BLI-075-06N-06W-D-60	20032512	15.50	1031720A	150.00
502344138	BLI-075-06N-06W-D-60	20032512	15.50	1031720A	106.00
502344140	BLI-075-06N-06W-D-60	20032512	15.50	1031720A	150.00
502344141	BLI-075-06N-06W-D-60	20032512	15.50	1031720A	150.00
502344142	BLI-075-06N-06W-D-60	20032512	15.50	1031720A	150.00
502344143	BLI-075-06N-06W-D-60	20032512	15.50	1031720A	150.00
502344144	BLI-075-06N-06W-D-60	20032512	15.50	1031720A	150.00
502344145	BLI-075-06N-06W-D-60	20032512	15.50	1031720A	150.00
502344146	BLI-075-06N-06W-D-60	20032512	15.50	1031720A	150.00
502344147	BLI-075-06N-06W-D-60	20032612	15.50	1031720A	150.00
502344148	BLI-075-06N-06W-D-60	20032612	15.50	1031720A	150.00
502344149	BLI-075-06N-06W-D-60	20032612	15.50	1031720A	150.00
502344150	BLI-075-06N-06W-D-60	20032612	15.50	1031720A	150.00
502344151	BLI-075-06N-06W-D-60	20032612	15.50	1031720A	150.00
502344152	BLI-075-06N-06W-D-60	20032612	15.50	1031720A	150.00
502344153	BLI-075-06N-06W-D-60	20032612	15.50	1031720A	150.00
502344154	BLI-075-06N-06W-D-60	20032612	15.50	1031720A	150.00
502344155	BLI-075-06N-06W-D-60	20032612	15.50	1031720A	150.00
502344156	BLI-075-06N-06W-D-60	20032612	15.50	1031720A	150.00
502344158	BLI-075-06N-06W-D-60	20032612	15.50	1031720A	150.00
502344159	BLI-075-06N-06W-D-60	20032612	15.50	1031720A	150.00
502344160	BLI-075-06N-06W-D-60	20032612	15.50	1031720A	150.00
502344161	BLI-075-06N-06W-D-60	20032612	15.50	1031720A	150.00
502344162	BLI-075-06N-06W-D-60	20032612	15.50	1031720A	150.00
502344163	BLI-075-06N-06W-D-60	20032612	15.50	1031720A	150.00
502344164	BLI-075-06N-06W-D-60	20032612	15.50	1031720A	150.00
502344165	BLI-075-06N-06W-D-60	20032612	15.50	1031720A	150.00
502344166	BLI-075-06N-06W-D-60	20032612	15.50	1031720B	150.00
502344167	BLI-075-06N-06W-D-60	20032612	15.50	1031720B	150.00
502344168	BLI-075-06N-06W-D-60	20032612	15.50	1031720B	150.00
502344169	BLI-075-06N-06W-D-60	20032612	15.50	1031720B	150.00
502344170	BLI-075-06N-06W-D-60	20032612	15.50	1031720B	150.00
502344171	BLI-075-06N-06W-D-60	20032612	15.50	1031720B	150.00
502344172	BLI-075-06N-06W-D-60	20032612	15.50	1031720B	150.00
502344173	BLI-075-06N-06W-D-60	20032612	15.50	1031720B	150.00
502344174	BLI-075-06N-06W-D-60	20032612	15.50	1031720B	150.00
502344175	BLI-075-06N-06W-D-60	20032612	15.50	1031720B	150.00
502344176	BLI-075-06N-06W-D-60	20032612	15.50	1031720B	150.00

SOLMAX

Solmax Geosynthetics, LLC

ROLL TEST DATA REPORT

SOLMAX QC APPROVED

Report Date: Mar/27/2020

Sales Order No.	***Customer Name***	***Project Location***	***Product Name***	***BOL Number***
SO-088708	Layfield Canada Ltd	CA	BLI-075-06N-06W-D-60	

Roll Number	ASTM D4632 Grab Strength (N)	ASTM D4632 Peel Strength (N)	ASTM D6768 Tensile Strength (kN/m)	ASTM D6496 Peel Strength (N/m)	ASTM D5993 Clay Content @ 0% Moisture (kg/m²)	ASTM D5890 Free Swell (ml/2g)	ASTM D2216 Moisture Content (%)	ASTM D5891 Fluid Loss (ml)
502344059	1397	383	14.6	3030	4.02	35	8.8	12.2
502344060	1397	383	14.6	3030	4.02	35	8.8	12.2
502344061	1397	383	14.6	3030	4.02	35	8.8	12.2
502344062	1397	383	14.6	3030	4.02	35	8.8	12.2
502344063	1397	383	14.6	3030	4.02	35	8.8	12.2
502344064	1397	383	14.6	3030	4.02	35	8.8	12.2
502344065	1397	383	14.6	3030	4.02	35	8.8	12.2
502344066	1397	383	14.6	3030	4.02	35	8.8	12.2
502344067	1392	378	12.7	3047	4.20	35	8.8	12.2
502344068	1392	378	12.7	3047	4.20	35	8.8	12.2
502344069	1392	378	12.7	3047	4.20	35	8.8	12.2
502344070	1392	378	12.7	3047	4.20	35	8.8	12.2
502344071	1392	378	12.7	3047	4.20	35	8.8	12.2
502344072	1392	378	12.7	3047	4.20	35	8.8	12.2
502344073	1392	378	12.7	3047	4.20	31	9.2	13.6
502344074	1392	378	12.7	3047	4.20	31	9.2	13.6
502344075	1392	378	12.7	3047	4.20	31	9.2	13.6
502344076	1392	378	12.7	3047	4.20	31	9.2	13.6
502344077	1392	378	12.7	3047	4.20	31	9.2	13.6
502344078	1392	378	12.7	3047	4.20	31	9.2	13.6
502344079	1392	378	12.7	3047	4.20	31	9.2	13.6
502344080	1392	378	12.7	3047	4.20	31	9.2	13.6
502344081	1392	378	12.7	3047	4.20	31	9.2	13.6
502344082	1392	378	12.7	3047	4.20	31	9.2	13.6
502344083	1143	427	11.3	3222	3.95	31	9.2	13.6
502344084	1143	427	11.3	3222	3.95	31	9.2	13.6
502344085	1143	427	11.3	3222	3.95	31	9.2	13.6
502344086	1143	427	11.3	3222	3.95	31	9.2	13.6
502344087	1143	427	11.3	3222	3.95	31	9.2	13.6
502344088	1143	427	11.3	3222	3.95	31	9.2	13.6
502344089	1143	427	11.3	3222	3.95	31	9.2	13.6
502344090	1143	427	11.3	3222	3.95	31	9.2	13.6
502344096	1143	427	11.3	3222	3.95	31	9.2	13.6
502344097	1143	427	11.3	3222	3.95	31	9.2	13.6

SOLMAX

Solmax Geosynthetics, LLC

ROLL TEST DATA REPORT

SOLMAX QC APPROVED

Report Date: Mar/27/2020

Sales Order No.	***Customer Name***	***Project Location***	***Product Name***	***BOL Number***
SO-088708	Layfield Canada Ltd	CA	BLI-075-06N-06W-D-60	

Roll Number	ASTM D4632 Grab Strength (N)	ASTM D4632 Peel Strength (N)	ASTM D6768 Tensile Strength (kN/m)	ASTM D6496 Peel Strength (N/m)	ASTM D5993 Clay Content @ 0% Moisture (kg/m²)	ASTM D5890 Free Swell (ml/2g)	ASTM D2216 Moisture Content (%)	ASTM D5891 Fluid Loss (ml)
502344098	1143	427	11.3	3222	3.95	31	9.2	13.6
502344099	1366	374	13.4	3100	4.39	31	9.2	13.6
502344100	1366	374	13.4	3100	4.39	31	9.2	13.6
502344101	1366	374	13.4	3100	4.39	31	9.2	13.6
502344102	1366	374	13.4	3100	4.39	31	9.2	13.6
502344103	1366	374	13.4	3100	4.39	31	9.2	13.6
502344104	1366	374	13.4	3100	4.39	32	11.2	14.0
502344105	1366	374	13.4	3100	4.39	32	11.2	14.0
502344110	1366	374	13.4	3100	4.39	32	11.2	14.0
502344111	1366	374	13.4	3100	4.39	32	11.2	14.0
502344112	1366	374	13.4	3100	4.39	32	11.2	14.0
502344113	1366	374	13.4	3100	4.39	32	11.2	14.0
502344114	1366	374	13.4	3100	4.39	32	11.2	14.0
502344115	1561	378	12.7	3170	4.07	32	11.2	14.0
502344116	1561	378	12.7	3170	4.07	32	11.2	14.0
502344117	1561	378	12.7	3170	4.07	32	11.2	14.0
502344118	1561	378	12.7	3170	4.07	32	11.2	14.0
502344119	1561	378	12.7	3170	4.07	32	11.2	14.0
502344120	1561	378	12.7	3170	4.07	32	11.2	14.0
502344121	1561	378	12.7	3170	4.07	32	11.2	14.0
502344122	1561	378	12.7	3170	4.07	32	11.2	14.0
502344124	1561	378	12.7	3170	4.07	32	11.2	14.0
502344125	1561	378	12.7	3170	4.07	32	11.2	14.0
502344126	1561	378	12.7	3170	4.07	32	11.2	14.0
502344127	1561	378	12.7	3170	4.07	32	11.2	14.0
502344128	1561	378	12.7	3170	4.07	32	11.2	14.0
502344129	1561	378	12.7	3170	4.07	32	11.2	14.0
502344130	1561	378	12.7	3170	4.07	32	11.2	14.0
502344131	1268	396	11.9	3222	3.93	32	11.2	14.0
502344132	1268	396	11.9	3222	3.93	32	11.2	14.0
502344133	1339	369	11.8	3100	3.76	32	11.2	14.0
502344134	1339	369	11.8	3100	3.76	32	11.2	14.0
502344135	1339	369	11.8	3100	3.76	32	11.2	14.0
502344136	1339	369	11.8	3100	3.76	32	11.2	14.0

SOLMAX

Solmax Geosynthetics, LLC

ROLL TEST DATA REPORT

SOLMAX QC APPROVED

Report Date: Mar/27/2020

Sales Order No.	***Customer Name***	***Project Location***	***Product Name***	***BOL Number***
SO-088708	Layfield Canada Ltd	CA	BLI-075-06N-06W-D-60	

Roll Number	ASTM D4632 Grab Strength (N)	ASTM D4632 Peel Strength (N)	ASTM D6768 Tensile Strength (kN/m)	ASTM D6496 Peel Strength (N/m)	ASTM D5993 Clay Content @ 0% Moisture (kg/m²)	ASTM D5890 Free Swell (ml/2g)	ASTM D2216 Moisture Content (%)	ASTM D5891 Fluid Loss (ml)
502344137	1339	369	11.8	3100	3.76	31	10.3	13.2
502344138	1339	369	11.8	3100	3.76	31	10.3	13.2
502344140	1339	369	11.8	3100	3.76	31	10.3	13.2
502344141	1339	369	11.8	3100	3.76	31	10.3	13.2
502344142	1339	369	11.8	3100	3.76	31	10.3	13.2
502344143	1339	369	11.8	3100	3.76	31	10.3	13.2
502344144	1339	369	11.8	3100	3.76	31	10.3	13.2
502344145	1339	369	11.8	3100	3.76	31	10.3	13.2
502344146	1339	369	11.8	3100	3.76	31	10.3	13.2
502344147	1339	369	11.8	3100	3.76	31	10.3	13.2
502344148	1339	369	11.8	3100	3.76	31	10.3	13.2
502344149	1490	391	13.0	3205	4.03	31	10.3	13.2
502344150	1490	391	13.0	3205	4.03	31	10.3	13.2
502344151	1490	391	13.0	3205	4.03	31	10.3	13.2
502344152	1490	391	13.0	3205	4.03	31	10.3	13.2
502344153	1490	391	13.0	3205	4.03	31	10.3	13.2
502344154	1490	391	13.0	3205	4.03	31	10.3	13.2
502344155	1490	391	13.0	3205	4.03	31	10.3	13.2
502344156	1490	391	13.0	3205	4.03	31	10.3	13.2
502344158	1490	391	13.0	3205	4.03	31	10.3	13.2
502344159	1490	391	13.0	3205	4.03	31	10.3	13.2
502344160	1490	391	13.0	3205	4.03	31	10.3	13.2
502344161	1490	391	13.0	3205	4.03	31	10.3	13.2
502344162	1490	391	13.0	3205	4.03	31	10.3	13.2
502344163	1490	391	13.0	3205	4.03	31	10.3	13.2
502344164	1490	391	13.0	3205	4.03	31	10.3	13.2
502344165	1334	400	14.0	3345	4.18	31	10.3	13.2
502344166	1334	400	14.0	3345	4.18	32	7.7	13.8
502344167	1334	400	14.0	3345	4.18	32	7.7	13.8
502344168	1334	400	14.0	3345	4.18	32	7.7	13.8
502344169	1334	400	14.0	3345	4.18	32	7.7	13.8
502344170	1334	400	14.0	3345	4.18	32	7.7	13.8
502344171	1334	400	14.0	3345	4.18	32	7.7	13.8
502344172	1334	400	14.0	3345	4.18	32	7.7	13.8

SOLMAX

Solmax Geosynthetics, LLC

ROLL TEST DATA REPORT

SOLMAX QC APPROVED

Report Date: Mar/27/2020

Sales Order No.	*Customer Name*	*Project Location*	*Product Name*	*BOL Number*
SO-088708	Layfield Canada Ltd	CA	BLI-075-06N-06W-D-60	

Roll Number	ASTM D4632 Grab Strength (N)	ASTM D4632 Peel Strength (N)	ASTM D6768 Tensile Strength (kN/m)	ASTM D6496 Peel Strength (N/m)	ASTM D5993 Clay Content @ 0% Moisture (kg/m²)	ASTM D5890 Free Swell (ml/2g)	ASTM D2216 Moisture Content (%)	ASTM D5891 Fluid Loss (ml)
502344173	1334	400	14.0	3345	4.18	32	7.7	13.8
502344174	1334	400	14.0	3345	4.18	32	7.7	13.8
502344175	1334	400	14.0	3345	4.18	32	7.7	13.8
502344176	1334	400	14.0	3345	4.18	32	7.7	13.8

Laboratory Manager _____

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GSE BENTOLINER

CERTIFICATE OF ANALYSIS 2020

PRODUCT : NATIONAL® 30

SHIPPED FROM: **BENTONITE PERFORMANCE MINERALS LLC**
554 US HWY 212
COLONY PLANT
BELLE FOURCHE, S.D. 57717

BOL #	LOAD DATE	**LOT CODE**	% MOIST **12 MAX**	Mesh % + 20 **15 MAX**	Mesh % - 200 **10 MAX**	FL **18 MAX**	MBC MEQ **70 MIN**	SWELL INDEX **25 MIN**	PWA **750 MIN**
B0004397966	**03-16-20**	**1031520D**	**9.8**	**0.23**	**4.09**	**14.0**	**116**	**34**	**1103**

MARCH		% MOIST **12 MAX**	Mesh % + 20 **15 MAX**	Mesh % - 200 **10 MAX**	FL **18 MAX**	MBC meq **70 MIN**	SWELL INDEX **25 MIN**	PWA **750 MIN**
No. of CARS **21**	M AVG	**9.14**	**0.28**	**4.07**	**14.13**	**114.95**	**32.38**	**1027.48**
	STD DEV	**0.53**	**0.30**	**1.51**	**0.62**	**2.73**	**2.01**	**42.60**

YTD		% MOIST **12 MAX**	Mesh % + 20 **15 MAX**	Mesh % - 200 **10 MAX**	FL **18 MAX**	MBC meq **70 MIN**	SWELL INDEX **25 MIN**	PWA **750 MIN**
No. of CARS **57**	M AVG	**8.91**	**0.52**	**4.16**	**13.82**	**113.17**	**31.40**	**981.66**
	STD DEV	**0.64**	**1.64**	**1.57**	**0.76**	**3.13**	**1.76**	**128.32**

SOLD TO: **GSE CLAY LINING TECHNOLOGY, Co.**
3150 FIRST AVENUE
SPEARFISH, SD 57783

Attn: **Bob Stadler (rstadler@gseworld.com)**
Chuck Taylor (ctaylor@gseworld.com)
Cheryl Hofer (chofer@gseworld.com)
(ezimmel@gseworld.com)

SHIPPED TO: **GSE CLAY LINING TECHNOLOGY, Co.**
3150 FIRST AVENUE
SPEARFISH, SD 57783

CC: Thomas Anderson
Jason Tawse

For any questions contact.
Q.A. SUPERVISOR
Tucker Goodvin

Prepared by: TO
03/16/20

GSE BENTOLINER

CERTIFICATE OF ANALYSIS 2020

PRODUCT : NATIONAL® 30

SHIPPED FROM: **BENTONITE PERFORMANCE MINERALS LLC**
554 US HWY 212
COLONY PLANT
BELLE FOURCHE, S.D. 57717

BOL #	LOAD DATE	LOT CODE	% MOIST 12 MAX	Mesh % + 20 15 MAX	Mesh % - 200 10 MAX	FL 18 MAX	MBC MEQ 70 MIN	SWELL INDEX 25 MIN	PWA 750 MIN
B0004397968	**03-17-20**	**1031720A**	**9.4**	**0.09**	**3.40**	**13.2**	**120**	**33**	**1036**

MARCH		% MOIST 12 MAX	Mesh % + 20 15 MAX	Mesh % - 200 10 MAX	FL 18 MAX	MBC meq 70 MIN	SWELL INDEX 25 MIN	PWA 750 MIN
No. of CARS	M AVG	**9.40**	**0.09**	**3.40**	**13.20**	**120.00**	**33.00**	**1036.00**
1	STD DEV	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

YTD		% MOIST 12 MAX	Mesh % + 20 15 MAX	Mesh % - 200 10 MAX	FL 18 MAX	MBC meq 70 MIN	SWELL INDEX 25 MIN	PWA 750 MIN
No. of CARS	M AVG	**9.40**	**0.09**	**3.40**	**13.20**	**120.00**	**33.00**	**1036.00**
1	STD DEV	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

SOLD TO: **GSE CLAY LINING TECHNOLOGY, Co.**
3150 FIRST AVENUE
SPEARFISH, SD 57783

Attn: **Bob Stadler (rstadler@gseworld.com)**
Chuck Taylor (ctaylor@gseworld.com)
Cheryl Hofer (chofer@gseworld.com)
(ezimmel@gseworld.com)

SHIPPED TO: **GSE CLAY LINING TECHNOLOGY, Co.**
3150 FIRST AVENUE
SPEARFISH, SD 57783

CC: Thomas Anderson
Jason Tawse

For any questions contact.
Q.A. SUPERVISOR
Tucker Goodvin

Prepared by: TO
03/17/20

GSE BENTOLINER

CERTIFICATE OF ANALYSIS 2020

PRODUCT : NATIONAL® 30

SHIPPED FROM: **BENTONITE PERFORMANCE MINERALS LLC**
554 US HWY 212
COLONY PLANT
BELLE FOURCHE, S.D. 57717

BOL #	LOAD DATE	LOT CODE	% MOIST 12 MAX	Mesh % + 20 15 MAX	Mesh % - 200 10 MAX	FL 18 MAX	MBC MEQ 70 MIN	SWELL INDEX 25 MIN	PWA 750 MIN
B0004397969	**03-19-20**	**1031720B**	**7.4**	**0.10**	**1.76**	**14.8**	**118**	**31**	**1035**

MARCH		% MOIST 12 MAX	Mesh % + 20 15 MAX	Mesh % - 200 10 MAX	FL 18 MAX	MBC meq 70 MIN	SWELL INDEX 25 MIN	PWA 750 MIN
No. of CARS	M AVG	**9.06**	**0.27**	**3.95**	**14.08**	**115.20**	**32.16**	**1030.12**
24	STD DEV	**0.60**	**0.28**	**1.46**	**0.63**	**2.77**	**1.97**	**39.56**

YTD		% MOIST 12 MAX	Mesh % + 20 15 MAX	Mesh % - 200 10 MAX	FL 18 MAX	MBC meq 70 MIN	SWELL INDEX 25 MIN	PWA 750 MIN
No. of CARS	M AVG	**8.89**	**0.50**	**4.10**	**13.82**	**113.39**	**31.37**	**985.68**
60	STD DEV	**0.65**	**1.59**	**1.55**	**0.75**	**3.20**	**1.73**	**125.06**

SOLD TO: **GSE CLAY LINING TECHNOLOGY, Co.**
3150 FIRST AVENUE
SPEARFISH, SD 57783

Attn: **Bob Stadler (rstadler@gseworld.com)**
Chuck Taylor (ctaylor@gseworld.com)
Cheryl Hofer (chofer@gseworld.com)
(ezimmel@gseworld.com)

SHIPPED TO: **GSE CLAY LINING TECHNOLOGY, Co.**
3150 FIRST AVENUE
SPEARFISH, SD 57783

CC: Thomas Anderson
Jason Tawse

For any questions contact.
Q.A. SUPERVISOR
Tucker Goodvin

Prepared by: TO
03/19/20

GSE BENTOLINER

CERTIFICATE OF ANALYSIS 2020

PRODUCT : NATIONAL® 30

SHIPPED FRO **BENTONITE PERFORMANCE MINERALS LLC**
554 US HWY 212
COLONY PLANT
BELLE FOURCHE, S.D. 57717

BOL #	LOAD DATE	LOT CODE	% MOIST 12 MAX	Mesh % + 20 15 MAX	Mesh % - 200 10 MAX	FL 18 MAX	MBC MEQ 70 MIN	SWELL INDEX 25 MIN	PWA 750 MIN
B0004402568	**03-22-20**	**1032220B**	**8.2**	**0.97**	**1.80**	**13.4**	**118**	**32**	**1072**

MARCH		% MOIST 12 MAX	Mesh % + 20 15 MAX	Mesh % - 200 10 MAX	0 FL 18 MAX	MBC meq 70 MIN	SWELL INDEX 25 MIN	PWA 750 MIN
No. of CARS	M AVG	**8.99**	**0.38**	**4.03**	**14.03**	**115.25**	**32.13**	**1022.06**
32	STD DEV	**0.56**	**0.75**	**1.55**	**0.61**	**2.68**	**1.90**	**38.71**

DATE
03-*

YTD		% MOIST 12 MAX	Mesh % + 20 15 MAX	Mesh % - 200 10 MAX	0 FL 18 MAX	MBC meq 70 MIN	SWELL INDEX 25 MIN	PWA 750 MIN
No. of CARS	M AVG	**8.89**	**0.53**	**4.14**	**13.83**	**113.97**	**31.58**	**987.14**
67	STD DEV	**0.62**	**1.59**	**1.60**	**0.69**	**3.16**	**1.80**	**126.36**

DATE
-

SOLD TO: **GSE CLAY LINING TECHNOLOGY, Co.**
3150 FIRST AVENUE
SPEARFISH, SD 57783

Attn: **Bob Stadler (rstadler@gseworld.com)**
Chuck Taylor (ctaylor@gseworld.com)
Cheryl Hofer (chofer@gseworld.com)
(ezimmel@gseworld.com)

For any questions contact.
Q.A. SUPERVISOR
Tucker Goodvin

SHIPPED TO: **GSE CLAY LINING TECHNOLOGY, Co.**
3150 FIRST AVENUE
SPEARFISH, SD 57783

Prepared by: TO
03/26/20

CC: Thomas Anderson
Jason Tawse
File
Thomas Cortner

GSE BENTOLINER

CERTIFICATE OF ANALYSIS 2020

PRODUCT : NATIONAL® 30

SHIPPED FRO **BENTONITE PERFORMANCE MINERALS LLC**
554 US HWY 212
COLONY PLANT
BELLE FOURCHE, S.D. 57717

BOL #	LOAD DATE	LOT CODE	% MOIST 12 MAX	Mesh % + 20 15 MAX	Mesh % - 200 10 MAX	FL 18 MAX	MBC MEQ 70 MIN	SWELL INDEX 25 MIN	PWA 750 MIN
B0004402569	**03-23-20**	**1032220C**	**8.4**	**0.04**	**3.76**	**13.2**	**116**	**30**	**992**

MARCH

No. of CARS		% MOIST 12 MAX	Mesh % + 20 15 MAX	Mesh % - 200 10 MAX	0 FL 18 MAX	MBC meq 70 MIN	SWELL INDEX 25 MIN	PWA 750 MIN
33	M AVG	**8.98**	**0.37**	**4.02**	**14.00**	**115.27**	**32.06**	**1021.15**
	STD DEV	**0.56**	**0.74**	**1.52**	**0.62**	**2.64**	**1.91**	**38.46**

DATE
03-*

YTD

No. of CARS		% MOIST 12 MAX	Mesh % + 20 15 MAX	Mesh % - 200 10 MAX	0 FL 18 MAX	MBC meq 70 MIN	SWELL INDEX 25 MIN	PWA 750 MIN
68	M AVG	**8.88**	**0.53**	**4.14**	**13.82**	**114.00**	**31.55**	**987.22**
	STD DEV	**0.62**	**1.58**	**1.59**	**0.69**	**3.14**	**1.79**	**125.31**

DATE
-

SOLD TO: **GSE CLAY LINING TECHNOLOGY, Co.**
3150 FIRST AVENUE
SPEARFISH, SD 57783

For any questions contact.
Q.A. SUPERVISOR
Tucker Goodvin

Attn: **Bob Stadler (rstadler@gseworld.com)**
Chuck Taylor (ctaylor@gseworld.com)
Cheryl Hofer (chofer@gseworld.com)
(ezimmel@gseworld.com)

SHIPPED TO: **GSE CLAY LINING TECHNOLOGY, Co.**
3150 FIRST AVENUE
SPEARFISH, SD 57783

Prepared by: TO
03/23/20

CC: Thomas Anderson
Jason Tawse
File
Thomas Cortner

Report Date
4/6/2020

SOLMAX

BentoLiner Manufacturing Certification

Sales Order: 88708

Customer: Layfield Canada Ltd

Project: Layfield CA / Eagle Gold Mine

Product Type: BLI-075-06N-06W-D-60 BentoLiner NWL

The GCL purchased and shipped for the above referenced project does meet or exceed the project specifications.

The GCL supplied to this project has been continuously inspected for the presence of needles and is certified to be needle free.

Chuck Taylor
Laboratory Technician

Roll Allocation List

Sales Order SO-088708
Customer Name Layfield Canada Ltd
Project Name Layfield CA / Eagle Gold Mine

Serial number	Item Number	Daily lot	Roll width	Clay	Length
502344487	BLI-075-06N-06W-D-60	20040112	15.50	1032920C	150.00
502344488	BLI-075-06N-06W-D-60	20040112	15.50	1032920C	150.00
502344489	BLI-075-06N-06W-D-60	20040112	15.50	1032920C	150.00
502344490	BLI-075-06N-06W-D-60	20040112	15.50	1032920C	150.00
502344491	BLI-075-06N-06W-D-60	20040112	15.50	1032920C	150.00
502344492	BLI-075-06N-06W-D-60	20040112	15.50	1032920C	150.00
502344493	BLI-075-06N-06W-D-60	20040112	15.50	1032920C	150.00
502344494	BLI-075-06N-06W-D-60	20040112	15.50	1032920C	150.00
502344495	BLI-075-06N-06W-D-60	20040112	15.50	1032920C	150.00
502344496	BLI-075-06N-06W-D-60	20040112	15.50	1032920C	150.00
502344497	BLI-075-06N-06W-D-60	20040112	15.50	1032920C	150.00
502344498	BLI-075-06N-06W-D-60	20040112	15.50	1032920C	150.00
502344499	BLI-075-06N-06W-D-60	20040112	15.50	1032920C	150.00
502344500	BLI-075-06N-06W-D-60	20040112	15.50	1032920C	150.00
502344501	BLI-075-06N-06W-D-60	20040112	15.50	1032920C	130.00
502344503	BLI-075-06N-06W-D-60	20040112	15.50	1032920C	150.00
502344504	BLI-075-06N-06W-D-60	20040112	15.50	1032920C	150.00
502344505	BLI-075-06N-06W-D-60	20040112	15.50	1032920C	150.00
502344506	BLI-075-06N-06W-D-60	20040112	15.50	1032920C	150.00
502344507	BLI-075-06N-06W-D-60	20040112	15.50	1032920C	150.00
502344508	BLI-075-06N-06W-D-60	20040112	15.50	1032920C	150.00
502344509	BLI-075-06N-06W-D-60	20040112	15.50	1032920C	150.00
502344510	BLI-075-06N-06W-D-60	20040112	15.50	1032920C	150.00
502344511	BLI-075-06N-06W-D-60	20040112	15.50	1032920D	150.00
502344512	BLI-075-06N-06W-D-60	20040112	15.50	1032920D	150.00
502344513	BLI-075-06N-06W-D-60	20040112	15.50	1032920D	150.00
502344514	BLI-075-06N-06W-D-60	20040112	15.50	1032920D	150.00
502344515	BLI-075-06N-06W-D-60	20040112	15.50	1032920D	150.00
502344516	BLI-075-06N-06W-D-60	20040112	15.50	1032920D	150.00
502344517	BLI-075-06N-06W-D-60	20040112	15.50	1032920D	150.00
502344518	BLI-075-06N-06W-D-60	20040112	15.50	1032920D	150.00
502344519	BLI-075-06N-06W-D-60	20040112	15.50	1032920D	150.00
502344520	BLI-075-06N-06W-D-60	20040112	15.50	1032920D	150.00
502344521	BLI-075-06N-06W-D-60	20040112	15.50	1032920D	150.00
502344522	BLI-075-06N-06W-D-60	20040112	15.50	1032920D	150.00
502344523	BLI-075-06N-06W-D-60	20040112	15.50	1032920D	150.00
502344524	BLI-075-06N-06W-D-60	20040112	15.50	1032920D	150.00
502344525	BLI-075-06N-06W-D-60	20040112	15.50	1032920D	150.00
502344526	BLI-075-06N-06W-D-60	20040112	15.50	1032920D	150.00
502344527	BLI-075-06N-06W-D-60	20040112	15.50	1032920D	150.00
502344528	BLI-075-06N-06W-D-60	20040112	15.50	1032920D	150.00
502344529	BLI-075-06N-06W-D-60	20040112	15.50	1032920D	150.00
502344530	BLI-075-06N-06W-D-60	20040112	15.50	1032920D	150.00
502344531	BLI-075-06N-06W-D-60	20040112	15.50	1032920D	150.00
502344532	BLI-075-06N-06W-D-60	20040112	15.50	1032920D	150.00
502344533	BLI-075-06N-06W-D-60	20040112	15.50	1032920D	150.00
502344534	BLI-075-06N-06W-D-60	20040112	15.50	1032920D	150.00
502344535	BLI-075-06N-06W-D-60	20040112	15.50	1032920D	150.00
502344536	BLI-075-06N-06W-D-60	20040112	15.50	1032920D	150.00
502344537	BLI-075-06N-06W-D-60	20040112	15.50	1032920D	150.00
502344538	BLI-075-06N-06W-D-60	20040112	15.50	1032920D	150.00
502344539	BLI-075-06N-06W-D-60	20040112	15.50	1032920D	150.00
502344540	BLI-075-06N-06W-D-60	20040112	15.50	1032920D	150.00
502344541	BLI-075-06N-06W-D-60	20040112	15.50	1032920D	150.00
502344542	BLI-075-06N-06W-D-60	20040112	15.50	1032920D	150.00
502344543	BLI-075-06N-06W-D-60	20040112	15.50	1033020A	150.00
502344544	BLI-075-06N-06W-D-60	20040112	15.50	1033020A	150.00
502344545	BLI-075-06N-06W-D-60	20040112	15.50	1033020A	150.00
502344546	BLI-075-06N-06W-D-60	20040112	15.50	1033020A	150.00
502344547	BLI-075-06N-06W-D-60	20040112	15.50	1033020A	150.00

Roll Allocation List

Sales Order SO-088708
Customer Name Layfield Canada Ltd
Project Name Layfield CA / Eagle Gold Mine

Serial number	Item Number	Daily lot	Roll width	Clay	Length
502344548	BLI-075-06N-06W-D-60	20040112	15.50	1033020A	150.00
502344549	BLI-075-06N-06W-D-60	20040112	15.50	1033020A	150.00
502344550	BLI-075-06N-06W-D-60	20040112	15.50	1033020A	150.00
502344551	BLI-075-06N-06W-D-60	20040112	15.50	1033020A	150.00
502344552	BLI-075-06N-06W-D-60	20040112	15.50	1033020A	150.00
502344553	BLI-075-06N-06W-D-60	20040112	15.50	1033020A	150.00
502344554	BLI-075-06N-06W-D-60	20040112	15.50	1033020A	150.00
502344555	BLI-075-06N-06W-D-60	20040112	15.50	1033020A	150.00
502344556	BLI-075-06N-06W-D-60	20040112	15.50	1033020A	150.00
502344557	BLI-075-06N-06W-D-60	20040112	15.50	1033020A	150.00
502344558	BLI-075-06N-06W-D-60	20040112	15.50	1033020A	150.00
502344559	BLI-075-06N-06W-D-60	20040112	15.50	1033020A	150.00
502344560	BLI-075-06N-06W-D-60	20040112	15.50	1033020A	150.00
502344561	BLI-075-06N-06W-D-60	20040112	15.50	1033020A	150.00
502344562	BLI-075-06N-06W-D-60	20040112	15.50	1033020A	150.00
502344563	BLI-075-06N-06W-D-60	20040112	15.50	1033020A	150.00
502344564	BLI-075-06N-06W-D-60	20040112	15.50	1033020A	150.00
502344565	BLI-075-06N-06W-D-60	20040112	15.50	1033020A	150.00
502344566	BLI-075-06N-06W-D-60	20040112	15.50	1033020A	150.00
502344567	BLI-075-06N-06W-D-60	20040112	15.50	1033020A	150.00
502344568	BLI-075-06N-06W-D-60	20040112	15.50	1033020A	150.00
502344569	BLI-075-06N-06W-D-60	20040112	15.50	1033020A	150.00
502344570	BLI-075-06N-06W-D-60	20040112	15.50	1033020A	150.00
502344571	BLI-075-06N-06W-D-60	20040112	15.50	1033020A	150.00
502344572	BLI-075-06N-06W-D-60	20040112	15.50	1033020A	150.00
502344573	BLI-075-06N-06W-D-60	20040112	15.50	1033020A	150.00
502344574	BLI-075-06N-06W-D-60	20040212	15.50	1032220D	150.00
502344575	BLI-075-06N-06W-D-60	20040212	15.50	1032220D	150.00
502344576	BLI-075-06N-06W-D-60	20040212	15.50	1032220D	150.00
502344577	BLI-075-06N-06W-D-60	20040212	15.50	1032220D	150.00
502344578	BLI-075-06N-06W-D-60	20040212	15.50	1032220D	150.00
502344579	BLI-075-06N-06W-D-60	20040212	15.50	1032220D	150.00
502344580	BLI-075-06N-06W-D-60	20040212	15.50	1032220D	150.00
502344581	BLI-075-06N-06W-D-60	20040212	15.50	1032220D	150.00
502344582	BLI-075-06N-06W-D-60	20040212	15.50	1032220D	150.00
502344583	BLI-075-06N-06W-D-60	20040212	15.50	1032220D	150.00
502344584	BLI-075-06N-06W-D-60	20040212	15.50	1032220D	150.00
502344585	BLI-075-06N-06W-D-60	20040212	15.50	1032220D	150.00
502344586	BLI-075-06N-06W-D-60	20040212	15.50	1032220D	150.00
502344587	BLI-075-06N-06W-D-60	20040212	15.50	1032220D	150.00
502344589	BLI-075-06N-06W-D-60	20040212	15.50	1032220D	150.00
502344590	BLI-075-06N-06W-D-60	20040212	15.50	1032220D	150.00
502344591	BLI-075-06N-06W-D-60	20040212	15.50	1032220D	150.00
502344592	BLI-075-06N-06W-D-60	20040212	15.50	1032220D	150.00
502344593	BLI-075-06N-06W-D-60	20040212	15.50	1032220D	150.00
502344594	BLI-075-06N-06W-D-60	20040212	15.50	1032220D	150.00
502344595	BLI-075-06N-06W-D-60	20040212	15.50	1032220D	150.00
502344596	BLI-075-06N-06W-D-60	20040212	15.50	1032220D	150.00
502344597	BLI-075-06N-06W-D-60	20040212	15.50	1032220D	150.00
502344598	BLI-075-06N-06W-D-60	20040212	15.50	1032220D	150.00
502344599	BLI-075-06N-06W-D-60	20040212	15.50	1032220D	150.00
502344600	BLI-075-06N-06W-D-60	20040212	15.50	1032220D	150.00
502344601	BLI-075-06N-06W-D-60	20040212	15.50	1032220D	150.00
502344602	BLI-075-06N-06W-D-60	20040212	15.50	1032220D	150.00
502344603	BLI-075-06N-06W-D-60	20040212	15.50	1032220D	150.00
502344604	BLI-075-06N-06W-D-60	20040212	15.50	1032220D	150.00
502344605	BLI-075-06N-06W-D-60	20040212	15.50	1032220D	150.00
502344606	BLI-075-06N-06W-D-60	20040212	15.50	1032320A	150.00
502344607	BLI-075-06N-06W-D-60	20040212	15.50	1032320A	150.00
502344608	BLI-075-06N-06W-D-60	20040212	15.50	1032320A	150.00

Roll Allocation List

Sales Order SO-088708
Customer Name Layfield Canada Ltd
Project Name Layfield CA / Eagle Gold Mine

Serial number	Item Number	Daily lot	Roll width	Clay	Length
502344609	BLI-075-06N-06W-D-60	20040212	15.50	1032320A	150.00
502344610	BLI-075-06N-06W-D-60	20040212	15.50	1032320A	150.00
502344611	BLI-075-06N-06W-D-60	20040212	15.50	1032320A	150.00
502344612	BLI-075-06N-06W-D-60	20040212	15.50	1032320A	150.00
502344613	BLI-075-06N-06W-D-60	20040212	15.50	1032320A	150.00
502344614	BLI-075-06N-06W-D-60	20040212	15.50	1032320A	150.00
502344615	BLI-075-06N-06W-D-60	20040212	15.50	1032320A	150.00
502344616	BLI-075-06N-06W-D-60	20040212	15.50	1032320A	150.00
502344617	BLI-075-06N-06W-D-60	20040212	15.50	1032320A	150.00
502344618	BLI-075-06N-06W-D-60	20040212	15.50	1032320A	150.00
502344619	BLI-075-06N-06W-D-60	20040212	15.50	1032320A	150.00
502344620	BLI-075-06N-06W-D-60	20040212	15.50	1032320A	150.00
502344621	BLI-075-06N-06W-D-60	20040212	15.50	1032320A	150.00
502344622	BLI-075-06N-06W-D-60	20040212	15.50	1032320A	150.00
502344623	BLI-075-06N-06W-D-60	20040212	15.50	1032320A	150.00
502344624	BLI-075-06N-06W-D-60	20040212	15.50	1032320A	150.00
502344625	BLI-075-06N-06W-D-60	20040212	15.50	1032320A	150.00
502344626	BLI-075-06N-06W-D-60	20040212	15.50	1032320A	150.00
502344627	BLI-075-06N-06W-D-60	20040212	15.50	1032320A	150.00
502344628	BLI-075-06N-06W-D-60	20040212	15.50	1032320A	150.00
502344629	BLI-075-06N-06W-D-60	20040212	15.50	1032320A	150.00
502344630	BLI-075-06N-06W-D-60	20040212	15.50	1032320A	150.00
502344631	BLI-075-06N-06W-D-60	20040212	15.50	1032320A	150.00
502344632	BLI-075-06N-06W-D-60	20040212	15.50	1032320A	150.00
502344633	BLI-075-06N-06W-D-60	20040212	15.50	1032320A	150.00
502344634	BLI-075-06N-06W-D-60	20040212	15.50	1032320A	150.00
502344635	BLI-075-06N-06W-D-60	20040212	15.50	1032320A	150.00
502344636	BLI-075-06N-06W-D-60	20040212	15.50	1032320B	150.00
502344637	BLI-075-06N-06W-D-60	20040212	15.50	1032320B	150.00
502344638	BLI-075-06N-06W-D-60	20040212	15.50	1032320B	150.00
502344639	BLI-075-06N-06W-D-60	20040212	15.50	1032320B	150.00
502344640	BLI-075-06N-06W-D-60	20040212	15.50	1032320B	150.00
502344641	BLI-075-06N-06W-D-60	20040212	15.50	1032320B	150.00
502344642	BLI-075-06N-06W-D-60	20040212	15.50	1032320B	150.00
502344643	BLI-075-06N-06W-D-60	20040212	15.50	1032320B	150.00
502344644	BLI-075-06N-06W-D-60	20040212	15.50	1032320B	150.00
502344645	BLI-075-06N-06W-D-60	20040212	15.50	1032320B	150.00
502344646	BLI-075-06N-06W-D-60	20040212	15.50	1032320B	150.00
502344647	BLI-075-06N-06W-D-60	20040212	15.50	1032320B	150.00
502344648	BLI-075-06N-06W-D-60	20040212	15.50	1032320B	150.00
502344649	BLI-075-06N-06W-D-60	20040212	15.50	1032320B	150.00
502344650	BLI-075-06N-06W-D-60	20040212	15.50	1032320B	150.00
502344651	BLI-075-06N-06W-D-60	20040212	15.50	1032320B	150.00
502344652	BLI-075-06N-06W-D-60	20040212	15.50	1032320B	150.00
502344653	BLI-075-06N-06W-D-60	20040212	15.50	1032320B	150.00
502344654	BLI-075-06N-06W-D-60	20040212	15.50	1032320B	150.00
502344655	BLI-075-06N-06W-D-60	20040212	15.50	1032320B	150.00
502344656	BLI-075-06N-06W-D-60	20040212	15.50	1032320B	150.00
502344657	BLI-075-06N-06W-D-60	20040212	15.50	1032320B	150.00
502344658	BLI-075-06N-06W-D-60	20040212	15.50	1032320B	150.00
502344659	BLI-075-06N-06W-D-60	20040212	15.50	1032320B	150.00
502344660	BLI-075-06N-06W-D-60	20040312	15.50	1032320B	150.00
502344661	BLI-075-06N-06W-D-60	20040312	15.50	1032320B	150.00
502344662	BLI-075-06N-06W-D-60	20040312	15.50	1032320B	150.00
502344663	BLI-075-06N-06W-D-60	20040312	15.50	1032320B	150.00
502344664	BLI-075-06N-06W-D-60	20040312	15.50	1032320B	150.00
502344665	BLI-075-06N-06W-D-60	20040312	15.50	1032320B	150.00
502344666	BLI-075-06N-06W-D-60	20040312	15.50	1032320C	150.00
502344667	BLI-075-06N-06W-D-60	20040312	15.50	1032320C	150.00
502344668	BLI-075-06N-06W-D-60	20040312	15.50	1032320C	150.00

Roll Allocation List

Sales Order SO-088708
Customer Name Layfield Canada Ltd
Project Name Layfield CA / Eagle Gold Mine

Serial number	Item Number	Daily lot	Roll width	Clay	Length
502344669	BLI-075-06N-06W-D-60	20040312	15.50	1032320C	150.00
502344670	BLI-075-06N-06W-D-60	20040312	15.50	1032320C	150.00
502344671	BLI-075-06N-06W-D-60	20040312	15.50	1032320C	150.00
502344672	BLI-075-06N-06W-D-60	20040312	15.50	1032320C	150.00
502344673	BLI-075-06N-06W-D-60	20040312	15.50	1032320C	150.00
502344674	BLI-075-06N-06W-D-60	20040312	15.50	1032320C	150.00
502344675	BLI-075-06N-06W-D-60	20040312	15.50	1032320C	150.00
502344676	BLI-075-06N-06W-D-60	20040312	15.50	1032320C	150.00
502344677	BLI-075-06N-06W-D-60	20040312	15.50	1032320C	150.00
502344678	BLI-075-06N-06W-D-60	20040312	15.50	1032320C	150.00
502344679	BLI-075-06N-06W-D-60	20040312	15.50	1032320C	150.00
502344680	BLI-075-06N-06W-D-60	20040312	15.50	1032320C	150.00
502344681	BLI-075-06N-06W-D-60	20040312	15.50	1032320C	150.00
502344682	BLI-075-06N-06W-D-60	20040312	15.50	1032320C	150.00
502344683	BLI-075-06N-06W-D-60	20040312	15.50	1032320C	150.00
502344684	BLI-075-06N-06W-D-60	20040312	15.50	1032320C	150.00
502344685	BLI-075-06N-06W-D-60	20040312	15.50	1032320C	150.00
502344686	BLI-075-06N-06W-D-60	20040312	15.50	1032320C	150.00
502344687	BLI-075-06N-06W-D-60	20040312	15.50	1032320C	150.00
502344688	BLI-075-06N-06W-D-60	20040312	15.50	1032320C	150.00
502344689	BLI-075-06N-06W-D-60	20040312	15.50	1032320C	150.00
502344690	BLI-075-06N-06W-D-60	20040312	15.50	1032320C	150.00
502344691	BLI-075-06N-06W-D-60	20040312	15.50	1032320C	150.00
502344692	BLI-075-06N-06W-D-60	20040312	15.50	1032320C	150.00
502344693	BLI-075-06N-06W-D-60	20040312	15.50	1032320C	150.00
502344694	BLI-075-06N-06W-D-60	20040312	15.50	1032320C	150.00
502344695	BLI-075-06N-06W-D-60	20040312	15.50	1032320C	150.00
502344696	BLI-075-06N-06W-D-60	20040312	15.50	1032320C	150.00
502344697	BLI-075-06N-06W-D-60	20040312	15.50	1032320D	150.00
502344698	BLI-075-06N-06W-D-60	20040312	15.50	1032320D	150.00
502344699	BLI-075-06N-06W-D-60	20040312	15.50	1032320D	150.00
502344700	BLI-075-06N-06W-D-60	20040312	15.50	1032320D	150.00
502344701	BLI-075-06N-06W-D-60	20040312	15.50	1032320D	150.00
502344702	BLI-075-06N-06W-D-60	20040312	15.50	1032320D	150.00
502344703	BLI-075-06N-06W-D-60	20040312	15.50	1032320D	150.00
502344704	BLI-075-06N-06W-D-60	20040312	15.50	1032320D	150.00
502344705	BLI-075-06N-06W-D-60	20040312	15.50	1032320D	150.00
502344706	BLI-075-06N-06W-D-60	20040312	15.50	1032320D	150.00
502344710	BLI-075-06N-06W-D-60	20040312	15.50	1032320D	150.00
502344711	BLI-075-06N-06W-D-60	20040312	15.50	1032320D	150.00
502344712	BLI-075-06N-06W-D-60	20040312	15.50	1032320D	150.00
502344713	BLI-075-06N-06W-D-60	20040312	15.50	1032320D	150.00
502344714	BLI-075-06N-06W-D-60	20040312	15.50	1032320D	150.00
502344715	BLI-075-06N-06W-D-60	20040312	15.50	1032320D	150.00
502344716	BLI-075-06N-06W-D-60	20040312	15.50	1032320D	150.00
502344717	BLI-075-06N-06W-D-60	20040312	15.50	1032320D	150.00
502344718	BLI-075-06N-06W-D-60	20040312	15.50	1032320D	150.00
502344719	BLI-075-06N-06W-D-60	20040312	15.50	1032320D	92.00
502344720	BLI-075-06N-06W-D-60	20040312	15.50	1032320D	94.00
502344721	BLI-075-06N-06W-D-60	20040312	15.50	1032320D	150.00

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Solmax Geosynthetics, LLC

ROLL TEST DATA REPORT

SOLMAX QC APPROVED

Report Date: Apr/6/2020

Sales Order No.	***Customer Name***	***Project Location***	***Product Name***	***BOL Number***
SO-088708	Layfield Canada Ltd	CA	BLI-075-06N-06W-D-60	

Roll Number	ASTM D4632 Grab Strength (N)	ASTM D4632 Peel Strength (N)	ASTM D6768 Tensile Strength (kN/m)	ASTM D6496 Peel Strength (N/m)	ASTM D5993 Clay Content @ 0% Moisture (kg/m²)	ASTM D5890 Free Swell (ml/2g)	ASTM D2216 Moisture Content (%)	ASTM D5891 Fluid Loss (ml)
502344487	1299	360	10.2	2732	4.19	32	9.3	14.2
502344488	1299	360	10.2	2732	4.19	32	9.3	14.2
502344489	1299	360	10.2	2732	4.19	32	9.3	14.2
502344490	1299	360	10.2	2732	4.19	32	9.3	14.2
502344491	1299	360	10.2	2732	4.19	32	9.3	14.2
502344492	1299	360	10.2	2732	4.19	32	9.3	14.2
502344493	1299	360	10.2	2732	4.19	32	9.3	14.2
502344494	1299	360	10.2	2732	4.19	32	9.3	14.2
502344495	1299	360	10.2	2732	4.19	32	9.3	14.2
502344496	1410	445	11.9	3800	4.12	32	9.3	14.2
502344497	1410	445	11.9	3800	4.12	32	9.3	14.2
502344498	1410	445	11.9	3800	4.12	32	9.3	14.2
502344499	1410	445	11.9	3800	4.12	32	9.3	14.2
502344500	1410	445	11.9	3800	4.12	32	9.3	14.2
502344501	1410	445	11.9	3800	4.12	32	9.3	14.2
502344503	1410	445	11.9	3800	4.12	32	9.3	14.2
502344504	1410	445	11.9	3800	4.12	32	9.3	14.2
502344505	1410	445	11.9	3800	4.12	32	9.3	14.2
502344506	1410	445	11.9	3800	4.12	32	9.3	14.2
502344507	1410	445	11.9	3800	4.12	32	9.3	14.2
502344508	1410	445	11.9	3800	4.12	32	9.3	14.2
502344509	1410	445	11.9	3800	4.12	32	9.3	14.2
502344510	1455	360	10.9	2890	3.96	32	9.3	14.2
502344511	1455	360	10.9	2890	3.96	32	9.2	13.8
502344512	1455	360	10.9	2890	3.96	32	9.2	13.8
502344513	1455	360	10.9	2890	3.96	32	9.2	13.8
502344514	1455	360	10.9	2890	3.96	32	9.2	13.8
502344515	1455	360	10.9	2890	3.96	32	9.2	13.8
502344516	1455	360	10.9	2890	3.96	32	9.2	13.8
502344517	1455	360	10.9	2890	3.96	32	9.2	13.8
502344518	1455	360	10.9	2890	3.96	32	9.2	13.8
502344519	1455	360	10.9	2890	3.96	32	9.2	13.8
502344520	1455	360	10.9	2890	3.96	32	9.2	13.8
502344521	1455	360	10.9	2890	3.96	32	9.2	13.8

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Solmax Geosynthetics, LLC

ROLL TEST DATA REPORT

SOLMAX QC APPROVED

Report Date: Apr/6/2020

Sales Order No.	***Customer Name***	***Project Location***	***Product Name***	***BOL Number***
SO-088708	Layfield Canada Ltd	CA	BLI-075-06N-06W-D-60	

Roll Number	ASTM D4632 Grab Strength (N)	ASTM D4632 Peel Strength (N)	ASTM D6768 Tensile Strength (kN/m)	ASTM D6496 Peel Strength (N/m)	ASTM D5993 Clay Content @ 0% Moisture (kg/m²)	ASTM D5890 Free Swell (ml/2g)	ASTM D2216 Moisture Content (%)	ASTM D5891 Fluid Loss (ml)
502344522	1455	360	10.9	2890	3.96	32	9.2	13.8
502344523	1455	360	10.9	2890	3.96	32	9.2	13.8
502344524	1455	360	10.9	2890	3.96	32	9.2	13.8
502344525	1455	360	10.9	2890	3.96	32	9.2	13.8
502344526	1499	369	13.1	2907	3.97	32	9.2	13.8
502344527	1499	369	13.1	2907	3.97	32	9.2	13.8
502344528	1499	369	13.1	2907	3.97	32	9.2	13.8
502344529	1499	369	13.1	2907	3.97	32	9.2	13.8
502344530	1499	369	13.1	2907	3.97	32	9.2	13.8
502344531	1499	369	13.1	2907	3.97	32	9.2	13.8
502344532	1499	369	13.1	2907	3.97	32	9.2	13.8
502344533	1499	369	13.1	2907	3.97	32	9.2	13.8
502344534	1499	369	13.1	2907	3.97	32	9.2	13.8
502344535	1499	369	13.1	2907	3.97	32	9.2	13.8
502344536	1499	369	13.1	2907	3.97	32	9.2	13.8
502344537	1499	369	13.1	2907	3.97	32	9.2	13.8
502344538	1499	369	13.1	2907	3.97	32	9.2	13.8
502344539	1499	369	13.1	2907	3.97	32	9.2	13.8
502344540	1499	369	13.1	2907	3.97	32	9.2	13.8
502344541	1499	369	13.1	2907	3.97	32	9.2	13.8
502344542	1455	387	13.4	3187	3.82	32	9.2	13.8
502344543	1455	387	13.4	3187	3.82	33	9.0	13.6
502344544	1455	387	13.4	3187	3.82	33	9.0	13.6
502344545	1455	387	13.4	3187	3.82	33	9.0	13.6
502344546	1455	387	13.4	3187	3.82	33	9.0	13.6
502344547	1455	387	13.4	3187	3.82	33	9.0	13.6
502344548	1455	387	13.4	3187	3.82	33	9.0	13.6
502344549	1455	387	13.4	3187	3.82	33	9.0	13.6
502344550	1455	387	13.4	3187	3.82	33	9.0	13.6
502344551	1455	387	13.4	3187	3.82	33	9.0	13.6
502344552	1455	387	13.4	3187	3.82	33	9.0	13.6
502344553	1455	387	13.4	3187	3.82	33	9.0	13.6
502344554	1455	387	13.4	3187	3.82	33	9.0	13.6
502344555	1455	387	13.4	3187	3.82	33	9.0	13.6

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Solmax Geosynthetics, LLC

ROLL TEST DATA REPORT

SOLMAX QC APPROVED

Report Date: Apr/6/2020

Sales Order No.	***Customer Name***	***Project Location***	***Product Name***	***BOL Number***
SO-088708	Layfield Canada Ltd	CA	BLI-075-06N-06W-D-60	

Roll Number	ASTM D4632 Grab Strength (N)	ASTM D4632 Peel Strength (N)	ASTM D6768 Tensile Strength (kN/m)	ASTM D6496 Peel Strength (N/m)	ASTM D5993 Clay Content @ 0% Moisture (kg/m²)	ASTM D5890 Free Swell (ml/2g)	ASTM D2216 Moisture Content (%)	ASTM D5891 Fluid Loss (ml)
502344556	1455	387	13.4	3187	3.82	33	9.0	13.6
502344557	1455	387	13.4	3187	3.82	33	9.0	13.6
502344558	1486	489	12.2	4028	3.85	33	9.0	13.6
502344559	1486	489	12.2	4028	3.85	33	9.0	13.6
502344560	1486	489	12.2	4028	3.85	33	9.0	13.6
502344561	1486	489	12.2	4028	3.85	33	9.0	13.6
502344562	1486	489	12.2	4028	3.85	33	9.0	13.6
502344563	1486	489	12.2	4028	3.85	33	9.0	13.6
502344564	1486	489	12.2	4028	3.85	33	9.0	13.6
502344565	1486	489	12.2	4028	3.85	33	9.0	13.6
502344566	1486	489	12.2	4028	3.85	33	9.0	13.6
502344567	1486	489	12.2	4028	3.85	33	9.0	13.6
502344568	1486	489	12.2	4028	3.85	33	9.0	13.6
502344569	1486	489	12.2	4028	3.85	33	9.0	13.6
502344570	1486	489	12.2	4028	3.85	33	9.0	13.6
502344571	1486	489	12.2	4028	3.85	33	9.0	13.6
502344572	1486	489	12.2	4028	3.85	33	9.0	13.6
502344573	1486	489	12.2	4028	3.85	33	9.0	13.6
502344574	1521	445	12.5	3730	4.37	33	8.4	13.6
502344575	1521	445	12.5	3730	4.37	33	8.4	13.6
502344576	1521	445	12.5	3730	4.37	33	8.4	13.6
502344577	1521	445	12.5	3730	4.37	33	8.4	13.6
502344578	1521	445	12.5	3730	4.37	33	8.4	13.6
502344579	1521	445	12.5	3730	4.37	33	8.4	13.6
502344580	1521	445	12.5	3730	4.37	33	8.4	13.6
502344581	1521	445	12.5	3730	4.37	33	8.4	13.6
502344582	1521	445	12.5	3730	4.37	33	8.4	13.6
502344583	1521	445	12.5	3730	4.37	33	8.4	13.6
502344584	1521	445	12.5	3730	4.37	33	8.4	13.6
502344585	1521	445	12.5	3730	4.37	33	8.4	13.6
502344586	1521	445	12.5	3730	4.37	33	8.4	13.6
502344587	1521	445	12.5	3730	4.37	33	8.4	13.6
502344589	1552	343	13.1	2714	4.11	33	8.4	13.6
502344590	1552	343	13.1	2714	4.11	33	8.4	13.6

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Solmax Geosynthetics, LLC

ROLL TEST DATA REPORT

SOLMAX QC APPROVED

Report Date: Apr/6/2020

Sales Order No.	***Customer Name***	***Project Location***	***Product Name***	***BOL Number***
SO-088708	Layfield Canada Ltd	CA	BLI-075-06N-06W-D-60	

Roll Number	ASTM D4632 Grab Strength (N)	ASTM D4632 Peel Strength (N)	ASTM D6768 Tensile Strength (kN/m)	ASTM D6496 Peel Strength (N/m)	ASTM D5993 Clay Content @ 0% Moisture (kg/m²)	ASTM D5890 Free Swell (ml/2g)	ASTM D2216 Moisture Content (%)	ASTM D5891 Fluid Loss (ml)
502344591	1552	343	13.1	2714	4.11	33	8.4	13.6
502344592	1552	343	13.1	2714	4.11	33	8.4	13.6
502344593	1552	343	13.1	2714	4.11	33	8.4	13.6
502344594	1552	343	13.1	2714	4.11	33	8.4	13.6
502344595	1552	343	13.1	2714	4.11	33	8.4	13.6
502344596	1552	343	13.1	2714	4.11	33	8.4	13.6
502344597	1552	343	13.1	2714	4.11	33	8.4	13.6
502344598	1552	343	13.1	2714	4.11	33	8.4	13.6
502344599	1552	343	13.1	2714	4.11	33	8.4	13.6
502344600	1552	343	13.1	2714	4.11	33	8.4	13.6
502344601	1552	343	13.1	2714	4.11	33	8.4	13.6
502344602	1552	343	13.1	2714	4.11	33	8.4	13.6
502344603	1552	343	13.1	2714	4.11	33	8.4	13.6
502344604	1423	351	13.0	2837	4.07	33	8.4	13.6
502344605	1423	351	13.0	2837	4.07	33	8.4	13.6
502344606	1423	351	13.0	2837	4.07	32	9.5	13.8
502344607	1423	351	13.0	2837	4.07	32	9.5	13.8
502344608	1423	351	13.0	2837	4.07	32	9.5	13.8
502344609	1423	351	13.0	2837	4.07	32	9.5	13.8
502344610	1423	351	13.0	2837	4.07	32	9.5	13.8
502344611	1423	351	13.0	2837	4.07	32	9.5	13.8
502344612	1423	351	13.0	2837	4.07	32	9.5	13.8
502344613	1423	351	13.0	2837	4.07	32	9.5	13.8
502344614	1423	351	13.0	2837	4.07	32	9.5	13.8
502344615	1423	351	13.0	2837	4.07	32	9.5	13.8
502344616	1423	351	13.0	2837	4.07	32	9.5	13.8
502344617	1423	351	13.0	2837	4.07	32	9.5	13.8
502344618	1423	351	13.0	2837	4.07	32	9.5	13.8
502344619	1423	351	13.0	2837	4.07	32	9.5	13.8
502344620	1446	365	13.1	3135	4.00	32	9.5	13.8
502344621	1446	365	13.1	3135	4.00	32	9.5	13.8
502344622	1446	365	13.1	3135	4.00	32	9.5	13.8
502344623	1446	365	13.1	3135	4.00	32	9.5	13.8
502344624	1446	365	13.1	3135	4.00	32	9.5	13.8

SOLMAX

Solmax Geosynthetics, LLC

ROLL TEST DATA REPORT



Report Date: Apr/6/2020

Sales Order No.	***Customer Name***	***Project Location***	***Product Name***	***BOL Number***
SO-088708	Layfield Canada Ltd	CA	BLI-075-06N-06W-D-60	

Roll Number	ASTM D4632 Grab Strength (N)	ASTM D4632 Peel Strength (N)	ASTM D6768 Tensile Strength (kN/m)	ASTM D6496 Peel Strength (N/m)	ASTM D5993 Clay Content @ 0% Moisture (kg/m²)	ASTM D5890 Free Swell (ml/2g)	ASTM D2216 Moisture Content (%)	ASTM D5891 Fluid Loss (ml)
502344625	1446	365	13.1	3135	4.00	32	9.5	13.8
502344626	1446	365	13.1	3135	4.00	32	9.5	13.8
502344627	1446	365	13.1	3135	4.00	32	9.5	13.8
502344628	1446	365	13.1	3135	4.00	32	9.5	13.8
502344629	1446	365	13.1	3135	4.00	32	9.5	13.8
502344630	1446	365	13.1	3135	4.00	32	9.5	13.8
502344631	1446	365	13.1	3135	4.00	32	9.5	13.8
502344632	1446	365	13.1	3135	4.00	32	9.5	13.8
502344633	1446	365	13.1	3135	4.00	32	9.5	13.8
502344634	1446	365	13.1	3135	4.00	32	9.5	13.8
502344635	1446	365	13.1	3135	4.00	32	9.5	13.8
502344636	1326	525	12.7	4221	3.84	32	8.9	13.6
502344637	1326	525	12.7	4221	3.84	32	8.9	13.6
502344638	1326	525	12.7	4221	3.84	32	8.9	13.6
502344639	1326	525	12.7	4221	3.84	32	8.9	13.6
502344640	1326	525	12.7	4221	3.84	32	8.9	13.6
502344641	1326	525	12.7	4221	3.84	32	8.9	13.6
502344642	1326	525	12.7	4221	3.84	32	8.9	13.6
502344643	1326	525	12.7	4221	3.84	32	8.9	13.6
502344644	1326	525	12.7	4221	3.84	32	8.9	13.6
502344645	1326	525	12.7	4221	3.84	32	8.9	13.6
502344646	1326	525	12.7	4221	3.84	32	8.9	13.6
502344647	1326	525	12.7	4221	3.84	32	8.9	13.6
502344648	1326	525	12.7	4221	3.84	32	8.9	13.6
502344649	1326	525	12.7	4221	3.84	32	8.9	13.6
502344650	1326	525	12.7	4221	3.84	32	8.9	13.6
502344651	1326	525	12.7	4221	3.84	32	8.9	13.6
502344652	1072	445	12.5	3800	3.94	32	8.9	13.6
502344653	1072	445	12.5	3800	3.94	32	8.9	13.6
502344654	1072	445	12.5	3800	3.94	32	8.9	13.6
502344655	1072	445	12.5	3800	3.94	32	8.9	13.6
502344656	1072	445	12.5	3800	3.94	32	8.9	13.6
502344657	1072	445	12.5	3800	3.94	32	8.9	13.6
502344658	1072	445	12.5	3800	3.94	32	8.9	13.6

SOLMAX

Solmax Geosynthetics, LLC

ROLL TEST DATA REPORT



Report Date: Apr/6/2020

Sales Order No.	***Customer Name***	***Project Location***	***Product Name***	***BOL Number***
SO-088708	Layfield Canada Ltd	CA	BLI-075-06N-06W-D-60	

Roll Number	ASTM D4632 Grab Strength (N)	ASTM D4632 Peel Strength (N)	ASTM D6768 Tensile Strength (kN/m)	ASTM D6496 Peel Strength (N/m)	ASTM D5993 Clay Content @ 0% Moisture (kg/m²)	ASTM D5890 Free Swell (ml/2g)	ASTM D2216 Moisture Content (%)	ASTM D5891 Fluid Loss (ml)
502344659	1072	445	12.5	3800	3.94	32	8.9	13.6
502344660	1072	445	12.5	3800	3.94	32	8.9	13.6
502344661	1072	445	12.5	3800	3.94	32	8.9	13.6
502344662	1072	445	12.5	3800	3.94	32	8.9	13.6
502344663	1072	445	12.5	3800	3.94	32	8.9	13.6
502344664	1072	445	12.5	3800	3.94	32	8.9	13.6
502344665	1072	445	12.5	3800	3.94	32	8.9	13.6
502344666	1072	445	12.5	3800	3.94	30	9.2	13.8
502344667	1072	445	12.5	3800	3.94	30	9.2	13.8
502344668	1561	356	13.3	2925	4.01	30	9.2	13.8
502344669	1561	356	13.3	2925	4.01	30	9.2	13.8
502344670	1561	356	13.3	2925	4.01	30	9.2	13.8
502344671	1561	356	13.3	2925	4.01	30	9.2	13.8
502344672	1561	356	13.3	2925	4.01	30	9.2	13.8
502344673	1561	356	13.3	2925	4.01	30	9.2	13.8
502344674	1561	356	13.3	2925	4.01	30	9.2	13.8
502344675	1561	356	13.3	2925	4.01	30	9.2	13.8
502344676	1205	356	13.2	2890	3.99	30	9.2	13.8
502344677	1205	356	13.2	2890	3.99	30	9.2	13.8
502344678	1205	356	13.2	2890	3.99	30	9.2	13.8
502344679	1205	356	13.2	2890	3.99	30	9.2	13.8
502344680	1205	356	13.2	2890	3.99	30	9.2	13.8
502344681	1205	356	13.2	2890	3.99	30	9.2	13.8
502344682	1205	356	13.2	2890	3.99	30	9.2	13.8
502344683	1205	356	13.2	2890	3.99	30	9.2	13.8
502344684	1205	356	13.2	2890	3.99	30	9.2	13.8
502344685	1205	356	13.2	2890	3.99	30	9.2	13.8
502344686	1205	356	13.2	2890	3.99	30	9.2	13.8
502344687	1205	356	13.2	2890	3.99	30	9.2	13.8
502344688	1205	356	13.2	2890	3.99	30	9.2	13.8
502344689	1205	356	13.2	2890	3.99	30	9.2	13.8
502344690	1205	356	13.2	2890	3.99	30	9.2	13.8
502344691	1205	356	13.2	2890	3.99	30	9.2	13.8
502344692	1410	489	24.7	3818	3.87	30	9.2	13.8

SOLMAX

Solmax Geosynthetics, LLC

ROLL TEST DATA REPORT

SOLMAX QC APPROVED

Report Date: Apr/6/2020

Sales Order No.	Customer Name	Project Location	Product Name	BOL Number
SO-088708	Layfield Canada Ltd	CA	BLI-075-06N-06W-D-60	

Roll Number	ASTM D4632 Grab Strength (N)	ASTM D4632 Peel Strength (N)	ASTM D6768 Tensile Strength (kN/m)	ASTM D6496 Peel Strength (N/m)	ASTM D5993 Clay Content @ 0% Moisture (kg/m²)	ASTM D5890 Free Swell (ml/2g)	ASTM D2216 Moisture Content (%)	ASTM D5891 Fluid Loss (ml)
502344693	1410	489	24.7	3818	3.87	30	9.2	13.8
502344694	1410	489	24.7	3818	3.87	30	9.2	13.8
502344695	1410	489	24.7	3818	3.87	30	9.2	13.8
502344696	1410	489	24.7	3818	3.87	30	9.2	13.8
502344697	1410	489	24.7	3818	3.87	31	9.8	12.6
502344698	1410	489	24.7	3818	3.87	31	9.8	12.6
502344699	1410	489	24.7	3818	3.87	31	9.8	12.6
502344700	1410	489	24.7	3818	3.87	31	9.8	12.6
502344701	1410	489	24.7	3818	3.87	31	9.8	12.6
502344702	1410	489	24.7	3818	3.87	31	9.8	12.6
502344703	1410	489	24.7	3818	3.87	31	9.8	12.6
502344704	1410	489	24.7	3818	3.87	31	9.8	12.6
502344705	1410	489	24.7	3818	3.87	31	9.8	12.6
502344706	1410	489	24.7	3818	3.87	31	9.8	12.6
502344710	1410	489	24.7	3818	3.87	31	9.8	12.6
502344711	1410	489	24.7	3818	3.87	31	9.8	12.6
502344712	1281	383	12.8	2627	4.26	31	9.8	12.6
502344713	1281	383	12.8	2627	4.26	31	9.8	12.6
502344714	1281	383	12.8	2627	4.26	31	9.8	12.6
502344715	1281	383	12.8	2627	4.26	31	9.8	12.6
502344716	1281	383	12.8	2627	4.26	31	9.8	12.6
502344717	1281	383	12.8	2627	4.26	31	9.8	12.6
502344718	1281	383	12.8	2627	4.26	31	9.8	12.6
502344719	1281	383	12.8	2627	4.26	31	9.8	12.6
502344720	1281	383	12.8	2627	4.26	31	9.8	12.6
502344721	1281	383	12.8	2627	4.26	31	9.8	12.6

Laboratory Manager

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GSE BENTOLINER

CERTIFICATE OF ANALYSIS 2020

PRODUCT : NATIONAL® 30

SHIPPED FRO **BENTONITE PERFORMANCE MINERALS LLC**
554 US HWY 212
COLONY PLANT
BELLE FOURCHE, S.D. 57717

BOL #	LOAD DATE	LOT CODE	% MOIST 12 MAX	Mesh % + 20 15 MAX	Mesh % - 200 10 MAX	FL 18 MAX	MBC MEQ 70 MIN	SWELL INDEX 25 MIN	PWA 750 MIN
B0004402569	**03-23-20**	**1032220C**	**8.4**	**0.04**	**3.76**	**13.2**	**116**	**30**	**992**
B0004402571	**03-23-20**	**1032220D**	**7.7**	**0.21**	**4.28**	**13.6**	**122**	**31**	**1065**

MARCH

No. of CARS		% MOIST 12 MAX	Mesh % + 20 15 MAX	Mesh % - 200 10 MAX	0 FL 18 MAX	MBC meq 70 MIN	SWELL INDEX 25 MIN	PWA 750 MIN
34	M AVG	**8.94**	**0.36**	**4.03**	**13.99**	**115.47**	**32.03**	**1022.44**
	STD DEV	**0.59**	**0.73**	**1.50**	**0.61**	**2.84**	**1.89**	**38.61**

DATE
03-*

YTD

No. of CARS		% MOIST 12 MAX	Mesh % + 20 15 MAX	Mesh % - 200 10 MAX	0 FL 18 MAX	MBC meq 70 MIN	SWELL INDEX 25 MIN	PWA 750 MIN
69	M AVG	**8.86**	**0.52**	**4.14**	**13.82**	**114.13**	**31.54**	**988.49**
	STD DEV	**0.63**	**1.57**	**1.58**	**0.68**	**3.28**	**1.78**	**124.67**

DATE
-

SOLD TO: GSE CLAY LINING TECHNOLOGY, Co.
3150 FIRST AVENUE
SPEARFISH, SD 57783

Attn: Bob Stadler (rstadler@gseworld.com)
Chuck Taylor (ctaylor@gseworld.com)
Cheryl Hofer (chofer@gseworld.com)
(ezimmel@gseworld.com)

SHIPPED TO: GSE CLAY LINING TECHNOLOGY, Co.
3150 FIRST AVENUE
SPEARFISH, SD 57783

CC: Thomas Anderson
Jason Tawse
File
Thomas Cortner

For any questions contact.
Q.A. SUPERVISOR
Tucker Goodvin

Prepared by: TO
03/23/20

GSE BENTOLINER

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PRODUCT : NATIONAL® 30

SHIPPED FRO **BENTONITE PERFORMANCE MINERALS LLC**
554 US HWY 212
COLONY PLANT
BELLE FOURCHE, S.D. 57717

BOL #	LOAD DATE	LOT CODE	% MOIST 12 MAX	Mesh % + 20 15 MAX	Mesh % - 200 10 MAX	FL 18 MAX	MBC MEQ 70 MIN	SWELL INDEX 25 MIN	PWA 750 MIN
B0004402572	**03-23-20**	**1032320A**	**8.1**	**0.28**	**2.66**	**11.8**	**108**	**38**	**1012**

MARCH		% MOIST 12 MAX	Mesh % + 20 15 MAX	Mesh % - 200 10 MAX	0 FL 18 MAX	MBC meq 70 MIN	SWELL INDEX 25 MIN	PWA 750 MIN
No. of CARS	M AVG	**8.94**	**0.36**	**4.03**	**13.99**	**115.47**	**32.03**	**1022.44**
34	STD DEV	**0.59**	**0.73**	**1.50**	**0.61**	**2.84**	**1.89**	**38.61**

DATE
03-*

YTD		% MOIST 12 MAX	Mesh % + 20 15 MAX	Mesh % - 200 10 MAX	0 FL 18 MAX	MBC meq 70 MIN	SWELL INDEX 25 MIN	PWA 750 MIN
No. of CARS	M AVG	**8.86**	**0.52**	**4.14**	**13.82**	**114.13**	**31.54**	**988.49**
69	STD DEV	**0.63**	**1.57**	**1.58**	**0.68**	**3.28**	**1.78**	**124.67**

DATE
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(ezimmel@gseworld.com)

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3150 FIRST AVENUE
SPEARFISH, SD 57783

Prepared by: TO
03/24/20

CC: Thomas Anderson
Jason Tawse
File
Thomas Cortner

GSE BENTOLINER

CERTIFICATE OF ANALYSIS 2020

PRODUCT : NATIONAL® 30

SHIPPED FRO **BENTONITE PERFORMANCE MINERALS LLC**
554 US HWY 212
COLONY PLANT
BELLE FOURCHE, S.D. 57717

BOL #	LOAD DATE	LOT CODE	% MOIST 12 MAX	Mesh % + 20 15 MAX	Mesh % - 200 10 MAX	FL 18 MAX	MBC MEQ 70 MIN	SWELL INDEX 25 MIN	PWA 750 MIN
B0004404709	03-24-20	1032320B	7.9	0.16	2.85	12.0	110	33	955

MARCH		% MOIST 12 MAX	Mesh % + 20 15 MAX	Mesh % - 200 10 MAX	0 FL 18 MAX	MBC meq 70 MIN	SWELL INDEX 25 MIN	PWA 750 MIN
No. of CARS	M AVG	8.89	0.36	3.96	13.87	115.11	32.22	1020.28
36	STD DEV	0.61	0.71	1.49	0.76	3.14	2.08	39.15

DATE
03-*

YTD		% MOIST 12 MAX	Mesh % + 20 15 MAX	Mesh % - 200 10 MAX	0 FL 18 MAX	MBC meq 70 MIN	SWELL INDEX 25 MIN	PWA 750 MIN
No. of CARS	M AVG	8.84	0.51	4.10	13.76	113.97	31.67	988.33
71	STD DEV	0.64	1.55	1.57	0.75	3.35	1.94	122.78

DATE
-

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PRODUCT : NATIONAL® 30

SHIPPED FRO **BENTONITE PERFORMANCE MINERALS LLC**
554 US HWY 212
COLONY PLANT
BELLE FOURCHE, S.D. 57717

BOL #	LOAD DATE	**LOT CODE**	% MOIST **12 MAX**	Mesh % + 20 **15 MAX**	Mesh % - 200 **10 MAX**	FL **18 MAX**	MBC MEQ **70 MIN**	SWELL INDEX **25 MIN**	PWA **750 MIN**
B0004402573	**03-24-20**	**1032320C**	**8.4**	**0.23**	**3.80**	**12.2**	**112**	**32**	**1012**

MARCH		% MOIST **12 MAX**	Mesh % + 20 **15 MAX**	Mesh % - 200 **10 MAX**	0 FL **18 MAX**	MBC meq **70 MIN**	SWELL INDEX **25 MIN**	PWA **750 MIN**
No. of CARS **37**	M AVG	**8.88**	**0.35**	**3.96**	**13.83**	**115.03**	**32.22**	**1020.05**
	STD DEV	**0.61**	**0.70**	**1.47**	**0.80**	**3.14**	**2.06**	**38.64**

DATE
03-*

YTD		% MOIST **12 MAX**	Mesh % + 20 **15 MAX**	Mesh % - 200 **10 MAX**	0 FL **18 MAX**	MBC meq **70 MIN**	SWELL INDEX **25 MIN**	PWA **750 MIN**
No. of CARS **72**	M AVG	**8.83**	**0.51**	**4.10**	**13.73**	**113.94**	**31.67**	**988.70**
	STD DEV	**0.64**	**1.54**	**1.56**	**0.77**	**3.33**	**1.92**	**121.85**

DATE
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03/25/20

CC: Thomas Anderson
Jason Tawse
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Thomas Cortner

GSE BENTOLINER

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PRODUCT : NATIONAL® 30

SHIPPED FRO **BENTONITE PERFORMANCE MINERALS LLC**
554 US HWY 212
COLONY PLANT
BELLE FOURCHE, S.D. 57717

BOL #	LOAD DATE	LOT CODE	% MOIST 12 MAX	Mesh % + 20 15 MAX	Mesh % - 200 10 MAX	FL 18 MAX	MBC MEQ 70 MIN	SWELL INDEX 25 MIN	PWA 750 MIN
B0004402574	**03-25-20**	**1032320D**	**8.8**	**0.11**	**5.26**	**14.0**	**114**	**32**	**1031**

MARCH No. of CARS		% MOIST 12 MAX	Mesh % + 20 15 MAX	Mesh % - 200 10 MAX	0 FL 18 MAX	MBC meq 70 MIN	SWELL INDEX 25 MIN	PWA 750 MIN
38	M AVG	**8.87**	**0.35**	**3.99**	**13.83**	**115.00**	**32.21**	**1020.34**
	STD DEV	**0.60**	**0.69**	**1.47**	**0.79**	**3.10**	**2.03**	**38.17**

DATE
03-*

YTD No. of CARS		% MOIST 12 MAX	Mesh % + 20 15 MAX	Mesh % - 200 10 MAX	0 FL 18 MAX	MBC meq 70 MIN	SWELL INDEX 25 MIN	PWA 750 MIN
73	M AVG	**8.83**	**0.51**	**4.11**	**13.74**	**113.94**	**31.68**	**989.35**
	STD DEV	**0.63**	**1.53**	**1.56**	**0.76**	**3.31**	**1.91**	**121.02**

DATE
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3150 FIRST AVENUE
SPEARFISH, SD 57783

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Cheryl Hofer (chofer@gseworld.com)
(ezimmel@gseworld.com)

SHIPPED TO: **GSE CLAY LINING TECHNOLOGY, Co.**
3150 FIRST AVENUE
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Prepared by: TO
03/25/20

GSE BENTOLINER

CERTIFICATE OF ANALYSIS 2020

PRODUCT : NATIONAL® 30

SHIPPED FRO **BENTONITE PERFORMANCE MINERALS LLC**
554 US HWY 212
COLONY PLANT
BELLE FOURCHE, S.D. 57717

BOL #	LOAD DATE	LOT CODE	% MOIST 12 MAX	Mesh % + 20 15 MAX	Mesh % - 200 10 MAX	FL 18 MAX	MBC MEQ 70 MIN	SWELL INDEX 25 MIN	PWA 750 MIN
B0004406797	**03-29-20**	**1032920C**	**8.2**	**0.09**	**6.08**	**13.4**	**116**	**34**	**1052**

MARCH		% MOIST 12 MAX	Mesh % + 20 15 MAX	Mesh % - 200 10 MAX	0 FL 18 MAX	MBC meq 70 MIN	SWELL INDEX 25 MIN	PWA 750 MIN
No. of CARS	M AVG	**8.68**	**0.30**	**4.19**	**13.74**	**114.61**	**32.22**	**1020.61**
49	STD DEV	**0.70**	**0.62**	**1.50**	**0.75**	**2.95**	**2.08**	**41.56**

DATE
03-*

YTD		% MOIST 12 MAX	Mesh % + 20 15 MAX	Mesh % - 200 10 MAX	0 FL 18 MAX	MBC meq 70 MIN	SWELL INDEX 25 MIN	PWA 750 MIN
No. of CARS	M AVG	**8.72**	**0.46**	**4.21**	**13.69**	**113.84**	**31.76**	**994.01**
84	STD DEV	**0.68**	**1.43**	**1.56**	**0.74**	**3.14**	**1.97**	**114.19**

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SPEARFISH, SD 57783

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3150 FIRST AVENUE
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03/30/20

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GSE BENTOLINER

CERTIFICATE OF ANALYSIS 2020

PRODUCT : NATIONAL® 30

SHIPPED FRO **BENTONITE PERFORMANCE MINERALS LLC**
554 US HWY 212
COLONY PLANT
BELLE FOURCHE, S.D. 57717

BOL #	LOAD DATE	LOT CODE	% MOIST 12 MAX	Mesh % + 20 15 MAX	Mesh % - 200 10 MAX	FL 18 MAX	MBC MEQ 70 MIN	SWELL INDEX 25 MIN	PWA 750 MIN
B0004406798	**03-30-20**	**1032920D**	**8.0**	**0.07**	**3.72**	**13.8**	**112**	**32**	**1028**

MARCH		% MOIST 12 MAX	Mesh % + 20 15 MAX	Mesh % - 200 10 MAX	0 FL 18 MAX	MBC meq 70 MIN	SWELL INDEX 25 MIN	PWA 750 MIN
No. of CARS	M AVG	**8.66**	**0.29**	**4.18**	**13.74**	**114.56**	**32.22**	**1020.76**
50	STD DEV	**0.70**	**0.61**	**1.48**	**0.74**	**2.94**	**2.06**	**41.15**

DATE
03-*

YTD		% MOIST 12 MAX	Mesh % + 20 15 MAX	Mesh % - 200 10 MAX	0 FL 18 MAX	MBC meq 70 MIN	SWELL INDEX 25 MIN	PWA 750 MIN
No. of CARS	M AVG	**8.71**	**0.45**	**4.21**	**13.69**	**113.82**	**31.77**	**994.45**
85	STD DEV	**0.69**	**1.42**	**1.55**	**0.73**	**3.13**	**1.96**	**113.51**

SOLD TO: **GSE CLAY LINING TECHNOLOGY, Co.**
3150 FIRST AVENUE
SPEARFISH, SD 57783

For any questions contact.
Q.A. SUPERVISOR
Tucker Goodvin

Attn: **Bob Stadler (rstadler@gseworld.com)**
Chuck Taylor (ctaylor@gseworld.com)
Cheryl Hofer (chofer@gseworld.com)
(ezimmel@gseworld.com)

SHIPPED TO: **GSE CLAY LINING TECHNOLOGY, Co.**
3150 FIRST AVENUE
SPEARFISH, SD 57783

Prepared by: TO
03/30/20

CC: Thomas Anderson
Jason Tawse
File
Thomas Cortner

GSE BENTOLINER

CERTIFICATE OF ANALYSIS 2020

PRODUCT : NATIONAL® 30

SHIPPED FRO **BENTONITE PERFORMANCE MINERALS LLC**
554 US HWY 212
COLONY PLANT
BELLE FOURCHE, S.D. 57717

BOL #	LOAD DATE	**LOT CODE**	% MOIST **12 MAX**	Mesh % + 20 **15 MAX**	Mesh % - 200 **10 MAX**	FL **18 MAX**	MBC MEQ **70 MIN**	SWELL INDEX **25 MIN**	PWA **750 MIN**
B0004406800	**03-30-20**	**1033020A**	**8.0**	**0.06**	**2.93**	**13.0**	**114**	**34**	**1007**

		#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	
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#REF!	**#REF!**	**#REF!**	**#REF!**	**#REF!**	**#REF!**	**#REF!**	**#REF!**	

SOLD TO: **GSE CLAY LINING TECHNOLOGY, Co.**
3150 FIRST AVENUE
SPEARFISH, SD 57783

For any questions contact.
Q.A. SUPERVISOR
Tucker Goodvin

Attn: **Bob Stadler (rstadler@gseworld.com)**
Chuck Taylor (ctaylor@gseworld.com)
Cheryl Hofer (chofer@gseworld.com)
(ezimmel@gseworld.com)

SHIPPED TO: **GSE CLAY LINING TECHNOLOGY, Co.**
3150 FIRST AVENUE
SPEARFISH, SD 57783

Prepared by: TO
04/06/20

CC: Thomas Anderson
Jason Tawse
File
Thomas Cortner

Report Date
8/30/2018

BentoLiner Manufacturing Certification

Sales Order: 84739

Customer: Layfield Canada Ltd

Project: Layfield/Eagle Gold Heap Leach Facility

Product Type: BLI-075-06N-06W-D-60 BentoLiner NWL

The GCL purchased and shipped for the above referenced project does meet or exceed the project specifications.

The GCL supplied to this project has been continuously inspected for the presence of needles and is certified to be needle free.

Chuck Taylor
Laboratory Technician

Roll Allocation List

Sales Order SO-084739
Customer Name Layfield Canada Ltd
Project Name Layfield/Eagle Gold Heap Leach Facility

Serial number	Item Number	Daily lot	Roll width	Clay	Length
502318971	BLI-075-06N-06W-D-60	28091112	15.50	1090118A	84.00
502318972	BLI-075-06N-06W-D-60	28091112	15.50	1090118A	150.00
502318973	BLI-075-06N-06W-D-60	28091112	15.50	1090118A	150.00
502318974	BLI-075-06N-06W-D-60	28091112	15.50	1090118A	150.00
502318975	BLI-075-06N-06W-D-60	28091112	15.50	1090118A	150.00
502318976	BLI-075-06N-06W-D-60	28091112	15.50	1090118A	150.00
502318977	BLI-075-06N-06W-D-60	28091112	15.50	1090118A	150.00
502318978	BLI-075-06N-06W-D-60	28091112	15.50	1090118A	150.00
502318979	BLI-075-06N-06W-D-60	28091112	15.50	1090118A	150.00
502318980	BLI-075-06N-06W-D-60	28091112	15.50	1090118A	150.00
502318981	BLI-075-06N-06W-D-60	28091112	15.50	1090118A	150.00
502318982	BLI-075-06N-06W-D-60	28091112	15.50	1090118A	150.00
502318983	BLI-075-06N-06W-D-60	28091112	15.50	1090118A	150.00
502318984	BLI-075-06N-06W-D-60	28091112	15.50	1090118A	150.00
502318985	BLI-075-06N-06W-D-60	28091112	15.50	1090118A	150.00
502318986	BLI-075-06N-06W-D-60	28091112	15.50	1090118A	150.00
502318987	BLI-075-06N-06W-D-60	28091112	15.50	1090118A	150.00
502318988	BLI-075-06N-06W-D-60	28091112	15.50	1090118A	150.00
502318989	BLI-075-06N-06W-D-60	28091112	15.50	1090118A	150.00
502318990	BLI-075-06N-06W-D-60	28091112	15.50	1090118A	150.00
502318991	BLI-075-06N-06W-D-60	28091112	15.50	1090118A	150.00
502318992	BLI-075-06N-06W-D-60	28091112	15.50	1090118A	150.00
502318993	BLI-075-06N-06W-D-60	28091112	15.50	1090118A	150.00
502318994	BLI-075-06N-06W-D-60	28091112	15.50	1090118A	150.00
502318995	BLI-075-06N-06W-D-60	28091112	15.50	1090118A	150.00
502318996	BLI-075-06N-06W-D-60	28091112	15.50	1090118A	150.00
502318997	BLI-075-06N-06W-D-60	28091112	15.50	1090118A	150.00
502318998	BLI-075-06N-06W-D-60	28091112	15.50	1090118A	150.00
502318999	BLI-075-06N-06W-D-60	28091112	15.50	1090118A	150.00
502319000	BLI-075-06N-06W-D-60	28091112	15.50	1090118A	150.00
502319001	BLI-075-06N-06W-D-60	28091112	15.50	1090118A	150.00
502319002	BLI-075-06N-06W-D-60	28091112	15.50	1090118A	150.00
502319003	BLI-075-06N-06W-D-60	28091112	15.50	1090118A	150.00
502319004	BLI-075-06N-06W-D-60	28091112	15.50	1090118A	150.00
502319005	BLI-075-06N-06W-D-60	28091112	15.50	1090118B	150.00
502319006	BLI-075-06N-06W-D-60	28091112	15.50	1090118B	150.00
502319007	BLI-075-06N-06W-D-60	28091112	15.50	1090118B	150.00
502319008	BLI-075-06N-06W-D-60	28091112	15.50	1090118B	150.00
502319009	BLI-075-06N-06W-D-60	28091112	15.50	1090118B	150.00
502319010	BLI-075-06N-06W-D-60	28091112	15.50	1090118B	150.00
502319011	BLI-075-06N-06W-D-60	28091112	15.50	1090118B	150.00
502319012	BLI-075-06N-06W-D-60	28091112	15.50	1090118B	150.00
502319013	BLI-075-06N-06W-D-60	28091112	15.50	1090118B	150.00
502319014	BLI-075-06N-06W-D-60	28091112	15.50	1090118B	150.00
502319015	BLI-075-06N-06W-D-60	28091112	15.50	1090118B	150.00
502319016	BLI-075-06N-06W-D-60	28091112	15.50	1090118B	150.00
502319018	BLI-075-06N-06W-D-60	28091112	15.50	1090118B	150.00
502319019	BLI-075-06N-06W-D-60	28091112	15.50	1090118B	150.00
502319020	BLI-075-06N-06W-D-60	28091112	15.50	1090118B	150.00
502319022	BLI-075-06N-06W-D-60	28091112	15.50	1090118B	150.00
502319023	BLI-075-06N-06W-D-60	28091112	15.50	1090118B	150.00
502319024	BLI-075-06N-06W-D-60	28091112	15.50	1090118B	150.00
502319025	BLI-075-06N-06W-D-60	28091112	15.50	1090118B	150.00
502319026	BLI-075-06N-06W-D-60	28091112	15.50	1090118B	150.00
502319027	BLI-075-06N-06W-D-60	28091112	15.50	1090118B	150.00
502319028	BLI-075-06N-06W-D-60	28091112	15.50	1090118B	150.00
502319029	BLI-075-06N-06W-D-60	28091112	15.50	1090118B	150.00
502319030	BLI-075-06N-06W-D-60	28091112	15.50	1090118B	150.00
502319031	BLI-075-06N-06W-D-60	28091112	15.50	1090118B	150.00

Roll Allocation List

Sales Order SO-084739
Customer Name Layfield Canada Ltd
Project Name Layfield/Eagle Gold Heap Leach Facility

Serial number	Item Number	Daily lot	Roll width	Clay	Length
502319032	BLI-075-06N-06W-D-60	28091112	15.50	1090118B	150.00
502319033	BLI-075-06N-06W-D-60	28091112	15.50	1090118B	150.00
502319034	BLI-075-06N-06W-D-60	28091112	15.50	1090118B	150.00
502319035	BLI-075-06N-06W-D-60	28091112	15.50	1090118C	150.00
502319036	BLI-075-06N-06W-D-60	28091112	15.50	1090118C	150.00
502319037	BLI-075-06N-06W-D-60	28091112	15.50	1090118C	150.00
502319038	BLI-075-06N-06W-D-60	28091112	15.50	1090118C	150.00
502319039	BLI-075-06N-06W-D-60	28091112	15.50	1090118C	150.00
502319040	BLI-075-06N-06W-D-60	28091112	15.50	1090118C	150.00
502319041	BLI-075-06N-06W-D-60	28091112	15.50	1090118C	150.00
502319042	BLI-075-06N-06W-D-60	28091112	15.50	1090118C	150.00
502319043	BLI-075-06N-06W-D-60	28091112	15.50	1090118C	150.00
502319044	BLI-075-06N-06W-D-60	28091112	15.50	1090118C	150.00
502319045	BLI-075-06N-06W-D-60	28091112	15.50	1090118C	150.00
502319046	BLI-075-06N-06W-D-60	28091112	15.50	1090118C	150.00
502319047	BLI-075-06N-06W-D-60	28091112	15.50	1090118C	150.00
502319048	BLI-075-06N-06W-D-60	28091112	15.50	1090118C	150.00
502319049	BLI-075-06N-06W-D-60	28091112	15.50	1090118C	150.00
502319050	BLI-075-06N-06W-D-60	28091112	15.50	1090118C	150.00
502319051	BLI-075-06N-06W-D-60	28091112	15.50	1090118C	150.00
502319052	BLI-075-06N-06W-D-60	28091112	15.50	1090118C	150.00
502319053	BLI-075-06N-06W-D-60	28091112	15.50	1090118C	150.00
502319054	BLI-075-06N-06W-D-60	28091112	15.50	1090118C	150.00
502319055	BLI-075-06N-06W-D-60	28091112	15.50	1090118C	150.00
502319056	BLI-075-06N-06W-D-60	28091112	15.50	1090118C	150.00
502319057	BLI-075-06N-06W-D-60	28091112	15.50	1090118C	150.00
502319058	BLI-075-06N-06W-D-60	28091112	15.50	1090118C	150.00
502319059	BLI-075-06N-06W-D-60	28091212	15.50	1090118C	150.00
502319060	BLI-075-06N-06W-D-60	28091212	15.50	1090118C	150.00
502319061	BLI-075-06N-06W-D-60	28091212	15.50	1090118C	150.00
502319062	BLI-075-06N-06W-D-60	28091212	15.50	1090118C	150.00
502319063	BLI-075-06N-06W-D-60	28091212	15.50	1090118C	150.00
502319064	BLI-075-06N-06W-D-60	28091212	15.50	1090118C	150.00
502319065	BLI-075-06N-06W-D-60	28091212	15.50	1090118C	150.00
502319066	BLI-075-06N-06W-D-60	28091212	15.50	1090118D	150.00
502319067	BLI-075-06N-06W-D-60	28091212	15.50	1090118D	150.00
502319068	BLI-075-06N-06W-D-60	28091212	15.50	1090118D	150.00
502319069	BLI-075-06N-06W-D-60	28091212	15.50	1090118D	150.00
502319070	BLI-075-06N-06W-D-60	28091212	15.50	1090118D	150.00
502319071	BLI-075-06N-06W-D-60	28091212	15.50	1090118D	150.00
502319072	BLI-075-06N-06W-D-60	28091212	15.50	1090118D	150.00
502319073	BLI-075-06N-06W-D-60	28091212	15.50	1090118D	150.00
502319074	BLI-075-06N-06W-D-60	28091212	15.50	1090118D	138.00
502319075	BLI-075-06N-06W-D-60	28091212	15.50	1090118D	150.00
502319076	BLI-075-06N-06W-D-60	28091212	15.50	1090118D	150.00
502319077	BLI-075-06N-06W-D-60	28091212	15.50	1090118D	150.00
502319078	BLI-075-06N-06W-D-60	28091212	15.50	1090118D	150.00
502319079	BLI-075-06N-06W-D-60	28091212	15.50	1090118D	150.00
502319080	BLI-075-06N-06W-D-60	28091212	15.50	1090118D	150.00
502319081	BLI-075-06N-06W-D-60	28091212	15.50	1090118D	150.00
502319082	BLI-075-06N-06W-D-60	28091212	15.50	1090118D	150.00
502319083	BLI-075-06N-06W-D-60	28091212	15.50	1090118D	150.00
502319084	BLI-075-06N-06W-D-60	28091212	15.50	1090118D	150.00
502319085	BLI-075-06N-06W-D-60	28091212	15.50	1090118D	150.00
502319086	BLI-075-06N-06W-D-60	28091212	15.50	1090118D	150.00
502319087	BLI-075-06N-06W-D-60	28091212	15.50	1090118D	150.00
502319088	BLI-075-06N-06W-D-60	28091212	15.50	1090118D	150.00
502319089	BLI-075-06N-06W-D-60	28091212	15.50	1090118D	150.00
502319090	BLI-075-06N-06W-D-60	28091212	15.50	1090118D	150.00

Roll Allocation List

Sales Order SO-084739
Customer Name Layfield Canada Ltd
Project Name Layfield/Eagle Gold Heap Leach Facility

Serial number	Item Number	Daily lot	Roll width	Clay	Length
502319091	BLI-075-06N-06W-D-60	28091212	15.50	1090118D	150.00
502319092	BLI-075-06N-06W-D-60	28091212	15.50	1090118D	150.00
502319093	BLI-075-06N-06W-D-60	28091212	15.50	1090118D	150.00
502319094	BLI-075-06N-06W-D-60	28091212	15.50	1090118D	150.00
502319095	BLI-075-06N-06W-D-60	28091212	15.50	1090118D	90.00
502319097	BLI-075-06N-06W-D-60	28091212	15.50	1090418A	150.00
502319098	BLI-075-06N-06W-D-60	28091212	15.50	1090418A	150.00
502319099	BLI-075-06N-06W-D-60	28091212	15.50	1090418A	150.00
502319100	BLI-075-06N-06W-D-60	28091212	15.50	1090418A	150.00
502319101	BLI-075-06N-06W-D-60	28091212	15.50	1090418A	150.00
502319103	BLI-075-06N-06W-D-60	28091212	15.50	1090418A	150.00
502319104	BLI-075-06N-06W-D-60	28091212	15.50	1090418A	150.00
502319105	BLI-075-06N-06W-D-60	28091212	15.50	1090418A	150.00
502319106	BLI-075-06N-06W-D-60	28091212	15.50	1090418A	150.00
502319107	BLI-075-06N-06W-D-60	28091212	15.50	1090418A	150.00
502319108	BLI-075-06N-06W-D-60	28091212	15.50	1090418A	150.00
502319109	BLI-075-06N-06W-D-60	28091212	15.50	1090418A	150.00
502319110	BLI-075-06N-06W-D-60	28091212	15.50	1090418A	150.00
502319111	BLI-075-06N-06W-D-60	28091212	15.50	1090418A	150.00
502319112	BLI-075-06N-06W-D-60	28091212	15.50	1090418A	150.00
502319113	BLI-075-06N-06W-D-60	28091212	15.50	1090418A	150.00
502319114	BLI-075-06N-06W-D-60	28091212	15.50	1090418A	150.00
502319115	BLI-075-06N-06W-D-60	28091212	15.50	1090418A	150.00
502319116	BLI-075-06N-06W-D-60	28091212	15.50	1090418A	150.00
502319117	BLI-075-06N-06W-D-60	28091212	15.50	1090418A	150.00
502319118	BLI-075-06N-06W-D-60	28091212	15.50	1090418A	150.00
502319119	BLI-075-06N-06W-D-60	28091212	15.50	1090418A	150.00
502319120	BLI-075-06N-06W-D-60	28091212	15.50	1090418A	150.00
502319121	BLI-075-06N-06W-D-60	28091212	15.50	1090418A	150.00
502319122	BLI-075-06N-06W-D-60	28091212	15.50	1090418A	150.00
502319123	BLI-075-06N-06W-D-60	28091212	15.50	1090418A	150.00
502319124	BLI-075-06N-06W-D-60	28091212	15.50	1090418A	150.00
502319125	BLI-075-06N-06W-D-60	28091212	15.50	1090418B	150.00
502319126	BLI-075-06N-06W-D-60	28091212	15.50	1090418B	150.00
502319127	BLI-075-06N-06W-D-60	28091212	15.50	1090418B	150.00
502319128	BLI-075-06N-06W-D-60	28091212	15.50	1090418B	150.00
502319129	BLI-075-06N-06W-D-60	28091212	15.50	1090418B	150.00
502319130	BLI-075-06N-06W-D-60	28091212	15.50	1090418B	150.00
502319131	BLI-075-06N-06W-D-60	28091212	15.50	1090418B	150.00
502319132	BLI-075-06N-06W-D-60	28091212	15.50	1090418B	150.00
502319133	BLI-075-06N-06W-D-60	28091212	15.50	1090418B	150.00
502319134	BLI-075-06N-06W-D-60	28091212	15.50	1090418B	150.00
502319135	BLI-075-06N-06W-D-60	28091212	15.50	1090418B	150.00
502319136	BLI-075-06N-06W-D-60	28091212	15.50	1090418B	150.00
502319137	BLI-075-06N-06W-D-60	28091212	15.50	1090418B	150.00
502319138	BLI-075-06N-06W-D-60	28091212	15.50	1090418B	150.00
502319139	BLI-075-06N-06W-D-60	28091212	15.50	1090418B	150.00
502319140	BLI-075-06N-06W-D-60	28091212	15.50	1090418B	150.00
502319141	BLI-075-06N-06W-D-60	28091212	15.50	1090418B	150.00
502319142	BLI-075-06N-06W-D-60	28091212	15.50	1090418B	150.00
502319143	BLI-075-06N-06W-D-60	28091212	15.50	1090418B	150.00
502319144	BLI-075-06N-06W-D-60	28091212	15.50	1090418B	150.00
502319145	BLI-075-06N-06W-D-60	28091212	15.50	1090418B	150.00
502319146	BLI-075-06N-06W-D-60	28091212	15.50	1090418B	150.00
502319147	BLI-075-06N-06W-D-60	28091312	15.50	1090418B	150.00
502319148	BLI-075-06N-06W-D-60	28091312	15.50	1090418B	150.00
502319149	BLI-075-06N-06W-D-60	28091312	15.50	1090418B	150.00
502319150	BLI-075-06N-06W-D-60	28091312	15.50	1090418B	124.00
502319152	BLI-075-06N-06W-D-60	28091312	15.50	1090418C	150.00

Roll Allocation List

Sales Order SO-084739
Customer Name Layfield Canada Ltd
Project Name Layfield/Eagle Gold Heap Leach Facility

Serial number	Item Number	Daily lot	Roll width	Clay	Length
502319153	BLI-075-06N-06W-D-60	28091312	15.50	1090418C	150.00
502319154	BLI-075-06N-06W-D-60	28091312	15.50	1090418C	150.00
502319155	BLI-075-06N-06W-D-60	28091312	15.50	1090418C	150.00
502319156	BLI-075-06N-06W-D-60	28091312	15.50	1090418C	150.00
502319157	BLI-075-06N-06W-D-60	28091312	15.50	1090418C	150.00
502319158	BLI-075-06N-06W-D-60	28091312	15.50	1090418C	150.00
502319159	BLI-075-06N-06W-D-60	28091312	15.50	1090418C	150.00
502319160	BLI-075-06N-06W-D-60	28091312	15.50	1090418C	150.00
502319161	BLI-075-06N-06W-D-60	28091312	15.50	1090418C	150.00
502319162	BLI-075-06N-06W-D-60	28091312	15.50	1090418C	150.00
502319163	BLI-075-06N-06W-D-60	28091312	15.50	1090418C	150.00
502319164	BLI-075-06N-06W-D-60	28091312	15.50	1090418C	150.00
502319165	BLI-075-06N-06W-D-60	28091312	15.50	1090418C	150.00
502319166	BLI-075-06N-06W-D-60	28091312	15.50	1090418C	150.00
502319167	BLI-075-06N-06W-D-60	28091312	15.50	1090418C	150.00
502319168	BLI-075-06N-06W-D-60	28091312	15.50	1090418C	150.00
502319169	BLI-075-06N-06W-D-60	28091312	15.50	1090418C	150.00
502319170	BLI-075-06N-06W-D-60	28091312	15.50	1090418C	150.00
502319171	BLI-075-06N-06W-D-60	28091312	15.50	1090418C	150.00
502319172	BLI-075-06N-06W-D-60	28091312	15.50	1090418C	150.00
502319173	BLI-075-06N-06W-D-60	28091312	15.50	1090418C	150.00
502319174	BLI-075-06N-06W-D-60	28091312	15.50	1090418C	150.00
502319175	BLI-075-06N-06W-D-60	28091312	15.50	1090418C	150.00
502319176	BLI-075-06N-06W-D-60	28091312	15.50	1090418C	150.00
502319177	BLI-075-06N-06W-D-60	28091312	15.50	1090418C	150.00
502319178	BLI-075-06N-06W-D-60	28091312	15.50	1090418C	150.00
502319179	BLI-075-06N-06W-D-60	28091312	15.50	1090418C	150.00
502319180	BLI-075-06N-06W-D-60	28091312	15.50	1090418C	150.00
502319181	BLI-075-06N-06W-D-60	28091312	15.50	1090418C	150.00
502319182	BLI-075-06N-06W-D-60	28091312	15.50	1090418D	150.00
502319189	BLI-075-06N-06W-D-60	28091312	15.50	1090418D	150.00
502319190	BLI-075-06N-06W-D-60	28091312	15.50	1090418D	150.00
502319191	BLI-075-06N-06W-D-60	28091312	15.50	1090418D	118.00
502319192	BLI-075-06N-06W-D-60	28091312	15.50	1090418D	150.00
502319193	BLI-075-06N-06W-D-60	28091312	15.50	1090418D	150.00
502319194	BLI-075-06N-06W-D-60	28091312	15.50	1090418D	150.00
502319195	BLI-075-06N-06W-D-60	28091312	15.50	1090418D	150.00
502319196	BLI-075-06N-06W-D-60	28091312	15.50	1090418D	150.00
502319197	BLI-075-06N-06W-D-60	28091312	15.50	1090418D	150.00
502319198	BLI-075-06N-06W-D-60	28091312	15.50	1090418D	150.00
502319199	BLI-075-06N-06W-D-60	28091312	15.50	1090418D	150.00
502319200	BLI-075-06N-06W-D-60	28091312	15.50	1090418D	150.00
502319201	BLI-075-06N-06W-D-60	28091312	15.50	1090418D	150.00
502319202	BLI-075-06N-06W-D-60	28091312	15.50	1090418D	150.00
502319203	BLI-075-06N-06W-D-60	28091312	15.50	1090418D	150.00
502319204	BLI-075-06N-06W-D-60	28091312	15.50	1090418D	150.00
502319205	BLI-075-06N-06W-D-60	28091312	15.50	1090418D	150.00
502319206	BLI-075-06N-06W-D-60	28091312	15.50	1090418D	150.00
502319207	BLI-075-06N-06W-D-60	28091312	15.50	1090418D	150.00
502319208	BLI-075-06N-06W-D-60	28091312	15.50	1090418D	150.00
502319209	BLI-075-06N-06W-D-60	28091312	15.50	1090418D	150.00
502319210	BLI-075-06N-06W-D-60	28091312	15.50	1090418D	150.00
502319211	BLI-075-06N-06W-D-60	28091312	15.50	1090418D	150.00
502319212	BLI-075-06N-06W-D-60	28091312	15.50	1090918A	150.00
502319213	BLI-075-06N-06W-D-60	28091312	15.50	1090918A	150.00
502319214	BLI-075-06N-06W-D-60	28091312	15.50	1090918A	150.00
502319215	BLI-075-06N-06W-D-60	28091312	15.50	1090918A	150.00
502319216	BLI-075-06N-06W-D-60	28091312	15.50	1090918A	150.00
502319217	BLI-075-06N-06W-D-60	28091312	15.50	1090918A	150.00

Roll Allocation List

Sales Order SO-084739
Customer Name Layfield Canada Ltd
Project Name Layfield/Eagle Gold Heap Leach Facility

Serial number	Item Number	Daily lot	Roll width	Clay	Length
502319218	BLI-075-06N-06W-D-60	28091312	15.50	1090918A	150.00
502319219	BLI-075-06N-06W-D-60	28091312	15.50	1090918A	150.00
502319220	BLI-075-06N-06W-D-60	28091312	15.50	1090918A	150.00
502319221	BLI-075-06N-06W-D-60	28091312	15.50	1090918A	150.00
502319223	BLI-075-06N-06W-D-60	28091312	15.50	1090918A	150.00
502319224	BLI-075-06N-06W-D-60	28091312	15.50	1090918A	150.00
502319225	BLI-075-06N-06W-D-60	28091312	15.50	1090918A	150.00
502319226	BLI-075-06N-06W-D-60	28091312	15.50	1090918A	150.00

GSE Environmental, LLC

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Sales Order No.	Customer Name	Project Location	Product Name	BOL Number
SO-084739	Layfield Canada Ltd	MAYO CA	BLI-075-06N-06W-D-60	

Roll Number	ASTM D4632 Grab Strength (lbs)	ASTM D4632 Peel Strength (lbs)	ASTM D6768 Tensile Strength (ppi)	ASTM D6496 Peel Strength (ppi)	ASTM D5993 Clay Content @ 0% Moisture (lbs/sf)	ASTM D5890 Free Swell (ml/2g)	ASTM D2216 Moisture Content (%)	ASTM D5891 Fluid Loss (ml)
502318971	296	84	66.6	17.9	0.84	35.0	10.7	13.6
502318972	296	84	66.6	17.9	0.84	35.0	10.7	13.6
502318973	296	84	66.6	17.9	0.84	35.0	10.7	13.6
502318974	296	84	66.6	17.9	0.84	35.0	10.7	13.6
502318975	296	84	66.6	17.9	0.84	35.0	10.7	13.6
502318976	296	84	66.6	17.9	0.84	35.0	10.7	13.6
502318977	296	84	66.6	17.9	0.84	35.0	10.7	13.6
502318978	296	84	66.6	17.9	0.84	35.0	10.7	13.6
502318979	296	84	66.6	17.9	0.84	35.0	10.7	13.6
502318980	313	84	72.7	17.9	0.80	35.0	10.7	13.6
502318981	313	84	72.7	17.9	0.80	35.0	10.7	13.6
502318982	313	84	72.7	17.9	0.80	35.0	10.7	13.6
502318983	313	84	72.7	17.9	0.80	35.0	10.7	13.6
502318984	313	84	72.7	17.9	0.80	35.0	10.7	13.6
502318985	313	84	72.7	17.9	0.80	35.0	10.7	13.6
502318986	313	84	72.7	17.9	0.80	35.0	10.7	13.6
502318987	313	84	72.7	17.9	0.80	35.0	10.7	13.6
502318988	313	84	72.7	17.9	0.80	35.0	10.7	13.6
502318989	313	84	72.7	17.9	0.80	35.0	10.7	13.6
502318990	313	84	72.7	17.9	0.80	35.0	10.7	13.6
502318991	313	84	72.7	17.9	0.80	35.0	10.7	13.6
502318992	313	84	72.7	17.9	0.80	35.0	10.7	13.6
502318993	313	84	72.7	17.9	0.80	35.0	10.7	13.6
502318994	313	84	72.7	17.9	0.80	35.0	10.7	13.6
502318995	313	84	72.7	17.9	0.80	35.0	10.7	13.6
502318996	248	94	56.4	21.2	0.80	35.0	10.7	13.6
502318997	248	94	56.4	21.2	0.80	35.0	10.7	13.6
502318998	248	94	56.4	21.2	0.80	35.0	10.7	13.6
502318999	248	94	56.4	21.2	0.80	35.0	10.7	13.6
502319000	248	94	56.4	21.2	0.80	35.0	10.7	13.6
502319001	248	94	56.4	21.2	0.80	35.0	10.7	13.6
502319002	248	94	56.4	21.2	0.80	35.0	10.7	13.6
502319003	248	94	56.4	21.2	0.80	35.0	10.7	13.6
502319004	248	94	56.4	21.2	0.80	35.0	10.7	13.6

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Sales Order No.	Customer Name	Project Location	Product Name	BOL Number
SO-084739	Layfield Canada Ltd	MAYO CA	BLI-075-06N-06W-D-60	

Roll Number	ASTM D4632 Grab Strength (lbs)	ASTM D4632 Peel Strength (lbs)	ASTM D6768 Tensile Strength (ppi)	ASTM D6496 Peel Strength (ppi)	ASTM D5993 Clay Content @ 0% Moisture (lbs/sf)	ASTM D5890 Free Swell (ml/2g)	ASTM D2216 Moisture Content (%)	ASTM D5891 Fluid Loss (ml)
502319005	248	94	56.4	21.2	0.80	34.5	10.2	13.6
502319006	248	94	56.4	21.2	0.80	34.5	10.2	13.6
502319007	248	94	56.4	21.2	0.80	34.5	10.2	13.6
502319008	248	94	56.4	21.2	0.80	34.5	10.2	13.6
502319009	248	94	56.4	21.2	0.80	34.5	10.2	13.6
502319010	248	94	56.4	21.2	0.80	34.5	10.2	13.6
502319011	248	94	56.4	21.2	0.80	34.5	10.2	13.6
502319012	309	100	68.2	23.6	0.80	34.5	10.2	13.6
502319013	309	100	68.2	23.6	0.80	34.5	10.2	13.6
502319014	309	100	68.2	23.6	0.80	34.5	10.2	13.6
502319015	309	100	68.2	23.6	0.80	34.5	10.2	13.6
502319016	309	100	68.2	23.6	0.80	34.5	10.2	13.6
502319018	309	100	68.2	23.6	0.80	34.5	10.2	13.6
502319019	309	100	68.2	23.6	0.80	34.5	10.2	13.6
502319020	309	100	68.2	23.6	0.80	34.5	10.2	13.6
502319022	309	100	68.2	23.6	0.80	34.5	10.2	13.6
502319023	309	100	68.2	23.6	0.80	34.5	10.2	13.6
502319024	309	100	68.2	23.6	0.80	34.5	10.2	13.6
502319025	309	100	68.2	23.6	0.80	34.5	10.2	13.6
502319026	309	100	68.2	23.6	0.80	34.5	10.2	13.6
502319027	309	100	68.2	23.6	0.80	34.5	10.2	13.6
502319028	321	85	52.6	15.5	0.79	34.5	10.2	13.6
502319029	321	85	52.6	15.5	0.79	34.5	10.2	13.6
502319030	321	85	52.6	15.5	0.79	34.5	10.2	13.6
502319031	321	85	52.6	15.5	0.79	34.5	10.2	13.6
502319032	321	85	52.6	15.5	0.79	34.5	10.2	13.6
502319033	321	85	52.6	15.5	0.79	34.5	10.2	13.6
502319034	321	85	52.6	15.5	0.79	34.5	10.2	13.6
502319035	321	85	52.6	15.5	0.79	35.0	10.6	13.8
502319036	321	85	52.6	15.5	0.79	35.0	10.6	13.8
502319037	321	85	52.6	15.5	0.79	35.0	10.6	13.8
502319038	321	85	52.6	15.5	0.79	35.0	10.6	13.8
502319039	319	95	61.7	16.8	0.82	35.0	10.6	13.8
502319040	319	95	61.7	16.8	0.82	35.0	10.6	13.8

GSE Environmental, LLC

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Report Date: Sep/14/2018

Sales Order No.	Customer Name	Project Location	Product Name	BOL Number
SO-084739	Layfield Canada Ltd	MAYO CA	BLI-075-06N-06W-D-60	

Roll Number	ASTM D4632 Grab Strength (lbs)	ASTM D4632 Peel Strength (lbs)	ASTM D6768 Tensile Strength (ppi)	ASTM D6496 Peel Strength (ppi)	ASTM D5993 Clay Content @ 0% Moisture (lbs/sf)	ASTM D5890 Free Swell (ml/2g)	ASTM D2216 Moisture Content (%)	ASTM D5891 Fluid Loss (ml)
502319041	319	95	61.7	16.8	0.82	35.0	10.6	13.8
502319042	319	95	61.7	16.8	0.82	35.0	10.6	13.8
502319043	319	95	61.7	16.8	0.82	35.0	10.6	13.8
502319044	319	95	61.7	16.8	0.82	35.0	10.6	13.8
502319045	319	95	61.7	16.8	0.82	35.0	10.6	13.8
502319046	319	95	61.7	16.8	0.82	35.0	10.6	13.8
502319047	319	95	61.7	16.8	0.82	35.0	10.6	13.8
502319048	319	95	61.7	16.8	0.82	35.0	10.6	13.8
502319049	319	95	61.7	16.8	0.82	35.0	10.6	13.8
502319050	319	95	61.7	16.8	0.82	35.0	10.6	13.8
502319051	319	95	61.7	16.8	0.82	35.0	10.6	13.8
502319052	319	95	61.7	16.8	0.82	35.0	10.6	13.8
502319053	319	95	61.7	16.8	0.82	35.0	10.6	13.8
502319054	319	95	61.7	16.8	0.82	35.0	10.6	13.8
502319055	303	95	70.2	18.0	0.81	35.0	10.6	13.8
502319056	303	95	70.2	18.0	0.81	35.0	10.6	13.8
502319057	303	95	70.2	18.0	0.81	35.0	10.6	13.8
502319058	303	95	70.2	18.0	0.81	35.0	10.6	13.8
502319059	303	95	70.2	18.0	0.81	35.0	10.6	13.8
502319060	303	95	70.2	18.0	0.81	35.0	10.6	13.8
502319061	303	95	70.2	18.0	0.81	35.0	10.6	13.8
502319062	303	95	70.2	18.0	0.81	35.0	10.6	13.8
502319063	303	95	70.2	18.0	0.81	35.0	10.6	13.8
502319064	303	95	70.2	18.0	0.81	35.0	10.6	13.8
502319065	303	95	70.2	18.0	0.81	35.0	10.6	13.8
502319066	303	95	70.2	18.0	0.81	34.0	11.7	12.8
502319067	303	95	70.2	18.0	0.81	34.0	11.7	12.8
502319068	303	95	70.2	18.0	0.81	34.0	11.7	12.8
502319069	303	95	70.2	18.0	0.81	34.0	11.7	12.8
502319070	303	95	70.2	18.0	0.81	34.0	11.7	12.8
502319071	311	89	52.2	17.5	0.82	34.0	11.7	12.8
502319072	311	89	52.2	17.5	0.82	34.0	11.7	12.8
502319073	311	89	52.2	17.5	0.82	34.0	11.7	12.8
502319074	311	89	52.2	17.5	0.82	34.0	11.7	12.8

GSE Environmental, LLC

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Report Date: Sep/14/2018

Sales Order No.	Customer Name	Project Location	Product Name	BOL Number
SO-084739	Layfield Canada Ltd	MAYO CA	BLI-075-06N-06W-D-60	

Roll Number	ASTM D4632 Grab Strength (lbs)	ASTM D4632 Peel Strength (lbs)	ASTM D6768 Tensile Strength (ppi)	ASTM D6496 Peel Strength (ppi)	ASTM D5993 Clay Content @ 0% Moisture (lbs/sf)	ASTM D5890 Free Swell (ml/2g)	ASTM D2216 Moisture Content (%)	ASTM D5891 Fluid Loss (ml)
502319075	311	89	52.2	17.5	0.82	34.0	11.7	12.8
502319076	311	89	52.2	17.5	0.82	34.0	11.7	12.8
502319077	311	89	52.2	17.5	0.82	34.0	11.7	12.8
502319078	311	89	52.2	17.5	0.82	34.0	11.7	12.8
502319079	311	89	52.2	17.5	0.82	34.0	11.7	12.8
502319080	311	89	52.2	17.5	0.82	34.0	11.7	12.8
502319081	311	89	52.2	17.5	0.82	34.0	11.7	12.8
502319082	311	89	52.2	17.5	0.82	34.0	11.7	12.8
502319083	311	89	52.2	17.5	0.82	34.0	11.7	12.8
502319084	311	89	52.2	17.5	0.82	34.0	11.7	12.8
502319085	311	89	52.2	17.5	0.82	34.0	11.7	12.8
502319086	311	89	52.2	17.5	0.82	34.0	11.7	12.8
502319087	266	100	57.9	20.0	0.82	34.0	11.7	12.8
502319088	266	100	57.9	20.0	0.82	34.0	11.7	12.8
502319089	266	100	57.9	20.0	0.82	34.0	11.7	12.8
502319090	266	100	57.9	20.0	0.82	34.0	11.7	12.8
502319091	266	100	57.9	20.0	0.82	34.0	11.7	12.8
502319092	266	100	57.9	20.0	0.82	34.0	11.7	12.8
502319093	266	100	57.9	20.0	0.82	34.0	11.7	12.8
502319094	266	100	57.9	20.0	0.82	34.0	11.7	12.8
502319095	266	100	57.9	20.0	0.82	34.0	11.7	12.8
502319097	266	100	57.9	20.0	0.82	30.5	10.5	13.6
502319098	266	100	57.9	20.0	0.82	30.5	10.5	13.6
502319099	266	100	57.9	20.0	0.82	30.5	10.5	13.6
502319100	266	100	57.9	20.0	0.82	30.5	10.5	13.6
502319101	266	100	57.9	20.0	0.82	30.5	10.5	13.6
502319103	266	100	57.9	20.0	0.82	30.5	10.5	13.6
502319104	292	94	68.0	18.8	0.77	30.5	10.5	13.6
502319105	292	94	68.0	18.8	0.77	30.5	10.5	13.6
502319106	292	94	68.0	18.8	0.77	30.5	10.5	13.6
502319107	292	94	68.0	18.8	0.77	30.5	10.5	13.6
502319108	292	94	68.0	18.8	0.77	30.5	10.5	13.6
502319109	292	94	68.0	18.8	0.77	30.5	10.5	13.6
502319110	292	94	68.0	18.8	0.77	30.5	10.5	13.6

GSE Environmental, LLC

ROLL TEST DATA REPORT

Report Date: Sep/14/2018

Sales Order No.	Customer Name	Project Location	Product Name	BOL Number
SO-084739	Layfield Canada Ltd	MAYO CA	BLI-075-06N-06W-D-60	

Roll Number	ASTM D4632 Grab Strength (lbs)	ASTM D4632 Peel Strength (lbs)	ASTM D6768 Tensile Strength (ppi)	ASTM D6496 Peel Strength (ppi)	ASTM D5993 Clay Content @ 0% Moisture (lbs/sf)	ASTM D5890 Free Swell (ml/2g)	ASTM D2216 Moisture Content (%)	ASTM D5891 Fluid Loss (ml)
502319111	292	94	68.0	18.8	0.77	30.5	10.5	13.6
502319112	292	94	68.0	18.8	0.77	30.5	10.5	13.6
502319113	292	94	68.0	18.8	0.77	30.5	10.5	13.6
502319114	292	94	68.0	18.8	0.77	30.5	10.5	13.6
502319115	292	94	68.0	18.8	0.77	30.5	10.5	13.6
502319116	292	94	68.0	18.8	0.77	30.5	10.5	13.6
502319117	292	94	68.0	18.8	0.77	30.5	10.5	13.6
502319118	292	94	68.0	18.8	0.77	30.5	10.5	13.6
502319119	292	94	68.0	18.8	0.77	30.5	10.5	13.6
502319120	254	99	61.7	18.3	0.85	30.5	10.5	13.6
502319121	254	99	61.7	18.3	0.85	30.5	10.5	13.6
502319122	254	99	61.7	18.3	0.85	30.5	10.5	13.6
502319123	254	99	61.7	18.3	0.85	30.5	10.5	13.6
502319124	254	99	61.7	18.3	0.85	30.5	10.5	13.6
502319125	254	99	61.7	18.3	0.85	35.5	7.9	14.0
502319126	254	99	61.7	18.3	0.85	35.5	7.9	14.0
502319127	254	99	61.7	18.3	0.85	35.5	7.9	14.0
502319128	254	99	61.7	18.3	0.85	35.5	7.9	14.0
502319129	254	99	61.7	18.3	0.85	35.5	7.9	14.0
502319130	254	99	61.7	18.3	0.85	35.5	7.9	14.0
502319131	254	99	61.7	18.3	0.85	35.5	7.9	14.0
502319132	254	99	61.7	18.3	0.85	35.5	7.9	14.0
502319133	254	99	61.7	18.3	0.85	35.5	7.9	14.0
502319134	254	99	61.7	18.3	0.85	35.5	7.9	14.0
502319135	254	99	61.7	18.3	0.85	35.5	7.9	14.0
502319136	253	84	60.2	15.3	0.94	35.5	7.9	14.0
502319137	253	84	60.2	15.3	0.94	35.5	7.9	14.0
502319138	253	84	60.2	15.3	0.94	35.5	7.9	14.0
502319139	253	84	60.2	15.3	0.94	35.5	7.9	14.0
502319140	253	84	60.2	15.3	0.94	35.5	7.9	14.0
502319141	253	84	60.2	15.3	0.94	35.5	7.9	14.0
502319142	253	84	60.2	15.3	0.94	35.5	7.9	14.0
502319143	253	84	60.2	15.3	0.94	35.5	7.9	14.0
502319144	253	84	60.2	15.3	0.94	35.5	7.9	14.0

GSE Environmental, LLC

ROLL TEST DATA REPORT

GSE QC APPROVED

Report Date: Sep/14/2018

Sales Order No.	Customer Name	Project Location	Product Name	BOL Number
SO-084739	Layfield Canada Ltd	MAYO CA	BLI-075-06N-06W-D-60	

Roll Number	ASTM D4632 Grab Strength (lbs)	ASTM D4632 Peel Strength (lbs)	ASTM D6768 Tensile Strength (ppi)	ASTM D6496 Peel Strength (ppi)	ASTM D5993 Clay Content @ 0% Moisture (lbs/sf)	ASTM D5890 Free Swell (ml/2g)	ASTM D2216 Moisture Content (%)	ASTM D5891 Fluid Loss (ml)
502319145	253	84	60.2	15.3	0.94	35.5	7.9	14.0
502319146	253	84	60.2	15.3	0.94	35.5	7.9	14.0
502319147	253	84	60.2	15.3	0.94	35.5	7.9	14.0
502319148	253	84	60.2	15.3	0.94	35.5	7.9	14.0
502319149	253	84	60.2	15.3	0.94	35.5	7.9	14.0
502319150	253	84	60.2	15.3	0.94	35.5	7.9	14.0
502319152	253	84	60.2	15.3	0.94	37.5	8.8	14.8
502319153	301	84	54.3	17.4	0.92	37.5	8.8	14.8
502319154	301	84	54.3	17.4	0.92	37.5	8.8	14.8
502319155	301	84	54.3	17.4	0.92	37.5	8.8	14.8
502319156	301	84	54.3	17.4	0.92	37.5	8.8	14.8
502319157	301	84	54.3	17.4	0.92	37.5	8.8	14.8
502319158	301	84	54.3	17.4	0.92	37.5	8.8	14.8
502319159	301	84	54.3	17.4	0.92	37.5	8.8	14.8
502319160	301	84	54.3	17.4	0.92	37.5	8.8	14.8
502319161	301	84	54.3	17.4	0.92	37.5	8.8	14.8
502319162	301	84	54.3	17.4	0.92	37.5	8.8	14.8
502319163	364	76	68.9	15.8	0.84	37.5	8.8	14.8
502319164	364	76	68.9	15.8	0.84	37.5	8.8	14.8
502319165	364	76	68.9	15.8	0.84	37.5	8.8	14.8
502319166	364	76	68.9	15.8	0.84	37.5	8.8	14.8
502319167	364	76	68.9	15.8	0.84	37.5	8.8	14.8
502319168	364	76	68.9	15.8	0.84	37.5	8.8	14.8
502319169	364	76	68.9	15.8	0.84	37.5	8.8	14.8
502319170	364	76	68.9	15.8	0.84	37.5	8.8	14.8
502319171	364	76	68.9	15.8	0.84	37.5	8.8	14.8
502319172	364	76	68.9	15.8	0.84	37.5	8.8	14.8
502319173	364	76	68.9	15.8	0.84	37.5	8.8	14.8
502319174	364	76	68.9	15.8	0.84	37.5	8.8	14.8
502319175	364	76	68.9	15.8	0.84	37.5	8.8	14.8
502319176	364	76	68.9	15.8	0.84	37.5	8.8	14.8
502319177	364	76	68.9	15.8	0.84	37.5	8.8	14.8
502319178	364	76	68.9	15.8	0.84	37.5	8.8	14.8
502319179	320	95	80.3	18.5	0.85	37.5	8.8	14.8

GSE Environmental, LLC

ROLL TEST DATA REPORT

GSE QC APPROVED

Report Date: Sep/14/2018

Sales Order No.	Customer Name	Project Location	Product Name	BOL Number
SO-084739	Layfield Canada Ltd	MAYO CA	BLI-075-06N-06W-D-60	

Roll Number	ASTM D4632 Grab Strength (lbs)	ASTM D4632 Peel Strength (lbs)	ASTM D6768 Tensile Strength (ppi)	ASTM D6496 Peel Strength (ppi)	ASTM D5993 Clay Content @ 0% Moisture (lbs/sf)	ASTM D5890 Free Swell (ml/2g)	ASTM D2216 Moisture Content (%)	ASTM D5891 Fluid Loss (ml)
502319180	320	95	80.3	18.5	0.85	37.5	8.8	14.8
502319181	320	95	80.3	18.5	0.85	37.5	8.8	14.8
502319182	320	95	80.3	18.5	0.85	36.0	10.2	13.8
502319189	320	95	80.3	18.5	0.85	36.0	10.2	13.8
502319190	320	95	80.3	18.5	0.85	36.0	10.2	13.8
502319191	320	95	80.3	18.5	0.85	36.0	10.2	13.8
502319192	320	95	80.3	18.5	0.85	36.0	10.2	13.8
502319193	320	95	80.3	18.5	0.85	36.0	10.2	13.8
502319194	320	95	80.3	18.5	0.85	36.0	10.2	13.8
502319195	366	77	72.9	15.6	0.78	36.0	10.2	13.8
502319196	366	77	72.9	15.6	0.78	36.0	10.2	13.8
502319197	366	77	72.9	15.6	0.78	36.0	10.2	13.8
502319198	366	77	72.9	15.6	0.78	36.0	10.2	13.8
502319199	366	77	72.9	15.6	0.78	36.0	10.2	13.8
502319200	366	77	72.9	15.6	0.78	36.0	10.2	13.8
502319201	366	77	72.9	15.6	0.78	36.0	10.2	13.8
502319202	366	77	72.9	15.6	0.78	36.0	10.2	13.8
502319203	366	77	72.9	15.6	0.78	36.0	10.2	13.8
502319204	366	77	72.9	15.6	0.78	36.0	10.2	13.8
502319205	366	77	72.9	15.6	0.78	36.0	10.2	13.8
502319206	366	77	72.9	15.6	0.78	36.0	10.2	13.8
502319207	366	77	72.9	15.6	0.78	36.0	10.2	13.8
502319208	366	77	72.9	15.6	0.78	36.0	10.2	13.8
502319209	366	77	72.9	15.6	0.78	36.0	10.2	13.8
502319210	366	77	72.9	15.6	0.78	36.0	10.2	13.8
502319211	326	91	70.3	13.0	0.80	36.0	10.2	13.8
502319212	326	91	70.3	13.0	0.80	35.0	10.2	13.6
502319213	326	91	70.3	13.0	0.80	35.0	10.2	13.6
502319214	326	91	70.3	13.0	0.80	35.0	10.2	13.6
502319215	326	91	70.3	13.0	0.80	35.0	10.2	13.6
502319216	326	91	70.3	13.0	0.80	35.0	10.2	13.6
502319217	326	91	70.3	13.0	0.80	35.0	10.2	13.6
502319218	326	91	70.3	13.0	0.80	35.0	10.2	13.6
502319219	326	91	70.3	13.0	0.80	35.0	10.2	13.6

GSE Environmental, LLC

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Report Date: Sep/14/2018

Sales Order No.	Customer Name	Project Location	Product Name	BOL Number
SO-084739	Layfield Canada Ltd	MAYO CA	BLI-075-06N-06W-D-60	

Roll Number	ASTM D4632 Grab Strength (lbs)	ASTM D4632 Peel Strength (lbs)	ASTM D6768 Tensile Strength (ppi)	ASTM D6496 Peel Strength (ppi)	ASTM D5993 Clay Content @ 0% Moisture (lbs/sf)	ASTM D5890 Free Swell (ml/2g)	ASTM D2216 Moisture Content (%)	ASTM D5891 Fluid Loss (ml)
502319220	326	91	70.3	13.0	0.80	35.0	10.2	13.6
502319221	326	91	70.3	13.0	0.80	35.0	10.2	13.6
502319223	326	91	70.3	13.0	0.80	35.0	10.2	13.6
502319224	326	91	70.3	13.0	0.80	35.0	10.2	13.6
502319225	326	91	70.3	13.0	0.80	35.0	10.2	13.6
502319226	326	91	70.3	13.0	0.80	35.0	10.2	13.6

Laboratory Manager _____

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GSE BENTOLINER

CERTIFICATE OF ANALYSIS 2018

PRODUCT : NATIONAL® 30

SHIPPED FROM: **BENTONITE PERFORMANCE MINERALS LLC**
554 US HWY 212
COLONY PLANT
BELLE FOURCHE, S.D. 57717

BOL #	LOAD DATE	LOT CODE	% MOIST 12 MAX	Mesh % + 20 15 MAX	Mesh % - 200 10 MAX	FL 18 MAX	MBC MEQ 70 MIN	SWELL INDEX 25 MIN	PWA 750 MIN
B0003956975	**09-02-18**	**1090118A**	**9.7**	**0.12**	**3.74**	**11.8**	**112**	**35**	**991**

SEPTEMBER		% MOIST 12 MAX	Mesh % + 20 15 MAX	Mesh % - 200 10 MAX	FL 18 MAX	MBC meq 70 MIN	SWELL INDEX 25 MIN	PWA 750 MIN
No. of CARS	M AVG	**9.33**	**0.11**	**3.00**	**12.40**	**109.33**	**34.33**	**992.67**
3	STD DEV	**0.29**	**0.02**	**0.99**	**0.71**	**2.49**	**0.94**	**15.15**

YTD		% MOIST 12 MAX	Mesh % + 20 15 MAX	Mesh % - 200 10 MAX	FL 18 MAX	MBC meq 70 MIN	SWELL INDEX 25 MIN	PWA 750 MIN
No. of CARS	M AVG	**8.90**	**0.30**	**4.12**	**13.63**	**109.78**	**31.10**	**958.48**
481	STD DEV	**0.91**	**0.55**	**2.00**	**1.16**	**5.40**	**1.85**	**72.21**

SOLD TO: **GSE CLAY LINING TECHNOLOGY, Co.**
3150 FIRST AVENUE
SPEARFISH, SD 57783

Attn: **Bob Stadler (rstadler@gseworld.com)**
Chuck Taylor (ctaylor@gseworld.com)
Cheryl Hofer (chofer@gseworld.com)
(ezimmel@gseworld.com)

SHIPPED TO: **GSE CLAY LINING TECHNOLOGY, Co.**
3150 FIRST AVENUE
SPEARFISH, SD 57783

CC: Thomas Anderson
Jason Tawse

For any questions contact.
Q.A. SUPERVISOR
Shannon Pollmiller
307-896-8505 or
(Shannon.Pollmiller@halliburton.com

Prepared by: TO
09/02/18

GSE BENTOLINER

CERTIFICATE OF ANALYSIS 2018

PRODUCT : NATIONAL® 30

SHIPPED FROM: **BENTONITE PERFORMANCE MINERALS LLC**
554 US HWY 212
COLONY PLANT
BELLE FOURCHE, S.D. 57717

BOL #	LOAD DATE	LOT CODE	% MOIST 12 MAX	Mesh % + 20 15 MAX	Mesh % - 200 10 MAX	FL 18 MAX	MBC MEQ 70 MIN	SWELL INDEX 25 MIN	PWA 750 MIN
B0003956977	**09-02-18**	**1090118B**	**8.9**	**0.09**	**4.67**	**11.6**	**110**	**33**	**1054**
B0003956979	**09-03-18**	**1090118C**	**9.6**	**9.60**	**3.14**	**14.2**	**110**	**33**	**1055**

SEPTEMBER		% MOIST 12 MAX	Mesh % + 20 15 MAX	Mesh % - 200 10 MAX	FL 18 MAX	MBC meq 70 MIN	SWELL INDEX 25 MIN	PWA 750 MIN
No. of CARS	M AVG	**9.30**	**2.01**	**3.36**	**12.60**	**109.60**	**33.80**	**1017.40**
5	STD DEV	**0.32**	**3.80**	**1.01**	**1.02**	**1.96**	**0.98**	**32.49**

YTD		% MOIST 12 MAX	Mesh % + 20 15 MAX	Mesh % - 200 10 MAX	FL 18 MAX	MBC meq 70 MIN	SWELL INDEX 25 MIN	PWA 750 MIN
No. of CARS	M AVG	**8.90**	**0.32**	**4.12**	**13.63**	**109.78**	**31.11**	**958.83**
483	STD DEV	**0.91**	**0.68**	**2.00**	**1.17**	**5.39**	**1.85**	**72.31**

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Cheryl Hofer (chofer@gseworld.com)
(ezimmel@gseworld.com)

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CC: Thomas Anderson
Jason Tawse

For any questions contact.
Q.A. SUPERVISOR
Shannon Pollmiller
307-896-8505 or
(Shannon.Pollmiller@halliburton.com

Prepared by: TO
09/03/18

GSE BENTOLINER

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PRODUCT : NATIONAL® 30

SHIPPED FROM: **BENTONITE PERFORMANCE MINERALS LLC**
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COLONY PLANT
BELLE FOURCHE, S.D. 57717

BOL #	LOAD DATE	LOT CODE	% MOIST 12 MAX	Mesh % + 20 15 MAX	Mesh % - 200 10 MAX	FL 18 MAX	MBC MEQ 70 MIN	SWELL INDEX 25 MIN	PWA 750 MIN
B0003956980	**09-04-18**	**1090118D**	**10.6**	**0.11**	**0.91**	**14.4**	**108**	**31**	**1037**
B0003956981	**09-04-18**	**1090418A**	**9.5**	**0.05**	**2.17**	**13.4**	**112**	**34**	**1041**

SEPTEMBER		% MOIST 12 MAX	Mesh % + 20 15 MAX	Mesh % - 200 10 MAX	FL 18 MAX	MBC meq 70 MIN	SWELL INDEX 25 MIN	PWA 750 MIN
No. of CARS	M AVG	**9.51**	**1.46**	**2.84**	**12.97**	**109.71**	**33.43**	**1023.57**
7	STD DEV	**0.52**	**3.32**	**1.23**	**1.08**	**1.98**	**1.29**	**29.16**

YTD		% MOIST 12 MAX	Mesh % + 20 15 MAX	Mesh % - 200 10 MAX	FL 18 MAX	MBC meq 70 MIN	SWELL INDEX 25 MIN	PWA 750 MIN
No. of CARS	M AVG	**8.90**	**0.32**	**4.11**	**13.63**	**109.78**	**31.11**	**959.13**
485	STD DEV	**0.91**	**0.67**	**2.00**	**1.16**	**5.38**	**1.85**	**72.34**

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(ezimmel@gseworld.com)

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SPEARFISH, SD 57783

CC: Thomas Anderson
Jason Tawse

For any questions contact.
Q.A. SUPERVISOR
Shannon Pollmiller
307-896-8505 or
(Shannon.Pollmiller@halliburton.com

Prepared by: TO
09/04/18

GSE BENTOLINER

CERTIFICATE OF ANALYSIS 2018

PRODUCT : NATIONAL® 30

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BELLE FOURCHE, S.D. 57717

BOL #	LOAD DATE	LOT CODE	% MOIST 12 MAX	Mesh % + 20 15 MAX	Mesh % - 200 10 MAX	FL 18 MAX	MBC MEQ 70 MIN	SWELL INDEX 25 MIN	PWA 750 MIN
B0003956982	**09-06-18**	**1090418B**	**10.0**	**0.05**	**4.01**	**13.8**	**114**	**34**	**1034**

SEPTEMBER		% MOIST 12 MAX	Mesh % + 20 15 MAX	Mesh % - 200 10 MAX	FL 18 MAX	MBC meq 70 MIN	SWELL INDEX 25 MIN	PWA 750 MIN
No. of CARS	M AVG	**9.58**	**1.28**	**2.99**	**13.08**	**110.25**	**33.50**	**1024.88**
8	STD DEV	**0.51**	**3.14**	**1.22**	**1.04**	**2.33**	**1.22**	**27.49**

YTD		% MOIST 12 MAX	Mesh % + 20 15 MAX	Mesh % - 200 10 MAX	FL 18 MAX	MBC meq 70 MIN	SWELL INDEX 25 MIN	PWA 750 MIN
No. of CARS	M AVG	**8.91**	**0.32**	**4.11**	**13.63**	**109.79**	**31.12**	**959.26**
486	STD DEV	**0.91**	**0.67**	**2.00**	**1.16**	**5.38**	**1.86**	**72.34**

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Prepared by: TO
09/06/18

GSE BENTOLINER

CERTIFICATE OF ANALYSIS 2018

PRODUCT : NATIONAL® 30

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COLONY PLANT
BELLE FOURCHE, S.D. 57717

BOL #	LOAD DATE	LOT CODE	% MOIST 12 MAX	Mesh % + 20 15 MAX	Mesh % - 200 10 MAX	FL 18 MAX	MBC MEQ 70 MIN	SWELL INDEX 25 MIN	PWA 750 MIN
B0003956983	**09-08-18**	**1090418C**	**8.3**	**1.79**	**3.22**	**12.2**	**114**	**33**	**966**

SEPTEMBER		% MOIST 12 MAX	Mesh % + 20 15 MAX	Mesh % - 200 10 MAX	FL 18 MAX	MBC meq 70 MIN	SWELL INDEX 25 MIN	PWA 750 MIN
No. of CARS **10**	M AVG	**9.42**	**1.76**	**2.68**	**14.85**	**106.82**	**31.94**	**928.65**
	STD DEV	**0.48**	**2.26**	**1.29**	**2.15**	**5.18**	**2.41**	**99.96**

YTD		% MOIST 12 MAX	Mesh % + 20 15 MAX	Mesh % - 200 10 MAX	FL 18 MAX	MBC meq 70 MIN	SWELL INDEX 25 MIN	PWA 750 MIN
No. of CARS **488**	M AVG	**8.91**	**0.35**	**4.08**	**13.67**	**109.69**	**31.11**	**957.38**
	STD DEV	**0.91**	**0.71**	**2.00**	**1.22**	**5.43**	**1.87**	**73.53**

SOLD TO: **GSE CLAY LINING TECHNOLOGY, Co.**
3150 FIRST AVENUE
SPEARFISH, SD 57783

Attn: **Bob Stadler (rstadler@gseworld.com)**
Chuck Taylor (ctaylor@gseworld.com)
Cheryl Hofer (chofer@gseworld.com)
(ezimmel@gseworld.com)

SHIPPED TO: **GSE CLAY LINING TECHNOLOGY, Co.**
3150 FIRST AVENUE
SPEARFISH, SD 57783

CC: Thomas Anderson
Jason Tawse

For any questions contact.
Q.A. SUPERVISOR
Shannon Pollmiller
307-896-8505 or
(Shannon.Pollmiller@halliburton.com

Prepared by: TO
09/08/18

GSE BENTOLINER

CERTIFICATE OF ANALYSIS 2018

PRODUCT : NATIONAL® 30

SHIPPED FROM: **BENTONITE PERFORMANCE MINERALS LLC**
554 US HWY 212
COLONY PLANT
BELLE FOURCHE, S.D. 57717

BOL #	LOAD DATE	LOT CODE	% MOIST 12 MAX	Mesh % + 20 15 MAX	Mesh % - 200 10 MAX	FL 18 MAX	MBC MEQ 70 MIN	SWELL INDEX 25 MIN	PWA 750 MIN
B0003956984	**09-08-18**	**1090418D**	**9.1**	**0.19**	**3.71**	**13.6**	**110**	**31**	**1002**

SEPTEMBER		% MOIST 12 MAX	Mesh % + 20 15 MAX	Mesh % - 200 10 MAX	FL 18 MAX	MBC meq 70 MIN	SWELL INDEX 25 MIN	PWA 750 MIN
No. of CARS	M AVG	**9.40**	**1.67**	**2.73**	**14.78**	**107.00**	**31.89**	**932.72**
11	STD DEV	**0.47**	**2.22**	**1.28**	**2.11**	**5.09**	**2.35**	**98.58**

YTD		% MOIST 12 MAX	Mesh % + 20 15 MAX	Mesh % - 200 10 MAX	FL 18 MAX	MBC meq 70 MIN	SWELL INDEX 25 MIN	PWA 750 MIN
No. of CARS	M AVG	**8.91**	**0.35**	**4.08**	**13.67**	**109.69**	**31.11**	**957.46**
489	STD DEV	**0.91**	**0.71**	**2.00**	**1.22**	**5.42**	**1.86**	**73.49**

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3150 FIRST AVENUE
SPEARFISH, SD 57783

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Prepared by: TO
09/09/18

GSE BENTOLINER

CERTIFICATE OF ANALYSIS 2018

PRODUCT : NATIONAL® 30

SHIPPED FROM: **BENTONITE PERFORMANCE MINERALS LLC**
554 US HWY 212
COLONY PLANT
BELLE FOURCHE, S.D. 57717

BOL #	LOAD DATE	LOT CODE	% MOIST 12 MAX	Mesh % + 20 15 MAX	Mesh % - 200 10 MAX	FL 18 MAX	MBC MEQ 70 MIN	SWELL INDEX 25 MIN	PWA 750 MIN
B0003956987	**09-10-18**	**1090918A**	**9.2**	**0.36**	**2.64**	**13.8**	**106**	**33**	**999**

SEPTEMBER		% MOIST 12 MAX	Mesh % + 20 15 MAX	Mesh % - 200 10 MAX	FL 18 MAX	MBC meq 70 MIN	SWELL INDEX 25 MIN	PWA 750 MIN
No. of CARS **12**	M AVG	**9.39**	**1.60**	**2.73**	**14.73**	**106.95**	**31.95**	**936.21**
	STD DEV	**0.46**	**2.18**	**1.24**	**2.06**	**4.96**	**2.30**	**97.09**

YTD		% MOIST 12 MAX	Mesh % + 20 15 MAX	Mesh % - 200 10 MAX	FL 18 MAX	MBC meq 70 MIN	SWELL INDEX 25 MIN	PWA 750 MIN
No. of CARS **490**	M AVG	**8.91**	**0.35**	**4.08**	**13.67**	**109.69**	**31.11**	**957.53**
	STD DEV	**0.91**	**0.71**	**2.00**	**1.22**	**5.42**	**1.86**	**73.45**

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Jason Tawse

For any questions contact.
Q.A. SUPERVISOR
Shannon Pollmiller
307-896-8505 or
(Shannon.Pollmiller@halliburton.com

Prepared by: TO
09/10/18

LAYFIELD CANADA LTD.
17720 – 129 Avenue NW Edmonton, Alberta T5V 0C4 Canada
Phone: (780) 453-6731
Fax: (780) 452-9495
Toll Free: 1 800 840-2884
Web: www.layfieldgroup.com
E-Mail: edm@layfieldgroup.com

INSTALLATION WARRANTY

Layfield Reference No. : (Job #) CT001401

LAYFIELD CANADA LTD. (LAYFIELD) hereby warrants to Victoria Gold Corp.; (the Customer) that the work performed by LAYFIELD on the Installation described as Eagle Gold Heap Leach ad Phase 1B will:

1. Meet the field seam specifications set out in the contract between LAYFIELD and the Customer (as amended by LAYFIELD's quotation), all workmanship to meet the requirements of LAYFIELD's Field Installation Quality Assurance program, and be free of defects at the time of completion of the Installation; and

2. Be free of installation defects from the date of the completion of the Installation (September 28, 2020), for a period of One year so long as the completed Installation is used for the purposes and in the manner for which the Installation was designed.

Should damage or defects within the scope of the aforesaid warranties occur, LAYFIELD shall repair the damage or defects, PROVIDED THAT the area to be repaired must first be made ready by the Customer and be in a clean, dry, unencumbered condition, free from all water, soil, sludge, residuals, and liquids of any kind.

To enable LAYFIELD to investigate and determine the cause of any alleged damage or defect, notice and details of any claim hereunder must be presented in writing to LAYFIELD within thirty (30) days after the alleged damage or defect was first noticed or observed. Failure to provide such notice and details shall invalidate all warranties provided hereunder.

The liability of LAYFIELD under the aforesaid warranties are subject to the following conditions:

a. LAYFIELD's only obligation shall be to repair or replace any defective workmanship and in no event shall LAYFIELD be liable for any amount in excess of the cost of the Installation;

b. No allowance will be made for repairs, replacements or alterations made by the Customer unless with the prior written consent of LAYFIELD;

c. The warranties hereunder extend only to the Customer and are not transferable;

d. The warranties hereunder shall not apply to any damage or defects resulting from misuse, mechanical abuse by machinery, equipment or persons, excessive pressures or stresses, exposure of the completed Installation of harmful chemicals, unusual weather conditions, casualty catastrophe such as (but not limited to) earthquake, flood, hail, tornado, or any other act of God;

e. Under no circumstances shall LAYFIELD be liable for any special, direct, indirect, or consequential damages including the loss of use of the Installation howsoever caused;

f. The warranties hereunder are given in lieu of all other warranties, express, implied, statutory, or otherwise, and the Customer expressly waives all other warranties and claims whatsoever except those specifically given herein, and the Customer acknowledges that the warranties hereunder are accepted in preference to and to the exclusion of any or all other warranties; and

g. An Installation Warranty will not be provided for lining projects unless the installation is completed by LAYFIELD personnel or designated LAYFIELD subcontractors.

LAYFIELD CANADA LTD.

for Jon Feenstra, Senior Project Manager

LAYFIELD CANADA LTD.

Cameron Forster, Vice President

LAYFIELD
Canada

Project Completion QA/QC Package
for

Victoria Gold Corp.

Eagle Gold Heap Leach Pad
Phase 1A Repairs

Dublin Gulch, YK

Prepared By: Jason Wheeler

Reviewed By: Jon Feenstra

Date Revised: October 2, 2020

Layfield Canada Ltd.

Table of Contents

for

Victoria Gold

Eagle Gold Heap Leach Pad
Phase 1A

Dublin Gulch, YK

EL6280

1) Geomembrane Detail & Test Log 1 pg.

GEOMEMBRANE DETAIL & TEST LOG

PROJECT NUMBER N/A AREA / LAYER Primary

PROJECT TITLE Repairs to Phase 1A

TRIAL SEAMS

#	MACHINE NUMBER	DATE YYYY-MM-DD	TIME	WELD TECH	AIR TEMP °C	PREHEAT TEMP °C	EXTRUDER TEMP °C	PEEL (PPI)					SHEAR (PPI)					CHK'D BY	REMARKS
1	EX-008	2020/09/12	1340	JL	10	260	260	124	122	130	108	118	166	156	160	153	146	TH	TT
2	EX-008	2020/09/13	1015	JL	10	260	260	117	147	166	145	118	179	165	151	153	170	TH	TT
3	EX -008	2020/09/28	1400	RL	14	260	257	145	161	152	167	158	181	156	162	167	171	RL	TT
4																			
5																			
6																			

DETAIL CODE	PANEL NUMBER(S)	LOCATION DESCRIPTION	DETAIL TYPE	REPAIR TYPE	MACHINE NUMBER	REPAIR DATE YYYY-MM-DD	START TIME	WELD TECH	AIR TEMP °C	TEST DATE YYYY-MM-DD	TEST METH.	QC TECH
1A	/	On Old Existing NW Side	D	P	EX-008	2020/09/13	1055	JL	10	2020/09/13	VB+PS	TH
1B	/	On Old Existing NW Side	D	P	EX-008	2020/09/13	1020	JL	10	2020/09/13	VB+PS	TH
1C	/	On Old Existing NW Side	D	P	EX-008	2020/09/13	1025	JL	10	2020/09/13	VB+PS	TH
1D	/	On Old Existing NW Side	D	P	EX-008	2020/09/13	1030	JL	10	2020/09/13	VB+PS	TH
1E	/	On Old Existing NW Side	D	P	EX-008	2020/09/13	1035	JL	10	2020/09/13	VB+PS	TH
1F	/	On Old Existing NW Side	D	P	EX-008	2020/09/13	1040	JL	10	2020/09/13	VB+PS	TH
1G	/	On Old Existing NW Side	D	P	EX-008	2020/09/13	1045	JL	10	2020/09/13	VB+PS	TH
1H	/	On Old Existing NW Side	D	P	EX-008	2020/09/13	1050	JL	10	2020/09/13	VB+PS	TH
1I	/	On Old Existing NW Side	D	P	EX-008	2020/09/12	1430	JL	10	2020/09/13	VB+PS	TH
1J	/	On Old Existing NW Side	D	P	EX-008	2020/09/12	1355	JL	10	2020/09/13	VB+PS	TH
1K	/	On Old Existing NW Side	D	P	EX-008	2020/09/12	1415	JL	10	2020/09/13	VB+PS	TH
1L	/	On Old Existing NW Side	D	P	EX-008	2020/09/12	1425	JL	10	2020/09/13	VB+PS	TH
1M	/	On Old Existing NW Side	D	P	EX-008	2020/09/28	1610	RL	14	2020/09/28	VB+PS	RL
	/											
	/											
	/											
	/											
	/											
	/											
	/											

DETAIL TYPE:

AD - ANIMAL DAMAGE	DS-# - DESTRUCT SAMPLE NUMBER	IO - INSUFFICIENT OVERLAP	T - THREE PANEL INTERSECTION
ATL - AIR TEST LEAK	EE - EARTHWORK EQUIPMENT DAMAGE	MD - MANUFACTURER/DELIVERY DAMAGE	VL - VACUUM TEST LEAK
BO - FUSION WELDER BURN	EXT - EXTENSION	P - PENETRATION	WR - WRINKLE
CR - CREASE	FM - FISHMOUTH	PT - PRESSURE TEST CUT	WS - WELDER RESTART
D - INSTALLATION DAMAGE	FS - FAILED SEAM LENGTH	SI - SOIL SURFACE IRREGULARITY	OTHER:

TEST METHOD:

AL - AIR LANCE	VB - VAC BOX
PS - POINT STRESS	ST - SPARK TEST

REPAIR TYPE:

G&W - GRIND & WELD	B - BOOT	P - PATCH
RS - RECONSTRUCTED SEAM	C - CAP	S - SKIRT
HAW - HOT AIR WELD		

REMARKS: Panel # covered Panel # covered Panel # covered Panel # covered Panel # covered Panel # covered Panel # covered Panel # covered Panel # covered Panel # covered Panel # covered Panel # covered Panel # covered

QC TECH: Thomas Howald

SUPERVISOR: Javier

SUBMISSION DATE: 2020/10/02

SHEET NUMBER: 1 of 1

APPENDIX 7
Requests for Information

REQUEST FOR INFORMATION

JDS RFI:	**VITGOLD-RFI-001**
Contractor RFI:	
Site Location: EAGLEGOLD	
Date Submitted: March 24, 2020	

Subject: Lateral ADS N-12 (plain end to plain end)	**Project Zone/Area: Heap Leach Phase 1B**
Contractor: JDS/Ewing	**Station/Location:**
Attention: Clint Green	**Discipline: Civil**

REQUEST

Related Drawings: **Forte Drawing DTL-F003**	**Other Related Documents:**

Information Request/Description of Issue:

1: Requesting information on lateral ADS N-12 male to male coupler connection 3 meters from the wye header. Should we utilize the split coupler or the snap coupler?

2: Will you require tape, screws, or any other means of securing this connection?

Proposed Corrective Action

Type of Change:	☐	Owner Change	☒	Clarification/Info	☒	Field Change
	☐	Vendor Change	☐	Design Change	☐	Other

Cost Impact:	
Schedule Impact:	

Requested by: Clint Abel		**March 24, 2020**
Name	Signature	Date

RESPONSE

☐ Approved ☐ Approved as noted ☐ Rejected as noted

Response:

2 types of couplers (external snap coupler and split couplers) were found onsite for connecting two ADS N-12 plain end pipes. Either coupler can be used as long as manufacturer's recommendations are followed.

Split couplers need to be bound by 2" wide polyethylene tape per manufacturer's recommendation. The 3M tape product submitted via e-mail will work. If you are having issues getting the 3M product to site, below is the product number for the ADS-supplied product:

ADS 2" Black Filament Tape-1137KA
https://www.reinders.com/products/1137ka/

Answered by:	**Clint Green**		**4/24/20**
Name	Signature		Date

Note: Response to this RFI does not constitute authorization to perform a change to any Contract. The Requestor may proceed with the response only on the basis that the Requestor agrees that it is not a contract change. If the Requestor believes that the response does constitute a contract change, the Requestor shall immediately notify JDS. Work undertaken without JDS written authorization is at the Contractor's risk and expense.

REQUEST FOR INFORMATION

JDS RFI:	**VITGOLD-RFI-002**
Contractor RFI:	
Site Location: EAGLEGOLD	
Date Submitted: May 20, 2020	

Subject: Spur Lateral Drain off 4E	**Project Zone/Area: Heap Leach Phase 1B**
Contractor: JDS/Ewing	**Station/Location:**
Attention: Clint Green	**Discipline: Civil**

REQUEST

Related Drawings: **Forte Drawing CV-F003, DTL-F002, DTL-F003**	**Other Related Documents:**

Information Request/Description of Issue:

Requesting approval to collect a small amount of water into lateral drain 4E? The lined section of the interceptor ditch above the header underdrain is controlling the majority of flow. However there is still a small amount of water finding its way down the header drain.

Proposed Corrective Action

We propose excavating a spur trench from lateral drain 4E to the source of water in the interceptor ditch. This section of ditch will be constructed the same as all other lateral drains in detail 14 on drawing DTL-F003. The lower end will be installed the same as the typical primary drain detail 8 on drawing DTL-F002. The upper end of the pipe will be capped to ensure no large partials enter the drainage system. The upper end of the 20mm drain rock will not be wrapped in geotextile to ensure the water enters the drainage system. Rip rap will be utilized to cover the inlet end at a minimum thickness of 300mm.

Type of Change:	☐	Owner Change	☒	Clarification/Info	☒	Field Change
	☐	Vendor Change	☐	Design Change	☐	Other

Cost Impact:	
Schedule Impact:	

Requested by: Clint Abel		**May 20, 2020**
Name	Signature	Date

RESPONSE

☒ Approved ☐ Approved as noted ☐ Rejected as noted

Response:

The proposed corrective action is approved.

Answered by:

Name: Clint Green	Signature: 	Date: May 29, 2020

Note: Response to this RFI does not constitute authorization to perform a change to any Contract. The Requestor may proceed with the response only on the basis that the Requestor agrees that it is not a contract change. If the Requestor believes that the response does constitute a contract change, the Requestor shall immediately notify JDS. Work undertaken without JDS written authorization is at the Contractor's risk and expense.

REQUEST FOR INFORMATION

JDS RFI:	**VITGOLD-RFI-003**
Contractor RFI:	
Site Location: EAGLEGOLD	
Date Submitted: June 3, 2020	

Subject: Horizontal seams on slopes greater than 2.5:1	**Project Zone/Area: Heap Leach Phase 1B**
Contractor: JDS/Ewing	**Station/Location:**
Attention: Clint Green	**Discipline: Civil**

REQUEST

Related Drawings: Conceptual Panel Layout Ph 1B-FORTE DYNAMICS-6-11-20.pdf	**Other Related Documents:** **Technical Specifications – Geosynthetics** **3.1.7.1 Placement**

Information Request/Description of Issue:

Requesting additional information on the requirement to connect the liner end seams at 45 degrees. Will the liner on slopes greater than 2.5H:1V require a 45 degree angle connection as listed in the Technical Specifications?

Proposed Corrective Action

There were no 45° angle end seams utilized in Phase 1A, but this could've been due to the length of the material deployed. All horizontal seams have to be staggered to ensure good material is welded on both side of each end seam.

Type of Change:	☐	Owner Change	☒	Clarification/Info	☒	Field Change
	☐	Vendor Change	☐	Design Change	☐	Other

Cost Impact:	
Schedule Impact:	

Requested by: Clint Abel		**June 3, 2020**
Name	Signature	Date

RESPONSE

☐	Approved	☒	Approved as noted	☐	Rejected as noted

Response:

Liner already deployed and welded at 45-degree angled seams shall remain in area delineated in green on the attached exhibit already lined with LLDPE.

Based on the on-site 45-degree seam vs. horizontal seam destructive testing (peel & shear) results, horizontal seams shall be allowed on the side slopes for remainder of un-lined areas within Phase 1B footprint. Given the following conditions are met:

- **Horizontal seams must be staggered at least 10m apart at different elevations across the slope**
- **No Horizontal seams shall be within 10m of the toe or crest of a slope**
- **Upper geomembrane panel must be shingled over the lower geomembrane when placing horizontal seam on side slope**

Answered by: Clint Green

Name Clint Green	Signature	Date 6/11/2020

Note: Response to this RFI does not constitute authorization to perform a change to any Contract. The Requestor may proceed with the response only on the basis that the Requestor agrees that it is not a contract change. If the Requestor believes that the response does constitute a contract change, the Requestor shall immediately notify JDS. Work undertaken without JDS written authorization is at the Contractor's risk and expense.



NOTES

Panel Layout is conceptual only, and subject to change due to field conditions and on site supervisor's discretion

REV.	RECORD OF CHANGES	DATE	BY

LAYFIELD

PH IB CONCEPTUAL LAYOUT
EL4280

VICTORIA GOLD
YUKON

DWG. NUMBER

Quote No.	Project No. CT001401
DWG : 1 OF 1	SCALE : N.T.S.
DWN: MJ | CHKD: JW	APP'D:
DATE: 05/28/20	REVISION: A

REQUEST FOR INFORMATION

JDS RFI:	**VITGOLD-RFI-004**
Contractor RFI:	
Site Location: EAGLEGOLD	
Date Submitted: June 11, 2020	

Subject: ODF-Collection Pipe Spacing	**Project Zone/Area: Heap Leach Phase 1B**
Contractor: JDS/Ewing	**Station/Location:**
Attention: Clint Green	**Discipline: Civil**

REQUEST

Related Drawings: 109005-51103-03-CV-F005-Collection Piping Plan View	**Other Related Documents:** **Technical Specifications – Earthworks Rev. 0 Overliner Drain Fill**

Information Request/Description of Issue:

Alternative ODF specification, that still meets design criteria of maximum of 0.6 meters phreatic surface under normal leaching conditions.

Proposed Corrective Action

Decrease collection pipe spacing to meet design criteria with a lower permeability ODF.

Type of Change:	☐	Owner Change	☒	Clarification/Info	☒	Field Change
	☐	Vendor Change	☐	Design Change	☐	Other

Cost Impact:	
Schedule Impact:	

Requested by: Clint Abel		**June 11, 2020**
Name	Signature	Date

RESPONSE

☐	Approved	☒	Approved as noted	☐	Rejected as noted

Response:

- **ODF material of a minimum 1E-6 cm/s as tested onsite is allowed with the new collection pipe spacing of 7 meters on gentle slopes, and 10 meters on steeper slopes. Please see attached memo, revised drawings CV-F005, DTL-F001, and DTL-F002, as well as revised neat line MTO.**

Answered by: Clint Green

Name Clint Green	Signature	Date 6/11/2020

Note: Response to this RFI does not constitute authorization to perform a change to any Contract. The Requestor may proceed with the response only on the basis that the Requestor agrees that it is not a contract change. If the Requestor believes that the response does constitute a contract change, the Requestor shall immediately notify JDS. Work undertaken without JDS written authorization is at the Contractor's risk and expense.

APPENDIX 8
Well Decommissioning Reports

Well/Borehole Inspection & Decommissioning Record

Eagle Gold Project

WELL/BOREHOLE INFORMATION SUMMARY

Well / Borehole ID	Location Description	Type / Purpose	Install Date
MW09-AG1	Phase 1B	Standpipe Piezometer	2009
Well Depth / Water Depth	**Coordinates (UTM)**	**Instrumentation**	**Decommission Date**
16.448 meters	7101949.07 459425.296	None	21-Jan-20

INSPECTION/MEETING RECORD

Date	Purpose	Attendee	Attendee	Attendee	Attendee
Jan.21/20	Decommissioning	Clint Abel	Josh Smith	Jessica Wilkinson	

DECOMMISSIONING DESCRIPTION

CASING REMOVAL

Monument removed - casing cutoff 2.36 meters below OG

INSTRUMENTATION REMOVAL

None

PLUG MATERIAL

Bentonite

PLUG VOLUME

(1 1/2) 23 kg bags

DECOMMISSIONING PLAN

Step	Description	Followed?	Deviation From Plan
1	Measure water level (16.298)	Yes	No
2	Excavate 2 meters below finished grade	Yes	Excavaed 3.138 (2.36 below OG)
3	Cut PVC at bottom of Excavation	Yes	No
4	Fill PVC with bentonite	Yes	No
5	Backfill with blast rock	Yes	No
6			

PHOTOGRAPHS

Before Decommissioning



After Decommissioning



LIST ATTACHMENTS

Well/Borehole Inspection & Decommissioning Record

Eagle Gold Project

WELL/BOREHOLE INFORMATION SUMMARY

Well / Borehole ID	Location Description	Type / Purpose	Install Date
MW09-AG2	Phase 1B	Standpipe / Water sample	2009
Well Depth / Water Depth	**Coordinates (UTM)**	**Instrumentation**	**Decommission Date**
15.9	7101980.60 459784.60	None	1-Jan-20

INSPECTION/MEETING RECORD

Date	Purpose	Attendee	Attendee	Attendee	Attendee
1-Jan-20	Decommissioning	Clint Abel	Phil Emerson	Josh Smith	Andrew Balance

DECOMMISSIONING DESCRIPTION

CASING REMOVAL

Monument removed - PVC cut off 4.18 meters below original ground

INSTRUMENTATION REMOVAL

None

PLUG MATERIAL

Bentonite

PLUG VOLUME

(2) 23Kg bags

DECOMMISSIONING PLAN

Step	Description	Followed?	Deviation From Plan
1	Expose covered monument	yes	no
2	Excavate 2 meters below finished grade	yes	Excavated extra 2 meters
3	Cut PVC off at bottom of excavation	yes	no
4	Fill PVC with bentonite	yes	no
5	Backfill with blast rock	yes	no
6	Compaction - 785 haul trucks driving over backfill	yes	no

PHOTOGRAPHS

Before Decommissioning



After Decommissioning



LIST ATTACHMENTS

Well/Borehole Inspection & Decommissioning Record

Eagle Gold Project

WELL/BOREHOLE INFORMATION SUMMARY

Well / Borehole ID	Location Description	Type / Purpose	Install Date
MW10-AG3-A	Phase 1B	SP/ Monitoring Well	2010
Well Depth / Water Depth	**Coordinates (UTM)**	**Instrumentation**	**Decommission Date**
16.76 M	71020113 459680.9	None	January 15,2020

INSPECTION/MEETING RECORD

Date	Purpose	Attendee	Attendee	Attendee	Attendee
Jan.15/20	Decommissioning	Clint Abel	Jessica Wilkinson	Josh Smith	

DECOMMISSIONING DESCRIPTION

CASING REMOVAL

Monument remover - PVC cutoff 2.639 meters below OG

INSTRUMENTATION REMOVAL

None

PLUG MATERIAL

Bentonite

PLUG VOLUME

(1) 23 kg bag

DECOMMISSIONING PLAN

Step	Description	Followed?	Deviation From Plan
1	Measure water lever (10.315 m)	Yes	No
2	Excavate 2 m below finished grade	Yes	Excavaed 2.6 meters
3	Cut PVC at bottom of the excavation	Yes	No
4	Fill PVC with bentonite	Yes	No
5	Backfill with blast rock	Yes	Backfill Jan. 16/20
6			

PHOTOGRAPHS

Before Decommissioning		After Decommissioning
		

LIST ATTACHMENTS

Well/Borehole Inspection & Decommissioning Record

Eagle Gold Project

WELL/BOREHOLE INFORMATION SUMMARY

Well / Borehole ID	Location Description	Type / Purpose	Install Date
MW10-AG3-B	Phase 1B	Standpipe Piezometer	2010
Well Depth / Water Depth	**Coordinates (UTM)**	**Instrumentation**	**Decommission Date**
10.67	7102016 459674.8	None	15-Jan-20

INSPECTION/MEETING RECORD

Date	Purpose	Attendee	Attendee	Attendee	Attendee
Jan.15/20	Decommissioning	Clint Abel	Jessica Wilkenson	Josh Smith	

DECOMMISSIONING DESCRIPTION

CASING REMOVAL

Monument removed - PVC cutoff 2.659 meters below OG

INSTRUMENTATION REMOVAL

None

PLUG MATERIAL

Bentonite

PLUG VOLUME

(1/2) 23 kg bag

DECOMMISSIONING PLAN

Step	Description	Followed?	Deviation From Plan
1	Measure water level	Yes	No / blockage near surface
2	Excavate 2 meters below finished grade	Yes	Excavated 2.659 meters
3	Cut PVC at bottom of the excavation	Yes	No
4	Fill PVC with benonite	Yes	No
5	Backfill with blast rock	Yes	Backfilled Jan. 16/20
6			

PHOTOGRAPHS

Before Decommissioning



After Decommissioning



LIST ATTACHMENTS

APPENDIX 9
Field Memos

BGC ENGINEERING INC.
AN APPLIED EARTH SCIENCES COMPANY

Construction Tracking Field Memorandum CTFM-01

Client:	**Victoria Gold Corp**	**Project:**	**Eagle Gold Construction Support**
EPCM:	**JDS**	**Project No.**	**0792021**
From:	**Roy Morlan**	**Date:**	**June 28, 2018**
Copied:	**Troy Meyer; Dan Granda**	**Record:**	**CTFM-01**

Re: Material 2 Test Fills 01 and 02

1.0 INTRODUCTION AND OBJECTIVE

On June 26, 2018 BGC developed and oversaw a test fill to evaluate the engineering properties of crusher reject sand for use as Material 2 – Select Fill and to determine if loose lift thickness could be increased from 0.15 m to 0.03 m using a 6 ton compactor. The test fills were intended to simulate placement and compaction of the material over the HLF embankment pipe trench drain fill and, therefore, no vibration was used while compacting.

2.0 TEST FILL CONSTRUCTION AND EXECUTION

The test fill was performed on June 26, 2018. BGC's representative, Roy Morlan, developed the test fill and was present during the test fills execution. Two test fill pads were constructed. Material 2 – Test Fill 01 was placed in 0.3m loose lifts. Material 2 – Test Fill 02 was placed in 0.15 m loose lifts. The test fills were constructed and survey control was provided by Pelly Construction. Sampling and testing was performed by Tetra Tech. The following sections discuss the execution of the test fill.

2.1. Test Fill Materials

The material use in the test fill was waste product from the Neway crusher operation (referred to as reject sand). Gradation, moisture, and a standard proctor test was performed by Tetra Tech at their on-site field laboratory prior to placement of the material. The results from this testing are included in ***Attachment 1***. The material generally consists of a well graded sand with a maximum size of 10 mm and a fines content of approximately 10%. Standard proctor results reported a maximum dry density of 2,080 kg/m3 and an optimum moisture of 9.5 %.

2.2. Test Fill Foundation

An area on Eagle Pup Road formally used as an equipment parking yard was used as the test foundation. The foundation consisted of sandy, gravely soils which were well compacted by heavy equipment traffic. The foundation was flat and dry. The foundation was proof rolled using a loaded 400D Deere haul truck (***Photo 1***). No deflection was noted in the foundation.



Photograph 1: Loaded haul truck proof rolling test fill foundation surface.

2.3. Lift Placement

Lifts were placed by end dump material from the haul truck then spreading the material with a Link Belt track mounted excavator. Material 2 – Test Fill 1 was placed in one 0.3 m loose lift. Material 2 – Test Fill 02 was place in one 0.15 loose lift. Lift thickness was measured by Pelly's surveyor using a mobile station. Each test fill measured approximately 6m x 6m.

2.4. Moisture Conditioning

Moisture was not added to the material prior or during the test fill.

2.5. Compaction Testing and Settlement Surveying

To perform compaction tracking at the test fill a flat (approximately 2cm thick), hard rock was placed in the center of the lift and used as a monitoring point. Initial survey of the settlement monitoring points was collected using a GPS surveying rod. The entire test fill surface was then compacted with one cycle (2 pass) of a CAT CS54 B vibratory compactor with an effective drum weight of 5,760 kg. (***Photo 2***) No vibration was used while compacting. After completion of one compaction cycle, settlement was measured at the settlement points. This compaction/survey procedure was repeated for 4 full compaction cycles.



***Photograph 2*:** Compaction of 0.30 m lift.

Settlement data collected is included in ***Table 1***.

	Pass 1 (mm)	Pass 2 (mm)	Pass 3 (mm)	Pass 4 (mm)
Test Fill 01	80	50	20	10
Test Fill 02	90	50	10	0

2.6. In-situ Density and Moisture Testing

In-situ density and moisture testing was performed by Tetra Tech using a nuclear density gauge. Density and moistures reported by Tetra Tech are included in ***Table 2***. Tetra Tech's data report for this testing is included in ***Attachment 1***.

	Comp % SPD	Moisture (%)
Test Fill 01	96.5	6.5
Test Fill 02	95.0	6.1

Table 1: Density Reported by SGSCM

2.7. Field Testing Observational

Little surface yield was observed in the lifts after the initial compaction pass. Excavations through the compacted material lifts revealed a well compacted, well graded matrix with little void space. Moisture within the lift was spread evenly. No material degradation or pulverization was observed. (***Photo 3***)



Photograph 3: Excavation through the compacted Test Fill 01 lift.

3.0 CONCLUSIONS

The results of the test fill indicate that the crusher reject sand can achieve sufficient densities for use as Material 2 – Select Fill with a minimum of 3 passes of a minimum 6,000 kg compactor, with or without vibration, and in lifts of up to 0.30m. As the material's stockpiled moisture was approximately 3% below optimum moisture the addition of water would likely result in compaction properties greater than 95% SPD when compacting without vibration. BGC recommends the addition of moisture to achieve - 1%/+ 3% optimum moisture when compacting without vibration over the drain pipe trenches. All other areas where the material is used can maintain a moisture of +/- 2% (per the Technical Specifications) and should be placed using vibratory roller compaction.

Attachments:

Attachment 1 – Tetra Tech Test Reports

Attachment 2 – CAT CS54 B Specification Sheet.

ATTAHMENT 1

SIEVE ANALYSIS REPORT

ASTM C136 & C117

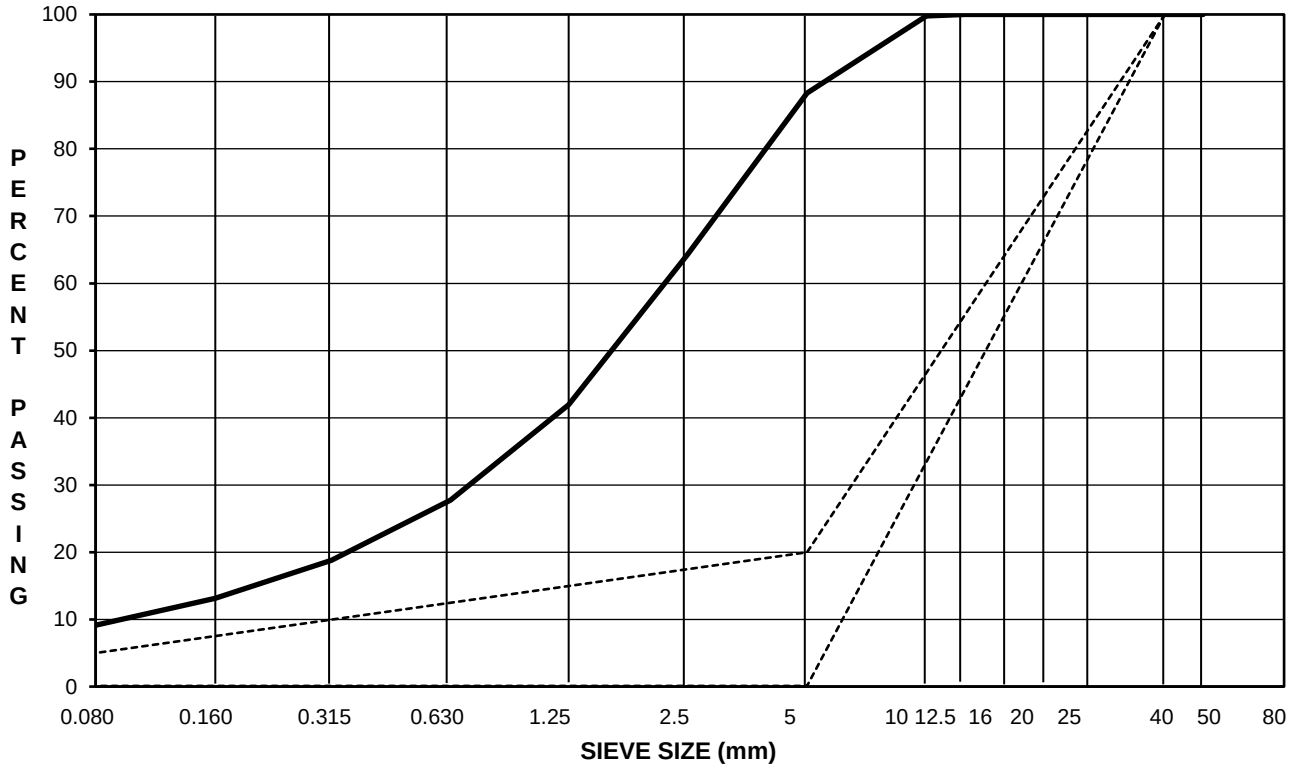
Project:	Eagle Gold Project	Sample Number:	SA01 - 17:30 hrs
Project No.:	704-ENG.WARC03532-01	Date Sampled:	June 9, 2018
Client:	JDS	Sampled By:	JP Tested By: JP
Attention:	Mr. Clint Abel/Dan Granda	Specification:	38mm Minus Drain Rock
Description:	Reject Sand from 38mm DRF	Fracture (2 faces):	N/A
Location:	Crusher Stacker Belt	Moisture Content:	6.8%

Aggregate Gradation (% Passing)

Sieve Size (*um*)	50000	40000	25000	20000	16000	12500	10000	5000	2500	1250	630	315	160	80
Upper Limit		100						20						5
Lower Limit		100						0.1						0.1
Test Result	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**88**	**64**	**42**	**28**	**19**	**13.1**	**9.1**

Remarks: REJECT SAND GRADATION

Reviewed By: _____ C.E.T.



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TETRA TECH

SIEVE ANALYSIS REPORT

ASTM C136 & C117

Project:	Eagle Gold Project	Sample Number:	SA02 - 15:45 hrs
Project No.:	704-ENG.WARC03532-01	Date Sampled:	June 18, 2018
Client:	JDS	Sampled By:	JP Tested By: JP
Attention:	Mr. Clint Abel/Dan Granda	Specification:	NA
Description:	Reject Sand from 38mm DRF	Fracture (2 faces):	N/A
Location:	Crusher Stacker Belt	Moisture Content:	5.0%

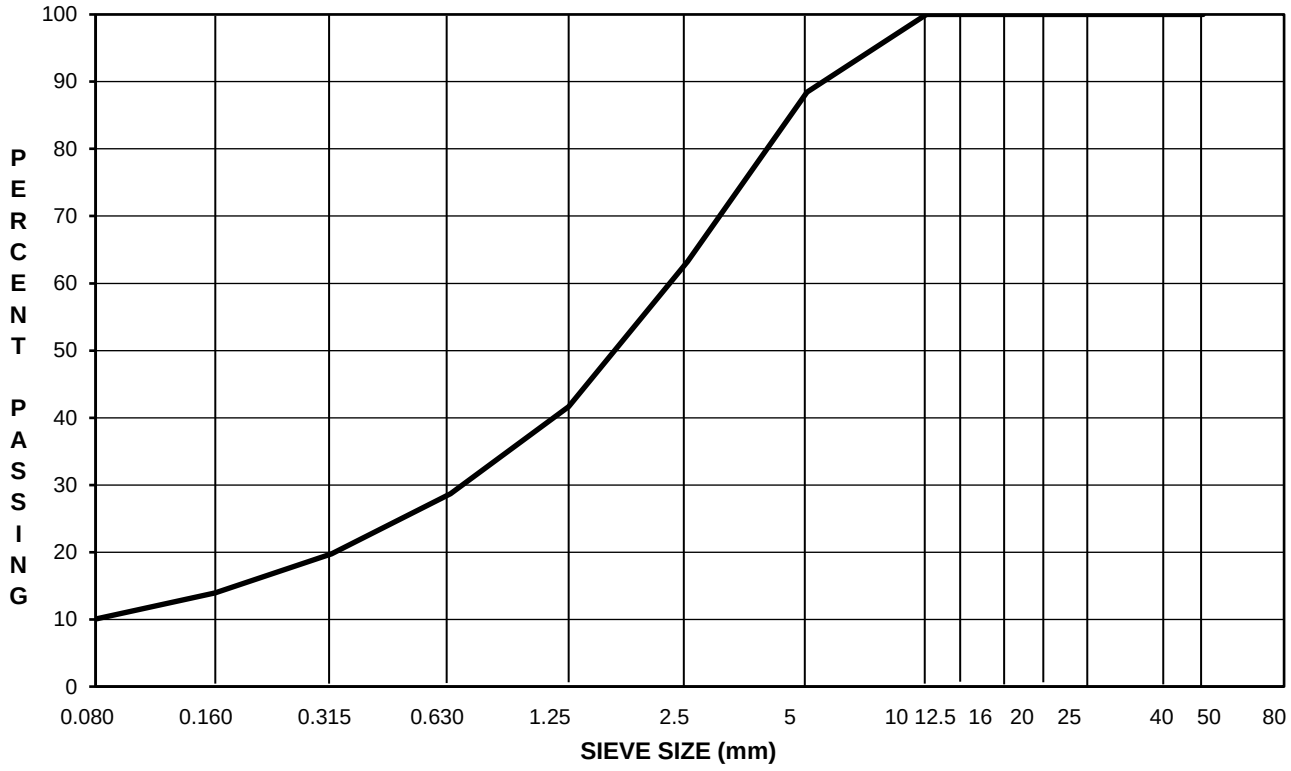
Aggregate Gradation (% Passing)

Sieve Size (*um*)	50000	40000	25000	20000	16000	12500	10000	5000	2500	1250	630	315	160	80
Upper Limit														
Lower Limit														
Test Result	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**88**	**63**	**42**	**29**	**20**	**13.9**	**10.1**

Remarks: REJECT SAND GRADATION

Test 2

Reviewed By: _____ C.E.T.



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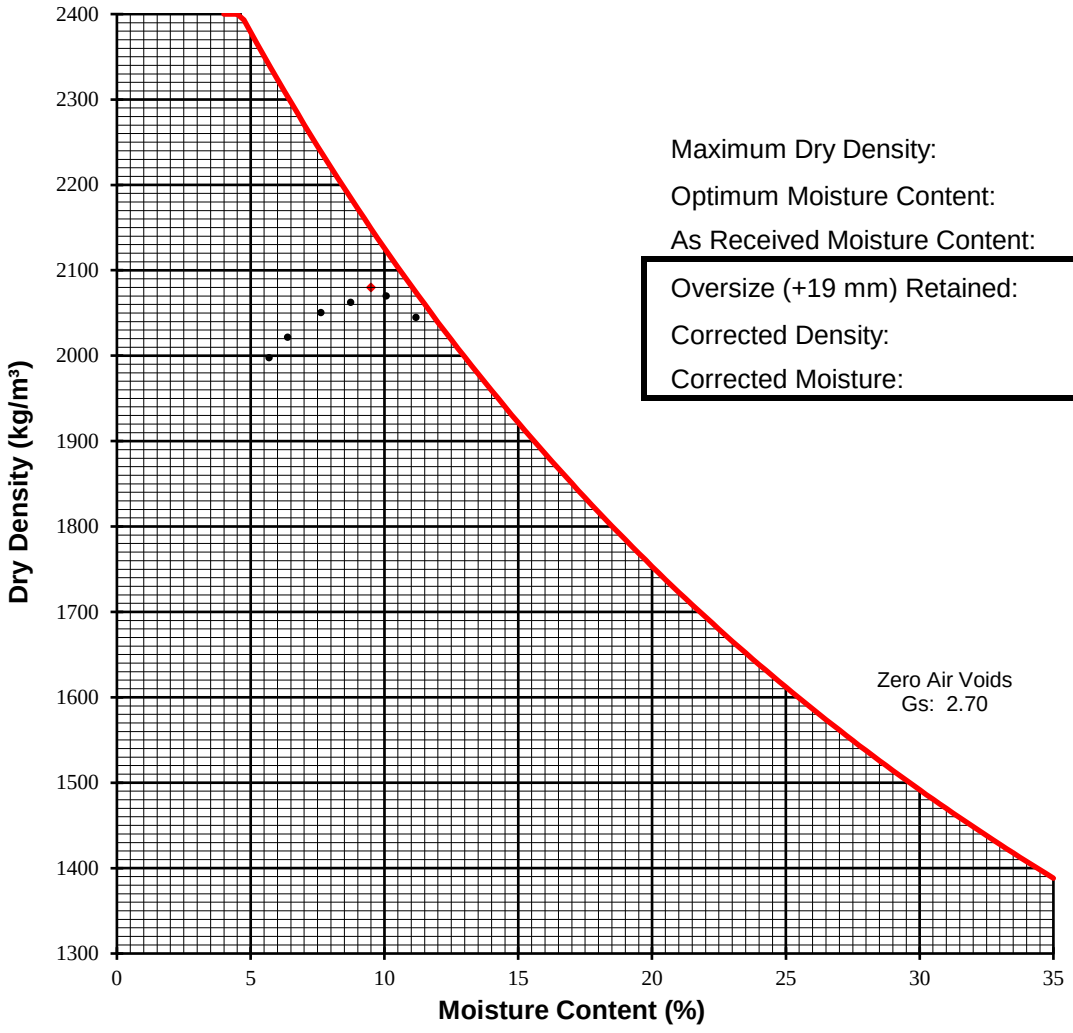
TETRA TECH

MOISTURE-DENSITY RELATIONSHIP (Proctor) REPORT

ASTM D698 Standard

Project:	2018 Dublin Gulch Project	Sample No.:	Reject Sand PR1
Client:	JDS/BGC	Sampled By:	JMP
Attention:	Clint/Roy	Sample Date:	June 22 2018
Project No.:	WARC-03235-05	Test Date:	June 23 2018
Description:	Reject Sand, contains some gravel, some silt	Preparation:	Moist
Source:	NCL Dublin Gulch reject Stockpile	Compaction:	Manual



Maximum Dry Density:	**2080**	kg/m³
Optimum Moisture Content:	**9.5**	%
As Received Moisture Content:	**5.7**	%
Oversize (+19 mm) Retained:		%
Corrected Density:	**2080**	%
Corrected Moisture:	**9.5**	%

Remarks: Overliner drain fill reject sand 10mm minus

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TETRA TECH

COMPACTION DENSITY TEST SUMMARY REPORT

ASTM Designation D6938

Project: Eagle Gold Project | **Test Apparatus:** Nuclear | **Troxler No:** 60841

QC Inspection & Testing | **Specified Compaction:** 95 % Std. Proctor Max. Dry Density

Project No.: WARC.03235-05 | **Specified Moisture** (MC)**:** As Below

Client: JDS Energy & Mining/BGC | **Temperature** **Air:** 18 ºC **Soil:** ºC

Attention: R.Morlan/D. Granda | **Date Tested:** 2018-06-27 **By:** J.Buyck

Contractor: Pelly Construction | **Construction Period:** DAYSHIFT

Soil Description: Type 2 Select Fill Material - SAND, trace silt (12.5 mm reject sand)

Material Usage/Zone: Proposed liner and pipe bedding

Date yyyy/mm/dd	**Test No.** / Probe (mm)	**Location:**	Depth to Grade (m)	Dry Density (kg/m³)	MC %	Max. Dry Density (kg/m³)	Opt. MC %	Comp % SPD
2018-06-27	**1** / 300	Method spec test of 150 mm of static rolled lift thickness	NA	1976	6.5	2080	9.5	**95.0**
2018-06-27	**2** / 300	Method spec test of 300 mm of static rolled lift thickness	NA	2007	6.1	2080	9.5	**96.5**

Remarks: Material placed and static rolled in two separate 150 mm and 300 mm lift thickness. Testing performed with R. Morlan present.

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ATTACHMENT 2

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CS54 Vibratory Soil Compactor

PHOTO **VIDEOS**








SPECIFICATIONS **BENEFITS & FEATURES** **COMPARE MODELS**

OVERVIEW

The CS54 Soil Compactor offers high compaction performance, speed and gradeability to maximize productivity while providing exceptional reliability and durability.

WEIGHTS

UNITS: **US** **METRIC**

Operating Weight - With Cab	10840.0 kg
Operating Weight - With ROPS/FOPS	10485.0 kg
Weight - Drum with Cab	5760.0 kg
Weight - Drum with ROPS/FOPS	5570.0 kg

OPERATING SPECIFICATIONS

Compaction Width	2134.0 mm
Ground Clearance	516.0 mm

Static Linear Load - With Cab	27.0 kg/cm
Static Linear Load - With ROPS/FOPS	26.1 kg/cm
Travel Speed - Maximum	11.1 km/h
Turning Radius - Inside Drum Edge	3.68 m

ENGINE

Gross Power	97.0 kW
Engine Model	Cat C4.4

DIMENSIONS

Drum Diameter	1534.0 mm
Drum Width	2134.0 mm
Height - With ROPS/FOPS or Cab	3.07 m
Overall Length	5.51 m
Overall Width	2.29 m
Wheel Base	2.9 m

VIBRATORY SYSTEM

Centrifugal Force - Maximum	234.0 kN
Centrifugal Force - Minimum	133.0 kN
Nominal Amplitude - High	1.8 mm
Nominal Amplitude - Low	0.85 mm

Variable Frequency Option Range	23.3-31 Hz (1,400-1,860 vpm)
Vibratory Frequency - Standard	31/34 Hz (1,860/2,040 vpm)

TIRES

Tires	23.1 × 26 8-ply flotation

SERVICE REFILL CAPACITIES

Fuel Tank Capacity	200.0 l

BGC ENGINEERING INC.
AN APPLIED EARTH SCIENCES COMPANY

Construction Tracking Field Memorandum CTFM-02

Client:	**Victoria Gold Corp**	**Project:**	**Eagle Gold Construction Support**
EPCM:	**JDS**	**Project No.**	**0792021**
From:	**Roy Morlan**	**Date:**	**June 30, 2018**
Copied:	**Troy Meyer; Dan Granda**	**Record:**	**CTFM-02**

Re: Material 7 Test Fill 01

1.0 INTRODUCTION AND OBJECTIVE

On June 30, 2018 BGC developed and oversaw a test fill to evaluate the engineering properties of Material 7 – Compacted Rockfill for use in the embankment construction. The rockfill was generated from the ADR excavation mostly from ripping and blasting bedrock.

2.0 TEST FILL CONSTRUCTION AND EXECUTION

The test fill was performed on June 30, 2018. BGC's representative, Roy Morlan, developed the test fill and was present during the test fills execution. Material 7 – Rockfill was placed in 0.9m loose lifts. The test fills were constructed and survey control was provided by Pelly Construction. Material sampling and testing was performed by Tetra Tech. Water replacement density testing was overseen by BGC. The following sections discuss the execution of the test fill.

2.1. Test Fill Materials and Borrow Description

The rockfill used in the test fill was generated by Pelly construction as borrow from excavation of the ADR plant foundation. Gradation testing was performed on the finer (3" minus) fraction of the material by Tetra Tech. Mid-fraction material (3" to 8") was estimated by Tetra Tech by scalping this material from the 3" sample. Larger fraction (>8") was visually estimated. Moisture content for the finer fraction of material was analyzed by Tetra Tech. The results from this testing are included in ***Attachment 1***. The material generally consists of a well graded gravel and sand matrix with approximately 30% rocks greater than 8" and a maximum size of 23". Moisture content of the fine fraction was reported as 3.2 %.

The rock used in the test fill was derived from a mostly quartzite source, which is the predominant rock type at this borrow. The quartzite material properties are mostly fine grained, orange brown, some banding present, slightly weathered (W2), strong to very strong (R4 to R5), and hard (H3).

Although not used in the test fill, zones of a weaker phyllitic rock (potentially phyllite or phyllonite) are also present within this borrow. This material is platy, very fine grained (aphantic), micaceous, has a significant amount of graphite, is gray, slightly weathered (W2), with rock quality ranging from (R1 to R3), and varies from soft (H6) to moderate hard (H4). The general recommended approach will involve mixing the stronger quartzite rock with the weaker phyllitic rock to produce an acceptable material for embankment fill. Additional test fills will be necessary to evaluate rock fill with significant portions of phyllitic rock. Alternatively, the weaker phyllitic material could be sorted and used as Material 3 fill.

2.2. Test Fill Foundation

An area on top of the ADR Material 3 Stockpile was used as the test location because it was close to the source material and relatively traffic free (***Figure 1***). The test location was hard, dry and previously compacted by heavy equipment traffic. However, the location was not flat so a leveling pad was constructed for the test fill. The leveling pad was constructed with Material 7 rockfill placed in an approximately 0.5m lift and compacted using a CAT CS68 B vibratory compactor and 4 passes. (***Photo 1***). The final foundation was flat, dry, and dense. No deflection from roller passes was noted in the foundation after compaction.

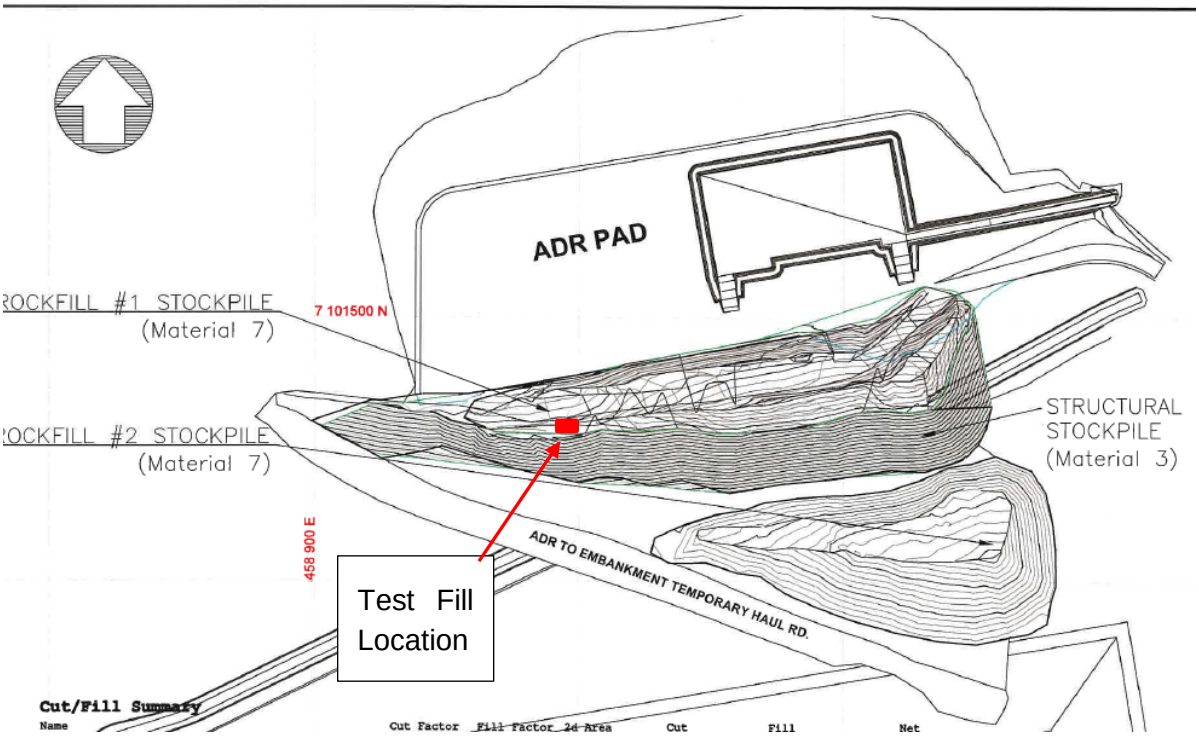

Figure 1: Test Fill Location



Photo 1: Construction of the test fill foundation leveling lift.

2.3. Test Fill Lift Placement

The test fill lift was placed by a Link Belt track mounted excavator directly from the stockpile. Material 7 – Test Fill 1 was placed in one 0.9 m loose lift. Lift thickness was measured by Pelly's surveyor using a mobile station. The test fill measured approximately 8m x 6m.

2.4. Moisture Conditioning

Moisture was not added to the material prior or during the test fill. However, moisture conditioning is generally encouraged during rock fill placement to facilitate compaction and will likely be necessary.

2.5. Compaction Testing and Settlement Surveying

To perform compaction tracking three steel plates were placed in a row down the center of the lift and used as a monitoring points (***Figure 2***). Initial survey of the settlement monitoring points was collected using a GPS surveying rod. The entire test fill surface was then compacted with one cycle (1 forward pass and 1 reverse pass) of a CAT CS68 B vibratory compactor with an effective

drum weight of 8,920 kg. After completion of one compaction cycle, settlement was measured at the settlement points. This compaction/survey procedure was repeated for 4 full compaction cycles.

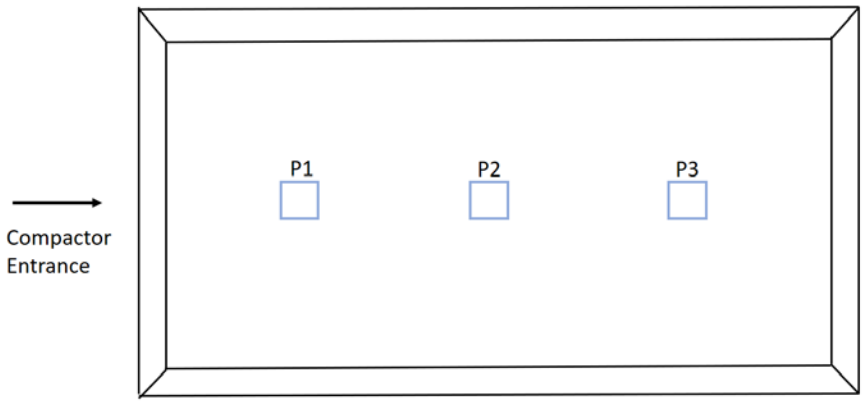

***Figure 1*:** Approximation of test fill pad and survey points

Settlement data collected is included in ***Table 1***. A settlement graph is shown in ***Figure 3***.

	Pre-Compaction	Pass 1	Pass 2	Pass 3	Pass 4
Survey Point 1 (P1)	950.40 m	950.37 m	950.35 m	950.33 m	950.32 m
Survey Point 2 (P2)	950.55 m	950.46 m	950.46 m	950.43 m	950.43 m
Survey Point 3 (P3)	950.59 m	950.49 m	950.47 m	950.46 m	950.45 m

Table 1: Survey elevation data collected during settlement tracking.

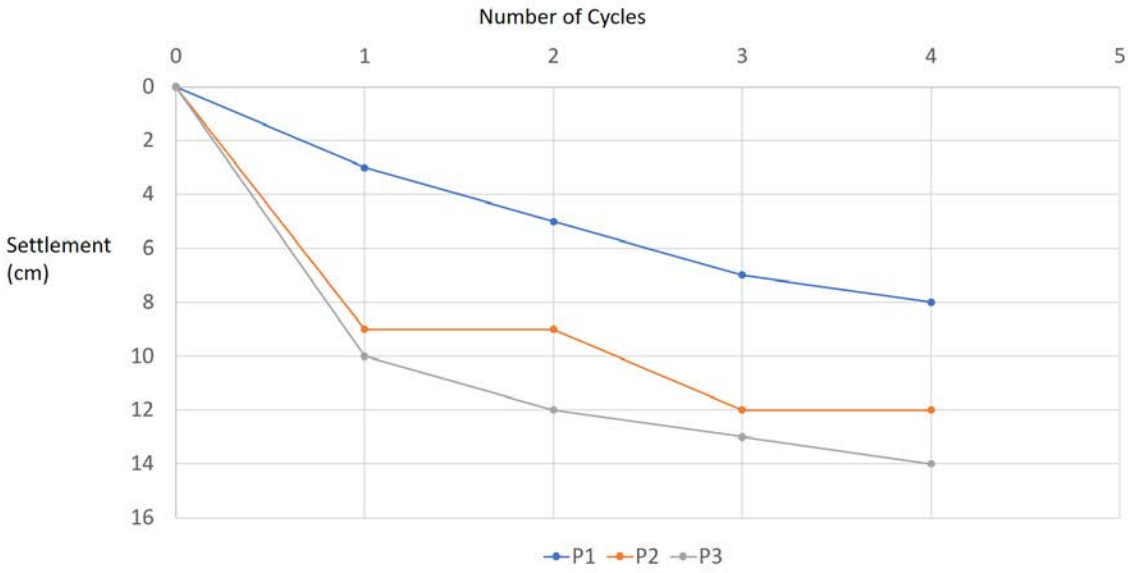

***Figure 3*:** Settlement recorded for each cycle.

2.6. In-situ Density and Moisture Testing

In-situ density and moisture collected by Tetra Tech

In-situ density and moisture testing was collected for reference by Tetra Tech using a nuclear density gauge. Results from nuclear density gauge testing on rockfill are known to be unreliable due to the presence of large, dense rocks and void spaces caused by displacement of rocks when hammering the steel rod. Therefore, these tests were performed for reference only. Water content was also analyzed by Tetra Tech in their field laboratory from a sample of the rockfill's finer material fraction (>3"). Density and moistures reported by Tetra Tech are included in ***Table 2***. Tetra Tech's data report for this testing is included in ***Attachment 1***.

	Dry Density (kg/m^3)	Moisture (%)
Nuclear Gage Test 1	2224	4.6
Nuclear Gage Test 2	2137	5.0
Standard Lab Testing	NA	3.2%

Table 2: Tetra Tech testing results

Water Replacement Test

A water replacement test was performed to determine the density of the compacted soil (***Photo 2 and 3***). A test pit was dug in the compacted lift. Material excavated from the pit was placed in three super sacks and weighed using Pelly's Terex Crane RT780 crane. The test pit was lined with 60 mil poly urethane liner and filled with water. The volume of water used was recorded and the density determined using the weight of the material excavated and the volume of the test pit.

The weight of the material was reported as 2,676 kg and volume of the test pit was determined to be 1.33 cubic meters. The density of the compacted rockfill was determined to be 2,012 kg/m^3 wet density and an estimated 1,965 kg/m^3 dry density assuming 70% rock smaller than 8".



Photo 2: Volume determination using water.



Photo 3: Super sacks with material excavated for the water replacement test.

2.7. Field Testing Observational

Little surface yield was observed in the lifts after the initial compaction pass. Excavations through the compacted material lifts revealed a well compacted, well graded matrix with little void space. Moisture within the lift was spread evenly. Rock was predominantly supported by the sandy gravel matrix. No material degradation or pulverization was observed. (***Photo 4***)



Photo 4: Compacted rockfill observed in the test fill trench cut.

3.0 CONCLUSIONS

The results of the test fill indicate that the rockfill produced from a mostly quartzite source at the ADR borrow can achieve sufficient compaction with a minimum of 4 cycles (1 forward and 1 reverse pass per cycle) of a minimum 9,000 kg compactor with vibration, and in lifts of up to 0.90m. These results were obtained with a stockpile moisture of 3.2% within the fill's fine fraction matrix.

BGC recommends that this criteria be used for placement and compaction of the rockfill within the embankment. If rock size and/or rock type, or general gradation varies significantly within this material an additional test fill will be required. If moisture content of the rockfill is below 3.2 % the Engineer may require additional moisture to be added before placement. Overly wet material may require the removal of moisture before placement. The Engineer will inspect the rockfill material during borrowing or placement to make these determinations.

As the rockfill generated from the ADR borrow area is variable due to the presence of weaker zones of phyllitic material, BGC recommends that the above criteria be used on rockfill produced from the zones of harder quartzite formations, which are more predominant at this borrow. Small zones of phyllitic material should be blended within the quartzite rockfill before use. Phyllitic material should not be allowed to be placed in a manner that would create lifts or zones within a lift composed of predominately weaker phyllitic material. Since these zones are more prone to material breakdown and develop a finer matrix they may be sorted and re-stockpiled for use as Material 3 – Structural Fill. A sperate test fill should be performed to determine if these phyllitic materials can be used as the predominant component of a Material 7 lift.

Attachments:

Attachment 1 – Tetra Tech Test Reports

Attachment 2 – CAT CS64 B Specification Sheet.

ATTACHMENT 1

MOISTURE CONTENT TEST RESULTS

ASTM D2216

Project:	Eagle Gold Project	Sample No.:	SA1
Project No.:	704-WARC03235-01	Date Tested:	June 29, 2018
Client:	JDS/BGC	Tested By:	JB
Address:	Roy Morlan	Page:	1 of 1

B.H. Number	Sample Number	Moisture Content (%)	Visual Description of Soil
N/A	SA1	3.2	Blasted Quartz Bedrock

Reviewed By: _____ C.E.T.

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TETRA TECH

COMPACTION DENSITY TEST SUMMARY REPORT

ASTM Designation D6938

Project: Eagle Gold Project | **Test Apparatus:** Nuclear | **Troxler No:** 60841

QC Inspection & Testing | **Specified Compaction:** 98 % Std. Proctor Max. Dry Density

Project No.: WARC.03235-05 | **Specified Moisture** (MC)**:** As Below

Client: JDS Energy & Mining/BGC | **Temperature** **Air:** 14 ºC **Soil:** ºC

Attention: R.Morlan/D. Granda | **Date Tested:** 2018-06-29 **By:** J. Buyck

Contractor: Pelly Construction | **Construction Period:** DAYSHIFT

Soil Description: Test Pad - Rock Fill Type 7 (Blasted Quartz)

Material Usage/Zone: Method Spec Test Pad near ADR Plant

Date yyyy/mm/dd	**Test No.** Probe (mm)	**Location:**	Depth to Grade (m)	Dry Density (kg/m³)	MC %	Max. Dry Density (kg/m³)	Opt. MC %	Comp % SPD
2018-06-29	**1** 300	Method Spec Test 1 - surface of test fill	Gr	2224	4.6	See remarks		
2018-06-29	**2** 300	Method Spec Test 2 - surface of test fill rotated 180 degrees	Gr	2045	6.3			
1900-01-00	**3** 300	Method Spec Test 1 - surface of test fill	0.5	2137	5.0			
1900-01-00	**4** 300	Method Spec Test 2 - surface of test fill rotated 180 degrees	0.5	2138	4.5			

Remarks: Densities provided under supervision of Roy Morlan. The results were found to be inconsistent due to coarseness of the Type 7 rock fill material.

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TETRA TECH

ATTACHMENT 2

B-Series
CS

Smooth Drum
Vibratory Soil Compactors



Comfort to Operate with Confidence

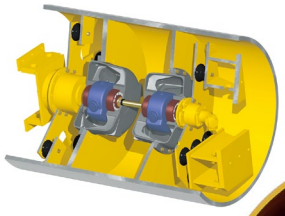
- NEW • *Comfortable redesigned cab with best-in-class climate control, multi-position windows*
- NEW • *Control console and display are integrated with pivoting seat* (optional deluxe cloth seat available)*
- NEW • *Display provides instrumentation data and diagnostics at a glance**
- • *Exceptional visibility to tires and drum edge*
- NEW – *Larger mirrors for enhanced rear visibility*
- NEW – *Narrower rear frame*
- NEW • *Optional light package upgrade provides four additional lights for excellent low light visibility*

Do More

- NEW • *Exclusive Cat® dual pump propel system with electronic control† provides:*
  - *– Exceptional traction and gradeability*
  - *– Plenty of power for leveling blade*
- *Optional equipment:*
  - *– Leveling blade*
  - *– Oval pad or square pad shell kit*

Work Smarter with Optional Compaction Measurement Technology

- NEW • *Cat Compaction Control*
  - *– Factory installed, dealer supported; integrated with machine for better protection from theft, vandalism*
  - *– Two sensor options available:*
    - NEW *- Machine Drive Power (MDP): exclusive Cat technology, rolling resistance-based*
    - *- Compaction Meter Value (CMV), accelerometer-based*
  - *– Mapping/Positioning option*
    - *- SBAS GNSS; upgradeable to RTK*
    - *- Includes seperate display, GNSS antenna*



Cat® Pod-style Vibratory System



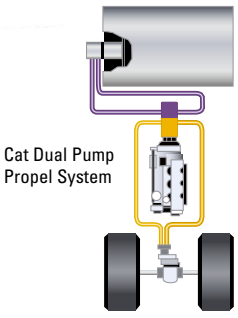
Cat Compaction Control with GNSS Mapping (SBAS)

Achieve Quality Compaction Faster

- • *Enhanced compaction force*
- NEW – *More weight at the drum*
- NEW – *Best-in-class amplitude*
- NEW • *Enhanced propel system with electronic control for better performance†*
- NEW • *Standard technology automates functions that enable high quality and uniformity:*
  - *– Automatic Speed Control†*
  - *– Auto-vibe*

Best Value Available

- • *Designed for easy maintenance, long service intervals*
- • *High reliablity due to robust design*
- • *Powerful and efficient engine*
  - *– Meets emissions standards where applicable*
  - NEW *– Reduces fuel burn when Eco-mode is used*
  - *– Self-monitors and alerts operator to abnormal engine performance*
- • *Highest resale value in the industry*



Cat Dual Pump Propel System

* In some markets, this feature available as an option on the CS54B.
† In some markets, this feature not available on the CS54B.

B-Series: CS Vibratory Soil Compactor Specifications

Model*	Operating Weight**	Weight at Drum	Drum Width	Engine†	Rated Power†
CS54B	10 555 kg (23,265 lb)	5880 kg (12,959 lb)	2130 mm (84")	C4.4 with ACERT	98 kW (131 hp)
CS56B	11 500 kg (25,346 lb)	6350 kg (13,990 lb)	2130 mm (84")	C4.4 with ACERT	117 kW (157 hp)
CS64B	12 055 kg (26,569 lb)	7120 kg (15,690 lb)	2130 mm (84")	C4.4 with ACERT	98 kW (131 hp))
CS66B	12 360 kg (27,245 lb)	7355 kg (16,214 lb)	2130 mm (84")	C4.4 with ACERT	117 kW (157 hp)
CS68B	14 325 kg (31,572 lb)	9150 kg (20,164 lb)	2130 mm (84")	C4.4 with ACERT	117 kW (157 hp)
CS74B	16 000 kg (35,264 lb)	10 620 kg (23,410 lb)	2130 mm (84")	C4.4 with ACERT	129.5 kW (173.7 hp)
CS76B	17 445 kg (38,450 lb)	12 190 kg (26,868 lb)	2130 mm (84")	C4.4 with ACERT	129.5 kW (173.7 hp)
CS78B	18 700 kg (41,214 lb)	13 440 kg (29,626 lb)	2130 mm (84")	C4.4 with ACERT	129.5 kW (173.7 hp)

Vibratory System

Frequency	*Standard High Amp*	*Eco-mode High Amp*	*Optional Variable Frequency*
CS54B, 56B, 64B, 66B, 68B	30.5 Hz (1830 vpm)	27.7 Hz (1664 vpm)	23.3 – 30.5 Hz (1400 – 1830 vpm)
CS74B, 76B, 78B	28 Hz (1680 vpm)	25.45 Hz (1527 vpm)	23.3 – 28 Hz (1400 – 1800 vpm)

Nominal Amplitude	*High*	*Low*
CS54B, 64B	1.9 mm (0.075")	0.95 mm (0.037")
CS56B, 66B, 68B, 74B, 76B, 78B	2.1 mm (0.083")	0.98 mm (0.039")

* Not all models are available in all markets.
** Operating Weights are approximate and include ROPS/FOPS cab, AC, coolant, lubricants, full fuel tank and 80 kg (175 lb) operator.
† In some markets certain models are equipped with C6.6 engine with ACERT. Rated Power can vary slightly by market.

Cat® Compaction Control Comparison - MDP and CMV

Feature	Machine Drive Power (MDP)	Compaction Meter Value (CMV)	Comment
Measurement Depth	30 - 60 cm (12 - 24 in)	1 - 1.2 m (3.3 - 4 ft)	Systems measure different depths, volumes
Correlates w/portable measurement devices	✔		Gives you confidence to move on
Usable on smooth drum or padfoot shell	✔		MDP is only technology for padfoot
Usable on granular or cohesive material	✔		CMV does not work on cohesive
Measures with or without vibration	✔		CMV disturbs soil as it is measuring
Exclusive Cat technology	✔		MDP only available from Caterpillar

The Cat® Advantage - Single Source Provider

	Cat Dealer	Competitive Dealer	Comment
Convenient worldwide dealer locations	✔		More than our 5 largest competitors combined
Engine service	✔		Cat machines feature Cat engines
Machine service	✔	✔	
Service technician trained for paving equipment	✔		Cat technicians trained on Cat machines
24/7/365 parts availability on most service parts	✔		Long lead times for competitive OEM parts
New OEM parts	✔		Competition offers inferior aftermarket parts
Reconditioned OEM parts	✔		Rebuilt to OEM spec by Cat Reman
Available financing options	✔		Available through Cat Financial
Application expertise	✔		Personnel understand the paving business
Machine rental	✔		Keeps your capital expense low
Products with high resale value	✔		Durable Cat machines built to last

For more complete information on Cat products, dealer services, and industry solutions, visit us on the web at www.cat.com/paving

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QEXQ1567-02 (11-12)

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BGC ENGINEERING INC.
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Construction Tracking Field Memorandum CTFM-03

Client:	**Victoria Gold Corp**	**Project:**	**Eagle Gold Construction Support**
EPCM:	**JDS**	**Project No.**	**0792021**
From:	**Roy Morlan**	**Date:**	**August 5, 2018**
Copied:	**Troy Meyer; Dan Granda**	**Record:**	**CTFM-03**

Re: Material 3 Test Fill 01 and 02

1.0 INTRODUCTION AND OBJECTIVE

On July 27, 2018 BGC developed and oversaw two test fills to evaluate the engineering properties of Material 3 – Structural Fill for use in the embankment construction. The material was generated from the ADR excavation.

2.0 TEST FILL CONSTRUCTION AND EXECUTION

BGC's representative, Roy Morlan, developed the test fills and was present during the execution. Two tests were conducted using Material 3 – Structural Fill. The test fills were constructed and surveyed by Pelly Construction. Material sampling and testing was performed by Tetra Tech. The following sections discuss the execution of the test fill.

2.1. Test Fill Materials and Borrow Description

The material used in the test fills was generated by Pelly as borrow from excavation of the ADR plant foundation and the area labeled as ADR West. Gradation testing was performed on the finer (3" minus) fraction of the material by Tetra Tech. Mid-fraction material (3" to 8") was estimated by Tetra Tech by scalping this material from the 3" sample. Moisture content for the finer fraction of material was analyzed by Tetra Tech. The results from this testing are included in ***Attachment 1***. The material generally consists of a well graded gravel and sand matrix with approximately 15% rock between 3" and 8". Moisture content was measured at approximately 5%. (***Photograph 1***)



Photograph 1: Photograph of loose material used in both test fills.

The 3” to 8” rocks in the test fill material were mostly quartzite, which is the predominant rock type at this borrow. The quartzite material properties are mostly fine grained, orange brown, some banding present, slightly weathered (W2), strong to very strong (R4 to R5), and hard (H3). Rocks were resistant to scratching and broke after several blows with a hammer (***Photograph 2***).



Photograph 2: Example of material between 3” and 8”.

Phyllitic material is present in the Material 3 mixture. The phyllitic material content is approximately 20 to 30% and mostly present in particle sizes less than 0.5”. This material is platy, very fine grained (aphanitic), micaceous, has a significant amount of graphite, is gray, slightly weathered (W2), with rock quality ranging from (R1 to R3), and varies from soft (H6) to moderate hard (H4).

2.2. Test Fill Foundation

An area on top of the ADR Material 3 Stockpile was used as the test location because it was close to the source material and relatively traffic free (***Figure 1***). The test location was hard, dry and previously compacted by heavy equipment traffic. No deflection from roller passes was noted in the foundation.

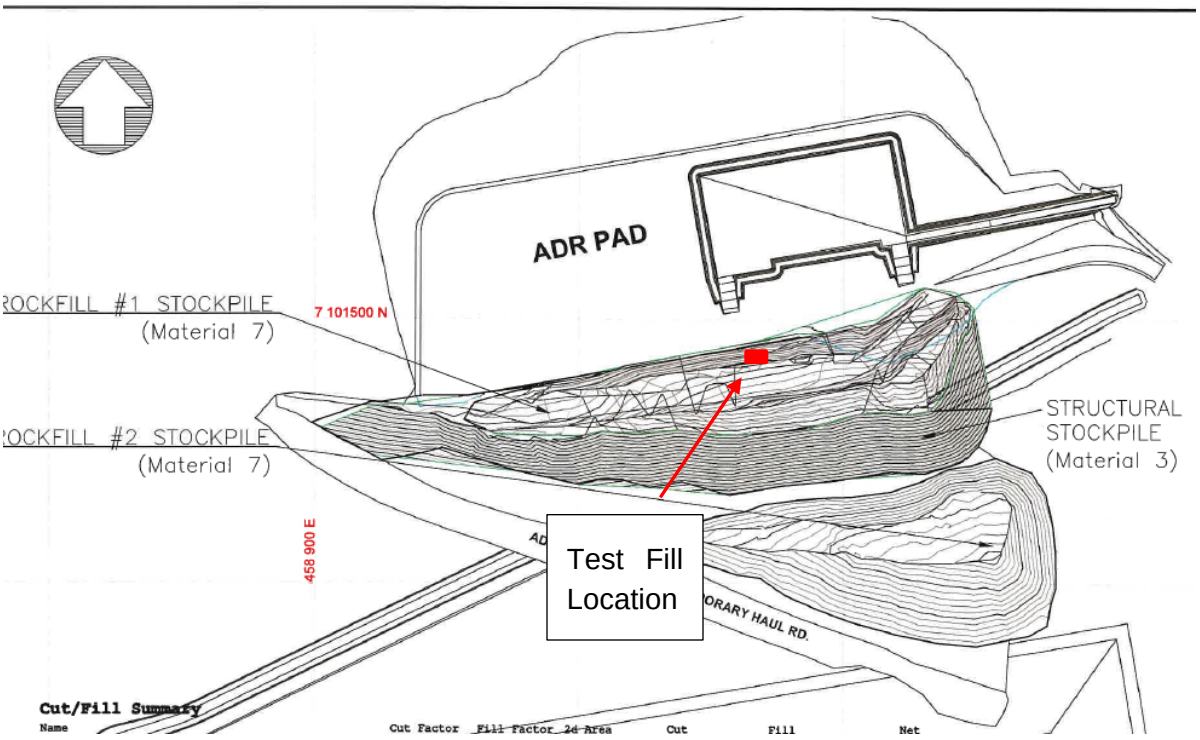

Figure 1: Test Fill Location

2.3. Test Fill Lift Placement and Compaction

Both test fills were constructed by pushing the material from the stockpile to the prepared foundation using a CAT D7 track mounted dozer. For Test Fill 01 material was placed in a 0.5m loose lifts. For Test Fill 02 material was placed in a 0.75 m loose lift. Lift thickness was measured by Pelly's surveyor using a mobile station. The test fill measured approximately 8m x 6m.

2.4. Moisture Conditioning

Moisture was not added to Test Fill 01 or Test Fill 02.

2.5. Test Fill 01 Compaction and Settlement Measurements

To perform compaction tracking three steel plates were placed in a row down the center of the lift and used as a monitoring points (***Figure 2***). Initial survey of the settlement monitoring points was collected using a GPS surveying rod. Test fill surfaces were compacted with one cycle (1 forward pass and 1 reverse pass) of a CAT CS78 B vibratory compactor with an effective drum weight of 13,440 kg. After completion of one compaction cycle, settlement was measured at the settlement points. This compaction/survey procedure was repeated for 3 full compaction cycles for Test Fill 01 and 4 full cycles for Test Fill 2. Specifications for the CAT CS78 B compactor are included in ***Attachment 1***.

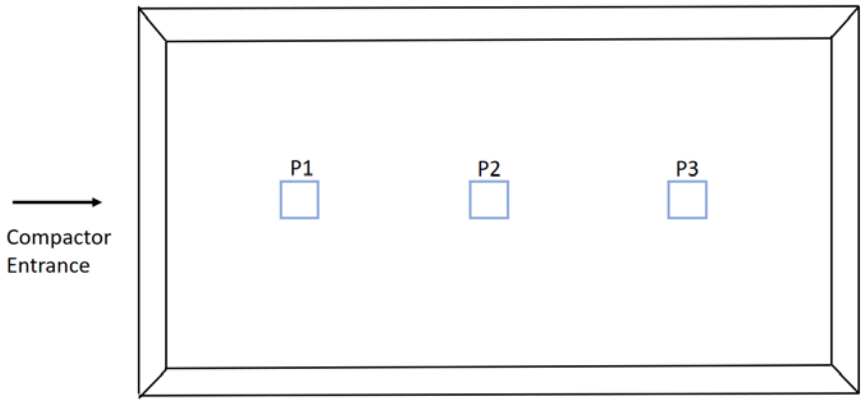

Figure 2**:** Approximation of test fill pad and survey points

Settlement data collected is included in ***Table 1***. Settlement graphs are shown in ***Figure 3 and 4***.

	Pre-Compaction (m)	Pass 1 (m)	Pass 2 (m)	Pass 3 (m)	Pass 4 (m)
Test Fill 01					
Survey Point 1 (P1)	948.80	948.79	948.76	948.75	NA
Survey Point 2 (P2)	948.80	948.79	948.75	948.74	NA
Survey Point 3 (P3)	948.79	948.76	948.75	948.74	NA
Test Fill 02					
Survey Point 1 (P1)	949.10	949.07	949.07	949.05	949.05
Survey Point 2 (P2)	949.08	949.03	949.03	949.00	949.01
Survey Point 3 (P3)	949.02	948.97	948.96	948.94	948.94

Table 1: Survey elevation data collected during settlement tracking.

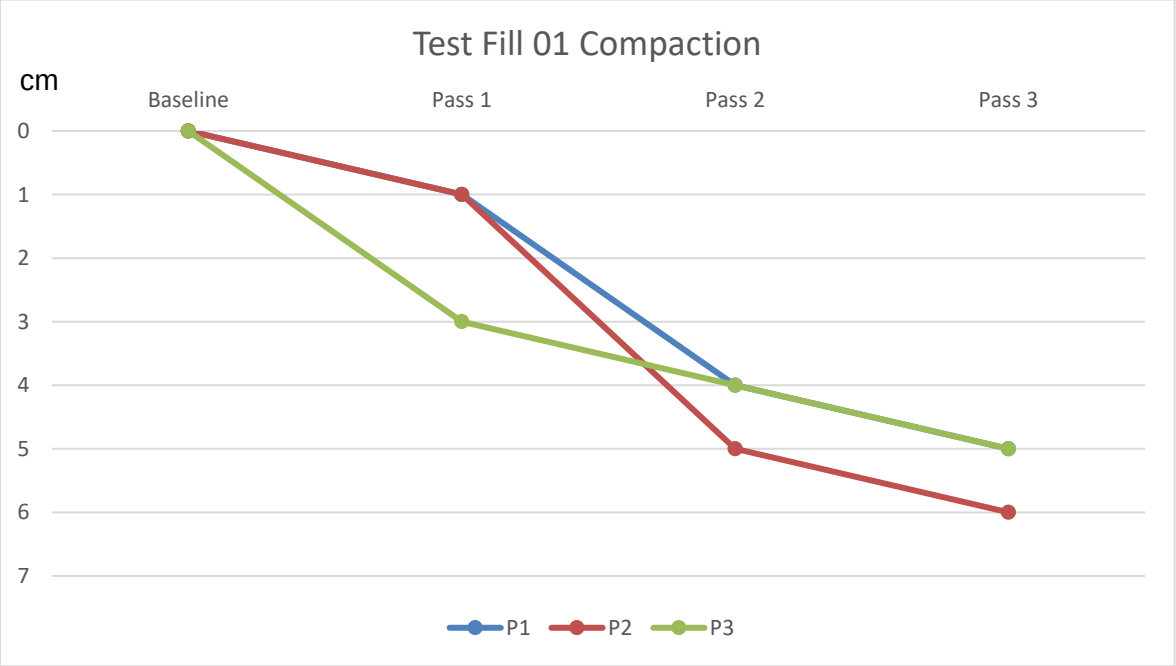

Figure 3: Test Fill 01 settlement recorded for each cycle.

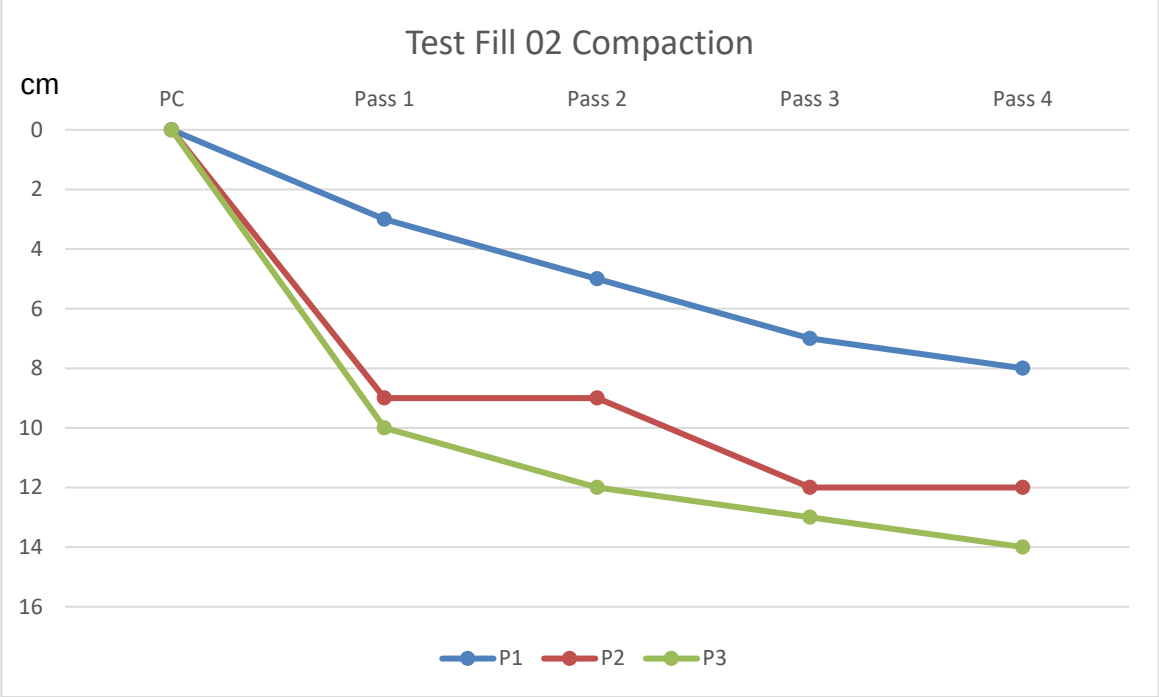

Figure 4: Test Fill 02 settlement recorded for each cycle.

2.5.1. In-situ Density and Moisture Testing

In-situ density and moisture testing was collected by Tetra Tech using a nuclear density gauge. Results were compared to the proctor for this material performed by Tetra Tech. The sample was scalped at material greater than 3". A rock correction was applied to the results by Tetra Tech. Optimum moisture was reported as 6.5% and density at this moisture was reported as 2,270 kg/m^3. Density and moistures reported by Tetra Tech are included in ***Table 2***. Tetra Tech's data report for this testing is included in ***Attachment 1***.

	Depth (cm)	Dry Density (kg/m^3)	Moisture (%)
Test Fill 01			
Test 1 (uncompacted)	30	2037	5.3
Test 2 (1 pass cycle)	30	2235	6.0
Test 3 (2 pass cycles)	30	2286	5.6
Test 4 (3 pass cycles)	30	2281	5.9
Test Fill 02			
Test 1 (uncompacted)	30	2,015	5.0
Test 2 (1 pass cycle)	30	2,160	5.4
Test 3 (2 pass cycles)	30	2,272	5.4
Test 4 (3 pass cycles)	30	2,271	5.2
Test 5 (4 pass cycles)	30	2,236	5.1
Test 6 (4 pass cycles)	70	1,812	5.3

Table 2: Tetra Tech nuclear density gauge testing results

2.5.2. Field Testing Observations

Some surface yield was observed in both test fills after the initial compaction pass. Excavations through each compacted test fill revealed a well compacted, well graded matrix with little void space. Moisture within the lift was spread evenly. Rock was predominantly supported by the sandy gravel matrix. No material degradation or pulverization was observed. A trench was photograph of Test Fill 01 is included as ***Photo 3***. A trench wall photograph of Test Fill 02 is included as ***Photo 4***.



Photo 3: Trench wall photograph from Test Fill 01.



Photo 04: Trench wall photograph from Test Fill 02.

3.0 CONCLUSIONS

The results of the test fills indicate that the Material 3 tested can achieve sufficient densities with a minimum of 2 passes of a minimum 13,000 kg compactor with vibration, and in lifts of up to 0.50m. These results were obtained with an average moisture of approximately 5.7%. Test Fill 02 did not achieve sufficient compaction below 0.5m even after 4 passes.

BGC recommends that the following criteria be used for placement and compaction of the Material 3 within the embankment:

- A maximum loose lift thickness of 0.45m should be used.
- Moisture content should be maintained between 5% and 7%. This will likely require moisture conditioning at the stockpile during loading for placement.
- Gradation of the material should not vary significantly from the material used in this test fill. If gradation varies significantly additional testing may be required.

- A minimum of two pass cycles (1 forward pass and 1 back pass per cycle) using a 13,000 kg vibrating compactor should be used. Use of lighter compactors should be approved by the Engineer and may require additional testing.
- Material should be sourced from a stockpile approved by the Engineer.
- QC should be performed by tracking and reporting the above. In-situ QC testing using a nuclear density gauge should also be performed. Testing should report density and moisture. A minimum of 6 tests per compacted lift should be performed. The amount of test can be reduced by the engineer after observing placement and compaction of the first several lifts and all criteria appear consistent. The average of the tests should determine to either pass or fail: 95% of 2,270 kg/m^3; moisture between 5% and 7%.

If general gradation or material composition (quartzite content) varies significantly within this material an additional test fill will be required. If moisture content of the rockfill is below 5 % the Engineer may reject the material until it is moisture conditioned. Overly wet samples may require the removal of moisture before placement. The Engineer will inspect the material during borrowing or placement and review QC reports to make these determinations.

BGC recommends that the above criteria be used on material produced from the zones of harder quartzite formations, which are more predominant at this borrow. Small zones of phyllitic material should be blended within the quartzite before use. Phyllitic rich material (25% to 100% phyllitic material) should be used on the upstream side of the lift. Phyllitic rich material should not constitute an entire lift or along the downstream face of the embankment.

Attachments:

Attachment 1 – Tetra Tech Test Reports

Attachment 2 – CAT CS64 B Specification Sheet.

ATTAHMENT 1

COMPACTION DENSITY TEST SUMMARY REPORT

ASTM Designation D6938

Project: Eagle Gold Project | **Test Apparatus:** Nuclear | **Troxler No:** 60841

QC Inspection & Testing | **Specified Compaction:** 95 % Mod. Proctor Max. Dry Density

Project No.: WARC.03235-05 | **Specified Moisture** (MC)**:** As Below

Client: JDS Energy & Mining/BGC | **Temperature** **Air:** 28 ºC **Soil:** ºC

Attention: R.Morlan/D. Granda | **Date Tested:** 7/27/2018 **By:** M. Estrada

Contractor: Pelly Construction | **Construction Period:** DAYSHIFT

Soil Description: Test Pad - Type 3 Structural Fill

Material Usage/Zone: Method Spec Test Pad near ADR Plant

Date yyyy/mm/dd	**Test No.** / Probe (mm)	**Location:**	Depth to Grade (m)	Dry Density (kg/m³)	MC %	Max. Dry Density	Opt. MC %	Comp % MPD
7/27/2018	**1** / 300	Method Spec Test Fill 1 - Uncompacted	Gr	2037	5.3	2270	6.7	**89.7**
7/27/2018	**2** / 300	Method Spec Test Fill 1 - 1 pass cycle	Gr	2235	6.0	2270	6.7	**98.5**
7/27/2018	**3** / 300	Method Spec Test Fill 1 - 2 pass cycles	Gr	2286	5.6	2270	6.7	**100.7**
7/27/2018	**4** / 300	Method Spec Test Fill 1 - 3 pass cycles	Gr	2281	5.9	2270	6.7	**100.5**
7/27/2018	**5** / 300	Method Spec Test Fill 2 - Uncompacted	Gr	2015	5.0	2270	6.7	**88.8**
7/27/2018	**6** / 300	Method Spec Test Fill 2 - 1 pass cycle	Gr	2160	5.4	2270	6.7	**95.2**
7/27/2018	**7** / 300	Method Spec Test Fill 2 - 2 pass cycles	Gr	2272	5.4	2270	6.7	**100.1**
7/27/2018	**8** / 300	Method Spec Test Fill 2 - 3 pass cycles	Gr	2271	5.2	2270	6.7	**100.0**
7/27/2018	**9** / 300	Method Spec Test Fill 2 - 4 pass cycles	Gr	2236	5.1	2270	6.7	**98.5**
7/27/2018	**10** / 300	Method Spec Test Fill 2 - 4 pass cycles	0.4	1812	5.3	2270	6.7	**79.8**

Remarks: Densities provided under supervision of Roy Morlan.

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TETRA TECH

ATTACHMENT 2

WHY BUY, RENT OR LEASE CAT® VIBRATORY SOIL COMPACTORS?
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CS78B

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CS78B Vibratory Soil Compactor

PHOTO VIDEOS








SPECIFICATIONS BENEFITS & FEATURES RELATED PRODUCTS COMPARE MODELS

OVERVIEW

The CS78B Vibratory Soil Compactor combines world-class productivity with outstanding operator comfort while continuing the legacy of durability, reliability and ease-of-service that contractors worldwide have come to expect from Cat® machines.

WEIGHTS

UNITS: US METRIC

Operating Weight - With Cab	18700.0 kg
Weight - Drum with Cab	13440.0 kg

OPERATING SPECIFICATIONS

Compaction Width	2134.0 mm
Ground Clearance	437.0 mm
Static Linear Load - With Cab	63.0 kg/cm
Travel Speed - Maximum	11.4 km/h
Turning Radius - Inside Drum Edge	3.68 m

ENGINE

Gross Power	129.5 kW
Engine Model	Cat C4.4 with ACERT

DIMENSIONS

Drum Diameter	1534.0 mm
Drum Width	2134.0 mm
Height - With ROPS/FOPS or Cab	3.11 m
Overall Length	6.13 m
Overall Width	2.36 m
Wheel Base	2.9 m

VIBRATORY SYSTEM

Centrifugal Force - Maximum	332.0 kN
Centrifugal Force - Minimum	166.0 kN
Nominal Amplitude - High	2.1 mm
Nominal Amplitude - Low	0.98 mm
Variable Frequency Option Range	23.3 - 28 Hz (1400-1680 vpm)
Vibratory Frequency - Standard	28 Hz (1680 vpm)

TIRES

Tires	23.1 x 26

SERVICE REFILL CAPACITIES

Fuel Tank Capacity	332.0 l

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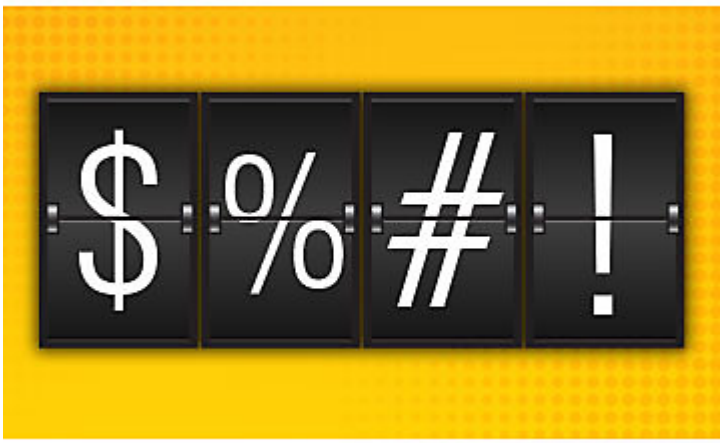

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Construction Tracking Field Memorandum CTFM-04

Client:	**Victoria Gold Corp**	**Project:**	**Eagle Gold Construction Support**
EPCM:	**JDS**	**Project No.**	**0792021**
From:	**Troy Meyer, P.Eng.**	**Date:**	**August 31, 2018**
Copied:	**Roy Morlan; Dan Granda**	**Record:**	**CTFM-04**

Re: Material 3 Test Fill 03

1.0 INTRODUCTION AND OBJECTIVE

On August 21, 2018 BGC developed and oversaw a test fill to evaluate the engineering properties of Material 3 – Structural Fill generated from the Event Pond excavation.

2.0 TEST FILL CONSTRUCTION AND EXECUTION

BGC's representative, Troy Meyer, developed the test fills and was present during the execution. The test fill was constructed and surveyed by Pelly Construction. Material sampling and testing was performed by Tetra Tech. The following sections discuss the execution of the test fill.

2.1. Test Fill Materials and Borrow Description

The material used in the test fills was generated by Pelly as borrow from excavation of the Event Pond and Spillway. This material has been designated as Material 3 Structural Fill. Gradation, moisture, and proctor testing was performed by Tetra Tech. The results from this testing are included in ***Attachment 1***. Material 3 was generated from a portion of the stratigraphy below the organic rich topsoil and the colluvial overburden in an area where bedrock is becoming more competent with depth. The material generally consists of broken weak rock in a matrix of gravel and sand with few fines (***Photograph 1***).



Photograph 1: Photograph of loose material used in the test fill.

2.2. Test Fill Foundation

A cleared area at the Event Pond excavation was used as the test location because it was close to the source material and relatively traffic free (***Figure 1***). The test foundation was compacted with 5 forward and 5 backwards passes with a vibratory compactor. The resulting foundation was hard and dry (***Photograph 2***). No significant deflection from roller passes was noted in the foundation.

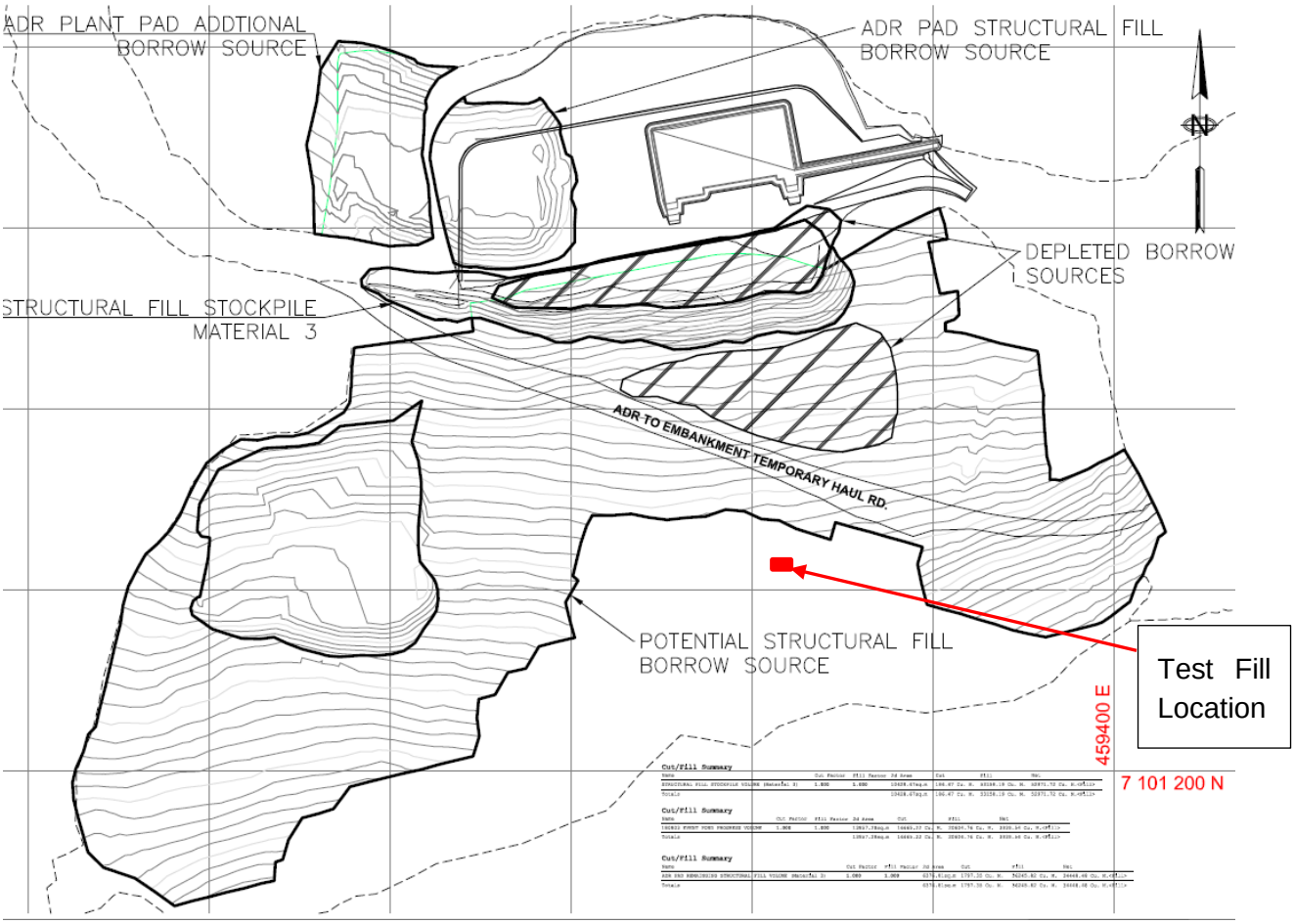


Figure 1: Test Fill Location



Photograph 2: Compaction of the test fill foundation.

2.3. Test Fill Lift Placement and Compaction

The test fill was constructed by a CAT 3751 track mounted excavator as a 0.5m loose lift. Lift thickness was measured by Pelly's surveyor using a mobile station. The test fill measured approximately 8m x 6m.

2.4. Moisture Conditioning

Moisture was not added to the test fill material.

2.5. Test Fill Compaction and Settlement Measurements

To perform compaction tracking three steel plates were placed in a row down the center of the lift and used as a monitoring points (***Figure 2***). Initial survey of the settlement monitoring points was collected using a GPS surveying rod. Test fill surface was compacted with one cycle (1 forward pass and 1 reverse pass) of a Volvo CS68B vibratory compactor with an effective drum weight of 9,150 kg. After completion of one compaction cycle, settlement was measured at the settlement

points. This compaction/survey procedure was repeated for 4 full compaction cycles. Specifications for the Volvo CS68B compactor are included in ***Attachment 1***.

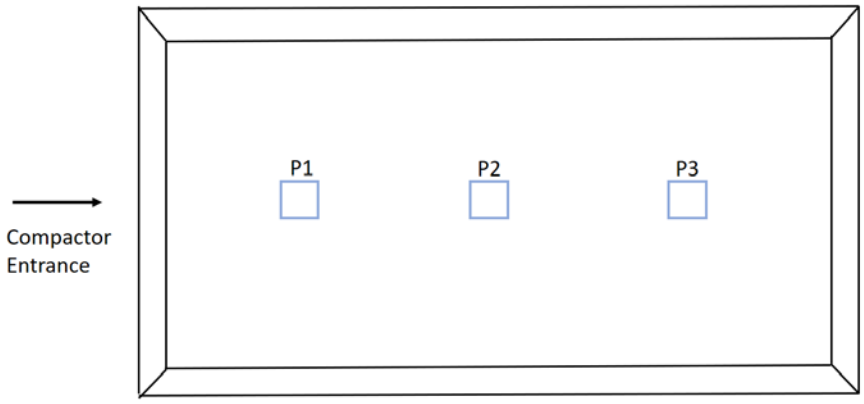


Figure 2**:** Approximation of test fill pad and survey points

Settlement data collected is included in ***Table 1***. A settlement graph is shown in ***Figure 3***.

	Pre-Compaction (m)	Pass 1 (m)	Pass 2 (m)	Pass 3 (m)	Pass 4 (m)
Survey Point 1 (P1)	905.884	905.834	905.819	905.814	905.812
Survey Point 2 (P2)	905.903	905.854	905.836	905.826	905.825
Survey Point 3 (P3)	905.956	905.881	905.867	905.853	905.852

Table 1: Survey elevation data collected during settlement tracking.

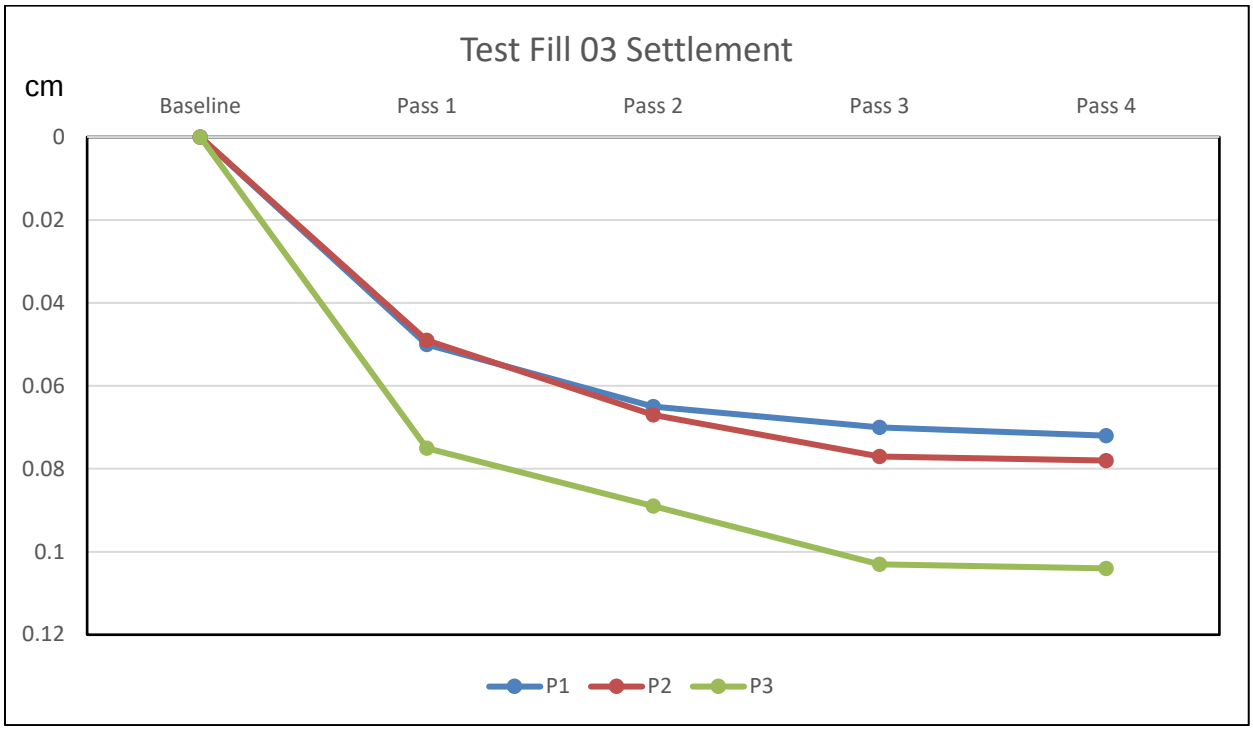


***Figure 3*:** Test Fill 03 settlement recorded for each cycle.

2.5.1. In-situ Density and Moisture Testing

In-situ density and moisture testing was collected by Tetra Tech using a nuclear density gauge. Results were compared to the proctor for this material performed by Tetra Tech. The standard proctor performed on the material reported a maximum dry density of 2,185 kg/m^3 at an optimum moisture of 8.7%. Density and moistures reported by Tetra Tech are included in ***Table 2***. The values represent over 96% of maximum dry density. Tetra Tech's data report for this testing is included in ***Attachment 1***.

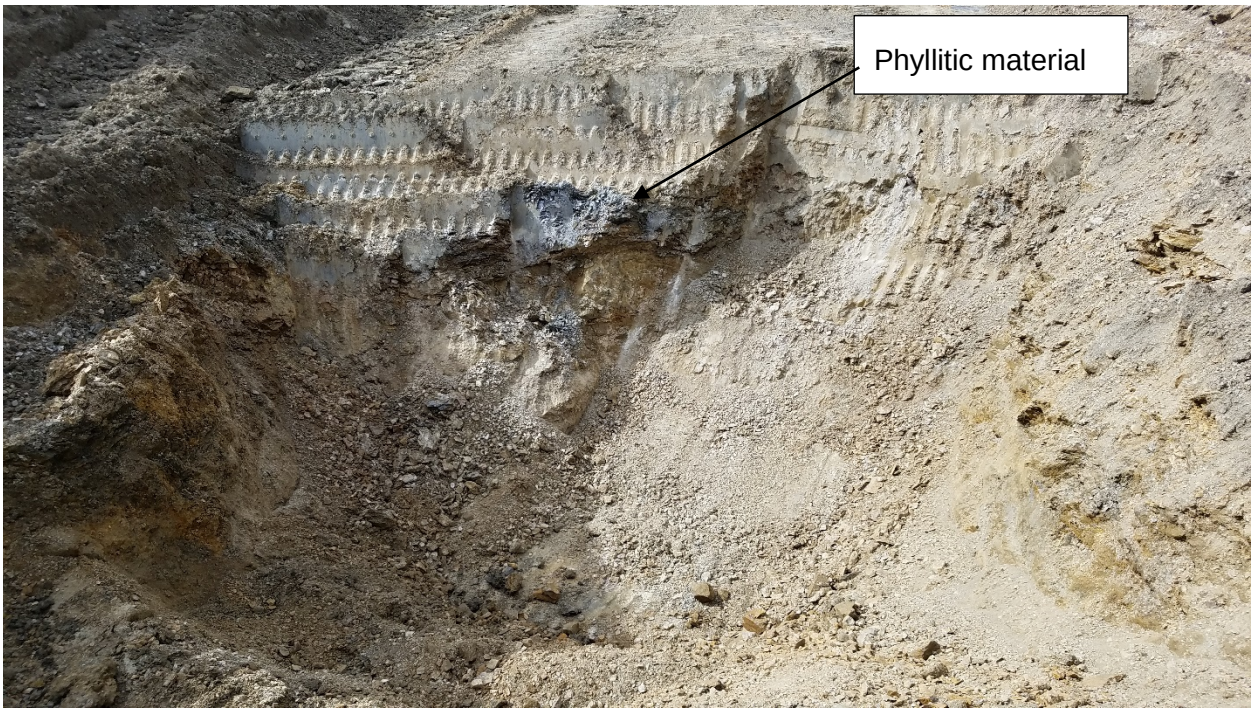
	Depth (cm)	Dry Density (kg/m^3)	Moisture (%)
Test 1 (4 pass cycles)	30	2126	5.1
Test 2 (4 pass cycles)	30	2116	6.2

Table 2: Tetra Tech nuclear density gauge testing results

2.5.2. Field Testing Observations

Some surface yield was observed in the compaction pass. Excavations through the compacted test fill revealed a well compacted, well graded matrix with little void space. Moisture within the lift was spread evenly. No material degradation or pulverization was observed.

A lens of phyllitic material was observed in the shallow excavation made to produce the test fill material **Photograph 3**. A deeper excavation was later made, and the material was observed to become more competent and rocky with depth **Photograph 4**.



Photograph 3: Shallow excavation made for test fill material.



Photograph 4: Deeper excavation into Event Pond borrow material.

3.0 CONCLUSIONS

The results of the test fill indicates that Material 3 excavated from the Event Pond area can achieve sufficient densities with a minimum of 3 passes of a minimum 9,000 kg compactor with vibration, and in lifts of up to 0.50m.

BGC recommends that the following criteria be used for placement and compaction of the Material 3-4 within the embankment:

- A maximum loose lift thickness of 0.50m should be used.
- Moisture content should be maintained between 3% and 8%. This is not expected to require moisture conditioning at the active face of the borrow excavation if direct loading is performed. If the material is stockpiled, moisture conditioning may be needed upon loading. Moisture conditioning should be avoided in freezing air temperatures.
- Gradation of the material may vary significantly from the material used in this test fill. The rock is expected to become gradually more competent with depth. Based on experience

with material from the ADR cut and ADR West borrow located above the event pond, the rock is expected to be moderately weathered at depth and will and will produce a coarser structural fill. Additional testing is not anticipated since previous test fills on this type of material have been completed. Approved finer grained Material 3 from the Event Pond should be placed and spread at the HLF embankment in such a manner to blend with the ADR Material 3. This can be accomplished by dumping piles of each material and pushing together with a dozer during spreading. As the material at the Event Pond becomes more competent and coarser with depth, blending may not be needed.

- A minimum of three (3) pass cycles (1 forward pass and 1 back pass per cycle) using a minimum 9,000 kg vibrating compactor should be used. Use of heavier compactors should follow the recommendations from previous test fills on structural fill (generally 2 passes for vibrating compactors heavier than 11,000 kg).
- Material 3 excavated from the Event Pond should be free of soft phyllitic material. Localized lenses of this material may be encountered in the excavation. This material is weak and unsuitable as structural fill.
- Stockpiles of topsoil and overburden material are being generated at the Event Pond area. Segregation of usable material from unsuitable material should be carefully managed to avoid cross-contamination. The colluvial overburden and highly weathered (soil-like) rock has been tested in a separate test fill and found to be suitable as Material 1 (Site Grading Fill). This material can be used for general fills but shall not be used in construction of the HLF or Event Pond embankments.
- QC should be performed by tracking and reporting the above. In-situ QC testing using a nuclear density gauge should also be performed. Testing should report density and moisture. A minimum of 1 tests per compacted lift should be performed. The number of tests can be reduced by the engineer after observing placement and compaction of the first several lifts and all criteria appear consistent. The average of the tests should determine to either pass or fail. The rock-corrected values from the Proctor test should be used: 95% of 2,236 kg/m^3; moisture between 4% and 8%.

Attachments:

Attachment 1 – Tetra Tech Test Reports

Attachment 2 – Volvo Compactor Specification Sheet.

ATTAHMENT 1

SIEVE ANALYSIS REPORT

ASTM C136 & C117

Project:	Eagle Gold Project	Sample Number:	Event Pond SA01
Project No.:	704-ENG.WARC03532-01	Date Sampled:	August 20 2018
Client:	JDS/BGC	Sampled By:	BGC Tested By: JP
Attention:	D. Granda/R.Bilbrowka	Specification:	Structural Fill
Description:	SAND and GRAVEL, some silt	Fracture (2 faces):	N/A
Location:	Event Pond grab sample	Moisture Content:	2.2%

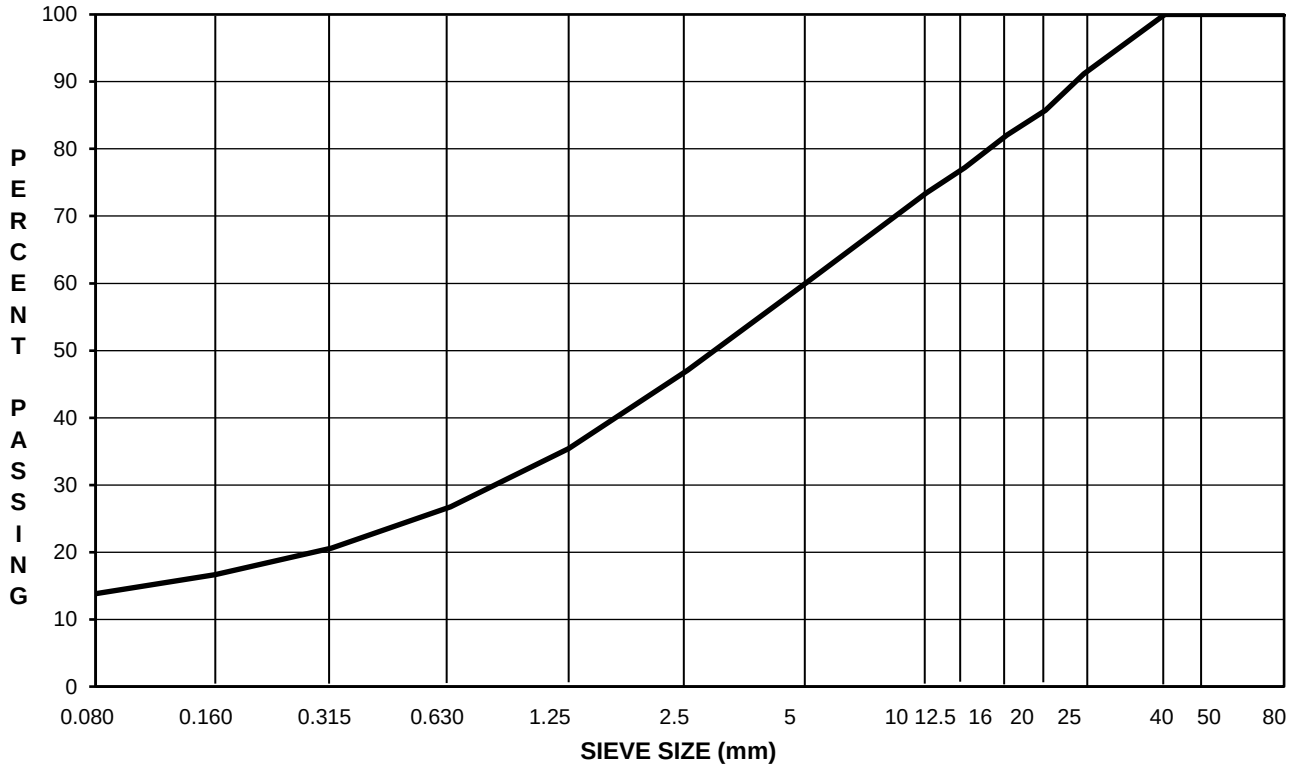
Aggregate Gradation (% Passing)

Size (um)	80k	50000	40000	25000	20000	16000	12500	10000	5000	2500	1250	630	315	160	80
U. Limit	100														
L. Limit	100														
Result	100	100	100	91	86	82	77	73	60	47	35	27	21	16.6	13.8

Remarks: Moisture content near 6% as sampled.

Sample stored in doors for 9 days prior to testing.

Reviewed By: _____ C.E.T.



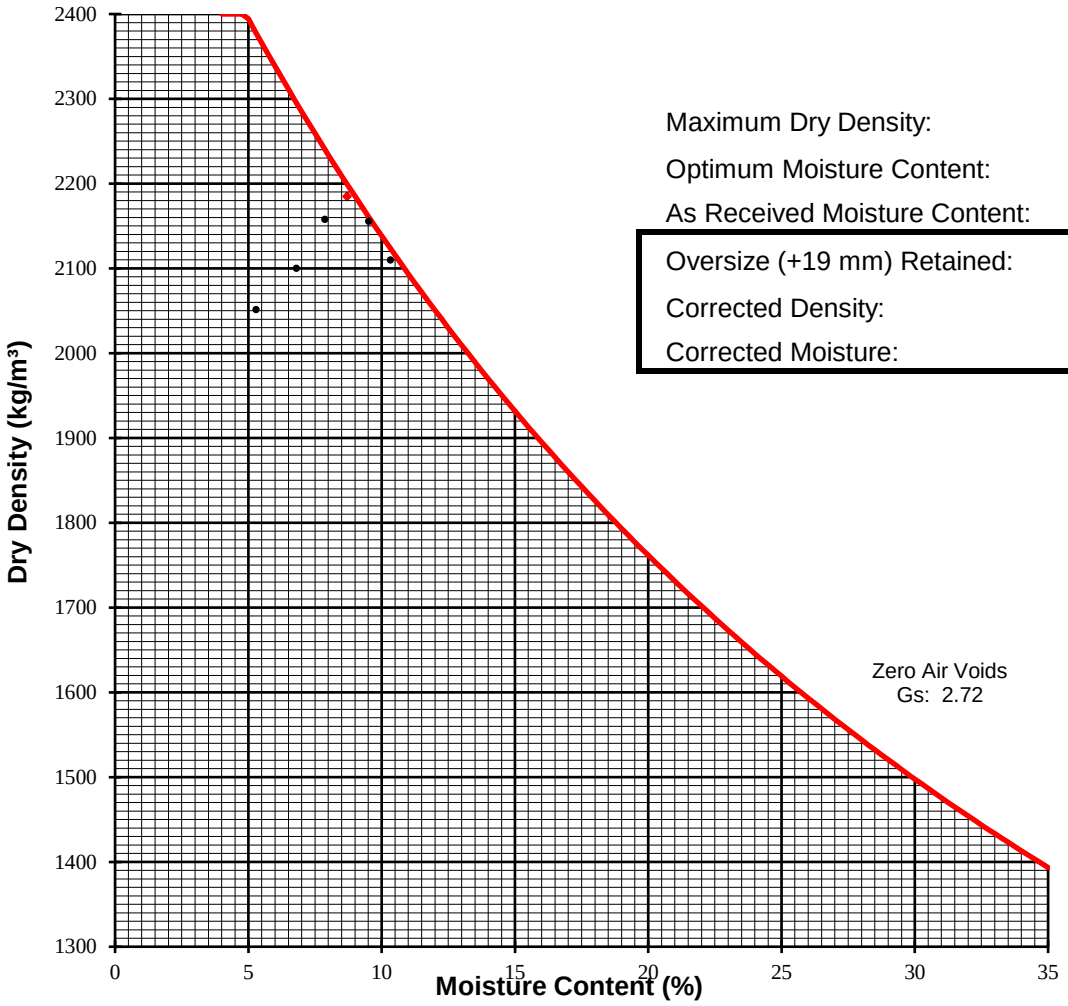
Data presented hereon is for the sole use of the stipulated client. Tetra Tech is not responsible, nor can be held liable, for use made of this report by any other party, with or without the knowledge of Tetra Tech. The testing services reported herein have been performed to recognized industry standards, unless noted. No other warranty is made. These data do not include or represent any interpretation or opinion of specification compliance or material suitability. Should engineering interpretation be required, Tetra Tech will provide it upon written request.

TETRA TECH

MOISTURE-DENSITY RELATIONSHIP (Proctor) REPORT

ASTM D698 Standard

Project:	2018 Dublin Gulch Eagle Gold Project	Sample No.:	Event Pond PR1
Client:	JDS/BGC	Sampled By:	TM/RM
Attention:	Clint/Dan	Sample Date:	August 20 2018
Project No.:	WARC-03235-03	Test Date:	August 29 2018
Description:	SAND and GRAVEL, some silt	Preparation:	Moist
Source:	Event Pond Excavation	Compaction:	Manual



Maximum Dry Density:	**2185**	kg/m³
Optimum Moisture Content:	**8.7**	%
As Received Moisture Content:	**5.5**	%
Oversize (+19 mm) Retained:	**13**	%
Corrected Density:	**2236**	kg/m³
Corrected Moisture:	**7.7**	%

Remarks: Material contains oversize (50-300mm plus rock)

Reviewed By: _____ C.E.T.

Data presented hereon is for the sole use of the stipulated client. Tetra Tech EBA is not responsible, nor can be held liable, for use made of this report by any other party, with or without the knowledge of Tetra Tech EBA. The testing services reported herein have been performed to recognized industry standards, unless noted. No other warranty is made. These data do not include or represent any interpretation or opinion of specification compliance or material suitability. Should engineering interpretation be required, Tetra Tech EBA will provide it upon written request.

TETRA TECH

ATTACHMENT 2



Cat® CS68B

Smooth Drum Vibratory Soil Compactor

Features:

The Cat® CS68B features a smooth drum and is ideally suited for granular soil applications:

- **Comfortable and ergonomic operator station** features pivoting seat with integrated multifunction LCD display and control console, outstanding visibility to the front and rear of machine, low sound levels and vibration for greater operator comfort and productivity.
- **World-class propel system** built around the exclusive Cat dual pump propel system, two pumps provide separate dedicated flow to drum drive motor and rear axle motor for exceptional gradeability and traction in forward and reverse. New electronic propel control enables more precise machine control.
- **Virtually maintenance free** due to maintenance-free hitch bearings and extended maintenance intervals for vibratory system and hydraulic system, providing more uptime and lower maintenance costs.
- **Enhanced compaction performance** due to more weight at the drum and greater amplitude. Automated propel and vibratory system functions make it easy to ensure consistent, high quality.
- **Optional Cat® Compaction Control** helps the operator determine when compaction has been completed to specification for greater productivity and uniform compaction quality.

Specifications

Engine - Power Train

Engine Model	Cat® C4.4 with ACERT™	
Global Emissions	US EPA Tier 4i/EU Stage IIIB	
Gross Power ISO 14396	117 kW	157 hp
Displacement	4.4 L	268.5 in³
Stroke	127 mm	5 in
Bore	105 mm	4.1 in
Max. Travel Speed (Forward or Reverse)	11.4 km/h	7 mph

Weights

Operating Weight w/ ROPS/FOPS cab	14 325 kg	31,572 lb
w/ padfoot shell kit	15 730 kg	34,662 lb
w/ leveling blade	14 980 kg	33,011 lb
w/ padfoot shell kit and leveling blade	16 380 kg	36,101 lb
Weight at Drum w/ ROPS/FOPS cab	9150 kg	20,164 lb
w/ padfoot shell kit	10 550 kg	23,247 lb
w/ leveling blade	10 105 kg	22,271 lb
w/ padfoot shell kit and leveling blade	11 505 kg	25,354 lb

Vibratory System Specifications

Frequency		
Standard	30.5 Hz	1830 vpm
During Eco-mode Operation	27.7 Hz	1664 vpm
Optional Variable Frequency	23.3-30.5 Hz	1400-1830 vpm
Nominal Amplitude @30.5 Hz (1830 vpm)		
High	2.1 mm	0.083 in
Low	0.98 mm	0.039 in
Centrifugal Force @ 30.5 Hz (1830 vpm)		
Maximum	301 kN	67,600 lb
Minimum	141 kN	31,670 lb
Static Linear Load		
w/ ROPS/FOPS Cab	42.9 kg/cm	240 lbs/in

Service Refill Capacities

Fuel Tank, total capacity	242 L	64 gal
Cooling System	27.8 L	7.3 gal
Engine Oil w/ Filter	11.6 L	3.1 gal
Eccentric Weight Housings	26 L	6.9 gal
Axle and Final Drives	18 L	4.8 gal
Hydraulic Tank (service refill)	50 L	13.2 gal

BGC ENGINEERING INC.
AN APPLIED EARTH SCIENCES COMPANY

Construction Tracking Field Memorandum CTFM-05

Client:	**Victoria Gold Corp**	**Project:**	**Eagle Gold Construction Support**
EPCM:	**JDS**	**Project No.**	**0792021**
From:	**Troy Meyer**	**Date:**	**Nov 8, 2018**
Copied:	**Roy Morlan**	**Record:**	**CTFM-05**

Re: Material 7 Test Fill 02

1.0 INTRODUCTION AND OBJECTIVE

On November 5, 2018 BGC developed and oversaw a test fill to evaluate the engineering properties of Material 7 – Compacted Rockfill for use in the embankment construction. The rockfill was generated from the required excavation of the Event Pond and from blasted rock at the ADR West borrow.

2.0 TEST FILL CONSTRUCTION AND EXECUTION

The test fill was performed on November 5, 2018. BGC's representative, Troy Meyer developed the test fill and was present during the test fills execution. Material 7 – Rockfill was placed in a 0.9m loose lifts. The test fills were constructed and survey control was provided by Pelly Construction. Material sampling and testing was performed by Tetra Tech. Field density testing was overseen by BGC. The following sections discuss the execution of the test fill.

2.1. Test Fill Materials and Borrow Description

Two separate sources of rockfill were used in two separate test fills. The material referred to as "ADR Blast Rock" was generated by Pelly construction as borrow from blasting and excavation at the borrow located west of the ADR plant. he material referred to as "Event Pond Cut" was generated by Pelly construction from required excavations at the eastern end of the event pond.

The material generally consists of quartzite rock with low to moderate strength and a maximum size of 60 cm. The quartzite material properties are mostly fine grained, orange brown, some banding present, slightly weathered (W2), strong to very strong (R4 to R5), and hard (H3).

The ADR Blast Rock contains a higher percentage of large rock than the Event Pond Cut material, which is more well-graded with a gravel and sand matrix. Both materials classify as Material 7 – Rockfill having more than 30 percent particles larger than 19. Moisture content of the minus 6-inch fraction was reported as 3.2 % for ADR Blast Rock and 4.6 % for Event Pond Cut.

Although not used in the test fill, zones of a weaker phyllitic rock (potentially phyllite or phyllonite) are also present within each source area. This material is platy, very fine grained (aphantic), micaceous, has a significant amount of graphite, is gray, slightly weathered (W2), with rock quality ranging from (R1 to R3), and varies from soft (H6) to moderate hard (H4).

2.2. Test Fill Foundation

An area on top of the south Event Pond embankment crest was used as the test location. ***Figure 1*** shows the locations of the test pad and the borrow areas. The test location was frozen, hard and previously compacted by heavy equipment traffic. ***Photo 1*** shows initial placement of fill on the test pad.



Photograph 1: ADR Blast Rock Test fill construction.



Figure 1: Test Fill and Borrow Locations



Photograph 3: Event Pond Cut material as delivered.

2.3. Test Fill Lift Placement

The test fill lift was placed by dumping and spreading with a GPS enabled D6 dozer. Both test fills were placed in one 0.9 m loose lift. Lift thickness was controlled by the Dozer and spot checked by Pelly's surveyor using a mobile station. Each test fill measured approximately 8m x 10m.

2.4. Moisture Conditioning and Temperature

Moisture was not added to the material prior or during the test fill. The ambient air temperature was -19 deg C. The delivered material temperature was measured with a thermal gun:

- ADR Blast Rock +10 deg C
- Event Pond Cut +4 deg C

The temperature of both materials reduced to -5 to -10 deg C at the time of compaction.

2.5. Compaction Testing and Settlement Surveying

To perform compaction tracking three steel plates were placed in a row down the center of the lift and used as a monitoring points (***Figure 2***). Initial survey of the settlement monitoring points was collected using a GPS surveying rod. The entire test fill surface was then compacted with one cycle (1 forward pass and 1 reverse pass) of a CAT CS68 B vibratory compactor with an effective drum weight of 9,150 kg. After completion of one compaction cycle, settlement was measured at the settlement points. This compaction/survey procedure was repeated for 4 full compaction cycles.

A loaded CAT777 haul truck was also used for compaction on adjacent sections of the test pads. The truck was trafficked at a slow speed over the plates and settlement measure by survey after each single pass.

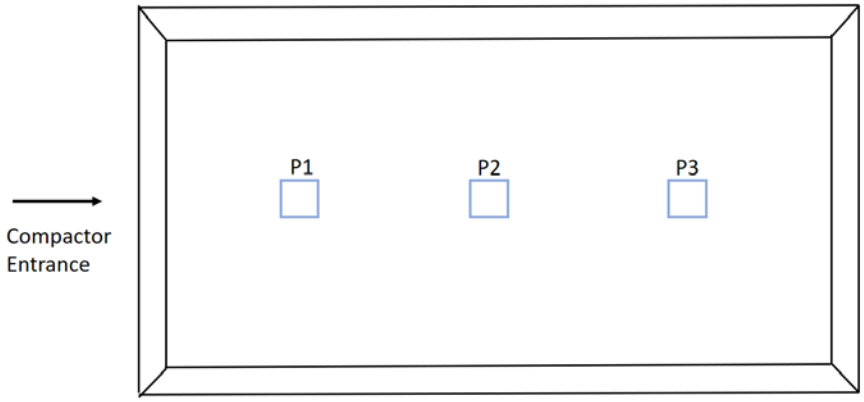


***Figure 2*:** Approximation of test fill pad and survey points

Settlement data collected is included in Table 1 through 4 and settlement graphs are shown as Figures 3 through 6.



Photograph 4: Compaction with Loaded CAT777 Haul Truck.

	Pre-Compaction	Cycle 1	Cycle 2	Cycle 3	Cycle 4
Survey Point 1 (P1)	877.058	877.04	877.028	877.027	877.022
Survey Point 2 (P2)	877.027	877.022	877.02	877.006	877.006
Survey Point 3 (P3)	877.074	877.033	877.017	877.011	877.008

Table 1: Survey Data for ADR Blast Rock with Compactor.

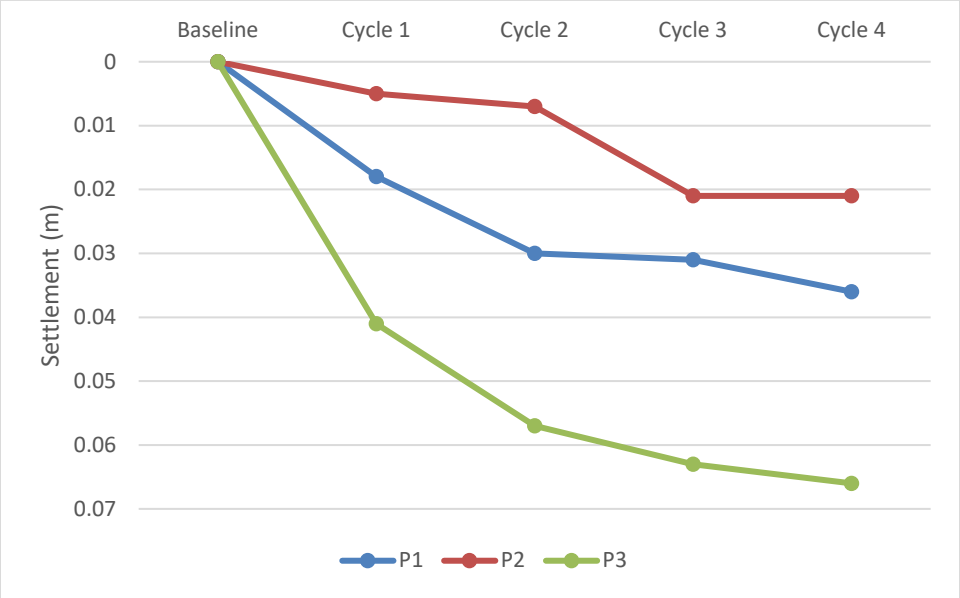


***Figure 3*:** Settlement for ADR Blast Rock with Compactor.

	Pre-Compaction	Pass 1	Pass 2	Pass 3
Survey Point 1 (P1)	877.114	877.096	877.095	877.096
Survey Point 2 (P2)	877.096	877.07	877.065	877.065
Survey Point 3 (P3)	877.034	876.995	876.994	876.991

Table 2: Survey Data for ADR Blast Rock with Loaded Haul Truck.

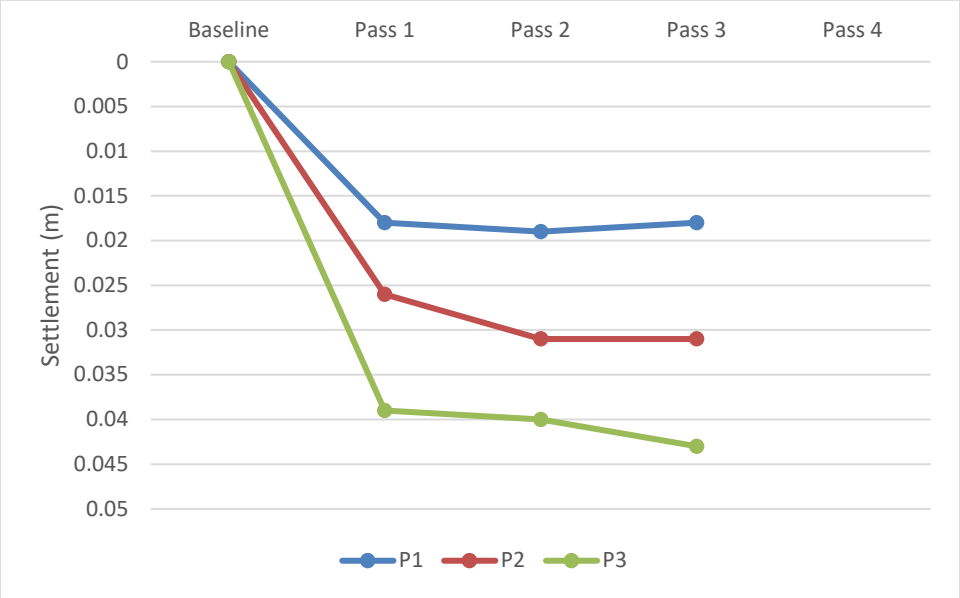


***Figure 4*:** Settlement for ADR Blast Rock with Loaded Haul Truck.

	Pre-Compaction	Cycle 1	Cycle 2	Cycle 3	Cycle 4
Survey Point 1 (P1)	877.137	877.086	877.073	877.057	877.059
Survey Point 2 (P2)	877.066	877.034	877.015	877.006	877.005
Survey Point 3 (P3)	877.105	877.073	877.058	877.052	877.049

Table 3: Survey Data for Event Pond Cut with Compactor.

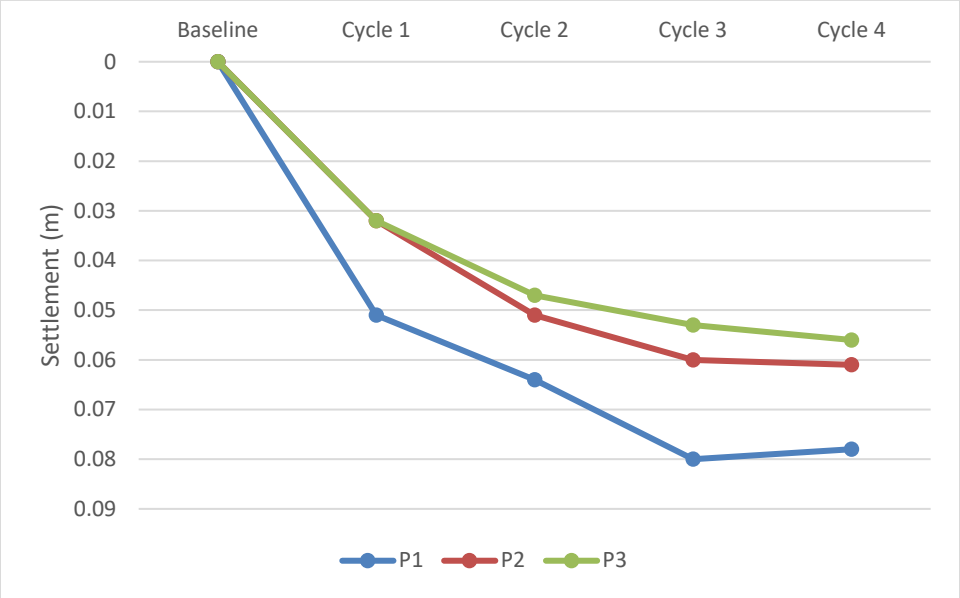


***Figure 5*:** Settlement for Event Pond Cut with Compactor.

	Pre-Compaction	Pass 1	Pass 2	Pass 3
Survey Point 1 (P1)	877.125	877.098	877.082	877.078
Survey Point 2 (P2)	877.102	877.055	877.041	877.039
Survey Point 3 (P3)	877.121	877.091	877.074	877.074

Table 4: Survey Data for Event Pond Cut with Loaded Haul Truck.

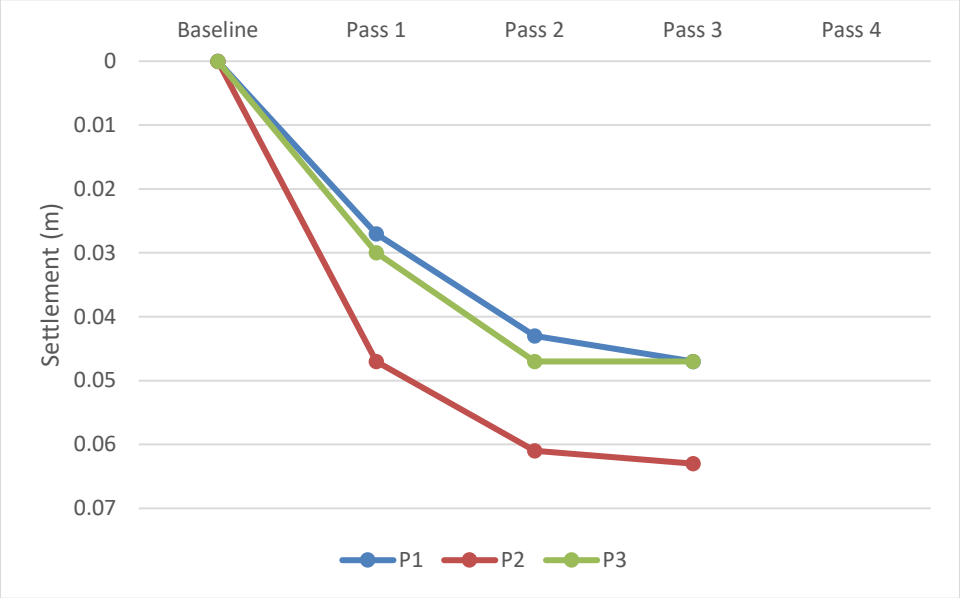


***Figure 6*:** Settlement for Event Pond Cut with Loaded Haul Truck.

2.6. In-situ Density and Moisture Testing

A volumetric test was performed to determine the density of the compacted soil (***Photo 4***). A test pit was dug in the compacted lift. Material excavated from the pit was placed in three super sacks and weighed using a digital scale suspended by a forklift. The test pit volume was determined from drone surveys by Underhill Surveyors.

Test Fill	Weight (kg)	Volume (m3)	Calculated Wet Density (kg/m3)	Estimated Moisture Content (%)	Calculated Dry Density (kg/m3)
ADR Blast Rock	2485	0.96	2588	3.2%	2508
Event Pond Cut	2766	1.1	2515	4.6%	2404

Table 5: Density data.

The dry density of the compacted rockfill was determined to be 2,508 kg/m^3 and 2,404 kg/m^3 for the ADR Blast Rock and Event Pond Cut material, respectively.



Photograph 5: Filling sacks for weighing.

3.0 CONCLUSIONS

The results of the test fill indicate that the rockfill produced from a mostly quartzite source at the ADR borrow and Event Pond cut can achieve sufficient densities with a minimum of 3 passes of a minimum 9,000 kg compactor with vibration, and in lifts of up to 0.90m. Alternatively, one pass with a loaded haul truck will provide adequate compaction. These results were obtained with a material moisture of under 6% within the fill's fine fraction matrix.

BGC recommends these criteria be used for placement and compaction of the rockfill within the Event Pond embankment. If rock size or general gradation varies significantly within this material an additional test fill will be required. If moisture content of the rockfill is above 6% the compaction may be inhibited by frost. Recommendations for placement of winter fills is provided in FM18-020 issued by BGC and dated October 27, 2018.

As the rockfill generated from both the ADR borrow area and Event Pond cut is variable due to the presence of weaker zones of phyllitic material, BGC recommends that the above criteria be used on rockfill produced from the zones of harder quartzite formations. Small zones of phyllitic material should be blended within the quartzite rockfill before use since these zones are more prone to material breakdown and frost. Phyllitic material should not be allowed to be placed in a manner that would create lifts or zones within a lift composed of predominately this material.

The Engineer will inspect the rockfill material during borrowing or placement to make these determinations. Quality control and assurance will be performed by BGC and Tetra Tech based on visual observations of material characteristics and proof rolling with loaded CAT777 trucks. Modifications to lift thickness may be recommended based on observations and additional field density tests may be required by the Engineer to verify compaction, as needed.

Attachments:

Attachment 1 – Tetra Tech Lab Test Report

Attachment 2 – Underhill Survey Data

Attachment 3 – CAT CS68B Specification Sheet.

ATTAHMENT 1

MOISTURE CONTENT TEST RESULTS

ASTM D2216

Project:	704-ENG.WARC3235-01	Sample No.:	SA1 (x2)
Project No.:	Eagle Gold Project - Event Pond Embankment Fi	Date Tested:	November 6, 2018
Client:	JDS Energy & Mining	Tested By:	ELN
Address:		Page:	1 of 1

Source	Sample Number	Moisture Content (%)	Visual Description of Soil
ADR Blast Rock	SA1	3.2	Embankment Rock Fill - Larger particles, orange colored
Event Pond	SA1	4.6	Embankment Rock Fill - smaller particles, brownish

Reviewed By: ISSUED FOR REVIEW C.E.T.

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TETRA TECH

ATTACHMENT 2

Underhill Geomatics

Eagle Gold Project

Volume Report – North Pad Volume

Client: JDS

Project Name: F:\6 Miscellaneous\2018-11-06 Pelly Compaction Test After\2018-11-06 Pelly Compaction Hole Volume.dwg

Project Description:

Report Date: 06/11/2018 11:46:41 AM

Prepared by: DB

Linear Units: meter	**Area Units:** squareMeter	**Volume Units:** cubicMeter

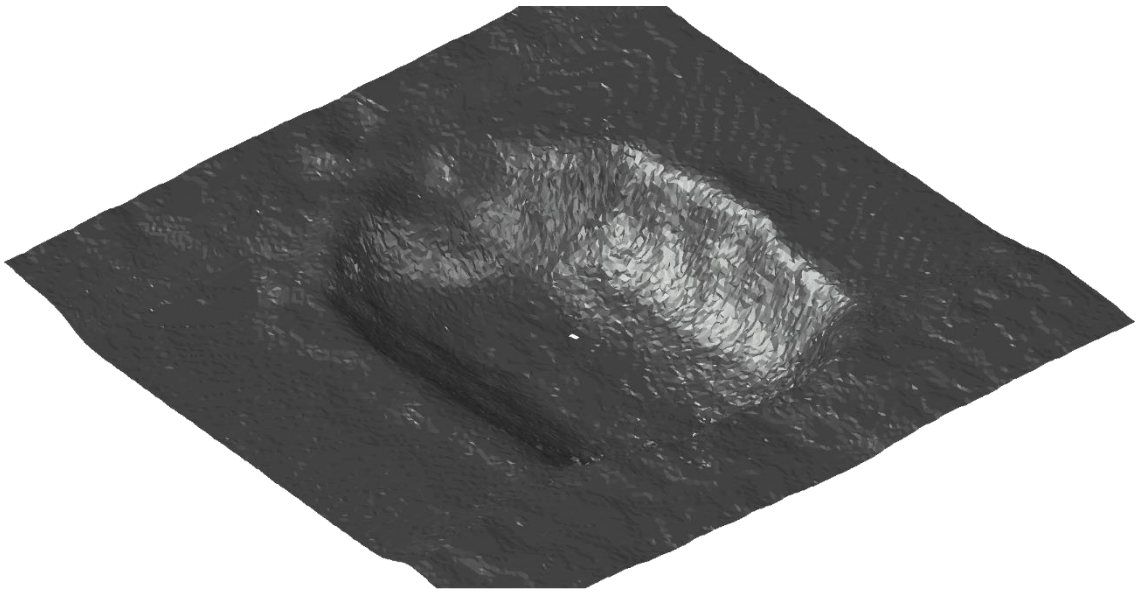
Surface: North Pad Volume

Area 2D: 13.477	Area 3D: 15.294
Elevation Max: 0.106	Elevation Min: -0.512
Number of Points: 560063	Number of Triangles: 1115130

Volume Surface: North Pad Volume

Volume Total: -1.10m³

Compare Surface: 2018-11-06 North Pad After
Base Surface: 2018-11-05 North Pad Before



Underhill Geomatics

Eagle Gold Project

Volume Report – South Pad Volume

Client: JDS

Project Name: F:\6 Miscellaneous\2018-11-06 Pelly Compaction Test After\2018-11-06 Pelly Compaction Hole Volume.dwg

Project Description:

Report Date: 06/11/2018 11:50:20 AM

Prepared by: DB

Linear Units: meter	**Area Units:** squareMeter	**Volume Units:** cubicMeter

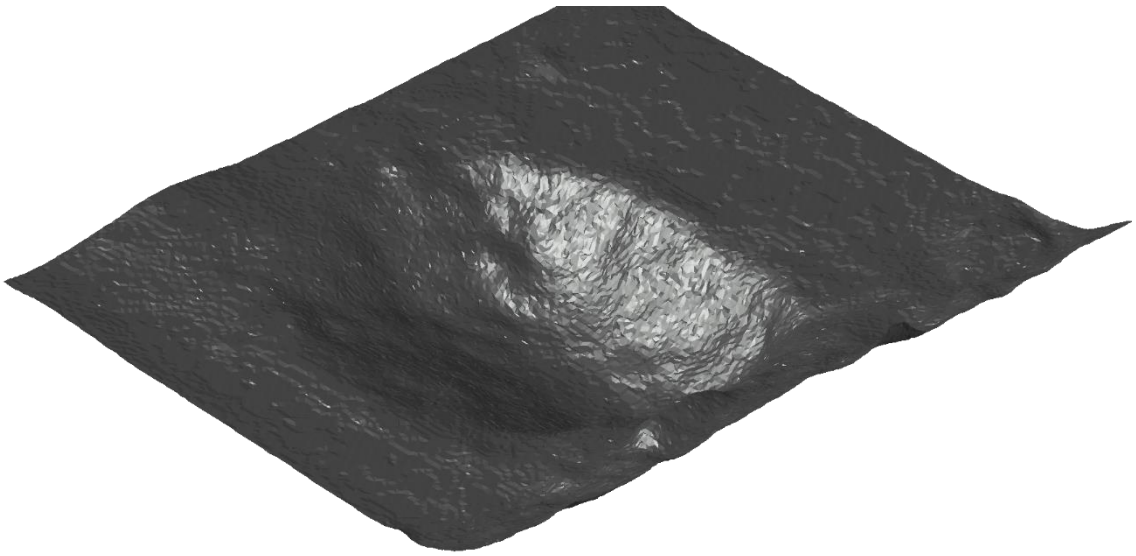
Surface: South Pad Volume

Area 2D: 14.723	Area 3D: 16.070
Elevation Max: 0.114	Elevation Min: -0.500
Number of Points: 618270	Number of Triangles: 1230239

Volume Surface: South Pad Volume

Volume Total: -0.96m³

Compare Surface: 2018-11-06 South Pad After
Base Surface: 2018-11-05 South Pad Before



ATTACHMENT 3



Cat®
CS68B

Smooth Drum
Vibratory Soil Compactor

Features:
The Cat® CS68B features a smooth drum and is ideally suited for granular soil applications:

- **Comfortable and ergonomic operator station** features pivoting seat with integrated multifunction LCD display and control console, outstanding visibility to the front and rear of machine, low sound levels and vibration for greater operator comfort and productivity.
- **World-class propel system** built around the exclusive Cat dual pump propel system, two pumps provide separate dedicated flow to drum drive motor and rear axle motor for exceptional gradeability and traction in forward and reverse. New electronic propel control enables more precise machine control.
- **Virtually maintenance free** due to maintenance-free hitch bearings and extended maintenance intervals for vibratory system and hydraulic system, providing more uptime and lower maintenance costs.
- **Enhanced compaction performance** due to more weight at the drum and greater amplitude. Automated propel and vibratory system functions make it easy to ensure consistent, high quality.
- **Optional Cat® Compaction Control** helps the operator determine when compaction has been completed to specification for greater productivity and uniform compaction quality.

Specifications

Engine - Power Train

Engine Model	Cat® C4.4 with ACERT™	
Global Emissions	US EPA Tier 4i/EU Stage IIIB	
Gross Power ISO 14396	117 kW	157 hp
Displacement	4.4 L	268.5 in³
Stroke	127 mm	5 in
Bore	105 mm	4.1 in
Max. Travel Speed (Forward or Reverse)	11.4 km/h	7 mph

Weights

Operating Weight w/ ROPS/FOPS cab	14 325 kg	31,572 lb
w/ padfoot shell kit	15 730 kg	34,662 lb
w/ leveling blade	14 980 kg	33,011 lb
w/ padfoot shell kit and leveling blade	16 380 kg	36,101 lb
Weight at Drum w/ ROPS/FOPS cab	9150 kg	20,164 lb
w/ padfoot shell kit	10 550 kg	23,247 lb
w/ leveling blade	10 105 kg	22,271 lb
w/ padfoot shell kit and leveling blade	11 505 kg	25,354 lb

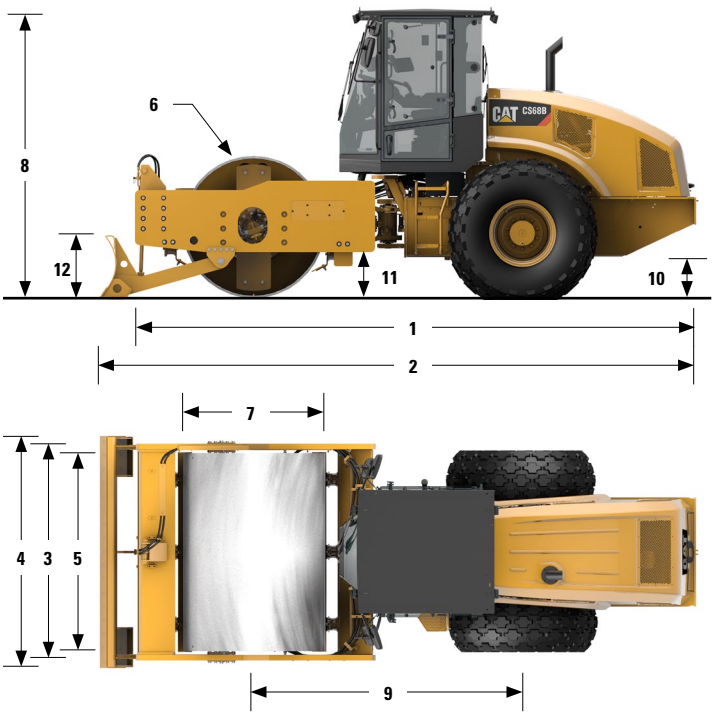
Vibratory System Specifications

Frequency		
Standard	30.5 Hz	1830 vpm
During Eco-mode Operation	27.7 Hz	1664 vpm
Optional Variable Frequency	23.3-30.5 Hz	1400-1830 vpm
Nominal Amplitude @30.5 Hz (1830 vpm)		
High	2.1 mm	0.083 in
Low	0.98 mm	0.039 in
Centrifugal Force @ 30.5 Hz (1830 vpm)		
Maximum	301 kN	67,600 lb
Minimum	141 kN	31,670 lb
Static Linear Load		
w/ ROPS/FOPS Cab	42.9 kg/cm	240 lbs/in

Service Refill Capacities

Fuel Tank, total capacity	242 L	64 gal
Cooling System	27.8 L	7.3 gal
Engine Oil w/ Filter	11.6 L	3.1 gal
Eccentric Weight Housings	26 L	6.9 gal
Axle and Final Drives	18 L	4.8 gal
Hydraulic Tank (service refill)	50 L	13.2 gal

CS68B Vibratory Soil Compactor



Dimensions

1	Overall Length	6.05 m	19.8 ft
2	Overall Length w/ Optional Leveling Blade	6.55 m	21.5 ft
3	Overall Width	2.33 m	7.64 ft
4	Overall Width w/ Optional Leveling Blade	2.50 m	8.25 ft
5	Drum Width	2134 mm	84 in
6	Drum Shell Thickness	30 mm	1.18 in
7	Drum Diameter	1434 mm	56.5 in
8	Overall Height	3.11 m	10.2 ft
9	Wheelbase	2.9 m	9.5 ft
10	Ground Clearance	437 mm	17.2 in
11	Curb Clearance	489 mm	19.3 in
12	Optional Leveling Blade Height	688 mm	27.1 in
	Inside Turning Radius	3.68 m	12.07 ft
	Hitch Articulation Angle	34°	
	Hitch Oscillation Angle	15°	
	Optional Leveling Blade Height	688 mm	27.1 in

STANDARD EQUIPMENT *Varies by market- contact your Dealer for specifics.*

ELECTRICAL
- 24 volt Electrical System
- 100 ampere Alternator
- 750 Cold-cranking Amps Battery Capacity

OPERATOR ENVIRONMENT
- ROPS/FOPS Cab with Climate Control (Heat, Air Conditioning)
- Cloth Adjustable Pivoting Seat with Integrated Console and LCD Display, Seat Belt
- Multifunction LCD Display with gauges and/or audible warning alarm for: *Hydraulic oil temperature, Engine oil pressure, Engine coolant temperature, Alternator charge, Fuel level, Service hour meter, Engine RPM, Ground speed, Vibe frequency, Fuel rate, Air filter constriction, Engine load and Optional Cat Compaction Control*
- Adjustable Tilting Steering Column with Integrated Cup Holders
- 12-volt Power Outlet
- Floor Mat
- Interior Rear View Mirror
- Horn, Backup Alarm
- Radio-ready

POWER TRAIN
- Cat® C4.4 Diesel Engine
- Air Cleaner, Dual Element
- Three-speed Throttle Switch w/ Eco-mode, Automatic Speed Control
- Dual Propel Pumps; One for Drum Drive, One for Rear Axle
- Fuel Filter, Water Separator, Electronic Priming Pump, Water Indicator
- Tilting Radiator/Hydraulic Oil Cooler
- Dual Braking System
- Two-speed Hydrostatic Transmission

VIBRATORY SYSTEM
- Smooth Drum
- Dual Amplitude, Single Frequency
- Dual Pod-Style Eccentric Weight Housings
- Auto-vibe Function
- Front Adjustable Steel Scraper

OTHER
- Hydraulic Oil Level Sight Gauge
- Radiator Coolant Level Sight Gauge
- Cat® ToughGuard™ Hose
- S·O·S℠ Sampling Valves, Engine Oil and Hydraulic Oil

OPTIONAL EQUIPMENT
- Padfoot Shell Kit
- Leveling Blade
- Variable Vibration Frequency
- Beacon, Rotating
- Polyurethane Drum Scrapers
- Steel Rear-side Drum Scraper
- Bio-oil Factory Fill
- Sun Visor
- Deluxe High-back Air-ride Pivoting Seat
- Cat Compaction Control, Machine Drive Power or CMV
- SBAS GNSS Mapping for Cat Compaction Control (RTK available)
- Upgraded Halogen Light Package
- Cab Internal Rear View Mirrors
- Cab Internal Roll-down Sun Screen
- Product Link
- Additional Rear View Mirrors

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APPENDIX 10
Stability Memo

Project Memo

Project No.: 109005
February 19, 2021

To:VGCCorp. **From:** Barry Carlson and Clint Green

cc:

Victoria Gold Corporation

Phase 1 (1A/1B)Stability Memo

1.0 INTRODUCTION

The purpose of this report is to present recent laboratory test results and updated liner interface slope stability analyses completed for the Phase 1 (A&B) Heap Leach Facility (HLF) at Victoria Gold Corporation's (VGC) Eagle Gold Project located in Yukon Territory, Canada.

The Eagle Gold HLF consists of an embankment that lies across the Ann Gulch valley about 200 m upstream of the confluence with Dublin Gulch. The ore will be stacked behind the embankment within Ann Gulch. The embankment provides confinement of the ore and creates an In-Heap Pond for temporary storage of pregnant solution, which is pumped to the recovery plant.

Limit-equilibrium slope stability 2-dimensional (2D) analyses were performed for the HLF as part of the detailed design (BGC, 2018) for the Phase 1 HLF and indicated acceptable factors of safety for all analyzed cases based on the data and parameters available at that time. BGC also followed up with (BGC 2019-Sept) stability report given construction materials and final surfaces known at that time.

This report incorporates previous studies and presents results from additional laboratory testing of the installed liner components, ore properties, and asbuilt survey of lined surfaces in the 3-dimensional (3D) slope stability analyses developed to further investigate stability of the proposed ore pile on the Phase 1 facility, particularly with respect to factors of safety for potential failure surfaces along the liner interface. The use of 3D analyses allows more comprehensive investigation of stability for sites with relatively complex geometries and possible lateral confinement of the sliding mass, such as valley fill heap leach facilities.

These analyses are limited to evaluation of the ore pile stability for potential failures along the liner interface and do not consider the stability of the embankment or foundation materials alone or as a component of the overall facility. Previous engineering studies (BGC, 2018) provide properties for the foundation and embankment materials and results of related stability analyses. The results and conclusions presented herein do not invalidate the previous work but provide a more comprehensive picture of the HLF Phase 1 ore pile stability as a basis for managing the ore stacking and for planning of future analyses.

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The primary reason for updated stability model was to update with actual data, from materials that were placed both in construction and in operations, and to ensure that the ultimate surface proposed for Phase 1 (1A &1B), was still adequate based on these updates. The information provided below presents that the configuration provided by Forte (adopted from BGC) is adequate.

2.0 DESIGN CRITERIA

The HLF embankment has been classified as a "Significant" hazard according to Canadian Dam Association (CDA) dam classification guidelines (CDA, 2014). The detailed design report (BGC, 2018) presents the classification rationale. Forte Dynamics has reviewed both the CDA Guidelines and BGC's recommendations and also concludes that the embankment is considered as High in hazard analysis. CDA recommendations for high hazard dams include consideration of the Earthquake Design Ground Motion (EDGM) with an annual exceedance probability of 1 in 2,475, and factors of safety as summarized in Table 1.

Table 1. Target factors of safety for slope stability, after CDA (2014).

Loading Condition	Minimum Factor of Safety (FoS)
Static, Long-term	1.5
Pseudo-static	1.0
Post-earthquake	1.2

2.1. Seismicity

According to the site-specific seismic hazard analysis previously performed for this site (Tetra Tech, 2012), a design peak ground acceleration (PGA) of 0.35 g should be used for facilities requiring low-probability (e.g., 1 in 5,000-year, or 1 in 10,000-year) or maximum design earthquake (MDE) ground motions, and a PGA of 0.25 g should be used for facilities requiring 1 in 2,475-year design basis earthquake (DBE) ground motions.

Pseudo-static analyses were performed to evaluate the stability of the HLF under seismic (earthquake) loading. A pseudo-static stability analysis incorporates the effects of seismic loads by subjecting the 3D sliding mass to a horizontal acceleration equal to a seismic coefficient based on the PGA expected during an earthquake. The pseuedo static analysis was completed at 2/3 PGA utilizing peak strengths for both liner interface and ore materials.

3.0 METHODS OF ANALYSIS

Limit Equilibrium (LE) geotechnical analyses were performed around the Phase 1 HLF using 3D methods. Materials were defined using shear-normal functions with input values for strength derived from laboratory testing results. The analyses were conducted using SVSLOPE: 3D Limit Equilibrium Slope Stability Analysis (Version 10.04.000.135) software by Bentley Software. SVSLOPE allows for multi-plane slope stability analysis of complex 3D geometry using triangulated surfaces from asbuilts of Phase 1A and 1B.

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Three different conditions were analyzed:

- Operational static with peak interface strength and estimated ore material strength from multiple lab tests.
- Operational pseudo-static with peak interface strength and estimated ore material strength from multiple lab tests.
- Post-earthquake static with residual interface strength and estimated ore material strength from multiple lab tests.

The horizontal ground acceleration produced by the DBE event (see Section 2.1) was used in the pseudo-static analysis. The post-earthquake analyses used the residual (large-displacement) liner strength, which is described further in Section 4.0.

4.0 MATERIAL PROPERTIES

The material properties used in the slope stability analyses are shown in Table 2.

Table 2. Material properties used in slope stability analyses.

Material Description	Strength Model	Unit Weight (kN/m3)	Comment
Crushed Ore	Shear-Normal	20	See Note 1
Foundation and Embankment	Shear-Normal	23	See Note 2
Liner Interface	Shear-Normal	12	See Note 3

Notes:
1. Shear-normal function, see Section 4.1.
2. Bedrock is modelled as impenetrable for the purpose of forcing failure surfaces along liner interface.
3. Bilinear functions for post-earthquake analysis, see Section 4.2.

4.1. Ore

Shear strength for the crushed ore was based on material received from site and tested at varying normal pressures. Figure 1 below presents all curves of ore strength considered for this analysis. The 2018/19 BGC curve is what was utilized in their associated reports based on data at the time. Forte Dynamics completed further ore testing based on what was placed on the heap in December 2019. The ore strengths were tested at varying moisture contents (9%), mas operational active leaching, and an assumed weakened strength at saturation of approximately (11.8%). Counterintuitively, lab results indicated that material strengths of the ore were higher at higher moisture content.

In considering this and all test work the current ore strength curve utilized in this analysis was achieved by a curve that follows the HLF sample at 9% to the 691 kPa level, at which pint the curve is extrapolated based on parallels with the BGC test work.

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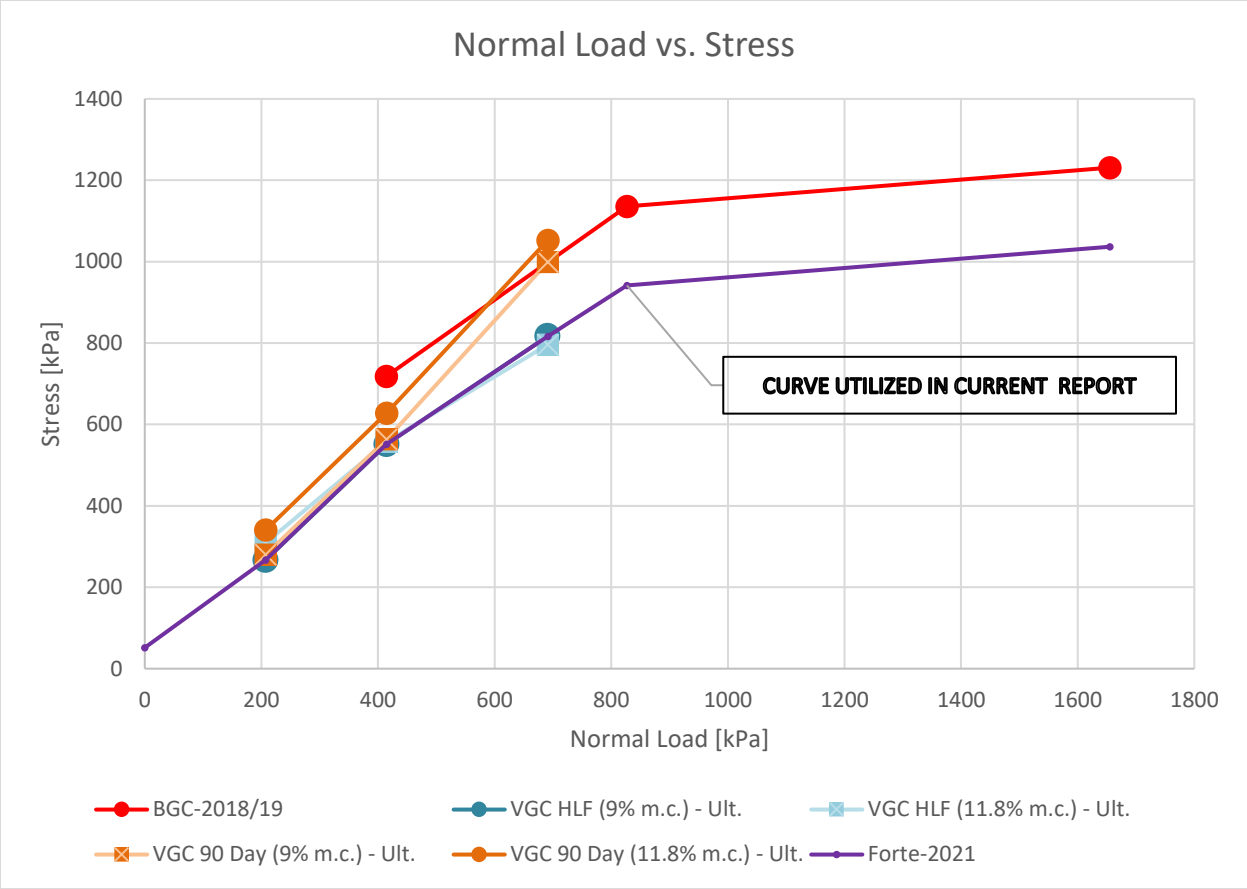

Figure 1. Presents all Ore Strengths tested to Date

Table 3 below presents the actual data points utilized for the Forte-2021 curve presented in Figure 1 and utilized in current analysis.

Table 3. Ore Shear strength Values-Forte 2021

VGC Forte-2021	
Normal [kPa]	Ultimate [kPa]
0	52
207	267
415	552
691	817
827	942
1655	1037

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4.2. Liner System

During construction, BGC performed laboratory multi-interface shear testing on the installed composite liner materials for Phase 1A, and Forte composed testing during Phase 1B. The lining system for the HLF pad comprises the following, from top to bottom:

- Overliner drain fill – minus 38 mm gravel (Phase 1A), similar material from HLF for Phase (1B)
- Textured geomembrane – 2.0 mm linear low-density polyethylene (LLDPE) - Solmax manufactured for Phase 1A and Enviroliner manufactured for Phase 1 B
- Geosynthetic clay liner (GCL) (Solmax for both Phase 1A and 1B)
- Prepared subgrade

Bulk samples of representative subgrade and overliner drain fill (ODF) material were collected from the site. The subgrade material was tested for index properties and classified as non-plastic silty sand with gravel. The ODF was described as angular to subangular, poorly graded gravel.

The geomembrane and GCL products samples were provided by the project liner supplier(s). The GCL samples were BentoLiner NWL-60 manufactured by GSE Environmental (GSE). The geomembrane sample was double- side textured LLDPE manufactured by Solmax for Phase 1A and Layfield for Phase 1B.

Phase 1A lab tests included:

GCL samples were also sent to TRI Environmental Inc. for peel strength and hydrated internal shear strength testing as part of conformance testing for the project. Laboratory test results are provided in Appendix A-1 and data sheets for the geosynthetic products are provided in Appendix B.

Phase 1B lab tests included:

GCL and LLDPE samples were sent to BGC labs shear strength test for this composite system and are presented in Appendix A2. Data sheets for the LLDPE are presented in Appendix B.

The weakest layer of the composite liner system was found to be the GCL interface with the textured geomembrane. At normal stresses higher than 400 kPa, the GCL/Geomembrane interface strength decreased from the peak strength resulting in a limiting residual strength value of about 100 kPa. Additional discussion of interpretation of laboratory results are presented in Section 6. Table 4 and Figure 2 present the interpreted results of the peak and residual (large displacement, or LD) shear strength based on the laboratory testing. These values were input as shear-normal strength envelopes in the stability model.

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Note:

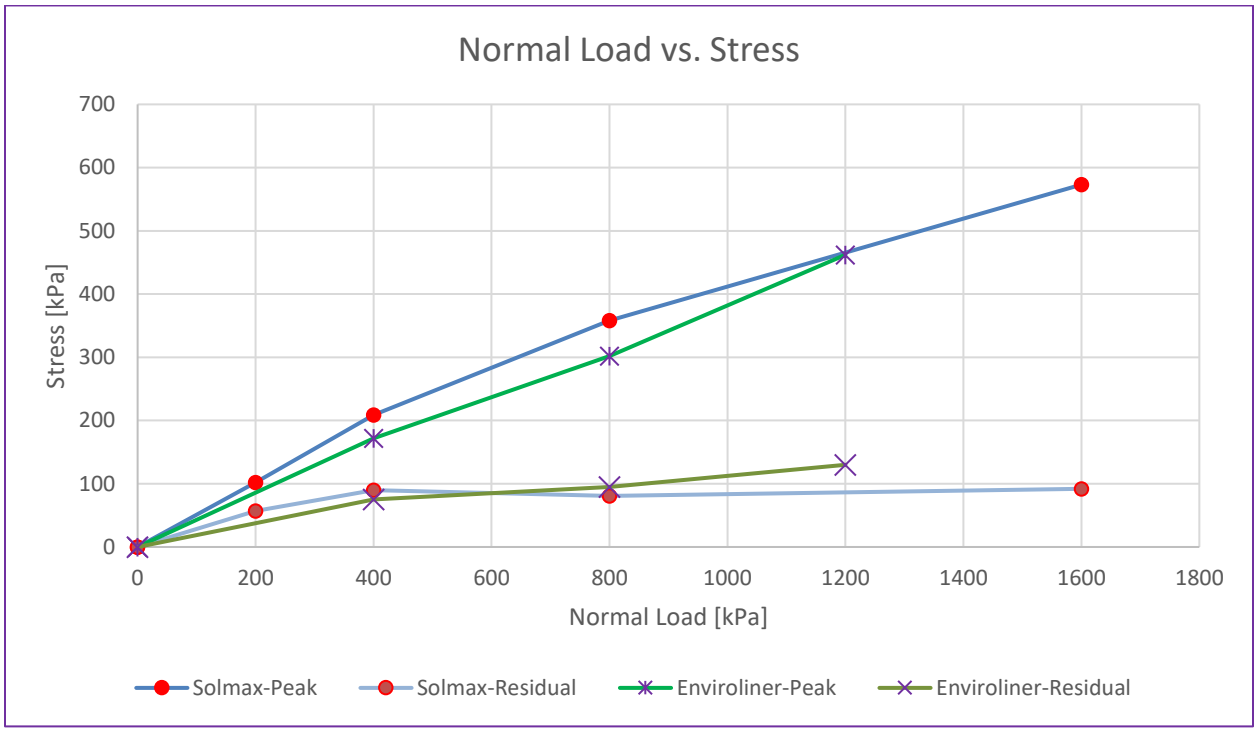

Figure 2. Interpreted liner interface strength for both Phase 1A (Solmax, and Phase 1B Enviroliner LLDPE

Table 4. Interpreted liner interface strength data for Solmax (Phase 1A)

	Normal Stress [kPa]	Peak Shear Stress [kPa]	Residual Shear Stress [kPa]
SOLMAX	0	0	0
	200	102	57
	400	209	90
	800	358	81
	1600	573	92

Table 5. Interpreted liner interface strength data for Enviroliner (Phase 1B)

	Normal Stress [kPa]	Peak Shear Stress [kPa]	Residual Shear Stress [kPa]
Enviroliner	0	0	0
	400	172	75
	800	302	95
	1200	462	130

Note: Both Table 4 and 5 interface strengths utilized the same GSE GCL Material

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5.0 RESULTS

The results of the slope stability analyses for Phase 1, including asbuilt survey and lab results of actual liner systems placed, are presented in Appendix C. Results shown on the figures are shaded to correspond with the following FoS ranges shown in the key on the left side of each sheet.

Results for static conditions (with peak interface strength and reduced material strength), pseudo-static (with peak interface strength and reduced material strength) and post-earthquake conditions (with residual liner interface strength) indicate acceptable factors for safety for all analyzed areas. The area of Phase 1 exhibited a minimum FoS value of about 2.21 for the modeled post-earthquake condition, 1.48 for the pseudo-static case and 2.24 for the static case.

Table 5 presents a summary of results compared of the stability analysis results..

Table 5. Summary of results.

Case	2021 3D Minimum FoS [4]
Static	2.24
Pseudo-static	1.48
Post-earthquake	2.21

Notes:

1. Minimum critical FoS from all 3D stability results.

6.0 CONCLUSIONS AND RECOMMENDATIONS

The multi-interface laboratory shear testing conducted for the project utilized standard methods and site-specific materials and is considered valid. The sample preparation included hydration under low confinement of the GCL with 24 hours of inundation prior to normal loading in the direct shear apparatus. This procedure is not representative of the field condition which typically involves gradual hydration of GCL in a confined (loaded) condition. Forte and previous engineer of record BGC considers the results of the liner interface testing somewhat conservative due to the fully saturated bentonite material noted on the geomembrane liner following the test. Some saturated bentonite apparently squeezed through the GCL cloth material between the GCL and geomembrane upon loading which reduced the interface strength upon shearing. BGC recommends further testing to investigate the possible effects of bentonite squeezing on interface strength and GCL hydration under confining stress prior to shearing.

These analyses were based on asbuilt Phase 1A and 1B pad and embankment asbuilt surfaces and updated testing of material strengths as a continuation of the analysis done in 2019. Additional stability analyses using continued material ore strength material test work that correspond to varying ore characteristics, such as ore particle size distribution, are recommended, as well as, continuing updates of surveyed asbuilt Phase 2-3, etc. To expand flexibility of approved liner systems for future phasing, it is also recommended that additional liner interface

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test work is completed on other manufacturer's materials. The dynamics of this facility are such that the ultimate configuration may require adjustments as data is obtained and analyzed by the Engineer of Record.

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Yours sincerely,

Forte Dynamics Inc.
per:

Barry Carlson, P.Eng.

Principal Engineer

Reviewed by:

Clint Green, P.E.
Principal Engineer

Attachments:
Appendix A – Laboratory Test Results
Appendix B – Product Data Sheets
Appendix C – Stability Analyses Results

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APPENDIX A

GEOSYNTHETIC and ORE LABORATORY TEST RESULTS

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APPENDIX A-1

PHASE 1A GEOSYNTHETIC LABORATORY TEST RESULTS

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PROJECT INFORMATION		LINER SYSTEM	
Number	1869-001	Subgrade	Silty SAND with gravel (SM)
Name	Eagle Gold Heap Leach Facility	GCL	GSE BentoLiner NWL-60, 15
Location	Dublin Gulch, Yukon Territory	Geomembrane	80mil Black Textured (SOLMAX)
Client	Victoria Gold Corp.	Overliner	Poorly graded GRAVEL (GP) - PT Material

INDEX PROPERTIES OF SUBGRADE	Before Shearing
Length and Width (cm)	40.5 x 40.5
Thickness (cm)	4.1
Bulk Density ρ_b(g/cm^3)	2.26
Dry Density ρ_d(g/cm^3)	2.06
Void Ratio e	0.32
Water Content (%)	9.7
Specific Gravity G_s	2.73

INDEX PROPERTIES OF OVERLINER	Before Shearing
Length and Width (cm)	40.5 x 40.5
Thickness (cm)	16.4
Bulk Density ρ_b(g/cm^3)	1.82
Dry Density ρ_d(g/cm^3)	1.79
Void Ratio e	0.45
Water Content (%)	1.6
Specific Gravity G_s	2.60

INDEX PROPERTIES OF GCL	
Initial Average Hydrated Thickness (cm)	0.73
Initial Water Content (%)	117.3
Final Water Content (%)	96.2

SHEARING PARAMETERS	
Vertical Stress σ'_v (kPa)	800
Displacement Rate (cm/min)	0.29

RESULTS	
τ_{max} (kPa)	368
τ_{res} (kPa)	74

Note: The liner system failed between the geosynethetic clay liner (GCL) and Geomembrane. Failure was also observed in the GCL. There was no evidence that any shearing occurred in either the subgrade or overliner.

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Fredericton, NB Canada E3B 1X6
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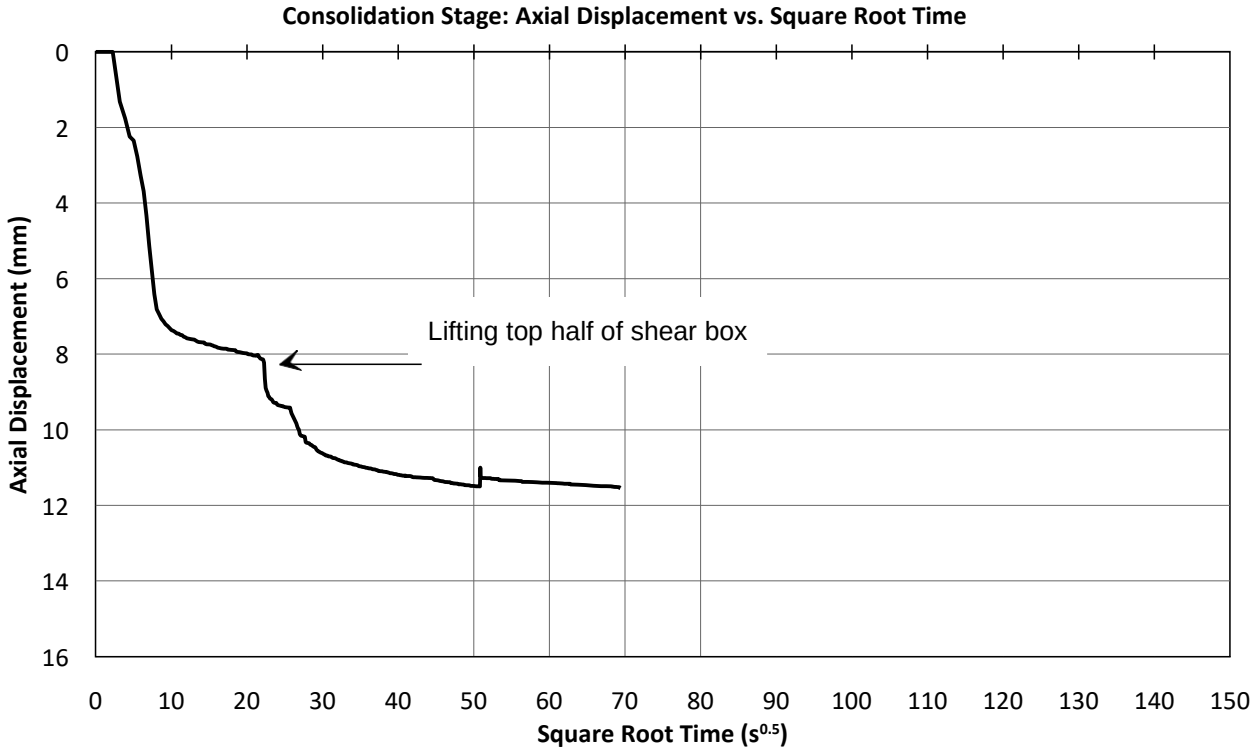
Tested by KS (2019-08-01)
Reviewed by DO (2019-08-02)
Approved by SD (2019-08-02)
Date Format (YYYY-MM-DD)



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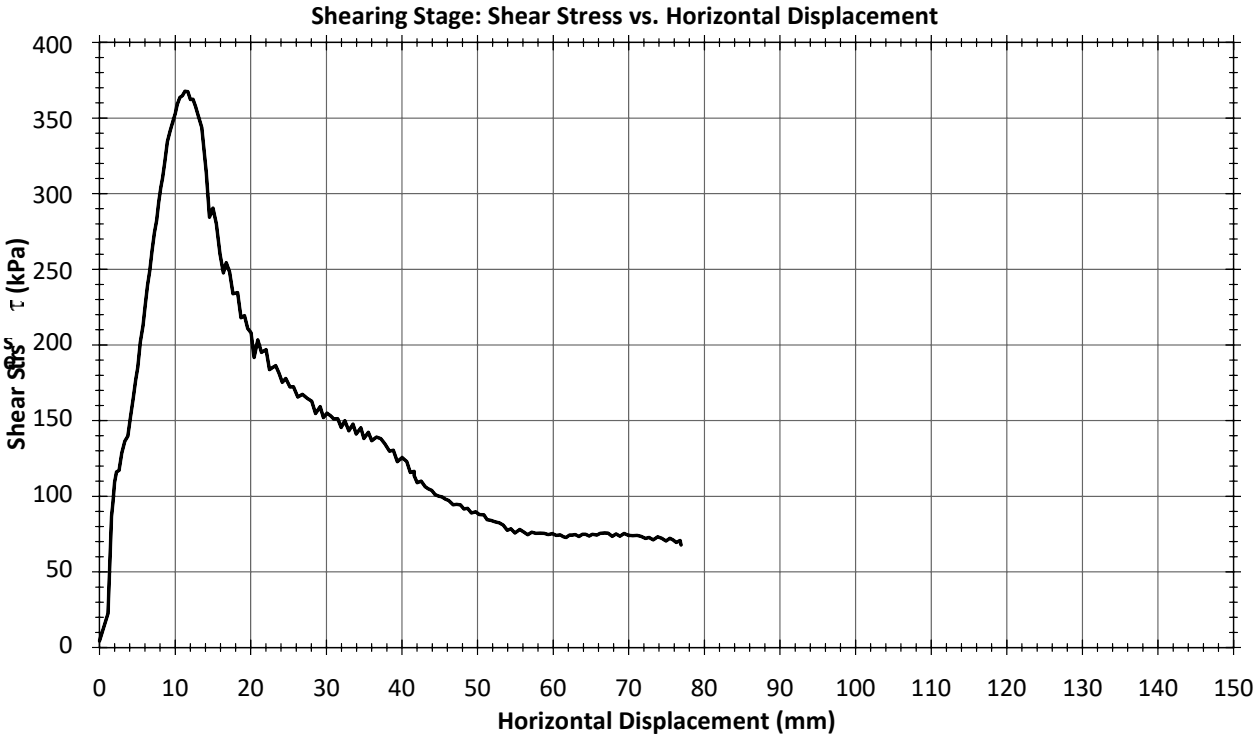

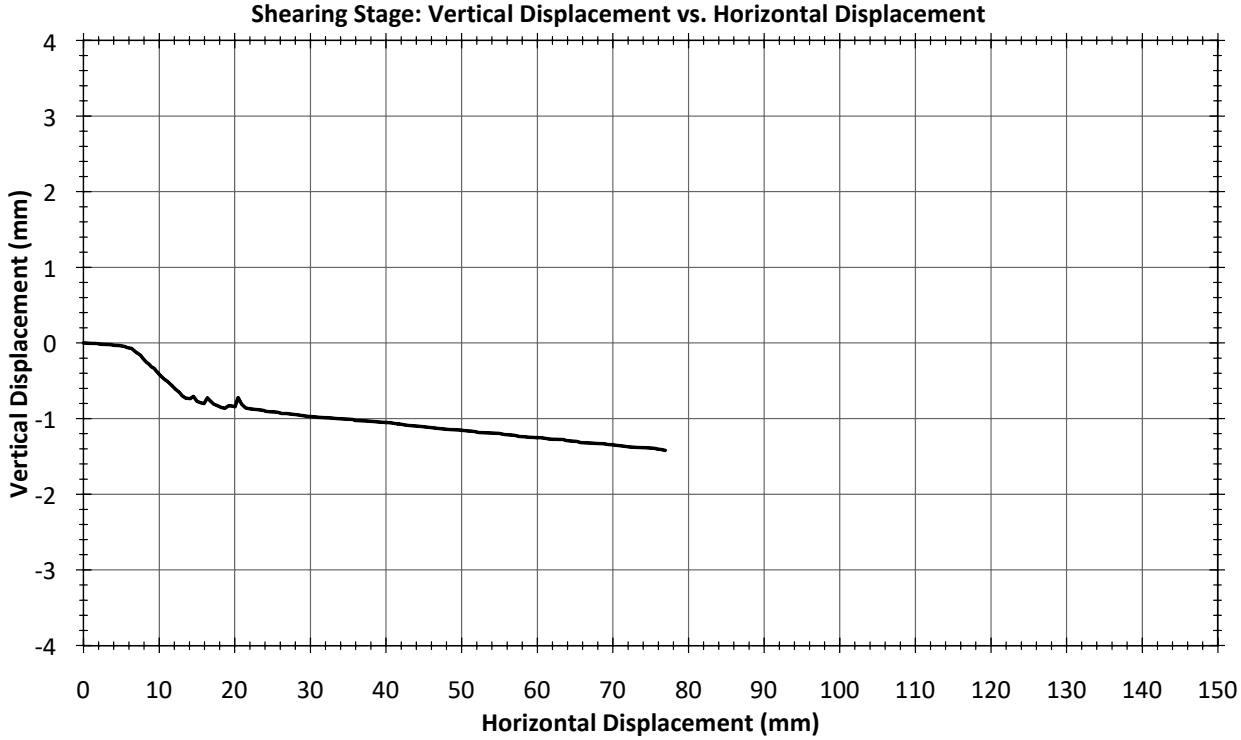

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Subgrade



GCL over subgrade



Alignment of GCL and geomembrane before test



Overliner



GCL after test



Subgrade after test

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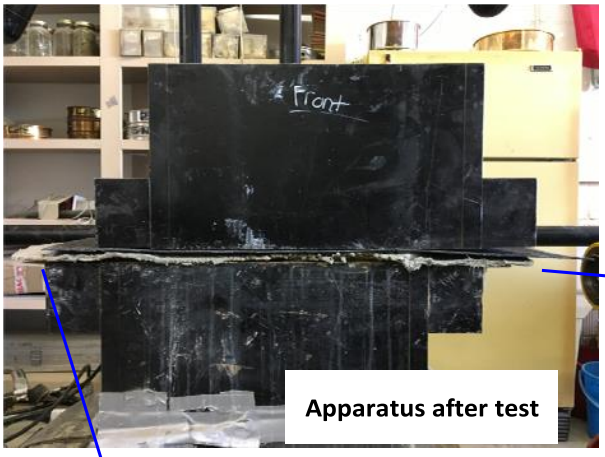
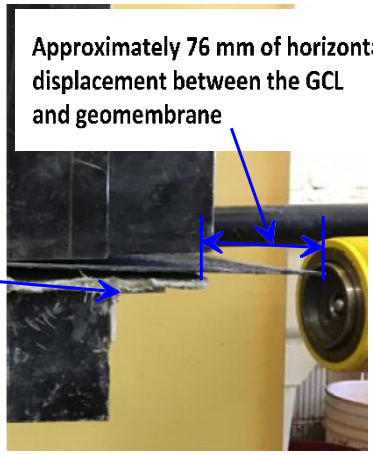


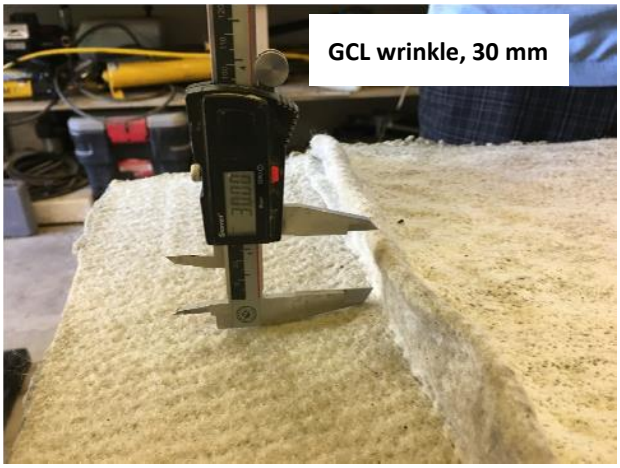
Apparatus after test







Top of geomembrane after test



GCL wrinkle, 30 mm



GCL wrinkle on bottom

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BGC ENGINEERING INC.
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PROJECT INFORMATION		LINER SYSTEM	
Number	1869-001	Subgrade	Silty SAND with gravel (SM)
Name	Eagle Gold Heap Leach Facility	GCL	GSE BentoLiner NWL-60, 15
Location	Dublin Gulch, Yukon Territory	Geomembrane	80mil Black Textured (SOLMAX)
Client	Victoria Gold Corp.	Overliner	Poorly graded GRAVEL (GP) - PT Material

INDEX PROPERTIES OF SUBGRADE	Before Shearing
Length and Width (cm)	40.5 x 40.5
Thickness (cm)	15.6
Bulk Density ρ_b(g/cm^3)	2.26
Dry Density ρ_d(g/cm^3)	2.04
Void Ratio e	0.34
Water Content (%)	10.3
Specific Gravity G_s	2.73

INDEX PROPERTIES OF OVERLINER	Before Shearing
Length and Width (cm)	40.5 x 40.5
Thickness (cm)	17.6
Bulk Density ρ_b(g/cm^3)	1.58
Dry Density ρ_d(g/cm^3)	1.56
Void Ratio e	0.67
Water Content (%)	1.7
Specific Gravity G_s	2.60

INDEX PROPERTIES OF GCL	
Initial Average Hydrated Thickness (cm)	0.76
Initial Water Content (%)	115.6
Final Water Content (%)	103.7

SHEARING PARAMETERS	
Vertical Stress σ'_v (kPa)	200
Displacement Rate (cm/min)	0.3

RESULTS	
τ_{max} (kPa)	102
τ_{res} (kPa)	57

Note: The liner system failed between the geosynethetic clay liner (GCL) and Geomembrane. There was no evidence that any shearing occurred in either the subgrade or overliner.

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Fredericton, NB Canada E3B 1X6
T 506.460.8660 | F 506.460.8679

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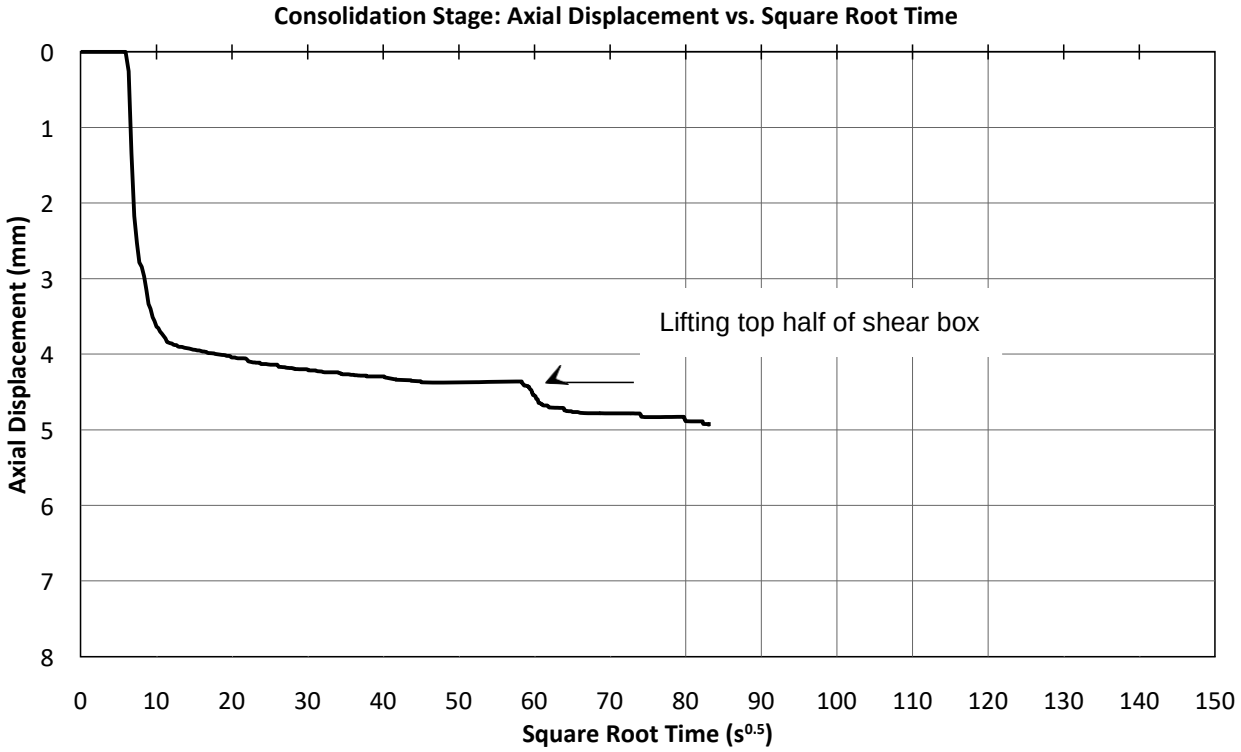
Approved by SD (2018-06-13)
Date Format (YYYY-MM-DD)



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T 506.460.8660 | F 506.460.8679

Tested by DO (2018-06-04)
Reviewed by MB (2018-06-12)
Approved by SD (2018-06-13)
Date Format (YYYY-MM-DD)

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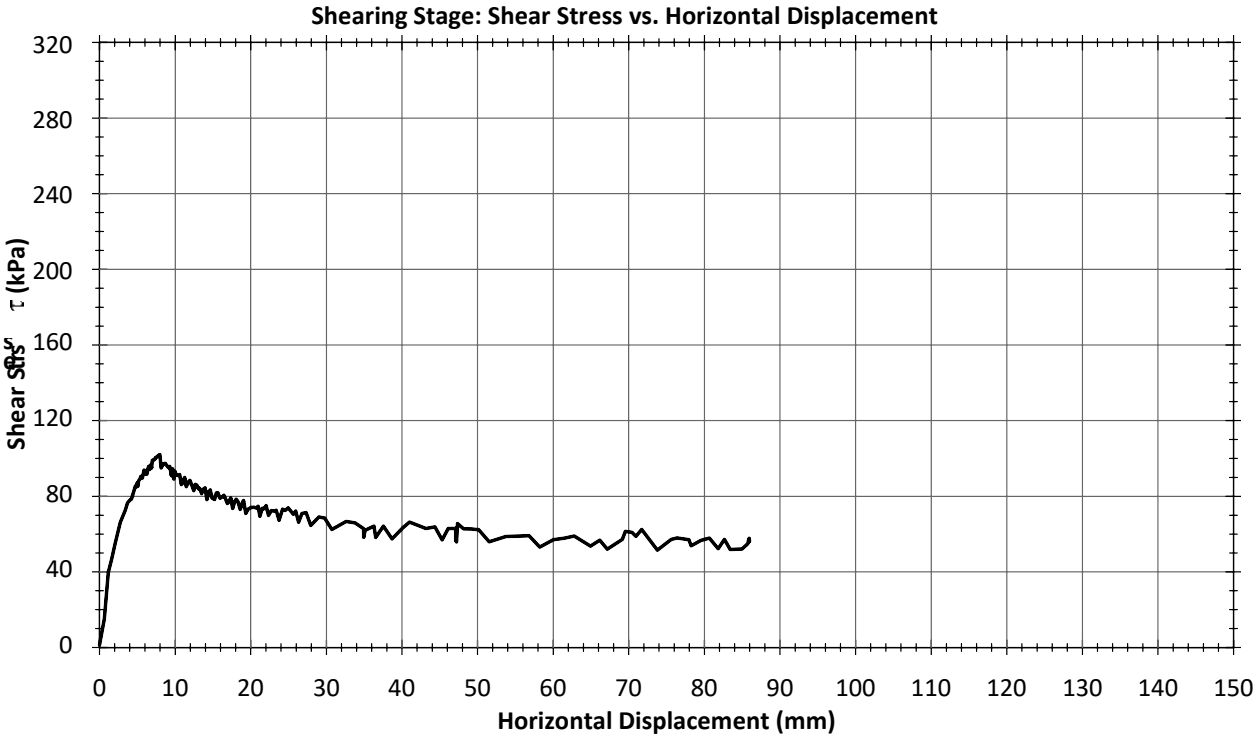

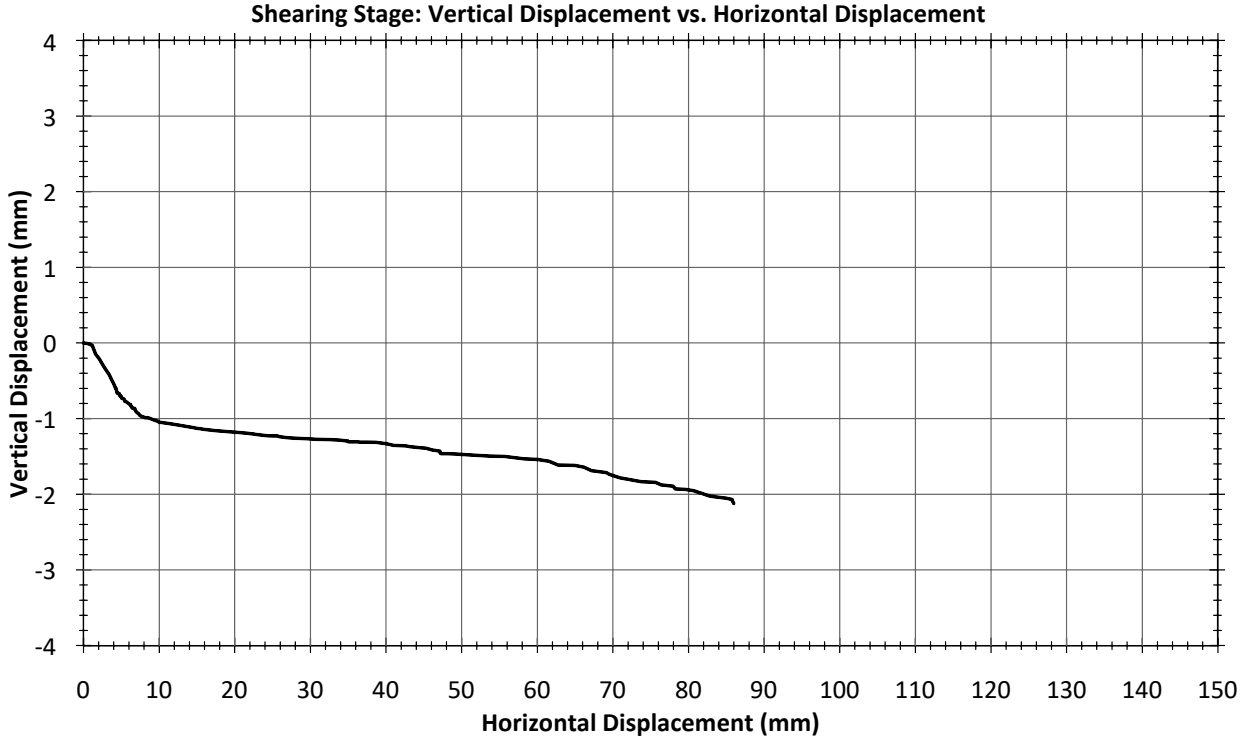

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Subgrade



Goemembrane and GCL placed above subgrade



Sliding between the GCL and the geomembrane during test



GCL and geomembrane after test



No signs of failure of the geomembrane



No signs of internal failure of the GCL

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PROJECT INFORMATION		LINER SYSTEM	
Number	1869-001	Subgrade	Silty SAND with gravel (SM)
Name	Eagle Gold Heap Leach Facility	GCL	GSE BentoLiner NWL-60, 15
Location	Dublin Gulch, Yukon Territory	Geomembrane	80mil Black Textured (SOLMAX)
Client	Victoria Gold Corp.	Overliner	Poorly graded GRAVEL (GP) - PT Material

INDEX PROPERTIES OF SUBGRADE	Before Shearing
Length and Width (cm)	40.5 x 40.5
Thickness (cm)	4.2
Bulk Density ρ_b(g/cm^3)	2.26
Dry Density ρ_d(g/cm^3)	2.07
Void Ratio e	0.32
Water Content (%)	9.2
Specific Gravity G_s	2.73

INDEX PROPERTIES OF OVERLINER	Before Shearing
Length and Width (cm)	40.5 x 40.5
Thickness (cm)	16.6
Bulk Density ρ_b(g/cm^3)	1.76
Dry Density ρ_d(g/cm^3)	1.74
Void Ratio e	0.49
Water Content (%)	1.4
Specific Gravity G_s	2.60

INDEX PROPERTIES OF GCL	
Initial Average Hydrated Thickness (cm)	0.70
Initial Water Content (%)	122.0
Final Water Content (%)	104.7

SHEARING PARAMETERS	
Vertical Stress σ'_v (kPa)	400
Displacement Rate (cm/min)	0.23

RESULTS	
τ_{max} (kPa)	209
τ_{res} (kPa)	90

Note: The liner system failed between the geosynethetic clay liner (GCL) and Geomembrane. No failure was observed in the GCL. There was no evidence that any shearing occurred in either the subgrade or overliner.

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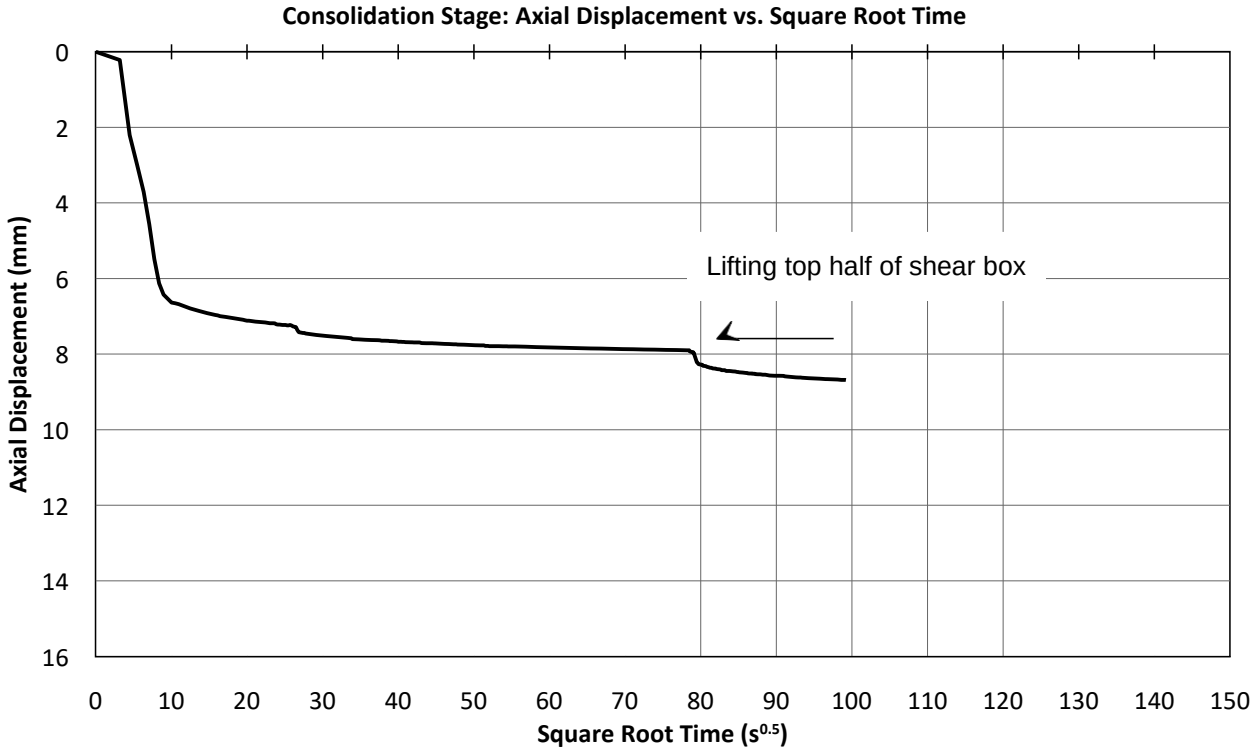
Approved by SD (2019-08-12)
Date Format (YYYY-MM-DD)



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Tested by KS (2019-08-06)
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Approved by SD (2019-08-12)
Date Format (YYYY-MM-DD)

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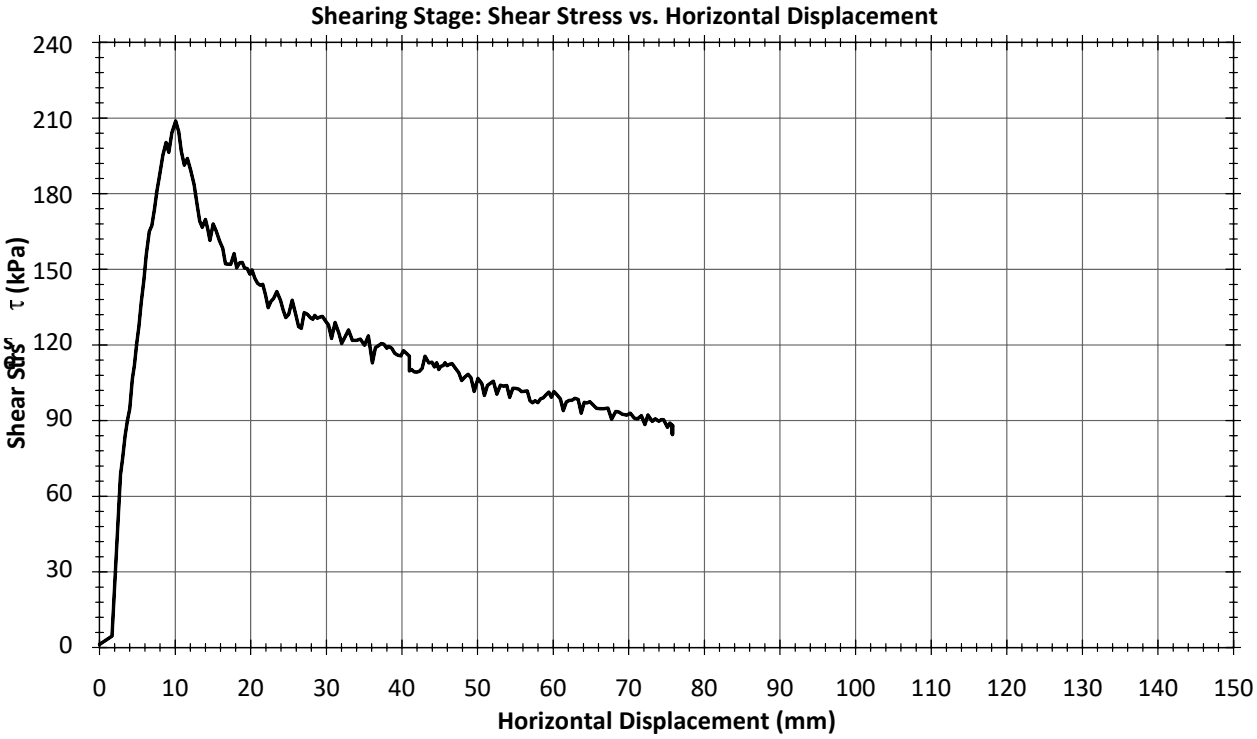

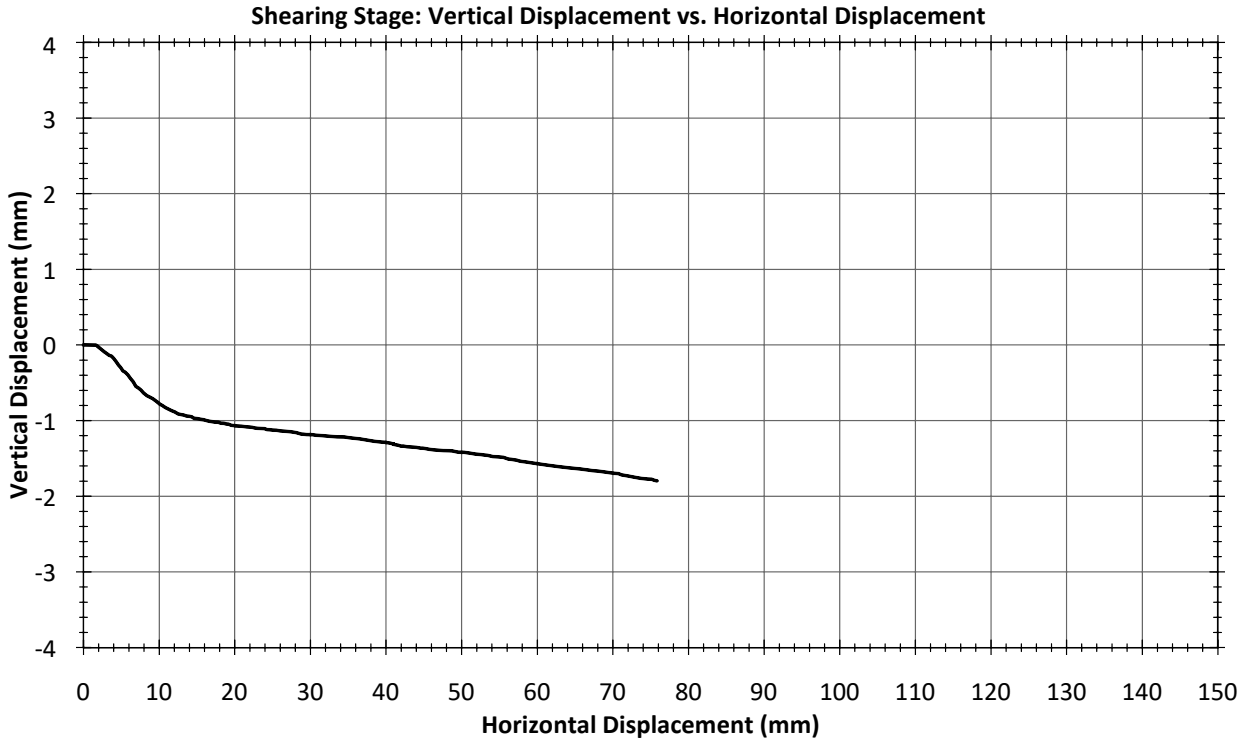

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Tested by KS (2019-08-06)
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Date Format (YYYY-MM-DD)



Subgrade



GCL over subgrade



Alignment of GCL and geomembrane before test



Overliner



GCL after test



Subgrade after test

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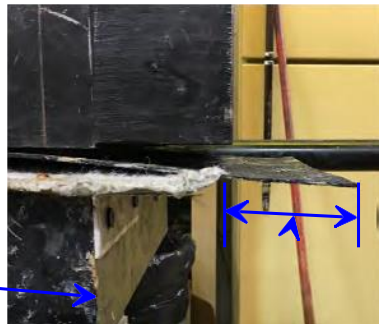
Approved by SD (2019-08-12)
Date Format (YYYY-MM-DD)



Apparatus after test



Approximately 75 mm of horizontal displacement between GCL and geomembrane



No GCL wrinkle on top



No GCL wrinkle on bottom



Top of geomembrane after test

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PROJECT INFORMATION		LINER SYSTEM	
Number	1869-001	Subgrade	Silty SAND with gravel (SM)
Name	Eagle Gold Heap Leach Facility	GCL	GSE BentoLiner NWL-60, 15
Location	Dublin Gulch, Yukon Territory	Geomembrane	80mil Black Textured (SOLMAX)
Client	Victoria Gold Corp.	Overliner	Poorly graded GRAVEL (GP) - PT Material

INDEX PROPERTIES OF SUBGRADE	Before Shearing
Length and Width (cm)	40.5 x 40.5
Thickness (cm)	4.0
Bulk Density ρ_b(g/cm^3)	2.26
Dry Density ρ_d(g/cm^3)	2.06
Void Ratio e	0.32
Water Content (%)	9.4
Specific Gravity G_s	2.73

INDEX PROPERTIES OF OVERLINER	Before Shearing
Length and Width (cm)	40.5 x 40.5
Thickness (cm)	15.6
Bulk Density ρ_b(g/cm^3)	1.86
Dry Density ρ_d(g/cm^3)	1.83
Void Ratio e	0.42
Water Content (%)	1.4
Specific Gravity G_s	2.60

INDEX PROPERTIES OF GCL	
Initial Average Hydrated Thickness (cm)	0.75
Initial Water Content (%)	113.8
Final Water Content (%)	95.2

SHEARING PARAMETERS	
Vertical Stress σ'_v (kPa)	800
Displacement Rate (cm/min)	0.24

RESULTS	
τ_{max} (kPa)	358
τ_{res} (kPa)	81

Note: The liner system failed between the geosynethetic clay liner (GCL) and Geomembrane. No failure was observed in the GCL. There was no evidence that any shearing occurred in either the subgrade or overliner.

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Tested by KS (2019-08-16)
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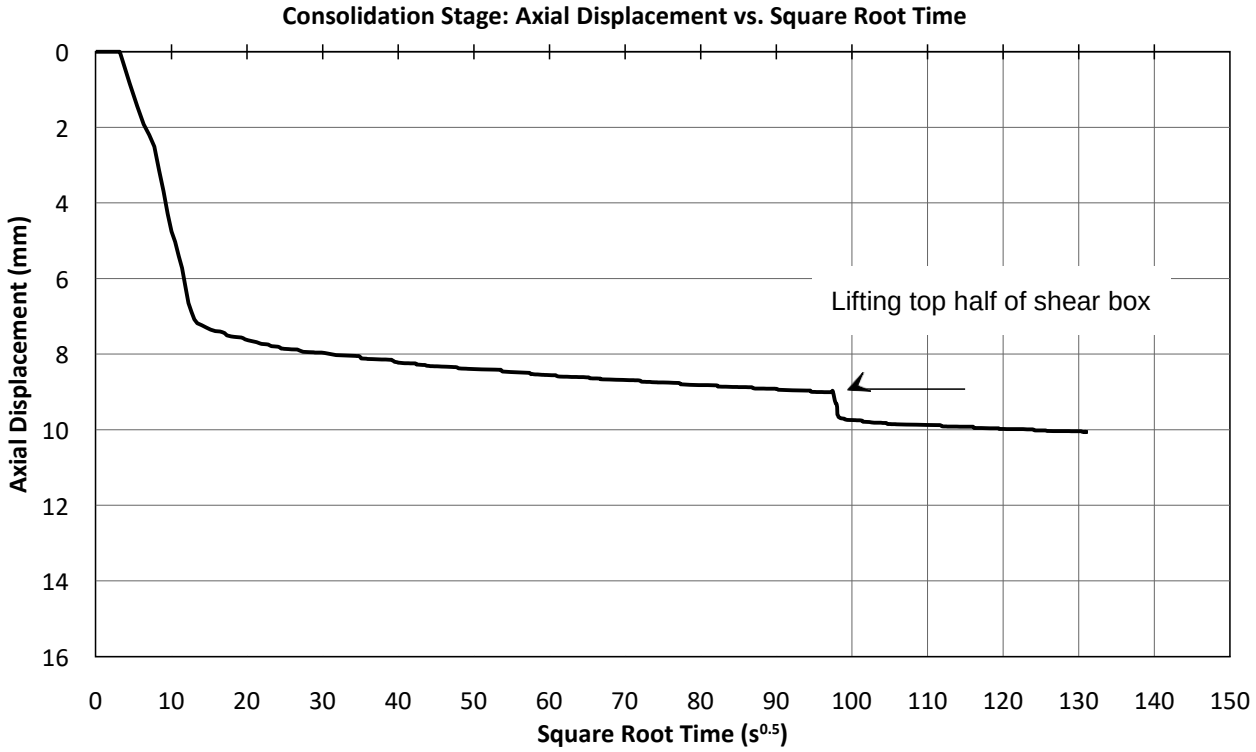
Approved by SD (2019-09-09)
Date Format (YYYY-MM-DD)



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Tested by KS (2019-08-16)
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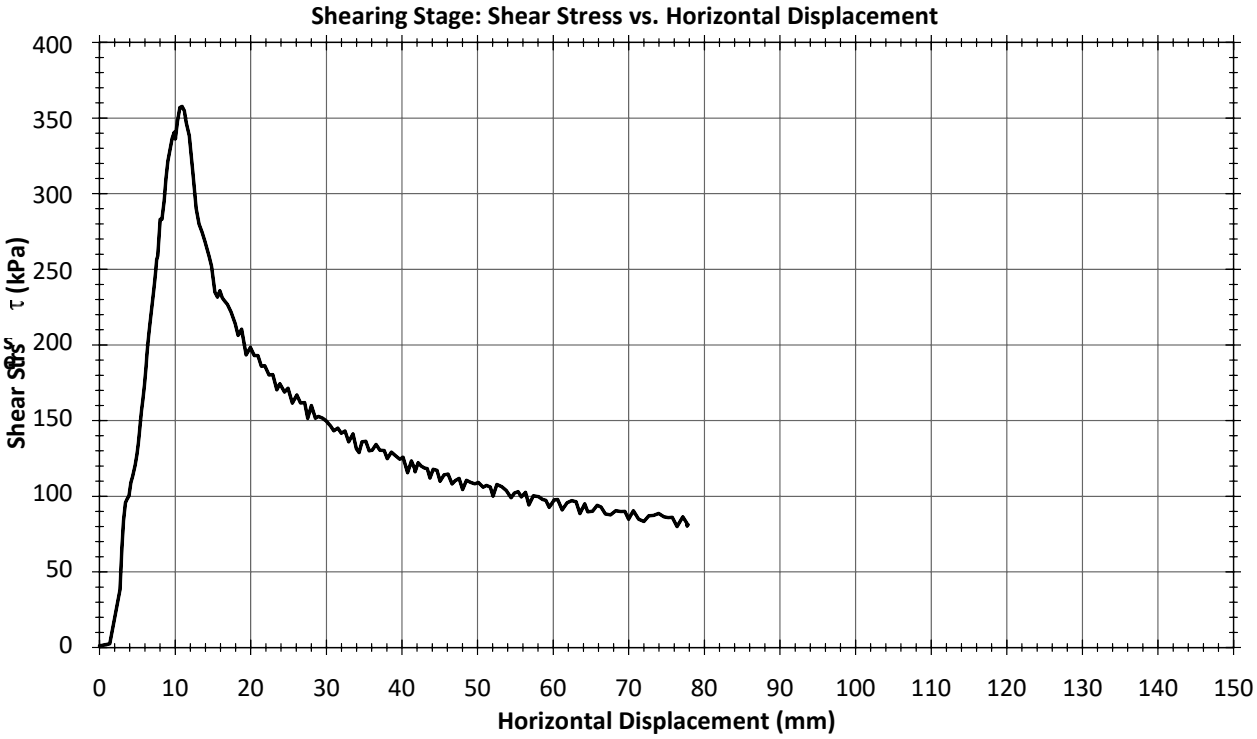

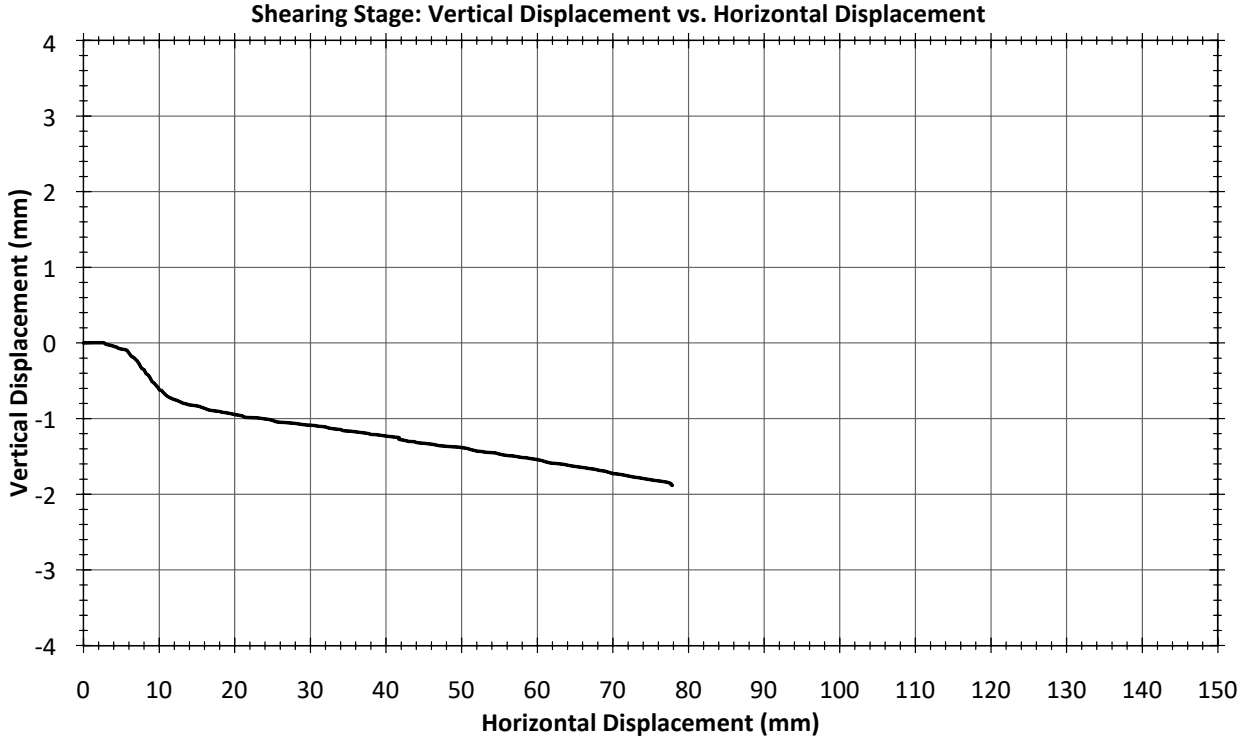

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Tested by KS (2019-08-16)
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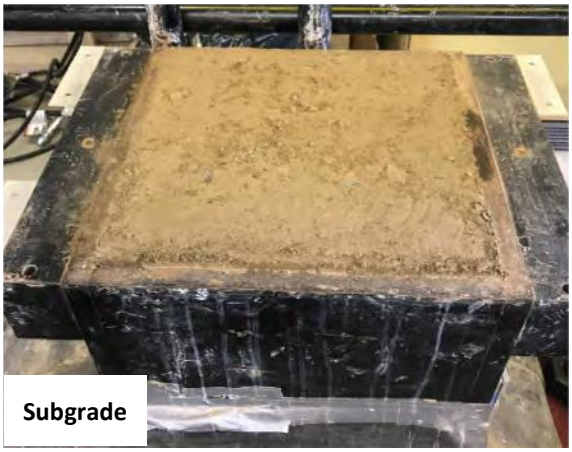
Date Format (YYYY-MM-DD)



Subgrade



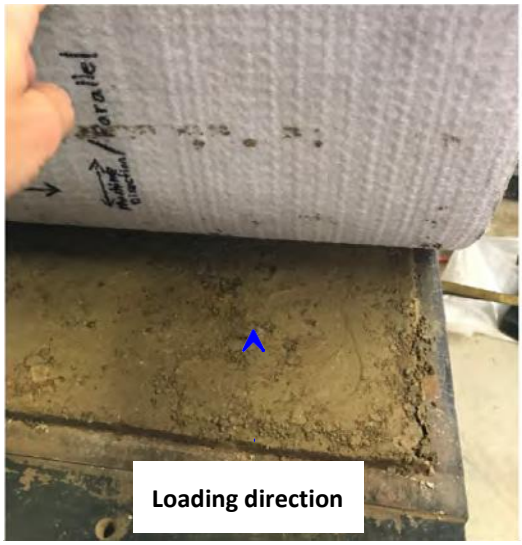
GCL over subgrade



Alignment of GCL and geomembrane before test



Overliner



Loading direction



GCL after test

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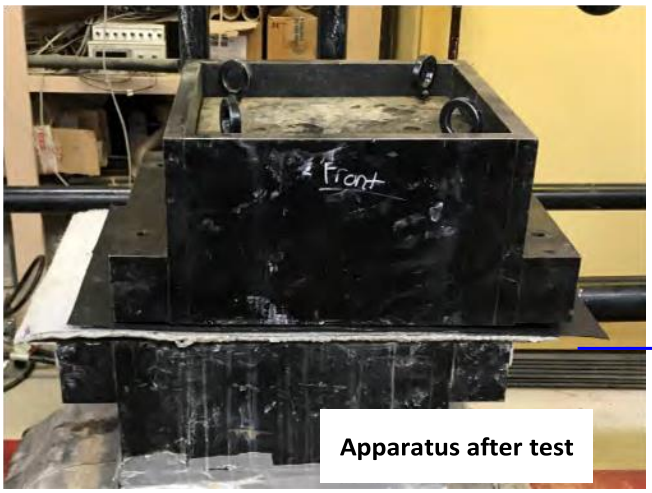
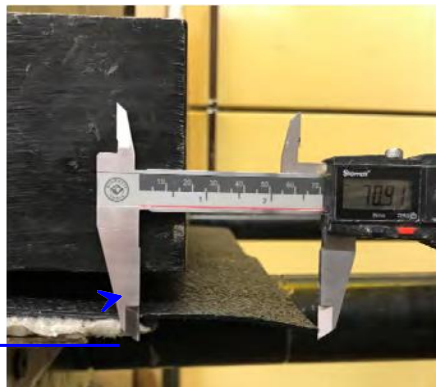


Apparatus after test



~71 mm of horizontal displacement between GCL and geomembrane

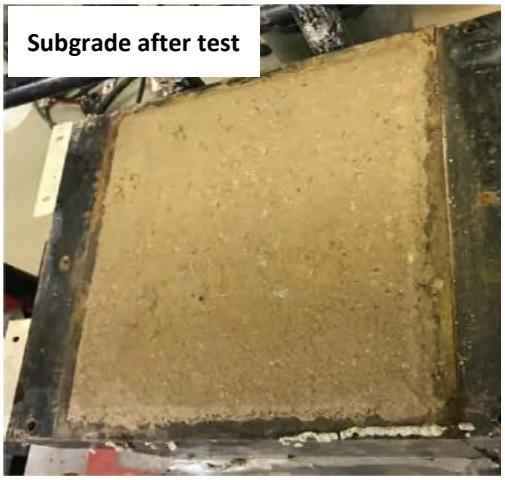


No GCL wrinkle on top



No GCL wrinkle on bottom

Subgrade after test





Top of geomembrane after test

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Approved by SD (2019-09-09)
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PROJECT INFORMATION		LINER SYSTEM	
Number	1869-001	Subgrade	Silty SAND with gravel (SM)
Name	Eagle Gold Heap Leach Facility	GCL	GSE BentoLiner NWL-60, 15
Location	Dublin Gulch, Yukon Territory	Geomembrane	80mil Black Textured (SOLMAX)
Client	Victoria Gold Corp.	Overliner	Poorly graded GRAVEL (GP) - PT Material

INDEX PROPERTIES OF SUBGRADE	Before Shearing
Length and Width (cm)	40.5 x 40.5
Thickness (cm)	9.9
Bulk Density ρ_b(g/cm^3)	2.26
Dry Density ρ_d(g/cm^3)	2.06
Void Ratio e	0.32
Water Content (%)	9.5
Specific Gravity G_s	2.73

INDEX PROPERTIES OF OVERLINER	Before Shearing
Length and Width (cm)	40.5 x 40.5
Thickness (cm)	16.4
Bulk Density ρ_b(g/cm^3)	1.82
Dry Density ρ_d(g/cm^3)	1.80
Void Ratio e	0.45
Water Content (%)	1.4
Specific Gravity G_s	2.60

INDEX PROPERTIES OF GCL	
Initial Average Hydrated Thickness (cm)	0.78
Initial Water Content (%)	110.9
Final Water Content (%)	91.6

SHEARING PARAMETERS	
Vertical Stress σ'_v (kPa)	1600
Displacement Rate (cm/min)	0.22

RESULTS	
τ_{max} (kPa)	573
τ_{res} (kPa)	92

Note: The liner system failed between the geosynethetic clay liner (GCL) and Geomembrane. Failure was also observed in the GCL. There was no evidence that any shearing occurred in either the subgrade or overliner.

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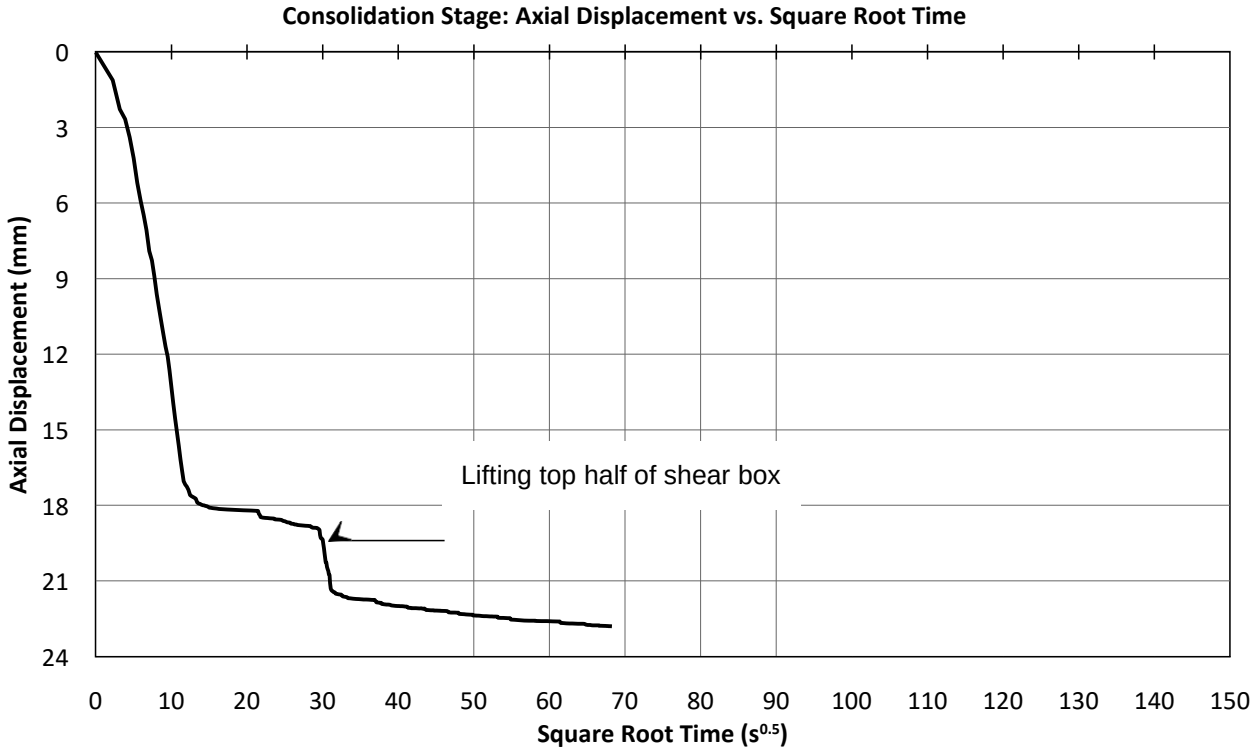

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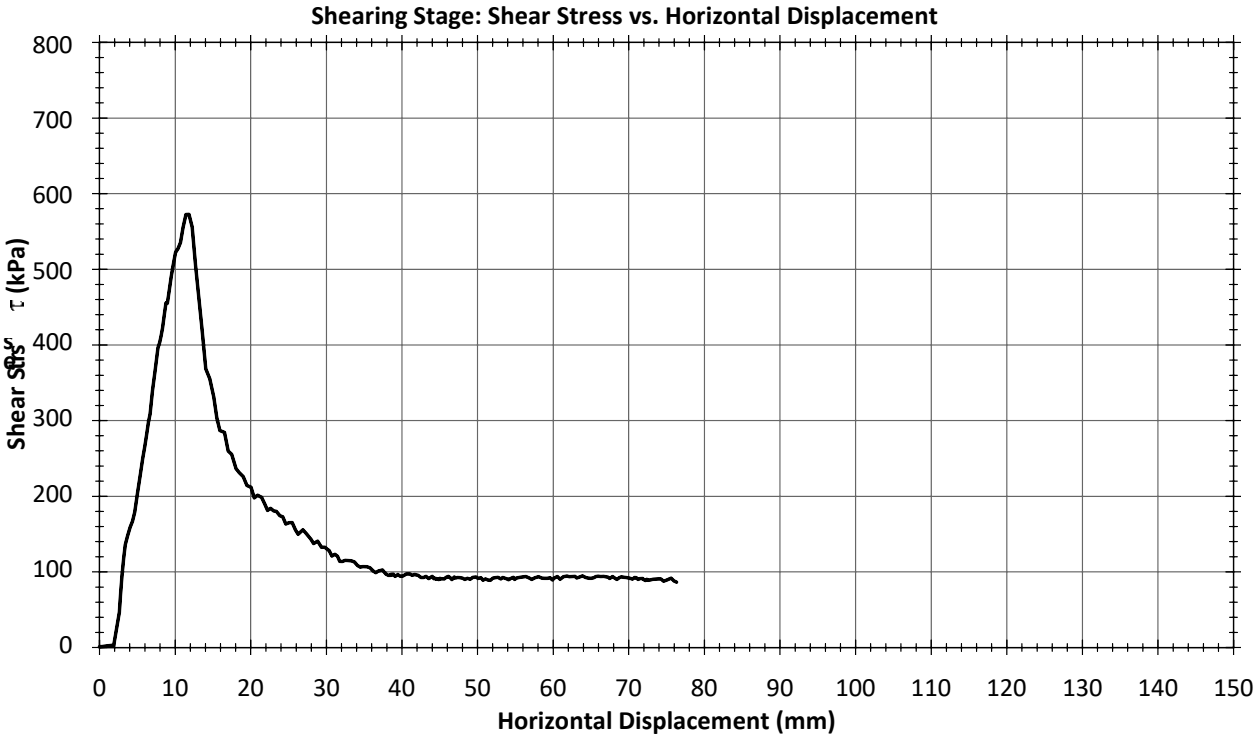

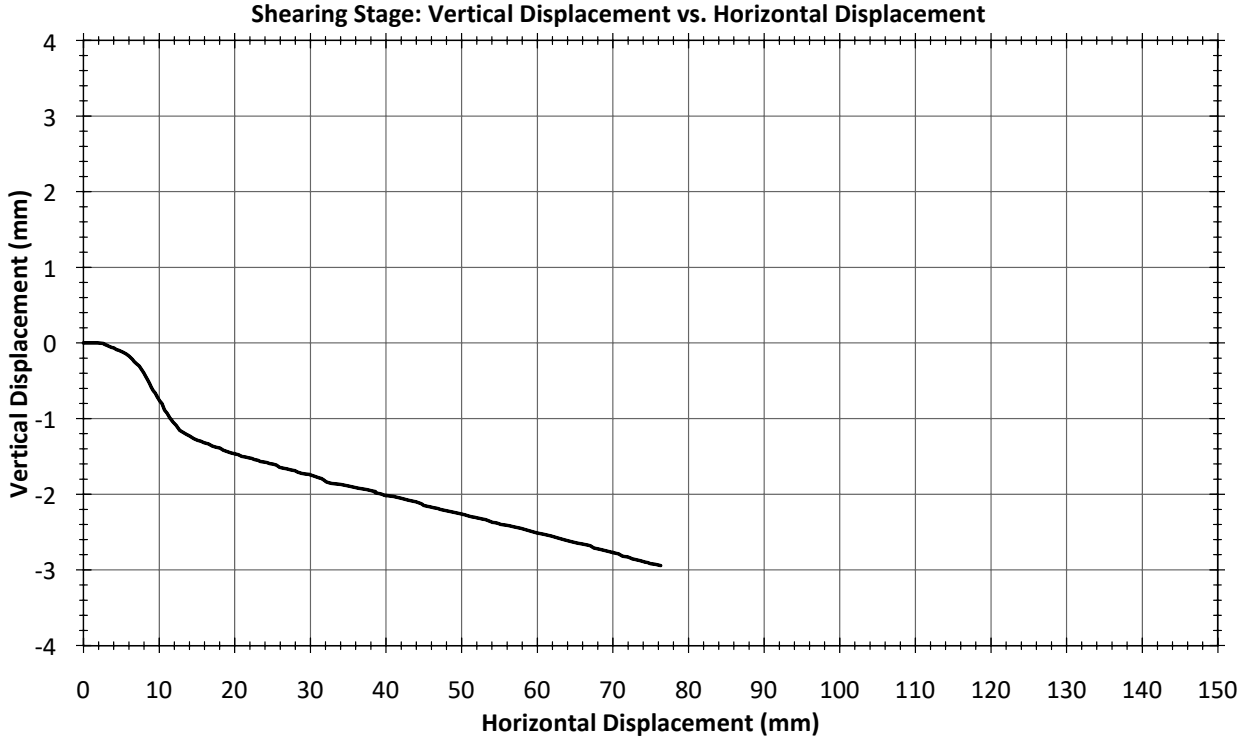

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Approved by SD (2019-07-26)
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Subgrade



GCL over subgrade



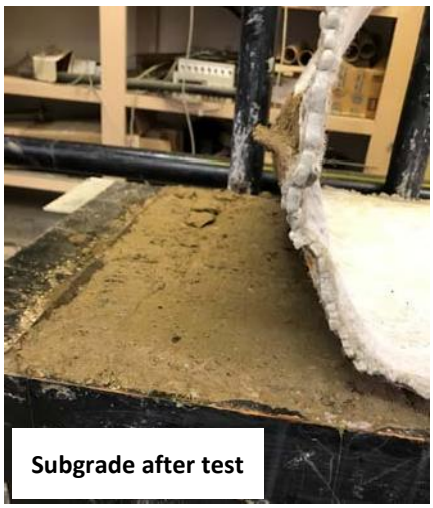
Alignment of GCL and geomembrane before test

Overliner





GCL after test



Subgrade after test

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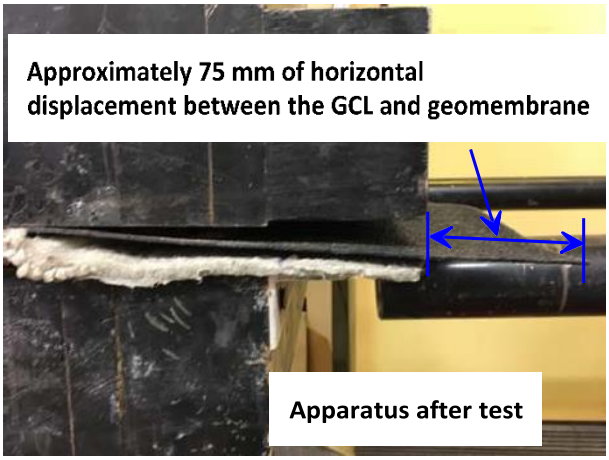
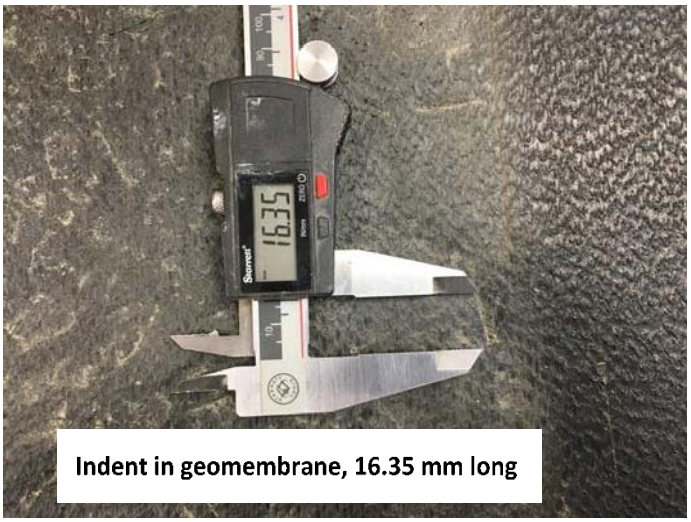
Date Format (YYYY-MM-DD)











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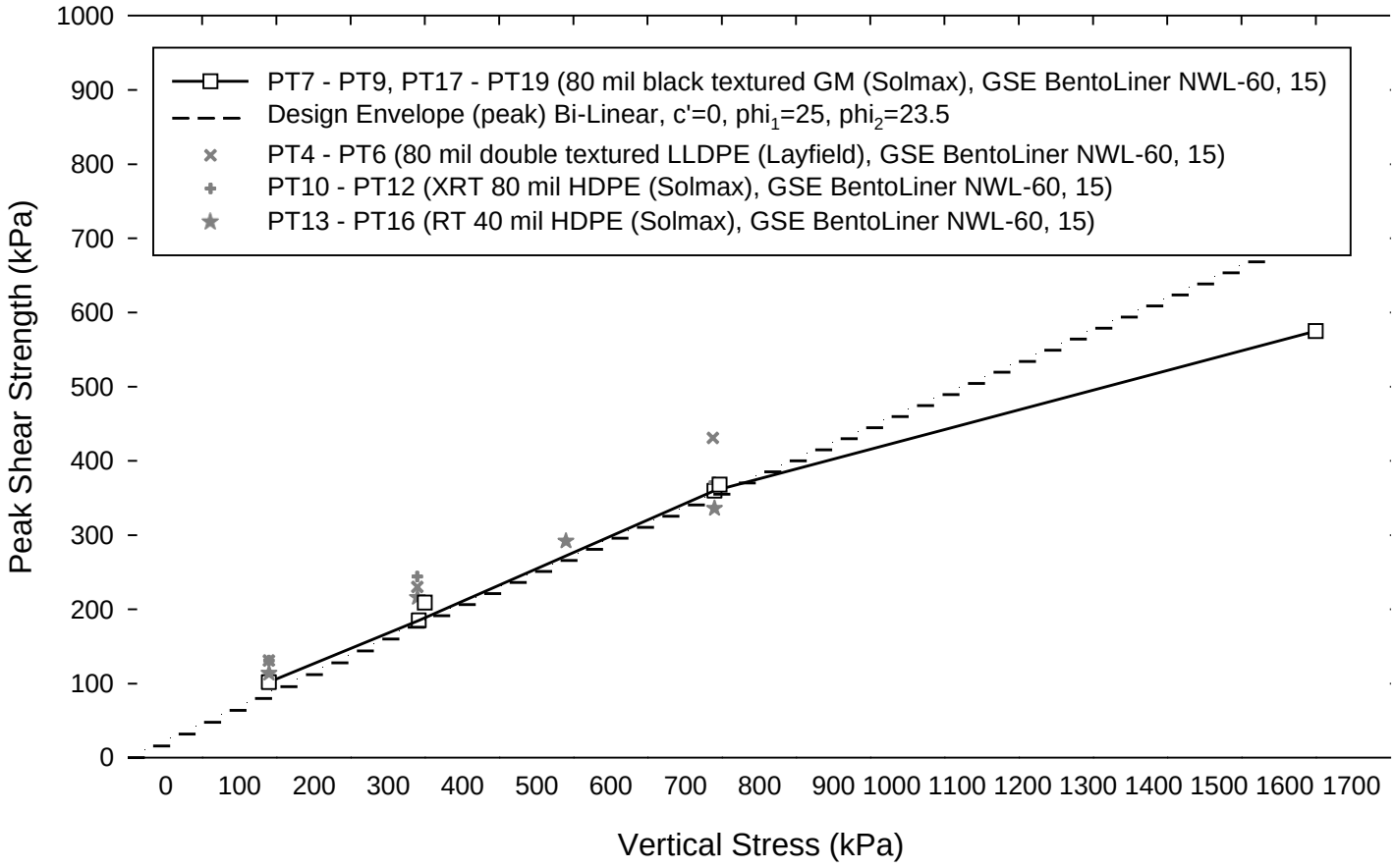
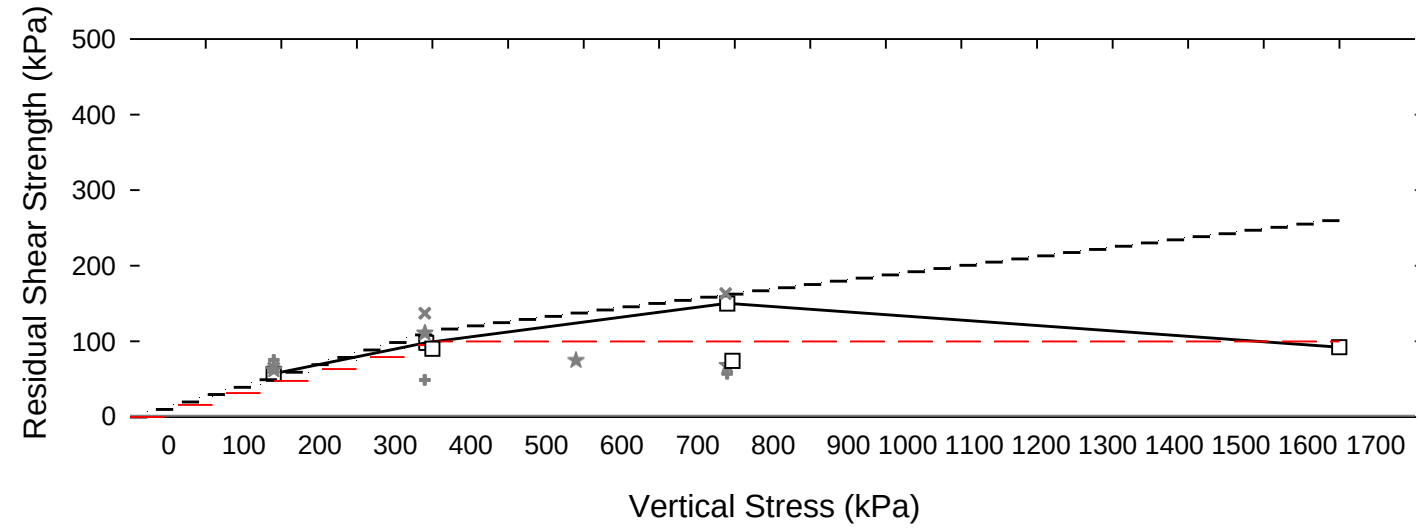
August 12, 2019





PT7 - PT9, PT17 - PT19 (80 mil black textured GM (Solmax), GSE BentoLiner NWL-60, 15)

Design Envelope (residual) Bi-Linear, c'=0, $phi_1=16^{\circ}$, $phi_2=7^{\circ}$

PT4 - PT6 (80 mil double textured LLDPE (Layfield), GSE BentoLiner NWL-60, 15)

PT10 - PT12 (XRT 80 mil HDPE (Solmax), GSE BentoLiner NWL-60, 15)

PT13 - PT16 (RT 40 mil HDPE (Solmax), GSE BentoLiner NWL-60, 15)

Residual Strength - Internal Failure of GCL (Fox and Stark 2015) c'=1.3, phi=4.8°

Alternative Strength Envelope (residual) Bi-Linear, c'=0, $phi_1=14^{\circ}$, $phi_2=0^{\circ}$

APPENDIX A-2

PHASE 1B GEOSYNTHETIC LABORATORY TEST RESULTS

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APPENDIX A-B

FORTE-2020-ORE LABORATORY TEST RESULTS

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APPENDIX B

PRODUCT DATA SHEETS (Phase 1A and 1B)

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APPENDIX C

STABILITY ANALYSES RESULTS

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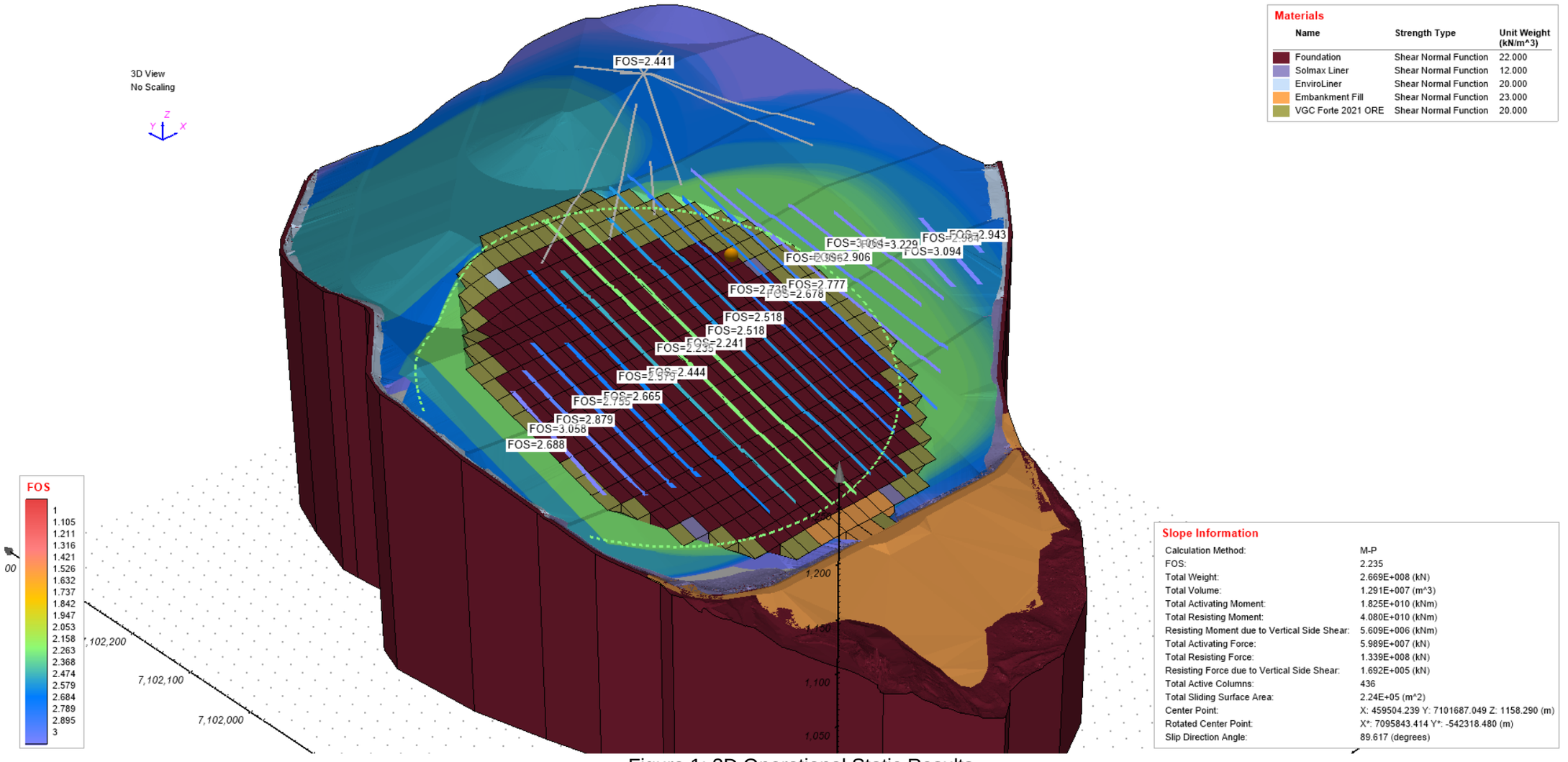


Figure 1: 3D Operational Static Results

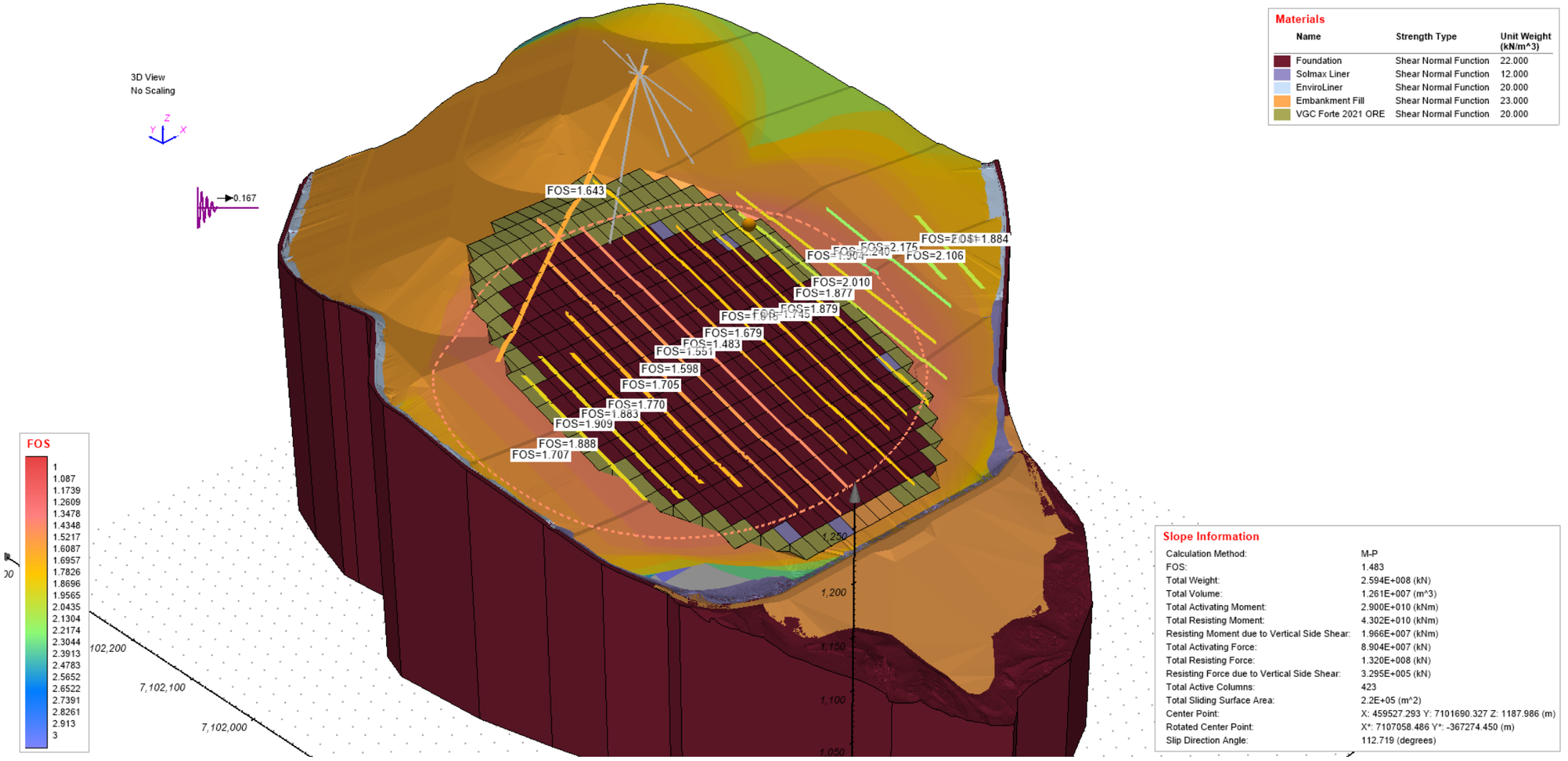


Figure 2: 3D Operational Pseudo-Static Results

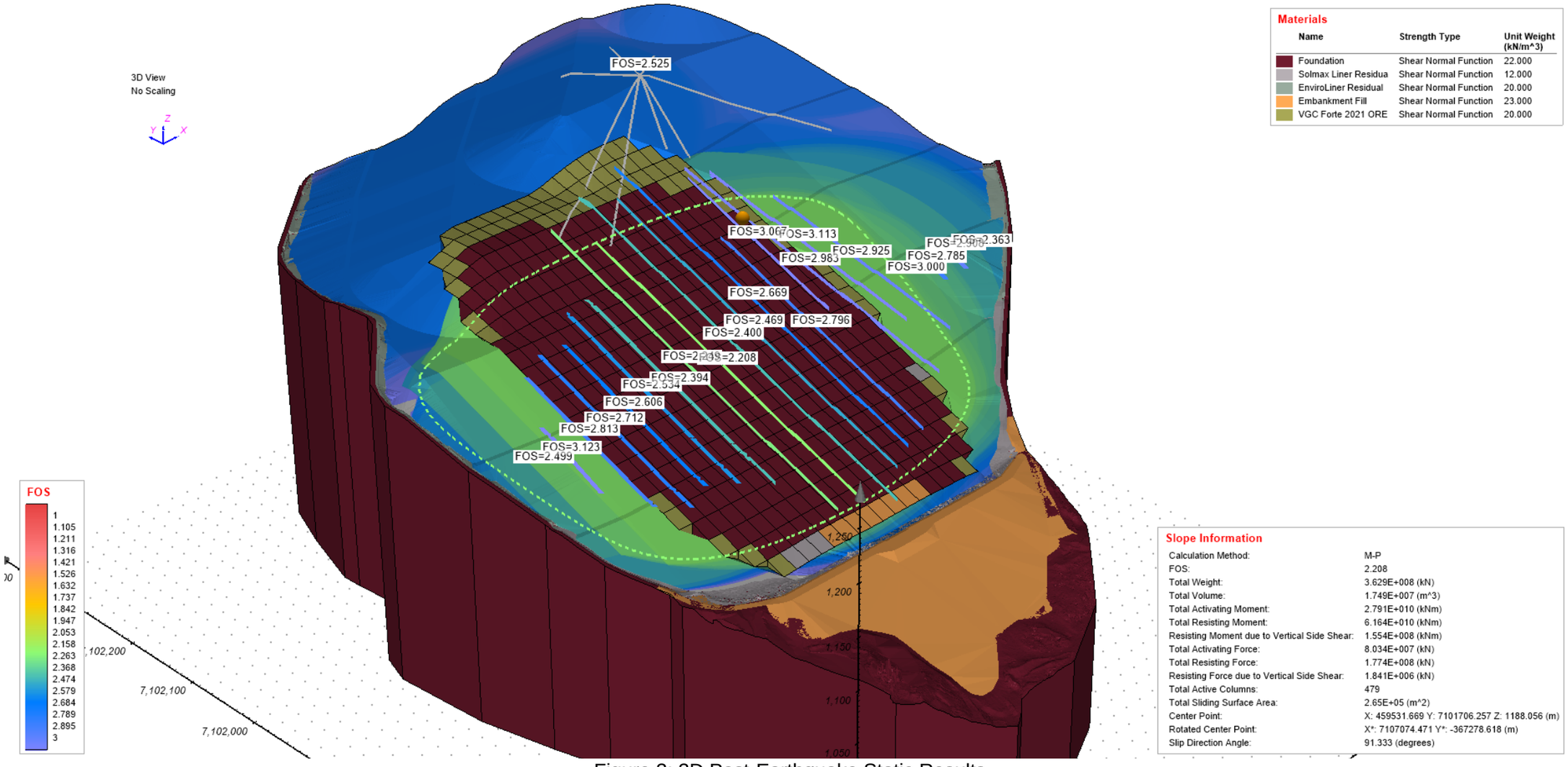


Figure 3: 3D Post-Earthquake Static Results

APPENDIX 11
Test Pit Logs & Photographs

Station 1

TRENCH: Lateral Drain 1 - West

Project No:		Test Date:	5/9/2020	Logged By:Swoz
Project :	PHASE 1B	Excavation Contractor:	Ewing	Assisted By:
Client:	VGC	Equipment:	CAT 336	Start Time: 2:00 PM
Location:	Eagle Mine HLF	Driller:		End Time:
Northing: 7102081	Easting: 459635	Elevation: 997		Hole Depth (METER):
Notes: Amnient temperature 15.0 Celsius		Excavation of trench ultimately utilized for underdrain		Watertable Depth:
Field Conditions: Sunny				

Construction Comments	Depth (m)	USCS Symbol	Weathering Grade	Description
They had already backfilled the drain pipe before I arrived but there was still some exposure in the trench.	0.0	GM		0.0 m to 1.5 m: Till, grey/brown, loose to compact material, damp, silt to cobble size clasts, sub angular. Temperature measured at 3.3 Celsius.
	0.5			
	1.0			
	1.5	SM		1.5 m to 2.4 m: Silt, grey/brown, wet (ground water present), Temperature measured at 2.1 Celsius.
	2.0			
	2.5			
	3.0			
	3.5			No ice observed in the trench. Bottom of exposed excavaton 2.4 m.
	4.0			
	4.5			
	5.0			
	5.5			
	6.0			



Looking NE



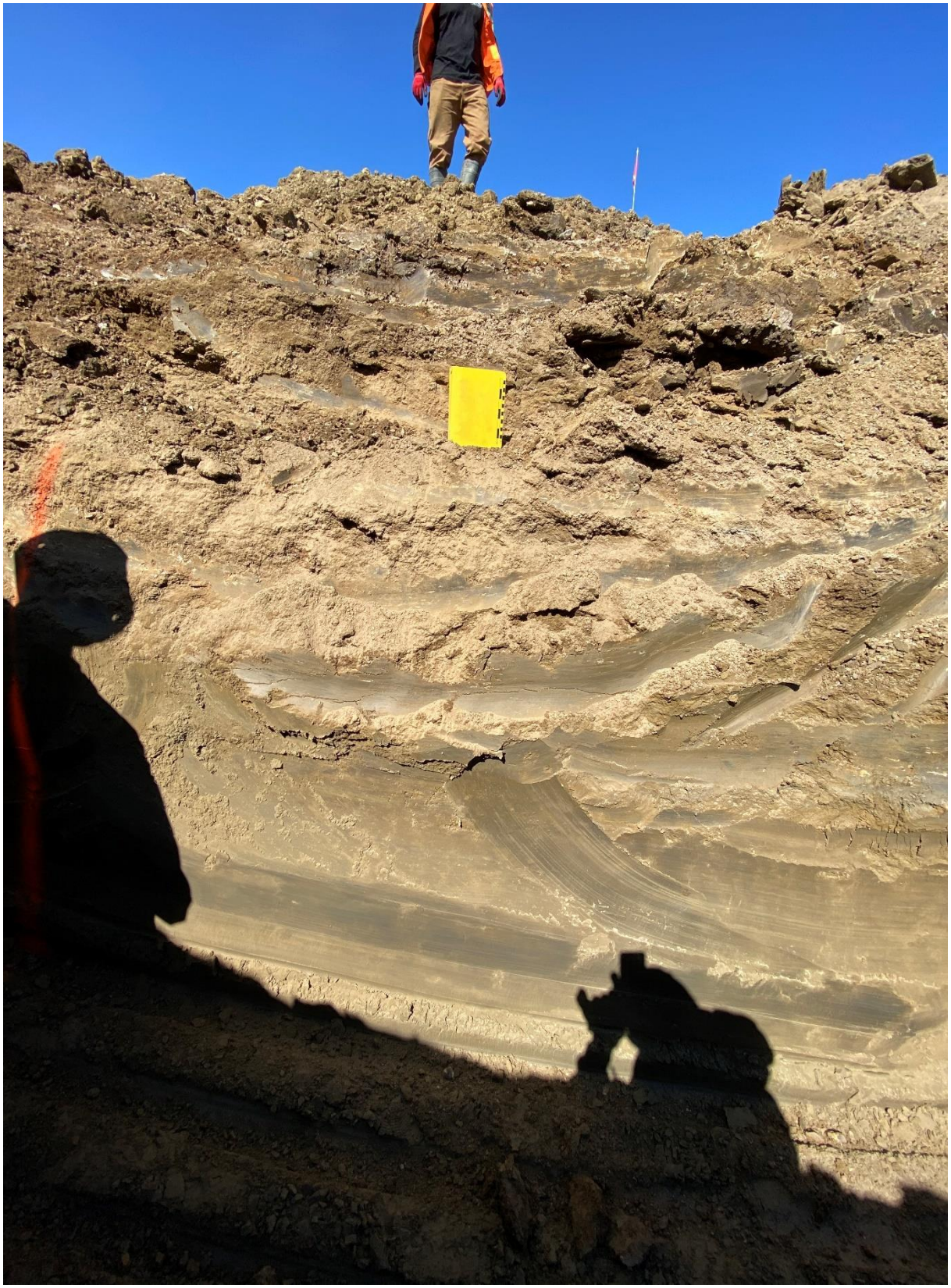
Looking SW

Station 2

TRENCH: Lateral Drain 1 - West

Project No:		Test Date:	5/10/2020	Logged By:Swoz
Project :	PHASE 1B	Excavation Contractor:	Ewing	Assisted By:
Client:	VGC	Equipment:	CAT 336	Start Time: 3:00 PM
Location:	Eagle Mine HLF	Driller:		End Time:
Northing: 7102052	Easting: 459558	Elevation: 1012		Hole Depth (METER):
Notes: Amnient temperature 15.0 Celsius		Excavation of trench ultimately utilized for underdrain		Watertable Depth:
Field Conditions: Sunny				

Construction Comments	Depth (m)	USCS Symbol	Weathering Grade	Description
	0.0	SM		0.0 m to 2.4 m: Partly frozen till, grey/brown, compact material, moist, clay to gravel size clasts, sub angular. No ice visible, poorly bonded/friable (Nf), No excess ice. Temperature measured at -0.3 Celsius.
	0.5			
	1.0			
	1.5			
	2.0			
	2.5			No visible ice observed in the trench. Bottom of excavaton 2.4 m.
	3.0			
	3.5			
	4.0			
	4.5			
	5.0			
	5.5			
	6.0			



Looking NE

Station 3

TRENCH: Lateral Drain 1 - West

Project No:		Test Date:	2020-05-18	Logged By: R. Burke
Project :	PHASE 1B	Excavation Contractor:	Ewing	Assisted By:
Client:	VGC	Equipment:	CAT 336	Start Time: 8:30 AM
Location:	Eagle Mine HLF	Driller:		End Time:
Northing: 7101790	Easting: 459323	Elevation: 1002		Hole Depth (METER):
Notes: Amnient temperature 4.0 Celsius		Excavation of trench ultimately utilized for underdrain		Watertable Depth:
Field Conditions: Sunny & Crisp				

Construction Comments	Depth (m)	USCS Symbol	Weathering Grade	Description
They had already backfilled the drain pipe before I arrived but there was still some exposure in the trench.	0.0	GM	CW	0.0 m to 1.9 m: Light brown, loose to compact gravel/sand material, damp, silt to cobble size clasts, sub angular. Temperature measured at 3.0 Celsius. Some highly weathered bedrock (metasediments) mixed in (~20%); majority of material is colluvium/overburden
	0.5			
	1.0			
	1.5		HW	1.9 m to 2.6 m: Light brown to brown, fractured, strongly weathered metasedimentary rock. R1 to R2
	2.0			
	2.5			
	3.0			
	3.5			No ice observed in the trench. Bottom of exposed excavaton 2.6m
	4.0			
	4.5			
	5.0			
	5.5			
	6.0			

Station 3
Trench: Lateral Drain 1 - West



Looking N

Station 4

TRENCH: Lateral Drain 1 - West

Project No:		Test Date:	2020-05-18	Logged By: R. Burke
Project :	PHASE 1B	Excavation Contractor:	Ewing	Assisted By:
Client:	VGC	Equipment:	CAT 336	Start Time: 8:30 AM
Location:	Eagle Mine HLF	Driller:		End Time:
Northing: 7101821	Easting: 459370	Elevation: 1002		Hole Depth (METER):
Notes: Amnient temperature 4.0 Celsius		Excavation of trench ultimately utilized for underdrain		Watertable Depth:
Field Conditions: Sunny & Crisp				

Construction Comments	Depth (m)	USCS Symbol	Weathering Grade	Description
Waypoint taken at contact between phyllitic graphitic schist and quartzite	0.0	GM	CW	0.0 m to 1.4 m: Light brown, loose to compact gravel/sand material, silt to cobble size clasts, sub angular. Dry to touch. Temperature measured at 3.0 Celsius. Some highly weathered bedrock (metasediments) mixed in (~20%); majority of material is colluvium/overburden. No topsoil.
	0.5			
	1.0			
	1.5		HW	1.4 m to 2.5 m: Light brown to brown, fractured, strongly weathered metasedimentary rock. R1 to R2. Mixture of phyllite and quartzite. Temperature measured at 2.0 C.
	2.0			
	2.5			
	3.0			
	3.5			No ice observed in the trench. Bottom of exposed excavaton 2.5m
	4.0			
	4.5			
	5.0			
	5.5			
	6.0			

Station 4
Trench: Lateral Drain 1 - West



Looking N

Station 4
Trench: Lateral Drain 1 - West



Looking N – Labeled

Station 1

TRENCH: Lateral Drain 1 - East

Project No:		Test Date:	5/26/2020	Logged By: R. Burke
Project :	PHASE 1B	Excavation Contractor:	Ewing	Assisted By:
Client:	VGC	Equipment:	CAT 336	Start Time: 1:00 PM
Location:	Eagle Mine HLF	Driller:		End Time:
Northing: 7102066	Easting: 459654	Elevation: 1002		Hole Depth (METER):
Notes: Amnient temperature 4.0 Celsius		Excavation of trench ultimately utilized for underdrain		Watertable Depth:
Field Conditions: Sunny & Crisp				

Construction Comments	Depth (m)	USCS Symbol	Weathering Grade	Description
	0.0	GM	CW	0.0 m to 2.3 m: Light brown, S3 (firm clay material) with mixture of gravel/sandy material. Silt to cobble size clasts, sub angular comprising 20% of overburden. Dry to touch. Temperature measured at 4.0 Celsius. Majority of material is colluvium/overburden. No topsoil. No Ice observed in trench.
	0.5	GM		
	1.0	GM		
	1.5	GC		No ice observed in the trench. Bottom of exposed excavaton 2.3m
	2.0	GC		
	2.5			
	3.0			
	3.5			
	4.0			
	4.5			
	5.0			
	5.5			
	6.0			

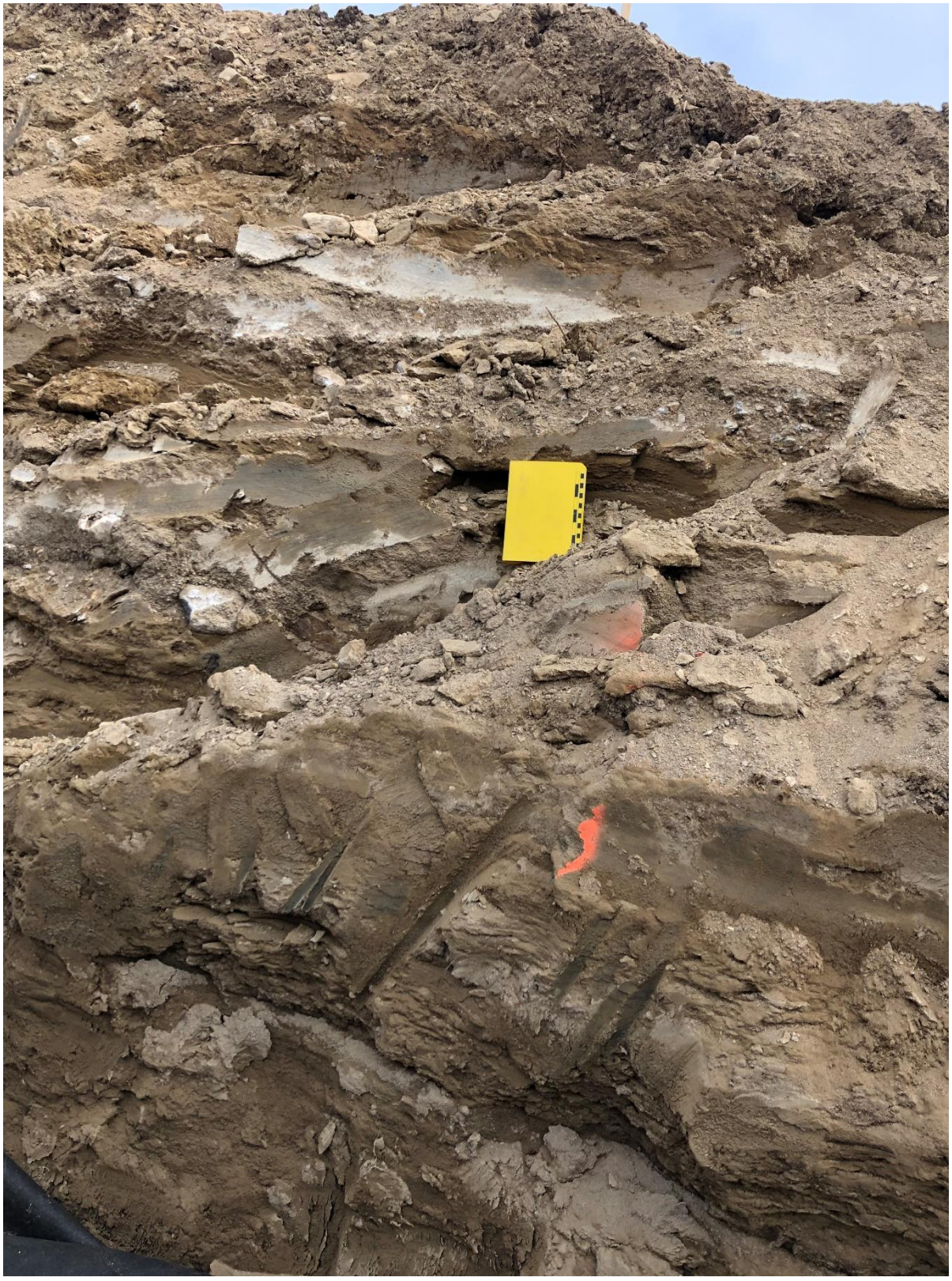


TRENCH # Station 1

TRENCH: Lateral Drain 2 - West

Project No:		Test Date:	4/29/2020	Logged By:Swoz
Project :	PHASE 1B	Excavation Contractor:	Ewing	Assisted By:
Client:	VGC	Equipment:	CAT 336	Start Time: 10:57
Location:	Eagle Mine HLF	Driller:		End Time:
Northing: 7102145	Easting: 459676	Elevation: 997		Hole Depth (METER):
Notes: Amnient temperature 3.0 Celsius Cloudy		Excavation of trench ultimately utilized for underdrain		Watertable Depth:
Field Conditions: Cold, Dry		None Noted		

Construction Comments	Depth (m)	USCS Symbol	Weathering Grade	Description
	0.0	SM	N/A	0.0m to 0.5 m: Top soil. organic rich, Silty sand, dark brown, moist when thawed (Type I). Temperature measured at -3.5 Celsius. Ground is frozen (seasonal frost). Ice not visible and the material is friable (Nf).
	0.5	SM	N/A	0.5m to 1.0m: Silty sand, brown, moist when thawed (Type I), Temperature measured at -3.7 Celsius. Ground is frozen (seasonal frost). Ice not visible and the material is friable (Nf).
	1.0	GP	N/A	1.0m to 1.3m: Colluvium. Angular to sub angular, sand rich gravels, loose, dry, Temperature measured at -3.7 Celsius.
	1.5	SM	N/A	1.3m to 2.7m: Silty sand, brown, moist when thawed (Type I). Sporadic 5-10cm sub angular clasts. Temperature measured at -3.7 Celsius. Ground is frozen (seasonal frost). Ice not visible and the material is friable (Nf).
	2.0			
	2.5			
	2.7			No ice observed in the bottom of the trench. Material in the trench is frozen (seasonal frost). Bottom of the excavaton 2.7m.
	3.0			
	3.5			
	4.0			
	4.5			
	5.0			
	5.5			
	6.0			



Station 2

TRENCH: Lateral Drain 2 - West

Project No:		Test Date:		5/1/2020	Logged By:Swoz
Project :	PHASE 1B	Excavation Contractor:		Ewing	Assisted By:
Client:	VGC	Equipment:		CAT 336	Start Time: 9:00AM
Location:	Eagle Mine HLF	Driller:			End Time:
Northing: 7102147	Easting: 459577		Elevation: 1019		Hole Depth (METER):
Notes: Amnient temperature 0.0 Celsius		Excavation of trench ultimately utilized for underdrain			Watertable Depth:
Field Conditions: Cold, Snowing		None Noted			

Construction Comments	Depth (m)	USCS Symbol	Weathering Grade	Description
	0.0		W4	0.0m to 1.0m: Bedrock, brown grey, intercalated phyllite and quartzite, highly weathered (W4), very weak, crumbles with one hammer blow (R1). Temperature measured at -3.2 Celsius.
	0.5			
	1.0			
	1.5			No ice observed in the bottom of the trench. Bottom of the excavaton 1.0 m.
	2.0			
	2.5			
	3.0			
	3.5			
	4.0			
	4.5			
	5.0			
	5.5			
	6.0			



Station 3

TRENCH: Lateral Drain 2 - West

Project No:		Test Date:		5/1/2020	Logged By:Swoz
Project :	PHASE 1B	Excavation Contractor:		Ewing	Assisted By:
Client:	VGC	Equipment:		CAT 336	Start Time: 9:10AM
Location:	Eagle Mine HLF	Driller:			End Time:
Northing: 7102108	Easting: 459488		Elevation: 1019		Hole Depth (METER):
Notes: Amnient temperature 0.0 Celsius		Excavation of trench ultimately utilized for underdrain			Watertable Depth:
Field Conditions: Cold, Snowing		None Noted			

Construction Comments	Depth (m)	USCS Symbol	Weathering Grade	Description
	0.0	SC	W5	0.0m to 0.3m: dark grey and orange, oxidized, bedrock-soil interface. Phyllites have completely weathered to clay (W5), up to 5 cm clasts of bedrock entrained in this material. Temperature measured at -3.2 Celsius.
	0.5		W4	0.3m to 1.15m. Bedrock (phyllite and quartzite), dark grey orange, oxidized, highely weathered (W4), Extremely weak (R0), indented with difficulty with thumbnail (S6).Temperature measured at -3.2 Celsius.
	1.0			
	1.5			No ice observed in the bottom of the trench. Bottom of the excavaton 1.15 m.
	2.0			
	2.5			
	3.0			
	3.5			
	4.0			
	4.5			
	5.0			
	5.5			
	6.0			



Station 4

TRENCH: Lateral Drain 2 - West

Project No:		Test Date:	5/3/2020	Logged By:Swoz
Project :	PHASE 1B	Excavation Contractor:	Ewing	Assisted By:
Client:	VGC	Equipment:	CAT 336	Start Time: 8:30AM
Location:	Eagle Mine HLF	Driller:		End Time:
Northing: 7102028	Easting: 459442	Elevation: 1018		Hole Depth (METER):
Notes: Amnient temperature 1.0 Celsius		Excavation of trench ultimately utilized for underdrain		Watertable Depth:
Field Conditions: Cold, Sunny		None Noted		

Construction Comments	Depth (m)	USCS Symbol	Weathering Grade	Description
	0.0		W3	0.0m to 1.2m: Bedrock, light grey, highley fractured/crushed quartzite. Very weak (R1). Temperature measured at -3.0 Celsius.
	0.5			
	1.0			
	1.5			No ice observed in the bottom of the trench. Bottom of the excavaton 1.2 m.
	2.0			
	2.5			
	3.0			
	3.5			
	4.0			
	4.5			
	5.0			
	5.5			
	6.0			



Station 5

TRENCH: Lateral Drain 2 - West

Project No:		Test Date:		5/4/2020	Logged By:Swoz
Project :	PHASE 1B	Excavation Contractor:		Ewing	Assisted By:
Client:	VGC	Equipment:		CAT 336	Start Time: 9:30AM
Location:	Eagle Mine HLF	Driller:			End Time:
Northing: 7101937	Easting: 459403		Elevation: 1018		Hole Depth (METER):
Notes: Amnient temperature 3.0 Celsius		Excavation of trench ultimately utilized for underdrain			Watertable Depth:
Field Conditions: Sunny		None Noted			

Construction Comments	Depth (m)	USCS Symbol	Weathering Grade	Description
	0.0		W3	0.0m to 1.0m: Bedrock,dark grey/brown/orange, phyllite with minor beds of quartzite, moderately weathered (W3), oxidized, Very weak (R0), readily indented with thumbnail (S5). Temperature measured at -1.7 Celsius.
	0.5			
	1.0			
	1.5			No ice observed in the bottom of the trench. Bottom of the excavaton 1.0 m.
	2.0			
	2.5			
	3.0			
	3.5			
	4.0			
	4.5			
	5.0			
	5.5			
	6.0			



Station 6

TRENCH: Lateral Drain 2 - West

Project No:		Test Date:		5/5/2020	Logged By:Swoz
Project :	PHASE 1B	Excavation Contractor:		Ewing	Assisted By:
Client:	VGC	Equipment:		CAT 336	Start Time: 8:00AM
Location:	Eagle Mine HLF	Driller:			End Time:
Northing: 7101859	Easting: 459338		Elevation: 1018		Hole Depth (METER):
Notes: Amnient temperature 3.0 Celsius		Excavation of trench ultimately utilized for underdrain			Watertable Depth:
Field Conditions: Warm, Partly Cloudy		None Noted			

Construction Comments	Depth (m)	USCS Symbol	Weathering Grade	Description
	0.0	GM		0.0m to 0.4m: Colluvium, dark grey, angular to sub angular clasts, loose material, mixed phyllite and quartzite, clast size from sand to cobble. Temperature measured at 0.5 Celsius.
	0.5		W3	0.4m to 0.9m: Bedrock , dark grey, mixed phyllite and quartzite, moderately weathered (W3), Very weak (R1) crumbles under a firm blow with a hammer.Temperature measured at 0.5 Celsius.
	1.0			
	1.5			No ice observed in the bottom of the trench. Bottom of the excavaton 0.9 m.
	2.0			
	2.5			
	3.0			
	3.5			
	4.0			
	4.5			
	5.0			
	5.5			
	6.0			

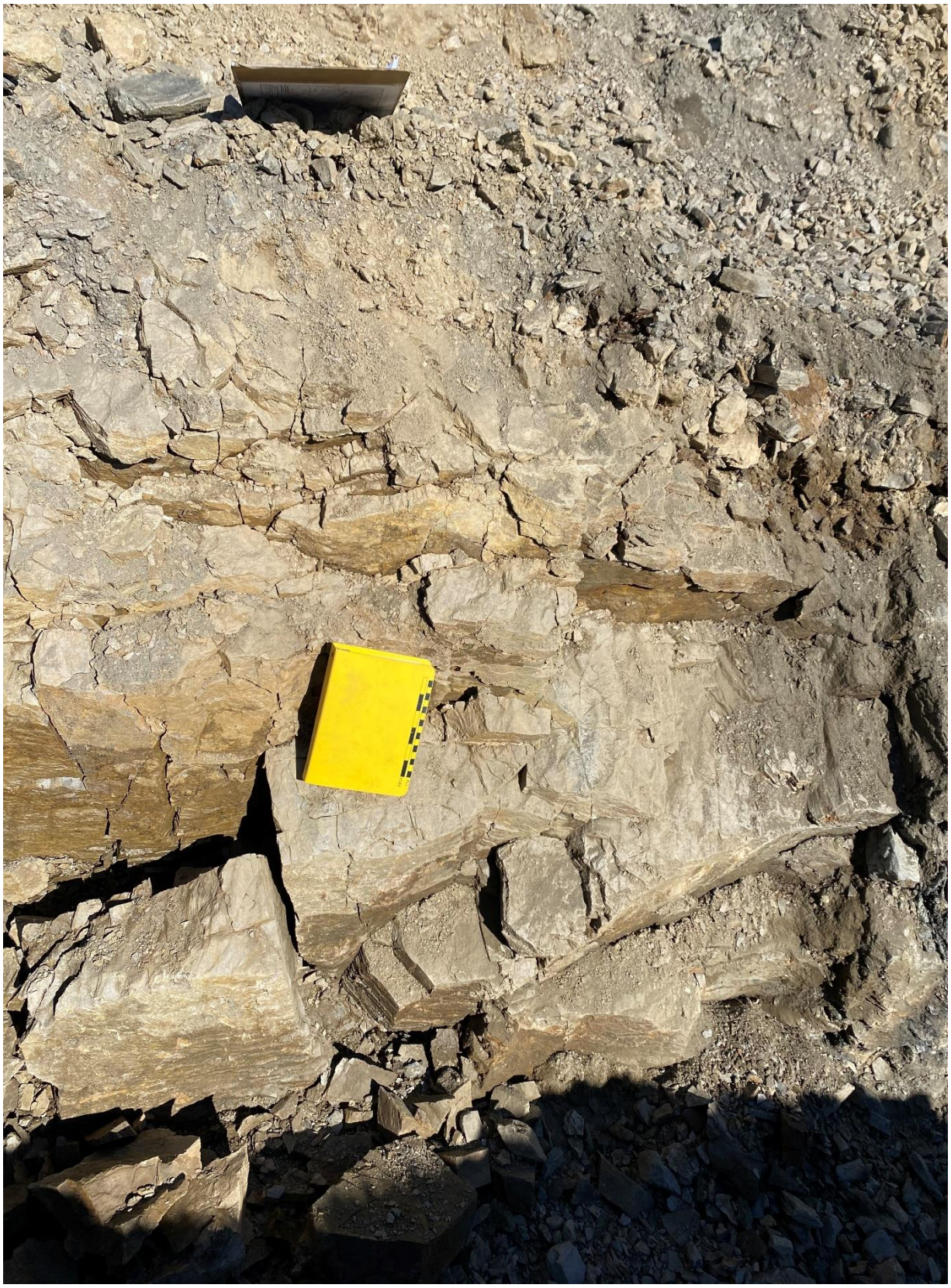


Station 7

TRENCH: Lateral Drain 2 - West

Project No:		Test Date:		5/6/2020	Logged By:Swoz
Project :	PHASE 1B	Excavation Contractor:		Ewing	Assisted By:
Client:	VGC	Equipment:		CAT 336	Start Time: 9:00AM
Location:	Eagle Mine HLF	Driller:			End Time:
Northing: 7101807	Easting: 459257		Elevation: 1035		Hole Depth (METER):
Notes: Amnient temperature 6.0 Celsius		Excavation of trench ultimately utilized for underdrain			Watertable Depth:
Field Conditions: Warm, Partly Cloudy					

Construction Comments	Depth (m)	USCS Symbol	Weathering Grade	Description
	0.0		W2	0.0m to 1.3m: Bedrock , grey/orange, quartzite, slightly weathered (W2), Stong (R4) requires more than one hammer blow to fracture. Temperature measured at 3.3 Celsius.
	0.5			
	1.0			
	1.5			No ice observed in the bottom of the trench. Bottom of the excavaton 1.3 m.
	2.0			
	2.5			
	3.0			
	3.5			
	4.0			
	4.5			
	5.0			
	5.5			
	6.0			



Station 8

TRENCH: Lateral Drain 2 - West

Project No:		Test Date:		5/6/2020	Logged By:Swoz
Project :	PHASE 1B	Excavation Contractor:		Ewing	Assisted By:
Client:	VGC	Equipment:		CAT 336	Start Time: 9:10AM
Location:	Eagle Mine HLF	Driller:			End Time:
Northing: 7101775	Easting: 459224		Elevation: 1037		Hole Depth (METER):
Notes: Amnient temperature 6.0 Celsius		Excavation of trench ultimately utilized for underdrain			Watertable Depth:
Field Conditions:		Warm, Partly Cloudy			

Construction Comments	Depth (m)	USCS Symbol	Weathering Grade	Description
	0.0	GM		0.0m to 0.4m: Colluvium, brown grey, angular to sub angular clasts, loose material, minor organics, clast size from silt to cobble. Temperature measured at 2.8 Celsius.
	0.5	GM		0.4m to 0.8m: Colluvium , dark grey, predominantly phyllite with minor quartzite. Temperature measured at 2.8 Celsius.
	1.0		W3	0.8m to 1.1m: Bedrock , dark grey, mixed phyllite and quartzite, moderately weathered (W3), Very weak (R1) crumbles under a firm blow with a hammer. Temperature measured at 2.8 Celsius.
	1.5			No ice observed in the bottom of the trench. Bottom of the excavaton 1.1 m. End of Lateral Drain 2 West
	2.0			
	2.5			
	3.0			
	3.5			
	4.0			
	4.5			
	5.0			
	5.5			
	6.0			



TEST PIT # TP-BGC19-01

Project: Eagle Gold HLF

Project No. : 0792023

Location: Eagle Gold Mine, Yukon, CA
Co-ordinates (m):
Ground Elevation:
Datum: NA

Excavator: CAT 336
Operator: TE

Start Date: June 26, 2019
Finish Date: June 26, 2019
Final Depth of Pit (m): 4.0
Logged by: RM
Reviewed by: NA

Depth (m)	Gint Symbol	Weathering Grade	Description
	SM	NA	0m to 0.5m: Topsoil. Grass and moss cover. Silty sand with minor gravel, organic rich, loose, dark brown, moist. Temperature measured 5º C.
1	GW	NA	0.5m to 3m: Culluvium. Sandy gravel, slightly moist, light brown, angular to sub-anglular gravel, dense. Temperature measured 5º C.
2			
3	SP	W5	3m to 3.8m: Bedrock. Weathered to soil. Relic rock texture still present. Meta-sediment, poorly graded sand, fine to medium grained, dense, alternating reddish-brown to dark brown. Crumbles by hand. Temperature measured 4.8º C.
4			3.8m to 4m: Bedrock. Weathered to soil (W5) with thin (10 to 20cm) thick pockets of discontinuous, stronger quartzite (W4), reddish brown. Temperature measured 4.5º C.
	NA	W4	4m: Grades to stronger, reddish brown quartzite at bottom of the pit. Highly weathered (W4), very weak (R1), moderately soft (H5).
5			
			No ice or frozen ground observed in excavation. Bottom of the excavation 4.0m Excavation backfilled with same excavated material in 1m lifts bucket packed.
6			
7			
8			

BGC ENGINEERING INC.
AN APPLIED EARTH SCIENCES COMPANY

Client: Victoria Gold Corp.

TEST PIT # TP-BGC19-02

Project: Eagle Gold HLF

Project No. : 0792023

Location: Eagle Gold Mine, Yukon, CA
Co-ordinates (m):
Ground Elevation:
Datum: NA

Excavator: CAT 336
Operator: TE

Start Date: June 26, 2019
Finish Date: June 26, 2019
Final Depth of Pit (m): 5.0
Logged by: RM
Reviewed by: NA

Depth (m)	Gint Symbol	Weathering Grade	Description
	SM	NA	0m to 2.7m: Topsoil. Grass and moss cover. Silty sand with minor gravel, organic rich from 0 to 1m, less organics below 1m, loose, denser with depth, dark brown, moist to slightly moist. Temperature measured 8º C.
2	GW	NA	2.7m to 4.8m: Culluvium. Sandy gravel, slightly moist, light brown, angular to sub-anglular gravel, dense. Temperature measured 8º C.
5	NA	W4	4.8m to 5m: Bedrock. Highly weathered (W4) quartzite, very weak and crumble with 1 hammer blow (R1), moderately soft and can be grooved with a knife with little effort (H5). Temperature measured 5.4º C.
			No ice or frozen ground observed in excavation. Bottom of the excavation 5.0m Excavation backfilled with same excavated material in 1m lifts bucket packed.

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Client: Victoria Gold Corp.

TEST PIT # TP-BGC19-03

Project: Eagle Gold HLF

Project No. : 0792023

Location: Eagle Gold Mine, Yukon, CA
Co-ordinates (m):
Ground Elevation:
Datum: NA

Excavator: CAT 336
Operator: TE

Start Date: June 26, 2019
Finish Date: June 26, 2019
Final Depth of Pit (m): 5.0
Logged by: RM
Reviewed by: NA

Depth (m)	Gint Symbol	Weathering Grade	Description
	SM	NA	0m to 1.2m: Topsoil. Grass and moss cover. Silty sand with minor gravel, loose, denser with depth, dark brown, moist to slightly moist. Temperature measured 7º C.
1	GW	NA	1.2m to 5m: Culluvium. Sandy gravel, slightly moist, light brown, angular to sub-anglular gravel, dense. Temperature measured 7.1º C.
2			
3			
4			
5	NA	W4	5m: Bedrock. Highly weathered (W4) quartzite, very weak and crumble with 1 hammer blow (R1), moderately soft and can be grooved with a knife with little effort (H5). Temperature measured 5º C.
6			No ice or frozen ground observed in excavation. Bottom of the excavation 5.0m Excavation backfilled with same excavated material in 1m lifts bucket packed.
7			
8			

BGC ENGINEERING INC.
AN APPLIED EARTH SCIENCES COMPANY

Client: Victoria Gold Corp.

TEST PIT # TP-BGC19-04

Project: Eagle Gold HLF

Project No. : 0792023

Location: Eagle Gold Mine, Yukon, CA
Co-ordinates (m):
Ground Elevation:
Datum: NA

Excavator: CAT 336
Operator: TE

Start Date: June 27, 2019
Finish Date: June 27, 2019
Final Depth of Pit (m): 1.5
Logged by: RM
Reviewed by: NA

Depth (m)	Gint Symbol	Weathering Grade	Description
	SM	NA	0m to 0.2m: Topsoil. Grass and moss cover. Silty sand with minor gravel, loose, denser with depth, dark brown, moist to slightly moist. Temperature measured 5.3º C.
1	GW	NA	0.2m to 1m: Culluvium. Sandy gravel, slightly moist, light brown, angular to sub-anglular gravel, dense. Temperature measured 5.0º C.
	NA	W3	1m to 1.5m: Bedrock. Moderately weathered (W3) quartzite, weak (R2), moderately hard and can be grooved with a knife with some effort (H4). Temperature measured 3.6º C.
2			No ice or frozen ground observed in excavation. Bottom of the excavation 1.5m Excavation backfilled with same excavated material in 1m lifts bucket packed.
3			
4			
5			
6			
7			
8			

BGC ENGINEERING INC.
AN APPLIED EARTH SCIENCES COMPANY

Client: Victoria Gold Corp.

TEST PIT # TP-BGC19-05

Project: Eagle Gold HLF

Project No. : 0792023

Location: Eagle Gold Mine, Yukon, CA
Co-ordinates (m):
Ground Elevation:
Datum: NA

Excavator: CAT 336
Operator: TE

Start Date: June 27, 2019
Finish Date: June 27, 2019
Final Depth of Pit (m): 3.5
Logged by: RM
Reviewed by: NA

Depth (m)	Gint Symbol	Weathering Grade	Description
	SM	NA	0m to 0.2m: Topsoil. Grass and moss cover. Silty sand with minor gravel, loose, denser with depth, dark brown, moist to slightly moist. Temperature measured 5.3º C.
1	GW	NA	0.2m to 3m: Culluvium. Sandy gravel, slightly moist, light brown, angular to sub-anglular gravel, dense. Temperature measured 3º C.
3	NA	W3	3m to 3.5m: Bedrock. very weathered (W4) quartzite, very weak and crumbles with one hammer blow (R1), moderately soft and can be grooved with a knife easily (H5). Temperature measured 2º C.
			No ice or frozen ground observed in excavation. Bottom of the excavation 3.5m Excavation backfilled with same excavated material in 1m lifts bucket packed.

BGC ENGINEERING INC.
AN APPLIED EARTH SCIENCES COMPANY

Client: Victoria Gold Corp.

TEST PIT # TP-BGC19-06

Project: Eagle Gold HLF

Project No. : 0792023

Location: Eagle Gold Mine, Yukon, CA
Co-ordinates (m):
Ground Elevation:
Datum: NA

Excavator: CAT 336
Operator: TE

Start Date: June 27, 2019
Finish Date: June 27, 2019
Final Depth of Pit (m): 3.0
Logged by: RM
Reviewed by: NA

Depth (m)	Gint Symbol	Weathering Grade	Description
	SM	NA	0m to 0.1m: Topsoil. Grass and moss cover. Silty sand with minor gravel, loose, denser with depth, dark brown, moist to slightly moist. Temperature measured 6º C.
1	GW	NA	0.1m to 2.5m: Culluvium. Sandy gravel, slightly moist, light brown, angular to sub-anglular gravel, dense. Temperature measured 3º C.
2			
	NA	W3	2.5m to 3m: Bedrock. very weathered (W4) quartzite, very weak and crumbles with one hammer blow (R1), moderately soft and can be grooved with a knife easily (H5). Temperature measured 3º C.
3			
			No ice or frozen ground observed in excavation. Bottom of the excavation 3.0m Excavation backfilled with same excavated material in 1m lifts bucket packed.
4			
5			
6			
7			
8			

BGC ENGINEERING INC.
AN APPLIED EARTH SCIENCES COMPANY

Client: Victoria Gold Corp.

APPENDIX A2

As-Built Drawings and Construction QA/QC Reports – HLF 1B

VICTORIA GOLD CORP

TSX | VGCX



Ditch A Improvement Construction Report
November 2020

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Issued Date	Revised Date	Revision #	Document #	Owner

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1 Background

1.1 Water Management Infrastructure

1.1.1 Overview

A number of water management facilities including ponds and sediment basins, diversions and interceptor ditches, as well as pumping and piping systems have been developed to proactively manage sediment-laden, contact and non-contact water throughout the life of the Eagle Gold Mine. Details regarding the development and operation of the water management facilities are found in the Water Management Plan Version 2020-01 (SGC, 2020).

Surface water routing for the Mine involves the use of 3 primary ditches as shown in Figure 1 and described below:

Ditch A Located downslope from the open pit, the Platinum Gulch WRSA, the 90-day stockpile and the open pit access road. Ditch A runs north from the drainage basin of the Platinum Gulch WRSA (PG WRSA) across the site and into the Lower Dublin South Pond (LDSP or Control Pond). Construction of Ditch A was completed in 2019.

Ditch B When the entire stretch of Ditch B is completed it will generally follow the natural Eagle Creek watercourse, and receive runoff from the Eagle Pup WRSA, and Suttles Gulch which contains the crusher installations and part of the Eagle Pit. Ditch B will flow west across site from the northern end of the Eagle Pup WRSA to the LDSP. Currently only the reach from Suttles Gulch to the LDSP is complete. Full construction of Ditch B is expected to be complete in 2021.

Ditch C Located downslope of the LDSP, it conveys the outflow from the pond to Haggart Creek. Ditch C flows generally west to a discharge location downstream of Dublin Gulch and upstream of a surface water monitoring station known as W4. Construction of Ditch C was completed in 2019.



Figure 1 - Major Water Management Infrastructure

1.1.2 Ditch A Challenges and Improvement Project

This As-built Report provides a summary of actions taken to improve the operation of Ditch A after implementing changes to address some lessons learned from two freshet seasons. Minor modifications to the design of the ditch were necessary after certain ditch characteristics were impeding its function and operability. In particular, the design did not fully meet the requirements for collecting contact water and sediment laden water during freshet and summer rain events due to sediment build-up at the sump, while at the same time specific maintenance activities (e.g., sediment clean out) in the ditch were impractical due the presence of the 28-inch pipleine.

In addition, during construction of the ditch in February and March 2018, a large icing developed at the the designed location for the PG sump due to the intersection of groundwater. Large icings formed in the sump and along the upper portion of Ditch A which made it not feasible to build the sump at the design location. The sump location was moved to a location about 200 m downgradient from the original design location, although Ditch A still extended to the design toe of the PG WRSA. The presence of potential icing development precludes the use of the design location for a sump.

As noted above, sediment build up occurred along many sections of the ditch, including the sump, which reduced the effective capacity of the ditch. The Issued for Construction configuration of Ditch A (i.e., the installation of HDPE pipe in the ditch) provided poor access for routine and thorough removal of the accumulated sediment. This configuration also increased the likelihood of the pipe joins and the pipe itself being damaged during attempts at moving the pipeline to access more of the ditch to remove sediment.

1.1.3 Inspector's Direction

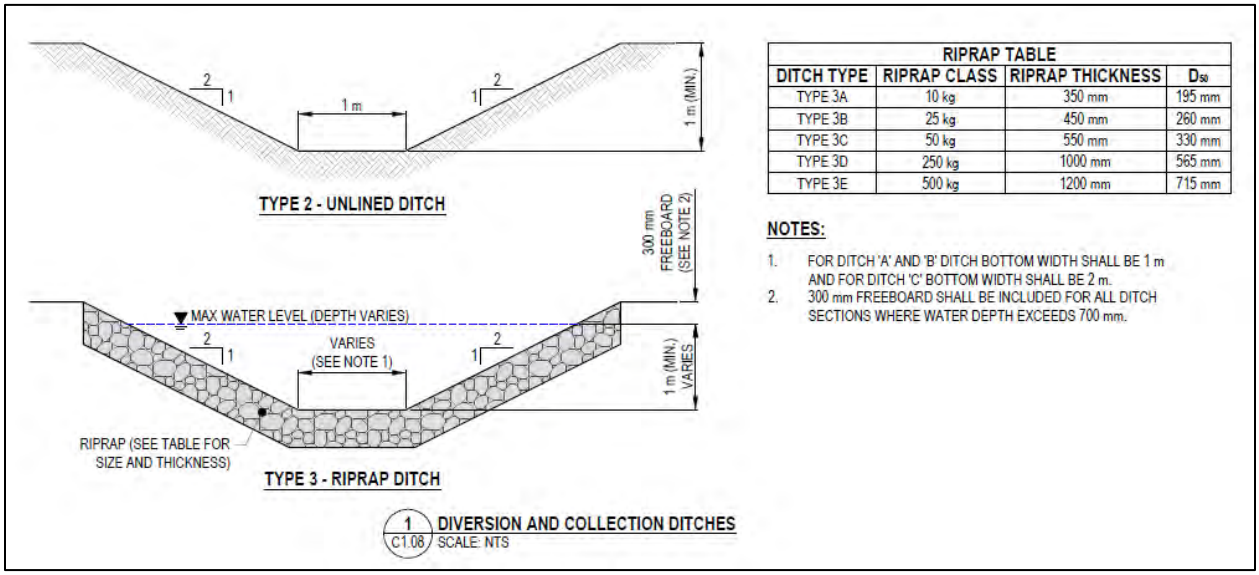
In response to water management challenges experienced on the site that were documented by Victoria Gold (Yukon) Corp. (VGC), the Inspector for the Major Mines, Compliance Monitoring and Inspections Branch of the Department of Energy, Mines and Resources issued an Inspector's Direction pursuant to section 35 (1) of the Waters Act.

The Inspector's Direction, dated July 10, 2020, required VGC to:

> *Test, reconfigure and repair the performance problems with Ditch A and the 24" Pipeline within the Platinum Gulch Water Management System (PGWMS). Complete and document all engineering modification in compliance with WUL QZ14-041, Part C - Design, Construction and Modification. All modifications must be updated in the Construction and Operations Water Management Plan and appended to the next Annual Report.*

1.2 Initial Ditch A Design

The Engineer of Record (EOR) for the Issued for Construction design of Ditch A was Mauricio Herrera of Tetra Tech EBA. The design included a typical cross section which had a 2:1 side slope, a 1 m bottom width, and non-woven geotextile overlain by rip rap (with varying specifications based on hydrologic analysis) as shown below in Figure 2. To ensure that there were no seepage losses of contact water emanating for the PG WRSA, the Issued for Construction and As-built configuration of Ditch A included a 28“ diameter HDPE Pipe within the ditch as shown in Figure 3.



RIPRAP TABLE			
DITCH TYPE	RIPRAP CLASS	RIPRAP THICKNESS	D_{50}
TYPE 3A	10 kg	350 mm	195 mm
TYPE 3B	25 kg	450 mm	260 mm
TYPE 3C	50 kg	550 mm	330 mm
TYPE 3D	250 kg	1000 mm	565 mm
TYPE 3E	500 kg	1200 mm	715 mm

NOTES:

1. FOR DITCH 'A' AND 'B' DITCH BOTTOM WIDTH SHALL BE 1 m AND FOR DITCH 'C' BOTTOM WIDTH SHALL BE 2 m.
2. 300 mm FREEBOARD SHALL BE INCLUDED FOR ALL DITCH SECTIONS WHERE WATER DEPTH EXCEEDS 700 mm.

Figure 2 - Tetra Tech EBA Issued for Construction Ditch Specifications

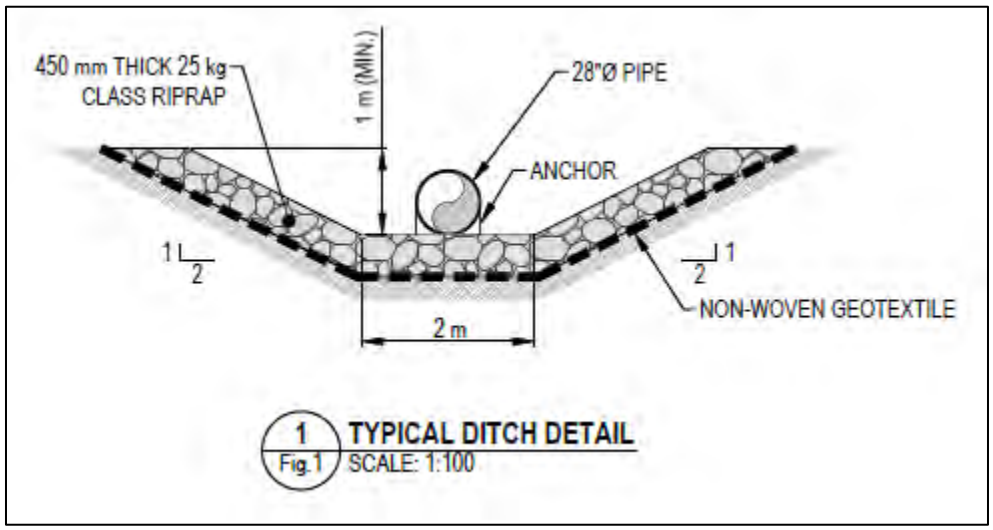


Figure 3 - Tetra Tech EBA Issued for Construction Typical Ditch with Pipe Detail

Water infiltrating the PG WRSA and intercepted by the rock drain was to be captured by a sump that was connected to the pipe installed within Ditch A as shown in Figure 4.

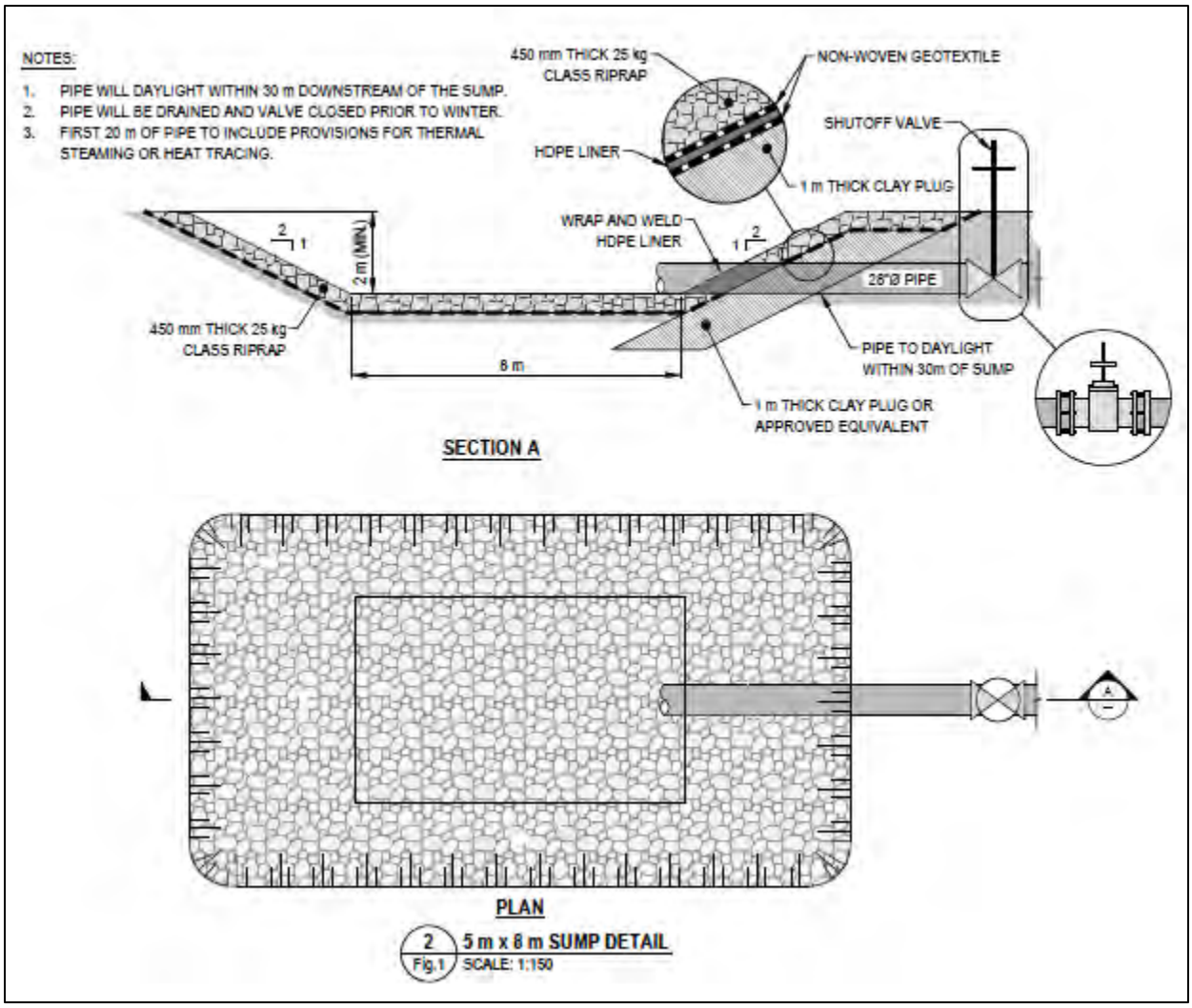


Figure 4 - Tetra Tech EBA Issued for Construction Sump Detail

1.3 Initial Ditch A Construction

Ditch A was constructed under the supervision of Field Engineers and Earthworks Superintendents of JDS Energy & Mining Inc. (JDS). Minor modifications to the design suggested by JDS field engineers were approved by the EOR. Underhill Geomatics Ltd. (Underhill) performed all layout and survey work for the ditch construction. Ewing Transport Ltd. (Ewing) completed all earthworks including excavation, ditch shaping, installation of geotextile, culvert installation, and riprap installation. Layfield Canada Inc. (Layfield) completed the installation of the impermeable liner lining the PG sump, and sealed the liner to the 28" HDPE pipe. The HDPE pipe was supplied by Sandale Inc. (Sandale). Nuway Crushing Ltd. (Nuway) completed all aggregate production for the ditch. A construction report was completed by JDS for all works completed on Ditch A which included As-built drawings provided by Maurico Herrera of Tetra Tech EBA (JDS, 2019).

Relevant As-built configurations are provided below in Figure 5, Figure 6 and 7.

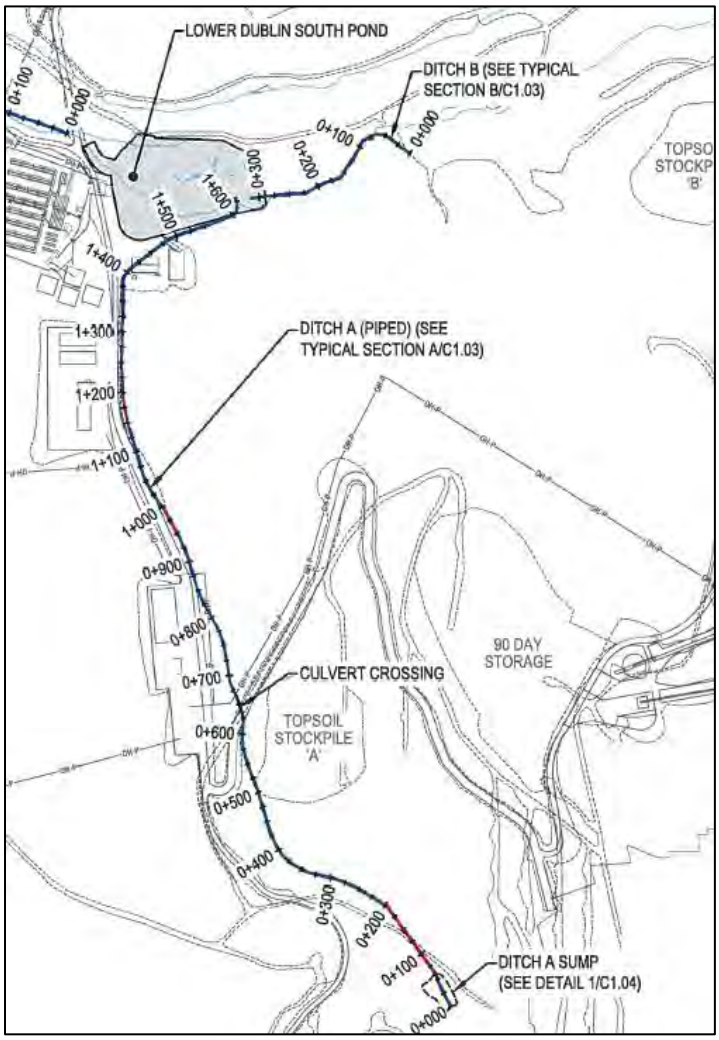


Figure 5 - Tetra Tech EBA As-built Ditch A Alignment

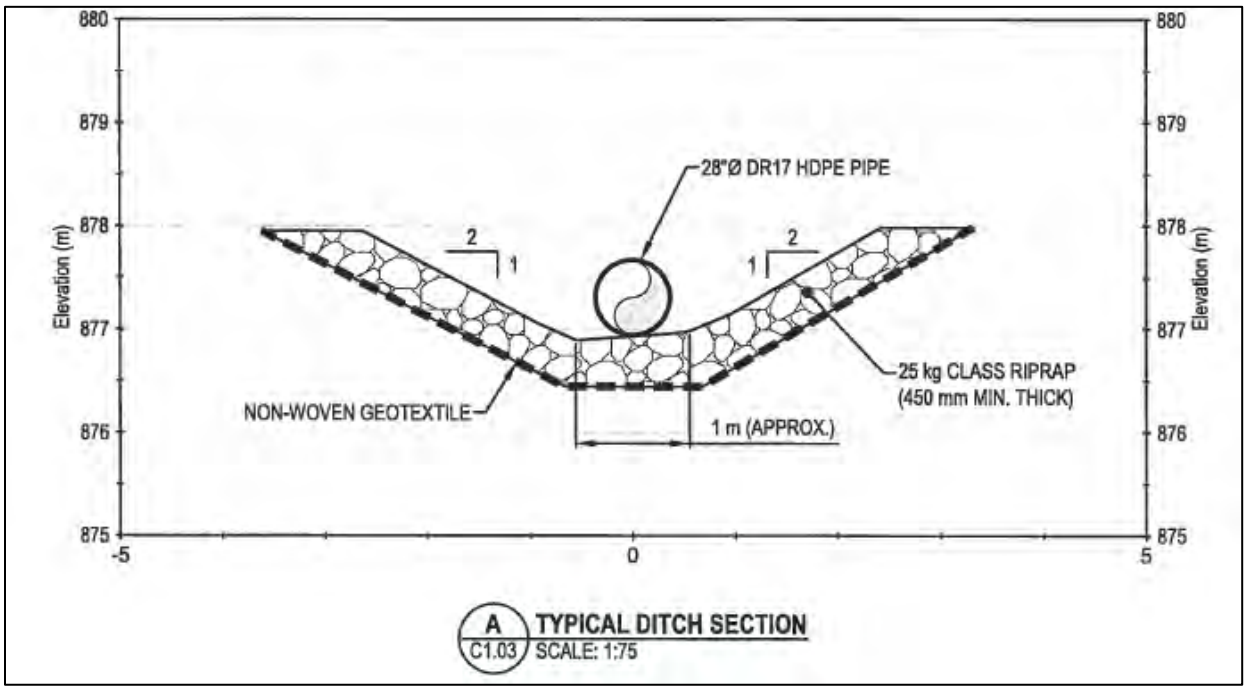


Figure 6 - Tetra Tech EBA As-built Ditch A Typical Cross Section

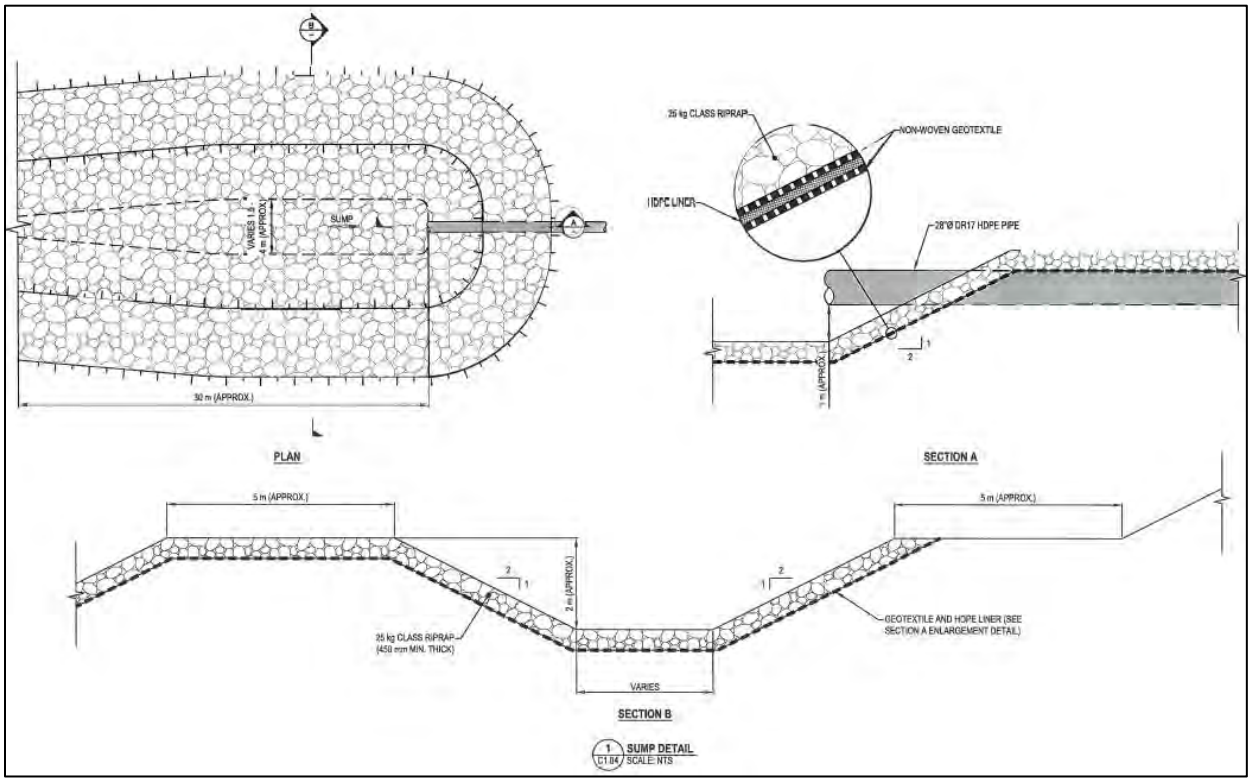


Figure 7 - Tetra Tech EBA As-built Ditch A Inlet Sump

1.4 Ditch A and Inlet Sump Construction and Operational Issues

During construction in winter 2018 – 2019, the designed location for the PG sump was excavated and groundwater was intersected. Large icings formed in the sump and along the upper portion of Ditch A which made the original sump location impractical (Photo 1).



Photo 1 - Large icing formed in the excavation at the original PG Sump location (Feb 9, 2019)

A field decision was made to re-establish the sump about 200 m northwest downhill from the original design location, and a rip-rap filled ditch was constructed uphill connecting the sump to the design toe of the PG WRSA. This section was not lined with geotextile.

Along many sections of Ditch A, sediment build up reduced the effective capacity of the ditch (Photo 2). The Issued for Construction configuration of Ditch A (i.e., the installation of HDPE pipe in the ditch) provided poor access for routine and thorough removal of the accumulated sediment. This configuration also increased the likelihood of the pipe joints and the pipe itself being damaged.

It is currently assumed that ongoing sediment build up will remain an issue until vegetation is re-established to assist with the stabilization of areas disturbed during construction activities. Silt fences were installed along most of the uphill side of Ditch A, however they were overwhelmed in certain locations and reduced their effectivity (Photo 3) and required regular maintenance and repair.



Photo 2 - Sediment build up in Ditch A



Photo 3 - Overwhelmed Silt Fences (prior to maintenance)

1.5 Ditch A Minor Modifications to Satisfy the Inspector's Direction

To comply with the Inspector's Direction, three options were considered by the Technical Services team, in their capacity as the responsible department for engineering modifications to the structure and under the supervision of the Engineer of Record established for this work, Mr. Richard Tuohey:

(1) Temporarily relocate the pipe out of the ditch prior to freshet and lay it adjacent to the ditch line, clean out the ditch prior to freshet, then replace pipe after freshet.

(2) Remove the pipe and bury it underneath or adjacent to the ditch, and clean the ditch as needed.

(3) Remove pipe entirely and reline ditch with an impermeable liner and replace the rip rap.

Option 3 was selected as it was determined that it would allow for Ditch A to function as designed (i.e., for capturing and conveying sediment laden and for conveying contact water without seepage losses to the LDSP).

2 Ditch A Improvement Construction Summary

2.1 Responsibilities

Ditch A Improvement construction was supervised by the Site Services department at VGC under the direction of the VGC EOR Mr. Richard Tuohey, P.Eng. Day-to-day supervision of the ditch progression was completed by Clint Abel, JDS's representative on site. Ewing completed all earthworks, liner placement, and rip rap sorting and placement in the ditch. Underhill completed an as-built survey of the ditch in the form of ditch slope surveys and survey of placed liner and rip rap. The Technical Services team completed QA/QC of rip rap placement using Wipfrag Software (Wipware, 2020). Wipfrag is a tool used for particle size analysis using size-referenced photos from the field. Final engineering sign-off on the ditch construction is provided by Richard Tuohey, VGC's Technical Services Superintendent.

2.2 Construction Material Sources

The impermeable liner installed in the ditch was sourced from unused liner available from the ongoing heap leach pad construction program. The liner is 2 mm Linear Low-Density Polyethylene (LLDPE) black textured geomembrane. Manufacturing documentation for the liner can be seen in Appendix A.

Most of the rip rap used to complete the ditch upgrades was sourced from the ditch itself and reused. If supplemental rip rap was required, sources of rock used were:

- Metasediment/granodiorite waste rock from the open pit
- Leftover rip rap from other Mine construction areas sourced from the Dublin Gulch valley

All additional rip rap used for the Ditch A works were tested for compliance with the construction grade waste rock requirements of the Quartz Mining License QML-0011 and Water Use Licence QZ14-041-1 and were deemed suitable. Certificates of analysis for the testing undertaken on the additional rip rap placed in Ditch A are provided in Appendix B.

2.3 Construction Summary

The modifications to Ditch A were completed between September 12 and October 23, 2020. All liner installation was completed by Oct 5 and final rip rap placement was completed on Oct 23. A follow up inspection of the mine was undertaken by the Inspector on October 20, 2020 and no concerns were raised with VGC site representatives at that time.

The alignment of Ditch A was not altered during the improvement works. The ditch alignment remains from the final toe of the PG WRSA and extends parallel to the Crusher Access Road into the Control Pond (Figure 1). The new as-built Ditch A extends about 260 m upstream from the as-built PG sump to the final toe of the PG WRSA and is keyed in under the ultimate termination point of the PG WRSA rock drain. For construction record purposes, the alignment extended upstream from the original 0+000 chainage start includes reverse chainage (e.g., 0-100, 0-200 chainage). The last 150 m of the alignment upstream that was ditched with rip rap to the original designed location of the PG sump was left in place.

The cross section of Ditch A also remains unchanged and includes a minimum 1 m wide base and 2:1 side slopes.

The 28-in HDPE pipe within the ditch was dissembled and removed. The ditch is now completely lined with impermeable liner thus the pipe is no longer necessary. As the pipe is no longer a component of the ditch system the as-built PG sump was also removed as the lined ditch now extends to the ultimate termination point of the PG WRSA rock drain.

Rip rap and accumulated silt in the ditch was removed with an excavator until the original base of the ditch was found. The material taken out of the ditch was sorted with a grizzly so fines were removed. The non-woven geotextile that was installed as part of the initial construction of Ditch A was removed and re-placed in areas where additional protection was deemed required.

The ditch was dammed when the impermeable liner was being placed, and liner strips were placed in shingles with at least 1 m overlap. Once liner was placed the original rip rap from the ditch or supplemental rock was placed back in the ditch.

The entirety of Ditch A is 1,872 m long, and the total length of lined ditch, according to the survey as-built, is 1830 m long. The 42 m long section of the ditch that does not include LLDPE liner is a culvert that is installed under Switchback 1 of the Crusher Access Road. The liner was tied in to the culvert under this switchback.

The following table is a summary of the rip rap type used for the length of Ditch A.

Table 1 - Rip Rap Class by Chainage

Chainage	Rip Rap Class
0-260 to 0+000	Class 10kg
0+000 to 0+600	Class 10kg
0+600 to 1+000	Class 25kg
1+000 to 1+500	Class 10kg
1+500 to 1+612	Class 50kg

Appendix C provides the daily reports completed by Ewing and documents all liner placement, materials removed from the ditch, materials replaced in the ditch, and supplemental rock placed in the ditch from additional sources.

A selection of construction photos is provided in Appendix D.

The as-built alignment with chainage and cross sections can be seen in Appendix E.

QA/QC test results can be seen in Appendix F.

3 Letter of Assurance

I hereby confirm that:

- I am a Professional Engineer registered with the Association of Professional Engineers of Yukon, and licensed to practice in the Yukon Territory;
- I have utilized the standards of care, skill and diligence that, in accordance with the standards of my professional, are required of Professional Engineers in the Yukon Territory;
- I am the Engineer of Record (EoR) for the Eagle Gold Mine Ditch A;
- I consider the construction improvements described within this report as "Minor Modifications", as defined in the Water Use Licence QZ14-041-1, to the submitted final designs of Ditch A and that these improvements do not affect the functionality of Ditch A to meets its design criteria or environmental performance requirements and do not affect the ability of an other Engineered Structure to meet their design and performance criteria.;
- All Quality Assurance and Quality Controls during construction were conducted to my satisfaction.

PERMIT TO PRACTICE
VICTORIA GOLD (YUKON) CORP.
SIGNATURE R. Tuohey
Date Nov 28/20
PERMIT NUMBER PP680
Association of Professional
Engineers of Yukon

Richard Tuohey, P.Eng.
Technical Services Superintendent
rtuohey@vgcx.com
867-456-7700 extension 6315

4 References

JDS (2019), Ditches A, B, & C Construction Report Eagle Gold Project, May 31 2019, prepared for Victoria Gold Corp.

SGC (2020), Eagle Gold Project Water Management Plan Version 2020-01, January 2020, prepared by StrataGold Corporation.

Wipware Inc. (2020). Wipfrag 3 [Cross-Platform Particle Analysis Software]. Ontario, Canada.

APPENDIX A

LINER MANUFACTURING DOCUMENTATION

APPROVED

☐ PROCEED TO NEXT SUBMISSION
☐ PROCEED WITH EXCEPTIONS AS NOTED TO NEXT SUBMISSION
☐ DO NOT PROCEED, REVISE AS NOTED AND RESUBMIT
☒ COMPLETE NO FURTHER SUBMISSIONS REQUIRED
FORTE

LAYFIELD

Geomembrane [EL4280, 2-sided Coarse Textured]

Our Enviro Liner 4000 coarse textured series Geomembranes have better interface friction capabilities compared to our standard textured geomembranes. Texturing can be accomplished either on one side or on both sides. Enviro Liner 4000 coarse textured product can be manufactured to custom asperity heights and is available by special order. Layfield is capable of supplying the friction and strength properties you require for your design build project. Enviro Liner 4280 Coarse Textured Geomembrane meets or exceeds the requirements of Table 2(B) GRI GM 17 specification for textured Linear Low-Density Polyethylene Geomembranes.



Property	ASTM	EL4280[1] 2-sided Coarse Textured	Frequency
Thickness nominal	D5994	2.00 mm	
- min.ave -lowest individual for 8 out of 10 values -lowest individual for any of the 10 values	D5994	1.90 mm 1.80 mm 1.70 mm	Every Roll
Sheet Density	D792	≤0.939 g/cc	Every 10 rolls
Dimensional Stability	D1204	±2%	Once per formulation
Tensile Properties (min. avg) Strength @ Break Elongation @ Break	D6693, Type IV Die	 31 kN/m 380%	Every 2 rolls
Asperity Height (min.ave)	D7466	0.50 mm	Every roll
Tear Resistance (min. avg)	D1004	200 N	Every 5 rolls
Puncture Resistance (min. avg)	D4833	500 N	Every 5 rolls
Multi-axial Elongation (typical)	D5617	30%	Once per formulation
Carbon Black Content	D4280	2.0-3.0%	Every 2 rolls
Carbon Black Dispersion	D5596	9 in Cat 1/ Cat 2 1 in Cat 3	Every 10 rolls
Oxidative Induction Time (OIT) High Pressure Oxidative Induction Time (HPOIT)	D5885	100 mins 400 mins	Per resin batch
Oven aging, 85 deg C, HOPIT % retained after 90 days	D5721 D5885	60%	Once per formulation
UV Resistance, HPOIT retained after 1600 hrs	D7238 D5885	35%	Once per formulation
Low Temperature Brittleness	D746	-70°C	Once per formulation
Roll Width	-	6.85 mtrs	
Roll Length	-	128 mtrs	

[1]*This product is made in Richmond, B.C, Canada.*

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Rev-12/19

LAYFIELD Leaders in Film & Geosynthetic Technology

Mill Certification Report

Job #	E0010695		
Start Date	4/10/2020	**Customer Name**	EAGLE GOLD - 356006
Req Delivery Date	4/14/2020	**Job Description**	EL4280 270" 80MIL SE TEX-2
Close Date		**Warehouse**	45
		Qty Manufactured	15120 FT

Inspection #	40070	**Job**	E0010695	**Status**	Active	**Result**	Pass
Stock Code	3322708S2A	EL4280 270" 80MIL SE TEX-2		**Inspection Date**	4/11/2020	**Completion Date**	4/14/2020
Notes							

Serial	Result	Core Width (273 in +/- 0.5 in)	Roll Length (ft)	Roll Weight - Net (4164 lbs +/- 0 lbs)	Sheet Width (270 in +/- 2 in)	Roll Area m2	Thickness - Average ASTM D5994 (76 mils min.)
3322708s2a-e0010695-001	Pass	272.50	420	4231.18	269.50	877.926421404682	78.48
3322708s2a-e0010695-002	Pass	272.50	420	4226.18	269.50	877.926421404682	78.97
3322708s2a-e0010695-003	Pass	272.50	420	4241.18	270.00	877.926421404682	80.89
3322708s2a-e0010695-004	Pass	272.50	420	4236.18	270.75	877.926421404682	79.85
3322708s2a-e0010695-005	Pass	272.50	420	4241.18	270.50	877.926421404682	81.7
3322708s2a-e0010695-006	Pass	272.50	420	4236.18	270.25	877.926421404682	81.35
3322708s2a-e0010695-007	Pass	272.25	420	4236.18	270.75	877.926421404682	81.95
3322708s2a-e0010695-008	Pass	272.50	420	4241.18	270.50	877.926421404682	81.1
3322708s2a-e0010695-009	Pass	272.50	420	4236.18	270.75	877.926421404682	79.88
3322708s2a-e0010695-010	Pass	272.50	420	4231.18	271.00	877.926421404682	78.15
3322708s2a-e0010695-011	Pass	272.50	420	4236.18	270.00	877.926421404682	78.59
3322708s2a-e0010695-012	Pass	272.50	420	4236.18	270.50	877.926421404682	77.55
3322708s2a-e0010695-013	Pass	272.50	420	4231.18	270.25	877.926421404682	78.22
3322708s2a-e0010695-014	Pass	272.50	420	4236.18	270.00	877.926421404682	78.67
3322708s2a-e0010695-015	Pass	272.50	420	4236.18	270.00	877.926421404682	78.46
3322708s2a-e0010695-016	Pass	272.50	420	4241.18	269.75	877.926421404682	80.6
3322708s2a-e0010695-017	Pass	272.50	420	4241.18	270.00	877.926421404682	80.85
3322708s2a-e0010695-018	Pass	272.50	420	4246.18	270.50	877.926421404682	80.8
3322708s2a-e0010695-019	Pass	272.50	420	4241.18	270.50	877.926421404682	81.29
3322708s2a-e0010695-020	Pass	272.50	420	4246.18	270.50	877.926421404682	81.5
3322708s2a-e0010695-021	Pass	272.50	420	4231.18	270.75	877.926421404682	81
3322708s2a-e0010695-022	Pass	271.50	420	4241.18	271.00	877.926421404682	79.81
3322708s2a-e0010695-023	Pass	272.00	420	4241.18	270.75	877.926421404682	78.26
3322708s2a-e0010695-024	Pass	272.50	420	4231.18	270.00	877.926421404682	79.02
3322708s2a-e0010695-025	Pass	272.00	420	4241.18	269.75	877.926421404682	78.84

LAYFIELD Leaders in Film & Geosynthetic Technology

Mill Certification Report

Job #	E0010695		
Start Date	4/10/2020	**Customer Name**	EAGLE GOLD - 356006
Req Delivery Date	4/14/2020	**Job Description**	EL4280 270" 80MIL SE TEX-2
Close Date		**Warehouse**	45
		Qty Manufactured	15120 FT

Inspection #	40070	**Job**	E0010695	**Status**	Active	**Result**	Pass
Stock Code	3322708S2A	EL4280 270" 80MIL SE TEX-2		**Inspection Date**	4/11/2020	**Completion Date**	4/14/2020
Notes							

Serial	Thickness - Minimum ASTM D5994 (72 mils min.)	Asperity - Printed Average ASTM D7466 (20 mils to 30 mils)	Asperity - Unprinted Average ASTM D7466 (20 mils to 30 mils)	Tear Strength - MD Average ASTM D1004 (45 lbs min.)	Tear Strength - TD Average ASTM D1004 (45 lbs min.)	Puncture Strength - Average ASTM D4833 (113 lbs min.)	Density ASTM D1505 (0.925 g/cc to 0.939 g/cc)
3322708s2a-e0010695-001	74.2	23.35	25.45	64.2	63.2	125.8	0.935
3322708s2a-e0010695-002	75.4	23.3	23.75	64.2	63.2	125.8	0.935
3322708s2a-e0010695-003	77.5	21	21.65	64.2	63.2	125.8	0.935
3322708s2a-e0010695-004	73	21.7	23.35	64.2	63.2	125.8	0.935
3322708s2a-e0010695-005	79.5	22.95	22.4	64.2	63.2	125.8	0.935
3322708s2a-e0010695-006	79	23.55	24.3	56.4	58.6	141.2	0.935
3322708s2a-e0010695-007	78.5	24.46	24.95	56.4	58.6	141.2	0.935
3322708s2a-e0010695-008	78	24.7	23.5	56.4	58.6	141.2	0.935
3322708s2a-e0010695-009	76.3	25.12	25.5	56.4	58.6	141.2	0.935
3322708s2a-e0010695-010	72.5	25.3	24.85	56.4	58.6	141.2	0.935
3322708s2a-e0010695-011	74.2	23.55	23.35	65.2	62.8	134.2	0.934
3322708s2a-e0010695-012	72.9	24.15	25	65.2	62.8	134.2	0.934
3322708s2a-e0010695-013	74.5	22.65	25.1	65.2	62.8	134.2	0.934
3322708s2a-e0010695-014	74.2	23.05	23.5	65.2	62.8	134.2	0.934
3322708s2a-e0010695-015	75.2	25.12	25.58	65.2	62.8	134.2	0.934
3322708s2a-e0010695-016	77.5	22.55	22.8	57.6	57.4	128.6	0.934
3322708s2a-e0010695-017	77.5	22.25	22.7	57.6	57.4	128.6	0.934
3322708s2a-e0010695-018	77.5	21.95	23.2	57.6	57.4	128.6	0.934
3322708s2a-e0010695-019	79	21.2	21.35	57.6	57.4	128.6	0.934
3322708s2a-e0010695-020	79.5	21.27	21.05	57.6	57.4	128.6	0.934
3322708s2a-e0010695-021	77.5	21.6	21.45	59.4	59.6	138.2	0.935
3322708s2a-e0010695-022	77.6	22	21.25	59.4	59.6	138.2	0.935
3322708s2a-e0010695-023	75.5	23.7	21.6	59.4	59.6	138.2	0.935
3322708s2a-e0010695-024	76	23.25	21.7	59.4	59.6	138.2	0.935
3322708s2a-e0010695-025	75.5	24.15	21.45	59.4	59.6	138.2	0.935

LAYFIELD Leaders in Film & Geosynthetic Technology

Mill Certification Report

Job #	E0010695		
Start Date	4/10/2020	**Customer Name**	EAGLE GOLD - 356006
Req Delivery Date	4/14/2020	**Job Description**	EL4280 270" 80MIL SE TEX-2
Close Date		**Warehouse**	45
		Qty Manufactured	15120 FT

Inspection #	40070	**Job**	E0010695	**Status**	Active	**Result**	Pass
Stock Code	3322708S2A	EL4280 270" 80MIL SE TEX-2		**Inspection Date**	4/11/2020	**Completion Date**	4/14/2020
Notes							

Serial	Carbon Black Content ASTM D4218 (2 % to 3 %)	Carbon Black Dispersion ASTM D5596	OIT - High Pressure ASTM D5885	OIT ASTM D5885	Dimensional stability (0 % to 2 %)
3322708s2a-e0010695-001	2.27	>= 9 in Cat 1 or 2	Pass > 400 mins	Pass > 100 mins	
3322708s2a-e0010695-002	2.27	>= 9 in Cat 1 or 2	Pass > 400 mins	Pass > 100 mins	
3322708s2a-e0010695-003	2.00	>= 9 in Cat 1 or 2	Pass > 400 mins	Pass > 100 mins	
3322708s2a-e0010695-004	2.00	>= 9 in Cat 1 or 2	Pass > 400 mins	Pass > 100 mins	
3322708s2a-e0010695-005	2.00	>= 9 in Cat 1 or 2	Pass > 400 mins	Pass > 100 mins	
3322708s2a-e0010695-006	2.10	>= 9 in Cat 1 or 2	Pass > 400 mins	Pass > 100 mins	
3322708s2a-e0010695-007	2.10	>= 9 in Cat 1 or 2	Pass > 400 mins	Pass > 100 mins	
3322708s2a-e0010695-008	2.10	>= 9 in Cat 1 or 2	Pass > 400 mins	Pass > 100 mins	
3322708s2a-e0010695-009	2.50	>= 9 in Cat 1 or 2	Pass > 400 mins	Pass > 100 mins	
3322708s2a-e0010695-010	2.50	>= 9 in Cat 1 or 2	Pass > 400 mins	Pass > 100 mins	
3322708s2a-e0010695-011	2.48	>= 9 in Cat 1 or 2	Pass > 400 mins	Pass > 100 mins	
3322708s2a-e0010695-012	2.48	>= 9 in Cat 1 or 2	Pass > 400 mins	Pass > 100 mins	
3322708s2a-e0010695-013	2.16	>= 9 in Cat 1 or 2	Pass > 400 mins	Pass > 100 mins	0.00
3322708s2a-e0010695-014	2.16	>= 9 in Cat 1 or 2	Pass > 400 mins	Pass > 100 mins	0.00
3322708s2a-e0010695-015	2.26	>= 9 in Cat 1 or 2	Pass > 400 mins	Pass > 100 mins	0.00
3322708s2a-e0010695-016	2.26	>= 9 in Cat 1 or 2	Pass > 400 mins	Pass > 100 mins	0.00
3322708s2a-e0010695-017	2.30	>= 9 in Cat 1 or 2	Pass > 400 mins	Pass > 100 mins	0.00
3322708s2a-e0010695-018	2.30	>= 9 in Cat 1 or 2	Pass > 400 mins	Pass > 100 mins	0.00
3322708s2a-e0010695-019	2.40	>= 9 in Cat 1 or 2	Pass > 400 mins	Pass > 100 mins	0.00
3322708s2a-e0010695-020	2.40	>= 9 in Cat 1 or 2	Pass > 400 mins	Pass > 100 mins	0.00
3322708s2a-e0010695-021	2.50	>= 9 in Cat 1 or 2	Pass > 400 mins	Pass > 100 mins	0.00
3322708s2a-e0010695-022	2.50	>= 9 in Cat 1 or 2	Pass > 400 mins	Pass > 100 mins	0.00
3322708s2a-e0010695-023	2.08	>= 9 in Cat 1 or 2	Pass > 400 mins	Pass > 100 mins	0.00
3322708s2a-e0010695-024	2.08	>= 9 in Cat 1 or 2	Pass > 400 mins	Pass > 100 mins	0.00
3322708s2a-e0010695-025	2.08	>= 9 in Cat 1 or 2	Pass > 400 mins	Pass > 100 mins	0.00

LAYFIELD Leaders in Film & Geosynthetic Technology

Mill Certification Report

Job #	E0010695		
Start Date	4/10/2020	**Customer Name**	EAGLE GOLD - 356006
Req Delivery Date	4/14/2020	**Job Description**	EL4280 270" 80MIL SE TEX-2
Close Date		**Warehouse**	45
		Qty Manufactured	15120 FT

Inspection #	40070	**Job**	E0010695	**Status**	Active	**Result**	Pass
Stock Code	3322708S2A	EL4280 270" 80MIL SE TEX-2		**Inspection Date**	4/11/2020	**Completion Date**	4/14/2020
Notes							

Serial	Result	Core Width (273 in +/- 0.5 in)	Roll Length (ft)	Roll Weight - Net (4164 lbs +/- 0 lbs)	Sheet Width (270 in +/- 2 in)	Roll Area m2	Thickness - Average ASTM D5994 (76 mils min.)
3322708s2a-e0010695-026	Pass	272.00	420	4226.18	269.50	877.926421404682	78.46
3322708s2a-e0010695-027	Pass	272.00	420	4231.18	269.75	877.926421404682	78.85
3322708s2a-e0010695-028	Pass	273.00	420	4256.18	270.25	877.926421404682	80.35
3322708s2a-e0010695-029	Pass	273.00	420	4256.18	269.75	877.926421404682	80.04
3322708s2a-e0010695-030	Pass	273.00	420	4266.18	270.50	877.926421404682	80.01
3322708s2a-e0010695-031	Pass	273.00	420	4266.18	270.00	877.926421404682	80.15
3322708s2a-e0010695-032	Pass	273.00	420	4256.18	271.00	877.926421404682	80.3
3322708s2a-e0010695-033	Pass	273.00	420	4266.18	270.75	877.926421404682	80.25
3322708s2a-e0010695-034	Pass	272.00	420	4261.18	270.50	877.926421404682	78.61
3322708s2a-e0010695-035	Pass	272.00	420	4281.18	270.00	877.926421404682	79.06
3322708s2a-e0010695-036	Pass	272.00	420	4241.18	269.50	877.926421404682	79.3

LAYFIELD Leaders in Film & Geosynthetic Technology

Mill Certification Report

Job #	E0010695		
Start Date	4/10/2020	**Customer Name**	EAGLE GOLD - 356006
Req Delivery Date	4/14/2020	**Job Description**	EL4280 270" 80MIL SE TEX-2
Close Date		**Warehouse**	45
		Qty Manufactured	15120 FT

Inspection #	40070	**Job**	E0010695	**Status**	Active	**Result**	Pass
Stock Code	3322708S2A	EL4280 270" 80MIL SE TEX-2		**Inspection Date**	4/11/2020	**Completion Date**	4/14/2020
Notes							

Serial	Thickness - Minimum ASTM D5994 (72 mils min.)	Asperity - Printed Average ASTM D7466 (20 mils to 30 mils)	Asperity - Unprinted Average ASTM D7466 (20 mils to 30 mils)	Tear Strength - MD Average ASTM D1004 (45 lbs min.)	Tear Strength - TD Average ASTM D1004 (45 lbs min.)	Puncture Strength - Average ASTM D4833 (113 lbs min.)	Density ASTM D1505 (0.925 g/cc to 0.939 g/cc)
3322708s2a-e0010695-026	75.1	23.85	23	58.6	56.2	127	0.935
3322708s2a-e0010695-027	75.6	24.5	24.15	58.6	56.2	127	0.935
3322708s2a-e0010695-028	77.3	20.9	20.7	58.6	56.2	127	0.935
3322708s2a-e0010695-029	77.7	20.6	20.7	58.6	56.2	127	0.935
3322708s2a-e0010695-030	77.5	20.7	20.9	58.6	56.2	127	0.935
3322708s2a-e0010695-031	77.8	20.5	20.6	59.2	59.2	134.6	0.935
3322708s2a-e0010695-032	78.5	20.8	20.7	59.2	59.2	134.6	0.935
3322708s2a-e0010695-033	77.8	20.5	20.9	59.2	59.2	134.6	0.935
3322708s2a-e0010695-034	73.5	23.45	23.9	59.2	59.2	134.6	0.935
3322708s2a-e0010695-035	75.6	22.8	22.4	59.2	59.2	134.6	0.935
3322708s2a-e0010695-036	76.5	24.85	23.05	59	57.8	144.2	0.935

LAYFIELD Leaders in Film & Geosynthetic Technology

Mill Certification Report

Job #	E0010695		
Start Date	4/10/2020	**Customer Name**	EAGLE GOLD - 356006
Req Delivery Date	4/14/2020	**Job Description**	EL4280 270" 80MIL SE TEX-2
Close Date		**Warehouse**	45
		Qty Manufactured	15120 FT

Inspection #	40070	**Job**	E0010695	**Status**	Active	**Result**	Pass
Stock Code	3322708S2A	EL4280 270" 80MIL SE TEX-2		**Inspection Date**	4/11/2020	**Completion Date**	4/14/2020
Notes							

Serial	Carbon Black Content ASTM D4218 (2 % to 3 %)	Carbon Black Dispersion ASTM D5596	OIT - High Pressure ASTM D5885	OIT ASTM D5885	Dimensional stability (0 % to 2 %)
3322708s2a-e0010695-026	2.38	>= 9 in Cat 1 or 2	Pass > 400 mins	Pass > 100 mins	0.00
3322708s2a-e0010695-027	2.38	>= 9 in Cat 1 or 2	Pass > 400 mins	Pass > 100 mins	0.00
3322708s2a-e0010695-028	2.26	>= 9 in Cat 1 or 2	Pass > 400 mins	Pass > 100 mins	0.00
3322708s2a-e0010695-029	2.26	>= 9 in Cat 1 or 2	Pass > 400 mins	Pass > 100 mins	0.00
3322708s2a-e0010695-030	2.17	>= 9 in Cat 1 or 2	Pass > 400 mins	Pass > 100 mins	0.00
3322708s2a-e0010695-031	2.33	>= 9 in Cat 1 or 2	Pass > 400 mins	Pass > 100 mins	0.00
3322708s2a-e0010695-032	2.33	>= 9 in Cat 1 or 2	Pass > 400 mins	Pass > 100 mins	0.00
3322708s2a-e0010695-033	2.33	>= 9 in Cat 1 or 2	Pass > 400 mins	Pass > 100 mins	0.00
3322708s2a-e0010695-034	2.33	>= 9 in Cat 1 or 2	Pass > 400 mins	Pass > 100 mins	0.00
3322708s2a-e0010695-035	2.33	>= 9 in Cat 1 or 2	Pass > 400 mins	Pass > 100 mins	0.00
3322708s2a-e0010695-036	2.33	>= 9 in Cat 1 or 2	Pass > 400 mins	Pass > 100 mins	0.00

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AN APPLIED EARTH SCIENCES COMPANY
330 Alison Blvd
Fredericton, NB Canada E3C 0A9
Telephone (506) 460-8660
Fax (506) 460-8679

March 25, 2020
Project No.: 2140001

Clint Green
Principal Engineer
Forte Dynamics Inc.
3003 E. Harmoney Road
Suite 320, Fort Collins, Co 80528

Dear Mr. Green,

Re: Forte Dynamics Lab Testing

1.0 INTRODUCTION

BGC Engineering Inc. (BGC) was retained by Forte Dynamics Inc. to conduct a series of liner interface shear tests for the expansion phases of the Victoria Gold Corp Project "Eagle Gold Mine". The results of these tests are attached herein.

2.0 BACKGROUND

On January 20th, 2020, BGC received a shipment of geosynthetic clay liners (GCL) and geomembranes from Layfield Group LTD. The product name associated with the GCL and the geomembrane was GSE BentoLiner NWL-60 and Layfield Enviro Liner 4280 CT, respectively.

During the first three tests, BGC observed lower than expected shear strengths between the GCL and the geomembrane. When comparing the 2020 GCL with the GCL tested by BGC in 2018 and 2019 (also GSE BentoLiner NWL-60), the results were incongruent. BGC observed that the 2020 GCL swelled approximately twice as much when compared to the GCL tested in 2018 and 2019 GCL. The lower internal shear strength of the 2020 GCL was attributed to the higher water content of the bentonite.

BGC notified Forte Dynamics Inc. of the apparent discrepancy in GCL types, and Forte Dymamics said they would reach out to Layfield and arrange to have new GCL sent to the BGC laboratory for testing.

On March 4th, 2020, BGC received the new shipment of GCL with product name GSE BentoLiner NWL-60. A second round of liner interface testing was completed using this GCL. The new GCL swelled to a similar water content and hydrated thickness as the GSE BentoLiner NWL-60 tested in 2018 and 2019.

In addition to completing the liner interface shear tests, BGC also completed Standard Proctor and particle size distribution tests on subgrade and overliner materials.

Individual laboratory reports for the completed tests are included in Appendix A. This work was conducted in general accordance with the scope of work provided in an email sent by Clint Green of Forte Dynamics Inc. to David Oldford of BGC on January 13, 2020 entitled "VGC-Eagle-Interface Shear", and according to the terms and conditions provided in Appendix B.

3.0 STANDARDS FOLLOWED

The index tests and the liner interface samples were tested in accordance with the latest editions of applicable American Society for Testing and Materials (ASTM) standards and recognized good practice. The following ASTM Standards were utilized:

- ASTM D5321 - Standard Test Method for Determining the Shear Strength of Soil-Geosynthetic and Geosynthetic-Geosynthetic Interfaces by Direct Shear.
- ASTM D6913 - Standard Test Methods for Particle-Size Distribution (Gradation) of Soils Using Sieve Analysis.
- ASTM D698 - Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Standard Effort (12,400 ft-lbf/ft^3 (600 kN-m/m^3).

4.0 EQUIPMENT

The liner interface tests were completed using BGC's large direct shear box apparatus. The shear box has horizontal dimensions of 40 cm x 40 cm and a height of 51 cm, and allows testing to be completed at vertical stresses of up to 5.5 MPa. The vertical stress is applied to a top plate by means of two 50 ton jacks. A horizontal force is applied by means of a single 50 ton jack. Vertical and horizontal displacements are measured and logged continuously throughout the test by means of Liner Variable Displacement Transducers (LVDT). The use of two vertical jacks and LVDT's allows adjustment of the top plate throughout the test. This ensures that the top plate remains parallel while maintaining a constant vertical stress. The horizontal force is continuously measured and logged by means of a load cell. A photograph of the equipment is provided in Figure 4-1.



Figure 4-1. BGC's Large Direct Shear Apparatus

5.0 METHODOLOGY

The liner interface tests were conducted by placing a subgrade material into the bottom half of the shear box. The subgrade was compacted to a minimum of 92% of the maximum Standard Proctor dry density as requested by Forte Dynamics. Next, a pre-soaked GCL was placed on top of the subgrade, followed by a geomembrane. The top half of the shear box was placed over the geomembrane and was filled with the overliner material. Finally, a top plate was placed above the overliner material. For each GCL type tested, two rounds of testing were completed at vertical stresses 400, 800 and 1200 kPa. The vertical stresses were applied to the system until the vertical deformation had stabilized. After consolidation, the liner systems were sheared at an average displacement rate of approximately 0.28 cm/min while maintaining a constant vertical stress.

6.0 CLOSURE

BGC Engineering Inc. (BGC) prepared this document for the account of Forte Dynamics Inc. The material in it reflects the judgment of BGC staff in light of the information available to BGC at the time of document preparation. Any use which a third party makes of this document or any reliance on decisions to be based on it is the responsibility of such third parties. BGC accepts no responsibility for damages, if any, suffered by any third party as a result of decisions made or actions based on this document.

As a mutual protection to our client, the public, and ourselves, all documents are submitted for the confidential information of our client for a specific project. Authorization for any use and/or publication of this document or any data, statements, conclusions or abstracts from or regarding our documents, through any form of print or electronic media, including without limitation, posting or reproduction of same on any website, is reserved pending BGC's written approval. A record copy of this document is on file at BGC. That copy takes precedence over any other copy or reproduction of this document.

Yours sincerely,

BGC ENGINEERING INC.
per:



David Oldford, P.Eng.
Geotechnical Engineer

Reviewed by:

Simon Dickinson, Ph.D., P.Eng.
Principal Geotechnical Engineer, CTO

DO/SD/dk/md

Attachment: Appendix A Laboratory Testing Reports
Appendix B BGC's Standard Terms and Conditions

APPENDIX A
LABORATORY TESTING REPORTS

PROJECT INFORMATION		LINER SYSTEM	
Number	2140-001	Subgrade	Gravel, sandy, trace fines
Name	Forte Dynamics Liner Testing	GCL	GSE BentoLiner NWL-60 GCL
Location	Yukon Territory	Geomembrane	Layfield Enviro Liner 4280 CT
Client	Forte Dynamics Inc.	Overliner	Poorly graded gravel with sand (GP)

INDEX PROPERTIES OF SUBGRADE	Initial
Length and Width (cm)	40.5 x 40.5
Thickness (cm)	14.6
Bulk Density ρ_b (g/cm^3)	2.30
Dry Density ρ_d (g/cm^3)	2.14
Void Ratio e	0.26
Water Content (%)	7.3
Specific Gravity G_s (Assumed)	2.70

INDEX PROPERTIES OF OVERLINER	Initial
Length and Width (cm)	40.5 x 40.5
Thickness (cm)	10.4
Bulk Density ρ_b (g/cm^3)	2.25
Dry Density ρ_d (g/cm^3)	2.12
Void Ratio e	0.23
Water Content (%)	6.3
Specific Gravity G_s (Assumed)	2.60

INDEX PROPERTIES OF GCL	
Initial Average Hydrated Thickness (cm)	1.16
Initial Water Content (%)	205.1
Final Water Content (%)	162.8

SHEARING PARAMETERS	
Vertical Stress σ'_v (kPa)	400
Displacement Rate (cm/min)	0.21

RESULTS	
τ_{max} (kPa)	144
τ_{res} (kPa)	22

Note: Internal failure was observed in the geosynethetic clay liner (GCL). Displacement between the subgrade and the GCL was observed, along with displacement between the geomembrane and GCL.

330 Alison Boulevard
Fredericton, NB Canada E3C 0A9
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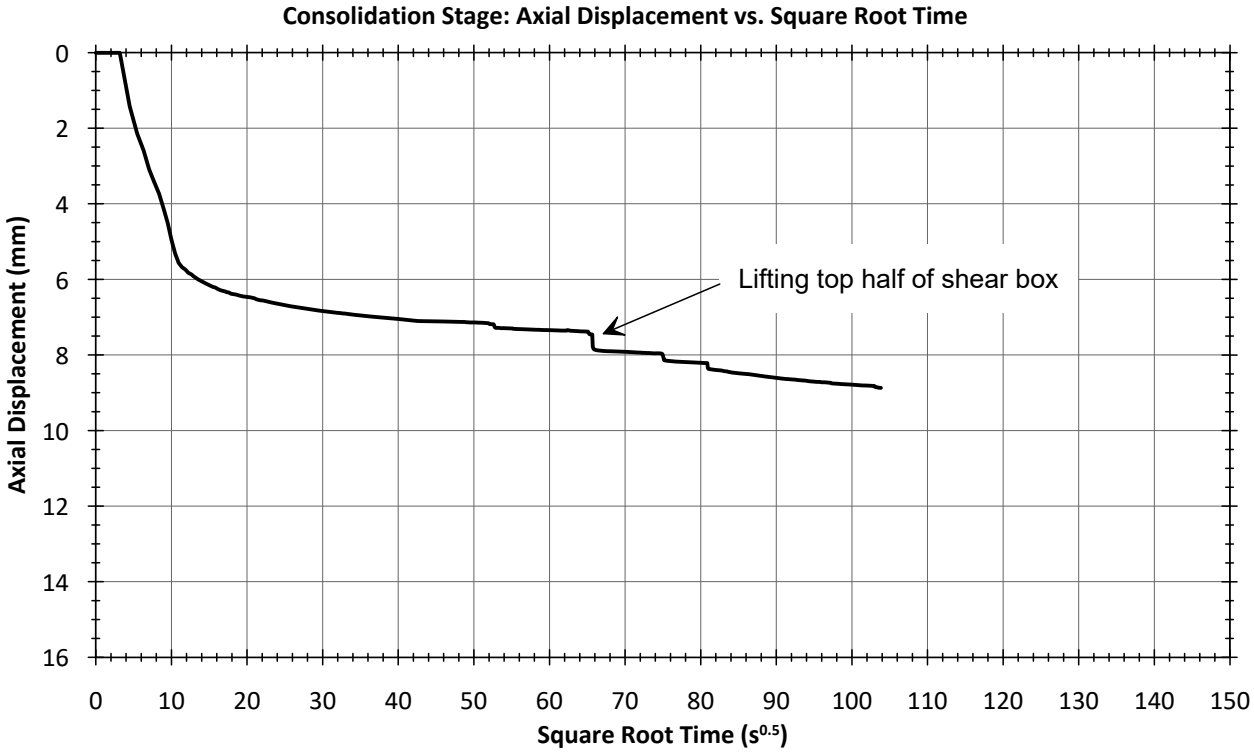

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Tested by DO (2020-02-21)
Reviewed by KS (2020-02-25)
Approved by SD (2020-03-17)
Date Format (YYYY-MM-DD)

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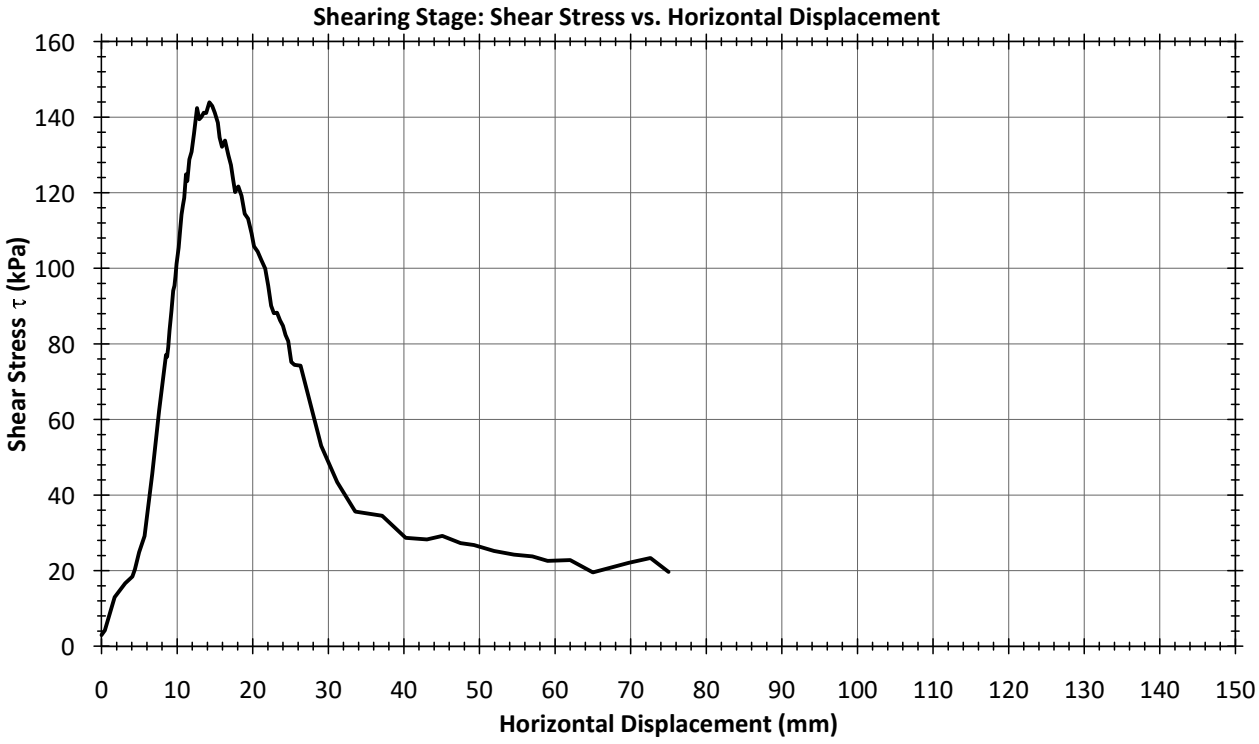

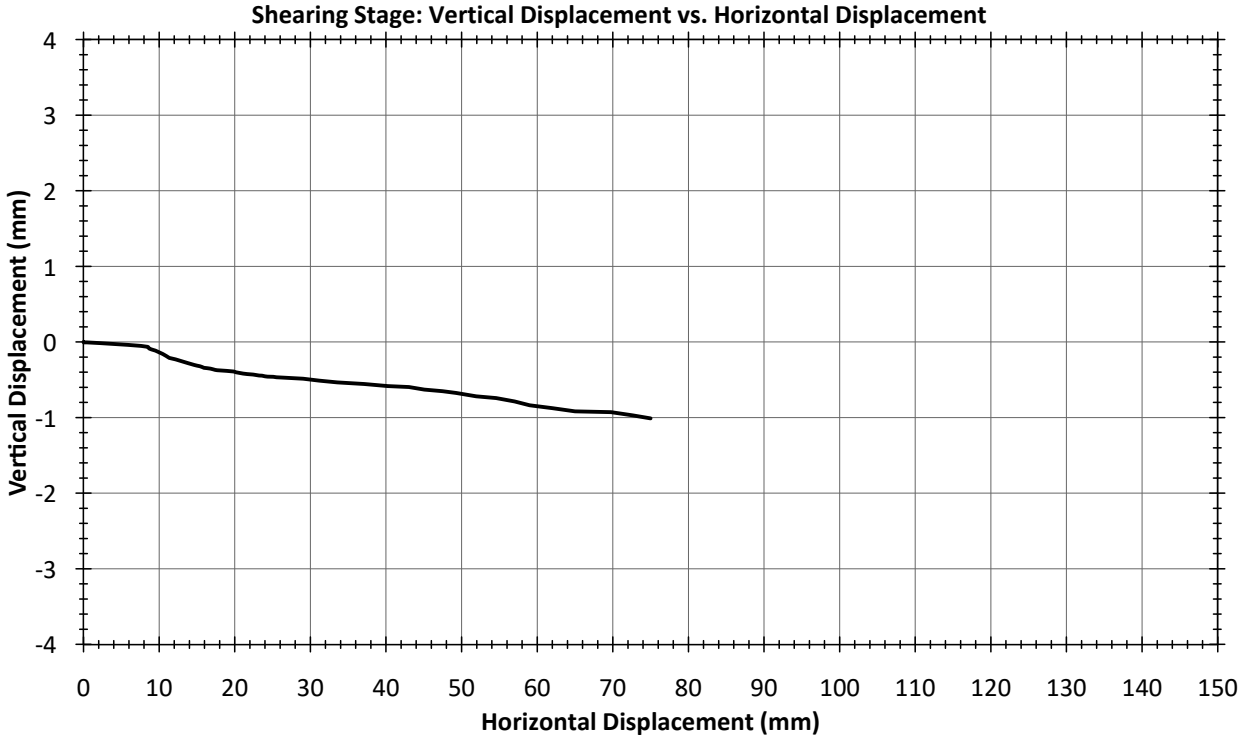

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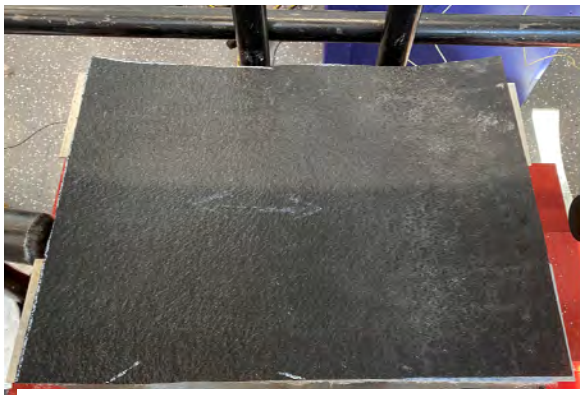
Subgrade



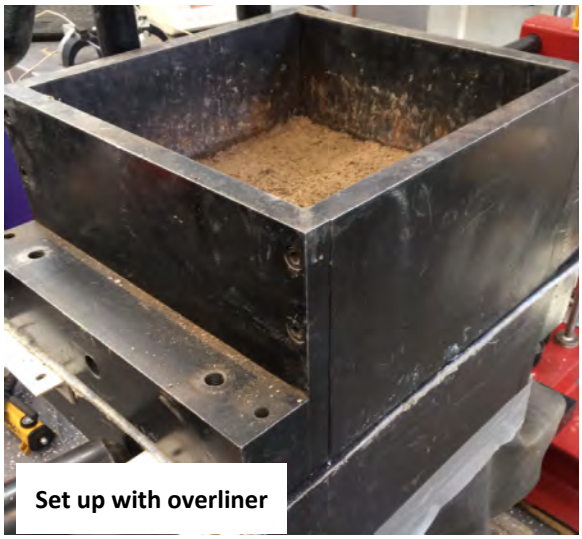
GCL over subgrade



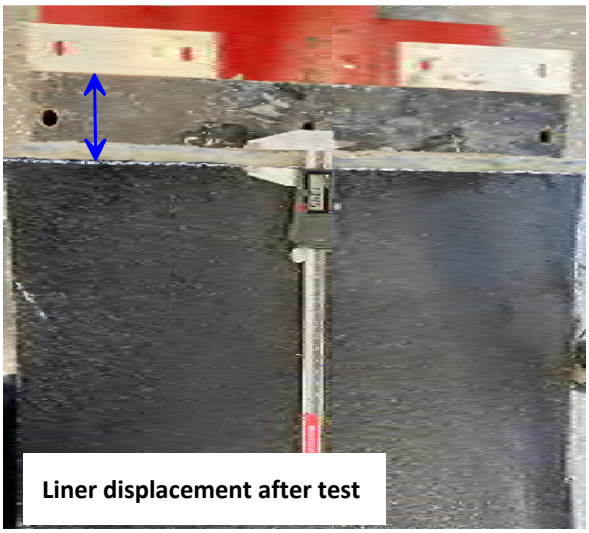
Alignment of GCL and geomembrane before test



Loading direction



Set up with overliner



Liner displacement after test

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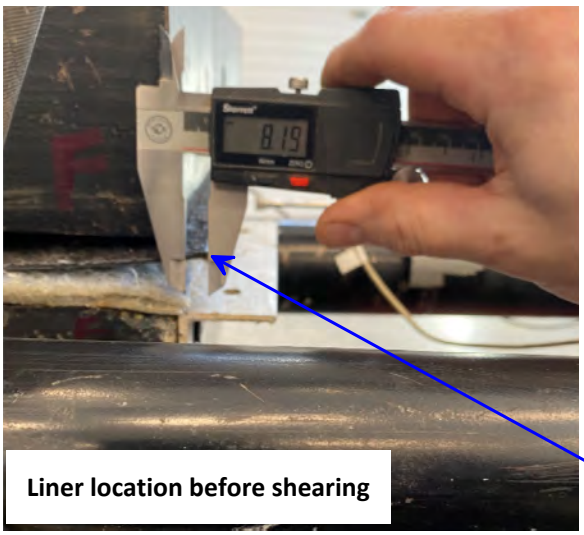

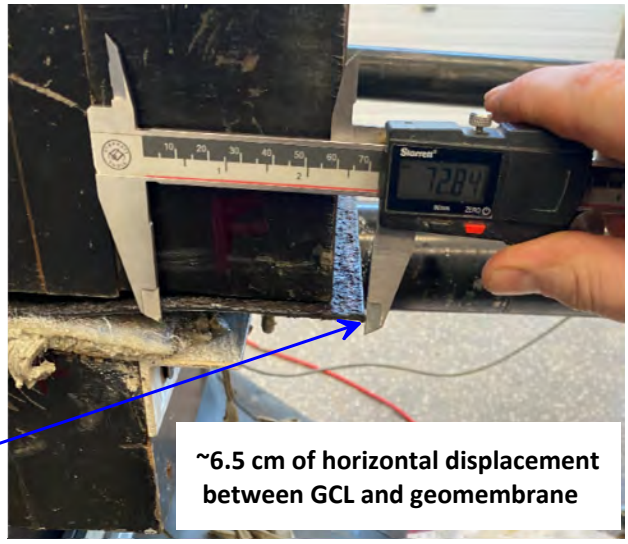






Subgrade after test



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Tested by DO (2020-02-21)
Reviewed by KS (2020-02-25)
Approved by SD (2020-03-17)
Date Format (YYYY-MM-DD)

PROJECT INFORMATION		LINER SYSTEM	
Number	2140-001	Subgrade	Gravel, sandy, trace fines
Name	Forte Dynamics Liner Testing	GCL	GSE BentoLiner NWL-60 GCL
Location	Yukon Territory	Geomembrane	Layfield Enviro Liner 4280 CT
Client	Forte Dynamics Inc.	Overliner	Poorly graded gravel with sand (GP)

INDEX PROPERTIES OF SUBGRADE	Initial
Length and Width (cm)	40.5 x 40.5
Thickness (cm)	14.8
Bulk Density ρ_b (g/cm^3)	2.29
Dry Density ρ_d (g/cm^3)	2.13
Void Ratio e	0.27
Water Content (%)	7.3
Specific Gravity G_s (Assumed)	2.70

INDEX PROPERTIES OF OVERLINER	Initial
Length and Width (cm)	40.5 x 40.5
Thickness (cm)	11.0
Bulk Density ρ_b (g/cm^3)	2.25
Dry Density ρ_d (g/cm^3)	2.12
Void Ratio e	0.23
Water Content (%)	6.3
Specific Gravity G_s (Assumed)	2.60

INDEX PROPERTIES OF GCL	
Initial Average Hydrated Thickness (cm)	1.09
Initial Water Content (%)	186.4
Final Water Content (%)	140.5

SHEARING PARAMETERS	
Vertical Stress σ'_v (kPa)	800
Displacement Rate (cm/min)	0.15

RESULTS	
τ_{max} (kPa)	195
τ_{res} (kPa)	32

Note: Internal failure was observed in the geosynethetic clay liner (GCL). Displacement between the subgrade and the GCL was observed, along with displacement between the geomembrane and GCL.

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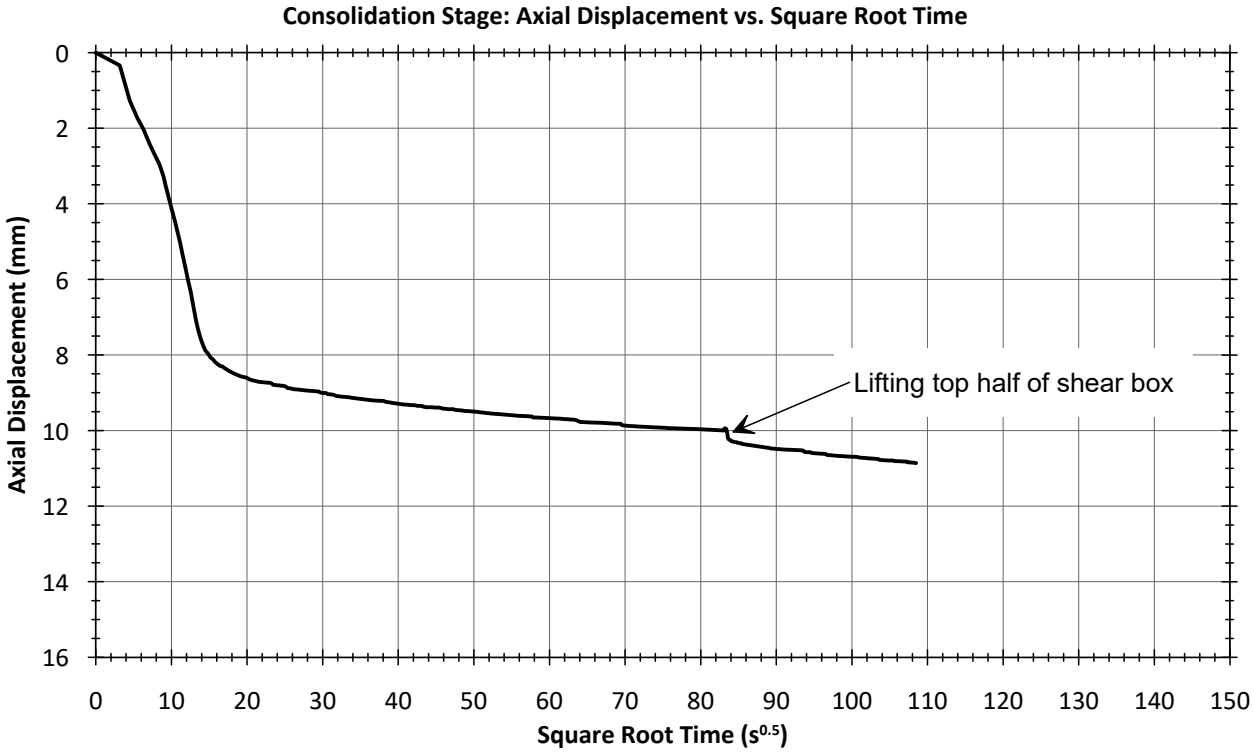

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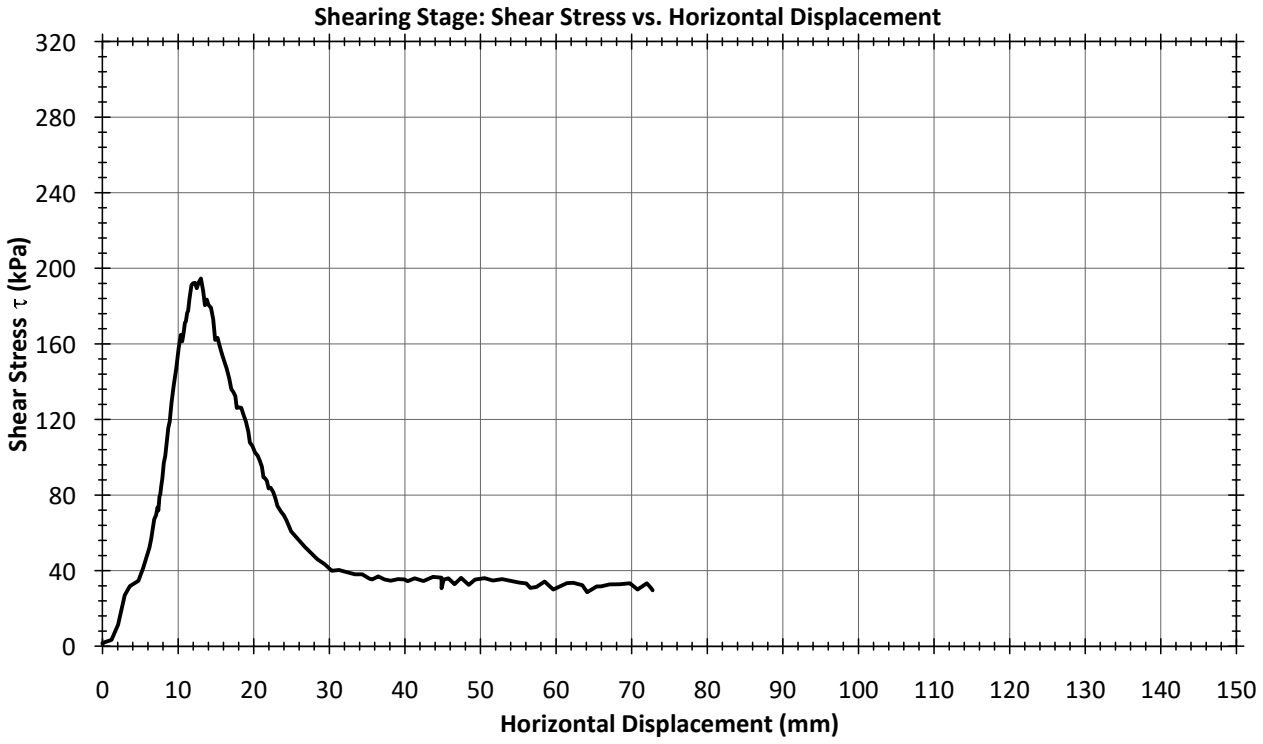
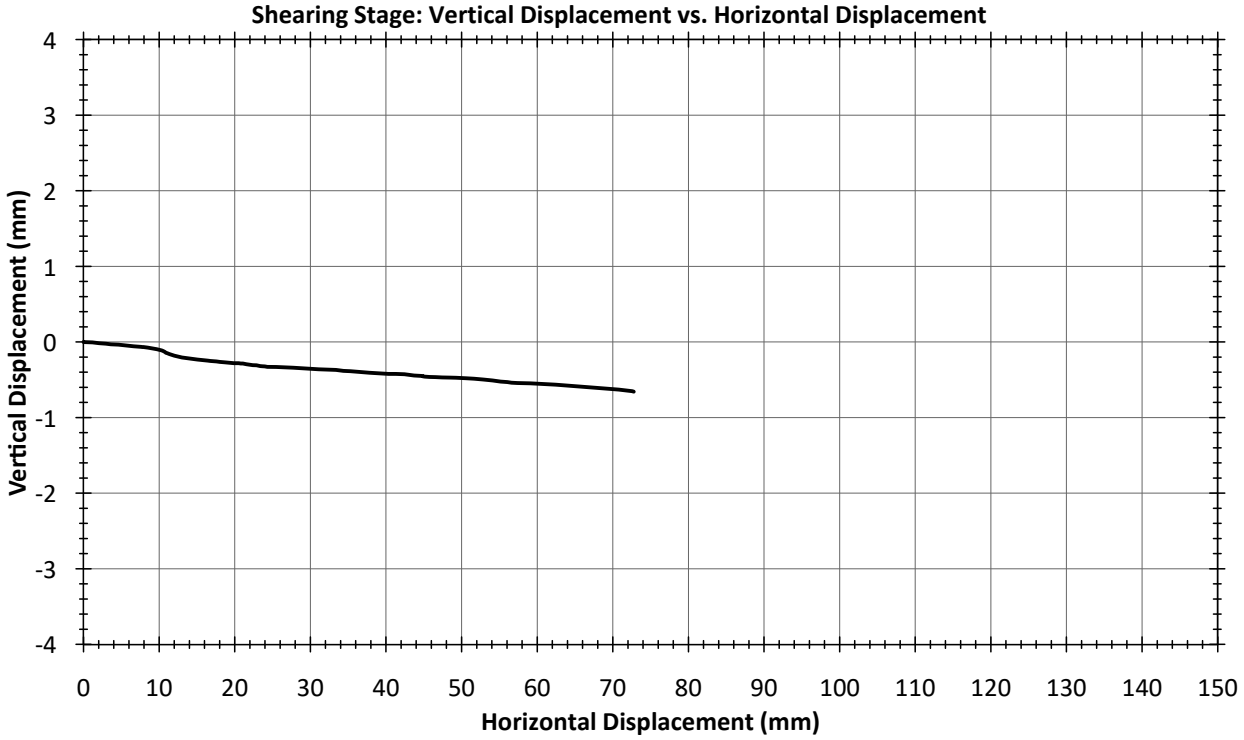
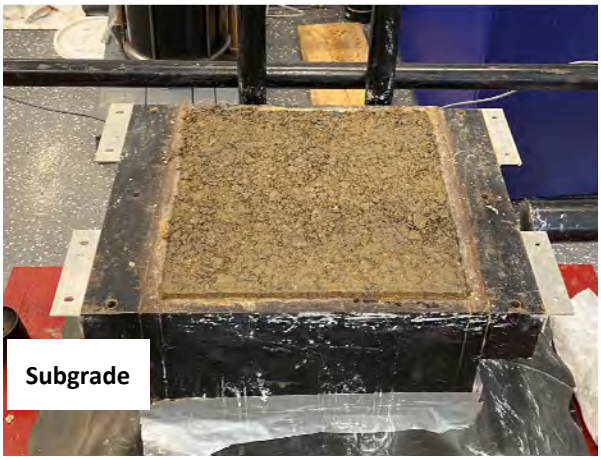


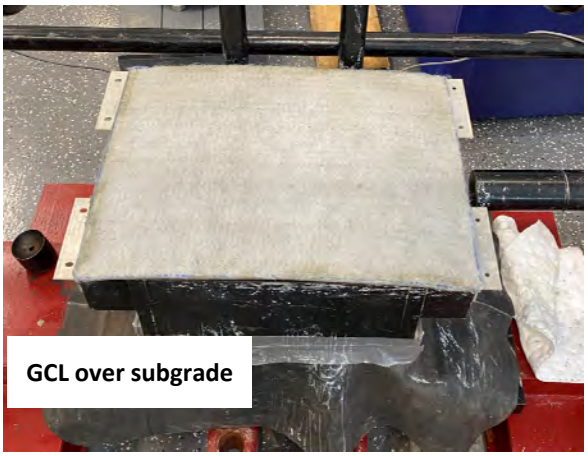


330 Alison Boulevard
Fredericton, NB Canada E3C 0A9
T 506.460.8660 | F 506.460.8679

Tested by DO (2020-02-24)
Reviewed by KS (2020-02-27)
Approved by SD (2020-03-17)
Date Format (YYYY-MM-DD)



Subgrade



GCL over subgrade



Alignment of GCL and geomembrane before test



Loading direction on GCL



Overliner



Shear box after test

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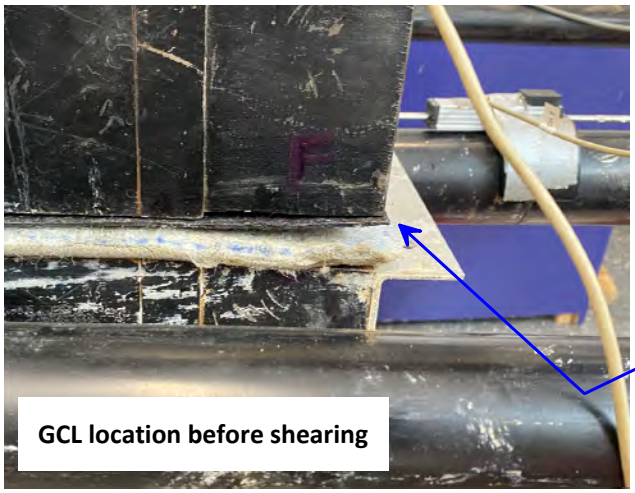
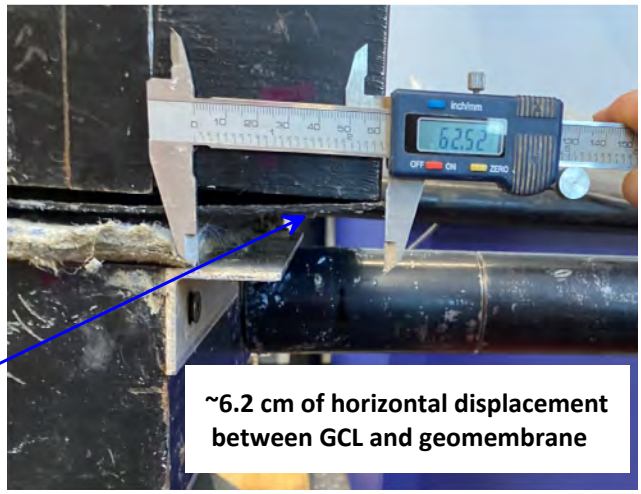


GCL location before shearing



~6.2 cm of horizontal displacement between GCL and geomembrane



~2.8 cm wrinkle in front of GCL



~2.9 cm wrinkle in back the GCL



Subgrade after test



Geomembrane after test

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PROJECT INFORMATION		LINER SYSTEM	
Number	2140-001	Subgrade	Gravel, sandy, trace fines
Name	Forte Dynamics Liner Testing	GCL	GSE BentoLiner NWL-60 GCL
Location	Yukon Territory	Geomembrane	Layfield Enviro Liner 4280 CT
Client	Forte Dynamics Inc.	Overliner	Poorly graded gravel with sand (GP)

INDEX PROPERTIES OF SUBGRADE	Initial
Length and Width (cm)	40.5 x 40.5
Thickness (cm)	15.0
Bulk Density ρ_b (g/cm^3)	2.29
Dry Density ρ_d (g/cm^3)	2.13
Void Ratio e	0.27
Water Content (%)	7.3
Specific Gravity G_s (Assumed)	2.70

INDEX PROPERTIES OF OVERLINER	Initial
Length and Width (cm)	40.5 x 40.5
Thickness (cm)	9.3
Bulk Density ρ_b (g/cm^3)	2.22
Dry Density ρ_d (g/cm^3)	2.10
Void Ratio e	0.24
Water Content (%)	5.8
Specific Gravity G_s (Assumed)	2.60

INDEX PROPERTIES OF GCL	
Initial Average Hydrated Thickness (cm)	1.02
Initial Water Content (%)	190.1
Final Water Content (%)	135.5

SHEARING PARAMETERS	
Vertical Stress σ'_v (kPa)	1200
Displacement Rate (cm/min)	0.17

RESULTS	
τ_{max} (kPa)	285
τ_{res} (kPa)	80

Note: Internal failure was observed in the geosynethetic clay liner (GCL). Displacement between the subgrade and the GCL was observed, along with displacement between the geomembrane and GCL.

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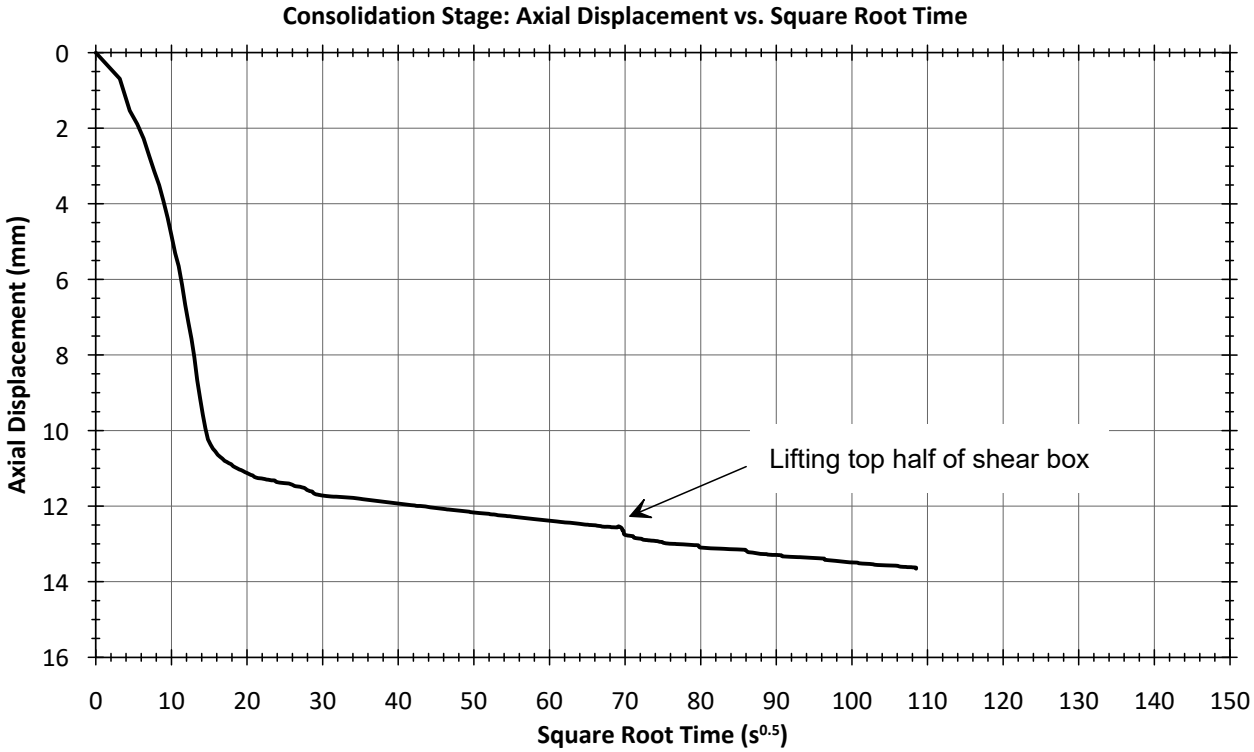

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Tested by DO (2020-02-28)
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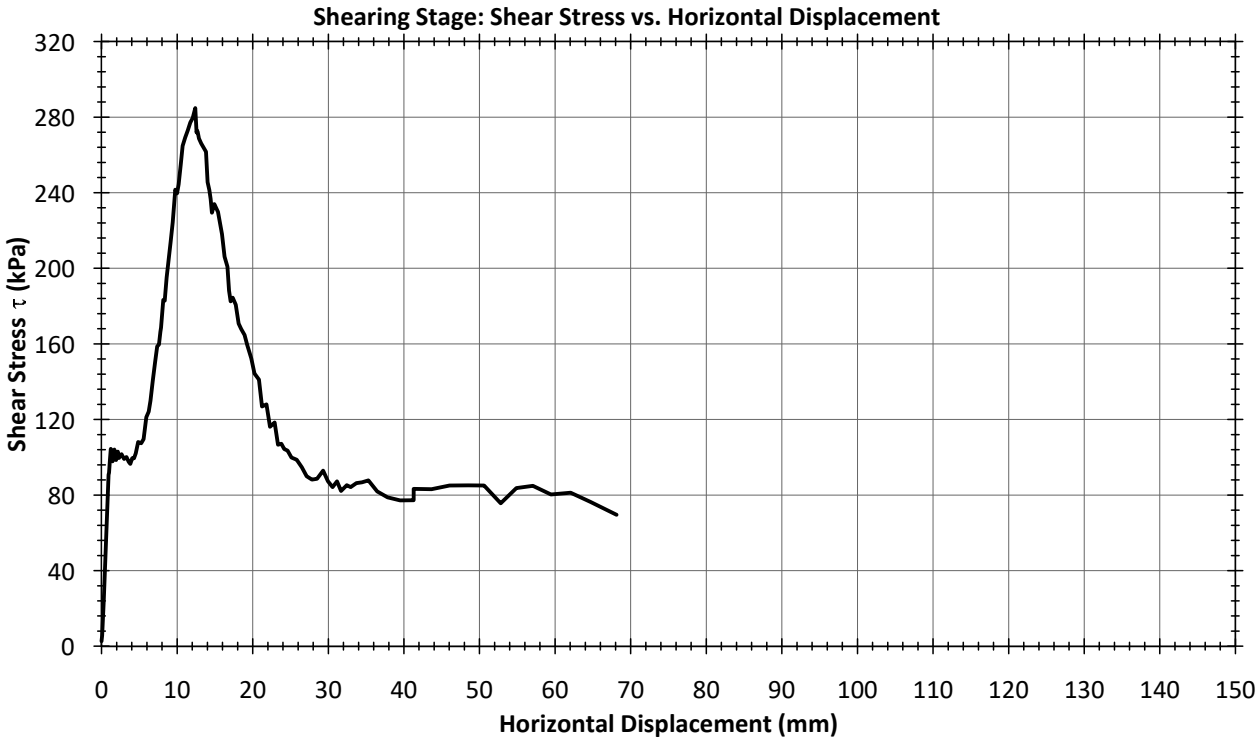

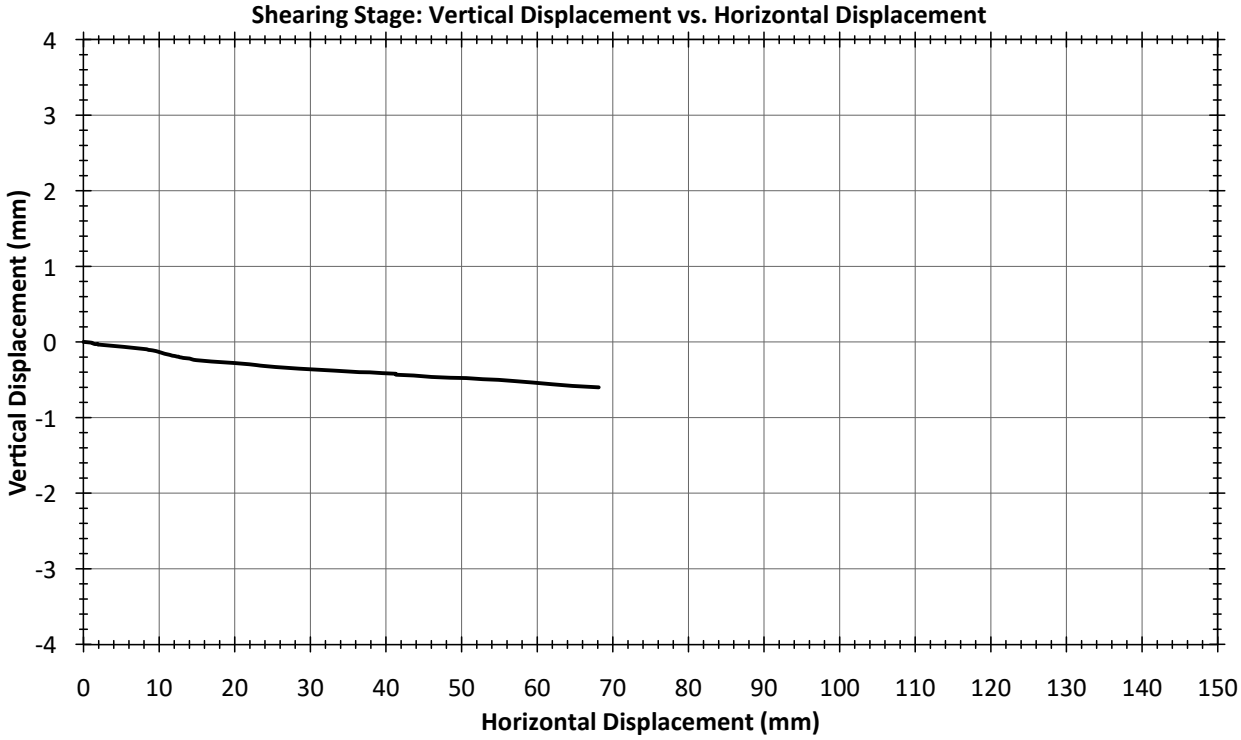

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Date Format (YYYY-MM-DD)



Subgrade



GCL over subgrade



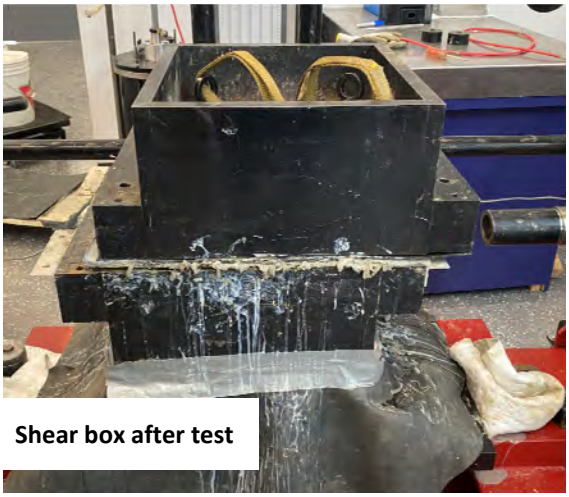
Alignment of GCL and geomembrane before test



Loading direction on GCL



Overliner



Shear box after test

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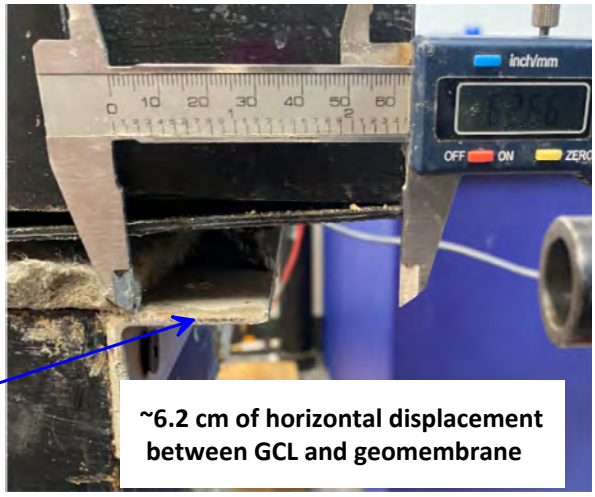
GCL location before shearing



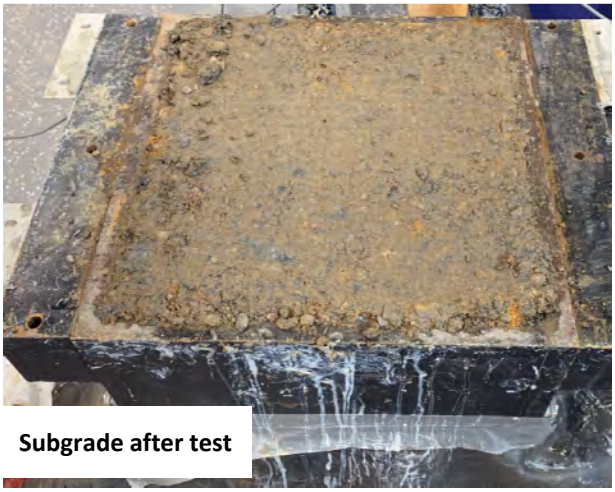
~6.2 cm of horizontal displacement between GCL and geomembrane



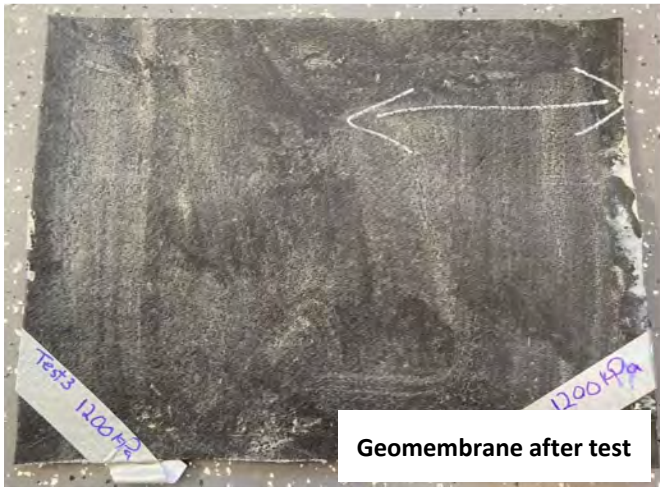
~2.5 cm wrinkle in front of GCL



~3.05 cm wrinkle in back the GCL



Subgrade after test



Geomembrane after test

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Tested by DO (2020-02-28)
Reviewed by KS (2020-03-02)
Approved by SD (2020-03-17)
Date Format (YYYY-MM-DD)

PROJECT INFORMATION		LINER SYSTEM	
Number	2140-001	Subgrade	Gravel, sandy, trace fines
Name	Forte Dynamics Liner Testing	GCL	GSE BentoLiner NWL-60 GCL
Location	Yukon Territory	Geomembrane	Layfield Enviro Liner 4280 CT
Client	Forte Dynamics Inc.	Overliner	Poorly graded gravel with sand (GP)

INDEX PROPERTIES OF SUBGRADE	Initial
Length and Width (cm)	40.5 x 40.5
Thickness (cm)	15.5
Bulk Density ρ_b (g/cm^3)	2.32
Dry Density ρ_d (g/cm^3)	2.17
Void Ratio e	0.25
Water Content (%)	7.3
Specific Gravity G_s (Assumed)	2.70

INDEX PROPERTIES OF OVERLINER	Initial
Length and Width (cm)	40.5 x 40.5
Thickness (cm)	15.8
Bulk Density ρ_b (g/cm^3)	2.21
Dry Density ρ_d (g/cm^3)	2.11
Void Ratio e	0.23
Water Content (%)	4.6
Specific Gravity G_s (Assumed)	2.60

INDEX PROPERTIES OF GCL	
Initial Average Hydrated Thickness (cm)	0.72
Initial Water Content (%)	108.9
Final Water Content (%)	86.7

SHEARING PARAMETERS	
Vertical Stress σ'_v (kPa)	800
Displacement Rate (cm/min)	0.48

RESULTS	
τ_{max} (kPa)	302
τ_{res} (kPa)	95

Note: The liner system failed between the geosynethetic clay liner (GCL) and Geomembrane. No failure was observed in the GCL. There was no evidence that any shearing occurred in either the subgrade or overliner.

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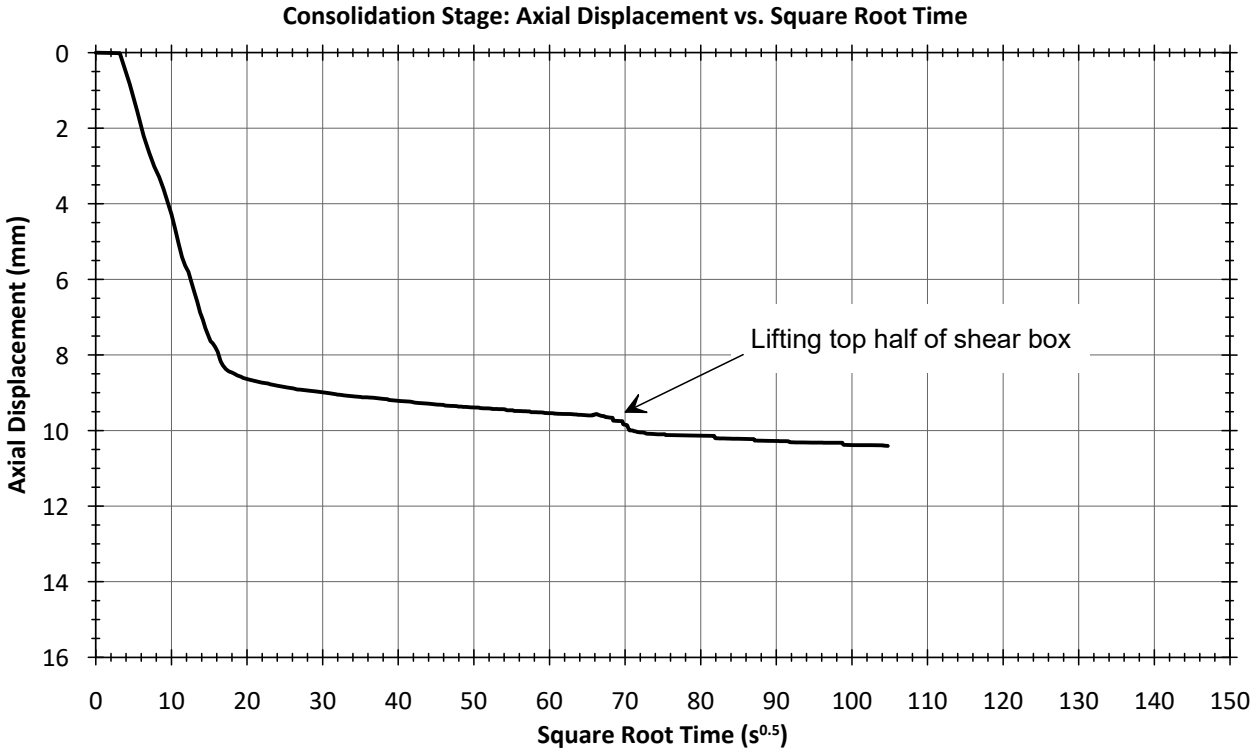
Tested by KS (2020-03-06)
Reviewed by DO (2020-03-09)
Approved by SD (2020-03-17)
Date Format (YYYY-MM-DD)



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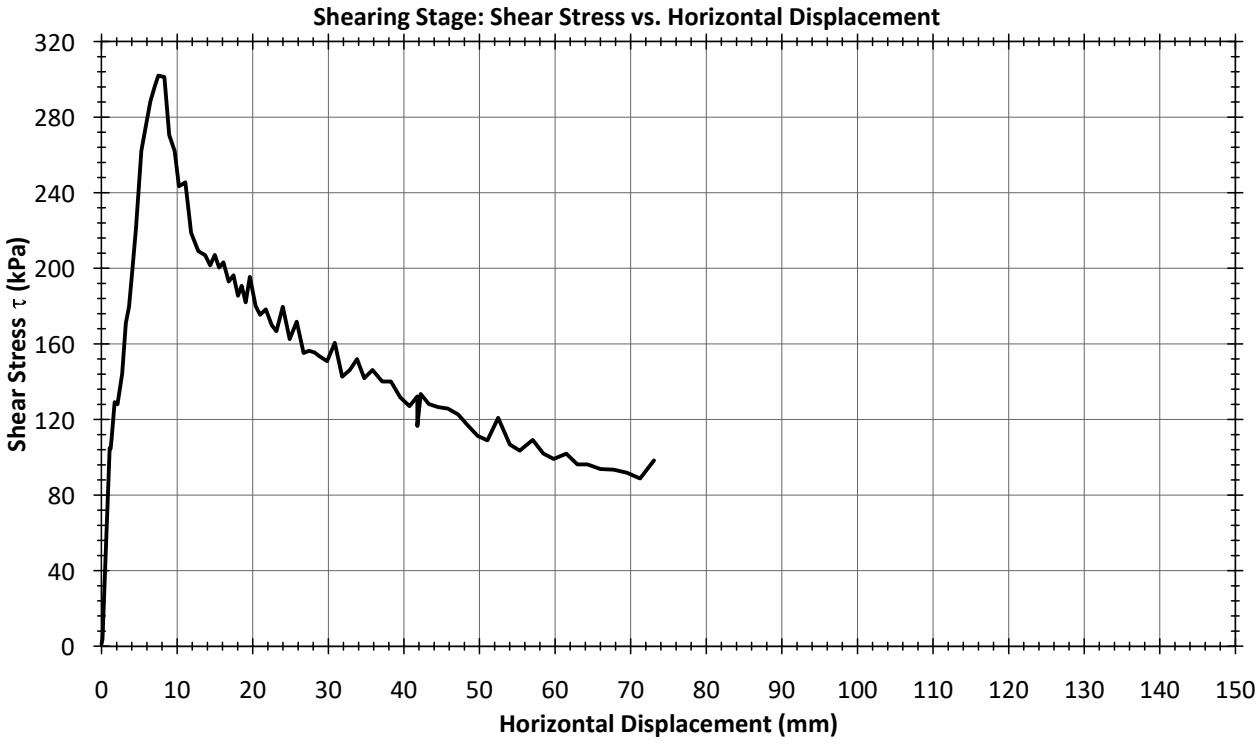

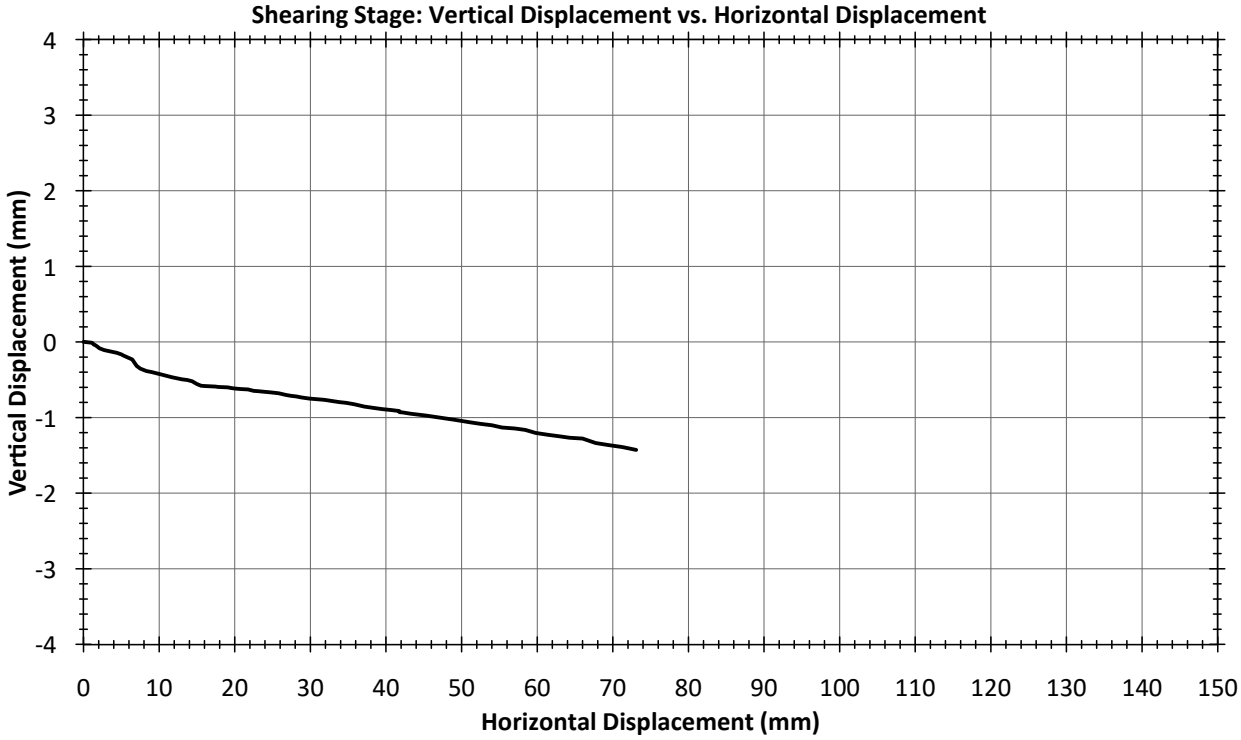

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Subgrade



GCL over subgrade

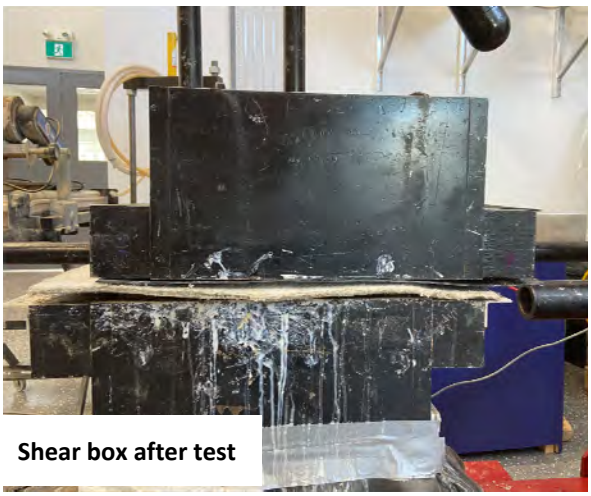


Alignment of GCL and geomembrane before test





Overliner



Shear box after test

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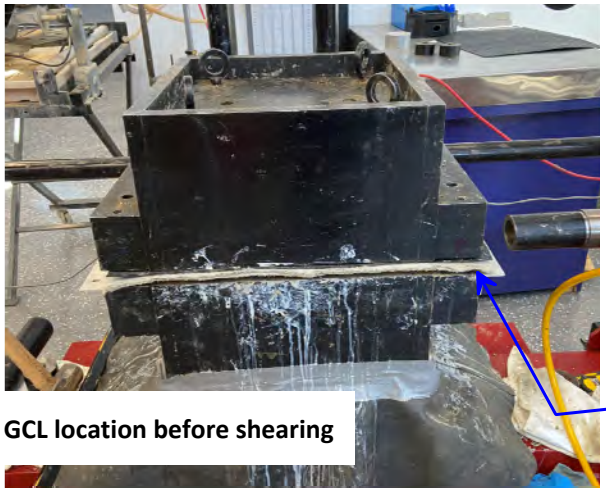
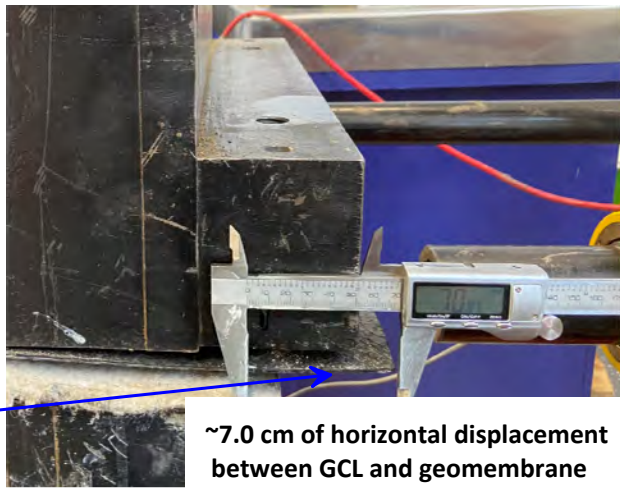


GCL location before shearing



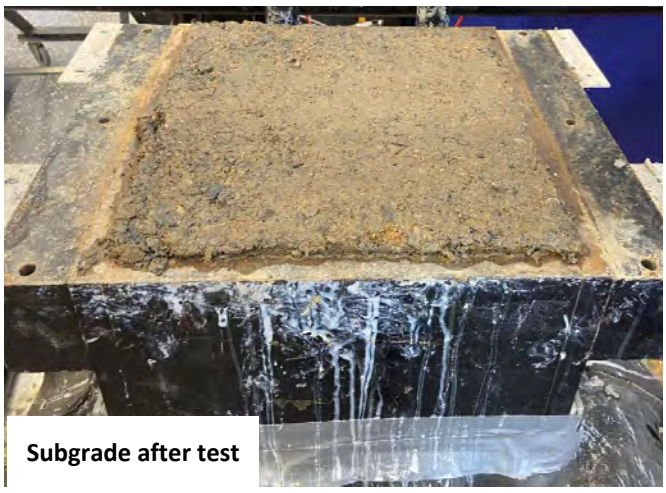
~7.0 cm of horizontal displacement between GCL and geomembrane



No GCL wrinkle on top



No GCL wrinkle on bottom



Subgrade after test



Geomembrane after test

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PROJECT INFORMATION		LINER SYSTEM	
Number	2140-001	Subgrade	Gravel, sandy, trace fines
Name	Forte Dynamics Liner Testing	GCL	GSE BentoLiner NWL-60 GCL
Location	Yukon Territory	Geomembrane	Layfield Enviro Liner 4280 CT
Client	Forte Dynamics Inc.	Overliner	Poorly graded gravel with sand (GP)

INDEX PROPERTIES OF SUBGRADE	Initial
Length and Width (cm)	40.5 x 40.5
Thickness (cm)	15.1
Bulk Density ρ_b (g/cm^3)	2.30
Dry Density ρ_d (g/cm^3)	2.17
Void Ratio e	0.25
Water Content (%)	6.1
Specific Gravity G_s (Assumed)	2.70

INDEX PROPERTIES OF OVERLINER	Initial
Length and Width (cm)	40.5 x 40.5
Thickness (cm)	12.0
Bulk Density ρ_b (g/cm^3)	2.16
Dry Density ρ_d (g/cm^3)	2.03
Void Ratio e	0.28
Water Content (%)	6.5
Specific Gravity G_s (Assumed)	2.60

INDEX PROPERTIES OF GCL	
Initial Average Hydrated Thickness (cm)	0.71
Initial Water Content (%)	95.5
Final Water Content (%)	82.0

SHEARING PARAMETERS	
Vertical Stress σ'_v (kPa)	1200
Displacement Rate (cm/min)	0.35

RESULTS	
τ_{max} (kPa)	462
τ_{res} (kPa)	130

Note: The liner system failed between the geosynethetic clay liner (GCL) and Geomembrane. No failure was observed in the GCL. There was no evidence that any shearing occurred in either the subgrade or overliner.

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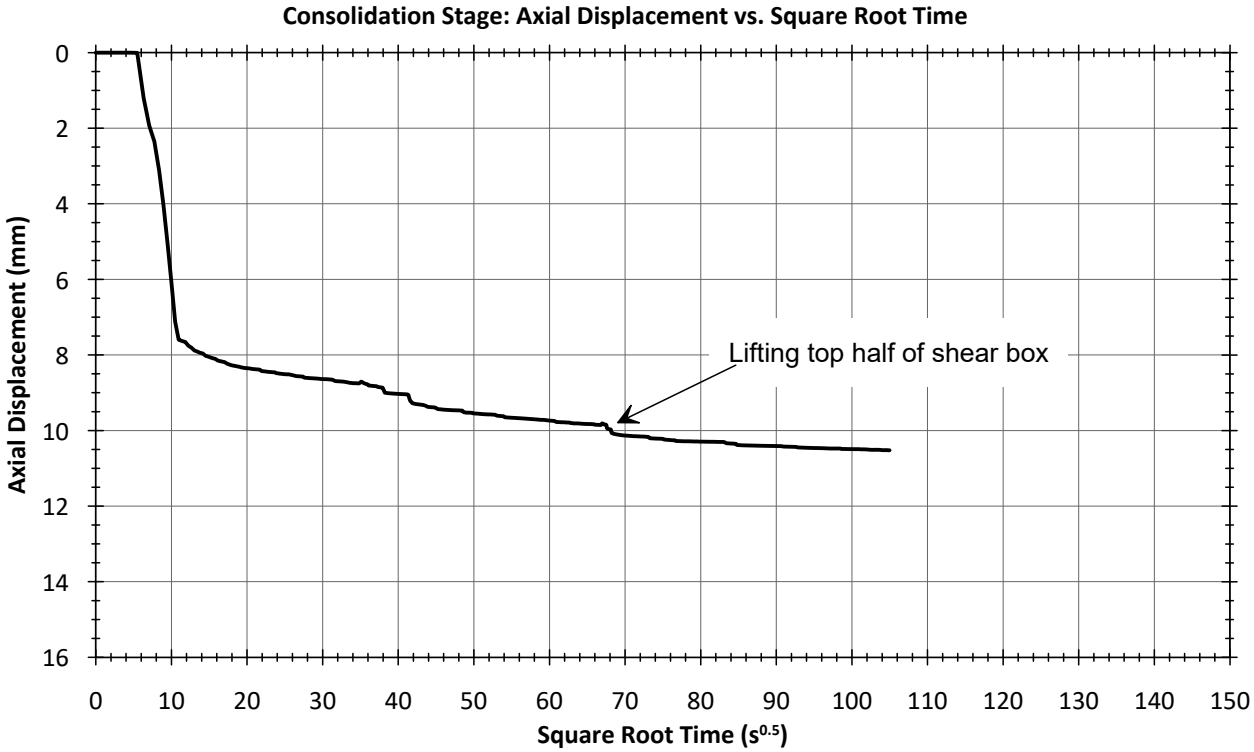

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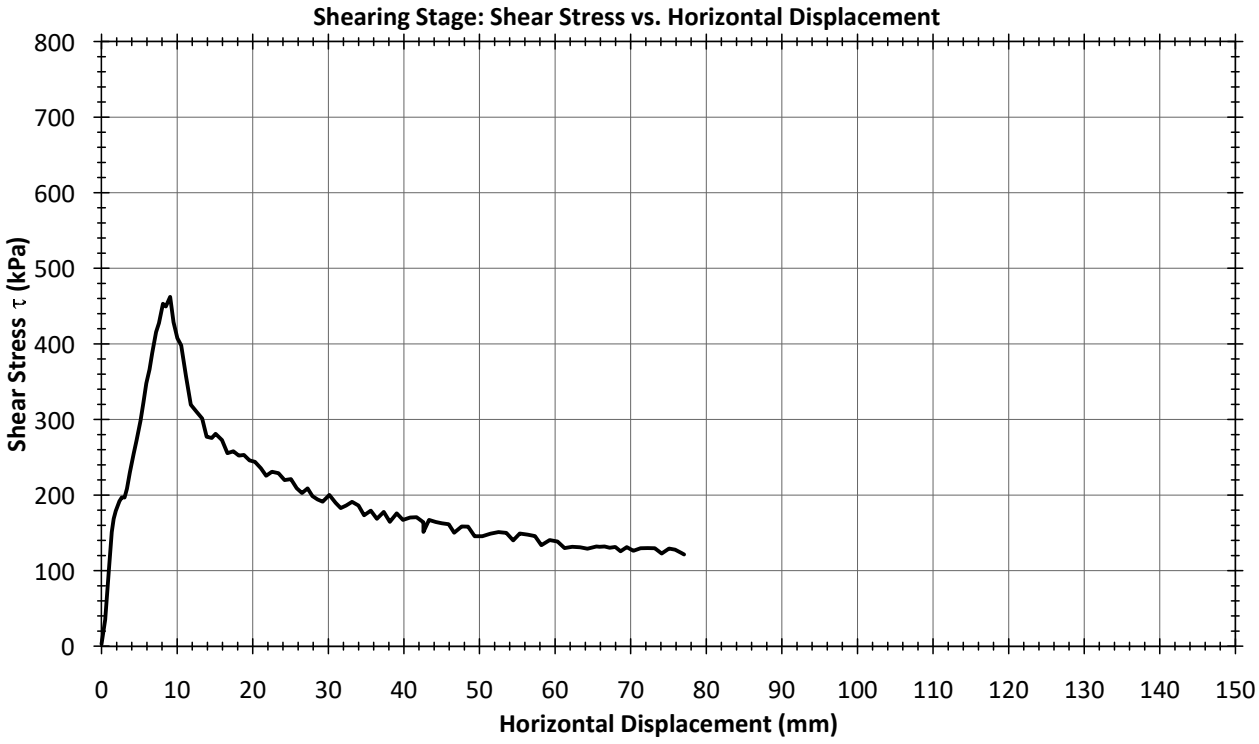

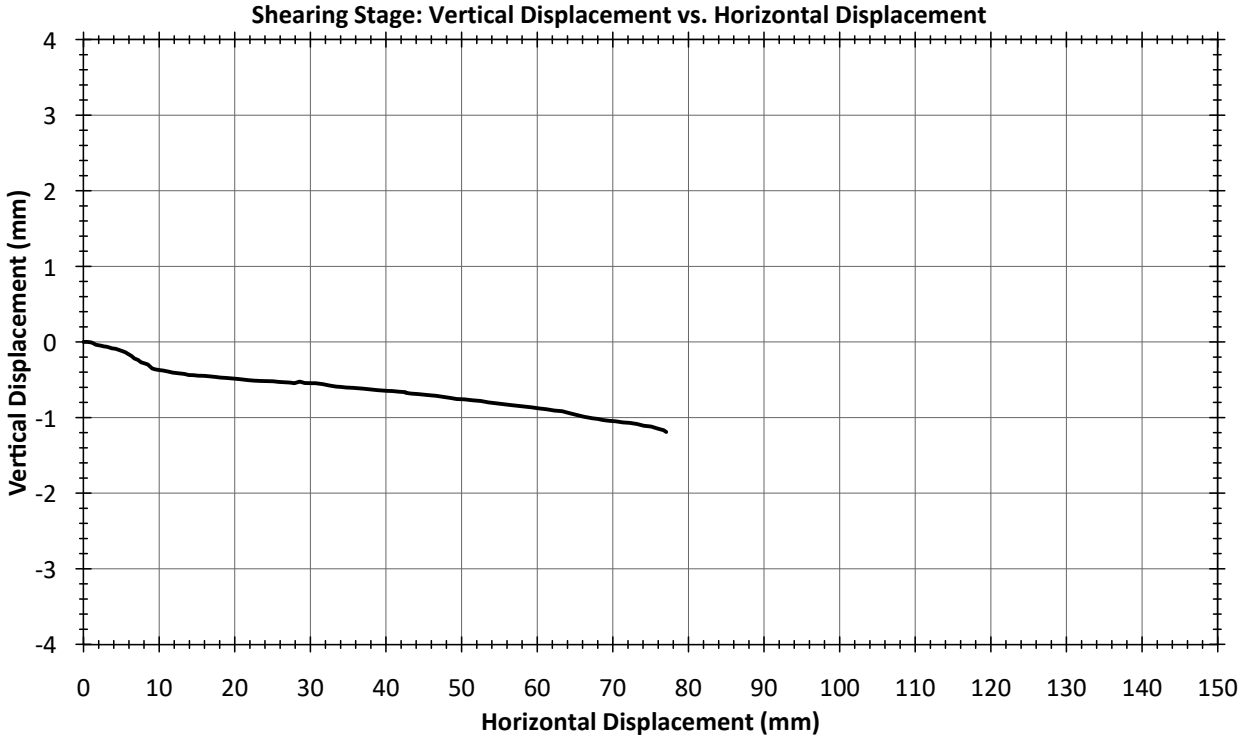

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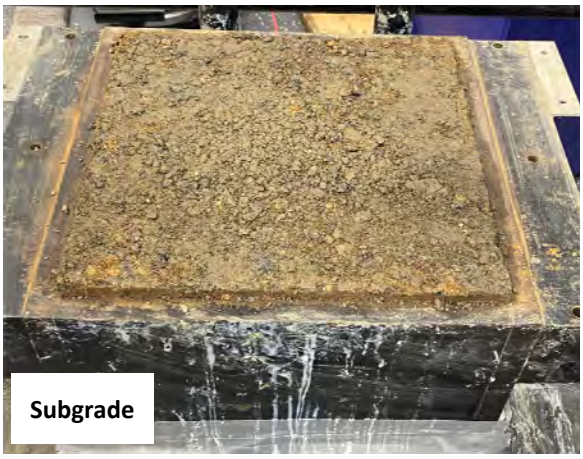


Subgrade



GCL over subgrade



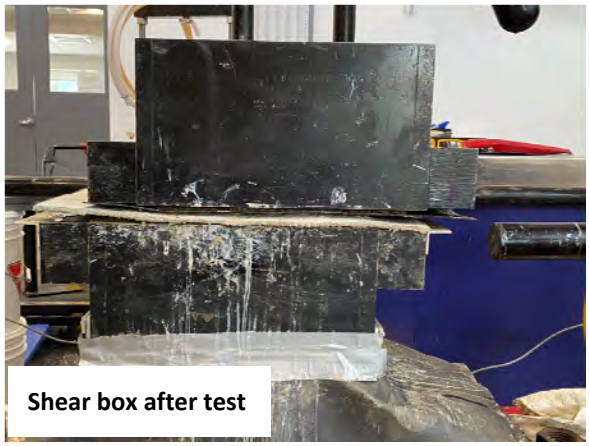
Alignment of GCL and geomembrane before test



Loading direction on GCL



Overliner



Shear box after test

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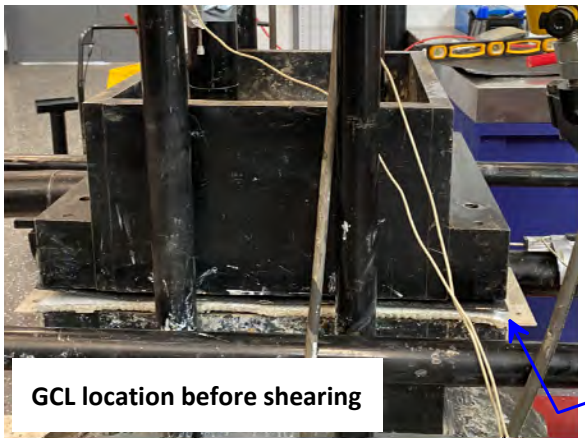
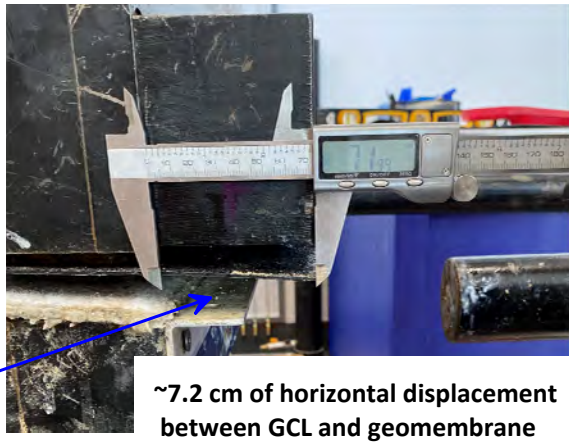
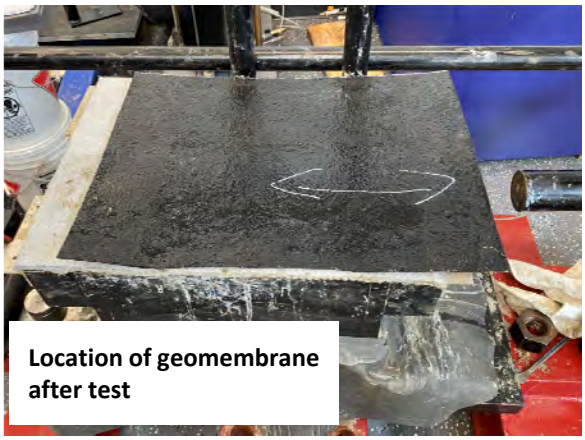


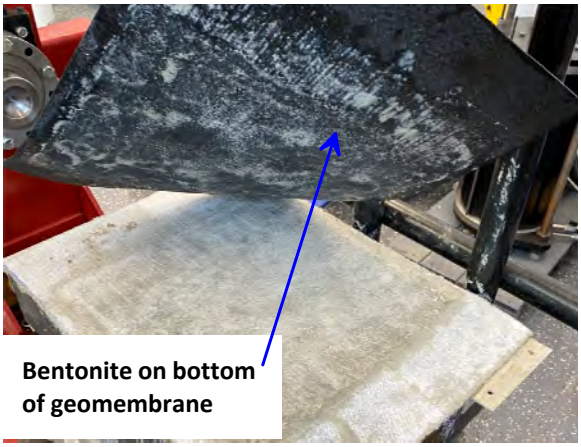
GCL location before shearing



~7.2 cm of horizontal displacement between GCL and geomembrane



Location of geomembrane after test



Bentonite on bottom of geomembrane



Subgrade after test



No wrinkles in GCL

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PROJECT INFORMATION		LINER SYSTEM	
Number	2140-001	Subgrade	Gravel, sandy, trace fines
Name	Forte Dynamics Liner Testing	GCL	GSE BentoLiner NWL-60 GCL
Location	Yukon Territory	Geomembrane	Layfield Enviro Liner 4280 CT
Client	Forte Dynamics Inc.	Overliner	Poorly graded gravel with sand (GP)

INDEX PROPERTIES OF SUBGRADE	Initial
Length and Width (cm)	40.5 x 40.5
Thickness (cm)	15.1
Bulk Density ρ_b (g/cm^3)	2.30
Dry Density ρ_d (g/cm^3)	2.17
Void Ratio e	0.24
Water Content (%)	6.1
Specific Gravity G_s (Assumed)	2.70

INDEX PROPERTIES OF OVERLINER	Initial
Length and Width (cm)	40.5 x 40.5
Thickness (cm)	10.6
Bulk Density ρ_b (g/cm^3)	2.22
Dry Density ρ_d (g/cm^3)	2.08
Void Ratio e	0.25
Water Content (%)	6.5
Specific Gravity G_s (Assumed)	2.60

INDEX PROPERTIES OF GCL	
Initial Average Hydrated Thickness (cm)	0.75
Initial Water Content (%)	106.7
Final Water Content (%)	95.8

SHEARING PARAMETERS	
Vertical Stress σ'_v (kPa)	400
Displacement Rate (cm/min)	0.30

RESULTS	
τ_{max} (kPa)	172
τ_{res} (kPa)	75

Note: The liner system failed between the geosynethetic clay liner (GCL) and Geomembrane. No failure was observed in the GCL. There was no evidence that any shearing occurred in either the subgrade or overliner.

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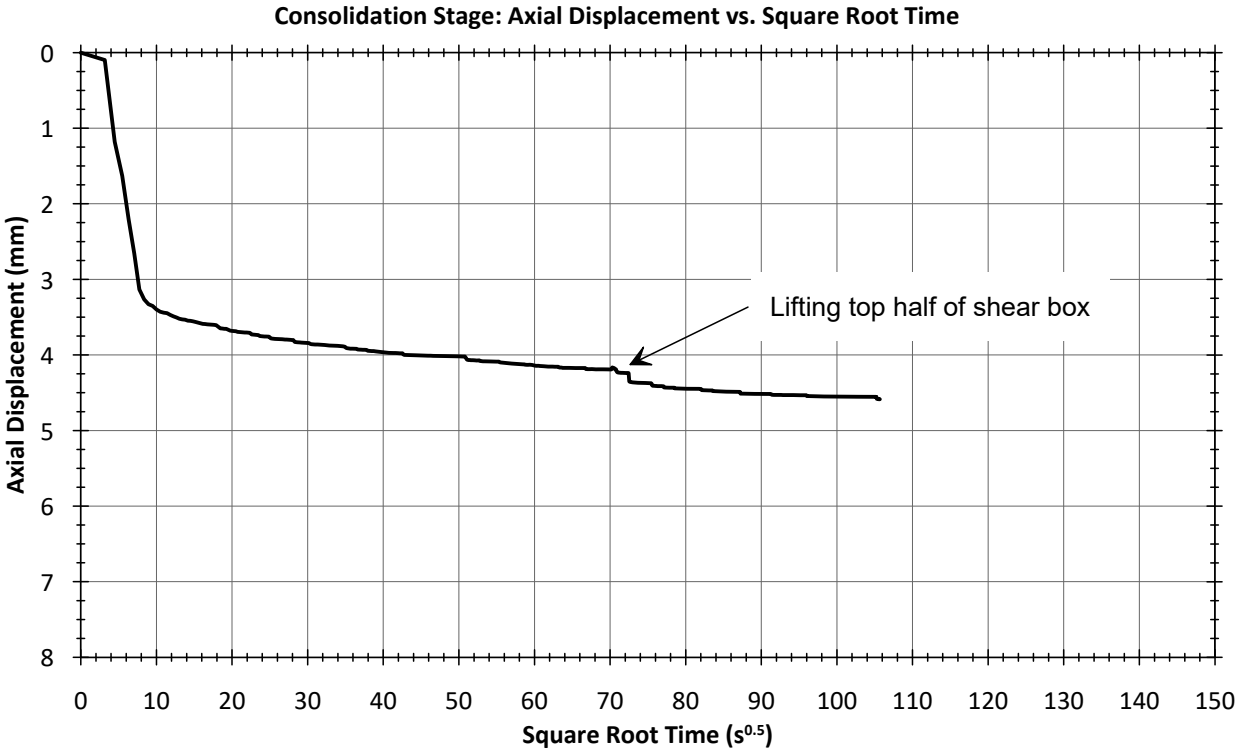
Tested by DO (2020-03-13)
Reviewed by KS (2020-03-16)
Approved by SD (2020-03-17)
Date Format (YYYY-MM-DD)



330 Alison Boulevard
Fredericton, NB Canada E3C 0A9
T 506.460.8660 | F 506.460.8679

Tested by DO (2020-03-13)
Reviewed by KS (2020-03-16)
Approved by SD (2020-03-17)
Date Format (YYYY-MM-DD)

BGC ENGINEERING INC.
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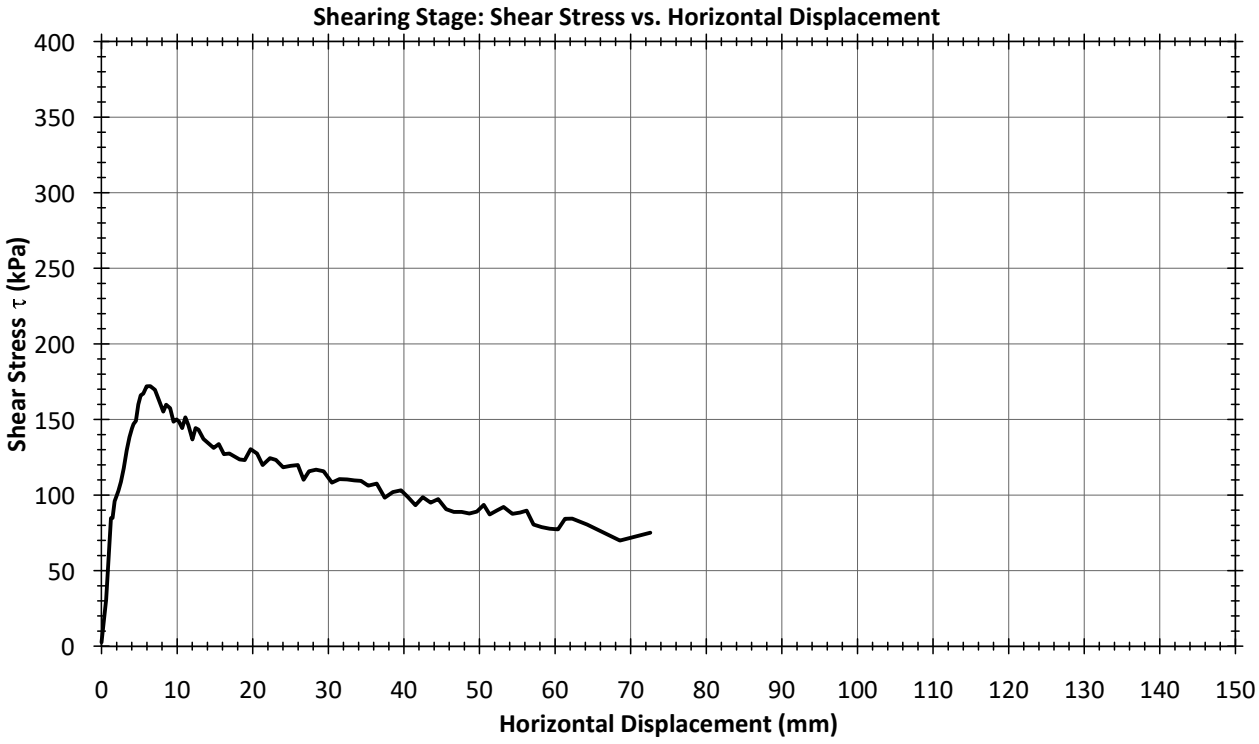

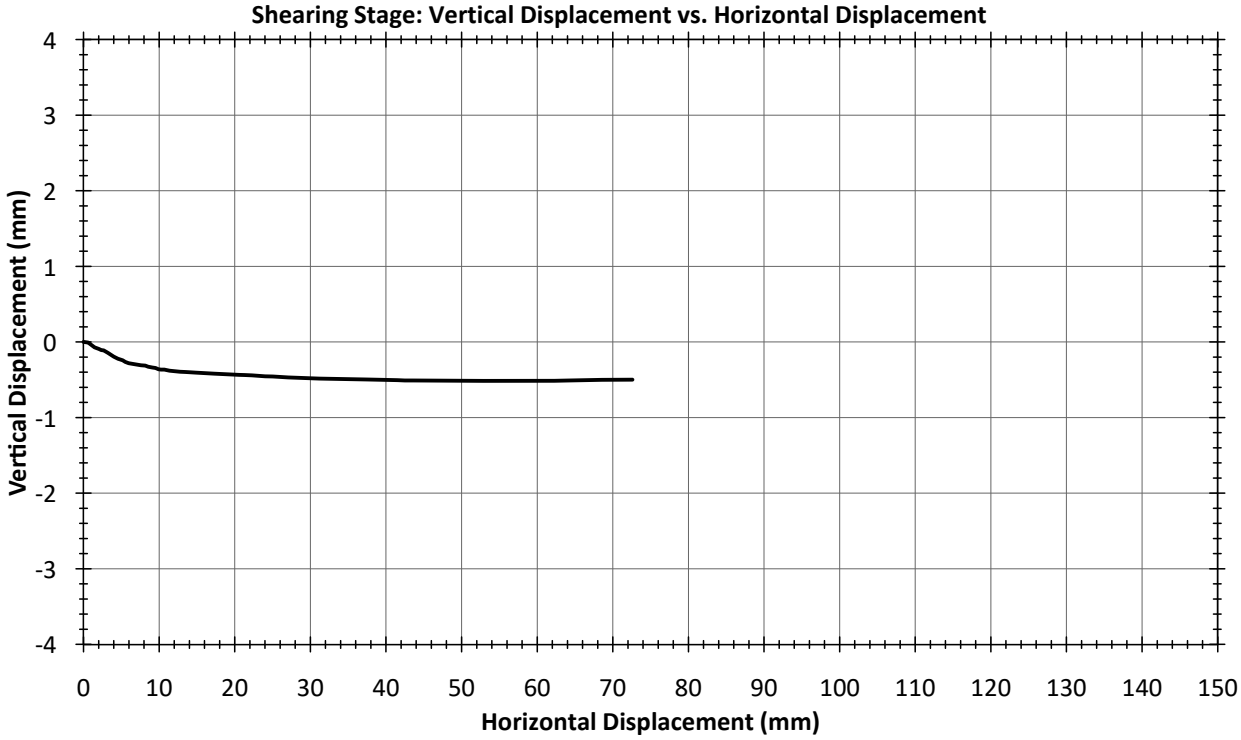

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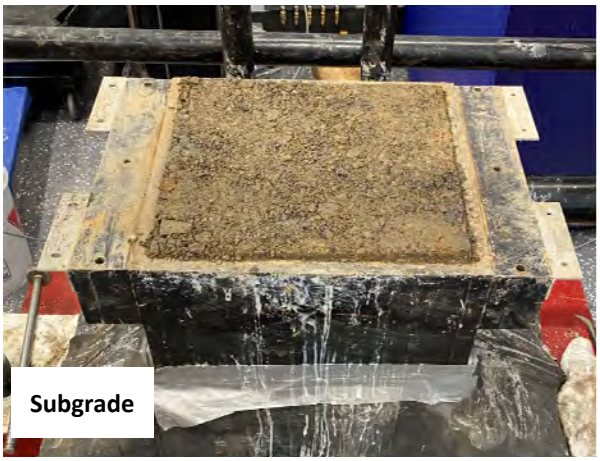


Subgrade



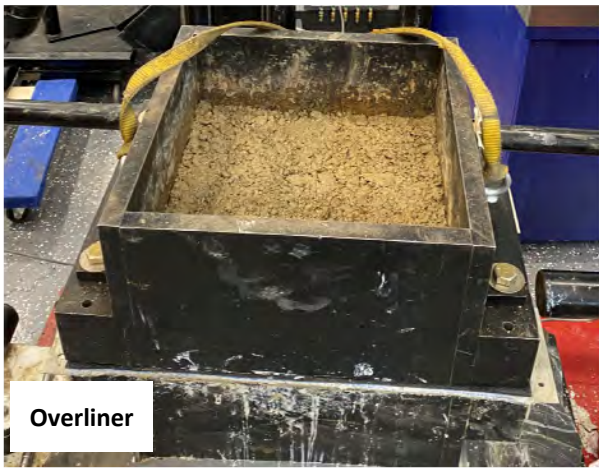
GCL over subgrade



Alignment of GCL and geomembrane before test



Loading direction on GCL



Overliner



Shear box after test

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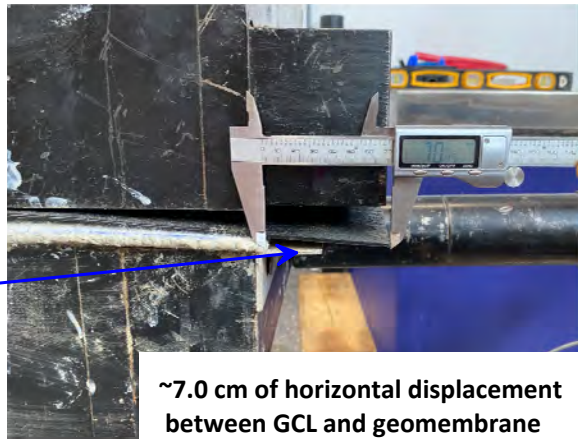
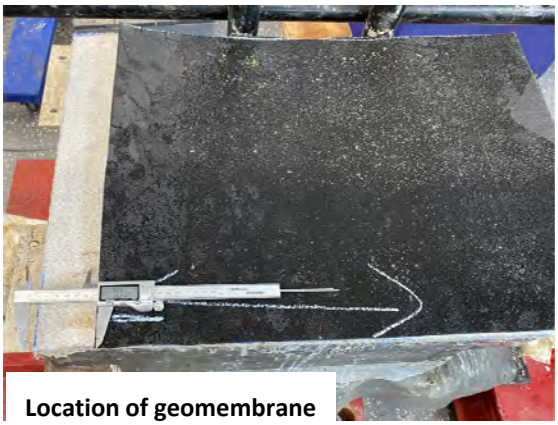
GCL location before shearing



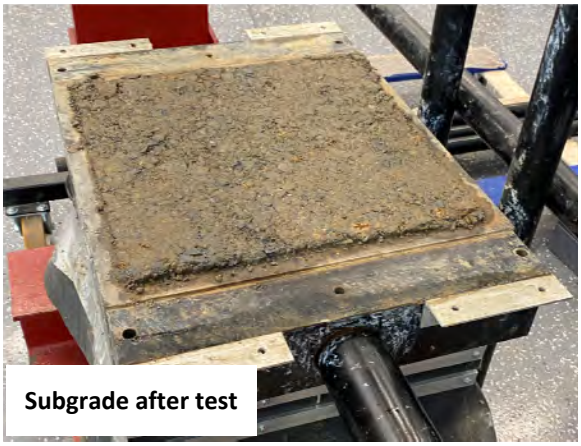
~7.0 cm of horizontal displacement between GCL and geomembrane



Location of geomembrane after test



Bentonite on bottom of geomembrane



Subgrade after test



No wrinkles in GCL

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BGC ENGINEERING INC.
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PARTICLE-SIZE DISTRIBUTION (GRADATION) OF SOILS
ASTM D6913
ASTM D7928

PROJECT INFORMATION

Project No.	2140-001
Project Name	Forte Dynamics Liner Testing
Project Location	Yukon Territory
Client	Forte Dynamics Inc.

SAMPLE INFORMATION

Borehole / Test Pit	-
Sample ID	Overliner
Sample Depth	0.00 m
Sample Type	Grab

GRADATION SUMMARY

Coarser than Gravel (%)	0
Gravel (%)	81
Sand (%)	15
Fines (%)	4
D_{60} (mm)	14.700
D_{30} (mm)	8.360
D_{10} (mm)	1.300
C_c	3.6
C_u	11

RESULTS

Size (mm)	Passing (%)	Size (mm)	Passing (%)
75	100.0		
50	100.0		
37.5	100.0		
25.0	95.5		
19.0	76.0		
9.5	32.5		
4.75	18.9		
2.00	11.8		
0.850	8.2		
0.425	6.3		
0.250	5.3		
0.150	4.5		
0.106	4.0		
0.075	3.5		

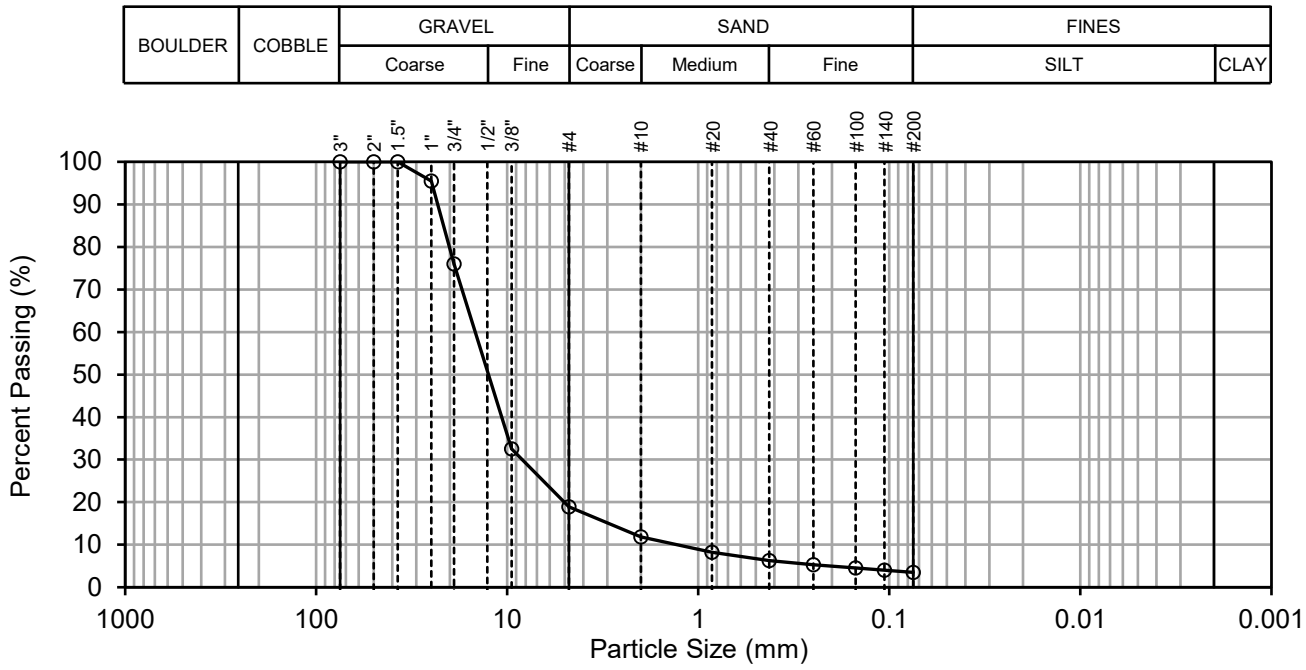
LABORATORY COMMENTS

PREPARATION METHOD

Oven dried

USCS DESCRIPTION (ASTM D2487)

Poorly graded gravel with sand (GP)



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Tested by D.Oldford (2020-02-14)
Reviewed by M.Billings (2020-03-13)
Approved by S.Dickinson (2020-03-17)
Date Format (YYYY-MM-DD)

BGC ENGINEERING INC.
AN APPLIED EARTH SCIENCES COMPANY

PARTICLE-SIZE DISTRIBUTION (GRADATION) OF SOILS
ASTM D6913
ASTM D7928

PROJECT INFORMATION

Project No.	2140-001
Project Name	Forte Dynamics Liner Testing
Project Location	Yukon Territory
Client	Forte Dynamics Inc.

SAMPLE INFORMATION

Borehole / Test Pit	-
Sample ID	Subgrade
Sample Depth	0.00 m
Sample Type	Grab

GRADATION SUMMARY

Coarser than Gravel (%)	0
Gravel (%)	58
Sand (%)	32
Fines (%)	10
D_{60} (mm)	10.300
D_{30} (mm)	2.210
D_{10} (mm)	0.079
C_c	6
C_u	130

RESULTS

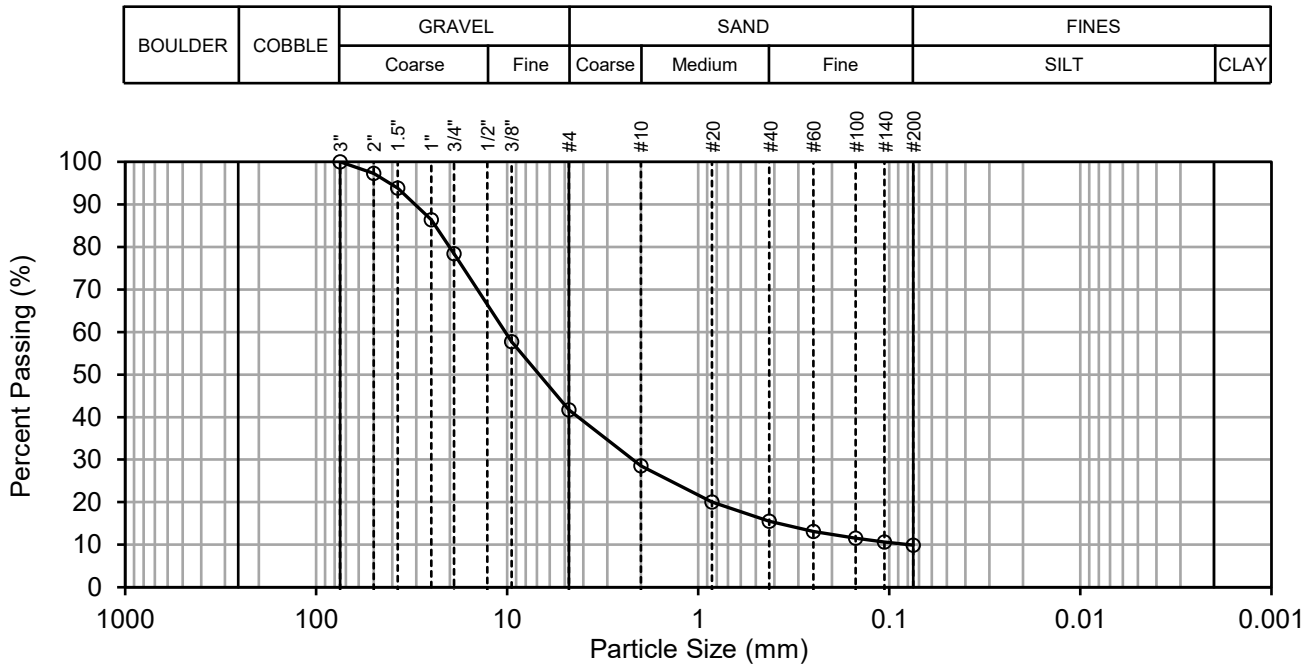
Size (mm)	Passing (%)	Size (mm)	Passing (%)
75	100.0		
50	97.3		
37.5	93.8		
25.0	86.4		
19.0	78.4		
9.5	57.7		
4.75	41.7		
2.00	28.5		
0.850	20.0		
0.425	15.5		
0.250	13.1		
0.150	11.5		
0.106	10.6		
0.075	9.9		

LABORATORY COMMENTS

PREPARATION METHOD

Oven dried

USCS DESCRIPTION (ASTM D2487)



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BGC ENGINEERING INC.
AN APPLIED EARTH SCIENCES COMPANY

LABORATORY COMPACTION CHARACTERISTICS OF SOIL USING STANDARD EFFORT
ASTM D698

PROJECT INFORMATION	
Project No.	2140-001
Project Name	Forte Dynamics Liner Testing
Project Location	Yukon Territory
Client	Forte Dynamics Inc.

SAMPLE INFORMATION	
Borehole / Test Pit	-
Sample ID	Subgrade
Sample Depth	0.00 m
Sample Type	Grab

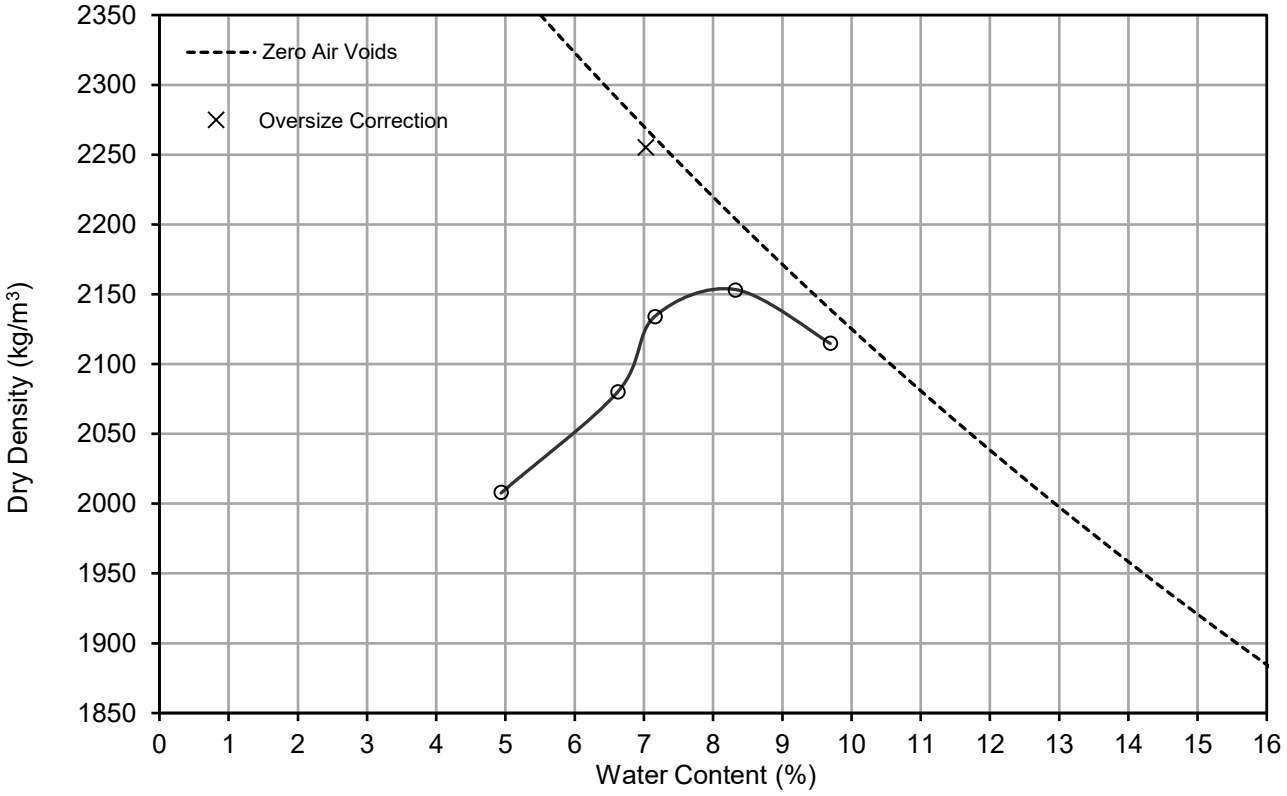
TEST INFORMATION	
Method Used	C
Preparation Method	Dry
Type of Rammer	Manual

SAMPLE PROPERTIES	
Percent Retained on 19 mm Sieve (%)	22
Percent Passing 19 mm Sieve (%)	78
As Received Water Content (%)	4.7
Specific Gravity (Assumed)	2.70

TRIAL RESULTS

Trial Number	1	2	3	4	5	6
Dry Density (kg/m^3)	2008	2080	2134	2153	2115	-
Water Content (%)	4.9	6.6	7.2	8.3	9.7	-

PROCTOR TEST RESULTS	AS TESTED	OVERSIZE CORRECTION
Maximum Dry Density (kg/m^3)	2153	2255
Optimum Water Content (%)	8.3	7.0



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Approved by S.Dickinson (2020-03-17)
Date Format (YYYY-MM-DD)

APPENDIX B
BGC's STANDARD TERMS AND CONDITIONS

AGREEMENT FOR LABORATORY TESTING SERVICES

Dated as of this 21 day of February, 2020, is made by and between:

Client: Forte Dynamics ("the **Client**"),

Address: 3003 E. Harmony Road, Suite 320
Fort Collins, Co 80528

AND:

BGC ENGINEERING INC. ("**BGC**")
Suite 500 – 980 Howe Street
Vancouver BC, V6Z 0C8
Canada

The Client and BGC agree as follows:

1. THE LABORATORY SERVICES

1.1 BGC will provide Client certain Laboratory Services (as defined below) for the following project:

(Insert brief description of the project (the "Project").

1.2 The Laboratory Services BGC will provide Client for the Project are either described below, or are described in the following document: SEE ATTACHED SCOPE OF WORK FOR LINER INTERFACE SHEAR

(Either add a description of the lab testing work BGC will perform, or insert the date and description/title of a document that contains the scope of work. Note whether the document is attached to this Agreement – e.g., see attached Proposal for Laboratory Services dated September 24, 2019) (the "Scope of Services Document")

2. AGREEMENT DOCUMENTS

2.1 The following documents form part of and are incorporated into this Agreement:

- This *Agreement For Laboratory Testing Services*
- Definitions
- General Conditions
- Scope of Services Document

If there is any conflict or inconsistency between or among the documents listed above, then the provision in the document listed closer to the top of the list will prevail.

[Rest of page intentionally blank. Signature page follows.]

3. SUCCESSION

3.1 This Agreement will inure to the benefit of and be binding upon the Parties, and their respective administrators, successors, and permitted assigns.

IN WITNESS THEREOF, the Parties hereto have executed this Agreement as of the day and year indicated on page one of this Agreement.

CLIENT: Forte Dynamics

ACCEPTED FOR **CLIENT** by:

(signature)

Name: Clint Green
(print)

Title: Principal Engineer

Date: Feb. 21, 2020

BGC ENGINEERING INC.

ACCEPTED FOR **BGC ENGINEERING INC.** by:

(signature)

Name: SIMON DICKINSON
(print)

Title: CTO

Date: Feb 22, 2020.

DEFINITIONS

In addition to any other terms defined elsewhere in this Agreement, the following terms have the meanings set forth below when capitalized and used in this Agreement:

"**Affiliate**" means any Person which directly or indirectly controls, is controlled by, or is under common control with, a Party to this Agreement. For purposes of the preceding sentence, "**control**" means the power to direct or manage affairs through ownership of voting securities, contract, voting trust, or any other means.

"**BGC**" means BGC Engineering Inc., a British Columbia, Canada corporation.

"**BGC Group**" refers collectively to BGC, BGC's Affiliates, BGC's sub-contractors, BGC's sub-consultants, and each of their respective Personnel.

"**Claim**" means any claim, action, legal proceeding, lawsuit, claim through arbitration, or other cause of action of any kind, including third party claims for contribution or indemnity.

"**Client**" means the Person identified as the "Client" in the *Agreement For Laboratory Testing Services*.

"**Client Group**" refers collectively to Client and Client's Affiliates.

"**Damages**" means any of the following: damages, losses, liabilities, costs, expenses, arbitration awards, penalties, fines, or assessments.

"Laboratory Services" means the laboratory testing and analysis that BGC performs for Client on one or more Samples, as well as the preparation of any Work Product related to such testing and analysis.

"Party" refers to either of BGC or Client, and **"Parties"** refers to both of BGC and Client.

"Person" means, as applicable, a natural person or an entity, including a partnership, corporation, company, limited liability company, joint venture, trust, government agency, unincorporated organization or other form of entity.

"Personnel" means current, former and future directors, officers, employees, shareholders, agents, and representatives.

"Sample" means any specimen of soil, rock, material, or other substance that BGC evaluates or tests for Client pursuant to the terms of this Agreement.

"Third Party" means any Person other than a member of BGC Group or a member of Client Group.

"Work Product" means any report or deliverable that BGC generates in connection with the Laboratory Services.

GENERAL CONDITIONS

1. STANDARD OF CARE

BGC will perform the Laboratory Services in accordance with the prevailing standard of care, skill, and diligence ordinarily exercised by a consulting engineering firm when performing similar services under comparable circumstances at the same or a similar location. BGC provides no other warranty, guarantee, representation, or covenant with respect to the Laboratory Services, either express or implied.

2. COMPENSATION

2.1 BGC will charge Client for the Laboratory Services in accordance with *BGC's Schedule of Fees and Disbursements,* as updated from time to time. Unless otherwise agreed, all charges are payable in Canadian Dollars (CAD). or US Dollars,

2.2 BGC may charge Client for any applicable sales taxes, value-added taxes, import duty, and any other transactional taxes arising, accruing, or collectable with respect to the Laboratory Services. The Client bears all costs and risks of carrying out customs formalities related to the Samples, including but not limited to payment of duties, taxes, and import fees before the Samples are delivered to BGC's laboratory.

2.3 Invoices are due and payable by the Client within thirty (30) days of the invoice date.

3. RIGHT OF ENTRY AND PROJECT INFORMATION

3.1 On a timely basis, the Client shall permit, or arrange for permission, for the BGC Group to enter onto and pass over all properties to which access is necessary for the Laboratory Services. However, BGC will only visit the Project site if both Parties agree that it is necessary for BGC to do so.

3.2 The Client shall promptly provide BGC all available documents, data, and other information relevant to either the Samples or the Laboratory Services. BGC may assume that all documents, information, and data provided to BGC by the Client, the Client's Personnel or the Client's other consultants are accurate and complete. The Client will immediately notify BGC if any such document, data, or information changes or is discovered to be incomplete or unreliable.

4. SCOPE OF WORK

4.1 The Scope of Services Document will specify the scope and nature of Laboratory Services (including the applicable testing standards) that BGC will perform on a Sample. BGC is only required to prepare a report as part of the Laboratory Services if the Scope of Services Document states that BGC will prepare a report. Otherwise, BGC may only provide the raw data resulting from any tests performed during the Laboratory Services.

4.2 If BGC and the Client do not confirm in writing the scope and nature of Laboratory Services that BGC is required to perform on a Sample, then BGC may perform such tests and analyses as BGC deems appropriate, based on information the Client previously provided BGC.

4.3 Unless BGC expressly agrees otherwise in writing, BGC is not required to evaluate the Samples for pollution, radioactivity, volatile organic compounds, or toxicity. Client must notify BGC immediately if Client determines or suspects that any Sample may contain unsafe levels of pollution, radioactivity, volatile organic compounds, or toxicity.

4.4 BGC is committed to the safety of its Personnel. BGC complies with occupational safety and environmental protection codes. To safely conduct the Laboratory Services, BGC requires compliance with the conditions listed below. Failure to comply with those conditions will cause delay or refusal of a Sample delivery:

4.4.1 A Safety Data Sheet (SDS) must accompany all Samples. At a minimum, the SDS must provide the following information for all Samples:

a. Responsible Person and phone number
b. Chemical name (for mixtures list percentage composition)
c. Specific gravity, appearance, color and odor
d. Explosion hazards or reactivity
e. Health hazards
f. Personal protective equipment and any special procedures required for safe handling.

4.4.2 If any material in a Sample is known or suspected to be carcinogenic, radioactive, pathogenic, infectious, or extremely hazardous, then Client must email the SDS for the Sample to BGC at least five (5) business days before Client intends to ship the Sample to BGC. BGC may decline to accept or test any such Sample.

4.4.3 All samples must be transported in suitable containers not larger than ten (10) gallons unless BGC approves another sample size and appropriate container.

4.5 Unless BGC expressly agrees otherwise in writing, BGC is not responsible for either: (a) collecting or gathering any Samples; (b) shipping or handling for any Samples while in transit to BGC's laboratory testing facility; or (c) any loss, damage, or deterioration of any Samples while in transit to BGC's laboratory testing facility.

4.6 Client is solely responsible, at the Client's expense, for: (a) properly collecting the Samples, (b) appropriately labelling the Samples, and (c) carefully shipping the Samples to BGC's laboratory facility.

4.7 **Client acknowledges that Samples may not be fully representative of the Project's actual site conditions. Project site conditions may vary from place to place. BGC does not represent, warrant or guarantee that the results of the Laboratory Services will provide a full, complete, or representative summary of actual Project site conditions.**

4.8 Unless the Parties agree otherwise in writing, BGC may destroy or permanently dispose of any Sample one hundred eighty (180) days after BGC first receives the Sample. Until BGC is permitted to dispose of a Sample, BGC will make reasonable efforts to follow accepted industry practice for storing the Sample. If BGC agrees to return a Sample to Client, then Client will reimburse BGC for all costs incurred to do so. A disposal fee will apply if BGC is required to dispose of a Sample.

5. INTELLECTUAL PROPERTY

5.1 BGC retains sole and exclusive ownership of all right, title, and interest for, in, and to all inventions, software, programs, processes, innovations, and other intellectual property in any form that BGC creates, invents, conceives of, or acquires while performing the Laboratory Services or as a result of the Laboratory Services.

6. WORK PRODUCT

6.1 Only qualified geotechnical experts should review and interpret the Work Product. BGC will not be responsible or liable for any Claims or Damages arising from any misinterpretation of the Work Product.

6.2 BGC is entitled to retain a file copy of any Work Product and all documents the Client provides BGC.

6.3 The Client agrees to use the Work Product solely for the specific purpose(s) for which BGC prepared or disclosed such Work Product. Any alteration or other use of Work Product not authorized by BGC shall be at the Client's sole risk.

7. INSURANCE

BGC shall carry the following insurance:

a. Such coverage as may be required pursuant to applicable Worker's Compensation legislation, or satisfactory employer's liability insurance;

b. Commercial general liability insurance for bodily injury and property damages in the amount of Two Million Canadian Dollars ($2,000,000.00 CAD) per occurrence and in the aggregate; and

c. Professional liability insurance, which insures BGC against liability arising from negligent acts, errors, and omissions in BGC's professional services, in the amount of Five Hundred Thousand Canadian Dollars ($500,000.00 CAD) per claim and in the aggregate.

8. ABSOLUTE LIMIT OF LIABILITY

8.1 Claims by Client Group

8.1.1 The absolute maximum aggregate liability of the BGC Group, or any of them, to the Client Group for Claims or Damages arising out of the Laboratory Services or related in any way to the Project shall not exceed **TWO HUNDRED FIFTY THOUSAND CANADIAN DOLLARS ($250,000.00 CAD)**. For greater certainty, this liability limitation applies whether all or any of the Client Group bring one or more Claims against all or any of BGC Group in any way related to this Agreement, the Project, or the Laboratory Services. This limit of liability shall apply to all Claims and Damages including, but not limited to, those arising due to breach of contract, tort, negligence, negligent misrepresentation, errors, omissions, breach of warranty, strict liability, breach of any statutory or regulatory requirement, or under any other theory of recovery or liability at law or in equity.

8.1.2 The Client, for itself and as agent for and on behalf of the other entities of the Client Group, hereby releases the BGC Group, and each of them, from any and all past, present and future liability for Claims or Damages arising from the Laboratory Services or the Project in excess of $250,000.00 CAD.

8.1.3 The Client confirms and expressly acknowledges that it has authority to act as agent for the other entities in the Client Group for the purposes of providing the liability limitation and release noted above.

8.1.4 The Client waives and releases any right to assert any Claims against the individual Personnel of either BGC, BGC's Affiliates, or BGC's subcontractors, even if Claims or Damages arise due to the negligence, errors, omissions, or other fault of such individuals.

8.2 Claims by Third Parties

8.2.1 The Client agrees to limit the total aggregate liability of the BGC Group, or any of them, to Third Parties for Claims or Damages arising out of the Laboratory Services to **TWO HUNDRED FIFTY THOUSAND CANADIAN DOLLARS ($250,000.00 CAD)** (the "Third Party Liability Limit"). If the total aggregate liability of all or any of the BGC Group for Third Parties' Claims or Damages exceeds the Third Party Liability Limit, then the Client will indemnify the BGC Group, and each of them, for all liability above the Third Party Liability Limit.

8.2.2 The indemnity in section 8.2.1 shall apply to all Claims or Damages including, but not limited to, those arising due to breach of contract, tort, negligence, negligent misrepresentation, errors, omissions, breach of warranty, strict liability, breach of any statutory or regulatory requirement, or under any other theory of recovery or liability at law or in equity.

9. EXCLUSIONS OF LIABILITY, AGREEMENTS TO DEFEND, AND INDEMNITIES

9.1 The Client agrees to defend, indemnify and hold harmless the BGC Group, and each of them, against any Claim asserted, brought, or prosecuted by a Third Party against the BGC Group, or any of them, that relates, in whole or in part, to any of the following:

9.1.1 the negligence, breach of contract, breach of duty, or any other fault of the Client, the Client's Affiliates, the Client's other contractors, the Client's other consultants, or any of their respective Personnel;

9.1.2 defects in data or Samples supplied to BGC by the Client or the Client's contractors or other consultants; or

9.1.3 use of any Work Product by the Client, its Affiliates, or their respective Personnel for any purpose other than the specific purpose or Project for which BGC prepared such Work Product.

9.2 All the Client's obligations to defend, release, and indemnify BGC Group in this Agreement shall survive any termination or expiry of this Agreement.

10. MUTUAL WAIVER OF PUNITIVE, EXEMPLARY, INDIRECT, INCIDENTAL, AND CONSEQUENTIAL DAMAGES

10.1 Each Party, for itself and as agent on behalf of its Affiliates, hereby releases the other Party, such other Party's Affiliates, and their respective Personnel from all liability for any punitive, exemplary, aggravated, indirect, incidental, and consequential damages that may arise in connection with the performance, purported performance, or non-performance of this Agreement or the Laboratory Services, howsoever caused, and whether arising due to breach of contract, tort (including negligence), strict liability, or under any other theory of liability at law or in equity. This waiver and release applies even if the possibility of

such losses or damages was known or foreseeable. Examples of such waived damages include, but are not limited to, lost profits, lost revenue, loss of contracts, loss of production, loss of business opportunity, costs of capital, business interruptions, loss of goodwill, loss of work, and loss of Project use. Each Party confirms and acknowledges that it has authority to act as agent for its Affiliates for the purposes of providing this waiver and release.

11. TERMS FAIRLY NEGOTIATED IN CONSIDERATION OF RELATIVE RISKS AND BENEFITS

11.1 The Parties acknowledge and agree that the exclusions of liability, limitations of liability, agreements to defend, indemnities, and waivers in this Agreement were fairly negotiated between them in consideration of the relative risks and benefits of the Laboratory Services to the Parties.

12. EARLY TERMINATION

12.1 Either Party may terminate this Agreement for any reason upon thirty (30) days written notice to the other Party.

12.2 Either Party may terminate this Agreement upon ten (10) days written notice to the other Party if the other Party is in default of its obligations under this Agreement and has failed within five (5) business days after receiving a default notice to cure such default, or to take reasonable steps towards curing such default.

12.3 Either Party may immediately terminate this Agreement if the other Party becomes insolvent, takes the benefit of any insolvency or bankruptcy law without providing prompt assurance that it will perform the balance of its obligations under this Agreement, makes a general assignment for the benefit of its creditors, or enters into a plan or arrangement for the benefit of its creditors.

12.4 If this Agreement is terminated for any reason, the Client shall forthwith pay BGC all amounts the Client owes BGC for satisfactorily performed Laboratory Services.

13. ASSIGNMENT

13.1 Except as otherwise agreed in writing, no Party may assign this Agreement without the other Party's written consent. The Parties' permitted successors and assigns are entitled to the benefit of, and shall be bound by, this Agreement.

14. FORCE MAJEURE

14.1 BGC shall not be in breach of this Agreement or liable for any Claims or Damages caused by delay or failure to perform, in full or in part, any of its obligations under this Agreement when such delay or failure to perform is due to any circumstance beyond BGC's reasonable control, including, without limitation: any strikes, walk-outs, riots, unavoidable incidents, floods, fires, earthquakes, natural disasters, inclement weather, acts of God or a public enemy, or a lawful order issued by a governmental authority.

15. NOTICES

15.1 Required written notices between the Parties shall be considered to have been received by the addressee on the date of delivery if personally delivered by hand during normal business hours to the addressee, or to a member of the addressee's firm, or to an officer of the corporation for whom the notice is intended. If sent by regular post, such written notice shall be deemed to have been delivered five (5) business days from the date of mailing. Notices sent by email or facsimile shall be deemed delivered upon completed transmission if properly directed and sent before 4:30pm Atlantic Time on a normal workday that is not a federal Canadian holiday, provided that the sending Party has an electronic acknowledgement that the facsimile or e-mail was received by the other Party.

15.2 Each Party shall designate a representative who is authorized to act on behalf of that Party and to receive notices under this Agreement. In the absence of such designation of an authorized representative, a Party's signatory to this Agreement is deemed to be that Party's representative. If this Agreement has not been signed, then the notice shall be provided by delivering written notice in accordance with section 15.1 to a Party's place of business.

16. SURVIVAL

16.1 All rights and obligations between the Parties under Sections 5 (Intellectual Property), 6 (Work Product), 8 (Absolute Limit of Liability), 9 (Exclusions of Liability, Agreements to Defend and Indemnities), 10 (Mutual Waiver of Punitive, Exemplary, Indirect, Incidental and Consequential Damages) shall survive and remain binding on the Parties after completion of the Laboratory Services or the expiry or any termination of this Agreement.

17. GENERAL PROVISIONS

17.1 This Agreement is governed by the law of British Columbia, Canada, without regard to any conflicts of law principles or any international treaty that may direct the application of the substantive law of another jurisdiction.

17.2 A Party's waiver of any breach of the other Party's obligations under this Agreement shall not be binding unless the waiver is in writing and signed by an authorized representative of the waiving Party.

17.3 If a court of competent jurisdiction determines that any part or provision of this Agreement is illegal, invalid, or unenforceable, then any such part or provision shall be limited or modified to the minimum extent necessary to make it and the remainder of this Agreement enforceable, and the provisions of this Agreement as so amended shall remain in full force and effect.

17.4 In this Agreement, the singular includes the plural and vice versa. All headings in this Agreement are for convenience only, and shall not be used to interpret this Agreement. This Agreement may be executed in separate counterparts, including electronically or by facsimile, and all such counterparts taken together shall be deemed the same original instrument.

SCOPE OF WORK FOR LINER INTERFACE SHEAR

Approved Project Number	Current Short Description	Synthetic Liner Genral Description	Synthetic Liner Short Description	Testing Required(y/n)[1]	Estimated Cost ($CAD)	LLDPE Sample Required (m2)-0.5x0.7	ODF Sample Required (# 20L buckets)	Subgrade Sample Required	Notes
1	Current Approved System	GCL LLDPE	GSE-NWL60 SOLMAX 80 MIL-11007064	n	$ -	0	0	0	Nilex Quoted LLDPE
N/A- as of 2020-01-09	Proposed System #A (Layfield)	GCL LLDPE	GSE-NWL60 EnviroLiner 4280 80 MIL (LF)	y	$ 6,300	1.05	6	3	
N/A- as of 2020-01-09	Proposed System #B	GCL LLDPE	BENTOMATOMAT DN SOLMAX 80 MIL-11007064	y	$ 6,300	1.05	6	3	
N/A- as of 2020-01-09	Proposed System #C	GCL LLDPE	BENTOMATOMAT DN EnviroLiner 4280 80 MIL (LF)	y	$ 6,300	1.05	6	3	
TOTAL TO OBTAIN (3) ADDITIONAL SYNTHETIC SYSTEM OPTIONS					$ 18,900	5.25	18	9	

1. Linear interface shear tests ASTM D5321-17. (3) shear tests at vertical stress of 400, 800, 1600 kPa per proposed system.
Additional testing to determine soil charcteristics may also be performed in order to perform the liner interface shear Test

APPENDIX B

GEOCHEMICAL TEST RESULTS

ALS Environmental

CERTIFICATE OF ANALYSIS

Work Order	: **WR2000964**	Page	: 1 of 6
Client	: **Victoria Gold (Yukon) Corp.**	Laboratory	: Whitehorse - Environmental
Contact	: Helena Kuikka	Account Manager	: Hilary Woods
Address	: Suite 1000 - 1050 W. Pender St Vancouver BC Canada V6E 3S7	Address	: #12 151 Industrial Road Whitehorse YT Canada Y1A 2V3
Telephone	: ----	Telephone	: +1 867 668 6689
Project	: Construction Materials	Date Samples Received	: 28-Sep-2020 09:57
PO	: 14723	Date Analysis Commenced	: 19-Oct-2020
C-O-C number	: 20200925a	Issue Date	: 03-Nov-2020 16:03
Sampler	: BB, FL, KT		
Site	: ABA		
Quote number	: Q67596		
No. of samples received	: 5		
No. of samples analysed	: 5		

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QC Interpretive report to assist with Quality Review and Sample Receipt Notification (SRN).

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is conducted in accordance with US FDA 21 CFR Part 11.

Signatories	*Position*	*Laboratory Department*
Brieanna Allen	Department Manager - Organics	Organics, Burnaby, British Columbia
Cristina Alexandre	Supervisor - Metals ICP Instrumentation	Metals, Burnaby, British Columbia
Janice Pearson	Account Manager Assistant	Internal Subcontracting, North Vancouver, British Columbia
Kevin Duarte	Team Leader - Inorganics	Inorganics - Water Quality, Burnaby, British Columbia
Shaneel Dayal	Analyst	Metals, Burnaby, British Columbia

General Comments

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Refer to the ALS Quality Control Interpretive report (QCI) for applicable references and methodology summaries. Reference methods may incorporate modifications to improve performance.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

Please refer to Quality Control Interpretive report (QCI) for information regarding Holding Time compliance.

Key : CAS Number: Chemical Abstracts Services number is a unique identifier assigned to discrete substances
LOR: Limit of Reporting (detection limit).

Unit	*Description*
-	No Unit
%	percent
kg	kilograms
mg/L	milligrams per litre
pH units	pH units
ppm	parts per million
tCaCO3/kt	tons CaCO3 per kiloton

<: less than.

>: greater than.

Surrogate: An analyte that is similar in behavior to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.

Test results reported relate only to the samples as received by the laboratory.

UNLESS OTHERWISE STATED on SRN or QCI Report, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

Analytical results in reports identified as "Preliminary Report" are considered authorized for use.

Analytical Results

Sub-Matrix: **Solid**
(Matrix: **Soil/Solid**)

Analyte	CAS Number	Method	LOR	Unit	Client sample ID	Ditch A MS-1	Ditch A MS-1-01	Ditch A MS-2	Ditch A MS-3	Ditch A MS-4
					Client sampling date / time	13-Sep-2020	13-Sep-2020	13-Sep-2020	13-Sep-2020	13-Sep-2020
						WR2000964-001	WR2000964-002	WR2000964-003	WR2000964-004	WR2000964-005
						Result	Result	Result	Result	Result
Physical Tests										
moisture	----	E144	0.25	%		0.28	<0.25	0.26	0.79	0.74
pH	----	E116	0.10	pH units		7.38	6.40	7.80	7.98	5.10
Acid Base Accounting										
carbon dioxide	124-38-9	C-GAS05	0.2	%		<0.2	<0.2	<0.2	<0.2	0.5
carbon, total [TC]	----	C-GAS05	0.05	%		<0.05	<0.05	<0.05	<0.05	0.13
fizz rating	----	OA-VOL08	1	-		1	1	1	1	1
maximum potential acidity [MPA]	----	OA-VOL08	0.3	tCaCO3/kt		0.3	<0.3	0.3	0.3	0.9
net neutralization potential [NNP]	----	OA-VOL08	1	tCaCO3/kt		11	6	12	7	15
neutralization potential [NP]	----	OA-VOL08	1	tCaCO3/kt		11	6	12	7	16
neutralization potential ratio [NPR], (NP/MPA)	----	OA-VOL08	0.01	-		35.20	38.40	38.40	22.40	17.07
pH (1:1 soil:water)	----	OA-ELE07	0.10	pH units		8.60	8.30	8.80	7.60	8.00
sulfate (as S), carbonate leach	14808-79-8	S-GRA06	0.01	%		<0.01	<0.01	<0.01	<0.01	<0.01
sulfate (as S), HCl leach	14808-79-8	S-GRA06A	0.01	%		0.01	<0.01	0.01	<0.01	0.01
sulfide (as S), total minus carbonate leach	18496-25-8	S-CAL06	0.01	%		0.01	<0.01	0.01	0.01	0.03
sulfur, total	7704-34-9	S-IR08	0.01	%		0.01	<0.01	0.01	0.01	0.03
weight, sample received	NA	WEI-21	0.02	kg		4.78	4.52	4.80	4.54	4.72
Metals										
aluminum	7429-90-5	ME-MS41	0.01	%		1.55	0.97	1.73	1.53	1.26
antimony	7440-36-0	ME-MS41	0.05	ppm		0.79	0.90	0.60	4.48	61.4
arsenic	7440-38-2	ME-MS41	0.1	ppm		40.7	69.0	294	545	859
barium	7440-39-3	ME-MS41	10	ppm		370	250	490	180	140
beryllium	7440-41-7	ME-MS41	0.05	ppm		0.57	0.34	0.59	1.01	0.78
bismuth	7440-69-9	ME-MS41	0.01	ppm		0.07	0.12	0.08	0.39	1.70
boron	7440-42-8	ME-MS41	10	ppm		<10	<10	<10	<10	<10
cadmium	7440-43-9	ME-MS41	0.01	ppm		0.07	0.07	0.07	0.24	1.25
calcium	7440-70-2	ME-MS41	0.01	%		0.69	0.18	0.63	0.21	0.72
cerium	7440-45-1	ME-MS41	0.02	ppm		76.4	49.1	80.5	67.9	58.3
cesium	7440-46-2	ME-MS41	0.05	ppm		3.44	3.01	4.21	3.67	3.05
chromium	7440-47-3	ME-MS41	1	ppm		32	24	38	23	23
cobalt	7440-48-4	ME-MS41	0.1	ppm		7.0	6.0	8.7	12.1	11.1

Analytical Results

Sub-Matrix: **Solid**
(Matrix: **Soil/Solid**)

Analyte	CAS Number	Method	LOR	Unit	Client sample ID	Ditch A MS-1	Ditch A MS-1-01	Ditch A MS-2	Ditch A MS-3	Ditch A MS-4
					Client sampling date / time	13-Sep-2020	13-Sep-2020	13-Sep-2020	13-Sep-2020	13-Sep-2020
						WR2000964-001	WR2000964-002	WR2000964-003	WR2000964-004	WR2000964-005
						Result	Result	Result	Result	Result
Metals										
copper	7440-50-8	ME-MS41	0.2	ppm		6.7	9.3	9.7	32.4	42.0
gallium	7440-55-3	ME-MS41	0.05	ppm		7.15	3.73	8.04	5.32	3.94
germanium	7440-56-4	ME-MS41	0.05	ppm		0.12	0.06	0.10	0.07	0.07
gold	7440-57-5	ME-MS41	0.02	ppm		<0.02	<0.02	0.03	0.02	0.04
hafnium	7440-58-6	ME-MS41	0.02	ppm		0.17	0.17	0.16	0.27	0.27
indium	7440-74-6	ME-MS41	0.005	ppm		0.016	0.009	0.021	0.017	0.029
iron	7439-89-6	ME-MS41	0.01	%		2.17	1.82	2.41	3.46	2.90
lanthanum	7439-91-0	ME-MS41	0.2	ppm		37.2	24.3	41.9	34.7	30.2
lead	7439-92-1	ME-MS41	0.2	ppm		6.8	7.5	7.6	14.8	301
lithium	7439-93-2	ME-MS41	0.1	ppm		38.0	20.5	39.0	42.9	14.0
magnesium	7439-95-4	ME-MS41	0.01	%		0.68	0.34	0.84	0.49	0.36
manganese	7439-96-5	ME-MS41	5	ppm		339	252	330	330	391
mercury	7439-97-6	ME-MS41	0.01	ppm		0.02	0.01	0.04	0.04	0.06
molybdenum	7439-98-7	ME-MS41	0.05	ppm		0.56	0.42	0.82	1.73	0.56
nickel	7440-02-0	ME-MS41	0.2	ppm		18.6	17.1	19.0	31.4	25.0
niobium	7440-03-1	ME-MS41	0.05	ppm		0.65	0.40	0.91	0.56	0.30
phosphorus	7723-14-0	ME-MS41	10	ppm		530	280	630	360	430
potassium	7440-09-7	ME-MS41	0.01	%		0.56	0.45	0.77	0.53	0.43
rhenium	7440-15-5	ME-MS41	0.001	ppm		<0.001	<0.001	0.002	<0.001	<0.001
rubidium	7440-17-7	ME-MS41	0.1	ppm		54.0	36.8	71.2	63.4	29.5
scandium	7440-20-2	ME-MS41	0.1	ppm		4.0	2.8	4.6	3.1	2.7
selenium	7782-49-2	ME-MS41	0.2	ppm		0.2	<0.2	0.4	0.5	0.5
silver	7440-22-4	ME-MS41	0.01	ppm		0.02	0.02	0.02	0.08	1.26
sodium	7440-23-5	ME-MS41	0.01	%		0.10	0.05	0.15	0.03	0.03
strontium	7440-24-6	ME-MS41	0.2	ppm		56.3	23.2	64.7	29.9	41.5
sulfur	7704-34-9	ME-MS41	0.01	%		0.01	<0.01	0.02	0.02	0.03
tantalum	7440-25-7	ME-MS41	0.01	ppm		<0.01	<0.01	<0.01	<0.01	<0.01
tellurium	13494-80-9	ME-MS41	0.01	ppm		0.01	<0.01	0.01	0.03	0.03
thallium	7440-28-0	ME-MS41	0.02	ppm		0.34	0.24	0.54	0.40	0.32
thorium	7440-29-1	ME-MS41	0.2	ppm		17.4	10.9	20.6	12.5	11.6
tin	7440-31-5	ME-MS41	0.2	ppm		0.8	0.5	1.0	0.6	0.6
titanium	7440-32-6	ME-MS41	0.005	%		0.201	0.097	0.238	0.061	0.051

Analytical Results

Sub-Matrix: **Solid**
(Matrix: **Soil/Solid**)

Analyte	CAS Number	Method	LOR	Unit	Client sample ID	Ditch A MS-1	Ditch A MS-1-01	Ditch A MS-2	Ditch A MS-3	Ditch A MS-4
					Client sampling date / time	13-Sep-2020	13-Sep-2020	13-Sep-2020	13-Sep-2020	13-Sep-2020
						WR2000964-001	WR2000964-002	WR2000964-003	WR2000964-004	WR2000964-005
						Result	Result	Result	Result	Result
Metals										
tungsten	7440-33-7	ME-MS41	0.05	ppm		2.80	5.39	178.5	41.4	1.20
uranium	7440-61-1	ME-MS41	0.05	ppm		2.20	1.28	3.17	2.05	1.50
vanadium	7440-62-2	ME-MS41	1	ppm		33	24	39	26	25
yttrium	7440-65-5	ME-MS41	0.05	ppm		8.17	4.42	9.56	6.40	6.27
zinc	7440-66-6	ME-MS41	2	ppm		45	39	58	85	238
zirconium	7440-67-7	ME-MS41	0.5	ppm		3.6	4.6	2.8	10.9	10.2
Leachable Metals										
aluminum, leachable	7429-90-5	E446	0.0050	mg/L		0.514	0.584	0.690	1.56	0.0457
antimony, leachable	7440-36-0	E446	0.00010	mg/L		0.00131	0.00137	0.00090	0.00447	0.0494
arsenic, leachable	7440-38-2	E446	0.0010	mg/L		0.0380	0.0435	0.168	0.158	0.233
barium, leachable	7440-39-3	E446	0.0010	mg/L		0.0340	0.0328	0.0416	0.0289	0.0156
beryllium, leachable	7440-41-7	E446	0.00050	mg/L		<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
bismuth, leachable	7440-69-9	E446	0.00050	mg/L		<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
boron, leachable	7440-42-8	E446	0.010	mg/L		0.011	<0.010	0.012	<0.010	<0.010
cadmium, leachable	7440-43-9	E446	0.000050	mg/L		<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
calcium, leachable	7440-70-2	E446	0.10	mg/L		2.83	0.63	5.28	2.62	19.2
chromium, leachable	7440-47-3	E446	0.00050	mg/L		<0.00050	0.00063	<0.00050	0.00140	<0.00050
cobalt, leachable	7440-48-4	E446	0.00010	mg/L		0.00016	0.00028	0.00010	0.00096	<0.00010
copper, leachable	7440-50-8	E446	0.0010	mg/L		<0.0010	<0.0010	<0.0010	0.0053	0.0024
iron, leachable	7439-89-6	E446	0.030	mg/L		0.229	0.687	0.143	3.44	<0.030
lead, leachable	7439-92-1	E446	0.00010	mg/L		0.00046	0.00071	0.00026	0.00229	0.00017
lithium, leachable	7439-93-2	E446	0.0050	mg/L		0.0054	0.0063	0.0088	0.0249	0.0068
magnesium, leachable	7439-95-4	E446	0.050	mg/L		0.906	0.289	0.947	1.02	2.43
manganese, leachable	7439-96-5	E446	0.00050	mg/L		0.0139	0.0176	0.00758	0.0327	0.00350
mercury, leachable	7439-97-6	E515	0.000050	mg/L		<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
molybdenum, leachable	7439-98-7	E446	0.00010	mg/L		0.00615	0.00301	0.00272	0.00370	0.00237
nickel, leachable	7440-02-0	E446	0.00050	mg/L		<0.00050	0.00070	<0.00050	0.00430	0.00052
phosphorus, leachable	7723-14-0	E446	0.30	mg/L		<0.30	<0.30	<0.30	<0.30	<0.30
potassium, leachable	7440-09-7	E446	0.050	mg/L		3.65	3.07	4.09	2.30	4.55
selenium, leachable	7782-49-2	E446	0.00050	mg/L		<0.00050	<0.00050	0.00083	<0.00050	0.00088
silicon, leachable	7440-21-3	E446	0.050	mg/L		3.49	4.18	3.02	6.82	4.28
silver, leachable	7440-22-4	E446	0.000050	mg/L		<0.000050	<0.000050	<0.000050	<0.000050	<0.000050

Analytical Results

Sub-Matrix: **Solid**
(Matrix: **Soil/Solid**)

Analyte	CAS Number	Method	LOR	Unit	Client sample ID	Ditch A MS-1	Ditch A MS-1-01	Ditch A MS-2	Ditch A MS-3	Ditch A MS-4
					Client sampling date / time	13-Sep-2020	13-Sep-2020	13-Sep-2020	13-Sep-2020	13-Sep-2020
						WR2000964-001	WR2000964-002	WR2000964-003	WR2000964-004	WR2000964-005
						Result	Result	Result	Result	Result
Leachable Metals										
sodium, leachable	7440-23-5	E446	0.050	mg/L		2.64	2.13	2.54	1.04	1.54
strontium, leachable	7440-24-6	E446	0.00050	mg/L		0.0232	0.0102	0.0438	0.0206	0.0801
sulfur, leachable	----	E446	0.50	mg/L		1.24	1.11	1.62	1.68	<0.50
thallium, leachable	7440-28-0	E446	0.00010	mg/L		<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
tin, leachable	7440-31-5	E446	0.00050	mg/L		<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
titanium, leachable	7440-32-6	E446	0.010	mg/L		0.012	0.016	<0.010	0.028	<0.010
uranium, leachable	7440-61-1	E446	0.000010	mg/L		0.000251	0.000114	0.000705	0.000288	0.00166
vanadium, leachable	7440-62-2	E446	0.0010	mg/L		0.0014	0.0010	0.0017	0.0022	<0.0010
zinc, leachable	7440-66-6	E446	0.010	mg/L		<0.010	<0.010	<0.010	<0.010	<0.010
hardness (as CaCO3), dissolved	----	E446	0.60	mg/L		10.8	2.76	17.1	10.7	57.9

Please refer to the General Comments section for an explanation of any qualifiers detected.

QUALITY CONTROL INTERPRETIVE REPORT

Work Order	: **WR2000964**	Page	: 1 of 14
Client	: **Victoria Gold (Yukon) Corp.**	Laboratory	: Whitehorse - Environmental
Contact	: Helena Kuikka	Account Manager	: Hilary Woods
Address	: Suite 1000 - 1050 W. Pender St Vancouver BC Canada V6E 3S7	Address	: #12 151 Industrial Road Whitehorse, Yukon Canada Y1A 2V3
Telephone	: ----	Telephone	: +1 867 668 6689
Project	: Construction Materials	Date Samples Received	: 28-Sep-2020 09:57
PO	: 14723	Issue Date	: 03-Nov-2020 16:03
C-O-C number	: 20200925a		
Sampler	: BB, FL, KT		
Site	: ABA		
Quote number	: Q67596		
No. of samples received	: 5		
No. of samples analysed	: 5		

This report is automatically generated by the ALS LIMS (Laboratory Information Management System) through evaluation of Quality Control (QC) results and other QA parameters associated with this submission, and is intended to facilitate rapid data validation by auditors or reviewers. The report highlights any exceptions and outliers to ALS Data Quality Objectives, provides holding time details and exceptions, summarizes QC sample frequencies, and lists applicable methodology references and summaries.

Key

Anonymous: Refers to samples which are not part of this work order, but which formed part of the QC process lot.
CAS Number: Chemical Abstracts Services number is a unique identifier assigned to discrete substances.
DQO: Data Quality Objective.
LOR: Limit of Reporting (detection limit).
RPD: Relative Percent Difference.

Summary of Outliers

Outliers : Quality Control Samples

- No Method Blank value outliers occur.
- No Duplicate outliers occur.
- No Laboratory Control Sample (LCS) outliers occur
- No Matrix Spike outliers occur.
- No Test sample Surrogate recovery outliers exist.

Outliers: Reference Material (RM) Samples

- No Reference Material (RM) Sample outliers occur.

Outliers : Analysis Holding Time Compliance (Breaches)

- Analysis Holding Time Outliers exist - please see following pages for full details.

Outliers : Frequency of Quality Control Samples

- No Quality Control Sample Frequency Outliers occur.

Analysis Holding Time Compliance

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times, which are selected to meet known provincial and /or federal requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by organizations such as CCME, US EPA, APHA Standard Methods, ASTM, or Environment Canada (where available). Dates and holding times reported below represent the first dates of extraction or analysis. If subsequent tests or dilutions exceeded holding times, qualifiers are added (refer to COA).

If samples are identified below as having been analyzed or extracted outside of recommended holding times, measurement uncertainties may be increased, and this should be taken into consideration when interpreting results.

Where actual sampling date is not provided on the chain of custody, the date of receipt with time at 15:00 is used for calculation purposes.

Where only the sample date without time is provided on the chain of custody, the sampling date at 15:00 is used for calculation purposes.

Matrix: **Soil/Solid**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Acid Base Accounting : Acid Base Accounting										
Compliant container										
Ditch A MS-1	OA-VOL08	13-Sep-2020	----	----	----		02-Nov-2020	----	----	
Acid Base Accounting : Acid Base Accounting										
Compliant container										
Ditch A MS-1-01	OA-VOL08	13-Sep-2020	----	----	----		02-Nov-2020	----	----	
Acid Base Accounting : Acid Base Accounting										
Compliant container										
Ditch A MS-2	OA-VOL08	13-Sep-2020	----	----	----		02-Nov-2020	----	----	
Acid Base Accounting : Acid Base Accounting										
Compliant container										
Ditch A MS-3	OA-VOL08	13-Sep-2020	----	----	----		02-Nov-2020	----	----	
Acid Base Accounting : Acid Base Accounting										
Compliant container										
Ditch A MS-4	OA-VOL08	13-Sep-2020	----	----	----		02-Nov-2020	----	----	
Acid Base Accounting : C by HClO4 digestion and titration										
Compliant container										
Ditch A MS-1	C-GAS05	13-Sep-2020	----	----	----		02-Nov-2020	----	----	
Acid Base Accounting : C by HClO4 digestion and titration										
Compliant container										
Ditch A MS-1-01	C-GAS05	13-Sep-2020	----	----	----		02-Nov-2020	----	----	

Matrix: **Soil/Solid**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Acid Base Accounting : C by HClO4 digestion and titration										
Compliant container Ditch A MS-2	C-GAS05	13-Sep-2020	----	----	----		02-Nov-2020	----	----	
Acid Base Accounting : C by HClO4 digestion and titration										
Compliant container Ditch A MS-3	C-GAS05	13-Sep-2020	----	----	----		02-Nov-2020	----	----	
Acid Base Accounting : C by HClO4 digestion and titration										
Compliant container Ditch A MS-4	C-GAS05	13-Sep-2020	----	----	----		02-Nov-2020	----	----	
Acid Base Accounting : Received Sample Weight										
Compliant container Ditch A MS-1	WEI-21	13-Sep-2020	----	----	----		02-Nov-2020	180 days	50 days	✓
Acid Base Accounting : Received Sample Weight										
Compliant container Ditch A MS-1-01	WEI-21	13-Sep-2020	----	----	----		02-Nov-2020	180 days	50 days	✓
Acid Base Accounting : Received Sample Weight										
Compliant container Ditch A MS-2	WEI-21	13-Sep-2020	----	----	----		02-Nov-2020	180 days	50 days	✓
Acid Base Accounting : Received Sample Weight										
Compliant container Ditch A MS-3	WEI-21	13-Sep-2020	----	----	----		02-Nov-2020	180 days	50 days	✓
Acid Base Accounting : Received Sample Weight										
Compliant container Ditch A MS-4	WEI-21	13-Sep-2020	----	----	----		02-Nov-2020	180 days	50 days	✓
Acid Base Accounting : Saturated Paste pH										
Compliant container Ditch A MS-1	OA-ELE07	13-Sep-2020	----	----	----		02-Nov-2020	----	----	

Matrix: **Soil/Solid**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Acid Base Accounting : Saturated Paste pH										
Compliant container Ditch A MS-1-01	OA-ELE07	13-Sep-2020	----	----	----		02-Nov-2020	----	----	
Acid Base Accounting : Saturated Paste pH										
Compliant container Ditch A MS-2	OA-ELE07	13-Sep-2020	----	----	----		02-Nov-2020	----	----	
Acid Base Accounting : Saturated Paste pH										
Compliant container Ditch A MS-3	OA-ELE07	13-Sep-2020	----	----	----		02-Nov-2020	----	----	
Acid Base Accounting : Saturated Paste pH										
Compliant container Ditch A MS-4	OA-ELE07	13-Sep-2020	----	----	----		02-Nov-2020	----	----	
Acid Base Accounting : Sulfates by HCl Leaching and Gravimetry with Sulfide S Calc.										
Compliant container Ditch A MS-1	S-GRA06A	13-Sep-2020	----	----	----		02-Nov-2020	----	----	
Acid Base Accounting : Sulfates by HCl Leaching and Gravimetry with Sulfide S Calc.										
Compliant container Ditch A MS-1-01	S-GRA06A	13-Sep-2020	----	----	----		02-Nov-2020	----	----	
Acid Base Accounting : Sulfates by HCl Leaching and Gravimetry with Sulfide S Calc.										
Compliant container Ditch A MS-2	S-GRA06A	13-Sep-2020	----	----	----		02-Nov-2020	----	----	
Acid Base Accounting : Sulfates by HCl Leaching and Gravimetry with Sulfide S Calc.										
Compliant container Ditch A MS-3	S-GRA06A	13-Sep-2020	----	----	----		02-Nov-2020	----	----	
Acid Base Accounting : Sulfates by HCl Leaching and Gravimetry with Sulfide S Calc.										
Compliant container Ditch A MS-4	S-GRA06A	13-Sep-2020	----	----	----		02-Nov-2020	----	----	

Matrix: **Soil/Solid**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Acid Base Accounting : Sulfates by NaCO3 Leaching and Gravimetry with Sulfide S Calc.										
Compliant container Ditch A MS-1	S-GRA06	13-Sep-2020	----	----	----		02-Nov-2020	----	----	
Acid Base Accounting : Sulfates by NaCO3 Leaching and Gravimetry with Sulfide S Calc.										
Compliant container Ditch A MS-1-01	S-GRA06	13-Sep-2020	----	----	----		02-Nov-2020	----	----	
Acid Base Accounting : Sulfates by NaCO3 Leaching and Gravimetry with Sulfide S Calc.										
Compliant container Ditch A MS-2	S-GRA06	13-Sep-2020	----	----	----		02-Nov-2020	----	----	
Acid Base Accounting : Sulfates by NaCO3 Leaching and Gravimetry with Sulfide S Calc.										
Compliant container Ditch A MS-3	S-GRA06	13-Sep-2020	----	----	----		02-Nov-2020	----	----	
Acid Base Accounting : Sulfates by NaCO3 Leaching and Gravimetry with Sulfide S Calc.										
Compliant container Ditch A MS-4	S-GRA06	13-Sep-2020	----	----	----		02-Nov-2020	----	----	
Acid Base Accounting : Sulfide S (as S) Calc. (Total-S - SO4-S)										
Compliant container Ditch A MS-1	S-CAL06	13-Sep-2020	----	----	----		02-Nov-2020	28 days	50 days	× EHT
Acid Base Accounting : Sulfide S (as S) Calc. (Total-S - SO4-S)										
Compliant container Ditch A MS-1-01	S-CAL06	13-Sep-2020	----	----	----		02-Nov-2020	28 days	50 days	× EHT
Acid Base Accounting : Sulfide S (as S) Calc. (Total-S - SO4-S)										
Compliant container Ditch A MS-2	S-CAL06	13-Sep-2020	----	----	----		02-Nov-2020	28 days	50 days	× EHT
Acid Base Accounting : Sulfide S (as S) Calc. (Total-S - SO4-S)										
Compliant container Ditch A MS-3	S-CAL06	13-Sep-2020	----	----	----		02-Nov-2020	28 days	50 days	× EHT

Matrix: **Soil/Solid**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Acid Base Accounting : Sulfide S (as S) Calc. (Total-S - SO4-S)										
Compliant container Ditch A MS-4	S-CAL06	13-Sep-2020	----	----	----		02-Nov-2020	28 days	50 days	× EHT
Acid Base Accounting : Total S by LECO and IR										
Compliant container Ditch A MS-1	S-IR08	13-Sep-2020	----	----	----		02-Nov-2020	----	----	
Acid Base Accounting : Total S by LECO and IR										
Compliant container Ditch A MS-1-01	S-IR08	13-Sep-2020	----	----	----		02-Nov-2020	----	----	
Acid Base Accounting : Total S by LECO and IR										
Compliant container Ditch A MS-2	S-IR08	13-Sep-2020	----	----	----		02-Nov-2020	----	----	
Acid Base Accounting : Total S by LECO and IR										
Compliant container Ditch A MS-3	S-IR08	13-Sep-2020	----	----	----		02-Nov-2020	----	----	
Acid Base Accounting : Total S by LECO and IR										
Compliant container Ditch A MS-4	S-IR08	13-Sep-2020	----	----	----		02-Nov-2020	----	----	
Leachable Metals : Mercury by CVAAS (Shakeflask, 3:1 Ratio with Water)										
Glass soil jar/Teflon lined cap Ditch A MS-1	E515	13-Sep-2020	19-Oct-2020	28 days	36 days	× EHT	21-Oct-2020	-9 days	1 days	×
Leachable Metals : Mercury by CVAAS (Shakeflask, 3:1 Ratio with Water)										
Glass soil jar/Teflon lined cap Ditch A MS-1-01	E515	13-Sep-2020	19-Oct-2020	28 days	36 days	× EHT	21-Oct-2020	-9 days	1 days	×
Leachable Metals : Mercury by CVAAS (Shakeflask, 3:1 Ratio with Water)										
Glass soil jar/Teflon lined cap Ditch A MS-2	E515	13-Sep-2020	19-Oct-2020	28 days	36 days	× EHT	21-Oct-2020	-9 days	1 days	×

Matrix: **Soil/Solid**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Leachable Metals : Mercury by CVAAS (Shakeflask, 3:1 Ratio with Water)										
Glass soil jar/Teflon lined cap										
Ditch A MS-3	E515	13-Sep-2020	19-Oct-2020	28 days	36 days	× EHT	21-Oct-2020	-9 days	1 days	×
Leachable Metals : Mercury by CVAAS (Shakeflask, 3:1 Ratio with Water)										
Glass soil jar/Teflon lined cap										
Ditch A MS-4	E515	13-Sep-2020	19-Oct-2020	28 days	36 days	× EHT	21-Oct-2020	-9 days	1 days	×
Leachable Metals : Metals by CRC ICPMS (Shakeflask, 3:1 Ratio with Water)										
Glass soil jar/Teflon lined cap										
Ditch A MS-1	E446	13-Sep-2020	19-Oct-2020	180 days	36 days	✓	20-Oct-2020	143 days	1 days	✓
Leachable Metals : Metals by CRC ICPMS (Shakeflask, 3:1 Ratio with Water)										
Glass soil jar/Teflon lined cap										
Ditch A MS-1-01	E446	13-Sep-2020	19-Oct-2020	180 days	36 days	✓	20-Oct-2020	143 days	1 days	✓
Leachable Metals : Metals by CRC ICPMS (Shakeflask, 3:1 Ratio with Water)										
Glass soil jar/Teflon lined cap										
Ditch A MS-2	E446	13-Sep-2020	19-Oct-2020	180 days	36 days	✓	20-Oct-2020	143 days	1 days	✓
Leachable Metals : Metals by CRC ICPMS (Shakeflask, 3:1 Ratio with Water)										
Glass soil jar/Teflon lined cap										
Ditch A MS-3	E446	13-Sep-2020	19-Oct-2020	180 days	36 days	✓	20-Oct-2020	143 days	1 days	✓
Leachable Metals : Metals by CRC ICPMS (Shakeflask, 3:1 Ratio with Water)										
Glass soil jar/Teflon lined cap										
Ditch A MS-4	E446	13-Sep-2020	19-Oct-2020	180 days	36 days	✓	20-Oct-2020	143 days	1 days	✓
Metals : 51 Elements by Aqua Regia digestion and ICP-AES/MS										
Compliant container										
Ditch A MS-1	ME-MS41	13-Sep-2020	----	----	----		02-Nov-2020	----	----	
Metals : 51 Elements by Aqua Regia digestion and ICP-AES/MS										
Compliant container										
Ditch A MS-1-01	ME-MS41	13-Sep-2020	----	----	----		02-Nov-2020	----	----	

Matrix: **Soil/Solid**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Metals : 51 Elements by Aqua Regia digestion and ICP-AES/MS										
Compliant container										
Ditch A MS-2	ME-MS41	13-Sep-2020	----	----	----		02-Nov-2020	----	----	
Metals : 51 Elements by Aqua Regia digestion and ICP-AES/MS										
Compliant container										
Ditch A MS-3	ME-MS41	13-Sep-2020	----	----	----		02-Nov-2020	----	----	
Metals : 51 Elements by Aqua Regia digestion and ICP-AES/MS										
Compliant container										
Ditch A MS-4	ME-MS41	13-Sep-2020	----	----	----		02-Nov-2020	----	----	
Physical Tests : Moisture Content by Gravimetry										
Glass soil jar/Teflon lined cap										
Ditch A MS-1	E144	13-Sep-2020	----	----	----		19-Oct-2020	----	----	
Physical Tests : Moisture Content by Gravimetry										
Glass soil jar/Teflon lined cap										
Ditch A MS-1-01	E144	13-Sep-2020	----	----	----		19-Oct-2020	----	----	
Physical Tests : Moisture Content by Gravimetry										
Glass soil jar/Teflon lined cap										
Ditch A MS-2	E144	13-Sep-2020	----	----	----		19-Oct-2020	----	----	
Physical Tests : Moisture Content by Gravimetry										
Glass soil jar/Teflon lined cap										
Ditch A MS-3	E144	13-Sep-2020	----	----	----		19-Oct-2020	----	----	
Physical Tests : Moisture Content by Gravimetry										
Glass soil jar/Teflon lined cap										
Ditch A MS-4	E144	13-Sep-2020	----	----	----		19-Oct-2020	----	----	
Physical Tests : pH by electrode (Shakeflask, 3:1 Ratio with Water)										
Glass soil jar/Teflon lined cap										
Ditch A MS-1	E116	13-Sep-2020	19-Oct-2020	30 days	36 days	× EHT	20-Oct-2020	-7 days	1 days	×

Matrix: **Soil/Solid**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Physical Tests : pH by electrode (Shakeflask, 3:1 Ratio with Water)										
Glass soil jar/Teflon lined cap										
Ditch A MS-1-01	E116	13-Sep-2020	19-Oct-2020	30 days	36 days	× EHT	20-Oct-2020	-7 days	1 days	×
Physical Tests : pH by electrode (Shakeflask, 3:1 Ratio with Water)										
Glass soil jar/Teflon lined cap										
Ditch A MS-2	E116	13-Sep-2020	19-Oct-2020	30 days	36 days	× EHT	20-Oct-2020	-7 days	1 days	×
Physical Tests : pH by electrode (Shakeflask, 3:1 Ratio with Water)										
Glass soil jar/Teflon lined cap										
Ditch A MS-3	E116	13-Sep-2020	19-Oct-2020	30 days	36 days	× EHT	20-Oct-2020	-7 days	1 days	×
Physical Tests : pH by electrode (Shakeflask, 3:1 Ratio with Water)										
Glass soil jar/Teflon lined cap										
Ditch A MS-4	E116	13-Sep-2020	19-Oct-2020	30 days	36 days	× EHT	20-Oct-2020	-7 days	1 days	×

Legend & Qualifier Definitions

EHT: Exceeded ALS recommended hold time prior to analysis.

Rec. HT: ALS recommended hold time (see units).

Quality Control Parameter Frequency Compliance

The following report summarizes the frequency of laboratory QC samples analyzed within the analytical batches (QC lots) in which the submitted samples were processed. The actual frequency should be greater than or equal to the expected frequency.

Matrix: **Soil/Solid**

Evaluation: × = *QC frequency outside specification*; ✓ = *QC frequency within specification.*

Quality Control Sample Type			Count		Frequency (%)		
Analytical Methods	*Method*	*QC Lot #*	*QC*	*Regular*	*Actual*	*Expected*	*Evaluation*
Laboratory Duplicates (DUP)							
Mercury by CVAAS (Shakeflask, 3:1 Ratio with Water)	E515	105006	1	5	20.0	5.0	✓
Metals by CRC ICPMS (Shakeflask, 3:1 Ratio with Water)	E446	105008	1	5	20.0	5.0	✓
Moisture Content by Gravimetry	E144	104681	1	11	9.0	5.0	✓
pH by electrode (Shakeflask, 3:1 Ratio with Water)	E116	105007	1	5	20.0	5.0	✓
Laboratory Control Samples (LCS)							
Mercury by CVAAS (Shakeflask, 3:1 Ratio with Water)	E515	105006	1	5	20.0	5.0	✓
Metals by CRC ICPMS (Shakeflask, 3:1 Ratio with Water)	E446	105008	1	5	20.0	5.0	✓
Moisture Content by Gravimetry	E144	104681	1	11	9.0	5.0	✓
pH by electrode (Shakeflask, 3:1 Ratio with Water)	E116	105007	1	5	20.0	5.0	✓
Method Blanks (MB)							
Mercury by CVAAS (Shakeflask, 3:1 Ratio with Water)	E515	105006	1	5	20.0	5.0	✓
Metals by CRC ICPMS (Shakeflask, 3:1 Ratio with Water)	E446	105008	1	5	20.0	5.0	✓
Moisture Content by Gravimetry	E144	104681	1	11	9.0	5.0	✓
Matrix Spikes (MS)							
Mercury by CVAAS (Shakeflask, 3:1 Ratio with Water)	E515	105006	1	5	20.0	5.0	✓
Metals by CRC ICPMS (Shakeflask, 3:1 Ratio with Water)	E446	105008	1	5	20.0	5.0	✓

Methodology References and Summaries

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Reference methods may incorporate modifications to improve performance (indicated by "mod").

Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
C by HClO4 digestion and titration	C-GAS05 ALS Minerals (Vancouver) - 2103 Dollarton Hwy North Vancouver British Columbia Canada V7H 0A7	Soil/Solid	ALS Minerals C-GAS05	Determine Total Inorganic Carbon (TIC) by using diluted perchloric acid to react with metal carbonate and yield carbon dioxide. Concentration of carbon dioxide is determined by colour titration. TOC is determined by this method and C-IR07 (TC).
pH by electrode (Shakeflask, 3:1 Ratio with Water)	E116 Vancouver - Environmental	Soil/Solid	MEND (mod)/APHA 4500-H (mod)	pH is determined by potentiometric measurement with a pH electrode, and is conducted at ambient laboratory temperature (normally 20 ± 5°C) on an extract from a soil sample that has been added in a 3:1 ratio of deionized water to soil, then leached and the extract filtered prior to analysis. The pH is then measured by a standard pH probe. .
Moisture Content by Gravimetry	E144 Vancouver - Environmental	Soil/Solid	CCME PHC in Soil - Tier 1	Moisture is measured gravimetrically by drying the sample at 105°C. Moisture content is calculated as the weight loss (due to water) divided by the wet weight of the sample, expressed as a percentage.
Metals by CRC ICPMS (Shakeflask, 3:1 Ratio with Water)	E446 Vancouver - Environmental	Soil/Solid	BC MINISTRY OF ENERGY AND MINES/EPA 6020B (mod)	A sample is extracted with water at a 3:1 liquid to solid ratio for 24 hours, then filtered through a 0.45 micron membrane filter. Analysis is by Collision/Reaction Cell ICPMS. This extraction is an empirical procedure with pre-defined characteristics. Recovery of some elements (Ag, Bi, and Sn) by this method can be variable due to the neutral pH of the extraction fluid, and therefore the LCS DQOs has been established at 50-130% for these elements.
Mercury by CVAAS (Shakeflask, 3:1 Ratio with Water)	E515 Vancouver - Environmental	Soil/Solid	BC MINISTRY OF ENERGY AND MINES/EPA 245.7	A sample is extracted with water at a 3:1 liquid to solid ratio for 24 hours, then filtered through a 0.45 micron membrane filter. Analysis is by CVAAS. This extraction is an empirical procedure with pre-defined characteristics. Recovery of mercury can be variable due to the neutral pH of the extraction fluid, and therefore the LCS DQO has been established at 50-130%.
51 Elements by Aqua Regia digestion and ICP-AES/MS	ME-MS41 ALS Minerals (Vancouver) - 2103 Dollarton Hwy North Vancouver British Columbia Canada V7H 0A7	Soil/Solid	ALS Minerals ME-MS41	A prepared sample is digested with aqua regia in a graphite heating block. After cooling, the resulting solution is diluted to with deionized water, mixed and analyzed by ICP-AES. Samples are then analyzed by ICP-MS for the remaining suite of elements.

Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Saturated Paste pH	OA-ELE07 ALS Minerals (Vancouver) - 2103 Dollarton Hwy North Vancouver British Columbia Canada V7H 0A7	Soil/Solid	ALS Minerals OA-ELE07	Sample mix with water in 1:1 ratio to make a paste, pH is then determined.
Acid Base Accounting	OA-VOL08 ALS Minerals (Vancouver) - 2103 Dollarton Hwy North Vancouver British Columbia Canada V7H 0A7	Soil/Solid	ALS Minerals OA-VOL08	Determine the acid generation power of a sample as tonne CaCO3 per kilo-tonne.
Sulfide S (as S) Calc. (Total-S - SO4-S)	S-CAL06 ALS Minerals (Vancouver) - 2103 Dollarton Hwy North Vancouver British Columbia Canada V7H 0A7	Soil/Solid	ALS Minerals S-CAL06	Sulfide Sulfur (as S) is calculated by subtracting the Carbonate Leachable Sulfate Sulfur (as S) from the Total Sulfur (as S) obtained from combustion.
Sulfates by NaCO3 Leaching and Gravimetry with Sulfide S Calc.	S-GRA06 ALS Minerals (Vancouver) - 2103 Dollarton Hwy North Vancouver British Columbia Canada V7H 0A7	Soil/Solid	ALS Minerals S-GRA06	A preppared sample is heated with diluted Na□CO□ and then filtered. The sulfate in the filtrate is precipitated with BaCl2 in a dilute HCl. The BaSO4 precipitate is filtered, ignited, weighed and the Sulfate Sulfur is determined (as S). Sulfide Sulfur (as S) is calculated by Total Sulfur from combustion minus Sulfate Sulfur from the Na□CO□ leach.
Sulfates by HCl Leaching and Gravimetry with Sulfide S Calc.	S-GRA06A ALS Minerals (Vancouver) - 2103 Dollarton Hwy North Vancouver British Columbia Canada V7H 0A7	Soil/Solid	ALS Minerals S-GRA06A	A prepared sample is heated with dilute HCl and then filtered. The sulfate in the filtrate is precipitated with BaCl2 in a dilute HCl. The BaSO4 precipitate is filtered, ignited, weighed and the Sulfate Sulfur is determined (as S). Sulfide sulfur is calculated by Total Sulfur from combustion minus Sulfate Sulfur from the HCl leach.

Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Total S by LECO and IR	S-IR08 ALS Minerals (Vancouver) - 2103 Dollarton Hwy North Vancouver British Columbia Canada V7H 0A7	Soil/Solid	ALS Minerals S-IR08	A prepared sample is heated to approximately 1350°C in an induction furnace with oxygen stream. Sulfur dioxide released from the sample are measured by IR (Leco analyzer) and the Total Sulfur result is provided.
Received Sample Weight	WEI-21 ALS Minerals (Vancouver) - 2103 Dollarton Hwy North Vancouver British Columbia Canada V7H 0A7	Soil/Solid	ALS Minerals WEI-21	Weigh out sample received.

Preparation Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Shakeflask Leachate Preparation (3:1 Ratio with Water)	EP446 Vancouver - Environmental	Soil/Solid	BC MINISTRY OF ENERGY AND MINES	A sample is extracted with water at a 3:1 liquid to solids ratio for 24 hours, then filtered through a 0.45 micron membrane filter.

QUALITY CONTROL REPORT

Work Order	: **WR2000964**	Page	: 1 of 10
Client	: Victoria Gold (Yukon) Corp.	Laboratory	: Whitehorse - Environmental
Contact	: Helena Kuikka	Account Manager	: Hilary Woods
Address	: Suite 1000 - 1050 W. Pender St Vancouver BC Canada V6E 3S7	Address	: #12 151 Industrial Road Whitehorse, Yukon Canada Y1A 2V3
Telephone	: ----	Telephone	: +1 867 668 6689
Project	: Construction Materials	Date Samples Received	: 28-Sep-2020 09:57
PO	: 14723	Date Analysis Commenced	: 19-Oct-2020
C-O-C number	: 20200925a	Issue Date	: 03-Nov-2020 16:03
Sampler	: BB, FL, KT		
Site	: ABA		
Quote number	: Q67596		
No. of samples received	: 5		
No. of samples analysed	: 5		

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits
- Reference Material (RM) Report; Recovery and Acceptance Limits
- Method Blank (MB) Report; Recovery and Acceptance Limits
- Laboratory Control Sample (LCS) Report; Recovery and Acceptance Limits

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is conducted in accordance with US FDA 21 CFR Part 11.

Signatories	*Position*	*Laboratory Department*
Brieanna Allen	Department Manager - Organics	Organics, Burnaby, British Columbia
Cristina Alexandre	Supervisor - Metals ICP Instrumentation	Metals, Burnaby, British Columbia
Janice Pearson	Account Manager Assistant	Internal Subcontracting, North Vancouver, British Columbia
Kevin Duarte	Team Leader - Inorganics	Inorganics - Water Quality, Burnaby, British Columbia
Shaneel Dayal	Analyst	Metals, Burnaby, British Columbia

General Comments

The ALS Quality Control (QC) report is optionally provided to ALS clients upon request. ALS test methods include comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against predetermined Data Quality Objectives (DQOs) to provide confidence in the accuracy of associated test results. This report contains detailed results for all QC results applicable to this sample submission. Please refer to the ALS Quality Control Interpretation report (QCI) for applicable method references and methodology summaries.

Key :

Anonymous = Refers to samples which are not part of this work order, but which formed part of the QC process lot.
CAS Number = Chemical Abstracts Services number is a unique identifier assigned to discrete substances.
DQO = Data Quality Objective.
LOR = Limit of Reporting (detection limit).
RPD = Relative Percentage Difference
# = Indicates a QC result that did not meet the ALS DQO.

Laboratory Duplicate (DUP) Report

A Laboratory Duplicate (DUP) is a randomly selected intralaboratory replicate sample. Laboratory Duplicates provide information regarding method precision and sample heterogeneity. ALS DQOs for Laboratory Duplicates are expressed as test-specific limits for Relative Percent Difference (RPD), or as an absolute difference limit of 2 times the LOR for low concentration duplicates within ~ 4-10 times the LOR (cut-off is test specific).

Sub-Matrix: **Soil/Solid**

					Laboratory Duplicate (DUP) Report						
Laboratory sample ID	*Client sample ID*	*Analyte*	*CAS Number*	*Method*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD(%) or Difference*	*Duplicate Limits*	*Qualifier*
Physical Tests (QC Lot: 104681)											
VA20B5318-026	Anonymous	moisture	----	E144	0.25	%	30.9	29.4	5.01%	20%	----
Physical Tests (QC Lot: 105007)											
WR2000964-001	Ditch A MS-1	pH	----	E116	0.10	pH units	7.38	7.34	0.543%	5%	----
Leachable Metals (QC Lot: 105006)											
WR2000964-001	Ditch A MS-1	mercury, leachable	7439-97-6	E515	0.000050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR	----
Leachable Metals (QC Lot: 105008)											
WR2000964-001	Ditch A MS-1	aluminum, leachable	7429-90-5	E446	0.0050	mg/L	0.514	0.463	10.4%	30%	----
		antimony, leachable	7440-36-0	E446	0.00010	mg/L	0.00131	0.00113	14.2%	30%	----
		arsenic, leachable	7440-38-2	E446	0.0010	mg/L	0.0380	0.0323	16.2%	30%	----
		barium, leachable	7440-39-3	E446	0.0010	mg/L	0.0340	0.0287	16.9%	30%	----
		beryllium, leachable	7440-41-7	E446	0.00050	mg/L	<0.00050	<0.00050	0	Diff <2x LOR	----
		bismuth, leachable	7440-69-9	E446	0.00050	mg/L	<0.00050	<0.00050	0	Diff <2x LOR	----
		boron, leachable	7440-42-8	E446	0.010	mg/L	0.011	<0.010	0.0009	Diff <2x LOR	----
		cadmium, leachable	7440-43-9	E446	0.000050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR	----
		calcium, leachable	7440-70-2	E446	0.10	mg/L	2.83	2.43	15.3%	30%	----
		chromium, leachable	7440-47-3	E446	0.00050	mg/L	<0.00050	<0.00050	0	Diff <2x LOR	----
		cobalt, leachable	7440-48-4	E446	0.00010	mg/L	0.00016	0.00015	0.00001	Diff <2x LOR	----
		copper, leachable	7440-50-8	E446	0.0010	mg/L	<0.0010	<0.0010	0	Diff <2x LOR	----
		iron, leachable	7439-89-6	E446	0.030	mg/L	0.229	0.209	9.00%	40%	----
		lead, leachable	7439-92-1	E446	0.00010	mg/L	0.00046	0.00042	0.00005	Diff <2x LOR	----
		lithium, leachable	7439-93-2	E446	0.0050	mg/L	0.0054	<0.0050	0.0004	Diff <2x LOR	----
		magnesium, leachable	7439-95-4	E446	0.050	mg/L	0.906	0.842	7.31%	30%	----
		manganese, leachable	7439-96-5	E446	0.00050	mg/L	0.0139	0.0125	10.1%	30%	----
		molybdenum, leachable	7439-98-7	E446	0.00010	mg/L	0.00615	0.00530	14.8%	30%	----
		nickel, leachable	7440-02-0	E446	0.00050	mg/L	<0.00050	<0.00050	0	Diff <2x LOR	----
		phosphorus, leachable	7723-14-0	E446	0.30	mg/L	<0.30	<0.30	0	Diff <2x LOR	----
		potassium, leachable	7440-09-7	E446	0.050	mg/L	3.65	3.19	13.6%	30%	----
		selenium, leachable	7782-49-2	E446	0.00050	mg/L	<0.00050	<0.00050	0	Diff <2x LOR	----
		silicon, leachable	7440-21-3	E446	0.050	mg/L	3.49	3.02	14.3%	40%	----
		silver, leachable	7440-22-4	E446	0.000050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR	----
		sodium, leachable	7440-23-5	E446	0.050	mg/L	2.64	2.37	10.9%	30%	----
		strontium, leachable	7440-24-6	E446	0.00050	mg/L	0.0232	0.0195	17.6%	30%	----

Sub-Matrix: **Soil/Solid**

					Laboratory Duplicate (DUP) Report						
Laboratory sample ID	*Client sample ID*	*Analyte*	*CAS Number*	*Method*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD(%) or Difference*	*Duplicate Limits*	*Qualifier*
Leachable Metals (QC Lot: 105008) - continued											
WR2000964-001	Ditch A MS-1	sulfur, leachable	----	E446	0.50	mg/L	1.24	1.25	0.006	Diff <2x LOR	----
		thallium, leachable	7440-28-0	E446	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		tin, leachable	7440-31-5	E446	0.00050	mg/L	<0.00050	<0.00050	0	Diff <2x LOR	----
		titanium, leachable	7440-32-6	E446	0.010	mg/L	0.012	<0.010	0.002	Diff <2x LOR	----
		uranium, leachable	7440-61-1	E446	0.000010	mg/L	0.000251	0.000208	19.1%	30%	----
		vanadium, leachable	7440-62-2	E446	0.0010	mg/L	0.0014	0.0011	0.0003	Diff <2x LOR	----
		zinc, leachable	7440-66-6	E446	0.010	mg/L	<0.010	<0.010	0	Diff <2x LOR	----

Method Blank (MB) Report

A Method Blank is an analyte-free matrix that undergoes sample processing identical to that carried out for test samples. Method Blank results are used to monitor and control for potential contamination from the laboratory environment and reagents. For most tests, the DQO for Method Blanks is for the result to be < LOR.

Sub-Matrix: **Soil/Solid**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
Physical Tests (QCLot: 104681)						
moisture	----	E144	0.25	%	<0.25	----
Leachable Metals (QCLot: 105006)						
mercury, leachable	7439-97-6	E515	0.00005	mg/L	<0.000050	----
Leachable Metals (QCLot: 105008)						
aluminum, leachable	7429-90-5	E446	0.005	mg/L	<0.0050	----
antimony, leachable	7440-36-0	E446	0.0001	mg/L	<0.00010	----
arsenic, leachable	7440-38-2	E446	0.001	mg/L	<0.0010	----
barium, leachable	7440-39-3	E446	0.001	mg/L	<0.0010	----
beryllium, leachable	7440-41-7	E446	0.0005	mg/L	<0.00050	----
bismuth, leachable	7440-69-9	E446	0.0005	mg/L	<0.00050	----
boron, leachable	7440-42-8	E446	0.01	mg/L	<0.010	----
cadmium, leachable	7440-43-9	E446	0.00005	mg/L	<0.000050	----
calcium, leachable	7440-70-2	E446	0.1	mg/L	<0.10	----
chromium, leachable	7440-47-3	E446	0.0005	mg/L	<0.00050	----
cobalt, leachable	7440-48-4	E446	0.0001	mg/L	<0.00010	----
copper, leachable	7440-50-8	E446	0.001	mg/L	<0.0010	----
iron, leachable	7439-89-6	E446	0.03	mg/L	<0.030	----
lead, leachable	7439-92-1	E446	0.0001	mg/L	<0.00010	----
lithium, leachable	7439-93-2	E446	0.005	mg/L	<0.0050	----
magnesium, leachable	7439-95-4	E446	0.05	mg/L	<0.050	----
manganese, leachable	7439-96-5	E446	0.0005	mg/L	<0.00050	----
molybdenum, leachable	7439-98-7	E446	0.0001	mg/L	<0.00010	----
nickel, leachable	7440-02-0	E446	0.0005	mg/L	<0.00050	----
phosphorus, leachable	7723-14-0	E446	0.3	mg/L	<0.30	----
potassium, leachable	7440-09-7	E446	0.05	mg/L	<0.050	----
selenium, leachable	7782-49-2	E446	0.0005	mg/L	<0.00050	----
silicon, leachable	7440-21-3	E446	0.05	mg/L	<0.050	----
silver, leachable	7440-22-4	E446	0.00005	mg/L	<0.000050	----
sodium, leachable	7440-23-5	E446	0.05	mg/L	<0.050	----
strontium, leachable	7440-24-6	E446	0.0005	mg/L	<0.00050	----
sulfur, leachable	----	E446	0.5	mg/L	<0.50	----
thallium, leachable	7440-28-0	E446	0.0001	mg/L	<0.00010	----
tin, leachable	7440-31-5	E446	0.0005	mg/L	<0.00050	----

Sub-Matrix: **Soil/Solid**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
Leachable Metals (QCLot: 105008) - continued						
titanium, leachable	7440-32-6	E446	0.01	mg/L	<0.010	----
uranium, leachable	7440-61-1	E446	0.00001	mg/L	<0.000010	----
vanadium, leachable	7440-62-2	E446	0.001	mg/L	<0.0010	----
zinc, leachable	7440-66-6	E446	0.01	mg/L	<0.010	----

Laboratory Control Sample (LCS) Report

A Laboratory Control Sample (LCS) is an analyte-free matrix that has been fortified (spiked) with test analytes at known concentration and processed in an identical manner to test samples. LCS results are expressed as percent recovery, and are used to monitor and control test method accuracy and precision, independent of test sample matrix.

Sub-Matrix: **Soil/Solid**

					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
Physical Tests (QCLot: 104681)									
moisture	----	E144	0.25	%	50 %	101	90.0	110	----
Physical Tests (QCLot: 105007)									
pH	----	E116	----	pH units	7.04 pH units	99.3	95.0	105	----
Leachable Metals (QCLot: 105006)									
mercury, leachable	7439-97-6	E515	0.00005	mg/L	0.0005 mg/L	79.0	50.0	130	----
Leachable Metals (QCLot: 105008)									
aluminum, leachable	7429-90-5	E446	0.005	mg/L	0.2 mg/L	110	70.0	130	----
antimony, leachable	7440-36-0	E446	0.0001	mg/L	0.1 mg/L	102	70.0	130	----
arsenic, leachable	7440-38-2	E446	0.001	mg/L	0.1 mg/L	96.0	70.0	130	----
barium, leachable	7440-39-3	E446	0.001	mg/L	0.025 mg/L	105	70.0	130	----
beryllium, leachable	7440-41-7	E446	0.0005	mg/L	0.01 mg/L	112	70.0	130	----
bismuth, leachable	7440-69-9	E446	0.0005	mg/L	0.1 mg/L	119	70.0	130	----
boron, leachable	7440-42-8	E446	0.01	mg/L	0.1 mg/L	98.8	70.0	130	----
cadmium, leachable	7440-43-9	E446	0.00005	mg/L	0.01 mg/L	115	70.0	130	----
calcium, leachable	7440-70-2	E446	0.1	mg/L	5 mg/L	112	70.0	130	----
chromium, leachable	7440-47-3	E446	0.0005	mg/L	0.025 mg/L	112	70.0	130	----
cobalt, leachable	7440-48-4	E446	0.0001	mg/L	0.025 mg/L	111	70.0	130	----
copper, leachable	7440-50-8	E446	0.001	mg/L	0.025 mg/L	109	70.0	130	----
iron, leachable	7439-89-6	E446	0.03	mg/L	0.1 mg/L	105	70.0	130	----
lead, leachable	7439-92-1	E446	0.0001	mg/L	0.05 mg/L	118	70.0	130	----
lithium, leachable	7439-93-2	E446	0.005	mg/L	0.025 mg/L	111	70.0	130	----
magnesium, leachable	7439-95-4	E446	0.05	mg/L	5 mg/L	124	70.0	130	----
manganese, leachable	7439-96-5	E446	0.0005	mg/L	0.025 mg/L	111	70.0	130	----
molybdenum, leachable	7439-98-7	E446	0.0001	mg/L	0.025 mg/L	94.1	70.0	130	----
nickel, leachable	7440-02-0	E446	0.0005	mg/L	0.05 mg/L	110	70.0	130	----
phosphorus, leachable	7723-14-0	E446	0.3	mg/L	1 mg/L	106	70.0	130	----
potassium, leachable	7440-09-7	E446	0.05	mg/L	5 mg/L	124	70.0	130	----
selenium, leachable	7782-49-2	E446	0.0005	mg/L	0.1 mg/L	99.7	70.0	130	----
silicon, leachable	7440-21-3	E446	0.05	mg/L	1 mg/L	101	70.0	130	----
silver, leachable	7440-22-4	E446	0.00005	mg/L	0.01 mg/L	104	70.0	130	----
sodium, leachable	7440-23-5	E446	0.05	mg/L	5 mg/L	123	70.0	130	----
strontium, leachable	7440-24-6	E446	0.0005	mg/L	0.025 mg/L	120	70.0	130	----
sulfur, leachable	----	E446	0.5	mg/L	5 mg/L	102	70.0	130	----

Sub-Matrix: **Soil/Solid**

					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
Leachable Metals (QCLot: 105008) - continued									
thallium, leachable	7440-28-0	E446	0.0001	mg/L	0.11 mg/L	117	70.0	130	----
tin, leachable	7440-31-5	E446	0.0005	mg/L	0.05 mg/L	93.4	70.0	130	----
titanium, leachable	7440-32-6	E446	0.01	mg/L	0.025 mg/L	94.6	70.0	130	----
uranium, leachable	7440-61-1	E446	0.00001	mg/L	0.0005 mg/L	115	70.0	130	----
vanadium, leachable	7440-62-2	E446	0.001	mg/L	0.05 mg/L	112	70.0	130	----
zinc, leachable	7440-66-6	E446	0.01	mg/L	0.05 mg/L	110	70.0	130	----

Matrix Spike (MS) Report

A Matrix Spike (MS) is a randomly selected intra-laboratory replicate sample that has been fortified (spiked) with test analytes at known concentration, and processed in an identical manner to test samples. Matrix Spikes provide information regarding analyte recovery and potential matrix effects. MS DQO exceedances due to sample matrix may sometimes be unavoidable; in such cases, test results for the associated sample (or similar samples) may be subject to bias. ND – Recovery not determined, background level >= 1x spike level.

Sub-Matrix: **Soil/Solid**

					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
Leachable Metals (QCLot: 105006)										
WR2000964-002	Ditch A MS-1-01	mercury, leachable	7439-97-6	E515	0.000097 mg/L	0.0001 mg/L	97.3	70.0	130	----
Leachable Metals (QCLot: 105008)										
WR2000964-002	Ditch A MS-1-01	aluminum, leachable	7429-90-5	E446	ND mg/L	0.2 mg/L	ND	70.0	130	----
		antimony, leachable	7440-36-0	E446	0.0197 mg/L	0.02 mg/L	98.5	70.0	130	----
		arsenic, leachable	7440-38-2	E446	ND mg/L	0.02 mg/L	ND	70.0	130	----
		barium, leachable	7440-39-3	E446	ND mg/L	0.02 mg/L	ND	70.0	130	----
		beryllium, leachable	7440-41-7	E446	0.0420 mg/L	0.04 mg/L	105	70.0	130	----
		bismuth, leachable	7440-69-9	E446	0.00979 mg/L	0.01 mg/L	97.9	70.0	130	----
		boron, leachable	7440-42-8	E446	0.100 mg/L	0.1 mg/L	100	70.0	130	----
		cadmium, leachable	7440-43-9	E446	0.00408 mg/L	0.004 mg/L	102	70.0	130	----
		calcium, leachable	7440-70-2	E446	4.05 mg/L	4 mg/L	101	70.0	130	----
		chromium, leachable	7440-47-3	E446	0.0399 mg/L	0.04 mg/L	99.7	70.0	130	----
		cobalt, leachable	7440-48-4	E446	0.0200 mg/L	0.02 mg/L	100	70.0	130	----
		copper, leachable	7440-50-8	E446	0.0199 mg/L	0.02 mg/L	99.6	70.0	130	----
		iron, leachable	7439-89-6	E446	1.96 mg/L	2 mg/L	98.0	70.0	130	----
		lead, leachable	7439-92-1	E446	0.0204 mg/L	0.02 mg/L	102	70.0	130	----
		lithium, leachable	7439-93-2	E446	0.115 mg/L	0.1 mg/L	115	70.0	130	----
		magnesium, leachable	7439-95-4	E446	0.992 mg/L	1 mg/L	99.2	70.0	130	----
		manganese, leachable	7439-96-5	E446	0.0197 mg/L	0.02 mg/L	98.6	70.0	130	----
		molybdenum, leachable	7439-98-7	E446	0.0192 mg/L	0.02 mg/L	96.1	70.0	130	----
		nickel, leachable	7440-02-0	E446	0.0398 mg/L	0.04 mg/L	99.4	70.0	130	----
		phosphorus, leachable	7723-14-0	E446	10.3 mg/L	10 mg/L	103	70.0	130	----
		potassium, leachable	7440-09-7	E446	4.67 mg/L	4 mg/L	117	70.0	130	----
		selenium, leachable	7782-49-2	E446	0.0412 mg/L	0.04 mg/L	103	70.0	130	----
		silicon, leachable	7440-21-3	E446	9.98 mg/L	10 mg/L	99.8	70.0	130	----
		silver, leachable	7440-22-4	E446	0.00379 mg/L	0.004 mg/L	94.7	70.0	130	----
		sodium, leachable	7440-23-5	E446	ND mg/L	2 mg/L	ND	70.0	130	----
		strontium, leachable	7440-24-6	E446	0.0215 mg/L	0.02 mg/L	108	70.0	130	----
		sulfur, leachable	----	E446	21.6 mg/L	20 mg/L	108	70.0	130	----
		thallium, leachable	7440-28-0	E446	0.00415 mg/L	0.004 mg/L	104	70.0	130	----
		tin, leachable	7440-31-5	E446	0.0194 mg/L	0.02 mg/L	97.3	70.0	130	----

Sub-Matrix: **Soil/Solid**

					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
Leachable Metals (QCLot: 105008) - continued										
WR2000964-002	Ditch A MS-1-01	titanium, leachable	7440-32-6	E446	0.040 mg/L	0.04 mg/L	101	70.0	130	----
		uranium, leachable	7440-61-1	E446	0.00423 mg/L	0.004 mg/L	106	70.0	130	----
		vanadium, leachable	7440-62-2	E446	0.0998 mg/L	0.1 mg/L	99.8	70.0	130	----
		zinc, leachable	7440-66-6	E446	0.395 mg/L	0.4 mg/L	98.7	70.0	130	----

Chain of Custody (COC) / Analytical Request Form

ALS Environmental
www.alsglobal.com

Canada Toll Free: 1 800 668 9878

Affix ALS barcode label here
(lab use only)

COC Number: 20200925a

Page 1 of 1

Report To	Contact and company name below will appear on the final report
Company:	Victoria Gold (Yukon) Corp.
Contact:	Helena Kuikka
Phone:	604-696-6611
	Company address below will appear on the final report
Street:	Suite 1000 - 1050 W. Pender St.
City/Province:	Vnacouver, B.C.
Postal Code:	V6E 3S7
Invoice To	Same as Report To ☐ YES ☑ NO
	Copy of Invoice with Report ☑ YES ☐ NO
Company:	
Contact:	

Report Format / Distribution

Select Report Format: ☑ PDF ☑ EXCEL ☐ EDD (DIGITAL)
Quality Control (QC) Report with Report ☐ YES ☐ NO
☐ Compare Results to Criteria on Report - provide details below if box checked
Select Distribution: ☑ EMAIL ☐ MAIL ☐ FAX

Email 1	hkuikka@vitgoldcorp.com , arodriguez@vitgoldcorp
Email 2	rtuohey@vitgoldcorp.com
Email 3	bbowden@vitgoldcorp.com , kbabin@vitgoldcorp.c

Invoice Distribution

Select Invoice Distribution: ☐ EMAIL ☐ MAIL ☐ FAX
Email 1 or Fax
Email 2

Select Service Level Below - Contact your AM to confirm all E&P TATs (surcharges may apply)

Regular [R] ☑ Standard TAT if received by 3 pm - business days - no surcharges apply

PRIORITY (Business Days)
- 4 day [P4-20%] ☐
- 3 day [P3-25%] ☐
- 2 day [P2-50%] ☑

EMERGENCY
- 1 Business day [E1 - 100%] ☐
- Same Day, Weekend or Statutory holiday [E2 -200% (Laboratory opening fees may apply)] ☐

Date and Time Required for all E&P TATs:

For tests that can not be performed according to the service level selected,

Project Information

ALS Account # / Quote #:	Q67596
Job #:	Construction Material
PO / AFE:	14723
LSD:	

Oil and Gas Required Fields (client use)

AFE/Cost Center:	PO#
Major/Minor Code:	Routing Code:
Requisitioner:	
Location:	

ALS Lab Work Order # (lab use only):

ALS Contact: Hilary Woods **Sampler:** KT,BB,FL

Analysis Requ

Indicate Filtered (F), Preserved (P) or Filtered and Pres

ALS Sample # (lab use only)	Sample Identification and/or Coordinates (This description will appear on the report)	Date (dd-mmm-yy)	Time (hh:mm)	Sample Type	EC and pH by PCT (SHAKEFLASK)	Aqua Regia ICPMS	Low Level Metals by CCMS & CVAFS (SHAK	Moisture content	Shakeflask - 3:1	Sample Handing and Disposal Fee	Special Request ALS Minerals Vancouver	Modified ABA	Shake Flask Extraction 3:1 water to solid ratio	SAMPLES	Sample is I	NUMBER C
	Ditch A MS-1	13-Sep-20		Soil	R	R	R	R	R	R	R	R	R			1
	Ditch A MS-1-01	13-Sep-20		Soil	R	R	R	R	R	R	R	R	R			1
	Ditch A MS-2	13-Sep-20		Soil	R	R	R	R	R	R	R	R	R			1
	Ditch A MS-3	13-Sep-20		Soil	R	R	R	R	R	R	R	R	R			1
	Ditch A MS-4	13-Sep-20		Soil	R	R	R	R	R	R	R	R	R			1

Environmental Division
Whitehorse
Work Order Reference
WR2000964

Telephone : +1 867 668 6689

Drinking Water (DW) Samples[1] (client use)

Are samples taken from a Regulated DW System?
☐ YES ☑ NO

Are samples for human consumption/ use?
☐ YES ☑ NO

Special Instructions / Specify Criteria to add on report by clicking on the drop-down list below (electronic COC only)

SAMPLE CONDITION AS RECEIVED (lab use only)

Frozen ☐ SIF Observations Yes ☐ No ☐
Ice Packs ☐ Ice Cubes ☐ Custody seal intact Yes ☐ No ☐
Cooling Initiated ☐

INITIAL COOLER TEMPERATURES °C				FINAL COOLER TEMPERATURES °C			
12'							

SHIPMENT RELEASE (client use)			INITIAL SHIPMENT RECEPTION (lab use only)			FINAL SHIPMENT RECEPTION (lab use only)		
Released by:	Date:	Time:	Received by:	Date:	Time:	Received by:	Date:	Time:
K.Babin	sep-25-20	12:00		Sept 28/20	09:57			

REFER TO BACK PAGE FOR ALS LOCATIONS AND SAMPLING INFORMATION WHITE - LABORATORY COPY YELLOW - CLIENT COPY SEPT 2017 FRONT

Failure to complete all portions of this form may delay analysis. Please fill in this form LEGIBLY. By the use of this form the user acknowledges and agrees with the Terms and Conditions as specified on the back page of the white - report copy.

1. If any water samples are taken from a Regulated Drinking Water (DW) System, please submit using an Authorized DW COC form.

APPENDIX C

DAILY REPORTS AND MATERIAL TRACKING

Time			Equipment		Haul Information					Liner Information		
Year	Period (Wk End)	Date	Load Unit	Load m3	Material	From (General Area)	To (General Area)	# Loads	Volume (ECM)	Liner (M)	Liner Cum. Meters	Approximate Liner chainage off drawing
2020	19-Sep-20	12-Sep-20	730	14	Pit Run	Switchback 1	Ditch A road repairs	34	476	0		
2020	19-Sep-20	13-Sep-20	730	14	Pit Run	Switchback 1	Ditch A road repairs	28	392	0		
2020	19-Sep-20	14-Sep-20	730	14	Pit Run	Switchback 1	Ditch A road repairs	36	504	0		
2020	19-Sep-20	15-Sep-20	730	14	Rip Rap 25kg	0+550 to 0+400	Switchback 1	12	168	12	12	0+550 to 0+540
2020	19-Sep-20	16-Sep-20	730	14	Rip Rap 25kg	0+400 to 0+325	Switchback 1	18	252	50	62	0+540 to 0+450
2020	19-Sep-20	16-Sep-20	730	14	Screened 25kg	Switchback 1	Ditch A @ 0+550	2	28			
2020	19-Sep-20	17-Sep-20	730	14	Rip Rap 25kg	0+325 to 0+200	Switchback 1	18.572	260.008	75	137	0+450 to 0+350
2020	19-Sep-20	17-Sep-20	730	14	Waste	0+325 to 0+200	Waste Dump	4	56			
2020	19-Sep-20	17-Sep-20	730	14	Screened 25kg	Switchback 1	Ditch A	3	42			
2020	19-Sep-20	18-Sep-20	730	14	Rip Rap 25kg	0+200 to 0+125	Switchback 1	9.64	134.96	125	262	0+350 to 0+450
2020	19-Sep-20	18-Sep-20	730	14	Waste	0+200 to 0+125	Waste Dump	9.64	134.96			
2020	19-Sep-20	18-Sep-20	730	14	Screened 25kg	Switchback 1	Ditch A	2	28			
2020	19-Sep-20	19-Sep-20	730	14	Waste	0+160 to 0+100	Waste Dump	18.3	256.2	100	362	0+350 to 0+275
2020	19-Sep-20	19-Sep-20	730	14	Rip Rap 25kg	0+160 to 0+100	Switchback 1	4.57	63.98			
2020	19-Sep-20	19-Sep-20	730	14	Screened 25kg	Switchback 1	Ditch A	3	42			
2020	26-Sep-20	20-Sep-20	730	14	Waste	0+100 to 0+020	Waste Dump	21	294	75	437	0+275 to 0+175
2020	26-Sep-20	20-Sep-20	730	14	Rip Rap 25kg	0+100 to 0+020	Switchback 1	4	56			
2020	26-Sep-20	20-Sep-20	730	14	Screened 25kg	Switchback 1	Ditch A	1	14			
2020	26-Sep-20	21-Sep-20	730	14	Waste	0+020 to 0-050	Waste Dump	24.29	340.06	75	512	0+175 to 0+100
2020	26-Sep-20	21-Sep-20	730	14	Screened 25kg	Switchback 1	Ditch A	2	28			
2020	26-Sep-20	22-Sep-20	730	14	Screened 25kg	Switchback 1	Ditch A	7.86	110.04	50	562	0+100 to 0+025
2020	26-Sep-20	22-Sep-20	730	14	Waste	0-050 to 0-100	Waste Dump	54	756			
2020	26-Sep-20	22-Sep-20	730	14	Rip Rap 25kg	0-050 to 0-100	Switchback 1	10	140			
2020	26-Sep-20	23-Sep-20	730	14	Waste	0+800 t0 0+700	AN Waste Dump	7	98	126	688	0+025 to 0-075
2020	26-Sep-20	23-Sep-20	730	14	Waste	0+800 t0 0+700	Eagle Waste Dump	17	238			
2020	26-Sep-20	23-Sep-20	730	14	Rip Rap 10kg	0+800 to 0+700	Switchback 1	2	28			
2020	26-Sep-20	23-Sep-20	730	14	Waste	0-100 to 0-200	AN Waste Dump	28	392			
2020	26-Sep-20	23-Sep-20	730	14	Pit Run	Switchback 1	0-100 to 0-200	2	28			
2020	26-Sep-20	23-Sep-20	730	14	Rip Rap 10kg	Switchback 1	0-100 to 0-200	10	140			
2020	26-Sep-20	24-Sep-20	730	14	Waste	0-190 to 0-220	AN Waste Dump	11	154	174	862	0-075 to 0-125
2020	26-Sep-20	24-Sep-20	730	14	Waste	0+700 to 0+600	Eagle Waste Dump	48	672			
2020	26-Sep-20	24-Sep-20	730	14	Rip Rap 10kg	Switchback 1	Control Pond	7	98			
2020	26-Jan-00	24-Sep-20	730	14	Rip Rap 10kg	Switchback 1	0-200 to 0-220	10	140			
2020	26-Sep-20	25-Sep-20	730	14	Pit Run	Switchback 1	Control Pond	64	896	48	910	0-125 to 0-195
2020	26-Sep-20	25-Sep-20	730	14	Pit Run	Switchback 1	0-200	2	28			
2020	26-Sep-20	25-Sep-20	730	12	Waste	1+400 to 1+300	Eagle Waste Dump	28	336			
2020	26-Sep-20	25-Sep-20	740	14	Waste	1+400 to 1+300	Eagle Waste Dump	12	168			
2020	26-Sep-20	26-Sep-20	730	14	Pit Run	Switchback 1	Control Pond	47	658	126	1036	0-195 to 0-220
2020	26-Sep-20	26-Sep-20	730	14	Waste	1+200	Eagle Waste Dump	21	294			
2020	26-Sep-20	26-Sep-20	730	14	Waste	1+432	Eagle Waste Dump	28	392			
2020	3-Oct-20	27-Sep-20	730	14	Waste	1+200 to 1+400	Eagle Waste Dump	23	322	100	1136	0+900 to 0+800
2020	3-Oct-20	27-Sep-20	730	14	Waste	0+900 to 0+800	Eagle Waste Dump	6	84			
2020	3-Oct-20	27-Sep-20	730	14	Waste	1+750 to 0+650	Eagle Waste Dump	18	252			
2020	3-Oct-20	27-Sep-20	730	14	Pit Run	Switchback 1	1+200 to 1+400	9	126			
2020	3-Oct-20	27-Sep-20	730	14	Pit Run	Switchback 1	0+900 to 0+800	10	140			
2020	3-Oct-20	27-Sep-20	730	14	Rip Rap	1+750 to 0+650	Switchback 1	4	56			
2020	3-Oct-20	28-Sep-20	730	14	rip rap	Switchback 1	1+000	9	126	70	1206	0+800 to 0+730
2020	3-Oct-20	28-Sep-20	730	14	waste	0+650	Eagle Waste Dump	6	84			
2020	3-Oct-20	28-Sep-20	730	14	Waste	0+850 to 0+750	Eagle Waste Dump	8	112			
2020	3-Oct-20	28-Sep-20	730	14	Pit Run	Switchback 1	0+850 to 0+750	11	154			
2020	3-Oct-20	29-Sep-20	730	14	rip rap	secondary	0+375 to 0+125	21	294	105	1311	0+630 to 0+525
2020	3-Oct-20	29-Sep-20	730	14	Waste	0+525 to 0+470	Eagle Waste Dump	3	42			
2020	3-Oct-20	29-Sep-20	730	14	pit run	Switchback 1	0+525 to 0+470	3	42			
2020	3-Oct-20	30-Sep-20	730	14	rip rap	secondary	0+125 to 0-45	20	280	40	1351	0+525 to 0+485
2020	3-Oct-20	30-Sep-20	730	14	rip rap	eagle	0+500 to 0+485	4	56			
2020	3-Oct-20	30-Sep-20	730	14	Waste	0+525 to 0+485	Eagle Waste Dump	5	70			
2020	3-Oct-20	30-Sep-20	730	14	Pit Run	Switchback 1	0+525 to 0+485	5	70			
2020	3-Oct-20	1-Oct-20	730	14	Pit Run	Switchback 1	1+000 TO 1+ 170	13	182	105	1456	1+000 to 1+105
2020	3-Oct-20	1-Oct-20	730	14	rip rap	eagle	0+500 to 0+570	20	280			
2020	3-Oct-20	2-Oct-20	730	14	rip rap	secondary	0-45 to 0-155	21	294	131	1587	1+105 to 1+236
2020	3-Oct-20	2-Oct-20	730	14	Pit Run	Switchback 1	0+170 to +300	13	182			
2020	3-Oct-20	3-Oct-20	730	14	rip rap	secondary	0-155 to 0-200	18	252	138	1725	1+236 to 1+374
2020	3-Oct-20	3-Oct-20	730	14	rip rap	secondary	0+350 to 0+250	6	84			
2020	3-Oct-20	3-Oct-20	730	14	Pit Run	Switchback 1	1+200 to 1+000	20	280			
2020	10-Oct-20	4-Oct-20	730	14	Pit Run	Switchback 1	1+000 to 1+850	5	70	163	1888	1+374 to 1+537
2020	10-Oct-20	4-Oct-20	730	14	rip rap	Switchback 1	0+250 to 0+125	16	224			
2020	10-Oct-20	4-Oct-20	730	14	rip rap	Switchback 1	0-200 to 0-175	6	84			
2020	10-Oct-20	5-Oct-20	730	14	Pit Run	Switchback 1	1+537 to 1+557	5	70	20	1908	1+537 to 1+557
2020	10-Oct-20	5-Oct-20	730	14	rip rap	eagle	0+750 to 0+760	14	196			
2020	10-Oct-20	5-Oct-20	730	14	rip rap	secondary	0+125 to 0 +35	16	224			
2020	10-Oct-20	5-Oct-20	730	14	rip rap	secondary	0-175 to 0-110	5	70			
2020	10-Oct-20	6-Oct-20	730	14	rip rap	secondary	0+450 to 0+500	8	112			
2020	10-Oct-20	6-Oct-20	730	14	rip rap	secondary	0-110 to 0-10	18	252			
2020	10-Oct-20	7-Oct-20	730	14	rip rap	Switchback 1	0+500 to 0+595	20	280			
2020	10-Oct-20	7-Oct-20	730	14	rip rap	secondary	0-10 to 0+100	25	350			
2020	10-Oct-20	8-Oct-20	730	14	rip rap	secondary	1+000 to 1+120	28	392			
2020	10-Oct-20	8-Oct-20	730	14	Pit Run	Switchback 1	secondary pit	4	56			
2020	10-Oct-20	9-Oct-20	730	14	rip rap	secondary	1+120 to 1+220	27	378			
2020	10-Oct-20	9-Oct-20	730	14	rip	secondary	eagle stockpile	5	70			
2020	10-Oct-20	9-Oct-20	730	14	Pit Run	Switchback 1	secondary pit	8	112			
2020	10-Oct-20	10-Oct-20	730	14	rip rap	secondary	1+220 to 1+280	18	252			
2020	10-Oct-20	10-Oct-20	730	14	rip rap	secondary	eagle stockpile	5	70			
2020	17-Oct-20	11-Oct-20	730	14	rip rap	secondary	1+000 to 0+900	25	350			
2020	17-Oct-20	11-Oct-20	730	14	rip rap	secondary	eagle stockpile	5	70			
2020	17-Oct-20	11-Oct-20	730	14	waste	0+800 to 0+785	Eagle Waste Dump	12	168			
2020	17-Oct-20	12-Oct-20	730	14	rip rap	eagle	washout below 90day	33	462			
2020	17-Oct-20	12-Oct-20	730	14	Waste	0+800 to 0+785	eagle	22	308			
2020	17-Oct-20	12-Oct-20	730	14	Pit Run	Switchback 1	0+800 to 0+785	36	504			
2020	17-Oct-20	13-Oct-20	730	14	rip rap	secondary	eagle stockpile	31	434			
2020	17-Oct-20	13-Oct-20	730	14	rip rap	Switchback 1	0+500 to 0+585	27	378			
2020	17-Oct-20	14-Oct-20	730	14	pit run	dublin	east peimeter berm	82	1148			
2020	17-Oct-20	15-Oct-20	730	14	Pit Run	dublin	east peimeter berm	46	644			
2020	17-Oct-20	17-Oct-20	730	14	20mm	phase 3	orica pad	7	98			
2020	17-Oct-20	17-Oct-20	730	14	rip rap	Switchback 1	1+630 to 1+615	3	42			
2020	24-Oct-20	18-Oct-20	730	14	rip rap	Switchback 1	1+615 to 1+535	5	70			
2020	24-Oct-20	18-Oct-20	730	14	rip rap	eagle	1+615 to 1+535	11	154			
2020	24-Oct-20	19-Oct-20	730	14	rip rap	eagle	ditch A	10	140			
2020	24-Oct-20	19-Oct-20	730	14	rip rap	Switchback 1	ditch A	7	98			
2020	24-Oct-20	19-Oct-20	730	14	waste	incinerator	Inert waste	1	14			
2020	24-Oct-20	19-Oct-20	730	14	Pit Run	Eagle	east peimeter berm	53	742			
2020	24-Oct-20	20-Oct-20	730	14	rip rap	Switchback 1	ditch A	13	182			
2020	24-Oct-20	20-Oct-20	730	14	waste	incinerator	Inert waste	1	14			
2020	24-Oct-20	20-Oct-20	730	14	Pit Run	eagle	east peimeter berm	41	574			
2020	24-Oct-20	21-Oct-20	730	14	rip rap	eagle	ditch A	7	98			
2020	24-Oct-20	21-Oct-20	730	14	rip rap	Switchback 1	ditch A	16	224			
2020	24-Oct-20	21-Oct-20	730	14	Pit Run	Eagle	east peimeter berm	52	728			
2020	24-Oct-20	22-Oct-20	730	14	Pit Run	Eagle	east peimeter berm	7	98			
2020	24-Oct-20	22-Oct-20	730	14	rip rap	Switchback 1	ditch A	3	42			
2020	24-Oct-20	23-Oct-20	730	14	Pit Run	eagle	east peimeter berm	23	322			

Ewing Transport Ltd
PO Box 61, Mayo, Yukon Territory Y0B 1M0
867-334-6457

Daily Report

Private

Label	Ditch “A” Day 1
	Eagle Gold
	Sunday, September 13th 2020, 1:23 AM (GMT +00:00)

Daily Report

Job:	*Reclaim Ditch A*
Location:	*1st switch back on crusher access*
Project Name:	*Ditch A*
Description of Work:	*Equipment Mob to site* *Road Resurfacing and Pads* *Grizzly setup* *Prep borrow pit*



Widening road below drainage Rock



Delivery and setup of grizzly



Borrow Pit



Borrow Pit



Road Resurfacing

Contract Ref. NO.: e.g. (WO, PO, CWP)	*Waiting on P.O.*
Weather(AM):	*-1c*
Weather(PM):	*5c*
Date:	*September 12, 2020*

Reported By:

Russell Noksana

Onsite Rep: Bill, Lea, Matt, Mike

Daily Report must be Supplied to Vic Gold by 9:00am

SAFETY TOPICS FOR YESTERDAY

Topics:

Complacency, mind on tasks
Risk assessment throughout the day

Incident(s)

None

Total Incidents	*0*

QUALITY TOPICS FOR YESTERDAY

Topics:

Waiting on response for access to screen rock at secondary below Nuway crushing

EXTRAS

ACTIVITIES COMPLETED YESTERDAY

Activities:

None

ACTIVITIES COMPLETED TODAY

Activities:

Mobilization of Equipment
Road Resurfacing and lay downs
Grizzly pickup in Dawson with low bed

EXTRA WORK/CONTRACT ISSUES AND/OR ENGINEERING IMPACTS (RFI'S0 AND/OR DELAYS

Info:

Approved to pickup proper size grizzly in Dawson for the project duration

ENVIRONMENTAL CONDITIONS FOR YESTERDAY

Conditions:

None

If conditions affected work progress, provide the number of hours and a brief description:

Mobilization-3 hrs

VISITORS ON SITE

CONTRACTORS EQUIPMENT AND HOURS UTILIZED FOR YESTERDAY

Contractors/Sub Name:

Ewing

Equipment:

Excavator **336EL UNIT 024**

Hrs Used:

10

CONTRACTORS EQUIPMENT AND HOURS UTILIZED FOR YESTERDAY

Contractors/Sub Name:

Ewing

Equipment:

Dozer **D7R-XR UNIT 031 (NEW)**

Hrs Used:

11

CONTRACTORS EQUIPMENT AND HOURS UTILIZED FOR YESTERDAY

Contractors/Sub Name:

Ewing

Equipment:

Rock Truck **730 UNIT 017**

Hrs Used:

8.5

CONTRACTORS EQUIPMENT AND HOURS UTILIZED FOR YESTERDAY

Contractors/Sub Name:

Ewing

Equipment:

Tractor **W900 ET024 (Blue)**

Hrs Used:

7.5

CONTRACTORS EQUIPMENT AND HOURS UTILIZED FOR YESTERDAY

Contractors/Sub Name:

Ewing

Equipment:

Tandem **W900 ET021 (Grey)**

Hrs Used:

4.5

CONTRACTORS LABOUR AND HOURS UTILIZED FOR YESTERDAY

Russell Noksana, *Supervisor*
September 13th 2020, 1:23 AM (GMT +00:00)

64.0311858, -135.8486214



Ewing Transport Ltd
PO Box 61, Mayo, Yukon Territory Y0B 1M0
867-334-6457

Daily Report

Private

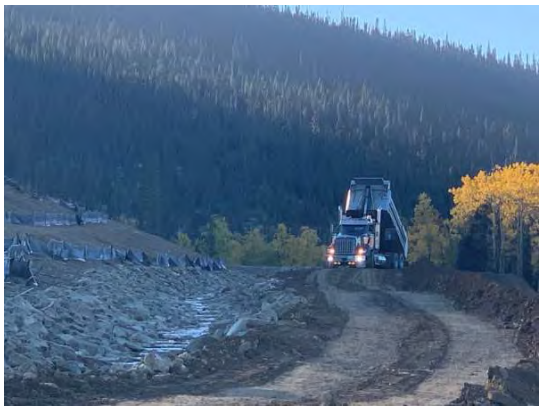
Label	Ditch A Day 2
	Eagle Gold
	Sunday, September 13th 2020, 11:30 PM (GMT +00:00)

Daily Report

Job:	*Reclaim Ditch A*
Location:	*First switch back crusher access*
Project Name:	*Ditch A*
Description of Work:	*Road resurfacing* *Lay down widening*



Hauling from borrow pit



Lay down pad



Haul truck

Contract Ref. NO.: e.g. (WO, PO, CWP)	*17486*
Weather(AM):	*-3c frost*
Weather(PM):	*2c*
Date:	*September 13, 2020*

Reported By:

> **Russell Noksana**

Onsite Rep: Bill, Lea, Matt, Mike

Daily Report must be Supplied to Vic Gold by 9:00am

SAFETY TOPICS FOR YESTERDAY

Topics:

Frost- proper access and egress on equipment
Traffic on access road, obey posted signs and be aware of light vehicles

Incident(s)

> **None**

Total Incidents	*0*

QUALITY TOPICS FOR YESTERDAY

Topics:

None

EXTRAS

ACTIVITIES COMPLETED YESTERDAY

Activities:

Mobilization
Started resurfacing roads
Pickup grizzlys and setup

ACTIVITIES COMPLETED TODAY

Activities:

Continue to haul materials for road resurfacing
Delivery of 2nd grizzly from Dawson

EXTRA WORK/CONTRACT ISSUES AND/OR ENGINEERING IMPACTS (RFI'S0 AND/OR DELAYS

Info:

No comments



Water running on access road at rock drain

ENVIRONMENTAL CONDITIONS FOR YESTERDAY

Conditions:

Waiting on response for rip rap at secondary below Nuway crushing

If conditions affected work progress, provide the number of hours and a brief description:

None

VISITORS ON SITE

Visitor:

Under Hill

# of Visits

1

CONTRACTORS EQUIPMENT AND HOURS UTILIZED FOR YESTERDAY

Contractors/Sub Name:

Ewing

Equipment:

Excavator **336EL UNIT 024**

Hrs Used:

12

CONTRACTORS EQUIPMENT AND HOURS UTILIZED FOR YESTERDAY

Contractors/Sub Name:

Ewing

Equipment:

Tandem **W900 ET021 (Grey)**

Hrs Used:

12

CONTRACTORS EQUIPMENT AND HOURS UTILIZED FOR YESTERDAY

Contractors/Sub Name:

Ewing

Equipment:

Dozer **D7R-XR UNIT 031 (NEW)**

Hrs Used:

12

CONTRACTORS EQUIPMENT AND HOURS UTILIZED FOR YESTERDAY

Contractors/Sub Name:

Ewing

Equipment:

Rock Truck **730 UNIT 017**

Hrs Used:

5

CONTRACTORS LABOUR AND HOURS UTILIZED FOR YESTERDAY

Contractors/Sub Name:

Ewing

# of Labourers

1

Total Hrs Worked:

6

Russell Noksana, *Supervisor*
September 13th 2020, 11:30 PM (GMT +00:00)

64.0240167, -135.8404858



Ewing Transport Ltd
PO Box 61, Mayo, Yukon Territory Y0B 1M0
867-334-6457

Daily Report

Private

Label	Ditch A -day 3
	Eagle Gold
	Tuesday, September 15th 2020, 1:47 AM (GMT +00:00)

Daily Report

Job:	*Reclaim Ditch A*
Location:	*0+400 to 0+300*
Project Name:	*Ditch A*
Description of Work:	*Road resurfacing and berms from 0+450 to 0+200* *Haul liner to site* *Test 2" pump and discharge system*



0+400 area



Rick truck at 0+450

Contract Ref. NO.: e.g. (WO, PO, CWP)	*17486*
Weather(AM):	*-2c clear*
Weather(PM):	*6c*
Date:	*September 14, 2020*

Reported By:

Russell Noksana

Onsite Rep: Bill, Lea, Matt, Mike

Daily Report must be Supplied to Vic Gold by 9:00am

SAFETY TOPICS FOR YESTERDAY

Topics:

Obey posted signs, speed limits and heavy traffic on crusher access

Incident(s)

Total Incidents

0

QUALITY TOPICS FOR YESTERDAY

Topics:

None

EXTRAS

ACTIVITIES COMPLETED YESTERDAY

Activities:

Resurfaced roads from 0+550 to 0+400

ACTIVITIES COMPLETED TODAY

Activities:

Road resurfacing and berms from 0+450 to 0+200

EXTRA WORK/CONTRACT ISSUES AND/OR ENGINEERING IMPACTS (RFI'S0 AND/OR DELAYS

Info:

None

ENVIRONMENTAL CONDITIONS FOR YESTERDAY

Conditions:

None

If conditions affected work progress, provide the number of hours and a brief description:

None

VISITORS ON SITE

Visitor:

# of Visits

0

CONTRACTORS EQUIPMENT AND HOURS UTILIZED FOR YESTERDAY

Contractors/Sub Name:

> **Ewing**

Equipment:

> **Dozer** > **D7R-XR UNIT 031 (NEW)**

Hrs Used:

12

CONTRACTORS EQUIPMENT AND HOURS UTILIZED FOR YESTERDAY

Contractors/Sub Name:

Ewing

Equipment:

Rock Truck **730 UNIT 017**

Hrs Used:

12

CONTRACTORS EQUIPMENT AND HOURS UTILIZED FOR YESTERDAY

Contractors/Sub Name:

Ewing

Equipment:

Excavator **336EL UNIT 024**

Hrs Used:

12

CONTRACTORS EQUIPMENT AND HOURS UTILIZED FOR YESTERDAY

Contractors/Sub Name:

Ewing

Equipment:

Packer **CS54B UNIT 010**

Hrs Used:

1

CONTRACTORS LABOUR AND HOURS UTILIZED FOR YESTERDAY

Russell Noksana, *Supervisor*
September 15th 2020, 1:47 AM (GMT +00:00)

64.0311526, -135.8486212



Ewing Transport Ltd
PO Box 61, Mayo, Yukon Territory Y0B 1M0
867-334-6457

Daily Report

Private

Label	Ditch A
	Eagle Gold
	Wednesday, September 16th 2020, 1:43 AM (GMT +00:00)

Daily Report

Job:	*Reclaim Ditch A*
Location:	*0+550*
Project Name:	*Ditch A*
Description of Work:	*Excavation and removal of existing Rip Rap* *Road resurfacing* *Install liner*
Contract Ref. NO.: e.g. (WO, PO, CWP)	*17486*
Weather(AM):	*3c clear*
Weather(PM):	*6c few clouds*
Date:	*September 15, 2020*

Reported By:

Russell Noksana

Onsite Rep: Bill, Lea, Matt, Mike

Daily Report must be Supplied to Vic Gold by 9:00am

SAFETY TOPICS FOR YESTERDAY

Topics:

Communication
Hand signals
Congestion

Incident(s)

None

Total Incidents	*0*

QUALITY TOPICS FOR YESTERDAY

Topics:

None

EXTRAS

Type:

Design(hrs)

Hrs:

11

Description:

Removal of rip rap
Removal of waste materials
Placement of geotextile and liner
Placement of rip rap

ACTIVITIES COMPLETED YESTERDAY

Activities:

Road resurfacing

ACTIVITIES COMPLETED TODAY

Activities:

Removal of rip rap and waste from 0+550 to 0+400
Install geotextile and liner



Removal of RIp Rap

ACTIVITIES COMPLETED TODAY

Activities:

No comments



Rock screening

ACTIVITIES COMPLETED TODAY

Activities:

No comments



Water diversion

ACTIVITIES COMPLETED TODAY

Activities:

No comments



Slope cleanup

ACTIVITIES COMPLETED TODAY

Activities:

No comments



Placing Rip Rap

ACTIVITIES COMPLETED TODAY

Activities:

No comments



Installing liner

ACTIVITIES COMPLETED TODAY

Activities:

No comments



Removing Rip Rap and sloping

EXTRA WORK/CONTRACT ISSUES AND/OR ENGINEERING IMPACTS (RFI'S0 AND/OR DELAYS

Info:

None

MATERIAL SOURCE AND DOCUMENTATION OF RIP/RAP SIZE USED PER CHAINAGE SECTION OF DITCH A

Chainage Start: *0+550*

Chainage End: *0+500*

Rip/Rap Size:

Class 25kg

Source:

Ditch A reclaim

GEOTEXTILE AND LINER INSTALL CONDITION DURING EXCAVATION PER CHAINAGE SECTION OF DITCH A

Chainage Start: *0+550*

Chainage End: *0+500*

Condition of Liner: *Install 2 panels of liner*
Install geotextile under and behind culvert

AMOUNT OF MATERIALS REMOVED, SCREENED, AND PLACED PER SECTION

Chainage Start: *0+550*

Chainage End: *0+400*

Amount of Material Removed (m³): *140*

Amount of Fines Screened Out (m³): *15*

Amount of Material Placed (m³): *25*

ENVIRONMENTAL CONDITIONS FOR YESTERDAY

Conditions:

None

If conditions affected work progress, provide the number of hours and a brief description:

Water

VISITORS ON SITE

Visitor:

Under Hill

# of Visits *1*

VISITORS ON SITE

Visitor:

› **JDS**

# of Visits

1

CONTRACTORS EQUIPMENT AND HOURS UTILIZED FOR YESTERDAY

Contractors/Sub Name:

› **Ewing**

Equipment:

› **Rock Truck** › **730 UNIT 018**

Hrs Used:

6

CONTRACTORS EQUIPMENT AND HOURS UTILIZED FOR YESTERDAY

Contractors/Sub Name:

› **Ewing**

Equipment:

› **Rock Truck** › **730 UNIT 016**

Hrs Used:

6

CONTRACTORS EQUIPMENT AND HOURS UTILIZED FOR YESTERDAY

Contractors/Sub Name:

› **Ewing**

Equipment:

› **Excavator** › **336EL UNIT 024**

Hrs Used:

12

CONTRACTORS EQUIPMENT AND HOURS UTILIZED FOR YESTERDAY

Contractors/Sub Name:

› **Ewing**

Equipment:

› **Excavator** › **329EL UNIT 027**

Hrs Used:

12

CONTRACTORS EQUIPMENT AND HOURS UTILIZED FOR YESTERDAY

Contractors/Sub Name:

› **Ewing**

Equipment:

› **Wheel Loader** › **950H UNIT 013**

Hrs Used:

12

CONTRACTORS EQUIPMENT AND HOURS UTILIZED FOR YESTERDAY

Contractors/Sub Name:

Ewing

Equipment:

Light Vehicle **3500 Dodge Ram ET006 (Silver-Standard)**

Hrs Used:

12

CONTRACTORS EQUIPMENT AND HOURS UTILIZED FOR YESTERDAY

Contractors/Sub Name:

Ewing

Equipment:

Light Vehicle **3500 Dodge Ram ET004 (Grey)**

Hrs Used:

12

CONTRACTORS LABOUR AND HOURS UTILIZED FOR YESTERDAY

Contractors/Sub Name:

Ewing

# of Labourers

2

Total Hrs Worked:

12



Ditch clean out and sloping

Russell Noksana, *Supervisor*
September 16th 2020, 1:43 AM (GMT +00:00)

64.0311936, -135.8485617

Ewing Transport Ltd
PO Box 61, Mayo, Yukon Territory Y0B 1M0
867-334-6457

Daily Report

Private

Label	Ditch A -Day 5
	Eagle Gold
	Thursday, September 17th 2020, 12:51 AM (GMT +00:00)

Daily Report

Job:	*Reclaim Ditch A*
Location:	*0+500*
Project Name:	*Ditch A*
Description of Work:	*Removal of rip rap* *Sloping and shaping ditch* *Water diversion* *Prep subgrade* *Install liner*
Contract Ref. NO.: e.g. (WO, PO, CWP)	*17486*
Weather(AM):	*2c cloudy*
Weather(PM):	*8c cloudy*
Date:	*September 16, 2020*

Reported By:

Russell Noksana

Onsite Rep: Bill, Lea, Matt, Mike

Daily Report must be Supplied to Vic Gold by 9:00am

SAFETY TOPICS FOR YESTERDAY

Topics:

Back and muscle strains
Proper lifting
Traffic

Incident(s)

None

Total Incidents	*0*

QUALITY TOPICS FOR YESTERDAY

Topics:

Water

EXTRAS

ACTIVITIES COMPLETED YESTERDAY

Activities:

Removal of rip rap
Screen rock
Install geotextile and liner
Install rip rap
Build cell dump
Shaping and sloping ditch

ACTIVITIES COMPLETED TODAY

Activities:

Prep and excavation removal of rip rap from 0+400 to 0+200
Install 7 panels of liner
Screen rock
Water diversion



Excavation and removal of rip rap and shaping

ACTIVITIES COMPLETED TODAY

Activities:

No comments



Hauling waste

ACTIVITIES COMPLETED TODAY

Activities:

No comments



Subgrade preparation

ACTIVITIES COMPLETED TODAY

Activities:

No comments



5 panels of liner

ACTIVITIES COMPLETED TODAY

Activities:

No comments



Subgrade prior to installation of liner

ACTIVITIES COMPLETED TODAY

Activities:

No comments



Liner install over pipe

ACTIVITIES COMPLETED TODAY

Activities:

No comments



Tie in prep over liner

ACTIVITIES COMPLETED TODAY

Activities:

No comments



Removal of dam - water running on liner

ACTIVITIES COMPLETED TODAY

Activities:

No comments





Heavy water flo

ACTIVITIES COMPLETED TODAY

Activities:

No comments



Sub grade prep

EXTRA WORK/CONTRACT ISSUES AND/OR ENGINEERING IMPACTS (RFI'S0 AND/OR DELAYS

Info:

Water pumps not working properly

MATERIAL SOURCE AND DOCUMENTATION OF RIP/RAP SIZE USED PER CHAINAGE SECTION OF DITCH A

Chainage Start:

0+500

Chainage End:

0+400

Rip/Rap Size:

Class 25kg

Source:

Reclaim from ditch A

GEOTEXTILE AND LINER INSTALL CONDITION DURING EXCAVATION PER CHAINAGE SECTION OF DITCH A

Chainage Start:

0+500

Chainage End:

0+450

Condition of Liner:

Rolled out 7 panels

AMOUNT OF MATERIALS REMOVED, SCREENED, AND PLACED PER SECTION

Chainage Start:

0+400

Chainage End:

0+325

Amount of Material Removed (m³):

250

Amount of Fines Screened Out (m³):

70

Amount of Material Placed (m³):

28

ENVIRONMENTAL CONDITIONS FOR YESTERDAY

Conditions:

None

If conditions affected work progress, provide the number of hours and a brief description:

None

VISITORS ON SITE

Visitor:

Under Hill

# of Visits

1

VISITORS ON SITE

Visitor:

Vic Gold

# of Visits

2

VISITORS ON SITE

Visitor:

Tetra Tech

# of Visits

1

CONTRACTORS EQUIPMENT AND HOURS UTILIZED FOR YESTERDAY

Contractors/Sub Name:

Ewing

Equipment:

Rock Truck **730 UNIT 018**

Hrs Used:

12

CONTRACTORS EQUIPMENT AND HOURS UTILIZED FOR YESTERDAY

Contractors/Sub Name:

Ewing

Equipment:

Excavator **336EL UNIT 025**

Hrs Used:

6

CONTRACTORS EQUIPMENT AND HOURS UTILIZED FOR YESTERDAY

Contractors/Sub Name:

Ewing

Equipment:

Excavator **325DL UNIT 022 (Quick Attach)**

Hrs Used:

6

CONTRACTORS EQUIPMENT AND HOURS UTILIZED FOR YESTERDAY

Contractors/Sub Name:

Ewing

Equipment:

Excavator **329EL UNIT 027**

Hrs Used:

12

CONTRACTORS EQUIPMENT AND HOURS UTILIZED FOR YESTERDAY

Contractors/Sub Name:

Ewing

Equipment:

Wheel Loader > 950H UNIT 013

Hrs Used:

10

CONTRACTORS EQUIPMENT AND HOURS UTILIZED FOR YESTERDAY

Contractors/Sub Name:

Ewing

Equipment:

Tandem > W900 ET021 (Grey)

Hrs Used:

1

CONTRACTORS LABOUR AND HOURS UTILIZED FOR YESTERDAY

Contractors/Sub Name:

Ewing

# of Labourers

2

Total Hrs Worked:

24



Setting roll of liner for deployment



Screened rock



Waste material after screening

Russell Noksana, *Supervisor*
September 17th 2020, 12:51 AM (GMT +00:00)

64.0239292, -135.8406959



Ewing Transport Ltd
PO Box 61, Mayo, Yukon Territory Y0B 1M0
867-334-6457

Daily Report

Private

Label	Ditch A - Day 6
	Eagle Gold
	Friday, September 18th 2020, 1:41 AM (GMT +00:00)

Daily Report

Job:	*Reclaim Ditch A*
Location:	*0+450*
Project Name:	*Ditch A*
Description of Work:	*Continue to excavate ditch, removal of rip rap* *Prep subgrade* *Water diversion* *Install liner* *Screen rock* *Haul waste*
Contract Ref. NO.: e.g. (WO, PO, CWP)	*17486*
Weather(AM):	*2c cloudy*
Weather(PM):	*10c cloudy*
Date:	*September 17, 2020*

Reported By:

Russell Noksana

Onsite Rep: Bill, Lea, Matt, Mike

Daily Report must be Supplied to Vic Gold by 9:00am

SAFETY TOPICS FOR YESTERDAY

Topics:

Communication
Update FLRAs
Traffic
Be aware of ground personal

Incident(s)

None

Total Incidents	*0*

QUALITY TOPICS FOR YESTERDAY

Topics:

Rock from ditch very muddy, need to dry prior to screening

EXTRAS

ACTIVITIES COMPLETED YESTERDAY

Activities:

Continue to excavate ditch, removal of rip rap end at 0+350
Prep subgrade
Water diversion
Install liner- end at 0+450
Screen rock
Haul waste

ACTIVITIES COMPLETED TODAY

Activities:

Install 10 panels of liner end at 0+350
Excavation and removal of rip rap end at 0+200
Water diversion
Screen rock and placement over liner



Rock screening

ACTIVITIES COMPLETED TODAY

Activities:

No comments



Liner placement

ACTIVITIES COMPLETED TODAY

Activities:

No comments



Excavation ditch A

ACTIVITIES COMPLETED TODAY

Activities:

No comments



Subgrade

ACTIVITIES COMPLETED TODAY

Activities:

No comments



Waste dump

ACTIVITIES COMPLETED TODAY

Activities:

No comments



Ditch A looking south

ACTIVITIES COMPLETED TODAY

Activities:

No comments



After removal of rip rap

ACTIVITIES COMPLETED TODAY

Activities:

No comments



Waste piles

EXTRA WORK/CONTRACT ISSUES AND/OR ENGINEERING IMPACTS (RFI'S0 AND/OR DELAYS

Info:

None

MATERIAL SOURCE AND DOCUMENTATION OF RIP/RAP SIZE USED PER CHAINAGE SECTION OF DITCH A

Chainage Start:	*0+325*
Chainage End:	*0+200*

Rip/Rap Size:

- **Class 25kg**

Source:

Ditch A reclaim

GEOTEXTILE AND LINER INSTALL CONDITION DURING EXCAVATION PER CHAINAGE SECTION OF DITCH A

Chainage Start:	*0+450*
Chainage End:	*0+375*
Condition of Liner:	*10 + panels*

AMOUNT OF MATERIALS REMOVED, SCREENED, AND PLACED PER SECTION

Chainage Start:	*0+325*
Chainage End:	*0+200*
Amount of Material Removed (m³):	*260*
Amount of Fines Screened Out (m³):	*70*
Amount of Material Placed (m³):	

36

ENVIRONMENTAL CONDITIONS FOR YESTERDAY

Conditions:

None

If conditions affected work progress, provide the number of hours and a brief description:

No comments

VISITORS ON SITE

Visitor:

Under Hill

# of Visits

1

VISITORS ON SITE

Visitor:

Vic Gold

# of Visits

2

VISITORS ON SITE

Visitor:

JDS

# of Visits

1

CONTRACTORS EQUIPMENT AND HOURS UTILIZED FOR YESTERDAY

Contractors/Sub Name:

Ewing

Equipment:

Excavator **325DL UNIT 022 (Quick Attach)**

Hrs Used:

12

CONTRACTORS EQUIPMENT AND HOURS UTILIZED FOR YESTERDAY

Contractors/Sub Name:

Ewing

Equipment:

Excavator **329EL UNIT 027**

Hrs Used:

12

CONTRACTORS EQUIPMENT AND HOURS UTILIZED FOR YESTERDAY

Contractors/Sub Name:

Ewing

Equipment:

Wheel Loader > 950H UNIT 013

Hrs Used:

12

CONTRACTORS EQUIPMENT AND HOURS UTILIZED FOR YESTERDAY

Contractors/Sub Name:

Ewing

Equipment:

Rock Truck > 730 UNIT 018

Hrs Used:

12

CONTRACTORS EQUIPMENT AND HOURS UTILIZED FOR YESTERDAY

Contractors/Sub Name:

Ewing

Equipment:

Skid Steer > 289D UNIT 015

Hrs Used:

2

CONTRACTORS EQUIPMENT AND HOURS UTILIZED FOR YESTERDAY

Contractors/Sub Name:

Ewing

Equipment:

Light Vehicle > 3500 Dodge Ram ET004 (Grey)

Hrs Used:

12

CONTRACTORS LABOUR AND HOURS UTILIZED FOR YESTERDAY

Contractors/Sub Name:

Ewing

# of Labourers

2

Total Hrs Worked:

24

Original View

Russell Noksana, *Supervisor*
September 18th 2020, 1:41 AM (GMT +00:00)

64.0311389, -135.8486128



Revised on September 18th 2020, 6:23 PM (GMT +00:00) Current View

Russell Noksana, *Supervisor*
September 18th 2020, 6:23 PM (GMT +00:00)

64.031736, -135.8483783



Ewing Transport Ltd
PO Box 61, Mayo, Yukon Territory Y0B 1M0
867-334-6457

Daily Report

Private

Label	Ditch A -Day 7
	Eagle Gold
	Saturday, September 19th 2020, 1:10 AM (GMT +00:00)

Daily Report

Job:	*Reclaim Ditch A*
Location:	*0+350*
Project Name:	*Ditch A*
Description of Work:	*Excavation and removal of rip rap* *Sloping subgrade prep* *Hauling waste and rip rap* *Screening rock* *Liner install* *Water diversion*
Contract Ref. NO.: e.g. (WO, PO, CWP)	*17486*
Weather(AM):	*5c cloudy*
Weather(PM):	*5 c rain and fog*
Date:	*September 18, 2020*

Reported By:

Russell Noksana

Onsite Rep: Bill, Lea, Matt, Mike

Daily Report must be Supplied to Vic Gold by 9:00am

SAFETY TOPICS FOR YESTERDAY

Topics:

Review harassment policy
New COVID 19 policy

Incident(s)

None

Total Incidents	*0*

QUALITY TOPICS FOR YESTERDAY

Topics:

Muddy rip rap- approx 50% waste

EXTRAS

ACTIVITIES COMPLETED YESTERDAY

Activities:

Installed liner to 0+350
Completed excavation and removal of rip rap to 0+200

ACTIVITIES COMPLETED TODAY

Activities:

Competed 15 panels of liner
Excavated and removal of rip rap for 125 m
Screen rock
Water diversion
Rip rap placement bottom of ditch
Road maintenance
Haul waste
Site clean up



Waste from bottom of ditch A

ACTIVITIES COMPLETED TODAY

Activities:

No comments



Continue to screen rock

ACTIVITIES COMPLETED TODAY

Activities:

No comments

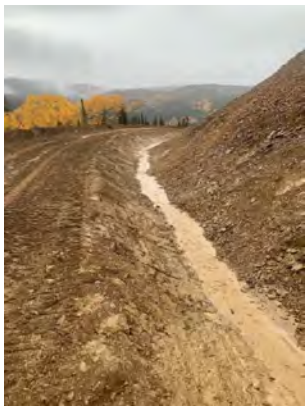


Sub grade rep ready for liner

ACTIVITIES COMPLETED TODAY

Activities:

No comments



Excavation and removal of rip rap

ACTIVITIES COMPLETED TODAY

Activities:

No comments

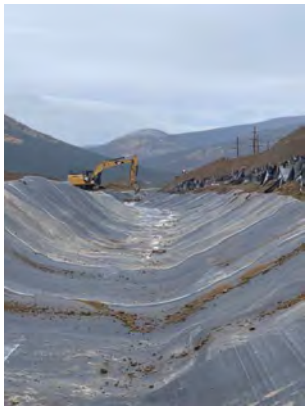


15 new panels of liner

ACTIVITIES COMPLETED TODAY

Activities:

No comments



Looking North -placing 25 kg rip rap

EXTRA WORK/CONTRACT ISSUES AND/OR ENGINEERING IMPACTS (RFI'S0 AND/OR DELAYS

Info:

Rain- rutted our haul roads
Night shift mine ops - rutted out roads

MATERIAL SOURCE AND DOCUMENTATION OF RIP/RAP SIZE USED PER CHAINAGE SECTION OF DITCH A

Chainage Start:	*0+200*
Chainage End:	*0+125*

Rip/Rap Size:

- **Class 25kg**

Source:

Removal of rip rap total of 5 loss for screening and rest to waste dump

GEOTEXTILE AND LINER INSTALL CONDITION DURING EXCAVATION PER CHAINAGE SECTION OF DITCH A

Chainage Start:	*0+350*
Chainage End:	*0+275*
Condition of Liner:	*15 panels placed and approx 50m of rip rap placed*

AMOUNT OF MATERIALS REMOVED, SCREENED, AND PLACED PER SECTION

Chainage Start:	*0+200*
Chainage End:	*0+125*
Amount of Material Removed (m^3):	*264*

Amount of Fines Screened Out (m³):	*28*
Amount of Material Placed (m³):	*20*

ENVIRONMENTAL CONDITIONS FOR YESTERDAY

Conditions:

Rain- saturated roads

If conditions affected work progress, provide the number of hours and a brief description:

Road maintenance-added cost

VISITORS ON SITE

Visitor:

Under Hill

# of Visits	*1*

VISITORS ON SITE

Visitor:

Vic Gold

# of Visits	*2*

CONTRACTORS EQUIPMENT AND HOURS UTILIZED FOR YESTERDAY

Contractors/Sub Name:

Ewing

Equipment:

Rock Truck **730 UNIT 018**

Hrs Used:	*12*

CONTRACTORS EQUIPMENT AND HOURS UTILIZED FOR YESTERDAY

Contractors/Sub Name:

Ewing

Equipment:

Excavator **329EL UNIT 027**

Hrs Used:	*12*

CONTRACTORS EQUIPMENT AND HOURS UTILIZED FOR YESTERDAY

Contractors/Sub Name:

Ewing

Equipment:

Excavator **325DL UNIT 022 (Quick Attach)**

Hrs Used:	*12*

CONTRACTORS EQUIPMENT AND HOURS UTILIZED FOR YESTERDAY

Contractors/Sub Name:

Ewing

Equipment:

Tandem **W900 ET021 (Grey)**

Hrs Used:

2.5

CONTRACTORS EQUIPMENT AND HOURS UTILIZED FOR YESTERDAY

Contractors/Sub Name:

Ewing

Equipment:

Rock Truck **730 UNIT 017**

Hrs Used:

4

CONTRACTORS EQUIPMENT AND HOURS UTILIZED FOR YESTERDAY

Contractors/Sub Name:

Ewing

Equipment:

Light Vehicle **3500 Dodge Ram ET004 (Grey)**

Hrs Used:

12

CONTRACTORS EQUIPMENT AND HOURS UTILIZED FOR YESTERDAY

Contractors/Sub Name:

Ewing

Equipment:

Wheel Loader **950H UNIT 013**

Hrs Used:

12

CONTRACTORS EQUIPMENT AND HOURS UTILIZED FOR YESTERDAY

Contractors/Sub Name:

Ewing

Equipment:

Skid Steer **289D UNIT 015**

Hrs Used:

2

CONTRACTORS LABOUR AND HOURS UTILIZED FOR YESTERDAY

Contractors/Sub Name:

Ewing	
# of Labourers	*3*
Total Hrs Worked:	*36*



Water flo over new liner



Crews installing liner panels

Russell Noksana, *Supervisor*
September 19th 2020, 1:10 AM (GMT +00:00)

64.031311, -135.8482512

Ewing Transport Ltd
PO Box 61, Mayo, Yukon Territory Y0B 1M0
867-334-6457

Daily Report

Private

Label	(revision)
	Eagle Gold
	Sunday, September 20th 2020, 1:31 AM (GMT +00:00)

Daily Report

Job:	*Ditch A*
Location:	*0+275*
Project Name:	*Ditch A*
Description of Work:	*Liner install* *Rip rap removal and placement* *Resloping and shaping ditch* *Screening rock* *Water diversion*
Contract Ref. NO.: e.g. (WO, PO, CWP)	*17486*
Weather(AM):	*-2c fog*
Weather(PM):	*6c cloudy*
Date:	*September 19, 2020*

Reported By:

> **Russell Noksana**

Onsite Rep: Bill, Lea, Matt, Mike

Daily Report must be Supplied to Vic Gold by 9:00am

SAFETY TOPICS FOR YESTERDAY

Topics:

Clear communication on radio channels
Spotter at all time's when congested

Incident(s)

> **None**

Total Incidents	*0*

QUALITY TOPICS FOR YESTERDAY

Topics:

Rock very muddy- hard to screen rock
Road rutted out due to rain and mine ops using access road on nights- delay start due to road maintenance

EXTRAS

ACTIVITIES COMPLETED YESTERDAY

Activities:

Installed 20 panels of liner
Excavation and removal of rip rap for 125 m
Place rip rap for approx 50m
Screen rock



Subgrade -Rocky areas -place geotextile

ACTIVITIES COMPLETED TODAY

Activities:

No comments



Inspection of subgrade-Prior to liner

ACTIVITIES COMPLETED TODAY

Activities:

No comments



Water pump-Dam and diversion

ACTIVITIES COMPLETED TODAY

Activities:

No comments



Continue with removal of rip rap and sloping

ACTIVITIES COMPLETED TODAY

Activities:

No comments



Water diversion

ACTIVITIES COMPLETED TODAY

Activities:

No comments



Haul road access

ACTIVITIES COMPLETED TODAY

Activities:

No comments



Crews installing liner

ACTIVITIES COMPLETED TODAY

Activities:

No comments



Rip Rap bottom of ditch above liner average 450mm

ACTIVITIES COMPLETED TODAY

Activities:

1.1m overlap



ACTIVITIES COMPLETED TODAY

Activities:

No comments



2 m bottom



2nd pic

ACTIVITIES COMPLETED TODAY

Activities:

No comments



3.1 m to toe exact 2:1 slope with 1.5 depth

ACTIVITIES COMPLETED TODAY

Activities:

No comments



New liner



Liner placement

ACTIVITIES COMPLETED TODAY

Activities:

No comments



Testing new liner install and positive drainage

ACTIVITIES COMPLETED TODAY

Activities:

No comments



Positive drainage

ACTIVITIES COMPLETED TODAY

Activities:

No comments



Today's screened rock

EXTRA WORK/CONTRACT ISSUES AND/OR ENGINEERING IMPACTS (RFI'S0 AND/OR DELAYS

Info:

Rework haul road access
Install geotextile along east slope prior to installing liner due to rocks along slopes



Rock on east slopes

MATERIAL SOURCE AND DOCUMENTATION OF RIP/RAP SIZE USED PER CHAINAGE SECTION OF DITCH A

Chainage Start:	*0+160*
Chainage End:	*0-+100*

Rip/Rap Size:

- **Class 25kg**

Source:

50% waste to dump

GEOTEXTILE AND LINER INSTALL CONDITION DURING EXCAVATION PER CHAINAGE SECTION OF DITCH A

Chainage Start:	*0+275*
Chainage End:	*0+175*
Condition of Liner:	*Good -20 panels of liner* *4 panels of geotextile*

AMOUNT OF MATERIALS REMOVED, SCREENED, AND PLACED PER SECTION

Chainage Start:	*0+160*
Chainage End:	*0+100*
Amount of Material Removed (m³):	*300*
Amount of Fines Screened Out (m³):	*48*
Amount of Material Placed (m³):	*24*

ENVIRONMENTAL CONDITIONS FOR YESTERDAY

Conditions:

None

If conditions affected work progress, provide the number of hours and a brief description:

None

VISITORS ON SITE

Visitor:

> **Under Hill**

# of Visits	*1*

CONTRACTORS EQUIPMENT AND HOURS UTILIZED FOR YESTERDAY

Contractors/Sub Name:

> **Ewing**

Equipment:

> **Excavator** > **325DL UNIT 022 (Quick Attach)**

Hrs Used:	*12*

CONTRACTORS EQUIPMENT AND HOURS UTILIZED FOR YESTERDAY

Contractors/Sub Name:

> **Ewing**

Equipment:

> **Excavator** > **329EL UNIT 027**

Hrs Used:	*12*

CONTRACTORS EQUIPMENT AND HOURS UTILIZED FOR YESTERDAY

Contractors/Sub Name:

Ewing

Equipment:

Wheel Loader **950H UNIT 013**

Hrs Used:

12

CONTRACTORS EQUIPMENT AND HOURS UTILIZED FOR YESTERDAY

Contractors/Sub Name:

Ewing

Equipment:

Rock Truck **730 UNIT 018**

Hrs Used:

12

CONTRACTORS EQUIPMENT AND HOURS UTILIZED FOR YESTERDAY

Contractors/Sub Name:

Ewing

Equipment:

Rock Truck **730 UNIT 016**

Hrs Used:

12

CONTRACTORS EQUIPMENT AND HOURS UTILIZED FOR YESTERDAY

Contractors/Sub Name:

Ewing

Equipment:

Dozer **D7R-XR UNIT 031 (NEW)**

Hrs Used:

3

CONTRACTORS EQUIPMENT AND HOURS UTILIZED FOR YESTERDAY

Contractors/Sub Name:

Ewing

Equipment:

Skid Steer **289D UNIT 015**

Hrs Used:

2

CONTRACTORS EQUIPMENT AND HOURS UTILIZED FOR YESTERDAY

Contractors/Sub Name:

Ewing

Equipment:

Light Vehicle > 3500 Dodge Ram ET004 (Grey)

Hrs Used:	*12*

CONTRACTORS LABOUR AND HOURS UTILIZED FOR YESTERDAY

Contractors/Sub Name:

Ewing

# of Labourers	*3*
Total Hrs Worked:	*36*

Original View

Russell Noksana, *Supervisor*
September 20th 2020, 1:31 AM (GMT +00:00)

64.0238851, -135.8407043



Revised on September 20th 2020, 3:48 PM (GMT +00:00) Current View

Russell Noksana, *Supervisor*
September 20th 2020, 3:48 PM (GMT +00:00)

64.0316528, -135.8483428



Ewing Transport Ltd
PO Box 61, Mayo, Yukon Territory Y0B 1M0
867-334-6457

Daily Report

Private

Label	Ditch A- Day 9
	Eagle Gold
	Monday, September 21st 2020, 1:30 AM (GMT +00:00)

Daily Report

Job:	*Reclaim Ditch A*
Location:	*0+175*
Project Name:	*Ditch A*
Description of Work:	*Excavation and removal of rip rap* *Prep subgrade and install geotextile and liner* *Water diversion* *Install rip rap* *Screen rock*
Contract Ref. NO.: e.g. (WO, PO, CWP)	*17486*
Weather(AM):	*-1c clear*
Weather(PM):	*4c cloudy light rain*
Date:	*September 20, 2020*

Reported By:

> **Russell Noksana**

Onsite Rep: Bill, Lea, Matt, Mike

Daily Report must be Supplied to Vic Gold by 9:00am

SAFETY TOPICS FOR YESTERDAY

Topics:

Continue to wear masks with 1 more personal in vehicle or room
Call in on all haul roads
Housekeeping

Incident(s)

> **None**

Total Incidents	*0*

QUALITY TOPICS FOR YESTERDAY

Topics:

Rip rap in ditch unusable due to silt and mud, new to dry or wash

EXTRAS

Type:

Rework(hrs)

Hrs:

3

Description:

Repair access roads due to mine ops

ACTIVITIES COMPLETED YESTERDAY

Activities:

Install 20 panels of liner and 4 panels of geotextile
Excavation of 125 m
Screen rock
Road maintenance and repairs
Install rip rap

ACTIVITIES COMPLETED TODAY

Activities:

Install 15 panels of liner
Install 15 panels of geotextile
Excavation and removal of rip rap
Screening rock
Water diversion
Hauling waste
Road repairs



Rutted roads

ACTIVITIES COMPLETED TODAY

Activities:

No comments



Waste rip rap with silt and mud

ACTIVITIES COMPLETED TODAY

Activities:

No comments



Water diversion

ACTIVITIES COMPLETED TODAY

Activities:

No comments



Preparing liner panels

ACTIVITIES COMPLETED TODAY

Activities:

No comments



Subgrade

ACTIVITIES COMPLETED TODAY

Activities:

No comments



Crew installing geotextile prior to liner

ACTIVITIES COMPLETED TODAY

Activities:

No comments



Liner looking North

ACTIVITIES COMPLETED TODAY

Activities:

No comments



Silt on slopes

ACTIVITIES COMPLETED TODAY

Activities:

No comments



Muddy and silt on slopes

ACTIVITIES COMPLETED TODAY

Activities:

No comments



Crews installing liner panels

ACTIVITIES COMPLETED TODAY

Activities:

No comments



Mine ops contaminated our rip rap pile with blast rock?

EXTRA WORK/CONTRACT ISSUES AND/OR ENGINEERING IMPACTS (RFI'S0 AND/OR DELAYS

Info:

Road repair for 3hrs due to mine ops rutted roads out



Rutted roads need repair

MATERIAL SOURCE AND DOCUMENTATION OF RIP/RAP SIZE USED PER CHAINAGE SECTION OF DITCH A

Chainage Start:

0+100

Chainage End:

0+20

Rip/Rap Size:

Class 25kg

Source:

Excavation for ditch, 80% waste

GEOTEXTILE AND LINER INSTALL CONDITION DURING EXCAVATION PER CHAINAGE SECTION OF DITCH A

Chainage Start:

0+175

Chainage End:	*0+100*
Condition of Liner:	*Very good- install 15 panels of liner and geotextile*

AMOUNT OF MATERIALS REMOVED, SCREENED, AND PLACED PER SECTION

Chainage Start:	*0+100*
Chainage End:	*0+20*
Amount of Material Removed (m³):	*350*
Amount of Fines Screened Out (m³):	*24*
Amount of Material Placed (m³):	*14*

ENVIRONMENTAL CONDITIONS FOR YESTERDAY

Conditions:

Muddy conditions, all of materials very silty

If conditions affected work progress, provide the number of hours and a brief description:

None

VISITORS ON SITE

CONTRACTORS EQUIPMENT AND HOURS UTILIZED FOR YESTERDAY

Contractors/Sub Name:

Ewing

Equipment:

Excavator **325DL UNIT 021**

Hrs Used: *12*

CONTRACTORS EQUIPMENT AND HOURS UTILIZED FOR YESTERDAY

Contractors/Sub Name:

Ewing

Equipment:

Excavator **329EL UNIT 027**

Hrs Used: *12*

CONTRACTORS EQUIPMENT AND HOURS UTILIZED FOR YESTERDAY

Contractors/Sub Name:

Ewing

Equipment:

Wheel Loader **950H UNIT 013**

Hrs Used:

12

CONTRACTORS EQUIPMENT AND HOURS UTILIZED FOR YESTERDAY

Contractors/Sub Name:

Ewing

Equipment:

Rock Truck **730 UNIT 018**

Hrs Used:

12

CONTRACTORS EQUIPMENT AND HOURS UTILIZED FOR YESTERDAY

Contractors/Sub Name:

Ewing

Equipment:

Rock Truck **730 UNIT 016**

Hrs Used:

12

CONTRACTORS EQUIPMENT AND HOURS UTILIZED FOR YESTERDAY

Contractors/Sub Name:

Ewing

Equipment:

Dozer **D7R-XR UNIT 031 (NEW)**

Hrs Used:

3

CONTRACTORS EQUIPMENT AND HOURS UTILIZED FOR YESTERDAY

Contractors/Sub Name:

Ewing

Equipment:

Light Vehicle **3500 Dodge Ram ET004 (Grey)**

Hrs Used:

12

CONTRACTORS LABOUR AND HOURS UTILIZED FOR YESTERDAY

Contractors/Sub Name:

Ewing

# of Labourers

3

Total Hrs Worked:

36



Water flo under ditch A

Russell Noksana, *Supervisor*
September 21st 2020, 1:30 AM (GMT +00:00)

64.031149, -135.8486242

Ewing Transport Ltd
PO Box 61, Mayo, Yukon Territory Y0B 1M0
867-334-6457

Daily Report

Private

Label	Ditch A- day 10
	Eagle Gold
	Tuesday, September 22nd 2020, 1:15 AM (GMT +00:00)

Daily Report

Job:	*Reclaim Ditch A*
Location:	*0+20*
Project Name:	*Ditch A*
Description of Work:	*Excavation and removal of rip rap* *Prepare subgrade and install geotextile and liner* *Water diversion* *Screen rock* *Hauling waste*
Contract Ref. NO.: e.g. (WO, PO, CWP)	*17486*
Weather(AM):	*-1c fog and snow*
Weather(PM):	*1c cloudy*
Date:	*September 21, 2020*

Reported By:

Russell Noksana

Onsite Rep: Bill, Lea, Matt, Mike

Daily Report must be Supplied to Vic Gold by 9:00am

SAFETY TOPICS FOR YESTERDAY

Topics:

Clear communication
Proper lighting

Incident(s)

None

Total Incidents	*0*

QUALITY TOPICS FOR YESTERDAY

Topics:

Rip rap from Ditch A very muddy and silty 80% waste

EXTRAS

Type:

Redesign(hrs)

Hrs:

4.5

Description:

Rebuild slopes and berm for ditch at 0+000 - ops sump area



Rebuilding and narrowing ditch at 0+000 at old PG sump

ACTIVITIES COMPLETED YESTERDAY

Activities:

Install 15 panels of liner
Install 15panels of geotextile
Excavation and removal of rip rap for 80m
Subgrade prep for liner
Screen rock
Water diversion

ACTIVITIES COMPLETED TODAY

Activities:

Install 15 panels of liner and geotextile along rocky slopes
Excavation and removal of rip rap
Subgrade prep for liner
Screen rock
Water diversion
Rebuild and narrow ditch A at the old PG sump



Geotextile along north slope

ACTIVITIES COMPLETED TODAY

Activities:

No comments



Water diversion over new liner

ACTIVITIES COMPLETED TODAY

Activities:

No comments



Subgrade

ACTIVITIES COMPLETED TODAY

Activities:

No comments



Slope subgrade

ACTIVITIES COMPLETED TODAY

Activities:

No comments



Installing liner

ACTIVITIES COMPLETED TODAY

Activities:

No comments



Ditch A prior to excavation

ACTIVITIES COMPLETED TODAY

Activities:

No comments



Water dam

EXTRA WORK/CONTRACT ISSUES AND/OR ENGINEERING IMPACTS (RFI'S0 AND/OR DELAYS

Info:

Rebuilding berm and narrowing ditch

MATERIAL SOURCE AND DOCUMENTATION OF RIP/RAP SIZE USED PER CHAINAGE SECTION OF DITCH A

Chainage Start:	*0+020*
Chainage End:	*0-050*

Rip/Rap Size:

- **Class 25kg**

Source:

Excavation of ditch A - 90% waste disposal due to silty muddy rip rap

GEOTEXTILE AND LINER INSTALL CONDITION DURING EXCAVATION PER CHAINAGE SECTION OF DITCH A

Chainage Start:	*0+100*
Chainage End:	*0+025*
Condition of Liner:	*Good- place approx 22 panels* *And 15 panels of Geotextile*

AMOUNT OF MATERIALS REMOVED, SCREENED, AND PLACED PER SECTION

Chainage Start:	*0+20*
Chainage End:	*0-050*
Amount of Material Removed (m^3):	*340*
Amount of Fines Screened Out (m^3):	*28*

Amount of Material Placed (m³): *28*

ENVIRONMENTAL CONDITIONS FOR YESTERDAY

Conditions:

Snow and muddy conditions

If conditions affected work progress, provide the number of hours and a brief description:

1

VISITORS ON SITE

Visitor:

JDS

# of Visits

1

CONTRACTORS EQUIPMENT AND HOURS UTILIZED FOR YESTERDAY

Contractors/Sub Name:

Ewing

Equipment:

Excavator **325DL UNIT 021**

Hrs Used:

12

CONTRACTORS EQUIPMENT AND HOURS UTILIZED FOR YESTERDAY

Contractors/Sub Name:

Ewing

Equipment:

Excavator **329EL UNIT 027**

Hrs Used:

10

CONTRACTORS EQUIPMENT AND HOURS UTILIZED FOR YESTERDAY

Contractors/Sub Name:

Ewing

Equipment:

Wheel Loader **950H UNIT 013**

Hrs Used:

5.5

CONTRACTORS EQUIPMENT AND HOURS UTILIZED FOR YESTERDAY

Contractors/Sub Name:

Ewing

Equipment:

Excavator **325DL UNIT 022 (Quick Attach)**

Hrs Used:

5

CONTRACTORS EQUIPMENT AND HOURS UTILIZED FOR YESTERDAY

Contractors/Sub Name:

Ewing

Equipment:

Skid Steer **289D UNIT 015**

Hrs Used:

4

CONTRACTORS EQUIPMENT AND HOURS UTILIZED FOR YESTERDAY

Contractors/Sub Name:

Ewing

Equipment:

Light Vehicle **3500 Dodge Ram ET004 (Grey)**

Hrs Used:

12

CONTRACTORS EQUIPMENT AND HOURS UTILIZED FOR YESTERDAY

Contractors/Sub Name:

Ewing

Equipment:

Rock Truck **730 UNIT 016**

Hrs Used:

12

CONTRACTORS LABOUR AND HOURS UTILIZED FOR YESTERDAY

Contractors/Sub Name:

Ewing

# of Labourers

3

Total Hrs Worked:

36

Russell Noksana, *Supervisor*
September 22nd 2020, 1:15 AM (GMT +00:00)

64.0311846, -135.8486298



Ewing Transport Ltd
PO Box 61, Mayo, Yukon Territory Y0B 1M0
867-334-6457

Daily Report

Private

Label	Ditch A- day 11
	Eagle Gold
	Wednesday, September 23rd 2020, 1:11 AM (GMT +00:00)

Daily Report

Job:	*Reclaim Ditch A*
Location:	*0+025*
Project Name:	*Ditch A*
Description of Work:	*Excavation and removal of rip rap* *Prepare subgrade and install liner and geotextile* *Placement of rip rap for 7 hrs* *Screen rock* *Hauling waste* *Water diversion*
Contract Ref. NO.: e.g. (WO, PO, CWP)	*17486*
Weather(AM):	*-1c cloudy*
Weather(PM):	*0c cloudy*
Date:	*September 22, 2020*

Reported By:

Russell Noksana

Onsite Rep: Bill, Lea, Matt, Mike

Daily Report must be Supplied to Vic Gold by 9:00am

SAFETY TOPICS FOR YESTERDAY

Topics:

Risk assessment for every new tasks
Slippery roads- slow down
Obey posted signs

Incident(s)

None

Total Incidents

0

QUALITY TOPICS FOR YESTERDAY

Topics:

Rip rap from ditch to silty and muddy- unsuitable for reuse
Bottom of ditch very saturated

EXTRAS

ACTIVITIES COMPLETED YESTERDAY

Activities:

Install 22 panels of liner amd geotextile
Excavation and removal of rip rap
Hauling waste and rip rap
Screening rock
Install rip rap
Water diversion

ACTIVITIES COMPLETED TODAY

Activities:

Install 10 panels of liner
Excavation and removal of rip rap for 150 m
Hauling waste and rip rap
Screening rock
Install rip rap
Water diversion
Site housekeeping
Grizzly repair

Site service onsite at 1:30 pm with excavator assist with ditching at 1+000



Site service assist with ditch A

ACTIVITIES COMPLETED TODAY

Activities:

No comments



Continue with excavation south of old PG sump

ACTIVITIES COMPLETED TODAY

Activities:

No comments



Water diversion

ACTIVITIES COMPLETED TODAY

Activities:

No comments



Placement of 25 kg rip rap

ACTIVITIES COMPLETED TODAY

Activities:

No comments



10 kg rip rap - saturated with silt and mud- need to dry

ACTIVITIES COMPLETED TODAY

Activities:

No comments



Excavation of subgrade at start of shift

EXTRA WORK/CONTRACT ISSUES AND/OR ENGINEERING IMPACTS (RFI'S0 AND/OR DELAYS

Info:

Silty rip rap - cannot screen at this time
Allot of waste
Muddy and silty subgrade and slopes , need to rebuild with dryer materials



Muddy and silty at bottom of ditch

MATERIAL SOURCE AND DOCUMENTATION OF RIP/RAP SIZE USED PER CHAINAGE SECTION OF DITCH A

Chainage Start:	*0-050*
Chainage End:	*0-100*

Rip/Rap Size:

> **Class 10kg**

Source:

Ditch A

Total of
28 waste dump
36 10 kg rip rap to pit
5 -25kg rip rap placement from pit

GEOTEXTILE AND LINER INSTALL CONDITION DURING EXCAVATION PER CHAINAGE SECTION OF DITCH A

Chainage Start:	*0+025*
Chainage End:	*0-075*
Condition of Liner:	*11 panels of liner* *3 panels of geotextile*

AMOUNT OF MATERIALS REMOVED, SCREENED, AND PLACED PER SECTION

Chainage Start:	*0-050*
Chainage End:	*0-0100*
Amount of Material Removed (m³):	*Total of 64 loads from ditch A to pit and waste dump*
Amount of Fines Screened Out (m³):	*14*
Amount of Material Placed (m³):	*60*

ENVIRONMENTAL CONDITIONS FOR YESTERDAY

Conditions:

Muddy and wet conditions

If conditions affected work progress, provide the number of hours and a brief description:

Slowed down liner placement

VISITORS ON SITE

Visitor:

> **Under Hill**

# of Visits	*1*

VISITORS ON SITE

Visitor:

JDS

# of Visits

1

CONTRACTORS EQUIPMENT AND HOURS UTILIZED FOR YESTERDAY

Contractors/Sub Name:

Ewing

Equipment:

Excavator **329EL UNIT 027**

Hrs Used:

11

CONTRACTORS EQUIPMENT AND HOURS UTILIZED FOR YESTERDAY

Contractors/Sub Name:

Ewing

Equipment:

Wheel Loader **950H UNIT 013**

Hrs Used:

10

CONTRACTORS EQUIPMENT AND HOURS UTILIZED FOR YESTERDAY

Contractors/Sub Name:

Ewing

Equipment:

Excavator **325DL UNIT 021**

Hrs Used:

6

CONTRACTORS EQUIPMENT AND HOURS UTILIZED FOR YESTERDAY

Contractors/Sub Name:

Ewing

Equipment:

Excavator **336EL UNIT 026 (Long Stick)**

Hrs Used:

6

CONTRACTORS EQUIPMENT AND HOURS UTILIZED FOR YESTERDAY

Contractors/Sub Name:

Ewing

Equipment:

Rock Truck **730 UNIT 016**

Hrs Used:

11

CONTRACTORS EQUIPMENT AND HOURS UTILIZED FOR YESTERDAY

Contractors/Sub Name:

Ewing

Equipment:

Rock Truck **730 UNIT 018**

Hrs Used:

11

CONTRACTORS EQUIPMENT AND HOURS UTILIZED FOR YESTERDAY

Contractors/Sub Name:

Ewing

Equipment:

Rock Truck **730 UNIT 017**

Hrs Used:

8

CONTRACTORS EQUIPMENT AND HOURS UTILIZED FOR YESTERDAY

Contractors/Sub Name:

Ewing

Equipment:

Skid Steer **289D UNIT 015**

Hrs Used:

3

CONTRACTORS EQUIPMENT AND HOURS UTILIZED FOR YESTERDAY

Contractors/Sub Name:

Ewing

Equipment:

Light Vehicle **3500 Dodge Ram ET004 (Grey)**

Hrs Used:

12

CONTRACTORS LABOUR AND HOURS UTILIZED FOR YESTERDAY

Contractors/Sub Name:

Ewing

# of Labourers

4

Total Hrs Worked:

48

Russell Noksana, *Supervisor*
September 23rd 2020, 1:11 AM (GMT +00:00)

64.0238137, -135.8409803



Ewing Transport Ltd
PO Box 61, Mayo, Yukon Territory Y0B 1M0
867-334-6457

Daily Report

Private

Label	Ditch A - Day 12
	Eagle Gold
	Thursday, September 24th 2020, 1:50 PM (GMT +00:00)

Daily Report

Job:	*Reclaim Ditch A*
Location:	*0-100*
Project Name:	*Ditch A*
Description of Work:	*Excavation and removal of rip rap* *Preparing subgrade and water diversion* *Install geotextile and liner* *Water diversion*
Contract Ref. NO.: e.g. (WO, PO, CWP)	*17486*
Weather(AM):	*3c few clouds*
Weather(PM):	*8c few clouds*
Date:	*September 23, 2020*

Reported By:

Russell Noksana

Onsite Rep: Bill, Lea, Matt, Mike

Daily Report must be Supplied to Vic Gold by 9:00am

SAFETY TOPICS FOR YESTERDAY

Topics:

Reduce backing up , less than 3 trucks lengths
4 ways at all times when parked on road ways
Proper radio communication and channel
PPE at all times

Incident(s)

None

Total Incidents	*0*

QUALITY TOPICS FOR YESTERDAY

Topics:

All rip rap from excavation very silty and muddy- all waste

EXTRAS

ACTIVITIES COMPLETED YESTERDAY

Activities:

Installed 50 m liner
Excavation and removal of rip rap for 50m
Water diversion
Placement of rip rap
Waste hauling

ACTIVITIES COMPLETED TODAY

Activities:

Install 100m of liner and geotextile
Completed all excavation to 0-200
Install 21 panels of liner
Installed 15 panels of geotextile
Screening rock
Water diversion
Site services assist with excavation of ditch A from 0+800 to 0+700



Excavator working at 0-150

ACTIVITIES COMPLETED TODAY

Activities:

No comments



Crews pulling liner in place

ACTIVITIES COMPLETED TODAY

Activities:

No comments



Installing geotextile and liner

ACTIVITIES COMPLETED TODAY

Activities:

No comments



1.4 m overlap

ACTIVITIES COMPLETED TODAY

Activities:

No comments



Crews continue to pull liner into place

ACTIVITIES COMPLETED TODAY

Activities:

No comments



Installing dam for water diversion

ACTIVITIES COMPLETED TODAY

Activities:

No comments



Prep subgrade

ACTIVITIES COMPLETED TODAY

Activities:

No comments



Screening 10kg rock

EXTRA WORK/CONTRACT ISSUES AND/OR ENGINEERING IMPACTS (RFI'S0 AND/OR DELAYS

Info:

Preparing access road at secondary below NuWay for access to 10 kg rock with excavator and dozer

MATERIAL SOURCE AND DOCUMENTATION OF RIP/RAP SIZE USED PER CHAINAGE SECTION OF DITCH A

Chainage Start:	*0-100*
Chainage End:	*0-200*

Rip/Rap Size:

> **Class 10kg**

Source:

South ditch A

GEOTEXTILE AND LINER INSTALL CONDITION DURING EXCAVATION PER CHAINAGE SECTION OF DITCH A

Chainage Start:	*0-075*
Chainage End:	*0-125*
Condition of Liner:	*Excellent, subgrade needed allot of sand and more geotextile was added for protection of liner*

AMOUNT OF MATERIALS REMOVED, SCREENED, AND PLACED PER SECTION

Chainage Start:	*0-100-Ewing* *0+800-site service*
Chainage End:	*0-200* *0+700- site services*
Amount of Material Removed (m³):	*812 total* *Kids to waste-58*

Amount of Fines Screened Out (m^3):

36

Amount of Material Placed (m^3):

84

ENVIRONMENTAL CONDITIONS FOR YESTERDAY

Conditions:

Muddy and silty materials from ditch

If conditions affected work progress, provide the number of hours and a brief description:

None

VISITORS ON SITE

Visitor:

JDS

# of Visits

1

VISITORS ON SITE

Visitor:

Vic Gold

# of Visits

2

CONTRACTORS EQUIPMENT AND HOURS UTILIZED FOR YESTERDAY

Contractors/Sub Name:

Ewing

Equipment:

Excavator **336EL UNIT 026 (Long Stick)**

Hrs Used:

11

CONTRACTORS EQUIPMENT AND HOURS UTILIZED FOR YESTERDAY

Contractors/Sub Name:

Ewing

Equipment:

Excavator **329EL UNIT 027**

Hrs Used:

11

CONTRACTORS EQUIPMENT AND HOURS UTILIZED FOR YESTERDAY

Contractors/Sub Name:

Ewing

Equipment:

Rock Truck **730 UNIT 016**

Hrs Used:

11

CONTRACTORS EQUIPMENT AND HOURS UTILIZED FOR YESTERDAY

Contractors/Sub Name:

Ewing

Equipment:

Rock Truck **730 UNIT 017**

Hrs Used:

11

CONTRACTORS EQUIPMENT AND HOURS UTILIZED FOR YESTERDAY

Contractors/Sub Name:

Ewing

Equipment:

Rock Truck **730 UNIT 018**

Hrs Used:

11

CONTRACTORS EQUIPMENT AND HOURS UTILIZED FOR YESTERDAY

Contractors/Sub Name:

Ewing

Equipment:

Wheel Loader **950H UNIT 013**

Hrs Used:

10

CONTRACTORS EQUIPMENT AND HOURS UTILIZED FOR YESTERDAY

Contractors/Sub Name:

Ewing

Equipment:

Excavator **325DL UNIT 021**

Hrs Used:

8

CONTRACTORS EQUIPMENT AND HOURS UTILIZED FOR YESTERDAY

Contractors/Sub Name:

Ewing

Equipment:

Dozer **D7R-XR UNIT 031 (NEW)**

Hrs Used:

4

CONTRACTORS EQUIPMENT AND HOURS UTILIZED FOR YESTERDAY

Contractors/Sub Name:

Ewing

Equipment:

Skid Steer **289D UNIT 015**

Hrs Used:

2

CONTRACTORS EQUIPMENT AND HOURS UTILIZED FOR YESTERDAY

Contractors/Sub Name:

Ewing

Equipment:

Light Vehicle **3500 Dodge Ram ET004 (Grey)**

Hrs Used:

12

CONTRACTORS LABOUR AND HOURS UTILIZED FOR YESTERDAY

Contractors/Sub Name:

Ewing

# of Labourers

4

Total Hrs Worked:

48



Hauling and placing 10 kg rip rap

Russell Noksana, *Supervisor*
September 24th 2020, 1:50 PM (GMT +00:00)

64.0311419, -135.8485028

Ewing Transport Ltd
PO Box 61, Mayo, Yukon Territory Y0B 1M0
867-334-6457

Daily Report

Private

Label	Ditch A - Day 13
	Eagle Gold
	Thursday, September 24th 2020, 10:58 PM (GMT +00:00)

Daily Report

Job:	*Reclaim ditch A*
Location:	*0-200*
Project Name:	*Ditch A*
Description of Work:	*Excavation and removal of rip rap* *Preparing sub grade and water diversion* *Installing liner* *Water diversion* *Preparing access at the control pond and water diversion*
Contract Ref. NO.: e.g. (WO, PO, CWP)	*17486*
Weather(AM):	*4c cloudy*
Weather(PM):	*8c cloudy*
Date:	*September 24, 2020*

Reported By:

> **Marshall Ewing**

Onsite Rep: Bill, Lea, Matt, Mike

Daily Report must be Supplied to Vic Gold by 9:00am

SAFETY TOPICS FOR YESTERDAY

Topics:

Mind on task
Complacency
JHA for working under power lines
Get to survey to mark underground cables

Incident(s)

> **None**

Total Incidents

0

QUALITY TOPICS FOR YESTERDAY

Topics:

Muddy conditions, not able to reuse rip rap

EXTRAS

ACTIVITIES COMPLETED YESTERDAY

Activities:

Installed 100m of liner
Completed excavation to 0-200
Installed 21 panels of liner
Installed 15 panels of geotextile
Screening rock
Water diversion
Site services assist with excavation of ditch A 0+800 to 0+700

ACTIVITIES COMPLETED TODAY

Activities:

Control pond access
Installed 29 panels of liner
Secondary rip rap access
Water diversion
Screening rock
House keeping



Control pond access

ACTIVITIES COMPLETED TODAY

Activities:

No comments



Installing liner

EXTRA WORK/CONTRACT ISSUES AND/OR ENGINEERING IMPACTS (RFI'S0 AND/OR DELAYS

Info:

Prepping access for rip rap at the secondary

MATERIAL SOURCE AND DOCUMENTATION OF RIP/RAP SIZE USED PER CHAINAGE SECTION OF DITCH A

Chainage Start:	*0-200*
Chainage End:	*0-220*

Rip/Rap Size:

- **Class 10kg**

Source:

South ditch A and tie in

GEOTEXTILE AND LINER INSTALL CONDITION DURING EXCAVATION PER CHAINAGE SECTION OF DITCH A

Chainage Start:	*0-125*
Chainage End:	*0-195*
Condition of Liner:	*Liner is in good condition*

AMOUNT OF MATERIALS REMOVED, SCREENED, AND PLACED PER SECTION

Chainage Start:	*0-190 Ewing* *0+700 site services*
Chainage End:	*0-220 Ewing* *0+600 site services*
Amount of Material Removed (m³):	*708 total waste removed*
Amount of Fines Screened Out (m³):	*No comments*
Amount of Material Placed (m³):	*120 placed from 0-190 - 0-220 to finish sub grade and slope*

ENVIRONMENTAL CONDITIONS FOR YESTERDAY

Conditions:

Muddy and silty material from ditch

If conditions affected work progress, provide the number of hours and a brief description:

No comments

VISITORS ON SITE

Visitor:

JDS

# of Visits

1

VISITORS ON SITE

Visitor:

Under Hill

# of Visits

1

CONTRACTORS EQUIPMENT AND HOURS UTILIZED FOR YESTERDAY

Contractors/Sub Name:

Ewing

Equipment:

Excavator **336EL UNIT 026 (Long Stick)**

Hrs Used:

12

CONTRACTORS EQUIPMENT AND HOURS UTILIZED FOR YESTERDAY

Contractors/Sub Name:

Ewing

Equipment:

Excavator **329EL UNIT 027**

Hrs Used:

12

CONTRACTORS EQUIPMENT AND HOURS UTILIZED FOR YESTERDAY

Contractors/Sub Name:

Ewing

Equipment:

Excavator **325DL UNIT 021**

Hrs Used:

6

CONTRACTORS EQUIPMENT AND HOURS UTILIZED FOR YESTERDAY

Contractors/Sub Name:

› **Ewing**

Equipment:

› **Wheel Loader** › **950C UNIT 012**

Hrs Used:

12

CONTRACTORS EQUIPMENT AND HOURS UTILIZED FOR YESTERDAY

Contractors/Sub Name:

› **Ewing**

Equipment:

› **Skid Steer** › **289D UNIT 015**

Hrs Used:

6

CONTRACTORS EQUIPMENT AND HOURS UTILIZED FOR YESTERDAY

Contractors/Sub Name:

› **Site Services**

Equipment:

› **Excavator** › **325L UNIT 020**

Hrs Used:

12

CONTRACTORS EQUIPMENT AND HOURS UTILIZED FOR YESTERDAY

Contractors/Sub Name:

› **Ewing**

Equipment:

› **Rock Truck** › **730 UNIT 018**

Hrs Used:

12

CONTRACTORS EQUIPMENT AND HOURS UTILIZED FOR YESTERDAY

Contractors/Sub Name:

› **Ewing**

Equipment:

› **Rock Truck** › **730 UNIT 016**

Hrs Used:

12

CONTRACTORS EQUIPMENT AND HOURS UTILIZED FOR YESTERDAY

Contractors/Sub Name:

› **Ewing**

Equipment:

› **Rock Truck** › **730 UNIT 016**

Hrs Used:

12

CONTRACTORS EQUIPMENT AND HOURS UTILIZED FOR YESTERDAY

Contractors/Sub Name:

Site Services

Equipment:

Rock Truck **740 - Ewing operator**

Hrs Used:

12

CONTRACTORS EQUIPMENT AND HOURS UTILIZED FOR YESTERDAY

Contractors/Sub Name:

Ewing

Equipment:

Excavator **325L UNIT 020**

Hrs Used:

4

CONTRACTORS EQUIPMENT AND HOURS UTILIZED FOR YESTERDAY

Contractors/Sub Name:

Ewing

Equipment:

Hrs Used:

No comments

CONTRACTORS LABOUR AND HOURS UTILIZED FOR YESTERDAY

Contractors/Sub Name:

Ewing

# of Labourers

4

Total Hrs Worked:

48

Original View

Marshall Ewing, *Supervisor*
September 24th 2020, 10:58 PM (GMT +00:00)

64.0311419, -135.8485654



Revised on September 25th 2020, 3:47 AM (GMT +00:00) View

Marshall Ewing, *Supervisor*
September 25th 2020, 3:47 AM (GMT +00:00)

64.0321429, -135.8488423



Revised on September 25th 2020, 1:35 PM (GMT +00:00) View

Marshall Ewing, *Supervisor*
September 25th 2020, 1:35 PM (GMT +00:00)

64.0311708, -135.8486043



Revised on September 25th 2020, 7:16 PM (GMT +00:00) Current View

Harrison Ewing, *Safety Manager*
September 25th 2020, 7:16 PM (GMT +00:00)

64.031403, -135.848236



Ewing Transport Ltd
PO Box 61, Mayo, Yukon Territory Y0B 1M0
867-334-6457

Daily Report

Private

Label	Ditch A - day 14
	Eagle Gold
	Saturday, September 26th 2020, 2:15 PM (GMT +00:00)

Daily Report

Job:	*Reclaim ditch A*
Location:	*0-200*
Project Name:	*Ditch A*
Description of Work:	*Excavation and removal of rip rap* *Preparing sub grade and water diversion* *Installing liner* *Water diversion* *Preparing access at the control pond and water diversion*
Contract Ref. NO.: e.g. (WO, PO, CWP)	*17486*
Weather(AM):	*2c cloudy*
Weather(PM):	*8c cloudy*
Date:	*September 26, 2020*

Reported By:

> **Marshall Ewing**

Onsite Rep: Bill, Lea, Matt, Mike

Daily Report must be Supplied to Vic Gold by 9:00am

SAFETY TOPICS FOR YESTERDAY

Topics:

Mind on task
Complacency
JHA for working under power lines
Get to survey to mark underground cables

Incident(s)

> **None**

Total Incidents

0

QUALITY TOPICS FOR YESTERDAY

Topics:

Site ops having trouble with pumps at the control pond

EXTRAS

ACTIVITIES COMPLETED YESTERDAY

Activities:

ontrol pond access
Secondary rip rap access
Water diversion
Screening rock
House keeping

ACTIVITIES COMPLETED TODAY

Activities:

Completed tie in at the top of Ditch A
Working on access at the control pond
Site services ditching across from WSL
Installed 8 panels of liner

ACTIVITIES COMPLETED TODAY

Activities:

No comments



Top of ditch A

ACTIVITIES COMPLETED TODAY

Activities:

No comments



Installing last panel of liner at ditch A

ACTIVITIES COMPLETED TODAY

Activities:

No comments



Anchor trench for liner

ACTIVITIES COMPLETED TODAY

Activities:

No comments



Access alongside Ditch A at control pond

ACTIVITIES COMPLETED TODAY

Activities:

No comments



Loading trucks

ACTIVITIES COMPLETED TODAY

EXTRA WORK/CONTRACT ISSUES AND/OR ENGINEERING IMPACTS (RFI'S0 AND/OR DELAYS

Info:

Prepping access for rip rap at the secondary

MATERIAL SOURCE AND DOCUMENTATION OF RIP/RAP SIZE USED PER CHAINAGE SECTION OF DITCH A

Chainage Start:	*0-200*
Chainage End:	*0-220*

Rip/Rap Size:

- **Class 10kg**

Source:

South ditch A and tie in

GEOTEXTILE AND LINER INSTALL CONDITION DURING EXCAVATION PER CHAINAGE SECTION OF DITCH A

Chainage Start:	*0-195*
Chainage End:	*0-220*
Condition of Liner:	*Liner is in good condition*

AMOUNT OF MATERIALS REMOVED, SCREENED, AND PLACED PER SECTION

Chainage Start:	*0+400 site services*
Chainage End:	*0+300 site services*
Amount of Material Removed (m^3):	*480 total waste removed* *896 places for access at control pond*

Amount of Fines Screened Out (m³):	*No comments*
Amount of Material Placed (m³):	*No comments*

ENVIRONMENTAL CONDITIONS FOR YESTERDAY

Conditions:

Pumps at 0+400 can't keep up with silty water

If conditions affected work progress, provide the number of hours and a brief description:

No comments

VISITORS ON SITE

Visitor:

JDS

# of Visits	*1*

VISITORS ON SITE

Visitor:

Vic Gold

# of Visits	*1*

CONTRACTORS EQUIPMENT AND HOURS UTILIZED FOR YESTERDAY

Contractors/Sub Name:

Ewing

Equipment:

Excavator **336EL UNIT 026 (Long Stick)**

Hrs Used:	*12*

CONTRACTORS EQUIPMENT AND HOURS UTILIZED FOR YESTERDAY

Contractors/Sub Name:

Ewing

Equipment:

Excavator **329EL UNIT 027**

Hrs Used:	*12*

CONTRACTORS EQUIPMENT AND HOURS UTILIZED FOR YESTERDAY

Contractors/Sub Name:

Ewing

Equipment:

Excavator **325DL UNIT 021**

Hrs Used:	*12*

CONTRACTORS EQUIPMENT AND HOURS UTILIZED FOR YESTERDAY

Contractors/Sub Name:

Ewing

Equipment:

Skid Steer **289D UNIT 015**

Hrs Used:

6

CONTRACTORS EQUIPMENT AND HOURS UTILIZED FOR YESTERDAY

Contractors/Sub Name:

Site Services

Equipment:

Excavator **325L UNIT 020**

Hrs Used:

12

CONTRACTORS EQUIPMENT AND HOURS UTILIZED FOR YESTERDAY

Contractors/Sub Name:

Ewing

Equipment:

Rock Truck **730 UNIT 018**

Hrs Used:

12

CONTRACTORS EQUIPMENT AND HOURS UTILIZED FOR YESTERDAY

Contractors/Sub Name:

Ewing

Equipment:

Rock Truck **730 UNIT 016**

Hrs Used:

12

CONTRACTORS EQUIPMENT AND HOURS UTILIZED FOR YESTERDAY

Contractors/Sub Name:

Ewing

Equipment:

Rock Truck **730 UNIT 016**

Hrs Used:

12

CONTRACTORS EQUIPMENT AND HOURS UTILIZED FOR YESTERDAY

Contractors/Sub Name:

Site Services

Equipment:

Rock Truck **740 - Ewing operator**

Hrs Used:

8

CONTRACTORS EQUIPMENT AND HOURS UTILIZED FOR YESTERDAY

Contractors/Sub Name:

Ewing

Equipment:

Excavator **325L UNIT 020**

Hrs Used:

2

CONTRACTORS LABOUR AND HOURS UTILIZED FOR YESTERDAY

Contractors/Sub Name:

Ewing

# of Labourers

4

Total Hrs Worked:

48

Original View

Marshall Ewing, *Supervisor*
September 26th 2020, 2:15 PM (GMT +00:00)

64.0311182, -135.8484018



Revised on September 26th 2020, 3:05 PM (GMT +00:00) Current View

Marshall Ewing, *Supervisor*
September 26th 2020, 3:05 PM (GMT +00:00)

64.0311589, -135.8483998



Ewing Transport Ltd
PO Box 61, Mayo, Yukon Territory Y0B 1M0
867-334-6457

Daily Report

Private

Label	Ditch A - Day 15
	Eagle Gold
	Sunday, September 27th 2020, 1:37 PM (GMT +00:00)

Daily Report

Job:	*Reclaim ditch A*
Location:	*0-200*
Project Name:	*Ditch A*
Description of Work:	*Excavation and removal of rip rap* *Preparing sub grade and water diversion* *Installing liner* *Water diversion* *Preparing access at the control pond and water diversion*
Contract Ref. NO.: e.g. (WO, PO, CWP)	*17486*
Weather(AM):	*2c cloudy*
Weather(PM):	*6c cloudy/raining*
Date:	*September 27, 2020*

Reported By:

> **Marshall Ewing**

Onsite Rep: Bill, Lea, Matt, Mike

Daily Report must be Supplied to Vic Gold by 9:00am

SAFETY TOPICS FOR YESTERDAY

Topics:

Ground crew must wear headlamps while working in the dark
Different work areas require different radio channels
Watch oncoming traffic on crusher access

Incident(s)

> **None**

Total Incidents	*0*

QUALITY TOPICS FOR YESTERDAY

EXTRAS

ACTIVITIES COMPLETED YESTERDAY

Activities:

Completed tie in at the top of Ditch A
Working on access at the control pond
Site services ditching across from WSL
Installed 8 panels of liner

ACTIVITIES COMPLETED TODAY

Activities:

Completed access along ditch A at control pond
Installed 100m of liner
Grade raise on crusher access road
Installed 21 panels of liner
Removing waste from ditch

ACTIVITIES COMPLETED TODAY

Activities:

No comments



Night shift dump material over rip/rap stockpile below nuway

ACTIVITIES COMPLETED TODAY

Activities:

No comments



Control pond access

ACTIVITIES COMPLETED TODAY

Activities:

No comments



Sub grade prep

ACTIVITIES COMPLETED TODAY

Activities:

No comments



Installing liner

ACTIVITIES COMPLETED TODAY

Activities:

No comments



Removing waste material from ditch

EXTRA WORK/CONTRACT ISSUES AND/OR ENGINEERING IMPACTS (RFI'S0 AND/OR DELAYS

Info:

Potential rip/rap source from ditch A pit



MATERIAL SOURCE AND DOCUMENTATION OF RIP/RAP SIZE USED PER CHAINAGE SECTION OF DITCH A

Chainage Start:	*No comments*
Chainage End:	*No comments*

Rip/Rap Size:

- **Class 10kg**

Source:

No comments

GEOTEXTILE AND LINER INSTALL CONDITION DURING EXCAVATION PER CHAINAGE SECTION OF DITCH A

Chainage Start:	*0+900*
Chainage End:	*0+800*
Condition of Liner:	*Liner is in good condition*

AMOUNT OF MATERIALS REMOVED, SCREENED, AND PLACED PER SECTION

Chainage Start:	*1+200 site services* *1+432 Ewing*
Chainage End:	*0+100 site services* *0+400 Ewing*
Amount of Material Removed (m³):	*No comments*
Amount of Fines Screened Out (m³):	*No comments*
Amount of Material Placed (m³):	*No comments*

ENVIRONMENTAL CONDITIONS FOR YESTERDAY

VISITORS ON SITE

Visitor:

JDS

# of Visits	*No comments*

VISITORS ON SITE

Visitor:

Vic Gold

# of Visits	*1*

CONTRACTORS EQUIPMENT AND HOURS UTILIZED FOR YESTERDAY

Contractors/Sub Name:

Ewing

Equipment:

Excavator **336EL UNIT 026 (Long Stick)**

Hrs Used:	*12*

CONTRACTORS EQUIPMENT AND HOURS UTILIZED FOR YESTERDAY

Contractors/Sub Name:

Ewing

Equipment:

Excavator **329EL UNIT 027**

Hrs Used:	*12*

CONTRACTORS EQUIPMENT AND HOURS UTILIZED FOR YESTERDAY

Contractors/Sub Name:

Ewing

Equipment:

> **Excavator** > **325DL UNIT 021**

Hrs Used:

12

CONTRACTORS EQUIPMENT AND HOURS UTILIZED FOR YESTERDAY

Contractors/Sub Name:

> **Ewing**

Equipment:

> **Skid Steer** > **289D UNIT 015**

Hrs Used:

6

CONTRACTORS EQUIPMENT AND HOURS UTILIZED FOR YESTERDAY

Contractors/Sub Name:

> **Ewing**

Equipment:

> **Rock Truck** > **730 UNIT 018**

Hrs Used:

12

CONTRACTORS EQUIPMENT AND HOURS UTILIZED FOR YESTERDAY

Contractors/Sub Name:

> **Ewing**

Equipment:

> **Rock Truck** > **730 UNIT 016**

Hrs Used:

12

CONTRACTORS EQUIPMENT AND HOURS UTILIZED FOR YESTERDAY

Contractors/Sub Name:

> **Ewing**

Equipment:

> **Rock Truck** > **730 UNIT 016**

Hrs Used:

12

CONTRACTORS EQUIPMENT AND HOURS UTILIZED FOR YESTERDAY

Contractors/Sub Name:

> **Ewing**

Equipment:

> **Excavator** > **325L UNIT 020**

Hrs Used:

2

CONTRACTORS EQUIPMENT AND HOURS UTILIZED FOR YESTERDAY

Contractors/Sub Name:

Ewing

Equipment:

Tandem **W900 ET021 (Grey)**

Hrs Used:

2

CONTRACTORS EQUIPMENT AND HOURS UTILIZED FOR YESTERDAY

Contractors/Sub Name:

Ewing

Equipment:

Packer **CS54B UNIT 010**

Hrs Used:

1

CONTRACTORS EQUIPMENT AND HOURS UTILIZED FOR YESTERDAY

Contractors/Sub Name:

Ewing

Equipment:

Wheel Loader **950C UNIT 012**

Hrs Used:

1

CONTRACTORS EQUIPMENT AND HOURS UTILIZED FOR YESTERDAY

Contractors/Sub Name:

Ewing

Equipment:

Dozer **D10R UNIT 030**

Hrs Used:

6

CONTRACTORS LABOUR AND HOURS UTILIZED FOR YESTERDAY

Contractors/Sub Name:

Ewing

# of Labourers

4

Total Hrs Worked:

48

Original View

Marshall Ewing, *Supervisor*
September 27th 2020, 1:37 PM (GMT +00:00)

64.0311705, -135.8485838



Revised on September 27th 2020, 3:48 PM (GMT +00:00) View

Marshall Ewing, *Supervisor*
September 27th 2020, 3:48 PM (GMT +00:00)

64.0311634, -135.8486362



Revised on September 27th 2020, 6:56 PM (GMT +00:00) Current View

Harrison Ewing, *Safety Manager*
September 27th 2020, 6:56 PM (GMT +00:00)

64.0312757, -135.8483887



Ewing Transport Ltd
PO Box 61, Mayo, Yukon Territory Y0B 1M0
867-334-6457

Daily Report

Private

Label	Ditch A - day 16
	Eagle Gold
	Monday, September 28th 2020, 1:41 PM (GMT +00:00)

Daily Report

Job:	*Reclaim ditch A*
Location:	*0-200*
Project Name:	*Ditch A*
Description of Work:	*Excavation and removal of rip rap* *Preparing sub grade and water diversion* *Installing liner* *Water diversion* *Placing rip rap*
Contract Ref. NO.: e.g. (WO, PO, CWP)	*17486*
Weather(AM):	*2c cloudy*
Weather(PM):	*3c cloudy/raining/windy*
Date:	*September 27, 2020*

Reported By:

> **Marshall Ewing**

Onsite Rep: Bill, Lea, Matt, Mike

Daily Report must be Supplied to Vic Gold by 9:00am

SAFETY TOPICS FOR YESTERDAY

Topics:

Loaded haul trucks have the right of way
Try not to meet on narrow sections of the road
Ground crew must work with caution because of traffic and equipment

Incident(s)

> **None**

Total Incidents	*0*

QUALITY TOPICS FOR YESTERDAY

EXTRAS

ACTIVITIES COMPLETED YESTERDAY

Activities:

Completed access along ditch A at control pond
Installed 100m of liner
Grade raise on crusher access road
Removing waste from ditch
Placed 20 panels of liner

ACTIVITIES COMPLETED TODAY

Activities:

Removing unsuitable material from ditch
Surface prep
Placed sand bags on liner due to windy conditions
Placed 14 panels of liner



Placing sand bags

ACTIVITIES COMPLETED TODAY

Activities:

No comments



Removing waste from ditch

ACTIVITIES COMPLETED TODAY

Activities:

No comments



ACTIVITIES COMPLETED TODAY

Activities:

No comments



Working at control pond

EXTRA WORK/CONTRACT ISSUES AND/OR ENGINEERING IMPACTS (RFI'S0 AND/OR DELAYS

MATERIAL SOURCE AND DOCUMENTATION OF RIP/RAP SIZE USED PER CHAINAGE SECTION OF DITCH A

Chainage Start:	*No comments*
Chainage End:	*No comments*

Rip/Rap Size:

- **Class 10kg**

Source:

No comments

GEOTEXTILE AND LINER INSTALL CONDITION DURING EXCAVATION PER CHAINAGE SECTION OF DITCH A

Chainage Start:	*0+800*
Chainage End:	*0+730*
Condition of Liner:	

Liner is in good condition

AMOUNT OF MATERIALS REMOVED, SCREENED, AND PLACED PER SECTION

Chainage Start:	*1+750 site services* *1+432 Ewing*
Chainage End:	*0+650 site services* *0+400 Ewing*
Amount of Material Removed (m³):	*No comments*
Amount of Fines Screened Out (m³):	*No comments*
Amount of Material Placed (m³):	*No comments*

ENVIRONMENTAL CONDITIONS FOR YESTERDAY

Conditions:

Rainy/windy conditions

If conditions affected work progress, provide the number of hours and a brief description:

Had to shut the whole crew down at 5pm to help place sand bags



VISITORS ON SITE

Visitor:

JDS

# of Visits	*No comments*

VISITORS ON SITE

Visitor:

Vic Gold

# of Visits	*1*

CONTRACTORS EQUIPMENT AND HOURS UTILIZED FOR YESTERDAY

Contractors/Sub Name:

Ewing

Equipment:

Excavator **336EL UNIT 026 (Long Stick)**

Hrs Used:

12

CONTRACTORS EQUIPMENT AND HOURS UTILIZED FOR YESTERDAY

Contractors/Sub Name:

Ewing

Equipment:

Excavator **329EL UNIT 027**

Hrs Used:

12

CONTRACTORS EQUIPMENT AND HOURS UTILIZED FOR YESTERDAY

Contractors/Sub Name:

Ewing

Equipment:

Excavator **325DL UNIT 021**

Hrs Used:

12

CONTRACTORS EQUIPMENT AND HOURS UTILIZED FOR YESTERDAY

Contractors/Sub Name:

Ewing

Equipment:

Skid Steer **289D UNIT 015**

Hrs Used:

4

CONTRACTORS EQUIPMENT AND HOURS UTILIZED FOR YESTERDAY

Contractors/Sub Name:

Ewing

Equipment:

Rock Truck **730 UNIT 018**

Hrs Used:

12

CONTRACTORS EQUIPMENT AND HOURS UTILIZED FOR YESTERDAY

Contractors/Sub Name:

Ewing

Equipment:

Rock Truck › 730 UNIT 016

Hrs Used:

12

CONTRACTORS EQUIPMENT AND HOURS UTILIZED FOR YESTERDAY

Contractors/Sub Name:

Ewing

Equipment:

Rock Truck › 730 UNIT 016

Hrs Used:

12

CONTRACTORS EQUIPMENT AND HOURS UTILIZED FOR YESTERDAY

Contractors/Sub Name:

Ewing

Equipment:

Tandem › W900 ET021 (Grey)

Hrs Used:

2

CONTRACTORS EQUIPMENT AND HOURS UTILIZED FOR YESTERDAY

Contractors/Sub Name:

Ewing

Equipment:

Wheel Loader › 950C UNIT 012

Hrs Used:

2

CONTRACTORS LABOUR AND HOURS UTILIZED FOR YESTERDAY

Contractors/Sub Name:

Ewing

# of Labourers

4

Total Hrs Worked:

48

Marshall Ewing, *Supervisor*
September 28th 2020, 1:41 PM (GMT +00:00)

64.0311523, -135.8485309



Ewing Transport Ltd
PO Box 61, Mayo, Yukon Territory Y0B 1M0
867-334-6457

Daily Report

Private

Label	Ditch A - day 17
	Eagle Gold
	Tuesday, September 29th 2020, 1:46 PM (GMT +00:00)

Daily Report

Job:	*Reclaim ditch A*
Location:	*Control pond*
Project Name:	*Ditch A*
Description of Work:	*Excavation and removal of rip rap* *Preparing sub grade and water diversion* *Installing liner* *Water diversion* *Placing rip rap*
Contract Ref. NO.: e.g. (WO, PO, CWP)	*17486*
Weather(AM):	*2c cloudy*
Weather(PM):	*5c cloudy/raining*
Date:	*September 29, 2020*

Reported By:

> **Marshall Ewing**

Onsite Rep: Bill, Lea, Matt, Mike

Daily Report must be Supplied to Vic Gold by 9:00am

SAFETY TOPICS FOR YESTERDAY

Topics:

Loaded haul trucks have the right of way
Try not to meet on narrow sections of the road
Ground crew must work with caution because of traffic and equipment

Incident(s)

> **None**

Total Incidents	*0*

QUALITY TOPICS FOR YESTERDAY

EXTRAS

ACTIVITIES COMPLETED YESTERDAY

Activities:

Removing unsuitable material from ditch
Surface prep
Placed sand bags on liner due to windy conditions
Placed 14 panels of liner

ACTIVITIES COMPLETED TODAY

Activities:

Placed rip rap in ditch where ditch slope is eroding
Removing unsuitable material from ditch A
Sub grade prep
Excavation around electrical conduit in ditch A completed
22 panels of liner installed

ACTIVITIES COMPLETED TODAY

Activities:

No comments



Working with survey around conduit

ACTIVITIES COMPLETED TODAY

Activities:

No comments



Water diversion

ACTIVITIES COMPLETED TODAY

Activities:

No comments



Sub grade prep

ACTIVITIES COMPLETED TODAY

Activities:

No comments



Placed rip rap where slope is eroding

ACTIVITIES COMPLETED TODAY

Activities:

No comments



Installing liner

EXTRA WORK/CONTRACT ISSUES AND/OR ENGINEERING IMPACTS (RFI'S0 AND/OR DELAYS

MATERIAL SOURCE AND DOCUMENTATION OF RIP/RAP SIZE USED PER CHAINAGE SECTION OF DITCH A

Chainage Start:	*No comments*
Chainage End:	*No comments*

Rip/Rap Size:

- **Class 10kg**

Source:

No comments

GEOTEXTILE AND LINER INSTALL CONDITION DURING EXCAVATION PER CHAINAGE SECTION OF DITCH A

Chainage Start:	*0+730*
Chainage End:	*0+630*
Condition of Liner:	*Liner is in good condition*

AMOUNT OF MATERIALS REMOVED, SCREENED, AND PLACED PER SECTION

Chainage Start:	*1+750 site services* *1+432 Ewing*
Chainage End:	*0+650 site services* *0+400 Ewing*
Amount of Material Removed (m^3):	*No comments*
Amount of Fines Screened Out (m^3):	*No comments*
Amount of Material Placed (m^3):	*No comments*

ENVIRONMENTAL CONDITIONS FOR YESTERDAY

Conditions:

Rain

If conditions affected work progress, provide the number of hours and a brief description:

Slope was eroding



VISITORS ON SITE

Visitor:

JDS

# of Visits

1

VISITORS ON SITE

Visitor:

Vic Gold

# of Visits

1

CONTRACTORS EQUIPMENT AND HOURS UTILIZED FOR YESTERDAY

Contractors/Sub Name:

Ewing

Equipment:

Excavator **336EL UNIT 026 (Long Stick)**

Hrs Used:

12

CONTRACTORS EQUIPMENT AND HOURS UTILIZED FOR YESTERDAY

Contractors/Sub Name:

Ewing

Equipment:

Excavator **329EL UNIT 027**

Hrs Used:

12

CONTRACTORS EQUIPMENT AND HOURS UTILIZED FOR YESTERDAY

Contractors/Sub Name:

Ewing

Equipment:

Excavator **325DL UNIT 021**

Hrs Used:

12

CONTRACTORS EQUIPMENT AND HOURS UTILIZED FOR YESTERDAY

Contractors/Sub Name:

Ewing

Equipment:

Skid Steer **289D UNIT 015**

Hrs Used:

4

CONTRACTORS EQUIPMENT AND HOURS UTILIZED FOR YESTERDAY

Contractors/Sub Name:

Ewing

Equipment:

Rock Truck **730 UNIT 018**

Hrs Used:

12

CONTRACTORS EQUIPMENT AND HOURS UTILIZED FOR YESTERDAY

Contractors/Sub Name:

Ewing

Equipment:

Rock Truck **730 UNIT 016**

Hrs Used:

12

CONTRACTORS EQUIPMENT AND HOURS UTILIZED FOR YESTERDAY

Contractors/Sub Name:

Ewing

Equipment:

Rock Truck **730 UNIT 016**

Hrs Used:

2

CONTRACTORS EQUIPMENT AND HOURS UTILIZED FOR YESTERDAY

Contractors/Sub Name:

Ewing

Equipment:

Tandem › W900 ET021 (Grey)

Hrs Used:

1

CONTRACTORS EQUIPMENT AND HOURS UTILIZED FOR YESTERDAY

Contractors/Sub Name:

Ewing

Equipment:

Wheel Loader › 950C UNIT 012

Hrs Used:

1

CONTRACTORS LABOUR AND HOURS UTILIZED FOR YESTERDAY

Contractors/Sub Name:

Ewing

# of Labourers

4

Total Hrs Worked:

48

Original View

Marshall Ewing, *Supervisor*
September 29th 2020, 1:46 PM (GMT +00:00)

64.0311701, -135.8485607



Revised on September 29th 2020, 5:32 PM (GMT +00:00) Current View

Marshall Ewing, *Supervisor*
September 29th 2020, 5:32 PM (GMT +00:00)

64.0311586, -135.8484298



Ewing Transport Ltd
PO Box 61, Mayo, Yukon Territory Y0B 1M0
867-334-6457

Daily Report

Private

Label	Ditch A - day 18
	Eagle Gold
	Wednesday, September 30th 2020, 1:41 PM (GMT +00:00)

Daily Report

Job:	*Reclaim ditch A*
Location:	*Control pond*
Project Name:	*Ditch A*
Description of Work:	*Excavation and removal of rip rap* *Preparing sub grade and water diversion* *Installing liner* *Water diversion* *Placing rip rap*
Contract Ref. NO.: e.g. (WO, PO, CWP)	*17486*
Weather(AM):	*0c cloudy*
Weather(PM):	*8c sunny*
Date:	*September 30, 2020*

Reported By:

> **Marshall Ewing**

Onsite Rep: Bill, Lea, Matt, Mike

Daily Report must be Supplied to Vic Gold by 9:00am

SAFETY TOPICS FOR YESTERDAY

Topics:

3-point contact
Watch your footing
When lifting heavy object, work together
Ask for your help

Incident(s)

> **None**

Total Incidents

0

QUALITY TOPICS FOR YESTERDAY

EXTRAS

ACTIVITIES COMPLETED YESTERDAY

ACTIVITIES COMPLETED TODAY

Activities:

Hauled rip rap from secondary source
Sub grade prep
Installed 18 panels of liner
Placed rip rap on section liner
105m of liner

ACTIVITIES COMPLETED TODAY

Activities:

No comments



Loading rip rap

ACTIVITIES COMPLETED TODAY

Activities:

No comments



Placing rip rap on liner

ACTIVITIES COMPLETED TODAY

Activities:

No comments



Installing liner

EXTRA WORK/CONTRACT ISSUES AND/OR ENGINEERING IMPACTS (RFI'S0 AND/OR DELAYS

MATERIAL SOURCE AND DOCUMENTATION OF RIP/RAP SIZE USED PER CHAINAGE SECTION OF DITCH A

Chainage Start:	*No comments*
Chainage End:	*No comments*

Rip/Rap Size:

- **Class 10kg**

Source:

No comments

GEOTEXTILE AND LINER INSTALL CONDITION DURING EXCAVATION PER CHAINAGE SECTION OF DITCH A

Chainage Start:	*0+630*
Chainage End:	*0+525*
Condition of Liner:	*Liner is in good condition*

AMOUNT OF MATERIALS REMOVED, SCREENED, AND PLACED PER SECTION

Chainage Start:	*1+750 site services* *1+432 Ewing*
Chainage End:	*0+650 site services* *0+400 Ewing*
Amount of Material Removed (m³):	*No comments*
Amount of Fines Screened Out (m³):	*No comments*
Amount of Material Placed (m³):	*No comments*

ENVIRONMENTAL CONDITIONS FOR YESTERDAY

VISITORS ON SITE

Visitor:

JDS

# of Visits

1

VISITORS ON SITE

Visitor:

Vic Gold

# of Visits

1

CONTRACTORS EQUIPMENT AND HOURS UTILIZED FOR YESTERDAY

Contractors/Sub Name:

Ewing

Equipment:

Excavator **336EL UNIT 026 (Long Stick)**

Hrs Used:

12

CONTRACTORS EQUIPMENT AND HOURS UTILIZED FOR YESTERDAY

Contractors/Sub Name:

Ewing

Equipment:

Excavator **329EL UNIT 027**

Hrs Used:

12

CONTRACTORS EQUIPMENT AND HOURS UTILIZED FOR YESTERDAY

Contractors/Sub Name:

Ewing

Equipment:

Excavator **325DL UNIT 021**

Hrs Used:

12

CONTRACTORS EQUIPMENT AND HOURS UTILIZED FOR YESTERDAY

Contractors/Sub Name:

Ewing

Equipment:

Skid Steer **289D UNIT 015**

Hrs Used:

4

CONTRACTORS EQUIPMENT AND HOURS UTILIZED FOR YESTERDAY

Contractors/Sub Name:

Ewing

Equipment:

Rock Truck **730 UNIT 018**

Hrs Used:

12

CONTRACTORS EQUIPMENT AND HOURS UTILIZED FOR YESTERDAY

Contractors/Sub Name:

Ewing

Equipment:

Rock Truck **730 UNIT 016**

Hrs Used:

12

CONTRACTORS EQUIPMENT AND HOURS UTILIZED FOR YESTERDAY

Contractors/Sub Name:

Ewing

Equipment:

Rock Truck **730 UNIT 016**

Hrs Used:

2

CONTRACTORS LABOUR AND HOURS UTILIZED FOR YESTERDAY

Contractors/Sub Name:

Ewing

# of Labourers

4

Total Hrs Worked:

48

Marshall Ewing, *Supervisor*
September 30th 2020, 1:41 PM (GMT +00:00)

64.0311689, -135.8485696



Ewing Transport Ltd
PO Box 61, Mayo, Yukon Territory Y0B 1M0
867-334-6457

Daily Report

Private

Label	Ditch A - day 20
	Eagle Gold
	Friday, October 2nd 2020, 2:54 PM (GMT +00:00)

Daily Report

Job:	*Reclaim ditch A*
Location:	*Control pond*
Project Name:	*Ditch A*
Description of Work:	*Preparing sub grade and water diversion* *Installing liner* *Water diversion* *Placing rip rap*
Contract Ref. NO.: e.g. (WO, PO, CWP)	*17486*
Weather(AM):	*1c raining*
Weather(PM):	*9c sunny*
Date:	*October 2, 2020*

Reported By:

Marshall Ewing

Onsite Rep: Bill, Lea, Matt, Mike

Daily Report must be Supplied to Vic Gold by 9:00am

SAFETY TOPICS FOR YESTERDAY

Topics:

Work with caution around power lines, use spotter if necessary
Rock truck box down
Proper berms on haul roads
Check spills kits

Incident(s)

None

Total Incidents

0

QUALITY TOPICS FOR YESTERDAY

EXTRAS

ACTIVITIES COMPLETED YESTERDAY

ACTIVITIES COMPLETED TODAY

Activities:

Hauled rip rap from eagle source
Sub grade prep
Placed rip rap on section liner
105m of liner installed
Installed culvert at 1st switchback
16 panels of liner(crew was able to lay liner directly into ditch for longer panel lengths)

ACTIVITIES COMPLETED TODAY

Activities:

No comments

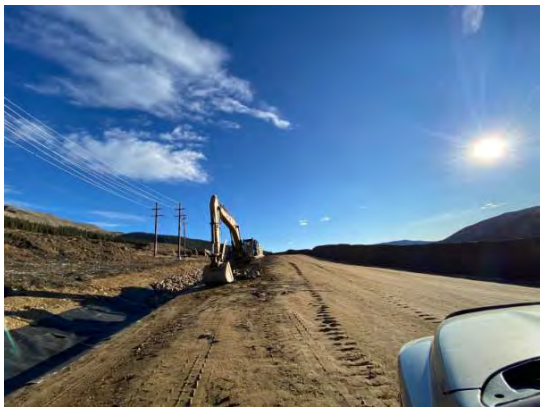


Installed culvert and electrical conduit at 1st switchback

ACTIVITIES COMPLETED TODAY

Activities:

No comments



Placing rip rap

ACTIVITIES COMPLETED TODAY

Activities:

No comments



Installing liner

ACTIVITIES COMPLETED TODAY

Activities:

No comments



Ditch A access at control pond

EXTRA WORK/CONTRACT ISSUES AND/OR ENGINEERING IMPACTS (RFI'S0 AND/OR DELAYS

MATERIAL SOURCE AND DOCUMENTATION OF RIP/RAP SIZE USED PER CHAINAGE SECTION OF DITCH A

Chainage Start:	*No comments*
Chainage End:	*No comments*
Rip/Rap Size:	
Source:	

No comments

GEOTEXTILE AND LINER INSTALL CONDITION DURING EXCAVATION PER CHAINAGE SECTION OF DITCH A

Chainage Start:	*1+000*
Chainage End:	

1+105

Condition of Liner:

Liner is in good condition

AMOUNT OF MATERIALS REMOVED, SCREENED, AND PLACED PER SECTION

ENVIRONMENTAL CONDITIONS FOR YESTERDAY

VISITORS ON SITE

Visitor:

JDS

# of Visits

1

VISITORS ON SITE

Visitor:

Vic Gold

# of Visits

1

CONTRACTORS EQUIPMENT AND HOURS UTILIZED FOR YESTERDAY

Contractors/Sub Name:

Ewing

Equipment:

Excavator **336EL UNIT 026 (Long Stick)**

Hrs Used:

12

CONTRACTORS EQUIPMENT AND HOURS UTILIZED FOR YESTERDAY

Contractors/Sub Name:

Ewing

Equipment:

Excavator **329EL UNIT 027**

Hrs Used:

12

CONTRACTORS EQUIPMENT AND HOURS UTILIZED FOR YESTERDAY

Contractors/Sub Name:

Ewing

Equipment:

Excavator **325DL UNIT 021**

Hrs Used:

9

CONTRACTORS EQUIPMENT AND HOURS UTILIZED FOR YESTERDAY

Contractors/Sub Name:

Ewing

Equipment:

Skid Steer > 289D UNIT 015

Hrs Used:

5

CONTRACTORS EQUIPMENT AND HOURS UTILIZED FOR YESTERDAY

Contractors/Sub Name:

Ewing

Equipment:

Rock Truck > 730 UNIT 018

Hrs Used:

12

CONTRACTORS EQUIPMENT AND HOURS UTILIZED FOR YESTERDAY

Contractors/Sub Name:

Ewing

Equipment:

Rock Truck > 730 UNIT 016

Hrs Used:

12

CONTRACTORS EQUIPMENT AND HOURS UTILIZED FOR YESTERDAY

Contractors/Sub Name:

Ewing

Equipment:

Rock Truck > 730 UNIT 016

Hrs Used:

2

CONTRACTORS EQUIPMENT AND HOURS UTILIZED FOR YESTERDAY

Contractors/Sub Name:

Ewing

Equipment:

Excavator > 325DL UNIT 021

Hrs Used:

3

CONTRACTORS EQUIPMENT AND HOURS UTILIZED FOR YESTERDAY

Contractors/Sub Name:

Ewing

Equipment:

Wheel Loader > 950C UNIT 012

Hrs Used:	*12*

CONTRACTORS EQUIPMENT AND HOURS UTILIZED FOR YESTERDAY

Contractors/Sub Name:

Ewing

Equipment:

Dozer **D10R UNIT 030**

Hrs Used:	*9*

CONTRACTORS LABOUR AND HOURS UTILIZED FOR YESTERDAY

Contractors/Sub Name:

Ewing

# of Labourers	*3*
Total Hrs Worked:	*36*

Original View

Marshall Ewing, *Supervisor*
October 2nd 2020, 2:54 PM (GMT +00:00)
64.0311534, -135.8484905



Revised on October 2nd 2020, 3:12 PM (GMT +00:00) View

Marshall Ewing, *Supervisor*
October 2nd 2020, 3:12 PM (GMT +00:00)
64.0311693, -135.8484925



Revised on October 2nd 2020, 8:43 PM (GMT +00:00) Current View

Marshall Ewing, *Supervisor*
October 2nd 2020, 8:43 PM (GMT +00:00)
64.0311038, -135.8486009



Ewing Transport Ltd
PO Box 61, Mayo, Yukon Territory Y0B 1M0
867-334-6457

Daily Report

Private

Label	Ditch A - day 22
	Eagle Gold
	Sunday, October 4th 2020, 5:30 PM (GMT +00:00)

Daily Report

Job:	*Reclaim Ditch A*
Location:	*Ditch A*
Project Name:	*Ditch A*
Description of Work:	*Preparing sub grade and water diversion* *Installing liner* *Placing rip rap*
Contract Ref. NO.: e.g. (WO, PO, CWP)	*17486*
Weather(AM):	*1c*
Weather(PM):	*8c*
Date:	*October 3, 2020*

Reported By:

Marshall Ewing

Onsite Rep: Bill, Lea, Matt, Mike

Daily Report must be Supplied to Vic Gold by 9:00am

SAFETY TOPICS

Topics:

Hauling through different work areas
Men on the ground near moving equipment
Lots of communication

Incident(s)

None

Total Incidents	*No comments*

QUALITY TOPICS

EXTRAS

ACTIVITIES COMPLETED

Activities:

Installed 138m of liner
21 panels
Placed rip rap on liner
Sub grade prep
Water diversion
Screening rip rap at 1st switchback

ACTIVITIES COMPLETED

Activities:

No comments



Placing rip rap on liner

ACTIVITIES COMPLETED

Activities:

No comments



Sub grade prep

ACTIVITIES COMPLETED

Activities:

No comments



Hauling rip rap

ACTIVITIES COMPLETED

Activities:

No comments



Installing rip rap

EXTRA WORK/CONTRACT ISSUES AND/OR ENGINEERING IMPACTS (RFI'S0 AND/OR DELAYS

GEOTEXTILE AND LINER INSTALL CONDITION DURING EXCAVATION PER CHAINAGE SECTION OF DITCH A

Chainage Start:	*1+236*
Chainage End:	*1+374*
Condition of Liner:	*Liner is in good condition*

ENVIRONMENTAL CONDITIONS

VISITORS ON SITE

Visitor:

Vic Gold

# of Visits	*1*

CONTRACTORS EQUIPMENT AND HOURS UTILIZED

Contractors/Sub Name:

Ewing

Equipment:

Wheel Loader **950H UNIT 013**

Hrs Used:

12

CONTRACTORS EQUIPMENT AND HOURS UTILIZED

Contractors/Sub Name:

Ewing

Equipment:

Excavator **325DL UNIT 022 (Quick Attach)**

Hrs Used:

12

CONTRACTORS EQUIPMENT AND HOURS UTILIZED

Contractors/Sub Name:

Ewing

Equipment:

Excavator **336EL UNIT 026 (Long Stick)**

Hrs Used:

12

CONTRACTORS EQUIPMENT AND HOURS UTILIZED

Contractors/Sub Name:

Ewing

Equipment:

Excavator **329EL UNIT 027**

Hrs Used:

12

CONTRACTORS EQUIPMENT AND HOURS UTILIZED

Contractors/Sub Name:

Ewing

Equipment:

Rock Truck **730 UNIT 016**

Hrs Used:

12

CONTRACTORS EQUIPMENT AND HOURS UTILIZED

Contractors/Sub Name:

Ewing

Equipment:

Rock Truck **730 UNIT 016**

Hrs Used:

12

CONTRACTORS EQUIPMENT AND HOURS UTILIZED

Contractors/Sub Name:

Ewing

Equipment:

Rock Truck **730 UNIT 018**

Hrs Used:

12

CONTRACTORS EQUIPMENT AND HOURS UTILIZED

Contractors/Sub Name:

Ewing

Equipment:

Skid Steer **289D UNIT 015**

Hrs Used:

5

CONTRACTORS LABOUR AND HOURS UTILIZED

Contractors/Sub Name:

Ewing

# of Labourers

3

Total Hrs Worked:

36

Marshall Ewing, *Supervisor*
October 4th 2020, 5:30 PM (GMT +00:00)

64.0311679, -135.8484931



Ewing Transport Ltd
PO Box 61, Mayo, Yukon Territory Y0B 1M0
867-334-6457

Daily Report

Private

Label	Ditch A - day 23
	Eagle Gold
	Monday, October 5th 2020, 6:07 PM (GMT +00:00)

Daily Report

Job:	*Reclaim Ditch A*
Location:	*Ditch A*
Project Name:	*Ditch A*
Description of Work:	*Preparing sub grade and water diversion* *Installing liner* *Placing rip rap*
Contract Ref. NO.: e.g. (WO, PO, CWP)	*17486*
Weather(AM):	*3c raining*
Weather(PM):	*7c*
Date:	*October 4, 2020*

Reported By:

> **Marshall Ewing**

Onsite Rep: Bill, Lea, Matt, Mike

Daily Report must be Supplied to Vic Gold by 9:00am

SAFETY TOPICS

Topics:

Slips/trips
Heavy lifting
Working near equipment
Keep warm
Muddy conditions

Incident(s)

> **None**

Total Incidents	*No comments*

QUALITY TOPICS

EXTRAS

ACTIVITIES COMPLETED

Activities:

Installed 163m of liner
28 panels
Placed rip rap on liner
Sub grade prep
Water diversion
Screening rip rap at 1st switchback

ACTIVITIES COMPLETED

Activities:

No comments



Sub grade prep

ACTIVITIES COMPLETED

Activities:

No comments



Installing liner

ACTIVITIES COMPLETED

Activities:

No comments



Placing rip rap on liner

ACTIVITIES COMPLETED

Activities:

No comments



Water diversion

ACTIVITIES COMPLETED

Activities:

No comments



Placing rip rap at the top of ditch A

EXTRA WORK/CONTRACT ISSUES AND/OR ENGINEERING IMPACTS (RFI'S0 AND/OR DELAYS

GEOTEXTILE AND LINER INSTALL CONDITION DURING EXCAVATION PER CHAINAGE SECTION OF DITCH A

Chainage Start:
1+374

Chainage End:
1+537

Condition of Liner:
Liner is in good condition

ENVIRONMENTAL CONDITIONS

VISITORS ON SITE

Visitor:

Vic Gold

# of Visits
1

VISITORS ON SITE

Visitor:

Under Hill

# of Visits
1

CONTRACTORS EQUIPMENT AND HOURS UTILIZED

Contractors/Sub Name:

Ewing

Equipment:

Wheel Loader **950H UNIT 013**

Hrs Used:
12

CONTRACTORS EQUIPMENT AND HOURS UTILIZED

Contractors/Sub Name:

Ewing

Equipment:

Excavator **325DL UNIT 022 (Quick Attach)**

Hrs Used:
12

CONTRACTORS EQUIPMENT AND HOURS UTILIZED

Contractors/Sub Name:

Ewing

Equipment:

Excavator **336EL UNIT 026 (Long Stick)**

Hrs Used:
12

CONTRACTORS EQUIPMENT AND HOURS UTILIZED

Contractors/Sub Name:

Ewing

Equipment:

Excavator **329EL UNIT 027**

Hrs Used:

12

CONTRACTORS EQUIPMENT AND HOURS UTILIZED

Contractors/Sub Name:

Ewing

Equipment:

Rock Truck **730 UNIT 016**

Hrs Used:

12

CONTRACTORS EQUIPMENT AND HOURS UTILIZED

Contractors/Sub Name:

Ewing

Equipment:

Rock Truck **730 UNIT 016**

Hrs Used:

12

CONTRACTORS EQUIPMENT AND HOURS UTILIZED

Contractors/Sub Name:

Ewing

Equipment:

Rock Truck **730 UNIT 018**

Hrs Used:

12

CONTRACTORS EQUIPMENT AND HOURS UTILIZED

Contractors/Sub Name:

Ewing

Equipment:

Skid Steer **289D UNIT 015**

Hrs Used:

8

CONTRACTORS LABOUR AND HOURS UTILIZED

Contractors/Sub Name:

Ewing

# of Labourers	*4*
Total Hrs Worked:	*48*

Marshall Ewing, *Supervisor*
October 5th 2020, 6:07 PM (GMT +00:00)

64.0311692, -135.8485215



Ewing Transport Ltd
PO Box 61, Mayo, Yukon Territory Y0B 1M0
867-334-6457

Daily Report

Private

Label	Ditch A - day 24
	Eagle Gold
	Tuesday, October 6th 2020, 6:23 PM (GMT +00:00)

Daily Report

Job:	*Reclaim Ditch A*
Location:	*Ditch A*
Project Name:	*Ditch A*
Description of Work:	*Preparing sub grade and water diversion* *Installing liner* *Placing rip rap*
Contract Ref. NO.: e.g. (WO, PO, CWP)	*17486*
Weather(AM):	*3c raining*
Weather(PM):	*7c*
Date:	*October 4, 2020*

Reported By:

> **Marshall Ewing**

Onsite Rep: Bill, Lea, Matt, Mike

Daily Report must be Supplied to Vic Gold by 9:00am

SAFETY TOPICS

Topics:

Clean headlights, taillights, windows and mirrors
Organize work area
Loaded trucks have right of way

Incident(s)

> **None**

Total Incidents	*No comments*

QUALITY TOPICS

EXTRAS

ACTIVITIES COMPLETED

Activities:

Installed 20m of liner
4panels
Placed rip rap on liner
Sub grade prep
Water diversion
Screening rip rap at 1st switchback
Liner installation is complete

ACTIVITIES COMPLETED

Activities:

No comments



Loading rip rap at eagle

ACTIVITIES COMPLETED

Activities:

No comments



Hauling rip rap

ACTIVITIES COMPLETED

Activities:

No comments



Placing rip rap on liner

ACTIVITIES COMPLETED

Activities:

No comments



Placing rip rap on liner

EXTRA WORK/CONTRACT ISSUES AND/OR ENGINEERING IMPACTS (RFI'S0 AND/OR DELAYS

GEOTEXTILE AND LINER INSTALL CONDITION DURING EXCAVATION PER CHAINAGE SECTION OF DITCH A

Chainage Start:	*1+537*
Chainage End:	*1+557*
Condition of Liner:	*Liner is in good condition*

ENVIRONMENTAL CONDITIONS

VISITORS ON SITE

Visitor:

Vic Gold

# of Visits	*1*

CONTRACTORS EQUIPMENT AND HOURS UTILIZED

Contractors/Sub Name:

Ewing

Equipment:

Wheel Loader **950H UNIT 013**

Hrs Used:

12

CONTRACTORS EQUIPMENT AND HOURS UTILIZED

Contractors/Sub Name:

Ewing

Equipment:

Excavator **325DL UNIT 022 (Quick Attach)**

Hrs Used:

12

CONTRACTORS EQUIPMENT AND HOURS UTILIZED

Contractors/Sub Name:

Ewing

Equipment:

Excavator **336EL UNIT 026 (Long Stick)**

Hrs Used:

12

CONTRACTORS EQUIPMENT AND HOURS UTILIZED

Contractors/Sub Name:

Ewing

Equipment:

Excavator **329EL UNIT 027**

Hrs Used:

12

CONTRACTORS EQUIPMENT AND HOURS UTILIZED

Contractors/Sub Name:

Ewing

Equipment:

Rock Truck **730 UNIT 016**

Hrs Used:

12

CONTRACTORS EQUIPMENT AND HOURS UTILIZED

Contractors/Sub Name:

Ewing

Equipment:

Rock Truck › 730 UNIT 016

Hrs Used:

12

CONTRACTORS EQUIPMENT AND HOURS UTILIZED

Contractors/Sub Name:

Ewing

Equipment:

Rock Truck › 730 UNIT 018

Hrs Used:

12

CONTRACTORS EQUIPMENT AND HOURS UTILIZED

Contractors/Sub Name:

Ewing

Equipment:

Skid Steer › 289D UNIT 015

Hrs Used:

8

CONTRACTORS LABOUR AND HOURS UTILIZED

Contractors/Sub Name:

Ewing

# of Labourers

4

Total Hrs Worked:

38

Marshall Ewing, *Supervisor*
October 6th 2020, 6:23 PM (GMT +00:00)

64.0311684, -135.848502



Ewing Transport Ltd
PO Box 61, Mayo, Yukon Territory Y0B 1M0
867-334-6457

Daily Report

Private

Label	Ditch A - day 25 (revision)
	Eagle Gold
	Wednesday, October 7th 2020, 6:03 PM (GMT +00:00)

Daily Report

Job:	*Reclaim Ditch A*
Location:	*Ditch A*
Project Name:	*Ditch A*
Description of Work:	*Placing rip rap*
Contract Ref. NO.: e.g. (WO, PO, CWP)	*17486*
Weather(AM):	*2c raining*
Weather(PM):	*4c raining*
Date:	*October 4, 2020*

Reported By:

Marshall Ewing

Onsite Rep: Bill, Lea, Matt, Mike

Daily Report must be Supplied to Vic Gold by 9:00am

SAFETY TOPICS

Topics:

House keeping
Muddy conditions
Don't get out of truck while getting loaded

Incident(s)

None

Total Incidents	*No comments*

QUALITY TOPICS

EXTRAS

ACTIVITIES COMPLETED

Activities:

Placing rip rap on liner

ACTIVITIES COMPLETED

Activities:

No comments



Screening rip rap

ACTIVITIES COMPLETED

Activities:

No comments



Placing rip rap

ACTIVITIES COMPLETED

Activities:

No comments



Placing rip rap

ACTIVITIES COMPLETED

EXTRA WORK/CONTRACT ISSUES AND/OR ENGINEERING IMPACTS (RFI'S0 AND/OR DELAYS

GEOTEXTILE AND LINER INSTALL CONDITION DURING EXCAVATION PER CHAINAGE SECTION OF DITCH A

ENVIRONMENTAL CONDITIONS

VISITORS ON SITE

Visitor:

Vic Gold

# of Visits

1

CONTRACTORS EQUIPMENT AND HOURS UTILIZED

Contractors/Sub Name:

Ewing

Equipment:

Wheel Loader **950H UNIT 013**

Hrs Used:

12

CONTRACTORS EQUIPMENT AND HOURS UTILIZED

Contractors/Sub Name:

Ewing

Equipment:

Excavator **325DL UNIT 022 (Quick Attach)**

Hrs Used:

12

CONTRACTORS EQUIPMENT AND HOURS UTILIZED

Contractors/Sub Name:

Ewing

Equipment:

› **Excavator** › **336EL UNIT 026 (Long Stick)**

Hrs Used:

12

CONTRACTORS EQUIPMENT AND HOURS UTILIZED

Contractors/Sub Name:

› **Ewing**

Equipment:

› **Excavator** › **329EL UNIT 027**

Hrs Used:

12

CONTRACTORS EQUIPMENT AND HOURS UTILIZED

Contractors/Sub Name:

› **Ewing**

Equipment:

› **Rock Truck** › **730 UNIT 016**

Hrs Used:

12

CONTRACTORS EQUIPMENT AND HOURS UTILIZED

Contractors/Sub Name:

› **Ewing**

Equipment:

› **Rock Truck** › **730 UNIT 016**

Hrs Used:

12

CONTRACTORS EQUIPMENT AND HOURS UTILIZED

Contractors/Sub Name:

› **Ewing**

Equipment:

› **Rock Truck** › **730 UNIT 018**

Hrs Used:

12

CONTRACTORS LABOUR AND HOURS UTILIZED

Contractors/Sub Name:

› **Ewing**

# of Labourers

No comments

Total Hrs Worked:

No comments

Original View

Marshall Ewing, *Supervisor*
October 7th 2020, 6:03 PM (GMT +00:00)

64.0311648, -135.8484991



Revised on October 7th 2020, 6:14 PM (GMT +00:00) Current View

Marshall Ewing, *Supervisor*
October 7th 2020, 6:14 PM (GMT +00:00)

64.0311609, -135.8484078



Ewing Transport Ltd
PO Box 61, Mayo, Yukon Territory Y0B 1M0
867-334-6457

Daily Report

Private

Label	Ditch A - day 26
	Eagle Gold
	Thursday, October 8th 2020, 6:00 PM (GMT +00:00)

Daily Report

Job:	*Reclaim Ditch A*
Location:	*Ditch A*
Project Name:	*Ditch A*
Description of Work:	*Placing rip rap*
Contract Ref. NO.: e.g. (WO, PO, CWP)	*17486*
Weather(AM):	*-1c*
Weather(PM):	*3c raining*
Date:	*October 7, 2020*

Reported By:

> **Marshall Ewing**

Onsite Rep: Bill, Lea, Matt, Mike

Daily Report must be Supplied to Vic Gold by 9:00am

SAFETY TOPICS

Topics:

Icy conditions
Muddy road conditions
Uneven haul roads from rip rap stockpile
Slip/trips

Incident(s)

> **None**

Total Incidents	*0*

QUALITY TOPICS

EXTRAS

ACTIVITIES COMPLETED

Activities:

Placing rip rap on liner

ACTIVITIES COMPLETED

Activities:

No comments



Placing rip rap near the top of ditch A

ACTIVITIES COMPLETED

Activities:

Transition from (10kg rip rap) to (25kg rip rap) at 0+500



ACTIVITIES COMPLETED

Activities:

No comments



ACTIVITIES COMPLETED

Activities:

No comments



Starting new section rip rap

EXTRA WORK/CONTRACT ISSUES AND/OR ENGINEERING IMPACTS (RFI'S0 AND/OR DELAYS

GEOTEXTILE AND LINER INSTALL CONDITION DURING EXCAVATION PER CHAINAGE SECTION OF DITCH A

ENVIRONMENTAL CONDITIONS

VISITORS ON SITE

Visitor:

Vic Gold

# of Visits

1

VISITORS ON SITE

Visitor:

JDS

# of Visits

1

CONTRACTORS EQUIPMENT AND HOURS UTILIZED

Contractors/Sub Name:

Ewing

Equipment:

Wheel Loader **950H UNIT 013**

Hrs Used:

12

CONTRACTORS EQUIPMENT AND HOURS UTILIZED

Contractors/Sub Name:

Ewing

Equipment:

Excavator **325DL UNIT 022 (Quick Attach)**

Hrs Used:

12

CONTRACTORS EQUIPMENT AND HOURS UTILIZED

Contractors/Sub Name:

Ewing

Equipment:

Excavator **336EL UNIT 026 (Long Stick)**

Hrs Used:

12

CONTRACTORS EQUIPMENT AND HOURS UTILIZED

Contractors/Sub Name:

Ewing

Equipment:

Excavator **329EL UNIT 027**

Hrs Used:

12

CONTRACTORS EQUIPMENT AND HOURS UTILIZED

Contractors/Sub Name:

Ewing

Equipment:

Rock Truck **730 UNIT 016**

Hrs Used:

12

CONTRACTORS EQUIPMENT AND HOURS UTILIZED

Contractors/Sub Name:

Ewing

Equipment:

Rock Truck › 730 UNIT 016

Hrs Used:

12

CONTRACTORS EQUIPMENT AND HOURS UTILIZED

Contractors/Sub Name:

Ewing

Equipment:

Rock Truck › 730 UNIT 018

Hrs Used:

12

CONTRACTORS LABOUR AND HOURS UTILIZED

Contractors/Sub Name:

Ewing

# of Labourers

No comments

Total Hrs Worked:

No comments

Marshall Ewing, *Supervisor*
October 8th 2020, 6:00 PM (GMT +00:00)

64.0310789, -135.8484518



Ewing Transport Ltd
PO Box 61, Mayo, Yukon Territory Y0B 1M0
867-334-6457

Daily Report

Private

Label	Ditch A - day 27
	Eagle Gold
	Friday, October 9th 2020, 5:57 PM (GMT +00:00)

Daily Report

Job:	*Reclaim Ditch A*
Location:	*Ditch A/B*
Project Name:	*Ditch A*
Description of Work:	*Began grubbing and shaping ditch B* *Placing rip rap*
Contract Ref. NO.: e.g. (WO, PO, CWP)	*17486*
Weather(AM):	*-1c snowing*
Weather(PM):	*2c*
Date:	*October 8, 2020*

Reported By:

> **Marshall Ewing**

Onsite Rep: Bill, Lea, Matt, Mike

Daily Report must be Supplied to Vic Gold by 9:00am

SAFETY TOPICS

Topics:

Icy conditions
Muddy road conditions
Uneven haul roads from rip rap stockpile
Slip/trips

Incident(s)

> **None**

Total Incidents	*0*

QUALITY TOPICS

EXTRAS

ACTIVITIES COMPLETED

Activities:

Placing rip rap on liner
Clearing brush and boulders from ditch B

ACTIVITIES COMPLETED

Activities:

No comments



Screening rip rap at switchback 1

ACTIVITIES COMPLETED

Activities:

No comments



Placing rip rap

ACTIVITIES COMPLETED

Activities:

No comments



Shaping Ditch B

EXTRA WORK/CONTRACT ISSUES AND/OR ENGINEERING IMPACTS (RFI'S0 AND/OR DELAYS

GEOTEXTILE AND LINER INSTALL CONDITION DURING EXCAVATION PER CHAINAGE SECTION OF DITCH A

ENVIRONMENTAL CONDITIONS

VISITORS ON SITE

Visitor:

Vic Gold

# of Visits

1

VISITORS ON SITE

Visitor:

JDS

# of Visits

1

CONTRACTORS EQUIPMENT AND HOURS UTILIZED

Contractors/Sub Name:

Ewing

Equipment:

Wheel Loader **950H UNIT 013**

Hrs Used:

12

CONTRACTORS EQUIPMENT AND HOURS UTILIZED

Contractors/Sub Name:

Ewing

Equipment:

Excavator **325DL UNIT 022 (Quick Attach)**

Hrs Used:

12

CONTRACTORS EQUIPMENT AND HOURS UTILIZED

Contractors/Sub Name:

Ewing

Equipment:

Excavator **336EL UNIT 026 (Long Stick)**

Hrs Used:

12

CONTRACTORS EQUIPMENT AND HOURS UTILIZED

Contractors/Sub Name:

Ewing

Equipment:

Excavator **329EL UNIT 027**

Hrs Used:

12

CONTRACTORS EQUIPMENT AND HOURS UTILIZED

Contractors/Sub Name:

Ewing

Equipment:

Rock Truck **730 UNIT 016**

Hrs Used:

12

CONTRACTORS EQUIPMENT AND HOURS UTILIZED

Contractors/Sub Name:

Ewing

Equipment:

Rock Truck **730 UNIT 016**

Hrs Used:

12

CONTRACTORS EQUIPMENT AND HOURS UTILIZED

Contractors/Sub Name:

Ewing

Equipment:

Rock Truck **730 UNIT 018**

Hrs Used:

12

CONTRACTORS EQUIPMENT AND HOURS UTILIZED

Contractors/Sub Name:

Ewing

Equipment:

> **Dozer** > **D10R UNIT 030**

Hrs Used:

10

CONTRACTORS LABOUR AND HOURS UTILIZED

Contractors/Sub Name:

> **Ewing**

# of Labourers

No comments

Total Hrs Worked:

No comments

Marshall Ewing, *Supervisor*
October 9th 2020, 5:57 PM (GMT +00:00)

64.0311409, -135.8485321



Ewing Transport Ltd
PO Box 61, Mayo, Yukon Territory Y0B 1M0
867-334-6457

Daily Report

Private

Label	Ditch A - day 28
	Eagle Gold
	Saturday, October 10th 2020, 3:39 PM (GMT +00:00)

Daily Report

Job:	*Reclaim Ditch A*
Location:	*Ditch A/B*
Project Name:	*Ditch A/B*
Description of Work:	*Grubbing and shaping ditch B* *Placing rip rap*
Contract Ref. NO.: e.g. (WO, PO, CWP)	*17486*
Weather(AM):	*-3*
Weather(PM):	*0*
Date:	*October 10, 2020*

Reported By:

> **Marshall Ewing**

Onsite Rep: Bill, Lea, Matt, Mike

Daily Report must be Supplied to Vic Gold by 9:00am

SAFETY TOPICS

Topics:

Cold weather
Flying debris
Work with caution
Bush guard required for clearing brush

Incident(s)

> **None**

Total Incidents	*0*

QUALITY TOPICS

EXTRAS

ACTIVITIES COMPLETED

Activities:

Placing rip rap on liner
Clearing brush and shaping ditch B

ACTIVITIES COMPLETED

Activities:

No comments



Screening rip rap at eagle

ACTIVITIES COMPLETED

Activities:

No comments

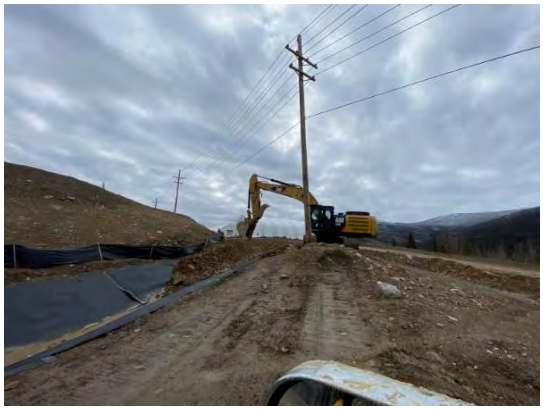


Bulking material at switchback 1 for rip rap

ACTIVITIES COMPLETED

Activities:

No comments



Placing rip rap

ACTIVITIES COMPLETED

Activities:

No comments



Shaping ditch B

EXTRA WORK/CONTRACT ISSUES AND/OR ENGINEERING IMPACTS (RFI'S0 AND/OR DELAYS

GEOTEXTILE AND LINER INSTALL CONDITION DURING EXCAVATION PER CHAINAGE SECTION OF DITCH A

ENVIRONMENTAL CONDITIONS

VISITORS ON SITE

Visitor:

Vic Gold

# of Visits

1

VISITORS ON SITE

Visitor:

JDS

# of Visits

1

CONTRACTORS EQUIPMENT AND HOURS UTILIZED

Contractors/Sub Name:

Ewing

Equipment:

Wheel Loader **950H UNIT 013**

Hrs Used:

12

CONTRACTORS EQUIPMENT AND HOURS UTILIZED

Contractors/Sub Name:

Ewing

Equipment:

Excavator **325DL UNIT 022 (Quick Attach)**

Hrs Used:

12

CONTRACTORS EQUIPMENT AND HOURS UTILIZED

Contractors/Sub Name:

Ewing

Equipment:

Excavator **336EL UNIT 026 (Long Stick)**

Hrs Used:

12

CONTRACTORS EQUIPMENT AND HOURS UTILIZED

Contractors/Sub Name:

Ewing

Equipment:

Excavator **329EL UNIT 027**

Hrs Used:

12

CONTRACTORS EQUIPMENT AND HOURS UTILIZED

Contractors/Sub Name:

Ewing

Equipment:

Rock Truck **730 UNIT 016**

Hrs Used:

12

CONTRACTORS EQUIPMENT AND HOURS UTILIZED

Contractors/Sub Name:

Ewing

Equipment:

Rock Truck › 730 UNIT 016

Hrs Used:

12

CONTRACTORS EQUIPMENT AND HOURS UTILIZED

Contractors/Sub Name:

Ewing

Equipment:

Rock Truck › 730 UNIT 018

Hrs Used:

12

CONTRACTORS EQUIPMENT AND HOURS UTILIZED

Contractors/Sub Name:

Ewing

Equipment:

Dozer › D10R UNIT 030

Hrs Used:

12

CONTRACTORS LABOUR AND HOURS UTILIZED

Contractors/Sub Name:

Ewing

# of Labourers

No comments

Total Hrs Worked:

No comments

Marshall Ewing, *Supervisor*
October 10th 2020, 3:39 PM (GMT +00:00)

64.0311676, -135.8485034



Ewing Transport Ltd
PO Box 61, Mayo, Yukon Territory Y0B 1M0
867-334-6457

Daily Report

Private

Label	Ditch A - day 29
	Eagle Gold
	Sunday, October 11th 2020, 4:11 PM (GMT +00:00)

Daily Report

Job:	*Reclaim Ditch A*
Location:	*Ditch A/B*
Project Name:	*Ditch A/B*
Description of Work:	*Grubbing and shaping ditch B* *Placing rip rap*
Contract Ref. NO.: e.g. (WO, PO, CWP)	*17486*
Weather(AM):	*-2 snowing*
Weather(PM):	*-1 snowing*
Date:	*October 10, 2020*

Reported By:

Marshall Ewing

Onsite Rep: Bill, Lea, Matt, Mike

Daily Report must be Supplied to Vic Gold by 9:00am

SAFETY TOPICS

Topics:

Cold weather
Flying debris
Work with caution
Icy road conditions

Incident(s)

None

Total Incidents	*0*

QUALITY TOPICS

EXTRAS

ACTIVITIES COMPLETED

Activities:

Placing rip rap on liner
Clearing brush and shaping ditch B

ACTIVITIES COMPLETED

Activities:

No comments



Placing rip rap

ACTIVITIES COMPLETED

Activities:

No comments



Shaping ditch B

ACTIVITIES COMPLETED

Activities:

No comments



EXTRA WORK/CONTRACT ISSUES AND/OR ENGINEERING IMPACTS (RFI'S0 AND/OR DELAYS

GEOTEXTILE AND LINER INSTALL CONDITION DURING EXCAVATION PER CHAINAGE SECTION OF DITCH A

ENVIRONMENTAL CONDITIONS

Conditions:

Icy road conditions

If conditions affected work progress, provide the number of hours and a brief description:

Rock trucks didn't start hauling till noon

VISITORS ON SITE

Visitor:

Vic Gold

# of Visits

1

CONTRACTORS EQUIPMENT AND HOURS UTILIZED

Contractors/Sub Name:

Ewing

Equipment:

Wheel Loader **950H UNIT 013**

Hrs Used:

12

CONTRACTORS EQUIPMENT AND HOURS UTILIZED

Contractors/Sub Name:

Ewing

Equipment:

Excavator **325DL UNIT 022 (Quick Attach)**

Hrs Used:

12

CONTRACTORS EQUIPMENT AND HOURS UTILIZED

Contractors/Sub Name:

Ewing

Equipment:

Excavator > 336EL UNIT 026 (Long Stick)

Hrs Used:

12

CONTRACTORS EQUIPMENT AND HOURS UTILIZED

Contractors/Sub Name:

Ewing

Equipment:

Excavator > 329EL UNIT 027

Hrs Used:

12

CONTRACTORS EQUIPMENT AND HOURS UTILIZED

Contractors/Sub Name:

Ewing

Equipment:

Rock Truck > 730 UNIT 016

Hrs Used:

12

CONTRACTORS EQUIPMENT AND HOURS UTILIZED

Contractors/Sub Name:

Ewing

Equipment:

Rock Truck > 730 UNIT 016

Hrs Used:

12

CONTRACTORS EQUIPMENT AND HOURS UTILIZED

Contractors/Sub Name:

Ewing

Equipment:

Rock Truck > 730 UNIT 018

Hrs Used:

12

CONTRACTORS EQUIPMENT AND HOURS UTILIZED

Contractors/Sub Name:

Ewing

Equipment:

Dozer > D10R UNIT 030

Hrs Used:	*12*

CONTRACTORS LABOUR AND HOURS UTILIZED

Contractors/Sub Name:

Ewing

# of Labourers	*No comments*
Total Hrs Worked:	*No comments*

Marshall Ewing, *Supervisor*
October 11th 2020, 4:11 PM (GMT +00:00)

64.0311597, -135.8485183



Ewing Transport Ltd
PO Box 61, Mayo, Yukon Territory Y0B 1M0
867-334-6457

Daily Report

Private

Label	Ditch A/B - day 30
	Eagle Gold
	Monday, October 12th 2020, 6:50 PM (GMT +00:00)

Daily Report

Job:	*Reclaim Ditch A*
Location:	*Ditch A/B*
Project Name:	*Ditch A/B*
Description of Work:	*Grubbing and shaping ditch B* *Placing rip rap* *Ditch repair*
Contract Ref. NO.: e.g. (WO, PO, CWP)	*17486*
Weather(AM):	*-4*
Weather(PM):	*-3*
Date:	*October 11, 2020*

Reported By:

> **Marshall Ewing**

Onsite Rep: Bill, Lea, Matt, Mike

Daily Report must be Supplied to Vic Gold by 9:00am

SAFETY TOPICS

Topics:

Cold weather
Flying debris
Work with caution
Icy road conditions

Incident(s)

> **None**

Total Incidents	*0*

QUALITY TOPICS

EXTRAS

ACTIVITIES COMPLETED

Activities:

Placing rip rap on liner
Clearing brush and shaping ditch B
Ditch repair

ACTIVITIES COMPLETED

Activities:

No comments



Grubbing at ditch B

ACTIVITIES COMPLETED

Activities:

No comments



Screening rip rap at switchback 1

ACTIVITIES COMPLETED

Activities:

No comments



Removing rip rap from ditch A for repairs

ACTIVITIES COMPLETED

Activities:

No comments



Shaping ditch B

EXTRA WORK/CONTRACT ISSUES AND/OR ENGINEERING IMPACTS (RFI'S0 AND/OR DELAYS

GEOTEXTILE AND LINER INSTALL CONDITION DURING EXCAVATION PER CHAINAGE SECTION OF DITCH A

ENVIRONMENTAL CONDITIONS

VISITORS ON SITE

Visitor:

Vic Gold

# of Visits

1

CONTRACTORS EQUIPMENT AND HOURS UTILIZED

Contractors/Sub Name:

Ewing

Equipment:

Wheel Loader **950H UNIT 013**

Hrs Used:

12

CONTRACTORS EQUIPMENT AND HOURS UTILIZED

Contractors/Sub Name:

Ewing

Equipment:

Excavator **325DL UNIT 022 (Quick Attach)**

Hrs Used:

12

CONTRACTORS EQUIPMENT AND HOURS UTILIZED

Contractors/Sub Name:

Ewing

Equipment:

Excavator **336EL UNIT 026 (Long Stick)**

Hrs Used:

12

CONTRACTORS EQUIPMENT AND HOURS UTILIZED

Contractors/Sub Name:

Ewing

Equipment:

Excavator **329EL UNIT 027**

Hrs Used:

12

CONTRACTORS EQUIPMENT AND HOURS UTILIZED

Contractors/Sub Name:

Ewing

Equipment:

Rock Truck **730 UNIT 016**

Hrs Used:

12

CONTRACTORS EQUIPMENT AND HOURS UTILIZED

Contractors/Sub Name:

Ewing

Equipment:

Rock Truck **730 UNIT 016**

Hrs Used:

12

CONTRACTORS EQUIPMENT AND HOURS UTILIZED

Contractors/Sub Name:

> **Ewing**

Equipment:

> **Rock Truck** > **730 UNIT 018**

Hrs Used:

12

CONTRACTORS EQUIPMENT AND HOURS UTILIZED

Contractors/Sub Name:

> **Ewing**

Equipment:

> **Dozer** > **D10R UNIT 030**

Hrs Used:

12

CONTRACTORS LABOUR AND HOURS UTILIZED

Contractors/Sub Name:

> **Ewing**

# of Labourers

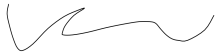
No comments

Total Hrs Worked:

No comments

Marshall Ewing, *Supervisor*
October 12th 2020, 6:50 PM (GMT +00:00)

64.0311648, -135.8485236



Ewing Transport Ltd
PO Box 61, Mayo, Yukon Territory Y0B 1M0
867-334-6457

Daily Report

Private

Label	Ditch A/B - day 31
	Eagle Gold
	Tuesday, October 13th 2020, 5:31 PM (GMT +00:00)

Daily Report

Job:	*Reclaim Ditch A / shape Ditch B*
Location:	*Ditch A/B*
Project Name:	*Ditch A/B*
Description of Work:	*Grubbing and shaping ditch B* *Placing rip rap* *Ditch repair*
Contract Ref. NO.: e.g. (WO, PO, CWP)	*17486*
Weather(AM):	*-7*
Weather(PM):	*-6*
Date:	*October 12, 2020*

Reported By:

> **Marshall Ewing**

Onsite Rep: Bill, Lea, Matt, Mike

Daily Report must be Supplied to Vic Gold by 9:00am

SAFETY TOPICS

Topics:

Cold weather
Reduce radio chatter
Confusing task, ask supervisor
Work with caution
Icy road conditions

Incident(s)

> **None**

Total Incidents	*0*

QUALITY TOPICS

EXTRAS

ACTIVITIES COMPLETED

Activities:

Placing rip rap on liner
Clearing brush and shaping ditch B
Ditch repair
Washout repair below 90 day

ACTIVITIES COMPLETED

Activities:

No comments



Removing unsuitable material

ACTIVITIES COMPLETED

Activities:

No comments



Wash out repair

ACTIVITIES COMPLETED

Activities:

No comments



Sub grade repair

ACTIVITIES COMPLETED

Activities:

No comments



Water diversion

ACTIVITIES COMPLETED

Activities:

No comments



ACTIVITIES COMPLETED

Activities:

No comments



D10 working at ditch B

EXTRA WORK/CONTRACT ISSUES AND/OR ENGINEERING IMPACTS (RFI'S0 AND/OR DELAYS

GEOTEXTILE AND LINER INSTALL CONDITION DURING EXCAVATION PER CHAINAGE SECTION OF DITCH A

ENVIRONMENTAL CONDITIONS

VISITORS ON SITE

Visitor:

Vic Gold

# of Visits

1

CONTRACTORS EQUIPMENT AND HOURS UTILIZED

Contractors/Sub Name:

Ewing

Equipment:

Wheel Loader **950H UNIT 013**

Hrs Used:

12

CONTRACTORS EQUIPMENT AND HOURS UTILIZED

Contractors/Sub Name:

Ewing

Equipment:

Excavator **325DL UNIT 022 (Quick Attach)**

Hrs Used:

12

CONTRACTORS EQUIPMENT AND HOURS UTILIZED

Contractors/Sub Name:

Ewing

Equipment:

Excavator > 336EL UNIT 026 (Long Stick)

Hrs Used:

12

CONTRACTORS EQUIPMENT AND HOURS UTILIZED

Contractors/Sub Name:

Ewing

Equipment:

Excavator > 336EL UNIT 026 (Long Stick)

Hrs Used:

12

CONTRACTORS EQUIPMENT AND HOURS UTILIZED

Contractors/Sub Name:

Ewing

Equipment:

Rock Truck > 730 UNIT 016

Hrs Used:

12

CONTRACTORS EQUIPMENT AND HOURS UTILIZED

Contractors/Sub Name:

Ewing

Equipment:

Rock Truck > 730 UNIT 016

Hrs Used:

12

CONTRACTORS EQUIPMENT AND HOURS UTILIZED

Contractors/Sub Name:

Ewing

Equipment:

Rock Truck > 730 UNIT 018

Hrs Used:

12

CONTRACTORS EQUIPMENT AND HOURS UTILIZED

Contractors/Sub Name:

Ewing

Equipment:

Dozer > D10R UNIT 030

Hrs Used:

12

CONTRACTORS LABOUR AND HOURS UTILIZED

Contractors/Sub Name:

Ewing

# of Labourers	*No comments*
Total Hrs Worked:	*No comments*

Marshall Ewing, *Supervisor*
October 13th 2020, 5:31 PM (GMT +00:00)

64.0311514, -135.8485174



Ewing Transport Ltd
PO Box 61, Mayo, Yukon Territory Y0B 1M0
867-334-6457

Daily Report

Private

Label	Ditch A/B - day 31
	Eagle Gold
	Wednesday, October 14th 2020, 6:37 PM (GMT +00:00)

Daily Report

Job:	*Reclaim Ditch A / shape Ditch B*
Location:	*Ditch A/B*
Project Name:	*Ditch A/B*
Description of Work:	*Grubbing and shaping ditch B* *Placing rip rap* *Ditch repair* *Stockpile rip rap at eagle*
Contract Ref. NO.: e.g. (WO, PO, CWP)	*17486*
Weather(AM):	*-10*
Weather(PM):	*-11*
Date:	*October 13, 2020*

Reported By:

> **Marshall Ewing**

Onsite Rep: Bill, Lea, Matt, Mike

Daily Report must be Supplied to Vic Gold by 9:00am

SAFETY TOPICS

Topics:

Confusing tasks
Heavy lifting
Very slippery surfaces
New work areas

Incident(s)

> **None**

Total Incidents	*0*

QUALITY TOPICS

EXTRAS

ACTIVITIES COMPLETED

Activities:

Placing rip rap on liner
Clearing brush and shaping ditch
Ditch repair
Stockpile rip rap at eagle
Screening rip rap at switchback 1

ACTIVITIES COMPLETED

Activities:

No comments



Placing rip rap

ACTIVITIES COMPLETED

Activities:

No comments



Removing boulders from ditch B area

EXTRA WORK/CONTRACT ISSUES AND/OR ENGINEERING IMPACTS (RFI'S0 AND/OR DELAYS

GEOTEXTILE AND LINER INSTALL CONDITION DURING EXCAVATION PER CHAINAGE SECTION OF DITCH A

ENVIRONMENTAL CONDITIONS

VISITORS ON SITE

Visitor:

Vic Gold

# of Visits

1

CONTRACTORS EQUIPMENT AND HOURS UTILIZED

Contractors/Sub Name:

Ewing

Equipment:

Wheel Loader > 950H UNIT 013

Hrs Used:

12

CONTRACTORS EQUIPMENT AND HOURS UTILIZED

Contractors/Sub Name:

Ewing

Equipment:

Excavator > 325DL UNIT 022 (Quick Attach)

Hrs Used:

12

CONTRACTORS EQUIPMENT AND HOURS UTILIZED

Contractors/Sub Name:

Ewing

Equipment:

Excavator > 336EL UNIT 026 (Long Stick)

Hrs Used:

12

CONTRACTORS EQUIPMENT AND HOURS UTILIZED

Contractors/Sub Name:

Ewing

Equipment:

Excavator > 336EL UNIT 026 (Long Stick)

Hrs Used:

12

CONTRACTORS EQUIPMENT AND HOURS UTILIZED

Contractors/Sub Name:

Ewing

Equipment:

Rock Truck > 730 UNIT 016

Hrs Used:

12

CONTRACTORS EQUIPMENT AND HOURS UTILIZED

Contractors/Sub Name:

Ewing

Equipment:

Rock Truck **730 UNIT 016**

Hrs Used:

12

CONTRACTORS EQUIPMENT AND HOURS UTILIZED

Contractors/Sub Name:

Ewing

Equipment:

Rock Truck **730 UNIT 018**

Hrs Used:

12

CONTRACTORS EQUIPMENT AND HOURS UTILIZED

Contractors/Sub Name:

Ewing

Equipment:

Dozer **D10R UNIT 030**

Hrs Used:

12

CONTRACTORS LABOUR AND HOURS UTILIZED

Contractors/Sub Name:

Ewing

# of Labourers

No comments

Total Hrs Worked:

No comments

Marshall Ewing, *Supervisor*
October 14th 2020, 6:37 PM (GMT +00:00)

64.0311685, -135.8485098



Ewing Transport Ltd
PO Box 61, Mayo, Yukon Territory Y0B 1M0
867-334-6457

Daily Report

Private

Label	Ditch A/B - day 32
	Eagle Gold
	Thursday, October 15th 2020, 6:55 PM (GMT +00:00)

Daily Report

Job:	*Reclaim Ditch A / shape Ditch B*
Location:	*Ditch A/B*
Project Name:	*Ditch A/B*
Description of Work:	*Grubbing and shaping ditch B* *Screening rip rap*
Contract Ref. NO.: e.g. (WO, PO, CWP)	*17486*
Weather(AM):	*-10*
Weather(PM):	*-4*
Date:	*October 14, 2020*

Reported By:

> **Marshall Ewing**

Onsite Rep: Bill, Lea, Matt, Mike

Daily Report must be Supplied to Vic Gold by 9:00am

SAFETY TOPICS

Topics:

Check in when working alone
Proper berms for rock trucks
3-point contact

Incident(s)

> **None**

Total Incidents	*0*

QUALITY TOPICS

EXTRAS

ACTIVITIES COMPLETED

Activities:

Grubbing and shaping at top of ditch B
Screening rip rap at switchback 1

ACTIVITIES COMPLETED

Activities:

No comments



Top of ditch B

ACTIVITIES COMPLETED

Activities:

No comments



Widening ditch B route

EXTRA WORK/CONTRACT ISSUES AND/OR ENGINEERING IMPACTS (RFI'S0 AND/OR DELAYS

GEOTEXTILE AND LINER INSTALL CONDITION DURING EXCAVATION PER CHAINAGE SECTION OF DITCH A

ENVIRONMENTAL CONDITIONS

VISITORS ON SITE

Visitor:

Vic Gold

# of Visits

1

VISITORS ON SITE

Visitor:

JDS

# of Visits

1

CONTRACTORS EQUIPMENT AND HOURS UTILIZED

Contractors/Sub Name:

Ewing

Equipment:

Wheel Loader **950H UNIT 013**

Hrs Used:

12

CONTRACTORS EQUIPMENT AND HOURS UTILIZED

Contractors/Sub Name:

Ewing

Equipment:

Excavator **336EL UNIT 026 (Long Stick)**

Hrs Used:

7

CONTRACTORS EQUIPMENT AND HOURS UTILIZED

Contractors/Sub Name:

Ewing

Equipment:

Dozer **D10R UNIT 030**

Hrs Used:

12

CONTRACTORS LABOUR AND HOURS UTILIZED

Contractors/Sub Name:

Ewing

# of Labourers

No comments

Total Hrs Worked:

No comments

Marshall Ewing, *Supervisor*
October 15th 2020, 6:55 PM (GMT +00:00)

64.0311277, -135.8485191



Ewing Transport Ltd
PO Box 61, Mayo, Yukon Territory Y0B 1M0
867-334-6457

Daily Report

Private

Label	Ditch A/B - day 33
	Eagle Gold
	Friday, October 16th 2020, 6:25 PM (GMT +00:00)

Daily Report

Job:	*Reclaim Ditch A / shape Ditch B*
Location:	*Ditch A/B*
Project Name:	*Ditch A/B*
Description of Work:	*Grubbing and shaping ditch B* *Screening rip rap*
Contract Ref. NO.: e.g. (WO, PO, CWP)	*17486*
Weather(AM):	*-6*
Weather(PM):	*-4*
Date:	*October 15, 2020*

Reported By:

- **Marshall Ewing**

Onsite Rep: Bill, Lea, Matt, Mike

Daily Report must be Supplied to Vic Gold by 9:00am

SAFETY TOPICS

Topics:

Check in when working alone
Proper berms for rock trucks
3-point contact

Incident(s)

- **None**

Total Incidents	*0*

QUALITY TOPICS

EXTRAS

ACTIVITIES COMPLETED

Activities:

Grubbing and shaping at top and bottom of ditch B
Screening rip rap at switchback 1

ACTIVITIES COMPLETED

Activities:

No comments



Top of ditch B

EXTRA WORK/CONTRACT ISSUES AND/OR ENGINEERING IMPACTS (RFI'S0 AND/OR DELAYS

GEOTEXTILE AND LINER INSTALL CONDITION DURING EXCAVATION PER CHAINAGE SECTION OF DITCH A

ENVIRONMENTAL CONDITIONS

VISITORS ON SITE

Visitor:

Vic Gold

# of Visits

1

VISITORS ON SITE

Visitor:

JDS

# of Visits

1

CONTRACTORS EQUIPMENT AND HOURS UTILIZED

Contractors/Sub Name:

Ewing

Equipment:

Wheel Loader **950H UNIT 013**

Hrs Used:

12

CONTRACTORS EQUIPMENT AND HOURS UTILIZED

Contractors/Sub Name:

Ewing

Equipment:

Excavator **336EL UNIT 026 (Long Stick)**

Hrs Used:

4

CONTRACTORS EQUIPMENT AND HOURS UTILIZED

Contractors/Sub Name:

Ewing

Equipment:

Dozer **D10R UNIT 030**

Hrs Used:

4

CONTRACTORS EQUIPMENT AND HOURS UTILIZED

Contractors/Sub Name:

Ewing

Equipment:

Excavator **336EL UNIT 025**

Hrs Used:

8

CONTRACTORS LABOUR AND HOURS UTILIZED

Contractors/Sub Name:

Ewing

# of Labourers

No comments

Total Hrs Worked:

No comments

Marshall Ewing, *Supervisor*
October 16th 2020, 6:25 PM (GMT +00:00)

64.0311515, -135.8484024



Ewing Transport Ltd
PO Box 61, Mayo, Yukon Territory Y0B 1M0
867-334-6457

Daily Report

Private

Label	Ditch A/B - day 34
	Eagle Gold
	Saturday, October 17th 2020, 8:21 PM (GMT +00:00)

Daily Report

Job:	*Reclaim Ditch A / shape Ditch B*
Location:	*Ditch A/B*
Project Name:	*Ditch A/B*
Description of Work:	*Grubbing and shaping ditch B* *Screening rip rap* *Placing rip rap on liner*
Contract Ref. NO.: e.g. (WO, PO, CWP)	*17486*
Weather(AM):	*-12*
Weather(PM):	*-8*
Date:	*October 16, 2020*

Reported By:

Marshall Ewing

Onsite Rep: Bill, Lea, Matt, Mike

Daily Report must be Supplied to Vic Gold by 9:00am

SAFETY TOPICS

Topics:

Cold weather
Chalk blocks when parking vehicles with tires
Check-in when working alone for long periods of time

Incident(s)

None

Total Incidents	*0*

QUALITY TOPICS

EXTRAS

ACTIVITIES COMPLETED

Activities:

Grubbing and shaping at top and bottom of ditch B
Screening rip rap at switchback 1

ACTIVITIES COMPLETED

Activities:

No comments



Placing rip rap

ACTIVITIES COMPLETED

Activities:

No comments



Ditch B access

ACTIVITIES COMPLETED

Activities:

No comments



Removing material for ditch B access

EXTRA WORK/CONTRACT ISSUES AND/OR ENGINEERING IMPACTS (RFI'S0 AND/OR DELAYS

GEOTEXTILE AND LINER INSTALL CONDITION DURING EXCAVATION PER CHAINAGE SECTION OF DITCH A

ENVIRONMENTAL CONDITIONS

VISITORS ON SITE

Visitor:

Vic Gold

# of Visits

1

CONTRACTORS EQUIPMENT AND HOURS UTILIZED

Contractors/Sub Name:

Ewing

Equipment:

Wheel Loader **950H UNIT 013**

Hrs Used:

12

CONTRACTORS EQUIPMENT AND HOURS UTILIZED

Contractors/Sub Name:

Ewing

Equipment:

Excavator **336EL UNIT 026 (Long Stick)**

Hrs Used:

12

CONTRACTORS EQUIPMENT AND HOURS UTILIZED

Contractors/Sub Name:

Ewing

Equipment:

Excavator **325DL UNIT 021**

Hrs Used:

12

CONTRACTORS LABOUR AND HOURS UTILIZED

Contractors/Sub Name:

Ewing

# of Labourers

No comments

Total Hrs Worked:

No comments

Marshall Ewing, *Supervisor*
October 17th 2020, 8:21 PM (GMT +00:00)

64.0311553, -135.8485111



Ewing Transport Ltd
PO Box 61, Mayo, Yukon Territory Y0B 1M0
867-334-6457

Daily Report

Private

Label	Ditch A/B - Day 36
	Eagle Gold
	Sunday, October 18th 2020, 6:12 PM (GMT +00:00)

Daily Report

Job:	*Reclaim Ditch A / shape Ditch B*
Location:	*Ditch A/B*
Project Name:	*Ditch A/B*
Description of Work:	*Access along exist Ditch B* *Screening rip rap* *Placing rip rap on liner* *Access down into fore bay*
Contract Ref. NO.: e.g. (WO, PO, CWP)	*17486*
Weather(AM):	*-20*
Weather(PM):	*-10*
Date:	*October 17, 2020*

Reported By:

> **Marshall Ewing**

Onsite Rep: Bill, Lea, Matt, Mike

Daily Report must be Supplied to Vic Gold by 9:00am

SAFETY TOPICS

Topics:

House keeping
Hauling on steep slopes
Working near heavy/bigger equipment
Berms
Lots of communication

Incident(s)

> **None**

Total Incidents

0

QUALITY TOPICS

EXTRAS

ACTIVITIES COMPLETED

Activities:

Placed rip rap on liner
Screened rip rap
Access along ditch B

ACTIVITIES COMPLETED

Activities:

No comments



Fore bay access

ACTIVITIES COMPLETED

Activities:

No comments



Placing rip rap

ACTIVITIES COMPLETED

Activities:

No comments



Access along ditch B

EXTRA WORK/CONTRACT ISSUES AND/OR ENGINEERING IMPACTS (RFI'S0 AND/OR DELAYS

GEOTEXTILE AND LINER INSTALL CONDITION DURING EXCAVATION PER CHAINAGE SECTION OF DITCH A

ENVIRONMENTAL CONDITIONS

VISITORS ON SITE

Visitor:

Vic Gold

# of Visits

1

CONTRACTORS EQUIPMENT AND HOURS UTILIZED

Contractors/Sub Name:

Ewing

Equipment:

Wheel Loader **950H UNIT 013**

Hrs Used:

3

CONTRACTORS EQUIPMENT AND HOURS UTILIZED

Contractors/Sub Name:

Ewing

Equipment:

Excavator **336EL UNIT 026 (Long Stick)**

Hrs Used:

12

CONTRACTORS EQUIPMENT AND HOURS UTILIZED

Contractors/Sub Name:

Ewing

Equipment:

Excavator **325DL UNIT 021**

Hrs Used:

12

CONTRACTORS EQUIPMENT AND HOURS UTILIZED

Contractors/Sub Name:

Ewing

Equipment:

Rock Truck **730 UNIT 017**

Hrs Used:

3

CONTRACTORS LABOUR AND HOURS UTILIZED

Contractors/Sub Name:

Ewing

# of Labourers

No comments

Total Hrs Worked:

No comments

Original View

Marshall Ewing, *Supervisor*
October 18th 2020, 6:12 PM (GMT +00:00)

64.031163, -135.8485266



Revised on October 18th 2020, 10:06 PM (GMT +00:00) Current View

Harrison Ewing, *Safety Manager*
October 18th 2020, 10:06 PM (GMT +00:00)

63.597, -135.9091



Ewing Transport Ltd
PO Box 61, Mayo, Yukon Territory Y0B 1M0
867-334-6457

Daily Report

Private

Label	Ditch A/B - day 36
	Eagle Gold
	Monday, October 19th 2020, 11:27 PM (GMT +00:00)

Daily Report

Job:	*Reclaim Ditch A / shape Ditch B*
Location:	*Ditch A/B*
Project Name:	*Ditch A/B*
Description of Work:	*Placed rip rap on liner*
Contract Ref. NO.: e.g. (WO, PO, CWP)	*17486*
Weather(AM):	*-18*
Weather(PM):	*-10*
Date:	*October 18, 2020*

Reported By:

- **Marshall Ewing**

Onsite Rep: Bill, Lea, Matt, Mike

Daily Report must be Supplied to Vic Gold by 9:00am

SAFETY TOPICS

Topics:

3-point contact
PPE when out of equipment
Check fire extinguishers

Incident(s)

- **None**

Total Incidents	*0*

QUALITY TOPICS

EXTRAS

ACTIVITIES COMPLETED

Activities:

Placed rip rap on liner



ACTIVITIES COMPLETED

Activities:

No comments



ACTIVITIES COMPLETED

Activities:

No comments



EXTRA WORK/CONTRACT ISSUES AND/OR ENGINEERING IMPACTS (RFI'S0 AND/OR DELAYS

GEOTEXTILE AND LINER INSTALL CONDITION DURING EXCAVATION PER CHAINAGE SECTION OF DITCH A

ENVIRONMENTAL CONDITIONS

VISITORS ON SITE

Visitor:

Vic Gold

# of Visits

1

CONTRACTORS EQUIPMENT AND HOURS UTILIZED

Contractors/Sub Name:

Ewing

Equipment:

Wheel Loader **950H UNIT 013**

Hrs Used:

12

CONTRACTORS EQUIPMENT AND HOURS UTILIZED

Contractors/Sub Name:

Ewing

Equipment:

Excavator **325DL UNIT 021**

Hrs Used:

12

CONTRACTORS EQUIPMENT AND HOURS UTILIZED

Contractors/Sub Name:

Ewing

Equipment:

Rock Truck **730 UNIT 017**

Hrs Used:

12

CONTRACTORS LABOUR AND HOURS UTILIZED

Contractors/Sub Name:

Ewing

# of Labourers

No comments

Total Hrs Worked:

No comments

Marshall Ewing, *Supervisor*
October 19th 2020, 11:27 PM (GMT +00:00)

64.0311296, -135.8484318



Ewing Transport Ltd
PO Box 61, Mayo, Yukon Territory Y0B 1M0
867-334-6457

Daily Report

Private

Label	Ditch A/B - day 38
	Eagle Gold
	Wednesday, October 21st 2020, 12:46 AM (GMT +00:00)

Daily Report

Job:	*Reclaim Ditch A / shape Ditch B*
Location:	*Ditch A/B*
Project Name:	*Ditch A/B*
Description of Work:	*Placed rip rap on liner*
Contract Ref. NO.: e.g. (WO, PO, CWP)	*17486*
Weather(AM):	*-19*
Weather(PM):	*-13*
Date:	*October 19, 2020*

Reported By:

- **Marshall Ewing**

Onsite Rep: Bill, Lea, Matt, Mike

Daily Report must be Supplied to Vic Gold by 9:00am

SAFETY TOPICS

Topics:

3-point contact
PPE when out of equipment
Check fire extinguishers

Incident(s)

- **None**

Total Incidents	*0*

QUALITY TOPICS

EXTRAS

ACTIVITIES COMPLETED

Activities:

Placed rip rap on liner



EXTRA WORK/CONTRACT ISSUES AND/OR ENGINEERING IMPACTS (RFI'S0 AND/OR DELAYS

GEOTEXTILE AND LINER INSTALL CONDITION DURING EXCAVATION PER CHAINAGE SECTION OF DITCH A

ENVIRONMENTAL CONDITIONS

VISITORS ON SITE

Visitor:

Vic Gold

# of Visits

1

VISITORS ON SITE

Visitor:

JDS

# of Visits

No comments

CONTRACTORS EQUIPMENT AND HOURS UTILIZED

Contractors/Sub Name:

Ewing

Equipment:

Wheel Loader **950H UNIT 013**

Hrs Used:

12

CONTRACTORS EQUIPMENT AND HOURS UTILIZED

Contractors/Sub Name:

Ewing

Equipment:

Excavator **329EL UNIT 027**

Hrs Used:

12

CONTRACTORS EQUIPMENT AND HOURS UTILIZED

Contractors/Sub Name:

Ewing

Equipment:

Rock Truck **730 UNIT 017**

Hrs Used:

12

CONTRACTORS LABOUR AND HOURS UTILIZED

Contractors/Sub Name:

Ewing

# of Labourers

No comments

Total Hrs Worked:

No comments

Marshall Ewing, *Supervisor*
October 21st 2020, 12:46 AM (GMT +00:00)

64.0311489, -135.84851



Ewing Transport Ltd
PO Box 61, Mayo, Yukon Territory Y0B 1M0
867-334-6457

Daily Report

Private

Label	Ditch A/B - day 39
	Eagle Gold
	Wednesday, October 21st 2020, 7:30 PM (GMT +00:00)

Daily Report

Job:	*Reclaim Ditch A / shape Ditch B*
Location:	*Ditch A/B*
Project Name:	*Ditch A/B*
Description of Work:	*Placed rip rap on liner*
Contract Ref. NO.: e.g. (WO, PO, CWP)	*17486*
Weather(AM):	*-20*
Weather(PM):	*-10*
Date:	*October 20, 2020*

Reported By:

> **Marshall Ewing**

Onsite Rep: Bill, Lea, Matt, Mike

Daily Report must be Supplied to Vic Gold by 9:00am

SAFETY TOPICS

Topics:

Cold weather
Icy roads
Falling debris
Use a spotter if required

Incident(s)

> **None**

Total Incidents	*0*

QUALITY TOPICS

EXTRAS

ACTIVITIES COMPLETED

Activities:

Placed rip rap on liner



EXTRA WORK/CONTRACT ISSUES AND/OR ENGINEERING IMPACTS (RFI'S0 AND/OR DELAYS

GEOTEXTILE AND LINER INSTALL CONDITION DURING EXCAVATION PER CHAINAGE SECTION OF DITCH A

ENVIRONMENTAL CONDITIONS

VISITORS ON SITE

Visitor:

Vic Gold

# of Visits

1

VISITORS ON SITE

Visitor:

JDS

# of Visits

No comments

CONTRACTORS EQUIPMENT AND HOURS UTILIZED

Contractors/Sub Name:

Ewing

Equipment:

Wheel Loader **950H UNIT 013**

Hrs Used:

12

CONTRACTORS EQUIPMENT AND HOURS UTILIZED

Contractors/Sub Name:

Ewing

Equipment:

Excavator **329EL UNIT 027**

Hrs Used:

12

CONTRACTORS EQUIPMENT AND HOURS UTILIZED

Contractors/Sub Name:

Ewing

Equipment:

Rock Truck **730 UNIT 017**

Hrs Used:

12

CONTRACTORS LABOUR AND HOURS UTILIZED

Contractors/Sub Name:

Ewing

# of Labourers

No comments

Total Hrs Worked:

No comments

Marshall Ewing, *Supervisor*
October 21st 2020, 7:30 PM (GMT +00:00)

64.0311797, -135.8485067

Ewing Transport Ltd
PO Box 61, Mayo, Yukon Territory Y0B 1M0
867-334-6457

Daily Report

Private

Label	Ditch A/B - day 40
	Eagle Gold
	Thursday, October 22nd 2020, 10:31 PM (GMT +00:00)

Daily Report

Job:	*Reclaim Ditch A / shape Ditch B*
Location:	*Ditch A/B*
Project Name:	*Ditch A/B*
Description of Work:	*Placed rip rap on liner*
Contract Ref. NO.: e.g. (WO, PO, CWP)	*17486*
Weather(AM):	*-20*
Weather(PM):	*-10*
Date:	*October 21, 2020*

Reported By:

> **Marshall Ewing**

Onsite Rep: Bill, Lea, Matt, Mike

Daily Report must be Supplied to Vic Gold by 9:00am

SAFETY TOPICS

Topics:

Pre trips
Check fire extinguishers
Check spill kits

Incident(s)

> **None**

Total Incidents	*0*

QUALITY TOPICS

EXTRAS

ACTIVITIES COMPLETED

Activities:

Placed rip rap on liner



ACTIVITIES COMPLETED

Activities:

No comments



Removing rip rap from existing ditch B

EXTRA WORK/CONTRACT ISSUES AND/OR ENGINEERING IMPACTS (RFI'S0 AND/OR DELAYS

GEOTEXTILE AND LINER INSTALL CONDITION DURING EXCAVATION PER CHAINAGE SECTION OF DITCH A

ENVIRONMENTAL CONDITIONS

VISITORS ON SITE

Visitor:

Vic Gold

# of Visits

1

VISITORS ON SITE

Visitor:

JDS

# of Visits

No comments

CONTRACTORS EQUIPMENT AND HOURS UTILIZED

Contractors/Sub Name:

Ewing

Equipment:

Wheel Loader **950H UNIT 013**

Hrs Used:

12

CONTRACTORS EQUIPMENT AND HOURS UTILIZED

Contractors/Sub Name:

Ewing

Equipment:

Excavator **329EL UNIT 027**

Hrs Used:

12

CONTRACTORS EQUIPMENT AND HOURS UTILIZED

Contractors/Sub Name:

Ewing

Equipment:

Rock Truck **730 UNIT 017**

Hrs Used:

12

CONTRACTORS EQUIPMENT AND HOURS UTILIZED

Contractors/Sub Name:

Ewing

Equipment:

Excavator **336EL UNIT 026 (Long Stick)**

Hrs Used:

6

CONTRACTORS LABOUR AND HOURS UTILIZED

Contractors/Sub Name:

Ewing

# of Labourers

No comments

Total Hrs Worked:

No comments

Marshall Ewing, *Supervisor*
October 22nd 2020, 10:31 PM (GMT +00:00)

64.0311271, -135.8484878



Ewing Transport Ltd
PO Box 61, Mayo, Yukon Territory Y0B 1M0
867-334-6457

Daily Report

Private

Label	Ditch A/B - day 41
	Eagle Gold
	Saturday, October 24th 2020, 1:15 AM (GMT +00:00)

Daily Report

Job:	*Ditch B*
Location:	*Ditch A/B*
Project Name:	*Ditch A/B*
Description of Work:	*Excavation and sub grade prep*
Contract Ref. NO.: e.g. (WO, PO, CWP)	*17486*
Weather(AM):	*-18*
Weather(PM):	*-14*
Date:	*October 23, 2020*

Reported By:

> **Marshall Ewing**

Onsite Rep: Bill, Lea, Matt, Mike

Daily Report must be Supplied to Vic Gold by 9:00am

SAFETY TOPICS

Topics:

3 point contact
Head lamps
Brake tests

Incident(s)

> **None**

Total Incidents	*0*

QUALITY TOPICS

EXTRAS

ACTIVITIES COMPLETED

Activities:

Rip rap completed at ditch A



ACTIVITIES COMPLETED

Activities:

No comments



Ditch B

EXTRA WORK/CONTRACT ISSUES AND/OR ENGINEERING IMPACTS (RFI'S0 AND/OR DELAYS

GEOTEXTILE AND LINER INSTALL CONDITION DURING EXCAVATION PER CHAINAGE SECTION OF DITCH A

ENVIRONMENTAL CONDITIONS

VISITORS ON SITE

Visitor:

Vic Gold

# of Visits

1

VISITORS ON SITE

Visitor:

JDS

# of Visits

No comments

CONTRACTORS EQUIPMENT AND HOURS UTILIZED

Contractors/Sub Name:

Ewing

Equipment:

Wheel Loader **950H UNIT 013**

Hrs Used:

12

CONTRACTORS EQUIPMENT AND HOURS UTILIZED

Contractors/Sub Name:

Ewing

Equipment:

Excavator **329EL UNIT 027**

Hrs Used:

12

CONTRACTORS EQUIPMENT AND HOURS UTILIZED

Contractors/Sub Name:

Ewing

Equipment:

Rock Truck **730 UNIT 017**

Hrs Used:

12

CONTRACTORS EQUIPMENT AND HOURS UTILIZED

Contractors/Sub Name:

Ewing

Equipment:

Excavator **336EL UNIT 026 (Long Stick)**

Hrs Used:

12

CONTRACTORS LABOUR AND HOURS UTILIZED

Contractors/Sub Name:

Ewing

# of Labourers

No comments

Total Hrs Worked:

No comments

Marshall Ewing, *Supervisor*
October 24th 2020, 1:15 AM (GMT +00:00)

64.0312226, -135.8485067



APPENDIX D

CONSTRUCTION PHOTOS



NOTES

1) ADDITIONAL PHOTOS ARE ARCHIVED BY VICTORIA GOLD

TITLE

20200915 – SWITCHBACK 1 LAYDOWN

DOCUMENT TITLE	APPENDIX	PREPARED BY	REVIEWED BY	DATE	FIGURE
Ditch A Improvement Construction Report	APPENDIX D – Construction Photos	LJ	RT	11/23/2020	D-1

Path: O:\03-ENG\11 Projects\Ditch A Relining\2_Construction

TSX: VGCX OTC: VITFF VGCX.com



NOTES

1) ADDITIONAL PHOTOS ARE ARCHIVED BY VICTORIA GOLD

TITLE

20200915 – CONSTRUCTION ON SOUTH END OF CULVERT (~0+600)

DOCUMENT TITLE	APPENDIX	PREPARED BY	REVIEWED BY	DATE	FIGURE
Ditch A Improvement Construction Report	APPENDIX D – Construction Photos	LJ	RT	11/23/2020	D-2

Path: O:\03-ENG\11 Projects\Ditch A Relining\2_Construction

TSX: VGCX OTC: VITFF VGCX.com



NOTES

1) ADDITIONAL PHOTOS ARE ARCHIVED BY VICTORIA GOLD

TITLE

20200916 – CONSTRUCTION ON SOUTH END OF CULVERT (~0+600)

DOCUMENT TITLE	APPENDIX	PREPARED BY	REVIEWED BY	DATE	FIGURE
Ditch A Improvement Construction Report	APPENDIX D – Construction Photos	LJ	RT	11/23/2020	D-3

Path: O:\03-ENG\11 Projects\Ditch A Relining\2_Construction

TSX: VGCX OTC: VITFF VGCX.com



NOTES

1) ADDITIONAL PHOTOS ARE ARCHIVED BY VICTORIA GOLD

TITLE

20200917 – CONSTRUCTION ON SOUTH END OF CULVERT (~0+600)

DOCUMENT TITLE	APPENDIX	PREPARED BY	REVIEWED BY	DATE	FIGURE
Ditch A Improvement Construction Report	APPENDIX D – Construction Photos	LJ	RT	11/23/2020	D-4

Path: O:\03-ENG\11 Projects\Ditch A Relining\2_Construction

TSX: VGCX OTC: VITFF VGCX.com



NOTES

1) ADDITIONAL PHOTOS ARE ARCHIVED BY VICTORIA GOLD

TITLE

20200918 – TIEING IN LINER TO UNUSED 28” HDPE PIPE (~0+600)

DOCUMENT TITLE	APPENDIX	PREPARED BY	REVIEWED BY	DATE	FIGURE
Ditch A Improvement Construction Report	APPENDIX D – Construction Photos	LJ	RT	11/23/2020	D-5

VGCX xceptional xploration xcellence xpression xtraordinary xperts xcel
xtra xperienced xecutives xplode xplorer xhilarating xtraordinary xcavation
VICTORIA GOLD CORP

Path: O:\03-ENG\11 Projects\Ditch A Relining\2_Construction

TSX: VGCX OTC: VITFF VGCX.com



NOTES

1) ADDITIONAL PHOTOS ARE ARCHIVED BY VICTORIA GOLD

TITLE

20200918 – DITCH SHAPING (~0+400)

DOCUMENT TITLE	APPENDIX	PREPARED BY	REVIEWED BY	DATE	FIGURE
Ditch A Improvement Construction Report	APPENDIX D – Construction Photos	LJ	RT	11/23/2020	D-6

Path: O:\03-ENG\11 Projects\Ditch A Relining\2_Construction

TSX: VGCX OTC: VITFF VGCX.com



NOTES

1) ADDITIONAL PHOTOS ARE ARCHIVED BY VICTORIA GOLD

TITLE

20200918 – LINER PLACEMENT IN SHINGLES (~0+300)

DOCUMENT TITLE	APPENDIX	PREPARED BY	REVIEWED BY	DATE	FIGURE
Ditch A Improvement Construction Report	APPENDIX D – Construction Photos	LJ	RT	11/23/2020	D-7

Path: O:\03-ENG\11 Projects\Ditch A Relining\2_Construction

TSX: VGCX OTC: VITFF VGCX.com



NOTES

1) ADDITIONAL PHOTOS ARE ARCHIVED BY VICTORIA GOLD

TITLE

20200918 – RESHAPING DITCH AND REBUILDING ERODED SIDES (~1+100)

DOCUMENT TITLE	APPENDIX	PREPARED BY	REVIEWED BY	DATE	FIGURE
Ditch A Improvement Construction Report	APPENDIX D – Construction Photos	LJ	RT	11/23/2020	D-8

Path: O:\03-ENG\11 Projects\Ditch A Relining\2_Construction

TSX: VGCX OTC: VITFF VGCX.com



NOTES

1) ADDITIONAL PHOTOS ARE ARCHIVED BY VICTORIA GOLD

TITLE

20200920 – DECONSTRUCTING THE PLATINUM GULCH SUMP (~0+000)

DOCUMENT TITLE	APPENDIX	PREPARED BY	REVIEWED BY	DATE	FIGURE
Ditch A Improvement Construction Report	APPENDIX D – Construction Photos	LJ	RT	11/23/2020	D-9

Path: O:\03-ENG\11 Projects\Ditch A Relining\2_Construction

TSX: VGCX OTC: VITFF VGCX.com



NOTES

1) ADDITIONAL PHOTOS ARE ARCHIVED BY VICTORIA GOLD

TITLE

20200922 – DECONSTRUCTED PLATINUM GULCH SUMP (~0+000)

DOCUMENT TITLE	APPENDIX	PREPARED BY	REVIEWED BY	DATE	FIGURE
Ditch A Improvement Construction Report	APPENDIX D – Construction Photos	LJ	RT	11/23/2020	D-10

Path: O:\03-ENG\11 Projects\Ditch A Relining\2_Construction

TSX: VGCX OTC: VITFF VGCX.com



NOTES

1) ADDITIONAL PHOTOS ARE ARCHIVED BY VICTORIA GOLD

TITLE

20200925 – PLACING LINER TO PLATINUM GULCH ROCK DRAIN (~0-100)

DOCUMENT TITLE	APPENDIX	PREPARED BY	REVIEWED BY	DATE	FIGURE
Ditch A Improvement Construction Report	APPENDIX D – Construction Photos	LJ	RT	11/23/2020	D-11

Path: O:\03-ENG\11 Projects\Ditch A Relining\2_Construction

TSX: VGCX OTC: VITFF VGCX.com



NOTES

1) ADDITIONAL PHOTOS ARE ARCHIVED BY VICTORIA GOLD

TITLE

20200925 – LINER DOWN TO OLD PLATINUM GULCH SUMP (~0-100)

DOCUMENT TITLE	APPENDIX	PREPARED BY	REVIEWED BY	DATE	FIGURE
Ditch A Improvement Construction Report	APPENDIX D – Construction Photos	LJ	RT	11/23/2020	D-12

Path: O:\03-ENG\11 Projects\Ditch A Relining\2_Construction

TSX: VGCX OTC: VITFF VGCX.com



NOTES

1) ADDITIONAL PHOTOS ARE ARCHIVED BY VICTORIA GOLD

TITLE

20200925 – BUILDING CONTROL POND ACCESS (~1+400)

DOCUMENT TITLE	APPENDIX	PREPARED BY	REVIEWED BY	DATE	FIGURE
Ditch A Improvement Construction Report	APPENDIX D – Construction Photos	LJ	RT	11/23/2020	D-13

Path: O:\03-ENG\11 Projects\Ditch A Relining\2_Construction

TSX: VGCX OTC: VITFF VGCX.com



NOTES

1) ADDITIONAL PHOTOS ARE ARCHIVED BY VICTORIA GOLD

TITLE

20200926 – DITCH WORK NEAR CONTROL POND (~1+600)

DOCUMENT TITLE	APPENDIX	PREPARED BY	REVIEWED BY	DATE	FIGURE
Ditch A Improvement Construction Report	APPENDIX D – Construction Photos	LJ	RT	11/23/2020	D-14

Path: O:\03-ENG\11 Projects\Ditch A Relining\2_Construction

TSX: VGCX OTC: VITFF VGCX.com



NOTES

1) ADDITIONAL PHOTOS ARE ARCHIVED BY VICTORIA GOLD

TITLE

20200926 – LINER TIE IN TO ROCK DRAIN (0-260)

DOCUMENT TITLE	APPENDIX	PREPARED BY	REVIEWED BY	DATE	FIGURE
Ditch A Improvement Construction Report	APPENDIX D – Construction Photos	LJ	RT	11/23/2020	D-15

Path: O:\03-ENG\11 Projects\Ditch A Relining\2_Construction

TSX: VGCX OTC: VITFF VGCX.com



NOTES

1) ADDITIONAL PHOTOS ARE ARCHIVED BY VICTORIA GOLD

TITLE

20200928 – LINER PLACEMENT ALONG CRUSHER ACCESS ROAD (~0+800)

DOCUMENT TITLE	APPENDIX	PREPARED BY	REVIEWED BY	DATE	FIGURE
Ditch A Improvement Construction Report	APPENDIX D – Construction Photos	LJ	RT	11/23/2020	D-16

Path: O:\03-ENG\11 Projects\Ditch A Relining\2_Construction

TSX: VGCX OTC: VITFF VGCX.com



NOTES

1) ADDITIONAL PHOTOS ARE ARCHIVED BY VICTORIA GOLD

TITLE

20200929 – EXCAVATING DITCH AROUND BURIED LINES (~0+700)

DOCUMENT TITLE	APPENDIX	PREPARED BY	REVIEWED BY	DATE	FIGURE
Ditch A Improvement Construction Report	APPENDIX D – Construction Photos	LJ	RT	11/23/2020	D-17

Path: O:\03-ENG\11 Projects\Ditch A Relining\2_Construction

TSX: VGCX OTC: VITFF VGCX.com



NOTES

1) ADDITIONAL PHOTOS ARE ARCHIVED BY VICTORIA GOLD

TITLE

20201002 – INSTALLED CULVERT AT SWITCHBACK 1 (~0+700)

DOCUMENT TITLE	APPENDIX	PREPARED BY	REVIEWED BY	DATE	FIGURE
Ditch A Improvement Construction Report	APPENDIX D – Construction Photos	LJ	RT	11/23/2020	D-18

Path: O:\03-ENG\11 Projects\Ditch A Relining\2_Construction

TSX: VGCX OTC: VITFF VGCX.com



NOTES

1) ADDITIONAL PHOTOS ARE ARCHIVED BY VICTORIA GOLD

TITLE

20201003 – RIP RAP SOURCE NEAR NUWAY CRUSHING SITE

DOCUMENT TITLE	APPENDIX	PREPARED BY	REVIEWED BY	DATE	FIGURE
Ditch A Improvement Construction Report	APPENDIX D – Construction Photos	LJ	RT	11/23/2020	D-19

Path: O:\03-ENG\11 Projects\Ditch A Relining\2_Construction

TSX: VGCX OTC: VITFF VGCX.com



NOTES

1) ADDITIONAL PHOTOS ARE ARCHIVED BY VICTORIA GOLD

TITLE

20201003 – PLACING RIP RAP ON LINER (~0+200)

DOCUMENT TITLE	APPENDIX	PREPARED BY	REVIEWED BY	DATE	FIGURE
Ditch A Improvement Construction Report	APPENDIX D – Construction Photos	LJ	RT	11/23/2020	D-20

Path: O:\03-ENG\11 Projects\Ditch A Relining\2_Construction

TSX: VGCX OTC: VITFF VGCX.com



NOTES

1) ADDITIONAL PHOTOS ARE ARCHIVED BY VICTORIA GOLD

TITLE

20201004 – PLACING RIP RAP AT TOP OF DITCH A (~0-260)

DOCUMENT TITLE	APPENDIX	PREPARED BY	REVIEWED BY	DATE	FIGURE
Ditch A Improvement Construction Report	APPENDIX D – Construction Photos	LJ	RT	11/23/2020	D-21

VGCX xceptional xploration xcellence xact xpression xert xtraordinary xperts xcel xtra xperienced xecutives xplode xplorer xhilarating xamine xtraordinary xcavation VICTORIA GOLD CORP

Path: O:\03-ENG\11 Projects\Ditch A Relining\2_Construction

TSX: VGCX OTC: VITFF VGCX.com



NOTES

1) ADDITIONAL PHOTOS ARE ARCHIVED BY VICTORIA GOLD

TITLE

20201007 – TRANSITION FROM 25 KG TO 10 KG CLASS RIP RAP (~0+500)

DOCUMENT TITLE	APPENDIX	PREPARED BY	REVIEWED BY	DATE	FIGURE
Ditch A Improvement Construction Report	APPENDIX D – Construction Photos	LJ	RT	11/23/2020	D-22

Path: O:\03-ENG\11 Projects\Ditch A Relining\2_Construction

TSX: VGCX OTC: VITFF VGCX.com



NOTES

1) ADDITIONAL PHOTOS ARE ARCHIVED BY VICTORIA GOLD

TITLE

20201007 – PLACING RIP RAP ON LINER (~0+800)

DOCUMENT TITLE	APPENDIX	PREPARED BY	REVIEWED BY	DATE	FIGURE
Ditch A Improvement Construction Report	APPENDIX D – Construction Photos	LJ	RT	11/23/2020	D-23

Path: O:\03-ENG\11 Projects\Ditch A Relining\2_Construction

TSX: VGCX OTC: VITFF VGCX.com



NOTES

1) ADDITIONAL PHOTOS ARE ARCHIVED BY VICTORIA GOLD

TITLE

20201010 – SCREENING RIP RAP AT DUBLIN GULCH SOURCE

DOCUMENT TITLE	APPENDIX	PREPARED BY	REVIEWED BY	DATE	FIGURE
Ditch A Improvement Construction Report	APPENDIX D – Construction Photos	LJ	RT	11/23/2020	D-24

VGCX xtra xperienced xecutives xplode xplorer xhilarating xtraordinary xcavation xamine xceptional xcellence xact xploration xpression xert xtraordinary xperts xcel VICTORIA GOLD CORP

Path: O:\03-ENG\11 Projects\Ditch A Relining\2_Construction

TSX: VGCX OTC: VITFF VGCX.com



NOTES

1) ADDITIONAL PHOTOS ARE ARCHIVED BY VICTORIA GOLD

TITLE

20201016 – PLACING RIP RAP ON LINER (~0+600)

DOCUMENT TITLE	APPENDIX	PREPARED BY	REVIEWED BY	DATE	FIGURE
Ditch A Improvement Construction Report	APPENDIX D – Construction Photos	LJ	RT	11/23/2020	D-25

Path: O:\03-ENG\11 Projects\Ditch A Relining\2_Construction

TSX: VGCX OTC: VITFF VGCX.com



NOTES

1) ADDITIONAL PHOTOS ARE ARCHIVED BY VICTORIA GOLD

TITLE

20201018 – COMPLETED SECTION OF RIP RAP (~1+500)

DOCUMENT TITLE	APPENDIX	PREPARED BY	REVIEWED BY	DATE	FIGURE
Ditch A Improvement Construction Report	APPENDIX D – Construction Photos	LJ	RT	11/23/2020	D-26

Path: O:\03-ENG\11 Projects\Ditch A Relining\2_Construction

TSX: VGCX OTC: VITFF VGCX.com



NOTES

1) ADDITIONAL PHOTOS ARE ARCHIVED BY VICTORIA GOLD

TITLE

20201021 – PLACING RIP RAP ON LINER (~0+900)

DOCUMENT TITLE	APPENDIX	PREPARED BY	REVIEWED BY	DATE	FIGURE
Ditch A Improvement Construction Report	APPENDIX D – Construction Photos	LJ	RT	11/23/2020	D-27

Path: O:\03-ENG\11 Projects\Ditch A Relining\2_Construction

TSX: VGCX OTC: VITFF VGCX.com



NOTES

1) ADDITIONAL PHOTOS ARE ARCHIVED BY VICTORIA GOLD

TITLE

20201101 – DITCH HOLDING WATER (~0+100)

DOCUMENT TITLE	APPENDIX	PREPARED BY	REVIEWED BY	DATE	FIGURE
Ditch A Improvement Construction Report	APPENDIX D – Construction Photos	LJ	RT	11/23/2020	D-28

Path: O:\03-ENG\11 Projects\Ditch A Relining\2_Construction

TSX: VGCX OTC: VITFF VGCX.com

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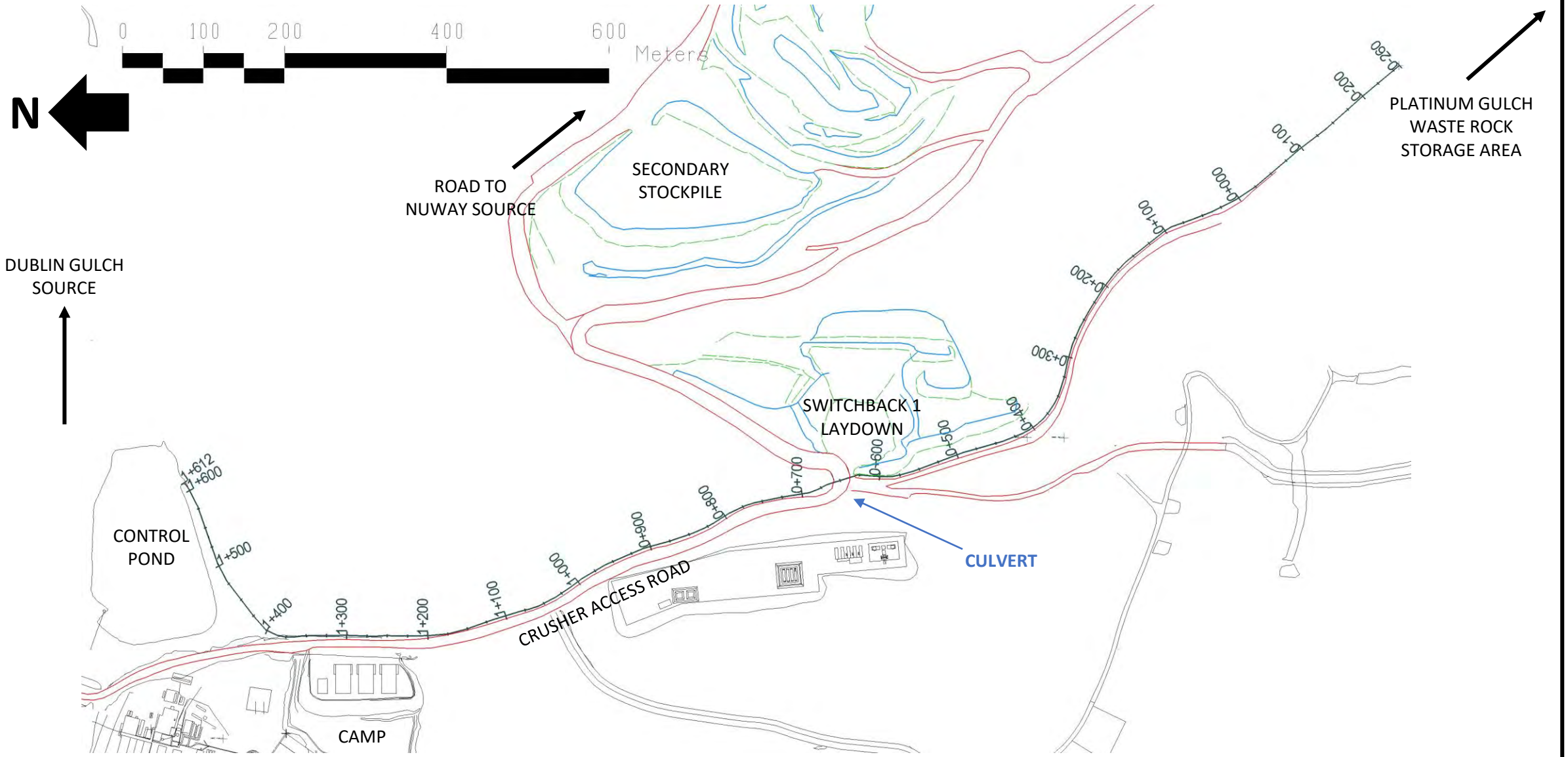
APPENDIX E

AS-BUILT FIGURES



VGCX xceptional xploration xcellence xpression xtraordinary xperts VICTORIA GOLD CORP

NOTES

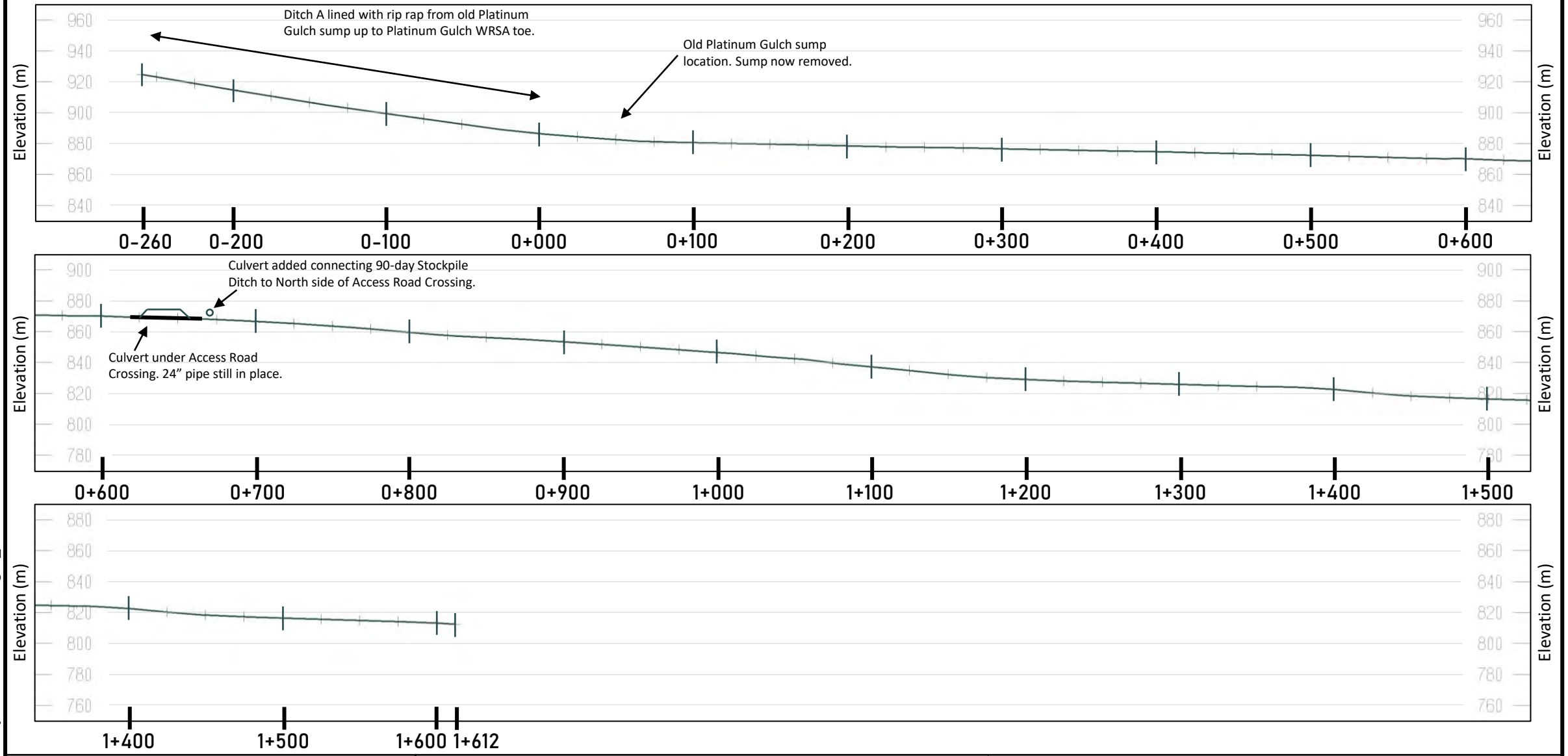
TITLE

AS-BUILT PLAN VIEW OF DITCH A

DOCUMENT TITLE	APPENDIX	PREPARED BY	REVIEWED BY	DATE	FIGURE
Ditch A Improvement Construction Report	APPENDIX E – As-built Figures	LJ	RT	11/23/2020	E-1

Path: O:\03-ENG\11 Projects\Ditch A Relining\2_Construction

TSX: VGCX OTC: VITFF VGCX.com



NOTES

TITLE

DITCH A PROFILE

DOCUMENT TITLE	APPENDIX	PREPARED BY	REVIEWED BY	DATE	FIGURE
Ditch A Improvement Construction Report	APPENDIX E – As-built Figures	LJ	RT	11/23/2020	E-2

VGCX xceptional xat xploration xcellence xpression xet xtraordinary xperts xcel xtra xperienced xecutives xplode xplorer xhilarating xamine xtraordinary xcavation VICTORIA GOLD CORP

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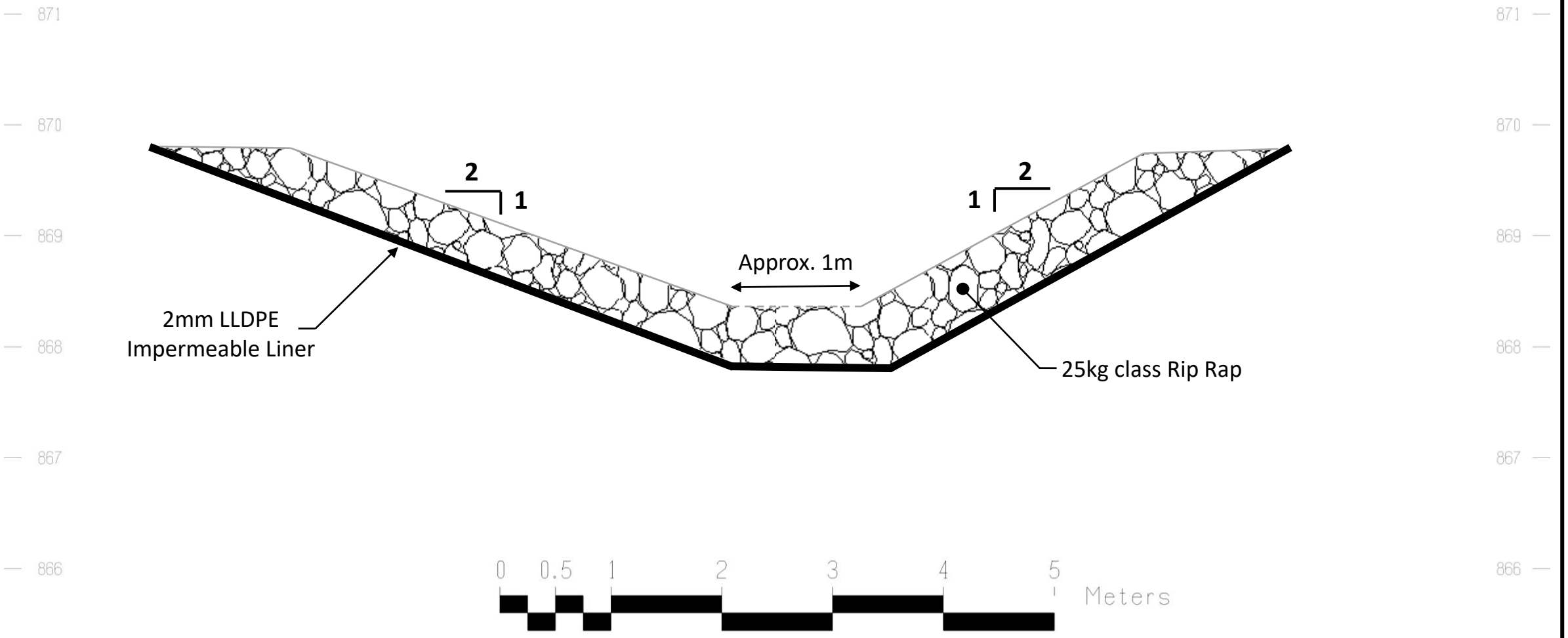
TSX: VGCX OTC: VITFF VGCX.com



NOTES

1) TOP OF RIP RAP IN BASE OF DITCH APPROXIMATED AS DITCH HAD ICE IN IT DURING SURVEY

TITLE

TYPICAL CROSS SECTION OF DITCH A

DOCUMENT TITLE	APPENDIX	PREPARED BY	REVIEWED BY	DATE	FIGURE
Ditch A Improvement Construction Report	APPENDIX E – As-built Figures	LJ	RT	11/23/2020	E-3

Path: O:\03-ENG\11 Projects\Ditch A Relining\2_Construction

TSX: VGCX OTC: VITFF VGCX.com

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APPENDIX F

QA/QC TEST RESULTS



VGCX xtra xperienced xecutives xplode xplorer xhilarating xtraordinary xcavation xamine xceptional xcellence xtraordinary xploration xpression xperts xcel xact xet VICTORIA GOLD CORP

NOTES

TITLE

SHINGLED LINER PLACEMENT CONVEYING WATER

DOCUMENT TITLE	APPENDIX	PREPARED BY	REVIEWED BY	DATE	FIGURE
Ditch A Improvement Construction Report	APPENDIX F – QAQC	LJ	RT	11/23/2020	F-1

Path: O:\03-ENG\11 Projects\Ditch A Relining\2_Construction

TSX: VGCX OTC: VITFF VGCX.com



NOTES

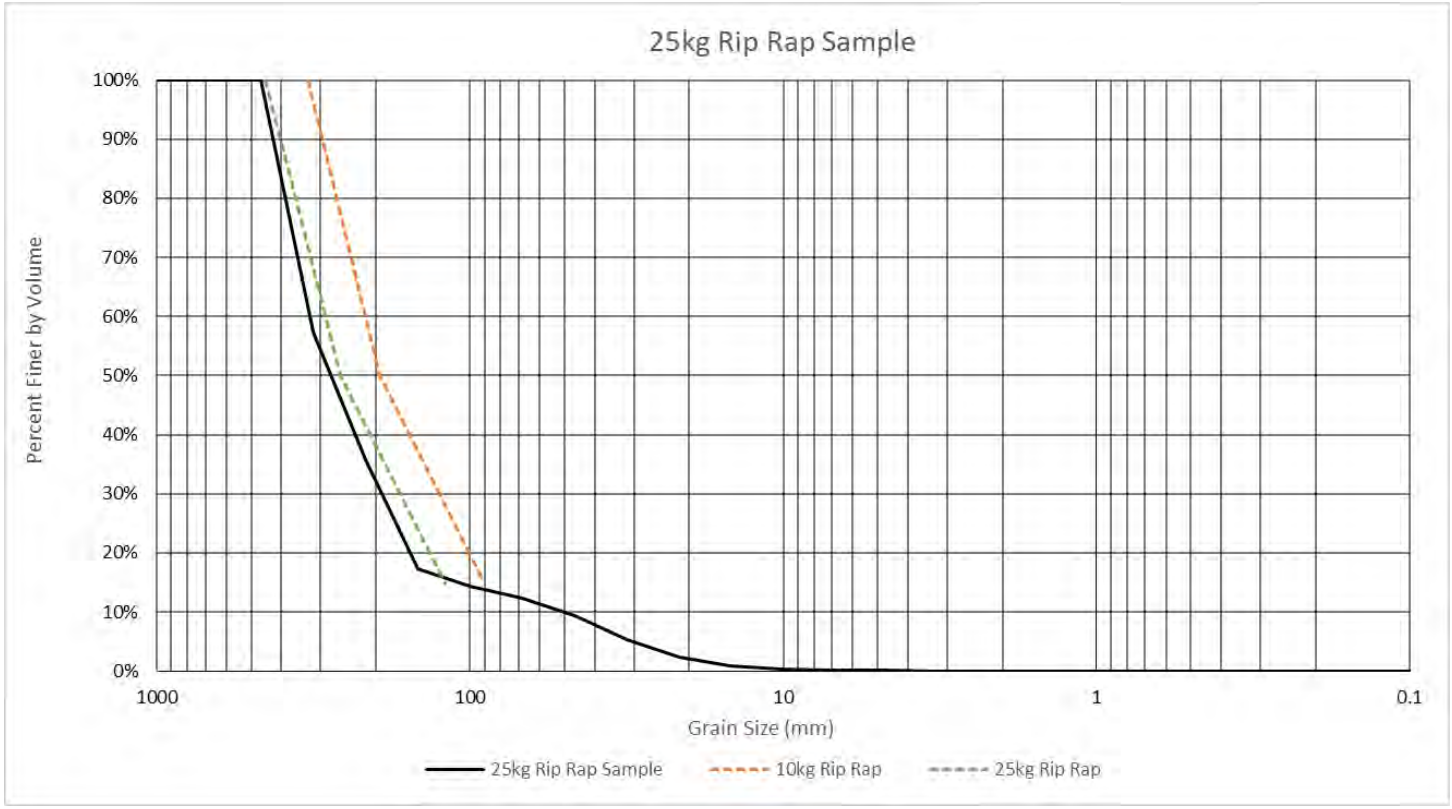
TITLE

SHINGLED LINER OVERLAP

DOCUMENT TITLE	APPENDIX	PREPARED BY	REVIEWED BY	DATE	FIGURE
Ditch A Improvement Construction Report	APPENDIX F – QAQC	LJ	RT	11/23/2020	F-2

Path: O:\03-ENG\11 Projects\Ditch A Relining\2_Construction

TSX: VGCX OTC: VITFF VGCX.com





NOTES

1) RIP RAP GRADATION OBTAINED USING WIPFRAG SOFTWARE
2) APPROXIMATE RIP RAP GRADATION LIMIT BASED ON BC MINISTRY OF TRANSPORTATION AND INFRASTRUCTURE RIP RAP INSTALLATION GUIDE (SEPT 2013)

TITLE

25 KG CLASS RIP RAP PARTICLE SIZE DISTRIBUTION

DOCUMENT TITLE	APPENDIX	PREPARED BY	REVIEWED BY	DATE	FIGURE
Ditch A Improvement Construction Report	APPENDIX F – QAQC	LJ	RT	11/23/2020	F-3

Path: O:\03-ENG\11 Projects\Ditch A Relining\2_Construction

TSX: VGCX OTC: VITFF VGCX.com

APPENDIX B1

EOR Certification – PG WRSA

VICTORIA GOLD CORP
TSX | VGCX

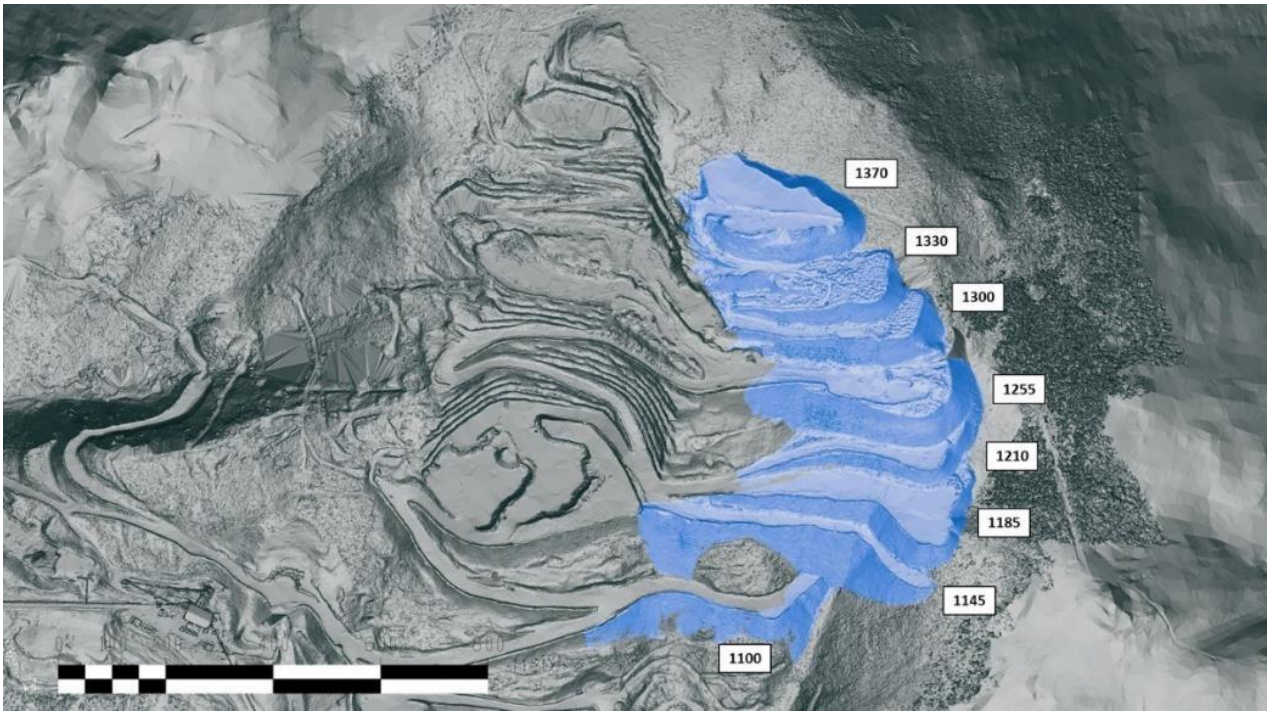
MEMO

Date	March 31, 2021
To	File
From	Richard Tuohey – Technical Services Superintendent Eagle Gold Mine
Subject	2020 Engineer of Record Summary Report for the Platinum Gulch Waste Rock Storage area (PG WRSA)

As identified in the Eagle Gold Project Water Management Plan Version 2020-01 with an effective date of January 2020, I am the designated Engineer of Record for the Waste Rock Storage Areas associated with the Eagle Gold Mine.

During 2020, a total of approximately 20 million tonnes (Mt) of material was removed from the Eagle Zone open pit by standard drill, blast and haul methods. Of the material removed from the pit, roughly 12.5 Mt was classified as waste rock which was subsequently placed in the PG WRSA. Waste rock was deposited to 8 different lifts in the PG WRSA ranging from the 1100 lift up to the 1370 lift. The PG WRSA was built in lifts using the end-dumped method for the majority of construction and occasionally using the free-dump method.

At December 31, 2020, the PG WRSA configuration was as shown below.



The PG WRSA has been developed, and is performing, in accordance with the design intent, performance objectives and indicators, applicable guidelines, standards and legal requirements, and relevant clauses of the Type A Water Use license QZ14-041-1.

The configuration of the WRSA at the end of 2020 achieved all planned operational requirements. During 2020, active and non-active lifts of the PG WRSA were monitored for movement using extensometers. All extensometers deployed in the PG WRSA showed movement rates below the monitoring thresholds.

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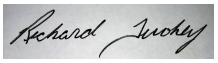
MEMO

There are currently no plans, nor requirement, to conduct any major maintenance work within the PG WRSA in 2021.

The is currently no damaged or faulting monitoring or control equipment associated with the PG WRSA and thus no requirement to repair or replace any equipment.



_____
Richard Tuohey P.Eng.

APPENDIX B2

EOR Certification – Open Pit

VICTORIA GOLD CORP
TSX | VGCX

MEMO

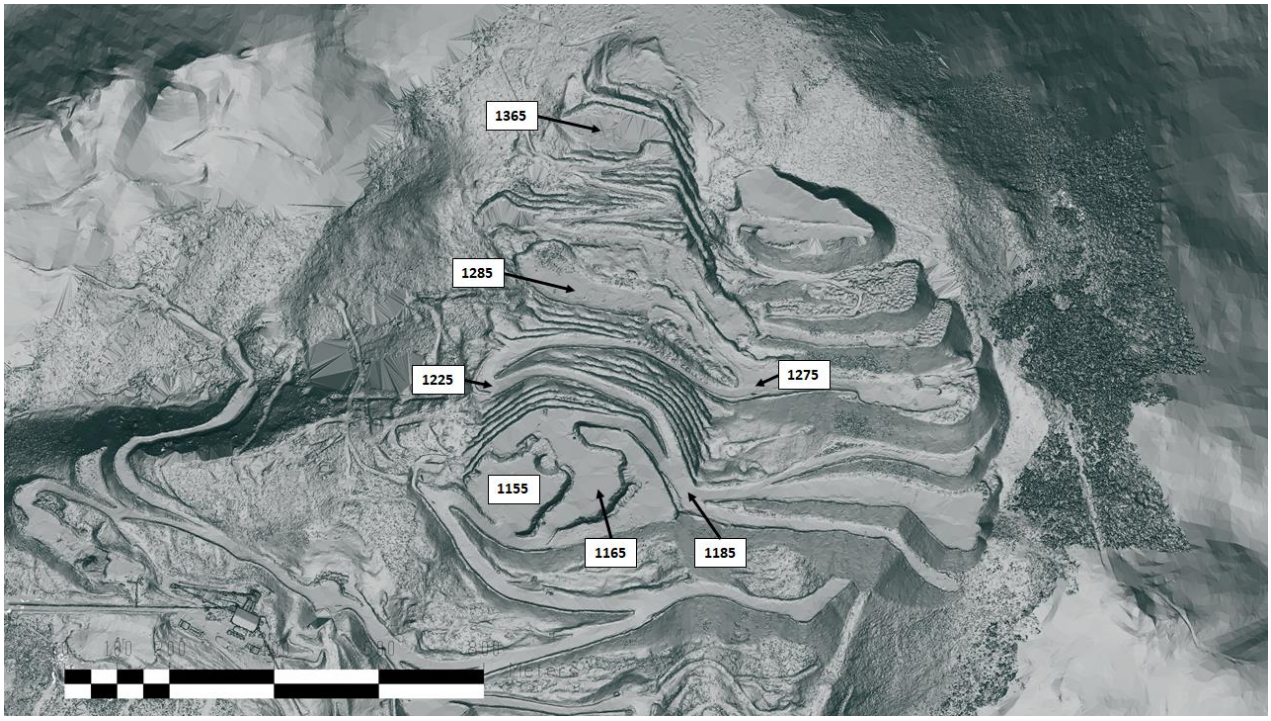
Date	March 31, 2021
To	File
From	Richard Tuohey – Technical Services Superintendent Eagle Gold Mine
Subject	2020 Engineer of Record Summary report for the Eagle Zone Open Pit

As identified in the Eagle Gold Project Water Management Plan Version 2020-01 with an effective date of January 2020, I am the designated Engineer of Record for the Eagle Zone Open Pit.

During 2020, a total of approximately 20 million tonnes (Mt) of material was removed from the open pit by standard drill, blast and haul methods. Of the material removed from the pit, roughly 7.5 Mt was ore and 12.5 Mt of was classified as waste rock.

The pit has been developed, and is performing, in accordance with the design intent, performance objectives and indicators, applicable guidelines, standards and legal requirements, and relevant clauses of the Type A Water Use License QZ14-041-1.

At December 31, 2020, the pit configuration was as shown below.

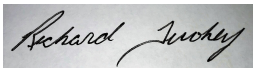


Mining in 2020 focused on Phase 1 single benching and the development of Phase 2 with single and double benches. During 2020 pit development, visual monitoring of the pit walls was actively conducted during regular pit inspections. A majority of the pit consists of single benches with 10 m bench heights and 6 m wide berms, and one wall in Phase 2 is double benched with 20 m bench heights and 10 m wide berms. The lithologies exposed in Phase 1 display equal portions of metasedimentary and granodiorite. Phase 2 is predominantly metasedimentary rock. Most rock within the pit was oxidized, weathered, and blocky.

A fairly dominant NE-SW trending fault zone in Phase 2, in combination with the exposed weathered metasedimentary rock, caused a localized instability along one of the Phase 2 haul ramps in September 2020. The area was bermed off and monitored using extensometers. Movement rates were measured to be consistently low. Access to the haul road was not required at the time of the instability, so the area is set to be remediated once heavy traffic access is required in 2021.

The configuration of the open pit at the end of 2020 included some final pit walls on the south wall of the pit and all planned operational requirements were achieved at the end of 2020.

The is currently no damaged or faulting monitoring or control equipment associated with the open pit and thus no requirement to repair or replace any equipment.



Richard Tuohey P.Eng.

APPENDIX B3

EOR Inspection and Certification - HLF

VICTORIA GOLD CORP

Project No. 109005
2020 Annual Inspection of Eagle Gold HLF
Document No. 109005-51100-01-EDR-F002



Prepared by:

FORTE DYNAMICS, INC
120 Commerce Drive
Units 3 & 4
Fort Collins, CO 80524
(720) 642-9328

Revision	Date	Status	Prepared By	Checked By	Approved By
REV A	19 MAR 21	Issued for Use	W. Reinhardt	C. Green	B. Carlson

Statement of Report

The report enclosed entitled “2020 EOR Annual Inspection Report” has been prepared for the exclusive use of Victoria Gold Corporation (VGC). No third party shall be entitled to use of this report without written consent of VGC and Forte Dynamics, Inc (Forte). The use of any and all information contained herein shall be at the sole risk of the user regardless of any fault or negligence of VGC or Forte.

This report has been prepared under the direct supervision of Barry Carlson, P. Eng. of Forte, with the assistance of Clint Green, P.E. and Will Reinhardt, P.E. of Forte. The 2020 annual inspection was completed by Mr. Clint Green, P.E. of Forte Dynamics on October 14, 2020. The annual inspection was conducted in accordance with the Eagle Gold Project Heap Leach Facility Operations and Maintenance Manual and the findings presented in this report are accurate to the best of our knowledge.

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1. Introduction

1.1 General

Forte Dynamics Inc. (Forte) was retained by Victoria Gold Corporation (VGC) to carry out an annual geotechnical inspection of the Heap Leach Facility (HLF) at the Eagle Gold Mine located in Yukon Territory, Canada. The general site layout of the HLF is shown in Appendix A.

The 2019 Engineering of Record (EoR) annual inspection was completed by Mr. Troy Meyer, P. Eng. of BGC Engineering, Inc. on October 2nd and 3rd, 2019 [Ref 1]. In late Fall of 2019, Mr. Meyer transferred his title as EoR to Mr. Barry Carlson, P. Eng. of Forte Dynamics, Inc. As EoR for the HLF, Forte has been involved with completion of outstanding items related to Phase 1A pad construction and final design and oversight for Phase 1B pad expansion. Record of construction (ROC) reports will be completed by Forte Dynamics under a separate scope. The 2020 inspection of the HLF was conducted on October 14th, 2020 as global travel was affected due to the COVID-19 pandemic. Going forward, the annual inspections will normally be conducted by July 1.

The inspection took place on site and was in general conformance with the monitoring plan outlined in the Operations, Maintenance, and Surveillance (OMS) Manual [Ref 2]. The scope of this annual dam inspection work was limited to:

- Visual inspection of the HLF and dam by the EOR, including taking appropriate photographs of the observed conditions;
- Review of routine inspection records prepared by operating personnel in the past year;
- Review whether or not recommendations from previous year's inspection had been addressed, and any incidents or actions arising from those previous recommendations;
- Review of instrumentation and monitoring data
- Review of the previous year's operations including reports of any incidents (and remedial measures) that may have occurred;
- Evaluation of the structural performance of the embankment and related components and identify any potential safety deficiencies or recommended items that need to be addressed in the coming year;
- Review of construction records, quality assurance and quality control (QA/QC) data and as-built information on facility construction; and
- Evaluation of the OMS Manual to assess the need for updating.

During the course of the site reconnaissance, check list type inspection forms were completed, documenting the visible condition of each of the above noted structures at the time of the site visit. The inspection forms are included in Appendix B. In addition, several photographs were taken of each of the above-mentioned structures, a selection of which are presented in Appendix C. The approximate location of the photos taken are shown in Appendix A. The inspection record includes recommendations for follow-up actions, where required.

1.2 Background

The Eagle Gold Mine is an open pit gold mine and heap leach operation. The Eagle Gold Heap Leach Facility (HLF) consists of an embankment that lies across the Ann Gulch valley about 200m upstream of the confluence with Dublin Gulch. The ore is stacked behind an embankment within Ann Gulch. The embankment provides confinement of the crushed ore and creates an In-Heap Pond for temporary storage of pregnant solution, which is pumped to the recovery plant.

The major design components for the HLF include the following: the embankment; a composite liner system; the In-Heap Pond; solution recovery wells; associated piping network for solution collection and distribution; a leak detection and recovery system (LDRS); and a downstream Event Pond to contain excess solution that could result from extreme precipitation or emergency events. An overflow spillway connects the HLF In-Heap Pond to the Event Pond and an emergency spillway allows overflow from the Event Pond to environment. Appendix A presents aerial photographs of the site provided by VGC and taken September 28, 2020.

The HLF will be progressively developed in phases: one phase during initial construction (pre-mining), and subsequent phases during mining operations as needed to provide HLF pad space for ore stacking operations. The HLF will occupy an area of 106 ha and contain about 86 MT of crushed ore at the end of the facility life.

Construction of Eagle Gold Mine Phase 1A HLF was completed in September 2019 with initial operations starting in July 2019 by stacking and leaching of ore in lower pad area while the upper pad area was completed. Phase 1B HLF was completed in September 2020 extending the liner from the 990m elevation to the Phase 1 interceptor ditch at approximate elevation 1050m.

The HLF pad consists of two liner systems, the up-gradient liner system and the in-heap pond liner system. The single composite liner system in the upper portion of the pad (above the in-heap solution storage area) is comprised of a double-side textured 80 mil linear low-density, polyethylene (LLDPE) liner over a geosynthetic clay liner (GCL) system. The double composite liner system in the lower portion of the pad (forming the in-heap solution storage area) is comprised of two discrete layers of LLDPE liner, separated by a layer of geonet material to form the LDRS, over a GCL system.

The In-Heap Pond (essentially a saturated zone within the lower extent of the HLF ore pile) at the spillway invert elevation of 937.5 m) contains up to 117,141 m3 of solution within the pore spaces of the stacked ore. Typical In-heap Pond operational volume will be about 57,763 m3. Storage of PLS in the In-Heap Pond is a cold-weather mitigation and has the added benefit that PLS will not be exposed during normal operations.

Process (barren) solution containing cyanide is applied to the ore via a drip irrigation system (buried during winter). The resultant PLS is captured in the solution collection system and flow to the In-Heap Pond. The PLS is recovered via a well system using pumps and standpipes. The PLS is transferred to the ADR plant for gold recovery.

The heap leach pad is constructed with a network of pipes that is distributed throughout the limits of the facility at the base of the ore pile. This pipe network collects and conveys PLS and any infiltrated stormwater to the In-Heap Pond area where it is pumped to the process plant via the solution collection wells. The pipe network was designed to accommodate stormwater volume from a 100-year, 24-hour storm event in addition to 150 percent of the design capacity of the anticipated PLS solution flow (150 percent PLS flow + 100-year, 24-hour storm event).

The downstream Events Pond serves as an overflow containment area that provides additional solution storage in case the In-Heap Pond capacity is exceeded. The Events Pond is sized to provide containment storage for the Probable Maximum Flood (PMF) Event assuming the In- Heap Pond solution storage is at maximum capacity. As designed, the Events Pond has an operational storage capacity of approximately 299,900 m3 to the spillway invert at elevation 894.5m.

Inspection and monitoring systems are included in the HLF to assess the ongoing performance of the facility. The In-Heap Pond fluid levels are monitored using a network of vibrating wire piezometers. The Events Pond fluid levels are monitored visually with level gauges or survey.

Liner Integrity is monitored by regular inspection flows into the LDRS monitoring sumps for both the In-Heap Pond and the Events Pond. The HLF design includes an underdrain system for the collection and drainage of subsurface water beneath the lined facility to limit upward pressure on the HLF liner. The underdrain system conveys subsurface flows to a monitoring vault. Flows reporting to the monitoring vault can either be released to environment or pumped back to the facility for make-up water.

The HLF confining embankment has been classified as a high hazard dam. A full description of the HLF design criteria and the currently defined monitoring approach is presented in the Operation, Surveillance and Maintenance (OMS) manual (VGC, 2020). Embankment integrity is to be monitored using a network of survey monuments (to be installed) and inclinometers. Dam safety inspections are required annually by the EoR and more comprehensive dam safety review is required by a qualified third-party every five years.

The parameters and criteria presented in Table 1-1 below form the basis of design for the HLF taken from the OMS Manual (VGC, 2020).

Table 1-1 Engineering Design Criteria

General	Quantity/Criteria
Heap ore capacity	45,847,770 m^3
Ore processing	Estimated 10.8 Mt/a of crushed ore over p.a. Three-stage crushing - primary crushing 365 days (29,500 tpd), secondary/tertiary 275 days per year (39,154 tpd)
Leach pad type	Permanent, multiple lift
Stacking Rate	Approximately 40,000-45,000 tpd
Stacking method	Conveyor-stacker or alternate
Stacked dry density of ore	1.72 t/m^3 (Varies)
Stack/lift height	Nominal 10 m lifts
Overall slope angle of stacked ore	2.5:1 (H:V), 22 degrees
Ore Setback	5 m from perimeter road 10 m from dam
Leach schedule	365 days per year
Solution application method	Drip emitters (buried during cold weather)
Solution application rate	10 $L/hr/m^2$ (7 L/hr/m2 nominal operations application rate)
Leach cycle time	90-day primary leach (45-day primary leach planned for operations)
Solution application flow	1,500 m3/hour nominal operations rate, additional capacity available for additional dynamic storage purposes
Geotechnical Stability	**Quantity/Criteria**
Design Basis Earthquake (DBE)	PGA = 0.25g (1 in 2475-year return period; applies to the operation condition of the HLF only; does not apply to the confining embankment
Maximum Design Earthquake (MDE)	PGA = 0.35g (corresponds to the Maximum Credible Earthquake or MCE event); applies to the confining embankment and long-term stability of the post-closure heap pile
Minimum Embankment and Ore Pile Factor of Safety	Static Loading - 1.5 (impounding),1.3 (non-impounding), Seismic Loading - 1.0 (pseudo-static methods) Post-Earthquake – 1.2
Permafrost	Ice-rich materials encountered in the embankment foundation will be removed; ice-rich material in the pad or pond, if thaw unstable, will be removed.

Confining Embankment	Quantity/Criteria
General	To provide stable confinement of the ore and create an In-Heap Pond
Overflow spillway	Sized to pass the PMF peak flow with 0.5 m of freeboard assuming heap storage is at capacity at the start of the event.
Groundwater	**Quantity/Criteria**
General	A drainage system is required beneath the liner system to control groundwater pressures. The system is to collect and monitor groundwater in a controlled manner before discharge downslope of the containment embankment if discharge criteria from permit requirements are met.
Pad Liner System	**Quantity/Criteria**
Overliner Drain Fill (ODF)	Crushed clean rock to provide a free draining layer under the placed ore and to protect the lining system from damage by ore placement while not impacting the conveyance of solution to the recovery wells. ODF will consist of a minimum 1.0-meter thickness (within the In-Heap Pond, minimum of 0.6 m otherwise) of minus 38 mm clean durable rock with less than 5 percent fines passing the No. 200 ASTM sieve size if the minimum in place hydraulic conductivity is greater than 2x10- 2 cm/s, or 5-10% passing the No 200 ASTM sieve size if the minimum in place hydraulic conductivity is greater than 5x10-2 cm/s.
Geosynthetic (geomembrane) liner	Suitable liner material to provide required puncture resistance, elastic strain range and resistance to solution attack and chemical breakdown along with cold weather performance for the Project's climate conditions (refer to LLDPE project standard specifications).
Geosynthetic Clay Liner (GCL)	Geosynthetic clay liner below the geosynthetic liner to provide a composite liner to minimize leakage. Objective maximum permeability 1×10^{-5} cm/s or 1×10^{-6} cm/s in the absence of a leachate detection and removal system.
Leachate collection and recovery system	A system to collect leachate and convey it to solution recovery wells. System to comprise ODF and a network of collection pipes to convey solution to the In-Heap Pond area while limiting solution head on liner.
Leak detection and recovery system (LDRS)	A system within the In-Heap Pond and Events Pond to collect leakage through the composite liner and convey it to monitoring points. The system to comprise geonet or similar synthetic drainage product to collect and convey any leaked solution to a gravel filled sump and pumping system.
LDRS monitoring	Monitoring of the flow into the LDRS to ensure that allowable rates (determined by permitting authorities) are not exceeded.
Solution Recovery Wells	**Quantity/Criteria**
General	Solution is to be recovered from the heap through inclined well casings equipped with submersible pumps installed in the In-Heap Pond solution storage area along the upstream dam slope. Adequate access for installing and recovering pumps from well casings will be provided on the dam crest.

Events Pond	Quantity/Criteria
General	The purpose of the Events Pond (constructed downstream of the embankment) is to temporarily store excess inflows that cannot be stored in the In-Heap Pond. Any overflow into the events pond will be evacuated, and used as make-up water, as fresh ore is added to the HLF. During the initial heap operation, the Events Pond may also be used as temporary storage for make-up water. Otherwise, the Events Pond will be kept dry.
Overflow spillway	Sized for routed PMF peak flow with 0.5 m of freeboard.
Storage Capacity	Sized to contain the runoff volume from the PMF event assuming the In-Heap Pond is full.
Liner system	Lining to comprise a double composite geosynthetic liner system with LDRS

2. 2020 Annual Inspection

2.1 Construction Follow Up Items

2.1.1 Phase 1A HLF

As part of the 2020 annual inspection, the construction follow up items previously identified by BGC were inspected by Forte Dynamics and reviewed with VGC personnel on site. The status of the Phase 1A HLF construction follow up items are included in Table 2-2.

At the time of the 2019 annual inspection the pregnant leach solution (PLS) pipework and overliner drain fill (ODF) had been advanced to approximately the 970m elev. VGC had accepted the responsibility of construction oversight and quality assurance (QA) for the advancement of the ODF and PLS pipework after June 30, 2019. The PLS pipework and ODF placement had continued ahead of stacking of ore on the pad, and at the time of the 2020 annual inspection the PLS pipework had been completed through Phase 1A and the ODF had been advanced to the 995m along the east perimeter and 1005m elev. into Phase 1B footprint along the west. Upon completion of the ODF placement in Phase 1A, Forte Dynamics will produce a ROC report for the remaining PLS pipework and ODF that was not included in BGC's report dated September 2019.

2.1.2 Phase 1B HLF

Phase 1B HLF construction was managed by JDS Energy and Mining (JDS) with the work completed by various contractors and sub-contractors. Tetra Tech performed on-site QA during construction of Phase 1B of the HLF. These services were performed between February 2020 and September 15, 2020. Off-site engineering support was performed by Forte Dynamics throughout this period. All documentation related to this work will be compiled in a ROC report. Similar to Phase 1A, the PLS pipework and ODF will be advanced ahead of the ore pile and VGC has accepted the responsibility of construction oversight and quality assurance

(QA). No additional construction follow-up items were identified at the time of inspection. Upon completion of the PLS pipework and ODF placement in Phase 1B a second ROC report will be submitted by Forte Dynamics.

2.2 Site Reconnaissance

The 2020 annual inspection was completed by Mr. Clint Green, P.E. of Forte Dynamics on October 14, 2020.

2.2.1 Heap Leach Facility

The HLF site inspection included walking along the embankment crest, downhill toe, and portions of the pad area, as well as observing the respective abutments, spillway, diversion channel and outlets of the underdrain pipelines.

The downhill slope of the dam was smooth, and a layer of growth medium planted last year had begun sprouting (Photo # VGC-EOR 31). The top liner in Phase 1A was almost entirely covered with ODF and ore had been stacked to the 985m elevation with operations beginning to stack the 995m elev. lift at the time of the inspection (Photo # VGC-EOR 3). A crushed ore transport system consisting of mobile “grasshopper” conveyors and a radial stacker was utilized for the stacking operations. The recently completed Phase 1B liner was still mostly exposed with ODF and PLS pipework placement along the western slope commencing (Photo # VGC-EOR 1).

At the time of the visual inspection, water was not being discharged to the environment from the HLF underdrain flows but was being pumped back into the process circuit (Photo # VGC-EOR 15). The underdrain monitoring vault pump was observed turning on and off in frequent intervals that could create operability issues since the pump is not designed to be operated in such a manner. This is discussed further in Section 2.3.3. Some erosion gullies along the crest of the underdrain containment area that appeared to be caused by rainfall runoff were observed (Photo # VGC-EOR 19 and VGC-EOR 21). The gullies were noted in last year’s inspection but appeared to have worsened since then, and therefore Forte recommends that VGC place additional coarse fill on the dam toe to limit ponding and construct a small rip-rap lined ditch along the crest of the underdrain containment area to direct surface water flows to the west edge of the monitoring vault area (Appendix E).

The PLS pipeline was observed along the HLF dam crest in the same location as noted in last year’s inspection (Photo # VGC-EOR 5 and VGC-EOR 29) From discussions with VGC personnel the plan is to place a large HDPE half-pipe shell around the PLS pipeline to provide better containment and protection of the dam in case of a spill. The barren pipeline was observed along the western edge of the HLF inside containment (Photo # VGC-EOR 6).

At the time of the inspection, VGC personnel were in the process of burying the powerline along the embankment crest that had previously routed above ground along the downstream edge of the embankment

crest (Photo # VGC-EOR 33). By burying the powerline, it should reduce risk to personnel traveling along the road and provide protection to the powerline.

It is understood that in July of 2020, a spill was reported by VGC that occurred due to a seep near the Heap Transfer Tower (CV-023) [Appendix D]. Remedial measures were performed by VGC personnel at site to pull the ore extents back onto HLF liner and meet the designed 10 m setback between the toe of the heap and the perimeter berm to prevent the potential for a future release of process solution outside of containment.

In the previous year's inspection, moderate cracking was observed on the HLF spillway access road. The cracks were up to 2 cm wide and about 10 m long. The cracks noted at the time did not pose a threat to the HLF embankment but could affect the access road and possibly the HLF spillway if not mitigated. In VGC's annual update report, it was noted that the spillway access road creep was being monitored during routine HLF inspections by site personnel, however no inspections forms were provided to Forte to review, and snow on the ground obscured the ability to verify cracks in the location. Forte recommends continued monitoring of the cracks.

During Forte's inspection, there appeared to be shallow rills created by rainfall runoff where the HLF spillway access road downstream face meets the downstream face of HLF embankment (Photo # VGC-EOR 23). This is just below where cracks were identified in the previous year's inspection. Forte agrees with BGC's previous recommendation to excavate a trench along the toe of the access road fill down to competent frost-free material and placing imported fill (structural or rock fill) into the trench and onto at least the bottom half of the access road slope to form a buttress. Additionally, placement of riprap along the groin to mitigate further rill or gullies from forming would be recommended. VGC should document this work and report back to Forte and this area should be monitored during routine HLF inspections by VGC personnel. Additionally, rills appeared on the slope between the Process Plant and the Event Pond (VGC-EOR 18). Forte recommends placement of additional fill along the berm on the south side of the Process Plant to divert runoff and regrading the spillway access road to drain into the HLF Spillway. VGC should document this work and report back to Forte and this area should be monitored during routine HLF inspections by VGC personnel.

Other than the observations indicated above, the dam, spillway, and the outlets of the discharge pipelines, based on the visual inspection, were observed to be functional and in good condition. A summary of recommended maintenance and monitoring action items is presented in Section 0.

2.2.2 Event Pond

The Event Pond was inspected by walking along the south embankment toe, up the emergency spillway and around the pond crest. The Event Pond is currently being used for temporary water storage. Ballasting of the Event Pond is required to prevent liner uplift. If using water as a ballast, Forte recommends a minimum of 0.6m of water depth always remain in the pond for wind ballasting.

In the previous year's inspection, minor cracking and settlement was observed along the Event Pond access road adjacent to the emergency spillway outfall. In VGC's annual update report, it was noted that the access road cracking was mitigated during access road improvements and no cracks were identified during Forte's visual inspection.

Flow from the Event Pond underdrain was not observed at the assumed outlet location. The outlet still needs to be located and clearly marked with signage (Photo # VGC-EOR 25).

2.3 Monitoring

2.3.1 In-Heap Pond Solution Inventory

The In-Heap Pond fluid level is tracked by a vibrating wire piezometer (VWP) installed in the inclined PLS riser pipe (Photo # VGC-EOR 27). The fluid level is being recorded daily and the In-Heap Pond elevation was at the approximate elevation of 932.4m on September 27, 2020. This elevation is approximately 5.1m below the HLF spillway invert and approximately 20.9m above the bottom of the PLS sump. Figure 2-1 below illustrates the In-Heap Pond level from data provided by the site team. It was observed that the In-Heap Pond level stayed below the spillway invert and never discharged to the HLF spillway. There were several instances where the In-Heap Pond crossed the Orange Alert threshold, but it appears Operations reacted appropriately by reducing the In-Heap Pond level before reaching the Red Alert level [Ref 2].

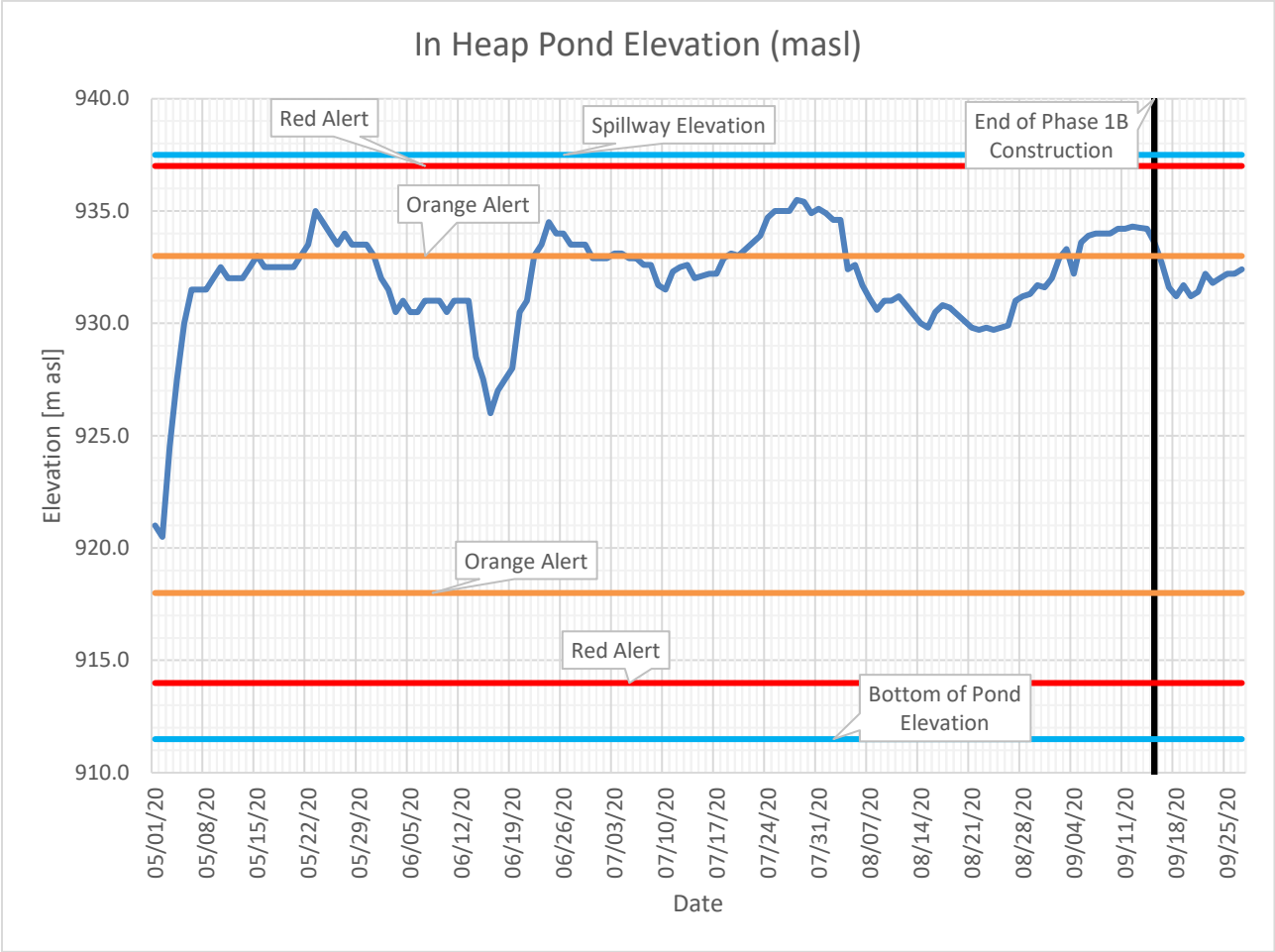


Figure 2-1: In-Heap Pond Elevation

2.3.2 HLF LDRS

The HLF LDRS sump level as of May 24, 2020 is being tracked via VWP in the LDRS sump and LDRS pump is activated manually once per week to evacuate any leakage and total volume pumped recorded via a local totalizer (Photo # VGC-EOR 27). Figure 2-2 shows the recorded leakage rates compared to the allowable leakage rates which affirms that the HLF liner system is functioning as designed.

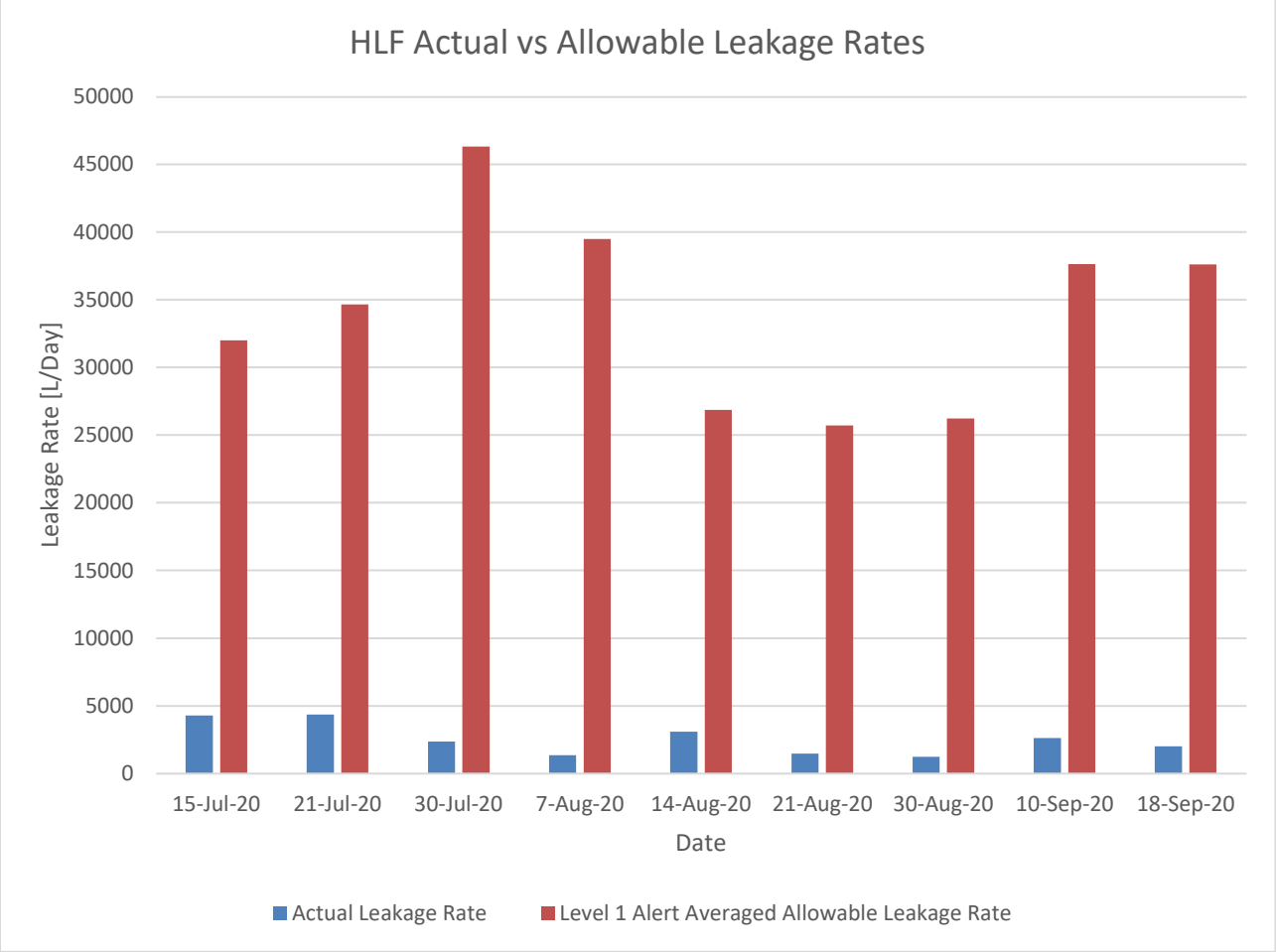


Figure 2-2: HLF LDRS Actual vs Allowable Leakage Rates

Forte recommends the HLF LDRS sump be evacuated by a level-actuated pumping system to automate the evacuation of the LDRS sump. Generally, sumps should be pumped prior to the water level reaching 0.5 m above the bottom of the LDRS end of pipe elevation. This will limit the hydraulic head on the bottom liner. Pumped flow volumes and water level readings should be recorded per the OMS manual [Ref 2].

2.3.3 Underdrain Monitoring Vault

The underdrain monitoring vault seepage and flow pumped back to the process circuit is being tracked daily by VGC site personnel. Figure 2-3 below illustrates the groundwater seepage that was pumped from the UMV to the Event Pond (Photo # VGC-EOR 15). Groundwater seepage is typically greater in the Springtime during freshet and lower in the Fall, but due to the liner installed during Phase 1, this has likely created a lag in response time for when seepage is seen at the UMV. Further data collection and analysis through the end of 2020 and into 2021 should confirm this assertion.

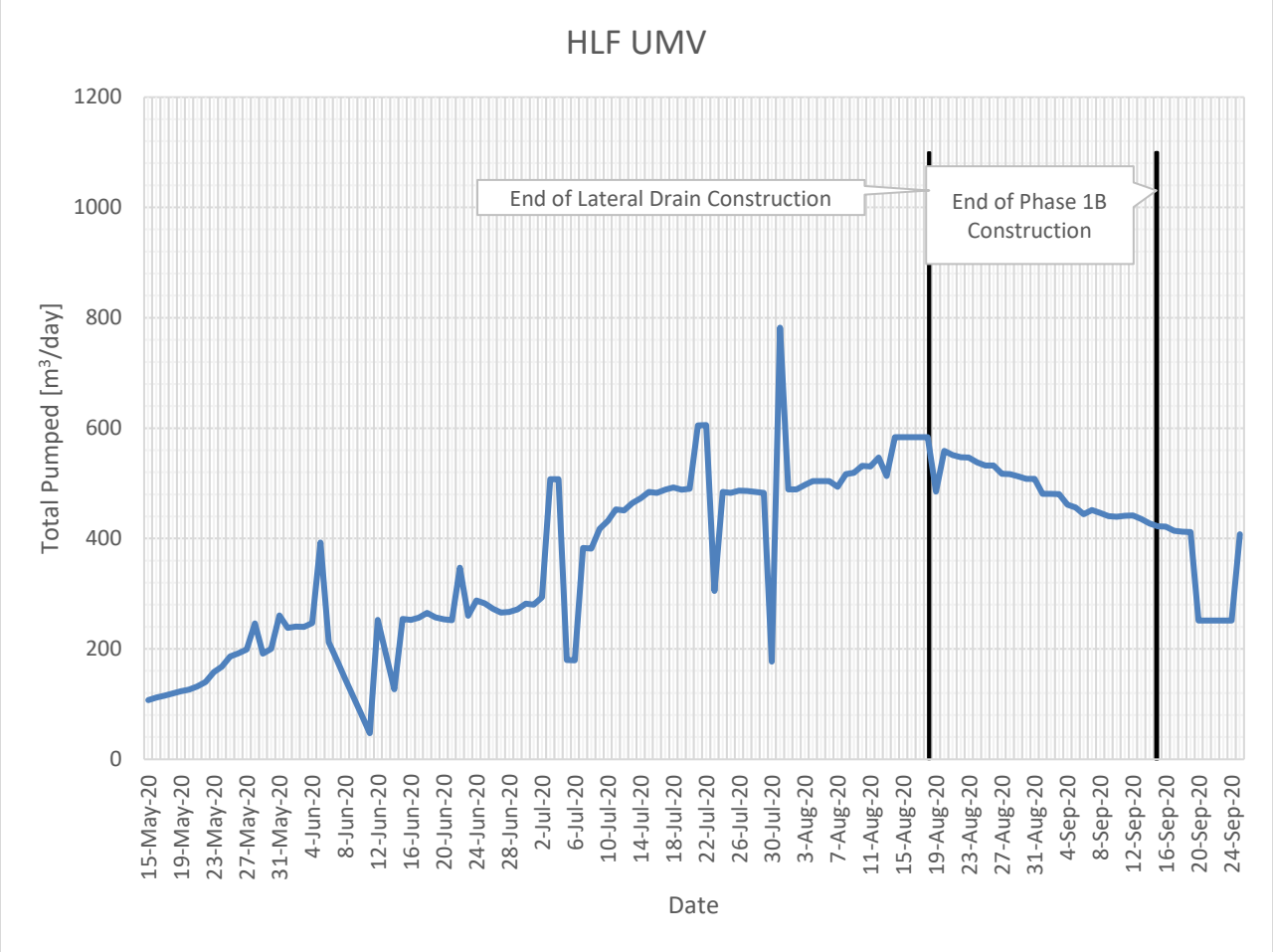


Figure 2-3: HLF UMV Pumped Daily

Figure 2-4below shows the UMV average daily pumping rate to the Event Pond which ranged between 2 m^3/hr and 32.6 m^3/hr. The pump data provided showed the pump has a maximum pumping capacity of 150 m^3/hr putting the operating point outside recommended operating envelope and explains why the pump was observed turning on and off frequently during the inspection. As a near term solution, Forte recommends procuring a spare pump to reduce downtime if the UMV pump were to fail. As a long-term solution, Forte recommends implementing a surge tank or other means of reducing the pumps cycling is needed, or procuring a new pump better suited for the application.

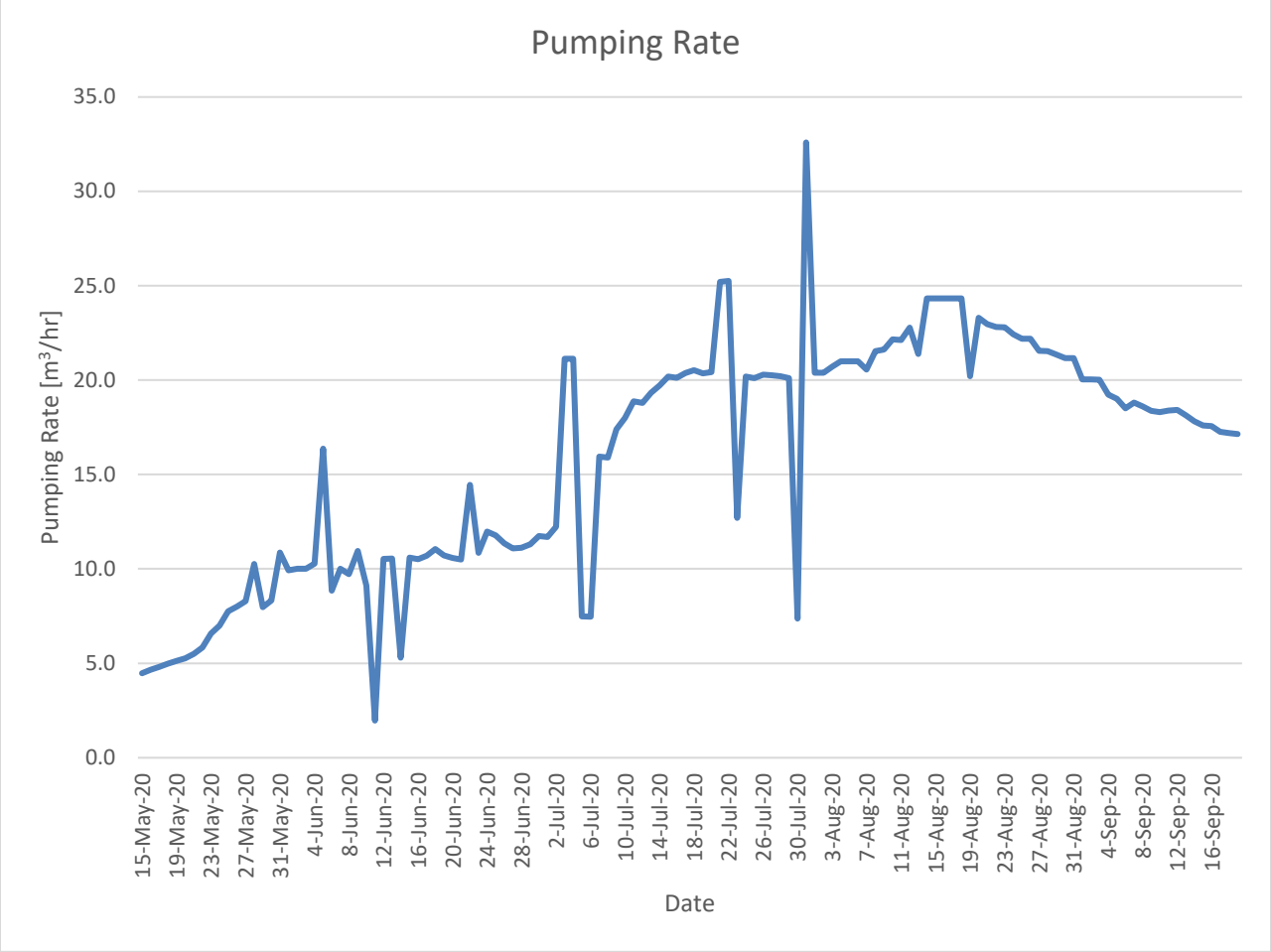


Figure 2-4: UMV Pumping Rate

2.3.4 Event Pond Storage

The Event Pond elevation was at approximate elevation 888.4 m, based on data provided by VGC at the time of the inspection (Photo # VGC-EOR 7). This elevation is approximately 6.1 m below the Event Pond emergency spillway invert. Event Pond level monitoring data collected from the site team was analyzed and Figure 2-5 presents the Event Pond available storage compared to the desired available storage that is required to be maintained in the Event Pond. The actual available storage was less than the desired available storage for some time in Spring of 2020 before the pond level was reduced. The volume stored in the Event Pond is non-contact water that was either collected from precipitation, pumped from the Lower Dublin South Pond (LDSP) or a small amount pumped from the underdrain monitoring vault. Figure 2-1 above shows that the In-Heap Pond level never reached the elevation of the spillway invert and therefore no PLS solution was conveyed to the Event Pond. Forte recommends utilizing the available water for HLF make-up water demands and maintain the desired available storage in the Event Pond.

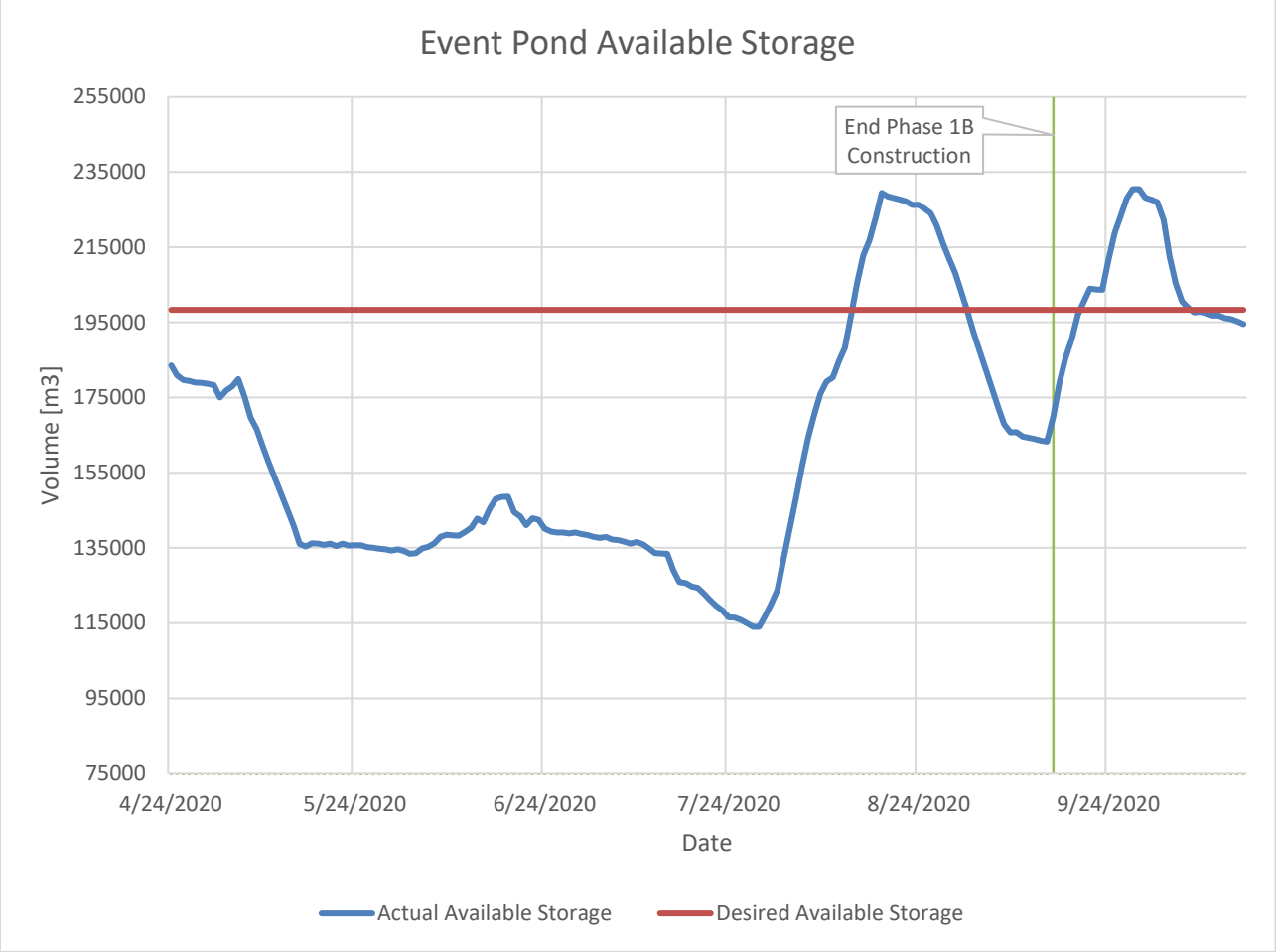


Figure 2-5: Event Pond Available Storage

2.3.5 Event Pond LDRS

The water level in the Event Pond LDRS sump was not known at the time of inspection and it was understood that the level was not being actively tracked but the piezometer trace shows that it is being evacuated once a week regardless of level (see Figure 2-6). Between November 18, 2019 and January 30, 2020, the water level in the Event Pond LDRS sump rose to a peak of 5.8m before being evacuated on January 31, 2020. This is likely due to Operators not pumping routinely during the colder months. Like the HLF LDRS, Forte recommends the Event Pond LDRS sump be evacuated based on observation of LDRS sump water level readings with a level switch installed that turns the pump on and off. Pumped flow volumes and water level readings should be recorded per the OMS manual.

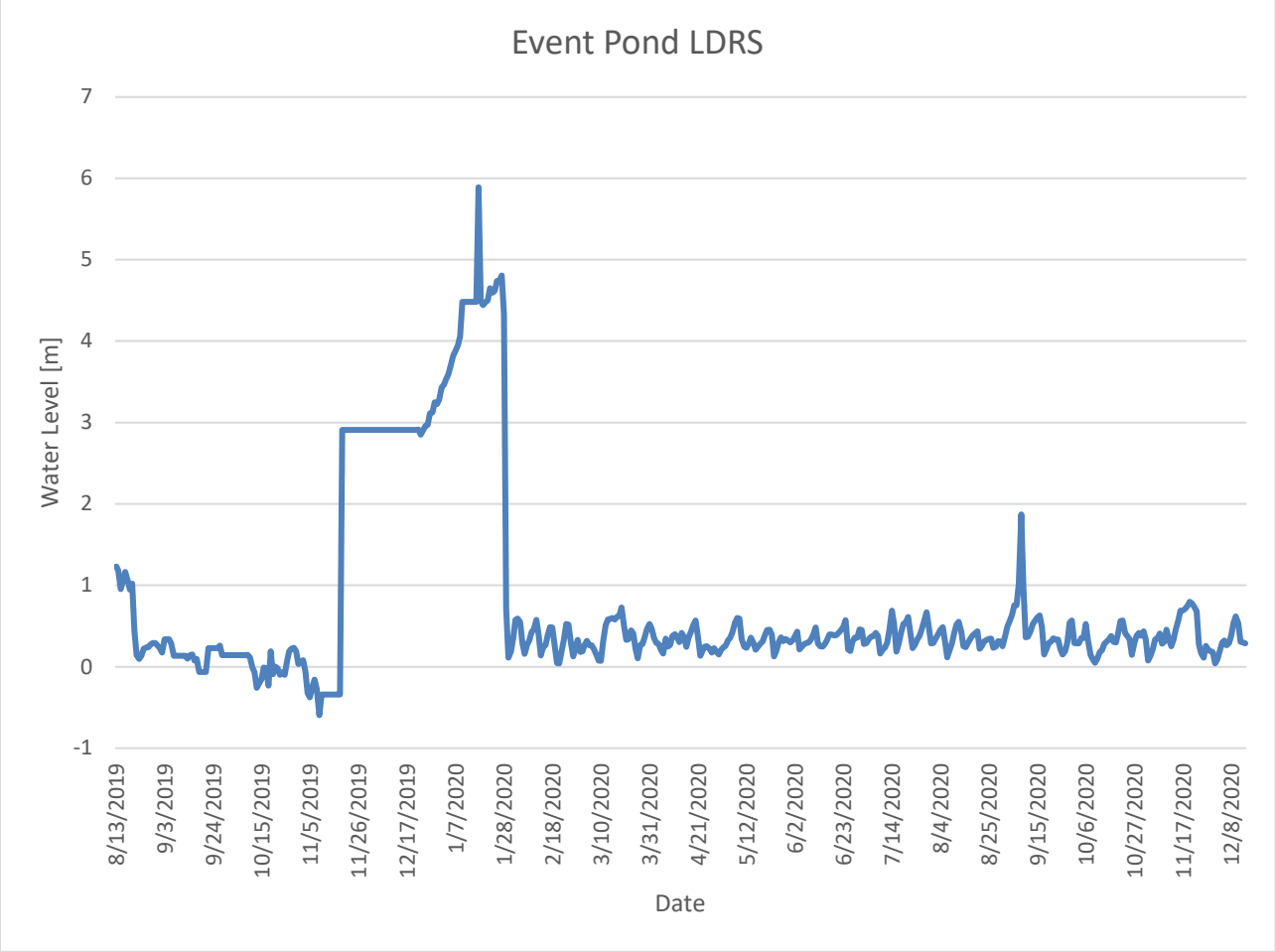


Figure 2-6: Event Pond LDRS Level

2.3.6 HLF Embankment Integrity

Three standpipes with VWPs are installed through the HLF dam crest. Piezometer P1 was installed into the dam foundation bedrock and Piezometers P2 and P3 were installed in the dam fill just above the western and eastern underdrains, respectively. The piezometer readings for P1, P2, and P3 are provided in Figure 2-7, Figure 2-8, and Figure 2-9 respectively. The P1 level data appears to have remained unchanged from previous readings taken during the 2019 annual inspection. The P2 and P3 sensors still appear to be dry and small fluctuations are likely attributed to the changes in barometric pressure seen. The P2 VWP sensor may have moved as the water level is below the sensor install depth or calibration is off. Additionally, the P3 VWP hole may have a small amount of mud that has collected at bottom where sensor is installed. Both sensors should be further investigated by the site team.

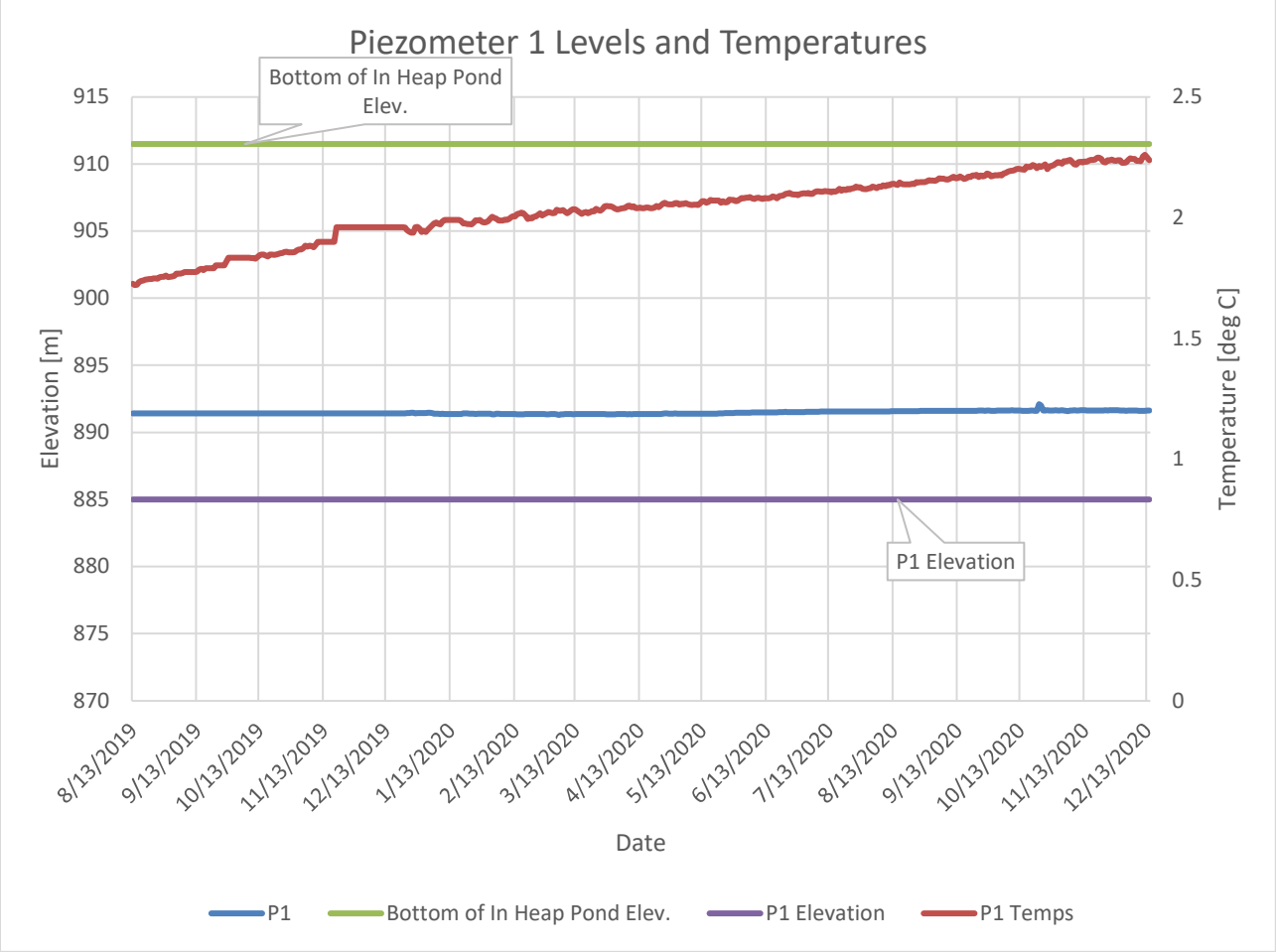


Figure 2-7: P1 Piezo Level and Temperatures

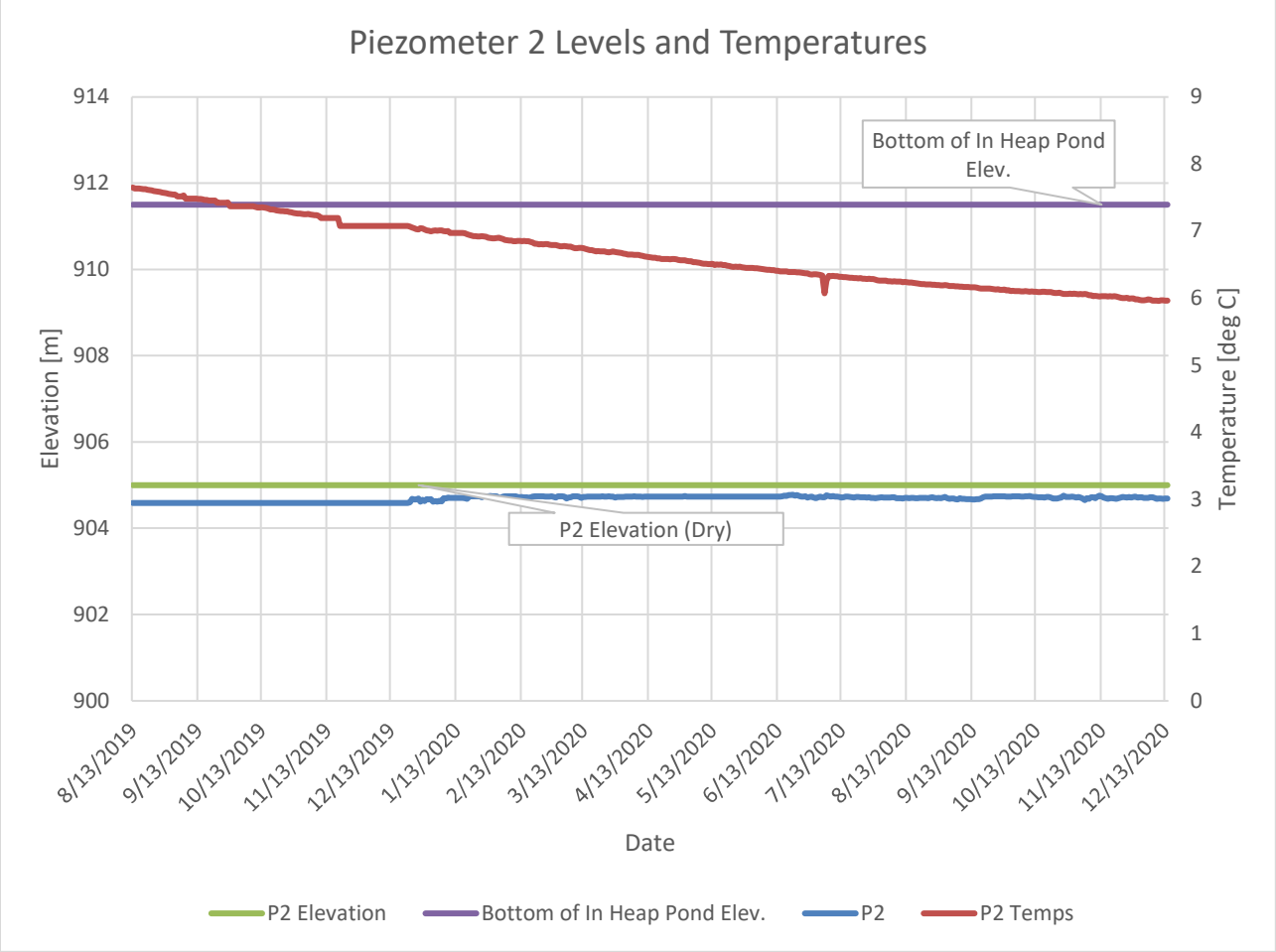


Figure 2-8: P2 Piezo Level and Temperatures

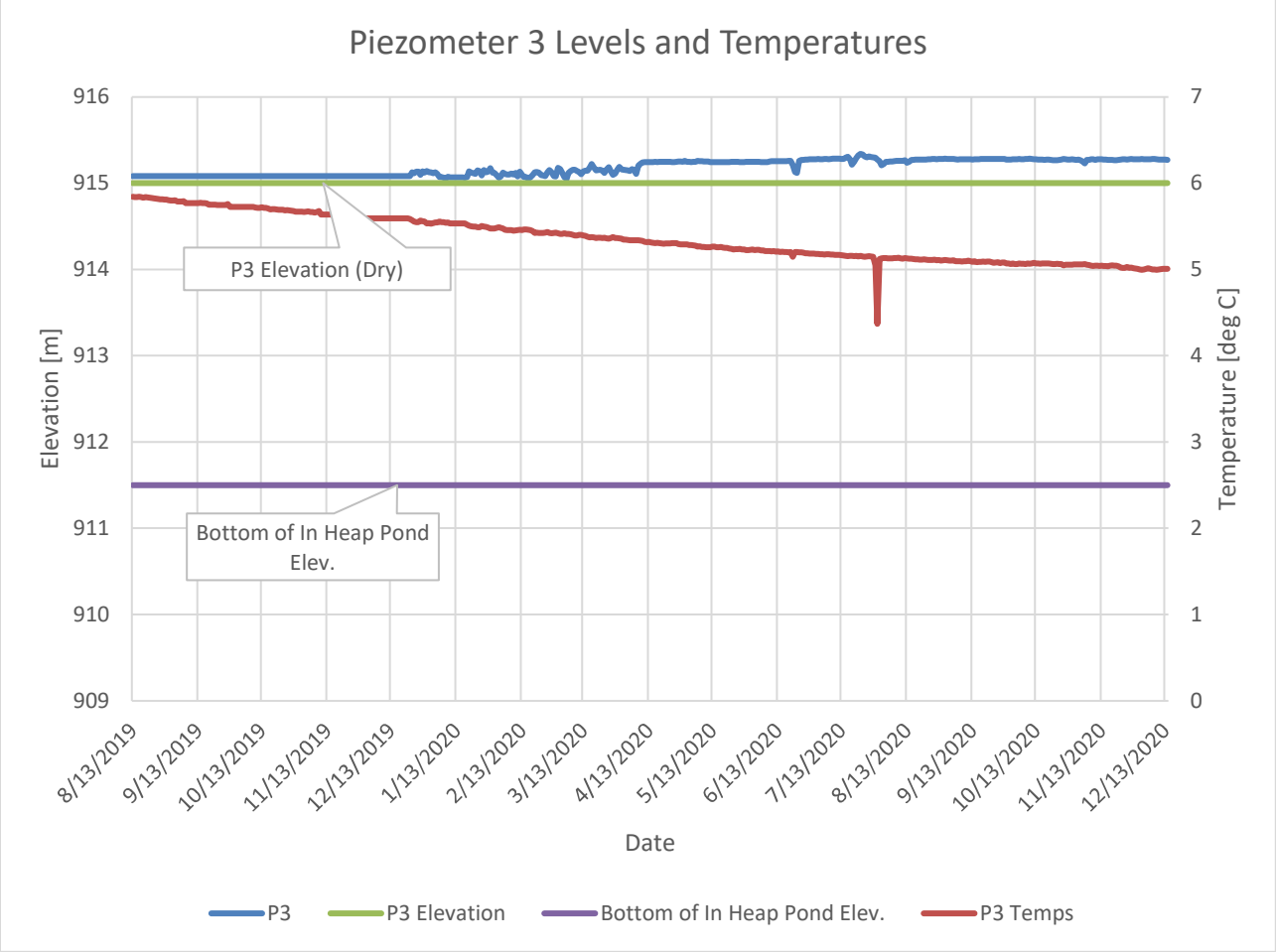


Figure 2-9: P3 Piezo Level and Temperatures

The OMS and instrumentation plan also called for eight (8) survey monuments to be installed at the completion of construction and prior to operation. The locations and installation details for the survey monuments can be found on drawings EGHLF-XD-09-01 and EGHLF-XD-09-02 [Ref 4]. The survey monuments were planned to be placed at 50m intervals along the embankment crest to monitor settlement and/or horizontal movements. These survey monuments have not been installed and therefore embankment settlement cannot be accurately monitored.

An RST MEMS Digital Inclinometer system was procured by VGC to measure lateral movements of the HLF embankment dam. The initial readings taken on the embankment began on June 26, 2020 with additional readings taken ahead of the annual inspection in July and August. The inclinometer takes measurements along two different axes; the A axis which is oriented perpendicular to the embankment crest and the B axis in parallel to the embankment crest. The inclinometer casing was completed to a depth of 54m within the embankment and measurements were taken every 0.5m from the bottom of the hole back to the surface. Results indicate negligible movement or deformation of the embankment as shown in Figure 2-10 through Figure 2-13 below.

RST Instruments Ltd.

MEAN DEVIATION

Inclinalysis v. 2.48.7

Borehole : INC_1
Project : VGC
Location :
Northing :
Easting :
Collar :

Spiral Correction : N/A
Collar Elevation : 0.00 meters
Reading Depth : 54.0 meters
A+ Groove Azimuth :
Base Reading : 2020 Jun 26 11:24
Applied Azimuth : 0.0 degrees

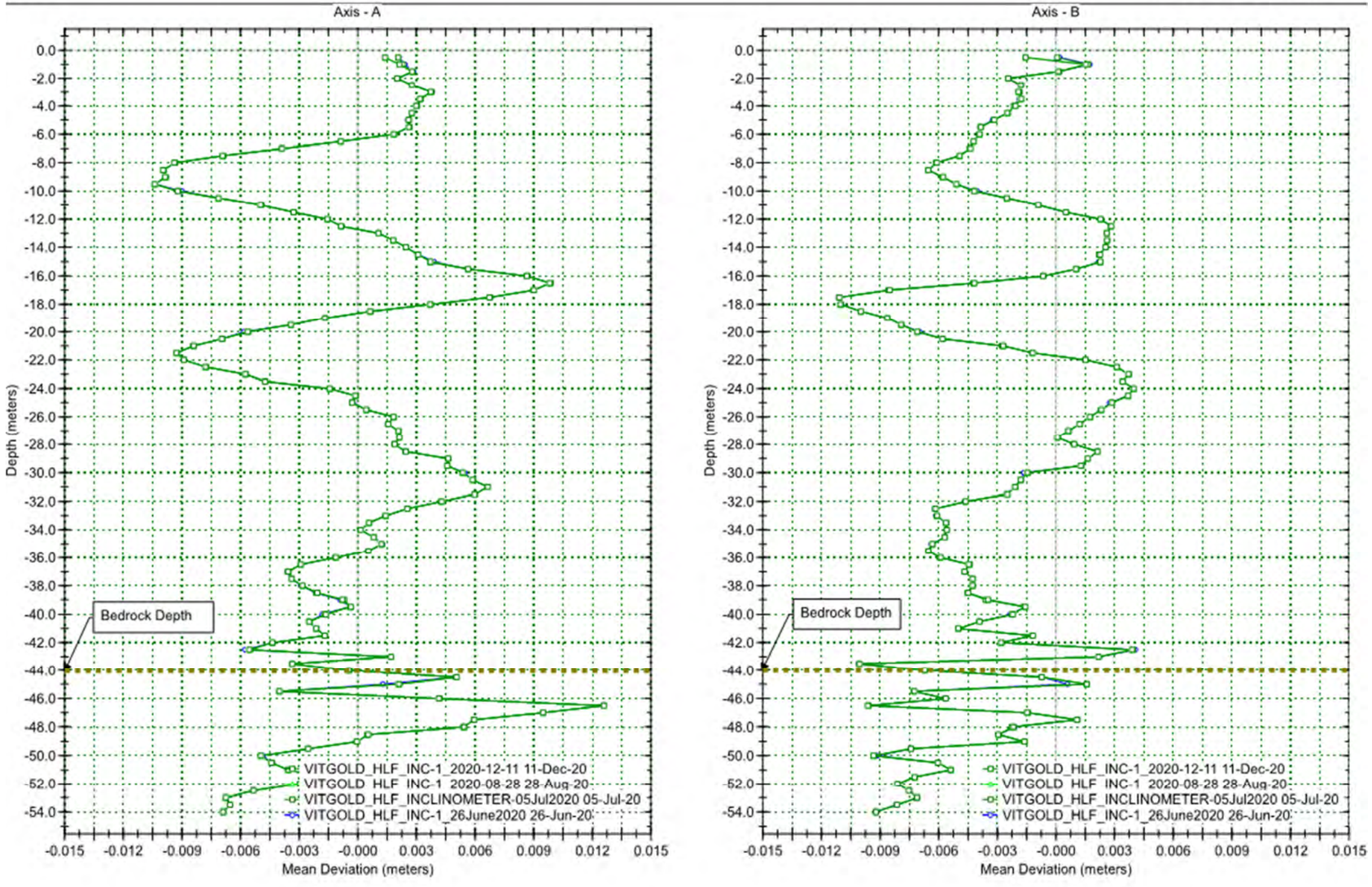


Figure 2-10: INC-1 Mean Deviation

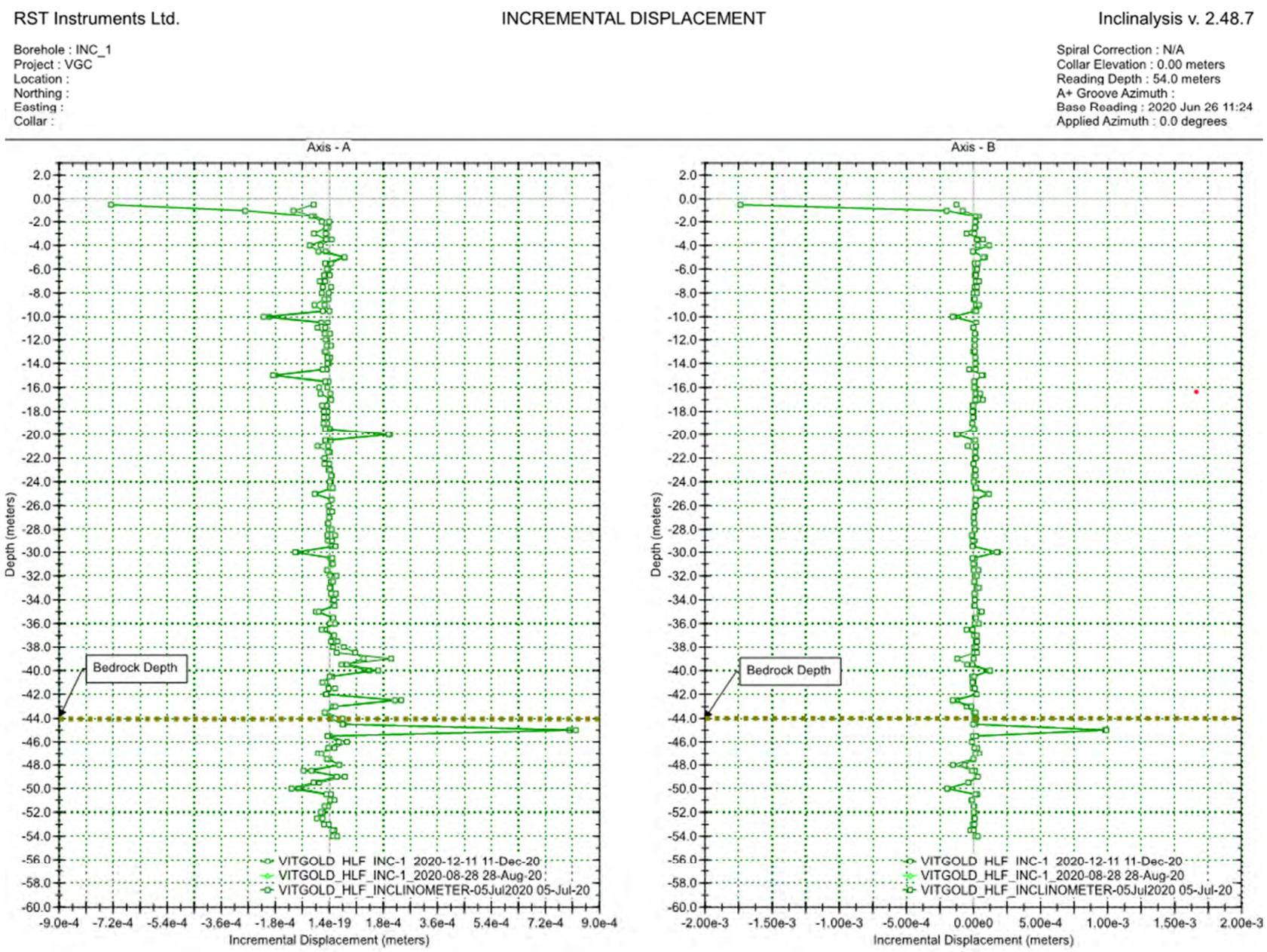


Figure 2-11: INC-1 Incremental Displacement

RST Instruments Ltd.

CUMULATIVE DISPLACEMENT

Inclinalysis v. 2.48.7

Borehole : INC_1
Project : VGC
Location :
Northing :
Easting :
Collar :

Spiral Correction : N/A
Collar Elevation : 0.00 meters
Reading Depth : 54.0 meters
A+ Groove Azimuth :
Base Reading : 2020 Jun 26 11:24
Applied Azimuth : 0.0 degrees

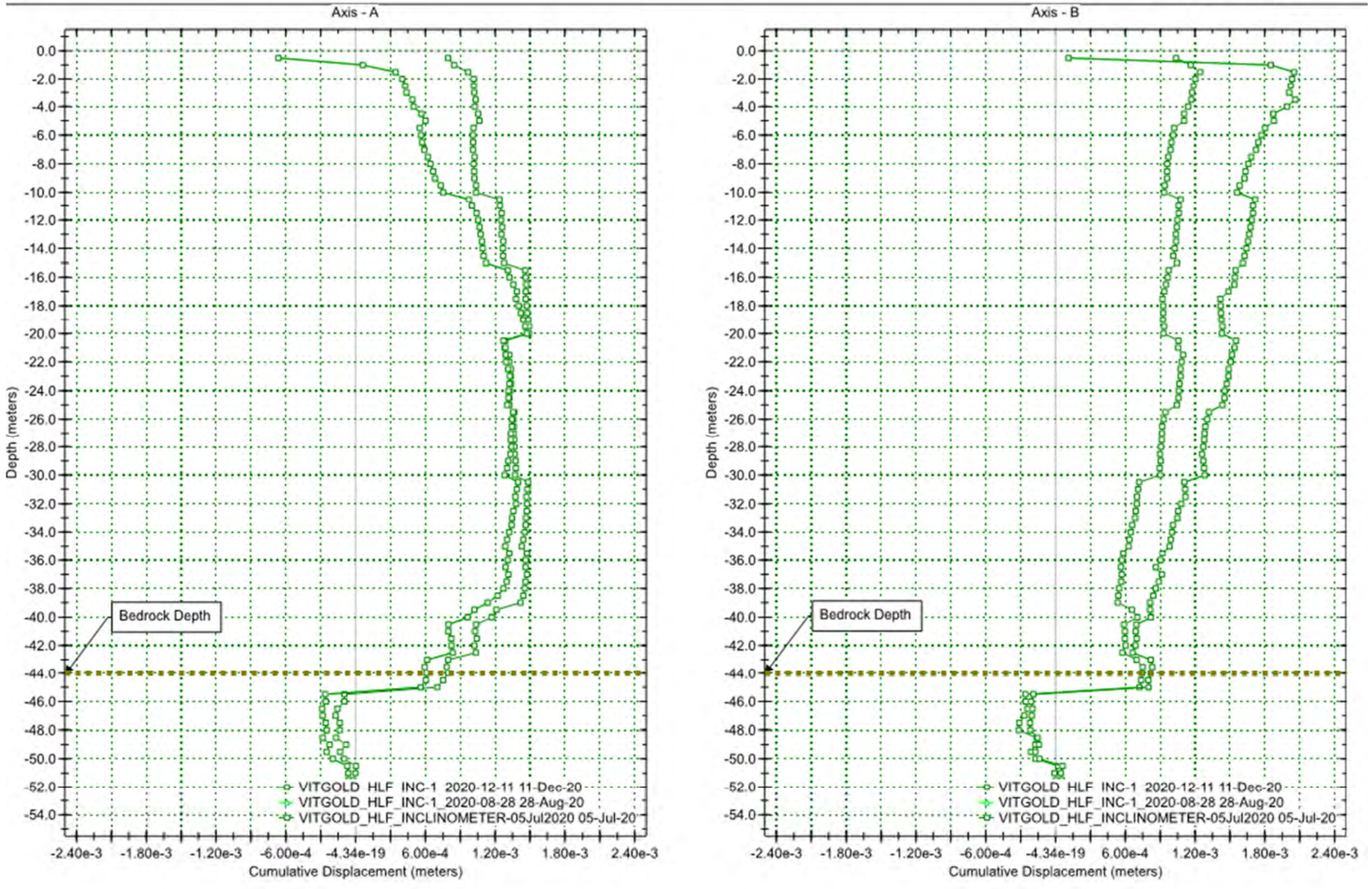


Figure 2-12: INC-1 Cumulative Displacement

RST Instruments Ltd.

Borehole : INC_1
Project : VGC
Location :
Northing :
Easting :
Collar :
Collar Elev : 0.00 meters

TIME PLOT
Displacement vs. Time

Inclinalysis v. 2.48.7

Spiral Correction : N/A
Movement Depth : 37.5 - 54.0 meters
Reading Depth : 54.0 meters
A+ Groove Azimuth :
Latest Reading : 2020 Dec 11 01:10
Initial Reading : 2020 Jun 26 11:24
Applied Azimuth : 0.0 degrees

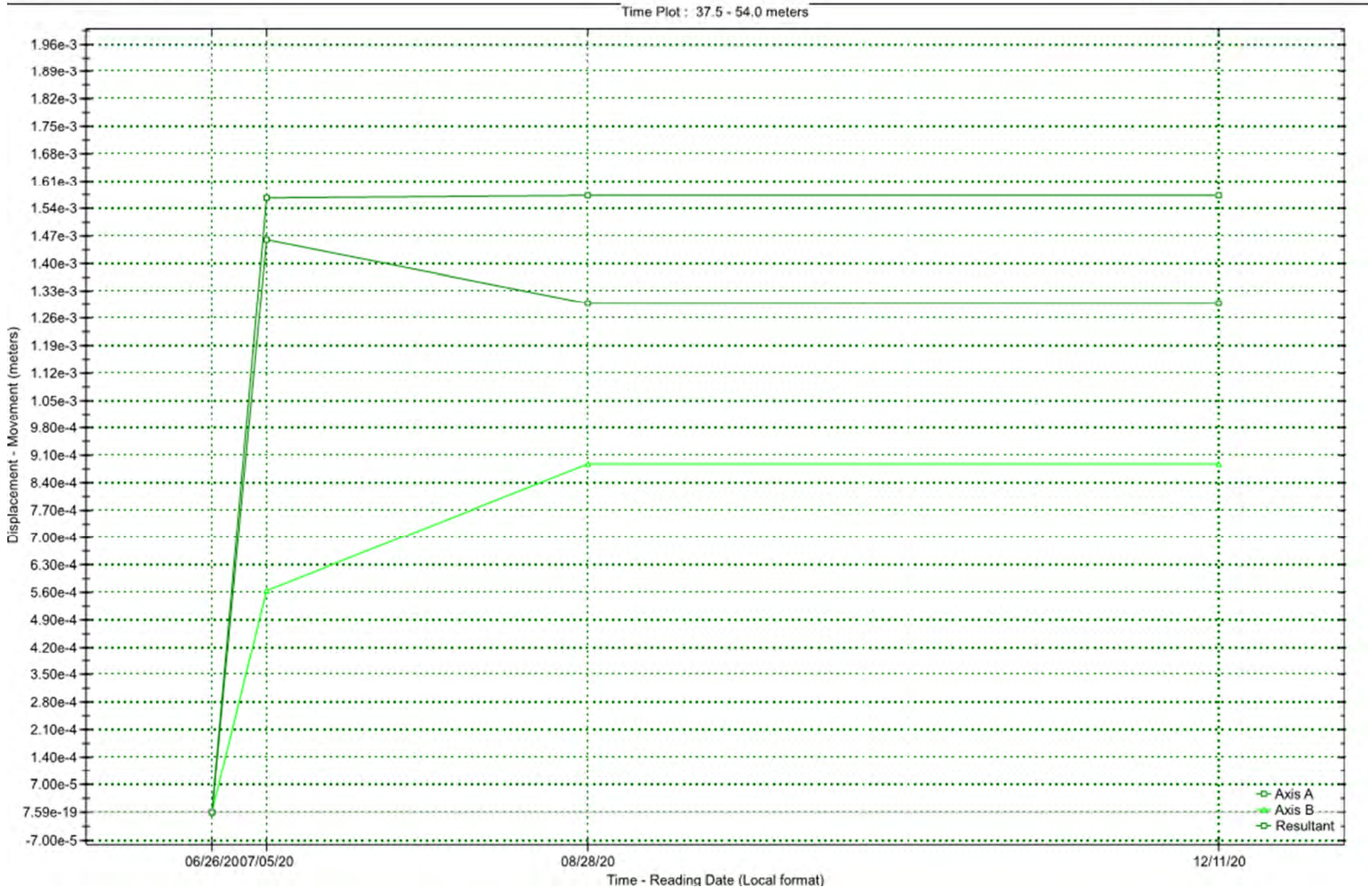


Figure 2-13: INC-1 Time Plot

2.4 HLF Operations, Maintenance and Surveillance Manual

An updated Operation, Maintenance and Surveillance (OMS) Manual dated January 2020 was prepared by VGC and presents roles and responsibilities, reference documents and reports, HLF description, operation, design basis, maintenance, dam surveillance program, emergency identification and evaluation, and emergency planning and response [Ref 2]. The OMS Manual accounts for the initial construction phase and start-up operations and includes the details of the facility layout, current VGC personnel, and the HLF operational plan. Forte reviewed the OMS Manual and have provided our required actions and recommendations in Table 2-1 below.

Table 2-1: OMS Manual Review Items

Item	Description	Action or Recommendation
Table 2.1-3	Update Contact Info for Process Manager	Action Required
Figure 4.3-1	Update Heap Leach Facility Cross-Section to Remove 55m bench at EL. 985.0m	Action Required
Table 6.3-1	Update Heap Ore Capacity based on volumetric capacity rather than tonnage	Recommendation
Table 6.3-1	Stacked dry density of ore – note that this parameter is variable	Recommendation
Table 6.3-1	Overliner Drain Fill (ODF) – update spec based on criteria used on Phase 1B construction	Action Required
Section 7.3.3	Update In-Heap Pond available storage capacity, operational volume, and combined storage volume of In-Heap Pond and Event Pond	Action Required
Table 7.3-1	Update Table based on Forte modeling input	Action Required
Table 7.4-1	Remove Table from OMS as the leaching plan should be updated with each mine plan update	Recommendation
Table 9.1-1	Revise frequency of inclinometer to quarterly	Action Required

2.5 2020 Recommendations

Table 2-2 below provides a summary of our recommended maintenance and monitoring action items for the HLF. Each action item has been assigned a priority ranking level from 1 to 3. 1 indicating highest priority and 3 indicating lowest priority. A ranking of 3 was generally assigned to items that would be considered routine inspection or monitoring.

These recommendations are based on a review of the pending construction items, outstanding action items from BGC's October 2019 site inspection and new action items from Forte's October 2020 site inspection.

As discussed in Section 2.2, Forte recommends as a priority the remediation and engineering review of the following two areas:

1. Remediation of the gullies along the crest of the underdrain containment area (Photo # VGC-EOR 19 and VGC-EOR 21)

2. Remediation of the HLF upper spillway access road slope creep and rills along groin between access road and HLF embankment (Photo # VGC-EOR 23)

Other action items listed on the inspection forms in Appendix B indicate areas that should continue to be monitored, but do not require specific action at this time.

Table 2-2: Recommended maintenance and monitoring action items – 2020 Annual HLF Inspection

Name of Structures	Maintenance/Monitoring Actions Required				
	Routine Monitoring/ Maintenance	Increased Monitoring/ Maintenance	Remediation and Engineering Review Necessary	Priority Level[(1)]	Recommendations
Heap Leach Facility (HLF)	Yes	-	Yes	3	• Continue the routine inspection and monitoring of the dam, abutments, emergency spillway, discharge outlet areas, LDRS sump, PLS sump, pad liner, PLS and barren pipes, monitoring wells (P-1, P-2, P-3), and pond level as per the current OMS manual.
				2	• Document using routine inspection forms all unusual/adverse conditions observed, as well as maintenance work undertaken.
				1	• Install pad cell piezometers in Phase 1B footprint per drawing 109005-51100-03-CV-F005 Rev 2 (August 2020)
				1	• Continue collecting inclinometer readings in casing INC-1 quarterly per OMS.
				2	• Instrument setup for continuous data download
				1	• Automate the evacuation of the LDRS sump based on water level readings (no greater than 0.5m above bottom end of LDRS pipe should be allowed).
				1	• Place additional coarse fill on the dam crest to limit ponding and construct a small swale (see Appendix E) along the crest of the underdrain containment area to direct surface water flows to the west edge of the monitoring vault area.
				2	• Install signage to clearly mark the HLF east underdrain outlet. – Not primary outlet for underdrain seepage as water is pumped back to process, however the underdrain outlet still requires marking.
				1	• Review of the underdrain monitoring vaults pumps' design. Procure spare pump for underdrain monitoring vault and store on site
				1	• Install survey monuments along embankment crest and take initial readings
				1	• Place additional coarse fill along the berm on the south side of the Process Plant to divert runoff and re-grade the spillway access road to drain into the HLF Spillway.
Event Pond (EP)	Yes	-	-	3	• Continue the routine inspection and monitoring of the embankment, abutments, pond liner, LDRS sump, and pond level as per the current OMS manual.
				2	• Instrument setup for continuous data download
				2	• Document using routine inspection forms all unusual/adverse conditions observed, as well as maintenance work undertaken.
				1	• Automate the evacuation of the LDRS sump based on water level readings (no greater than 0.5m above bottom end of LDRS pipe should be allowed).
				2	• Install signage to clearly mark the Event Pond underdrain outlet (See Appendix E)
HLF Spillway	Yes	-	Yes	3	• Continue the routine inspection and monitoring of the spillway armoring, adjacent access road, seepage collection pipe outlet as per the current OMS manual.
				2	• Document using routine inspection forms all unusual/adverse conditions observed, as well as maintenance work undertaken.
				1	• Remediation of the significant surface erosion along the downstream face of the HLF spillway access road
				1	• Placement of riprap along the groin between HLF spillway access road and HLF embankment to mitigate further rill or gullies from forming
Emergency Spillway	Yes	-	-	3	• Continue the routine inspection and monitoring of the spillway armoring, adjacent access road, seepage collection pipe outlet as per the current OMS manual.
				2	• Document using routine inspection forms all unusual/adverse conditions observed, as well as maintenance work undertaken.

Note 1: Priority Levels are assigned from 1 to 3. 1 indicating highest priority and 3 indicating lowest priority. A ranking of 3 was generally assigned to items that would be considered routine inspection or monitoring.

3. Closure

Forte Dynamics Inc. (Forte) prepared this document for the account of Victoria Gold Corporation. The material in it reflects the judgment of Forte staff considering the information available to Forte at the time of document preparation. Any use which a third party makes of this document or any reliance on decisions to be based on it is the responsibility of such third parties. Forte accepts no responsibility for damages, if any, suffered by any third party as a result of decisions made or actions based on this document.

As a mutual protection to our client, the public, and ourselves, all documents and drawings are submitted for the confidential information of our client for a specific project. Authorization for any use and/or publication of this document or any data, statements, conclusions or abstracts from or regarding our documents and drawings, through any form of print or electronic media, including without limitation, posting or reproduction of same on any website, is reserved pending Forte's written approval. A record copy of this document is on file at Forte. That copy takes precedence over any other copy or reproduction of this document.

Note the conclusions provided herein will change as the recommended maintenance measures are undertaken.

We trust the above satisfies your requirements at this time. Should you have any questions or comments, please do not hesitate to contact us.

Yours sincerely,

Forte Dynamics Inc.
per:



Barry Carlson, P.Eng.

Principal Engineer

PERMIT TO PRACTICE
FORTE DYNAMICS, INC.
SIGNATURE
Date 3/22/21
PERMIT NUMBER PP626
Association of Professional Engineers of Yukon

4. References

[1] BGC Engineering. Inc. (2019, November 19). Eagle Gold Project Heap Leach Facility – Annual Inspection.

[2] Victoria Gold Corp. (2020, January). Eagle Gold Project Heap Leach Facility Operation, Maintenance and Surveillance Manual. Version 2020-01

[3] Allnorth. (2020, October). Annual Physical Stability Assessment Report – Victoria Gold – Eagle Gold Project. 2002684-201006.

[4] BGC Engineering. Inc. (2018, January 8). Eagle Gold Project Heap Leach Facility Detailed Design Report.

APPENDIX A

SITE LAYOUT - AERIAL PHOTOGRAPH FIGURES


Eagle HLF
Figure A-1: Heap Leach Pad and Perimeter Access
Legend
Photographs
VGC EoR - 1
VGC EoR - 2
VGC EoR - 3
VGC EoR - 4
Google Earth
Image Landsat / Copernicus
1000 ft
N


Eagle HLF
Figure A-2: Process Area and HLF Spillway
Legend
Photographs
VGC EoR - 5
VGC EoR - 6
VGC-EOR-35
VGC-EOR-34
Google Earth
Image Landsat / Copernicus
400 ft
N


Eagle HLF
Figure A-3: Event Pond LDRS and Underdrain Outlet
Legend
Photographs
VGC EoR - 7
VGC EoR - 8
VGC EoR - 9
VGC EoR - 10
VGC EoR - 25
Google Earth
Image Landsat / Copernicus
400 ft
N


Eagle HLF
Figure A-4: Event Pond Emergency Spillway
Legend
Photographs
VGC EoR - 11
VGC EoR - 13
VGC EoR - 12
VGC EoR - 14
Google Earth
Image Landsat / Copernicus
200 ft
N


Eagle HLF
Figure A-5: Event Pond and Underdrain Monitoring Vault Discharge Location
Legend
Photographs
VGC EoR - 18
VGC EoR - 16
VGC EoR - 17
VGC EoR - 15
Google Earth
Image Landsat / Copernicus
N
200 ft


Eagle HLF
Figure A-6: Underdrain Monitoring Vault
Legend
Photographs
VGC EoR - 22
VGC EoR - 23
VGC EoR - 24
VGC EoR - 21
VGC EoR - 20
VGC EoR - 19
Google Earth
Image Landsat / Copernicus
N
100 ft


Eagle HLF
Figure A-7: PLS Recovery Piping from In-Heap Pond and HLF Embankment
Legend
Photographs
VGC EoR - 29
VGC EoR - 28
VGC EoR - 26
VGC EoR - 27
VGC EoR - 30
VGC EoR - 31
VGC EoR - 32
VGC EoR - 33
Google Earth
Image Landsat / Copernicus
N
100 ft

APPENDIX B

INSPECTION FORMS

Project Number: 109005

Forte Representative: Clint Green | Date: October 14, 2020

Structure Designation: Heap Leach Facility | Crest Elevation: 940 m

Pond Bottom (Sump): 911.5 | Spillway Invert El: 937.5 m

Downstream Pond Elevation: - | Notes:

OBSERVATIONS

CREST

					Action Required
Cracking:	X not apparent	apparent	Notes:		N
Settlement/Uneven:	not apparent	X apparent	Notes:	Very minor rutting in wheel paths along crest access due to current wet weather	N
Erosion:	X not apparent	apparent	Notes:		N
Sinkholes:	X not apparent	apparent	Notes:		N
Other Movement:	X not apparent	apparent	Notes:		N
Crest Vegetation:	X not apparent	apparent	Notes:		N

Comments: Continue routine monitoring. Light snow cover during observation, althought mostly removed with traffic. Underground power line just below crest on downstream slope during time of observation. — Y

DOWNSTREAM SLOPE AND TOE AREA

Approximate Slope Angle: 2.5H:1V — N

Slope Visually Uniform	X yes	no	Notes:		N
Erosion:	not apparent	X apparent	Notes:	Rilling occuring most significantly along west intersection of embankment fill and insitu material and along toe, above monitoring vault	Y
Settlement/Uneven:	X not apparent	apparent	Notes:		N
Bulging/Cracking:	X not apparent	apparent	Notes:		N
Sloughing:	X not apparent	apparent	Notes:		N
Slope Protection:	X not apparent	apparent	Notes:		N
Animal Burrows:	X not apparent	apparent	Notes:		N
Slope Vegetation:	not apparent	X apparent	X sparse ☐ moderate ☐ heavy		N
			Notes:	New vegetation coming in which will naturally reduce rilling	
Seepage:	X not apparent	apparent			N

Location of Seepage: **1** | Notes:

Estimated Rate: ☐ damp ☐ trickle ☐ steady | estimated flow ☐ l/s

Apparent Clarity: ☐ clear ☐ muddy | Sample taken: ☐ yes ☐ no

Location of Seepage: **2** | Notes:

Estimated Rate: ☐ damp ☐ trickle ☐ steady | estimated flow ☐ l/s

Apparent Clarity: ☐ clear ☐ muddy | Sample taken: ☐ yes ☐ no

Project Number: 109005
Structure Designation: Heap Leach Facility Date: October 14, 2020

Location of Seepage: **3** Notes:
Estimated Rate: [ ] damp [ ] trickle [ ] steady estimated flow [ ] l/s
Apparent Clarity: [ ] clear [ ] muddy Sample taken: [ ] yes [ ] no

Location of Seepage: **4** Notes:
Estimated Rate: [ ] damp [ ] trickle [ ] steady estimated flow [ ] l/s
Apparent Clarity: [ ] clear [ ] muddy Sample taken: [ ] yes [ ] no

Toe Vegetation: [X] not apparent [ ] apparent [ ] sparse [ ] moderate [ ] heavy N

Soft Ground at Toe: [X] not apparent [ ] apparent Notes: N

Comments:

UPSTREAM AREA

Erosion: [X] not apparent [ ] apparent Notes: The upstream slope has a geosynthetic liner system and is filled with crushed rock to within a couple meters of crest per design N

Degree: [ ] minor [ ] severe Type: [ ] waves [ ] runoff [ ] flow from discharge

Slope Visually Uniform [X] yes [ ] no Notes: N

Settlement/Uneven: [X] not apparent [ ] apparent Notes: N

Bulging/Cracking: [X] not apparent [ ] apparent Notes: N

Sloughing: [X] not apparent [ ] apparent Notes: N

Slope Protection: [ ] not apparent [X] apparent Notes: Slope is covered with double geomembrane liner and gravel N

Slope Vegetation: [X] not apparent [ ] apparent [ ] sparse [ ] moderate [ ] heavy N

Notes:

Animal Burrows: [X] not apparent [ ] apparent Notes: N

Sinkholes: [X] not apparent [ ] apparent Notes: N

Upstream Surface: [X] ore [ ] apparent Notes: Ore has been stacked to within 2.5m of the crest elevation N

Comments: Continue routine monitoring Y

SPILLWAY/FLOW CONTROL STRUCTURE

Type: [ ] none [ ] decant [ ] wing walls [X] spillway [ ] weir

dimensions
invert 937.5 m

Project Number: 109005
Structure Designation: Heap Leach Facility Date: October 14, 2020

Notes: Minor rock debris in lined channel. It would washout in major event and not reduce capacity. However routine cleanouts are recommended to reduce potential damage to receiving lined event pond.

Flow:
Estimated Rate: [ ] L/s [ ] Measured [ ] Estimated [X] None
Apparent Clarity: [ ] Clear [ ] Muddy [ ] Ice
Gauge in Place: [ ] Reading [ ] Apparent [ ] Not Apparent

Comments: The HLF spillway conveys flows to the Event Pond, see inspection sheet for Event Pond. Y

DIVERSION/DISCHARGE STRUCTURE

Type: [ ] None [X] Diversion [ ] Discharge Notes:

Blockage: [X] not apparent [ ] apparent Y
Location: **1** Notes:
Type: [ ] Debris [ ] Beaver Activity [X] Siltation
Degree: [ ] Minor [ ] Severe
Location: **2** Notes: N
Type: [ ] Debris [ ] Beaver Activity [ ] Siltation
Degree: [ ] Minor [ ] Severe

Erosion: [X] not apparent [ ] apparent N
Location: **1** Notes:
Degree: [ ] Minor [ ] Severe
Location: **2** Notes:
Degree: [ ] Minor [ ] Severe
Location: **3** Notes:
Degree: [ ] Minor [ ] Severe

Comments: Continue routine monitoring of the diversion ditch Y

PIPELINES

[X] In Use [ ] Not in Use Comments: Barren solution pipe installed along western permiter berm and PLS pipe on dam crest N

Project Number: 109005

Structure Designation: Heap Leach Facility Date: October 14, 2020

INSTRUMENTATION

None	[ ]			Notes:	
Piezometers	[ ] not apparent	[X] apparent	Notes:	P1, P2, and P3 VWPs in standpipes through dam	Y
Monitoring Wells	[X] not apparent	[ ] apparent	Notes:		
Inclinometers	[ ] not apparent	[X] apparent	Notes:	Probe installed and data collected per recommendations	Y
Survery Stakes	[X] not apparent	[ ] apparent	Notes:	Installation and monitoring of these are required	Y
Other	[ ] not apparent	[X] apparent	Notes:	LDRS is being read manually. Automation of pumping and metering of the LDRS is required to be implemented	Y

Were readings taken while on site? [X] Yes [ ] No

Comments: Continue routing monitoring of VWPs. See above comments on installation of survey monuments ar Y
automation of LDRS pump

CHANGES FROM PREVIOUS YEAR [ ] Not Applicable [X] Applicable

[ ] Repairs [ ] Construction [ ] Maintenance [ ] Seepage [ ] Other

Comments:

RECOMMENDATIONS

Continue routine inspection and monitoring of the dam, diversion ditch, instrumentation and pond level as per t
current HLF management plan and OMS manual.

See above comments.

MONITORING/ACTIONS REQUIRED

[ ] None Required
[X] Routine Monitoring/Maintenance
[ ] Increased Monitoring/Maintenance
[X] Remediation and Engineering Review Necessary

ATTACHMENTS

Plan or Sketch Attached:

Photographs Taken: October 14, 2020

Photographs:

Forte Representative: Clint Green Date: October 14, 2020

Project Number: 109005

Forte Representative: Clint Green | Date: October 14, 2020

Structure Designation: Event Pond | Crest Elevation: 895.5 m

Pond Bottom (Sump): 886.5 m | Spillway Invert El: 894.5 m

Downstream Pond Elevation: - | Notes:

OBSERVATIONS

				Action Required
CREST				
Cracking:	X not apparent	☐ apparent	Notes: Nothing substantial observed, but as noted above, some snow cover was present at time of observation	N
Settlement/Uneven:	X not apparent	☐ apparent	Notes:	N
Erosion:	X not apparent	☐ apparent	Notes:	N
Sinkholes:	X not apparent	☐ apparent	Notes:	N
Other Movement:	X not apparent	☐ apparent	Notes:	N
Crest Vegetation:	X not apparent	☐ apparent	Notes:	N
Comments: Continue routine monitoring				Y
DOWNSTREAM SLOPE AND TOE AREA			Approximate Slope Angle: 2H:1V	N
Slope Visually Uniform	X yes	☐ no	Notes:	N
Erosion:	X not apparent	☐ apparent	Notes:	N
Settlement/Uneven:	X not apparent	☐ apparent	Notes:	N
Bulging/Cracking:	☐ not apparent	X apparent	Notes: The emergency spillway lower berm (outside the embankment toe) shows some minor cracks	N
Sloughing:	X not apparent	☐ apparent	Notes:	N
Slope Protection:	☐ not apparent	X apparent	Notes: Concrete cloth armouring on the emergency spillway	N
Animal Burrows:	X not apparent	☐ apparent	Notes:	N
Slope Vegetation:	X not apparent	☐ apparent	☐ sparse ☐ moderate ☐ heavy Notes:	N
Seepage:	X not apparent	☐ apparent		N

Location of Seepage: **1** | Notes:

Estimated Rate: ☐ damp ☐ trickle ☐ steady estimated flow ☐ l/s

Apparent Clarity: ☐ clear ☐ muddy Sample taken: ☐ yes ☐ no

Location of Seepage: **2** | Notes:

Estimated Rate: ☐ damp ☐ trickle ☐ steady estimated flow ☐ l/s

Apparent Clarity: ☐ clear ☐ muddy Sample taken: ☐ yes ☐ no

Project Number: 109005
Structure Designation: Event Pond Date: October 14, 2020

Location of Seepage: **3** Notes:
Estimated Rate: [ ] damp [ ] trickle [ ] steady estimated flow [ ] l/s
Apparent Clarity: [ ] clear [ ] muddy Sample taken: [ ] yes [ ] no

Location of Seepage: **4** Notes:
Estimated Rate: [ ] damp [ ] trickle [ ] steady estimated flow [ ] l/s
Apparent Clarity: [ ] clear [ ] muddy Sample taken: [ ] yes [ ] no

Toe Vegetation: [X] not apparent [ ] apparent [ ] sparse [ ] moderate [ ] heavy N

Soft Ground at Toe: [X] not apparent [ ] apparent Notes: N

Comments: Event Pond underdrain outlet needs to be surveyed and properly posted with signage

UPSTREAM AREA Approximate Slope Angle: 2H:1V N

Erosion: [ ] not apparent [X] apparent Notes: Minor erosion rills on north slope cut above Event Pond Y
Degree: [X] minor [ ] severe Type: [ ] waves [X] runoff [ ] flow from discharge
Slope Visually Uniform [ ] yes [X] no Notes: Some uneven ground above northeast corner of Event Pond below the HLF spillway Y
Settlement/Uneven: [ ] not apparent [X] apparent Notes: Upper access road along HLF spillway shows some settlement Y
Bulging/Cracking: [X] not apparent [ ] apparent Notes: N
Sloughing: [X] not apparent [ ] apparent Notes: N
Slope Protection: [X] not apparent [ ] apparent Notes: N
Slope Vegetation: [X] not apparent [ ] apparent [ ] sparse [ ] moderate [ ] heavy N
Notes:
Animal Burrows: [X] not apparent [ ] apparent Notes: N
Sinkholes: [X] not apparent [ ] apparent Notes: N
Upstream Surface: [ ] Tailings [X] Water Notes: Water in double lined pond N

Comments: Monitoring of access road along upper HLF spillway should continue. Once snow melt is complete, Forte requests photos. Event Pond should maintain a minimum water depth of 0.6 meters per updat ballast design. Y

SPILLWAY/FLOW CONTROL STRUCTURE

Type: [ ] none [X] spillway dimensions
[ ] decant [ ] weir invert 894.5 m
[ ] wing walls

Project Number: 109005
Structure Designation: Event Pond Date: October 14, 2020

Notes:

Flow: Estimated Rate: [ ] L/s [ ] Measured [ ] Estimated [ ] None
Apparent Clarity: [ ] Clear [ ] Muddy [ ] Ice
Gauge in Place: [ ] Reading [ ] Apparent [X] Not Apparent

Comments: Continue routine monitoring of the emergency spillway Y

DIVERSION/DISCHARGE STRUCTURE

Type: [X] None [ ] Diversion [ ] Discharge Notes:

Blockage: [X] not apparent [ ] apparent N
Location: **1** Notes:
Type: [ ] Debris [ ] Beaver Activity [ ] Siltation
Degree: [ ] Minor [ ] Severe
Location: **2** Notes: N
Type: [ ] Debris [ ] Beaver Activity [ ] Siltation
Degree: [ ] Minor [ ] Severe

Erosion: [X] not apparent [ ] apparent N
Location: **1** Notes:
Degree: [ ] Minor [ ] Severe
Location: **2** Notes:
Degree: [ ] Minor [ ] Severe

Comments: N

INSTRUMENTATION

None	[ ]		Notes:	
Piezometers	[ ] not apparent	[X] apparent	Notes:	VWP installed in inclined riser pipe to monitor LDRS in lined pond Y
Monitoring Wells	[X] not apparent	[ ] apparent	Notes:	
Inclinometers	[X] not apparent	[ ] apparent	Notes:	Y
Survery Stakes	[X] not apparent	[ ] apparent	Notes:	Installation and monitoring of these are required Y
Other	[X] not apparent	[ ] apparent	Notes:	Y

Were readings taken while on site? [ ] Yes [X] No

Project Number: 109005

Structure Designation: Event Pond Date: October 14, 2020

Comments: Continue routing monitoring of VWPs. See above comments on automation of LDRS sump Y

CHANGES FROM PREVIOUS YEAR [X] Not Applicable [ ] Applicable

[ ] Repairs [ ] Construction [ ] Maintenance [ ] Seepage [ ] Other

Comments: See above comments

RECOMMENDATIONS

The Event Pond underdrain outlet could not be located and should be surveyed and properly marked with signag
The Event Pond LDRS sump should be monitored . Automation of pumping and metering of the LDRS is required to be implemented. Continue to monitor the Event Pond per the latest OMS plan. Document all unusual/adverse conditions observed, as well as maintenance work undertaken.

MONITORING/ACTIONS REQUIRED

[ ] None Required
[X] Routine Monitoring/Maintenance
[ ] Increased Monitoring/Maintenance
[X] Remediation and Engineering Review Necessary

ATTACHMENTS

Plan or Sketch Attached:

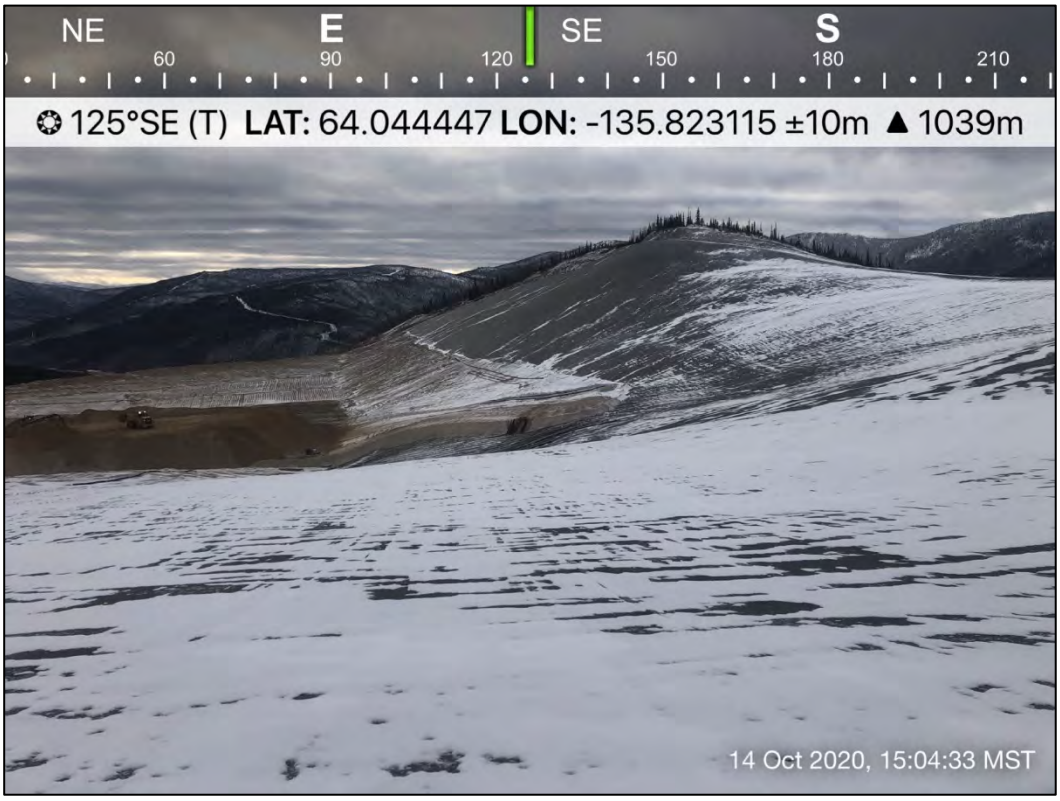
Photographs Taken: October 14, 2020

Photographs:

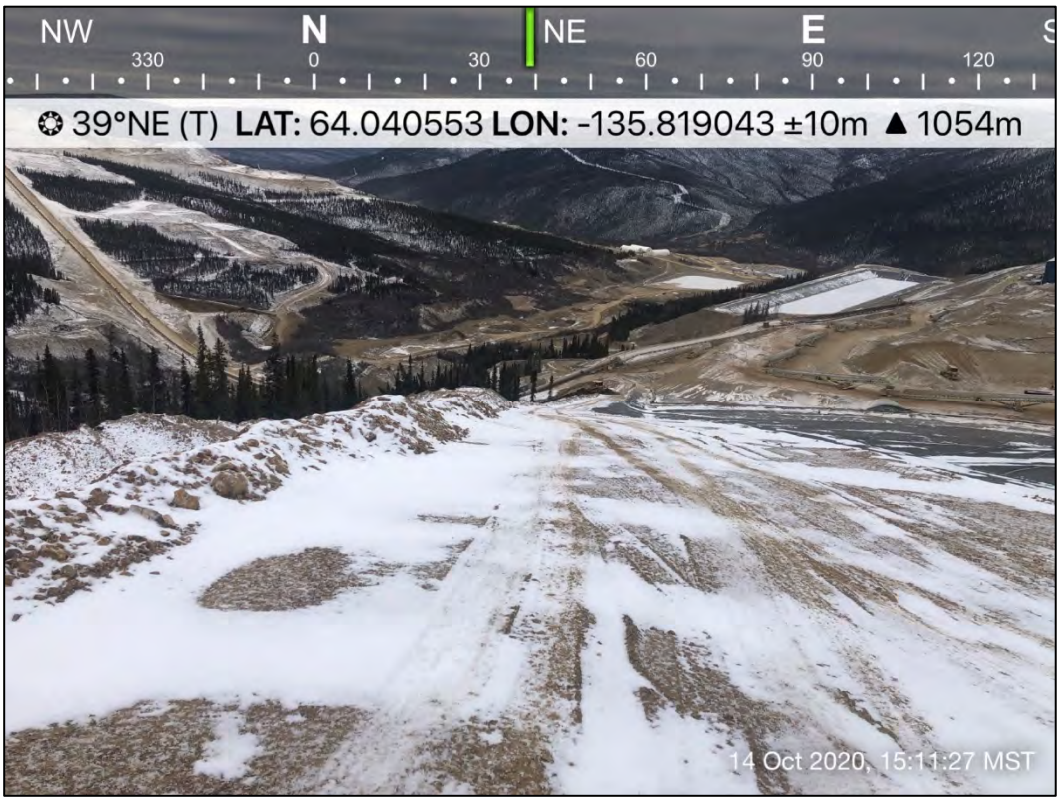
Forte Representative: Clint Green Date: October 14, 2020

APPENDIX C

PHOTOGRAPHS



VGC-EOR 1: Phase 1B Liner (Foreground) and Phase 1A Ore & ODF (Background)



VGC-EOR 2: East HLF Perimeter Access Road



VGC-EOR 3: Stacking of Ore on Phase 1A



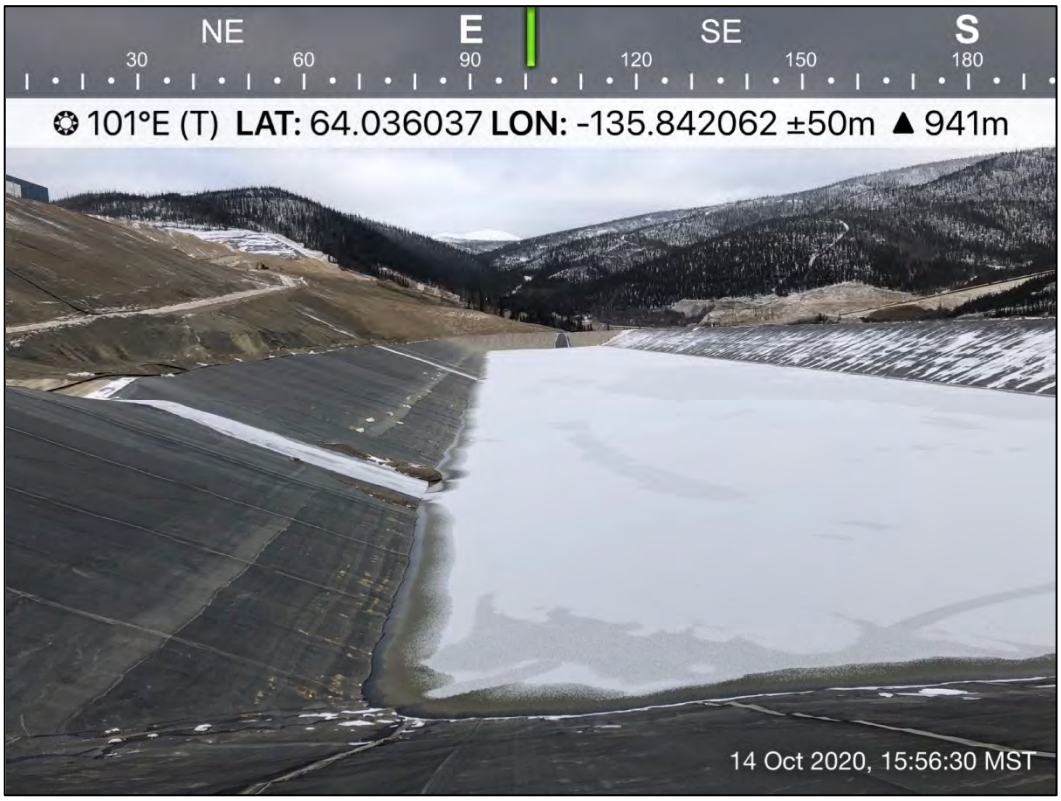
VGC-EOR 4: West HLF Perimeter Access Road



VGC-EOR 5: In-Heap Pond Spillway Culverts and PLS Pipe



VGC-EOR 6: Barren Leach Solution Piping and Toe of Heap



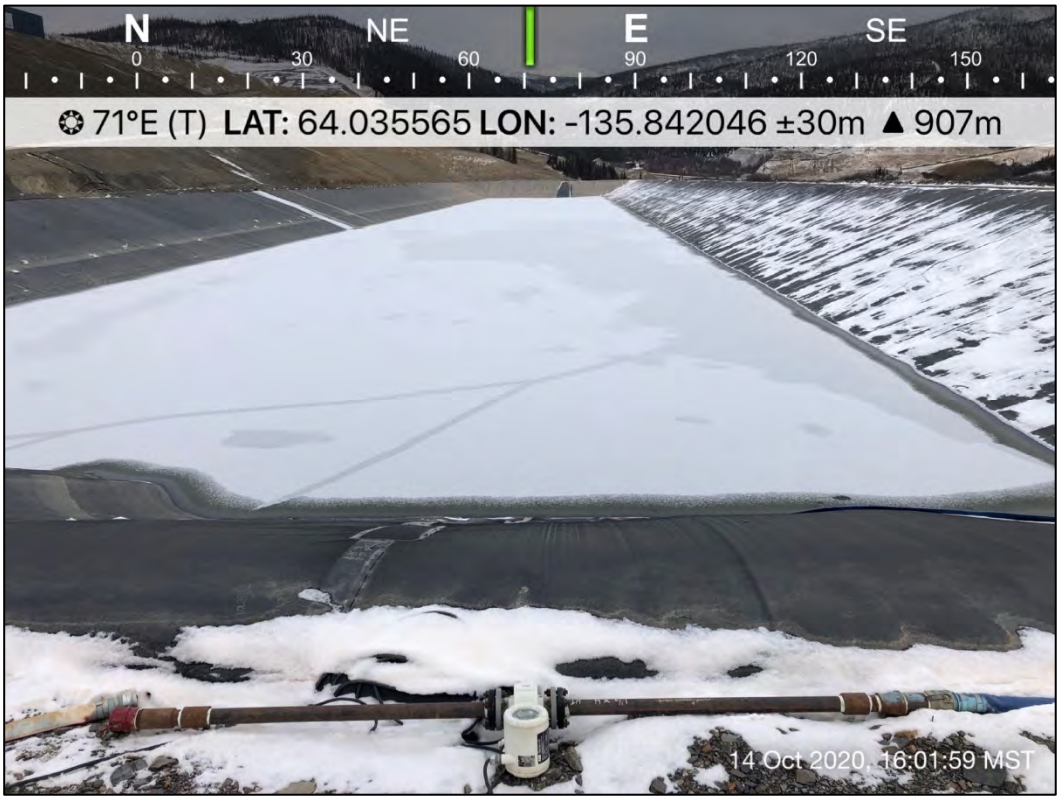
VGC-EOR 7: Event Pond (West Side)



VGC-EOR 8: Event Pond LDRS



VGC-EOR 9: Event Pond Pump Control Station



VGC-EOR 10: Event Pond (Background) Flowmeter (Foreground)



VGC-EOR 11: Event Pond Emergency Spillway Entrance



VGC-EOR 12: Event Pond Emergency Spillway



VGC-EOR 13: Event Pond Emergency Spillway



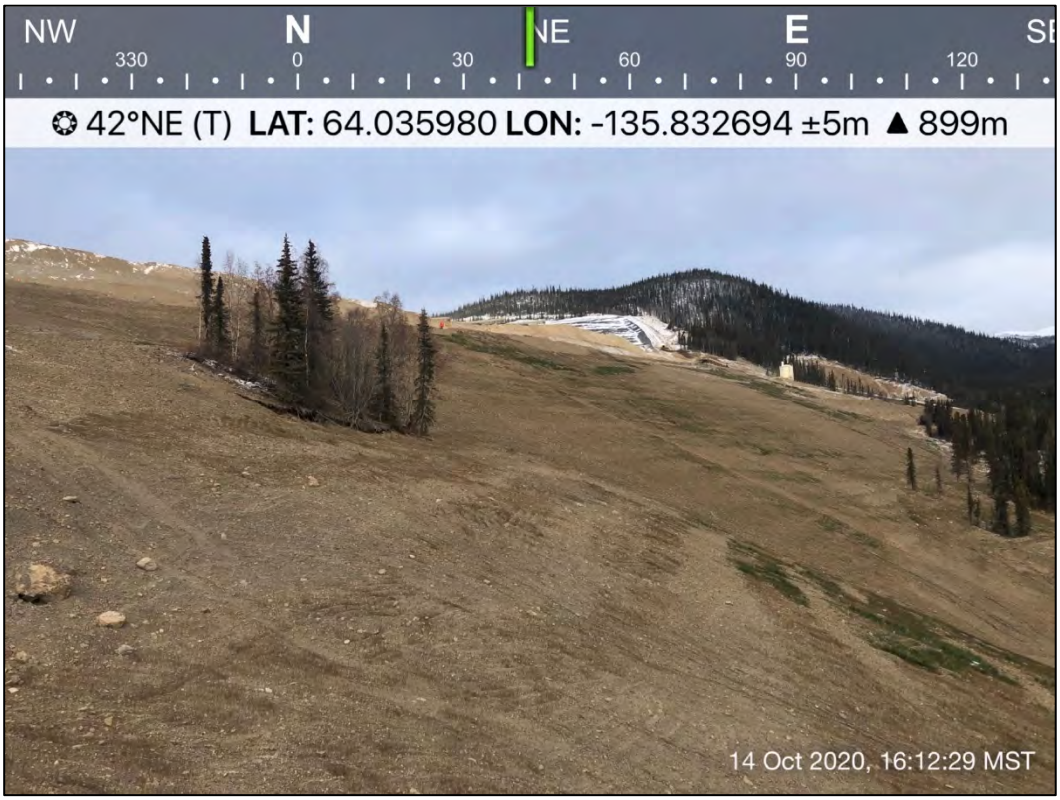
VGC-EOR 14: Event Pond Emergency Spillway



VGC-EOR 15: Underdrain Monitoring Vault Discharge to Event Pond



VGC-EOR 16: HLF Embankment Toe



VGC-EOR 17: HLF Embankment



VGC-EOR 18: Shallow Rills along North End of Event Pond



VGC-EOR 19: Erosion Gully Downhill of the UMV



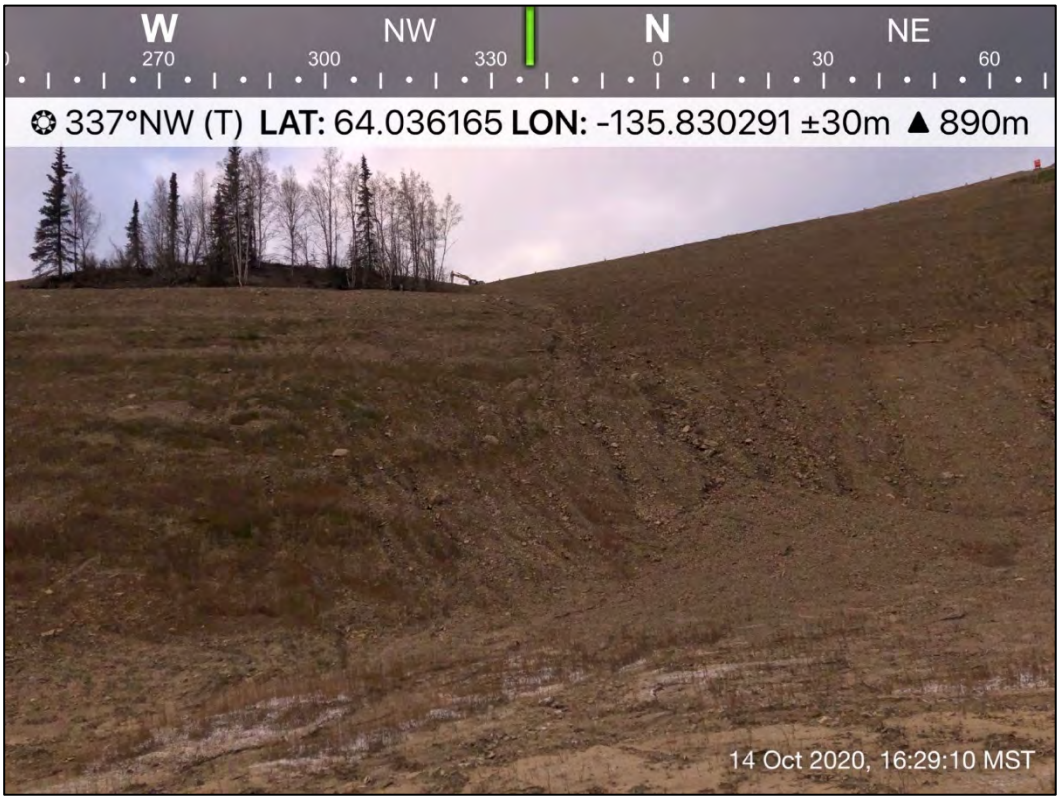
VGC-EOR 20: Underdrain Monitoring Vault



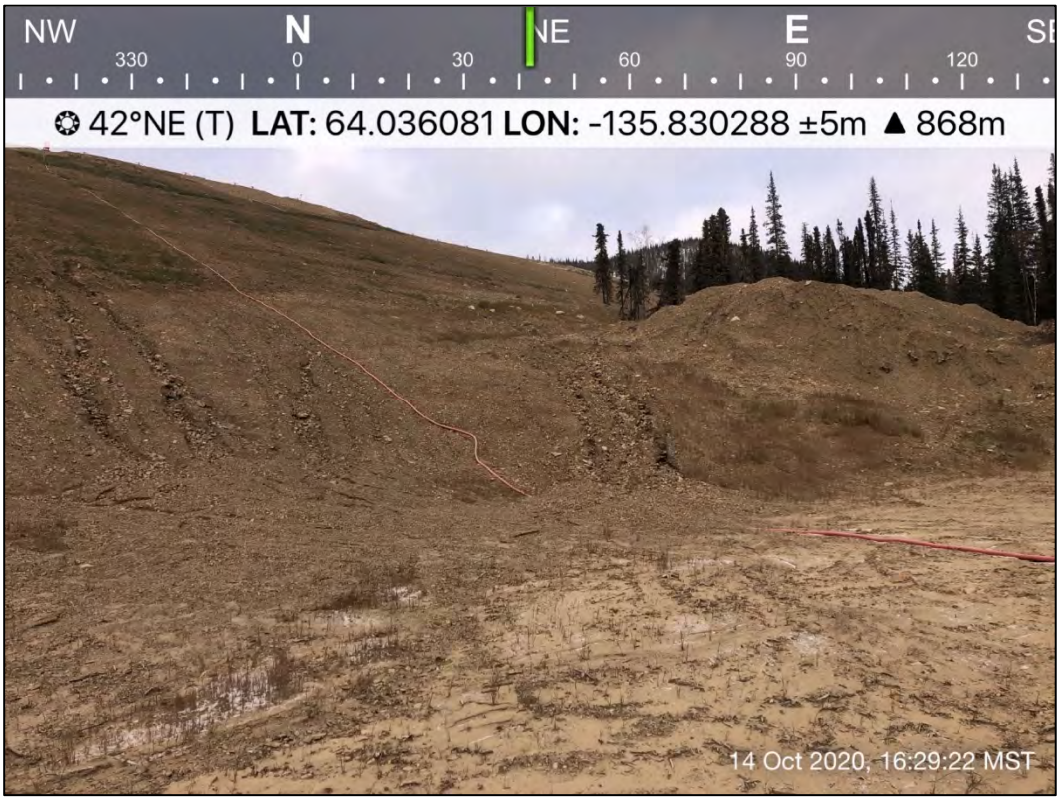
VGC-EOR 21: Erosion Uphill of the UMV



VGC-EOR 22: HLF Embankment Toe



VGC-EOR 23: Erosion between Downslope Face of HLF Spillway and HLF Embankment



VGC-EOR 24: Shallow Rills on HLF Embankment Toe



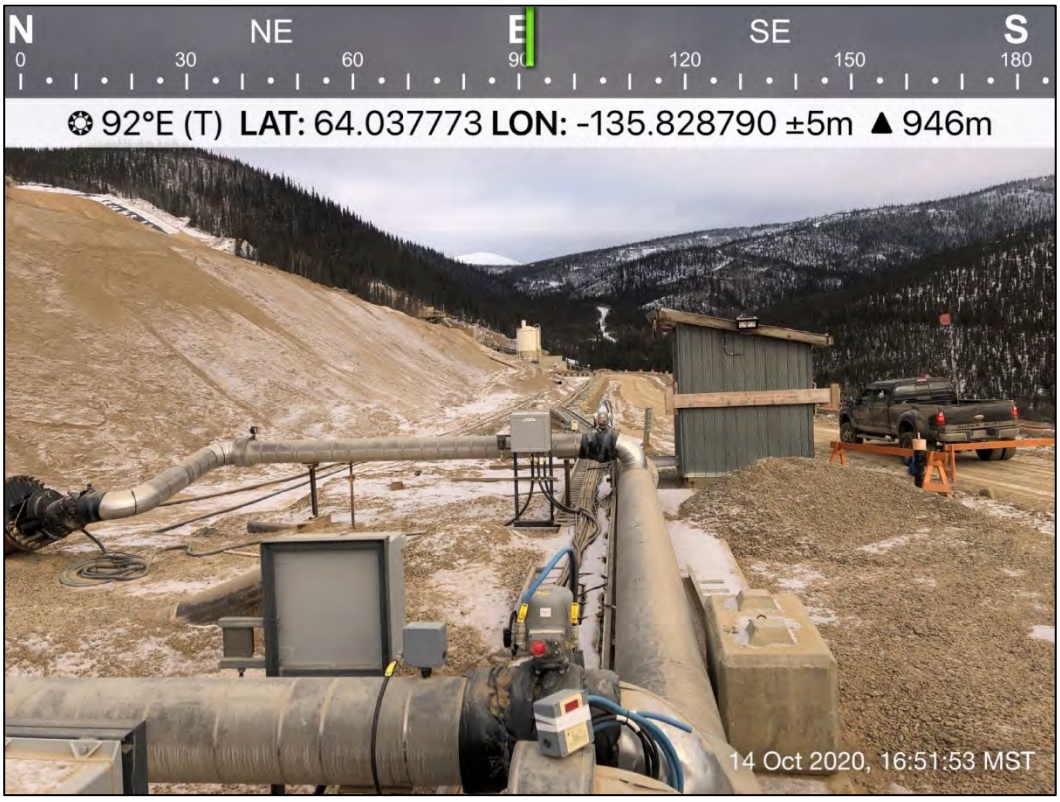
VGC-EOR 25: Event Pond Underdrain Discharge Outlet



VGC-EOR 26: PLS Recovery Standpipes



VGC-EOR 27: In-Heap Pond VWP (Background) and LDRS Standpipe (Foreground)



VGC-EOR 28: PLS Manifold (Foreground); Lime Silo (Background)



VGC-EOR 29: PLS Pipe along Toe of Heap; Process Plant (Background)



VGC-EOR 30: Embankment Piezometer & Inclinometer Standpipes



VGC-EOR 31: Downhill Face of HLF Embankment



VGC-EOR 32: HLF Embankment (Foreground) Event Pond (Background)



VGC-EOR 33: Burying of Powerline during Site Visit



VGC-EOR 34: HLF Spillway Culvert Discharge End



VGC-EOR 35: HLF Spillway and Upper Access Road

APPENDIX D

VGC SPILL REPORT

EAGLE GOLD PROJECT

SPILL REPORT

PROCESS SOLUTION SPILL TO GROUND – JULY 11, 2020

JULY 21, 2020

Prepared By:
Victoria Gold (Yukon) Corp.
Eagle Gold Project

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1 INTRODUCTION

This report summarizes the events that occurred during the early hours of July 11, 2020 that resulted in a release of process solution from the lined footprint for the Heap Leach Facility (HLF) to soils outside of containment. This report also summarizes the subsequent responses implemented to mitigate this release and to prevent possible reoccurrence. **At the time of this report there has been no detection of total or WAD cyanide in monitored surface water or groundwater downgradient of the HLF.** A low-level detection of total cyanide was received for one soil sample downgradient of the CV-022 road access road. The total cyanide (which includes free cyanide) concentration detected is below all soil quality guidelines for free cyanide provided in the Canadian Soil Quality Guidelines for the Protection of Environmental and Human Health (Canadian Council of Ministers of the Environment, 1999).

On July 11, 2020, at 01:30, during heavy rains, pooling water was reported on the HLF loadout area. At 04:00, inspections of the HLF area identified a channelized flow of rainwater mixed with process solution seeping from the base of the loadout pile adjacent to the Heap Transfer Tower (CV-023) pad. The seep was located about 2 metres above the main east-west access roadway (the HLF Perimeter Road) just to the west of the transformer and E house area, which are situated below the conveyors. The seep emerged outside of the lined containment of the HLF and was observed to commingle with the roadway runoff; however, due to the very low flow of the seep, it was not distinguishable on the roadway.

Investigations during and since the incident indicate a combination of a damaged solution distribution pipe on an upper ore lift of the HLF, heavy rainfall and the extension of the loadout pile beyond lined containment were the primary root causes of the release.

The damaged solution distribution pipeline was isolated and flow shutoff upon discovery. Earthworks (berm construction and ditching) was initiated to contain and stop the source of the seep, as well as contain the release of the seep. The seep was fully contained by 09:00 that morning, and directed back into the lined containment of the HLF. The estimated volume of fluid (i.e., comingled rainfall and process solution) released outside of containment is approximately 4.5m^3. Based on both surface and ground water samples taken, there is no evidence that any potential receiving water bodies or groundwater were affected by process solution. Onsite analyses for free cyanide concentrations in samples collected on the morning of the release from streams downgradient of the seep and HLF showed values below the onsite method detection limit. External laboratory analysis was also actioned on samples collected, and yielded non-detect results for Total or WAD cyanide.

On July 12, 2020, notification was provided to regulators and the First Nation of Nacho Nyak Dun (FNNND) regarding the incident. The following were notified:

- Natural Resource Officer, Inspector Major Mines - Compliance Monitoring and Inspection, Department of Energy, Mines and Resources (EMR)
- Director - Minerals Resource Branch, EMR,
- Enforcement Officer - Enforcement Branch, Environment and Climate Change Canada (ECCC), and
- FNNND Lands and Resources Manager.

Section 1: Introduction

This report provides a detailed chronological event summary, release details, important environmental and site factors that led to the incident, concurrent and post-incident responses, and reporting.

2 CHRONOLOGICAL EVENT SUMMARY

2.1 RELEASE RECOGNITION AND IMMEDIATE RESPONSES

Features relevant to this event summary are provided in Figure 2-1 and Figure 2-2.

July 10, 2020

Heavy rains commenced just prior to midnight on July 10. Approximately 43.5 mm of precipitation fell at the Camp Climate Station (located approximately 1,500 metres from the seepage location) between 21:00 July 10 and 21:00 July 11. The highest intensity of rain recorded during the incident time frame was between 23:00 July 10 and 02:00 July 11, at one point reaching an intensity of approximately 7.2 mm/hr. Prior to the incident and earlier that same day, rainfall intensity peaked at 10 mm/hr between 20:00 and 21:00 on July 10. The weather data indicate that the HLF and Eagle Site sustained high intensity microbursts of rainfall throughout July 10 and July 11, leading up to and throughout the incident timeline.

July 11, 2020

01:30 Pooling water was reported on the heap leach pad CV-023 loadout area (on the 950 lift) from a loader operator and was investigated by the Process foreman. Water was observed cascading down from the 975 lift, accumulating on the 950 bench in the stockpile-loadout. It was believed at that time that the pooling water was sourced from the precipitation event. A berm was constructed from the crushed ore within the HLF across the loadout area to contain the pooling water up against the toe of the 965 lift, and keep water away from the stockpile and the loadout operations.

03:45 The heavy rain had stopped, however pooling water on the loadout area continued to increase in volume and depth, so a berm across the loadout was raised. The Process General Foreman was called out to help investigate. It was determined that solution flow from the 8” process solution distribution line on the 975 lift directly uphill from the stockpile-loadout area was leaking and contributing to the flow of water to the pooled area on the 950 lift. The leaking distribution line was immediately turned off.

03:45 to 04:30 Investigation was turned to areas downgradient of the stockpile-loadout area. The HLF perimeter road was wet and muddy throughout. A small channelized flow (or rivulet) was noticed seeping about 2 metres above the driving surface of the road from the base of the crushed ore pile below the stockpile-loadout area. The rivulet was observed to distribute down to the roadway into a small ponded area which had formed in a low area west of, and immediately adjacent to, the westernmost transformer of the E-House. Once the rivulet reached the roadway it could not be discerned in the mud and rainwater that covered the roadway. An excavator was mobilized and dispatched to this area to commence immediate remedial earthworks.

04:30 – 05:30 Remedial earthworks outside of the lined containment area commenced; over the next hour, three berms were constructed. One berm was built adjacent to the transformer area across the rivulet to contain water upgradient of the roadway. A second berm was built across the junction of the

Dublin Gulch access road and the HLF perimeter road, and a third berm was built across the junction of the HLF perimeter road and the CV-022 Road.

Additionally, the Process Manager designate and Site General Manager were informed of the incident and the remedial measures being taken. As a precaution, all ADR processes feeding all the distribution lines were shutdown.

07:00 to 09:00 Inspections of the incident area were undertaken by the General Manager, and managers/superintendents from the Environment, Process, and Health and Safety Departments. During the inspection:

- Water was observed to continue to emerge from the seep.
- Water was pooling behind the bermed area west of the transformer. The berm was observed to be containing the pool and deemed to be providing appropriate containment thereof.
- A suction pumping system was established to collect all pooling water and pump it back into the HLF containment area.
- Additional earthworks were undertaken and a liner was installed in the seep area to direct the pooling water back to lined containment.
- Visual assessment of other areas of HLF was undertaken and no concerns were noted.
- Offsite Senior Management was notified.
- Emergency Operations Centre (EOC) was activated and the Emergency Response Plan and Cyanide Management Plan was initiated.
- Incident management team meeting was conducted to coordinate, release response, further remediation and sampling efforts.



Photo 2-1: Seep Location Looking North - July 11, 2020 @ 07:00



Photo 2-2: Containment Berm Construction Adjacent to HLF Perimeter Road Looking West - July 11, 2020 @ 07:00

09:00 Berms, ditches, liners and pumping set-ups were completed, directing all fluid back to lined containment. The seep was still flowing but was fully contained.

09:00 to 15:00 The seep was sampled and on-site analysis for cyanide confirmed that the water was diluted solution (approximately 175 parts per million {ppm} free cyanide was detected compared to the 250 ppm in the process solution as it is distributed to the HLF). Flow was estimated at seepage location at approximately 10 L/min. Based on initial observations from when the seep was suspected to begin flowing (01:30) and when the flow from the seep was fully contained (09:00), the estimated volume of potential infiltrated rainwater and process solution released outside of containment is 4.5 m^3. This equates to a release of less than 1kg of free cyanide.

Further, as part of the Cyanide Management Plan (specifically the Environmental (Soil/Water Quality) Monitoring Procedures SOP), water quality samples were collected at standard Environmental Monitoring, Surveillance and Adaptive Management Plan locations (see Figure 2-3) and other locations above and downgradient of the incident area including:

- Two stations on Dublin Gulch
- One station on Eagle Creek, and
- Three stations on Haggart Creek.

2.2 FOLLOW-UP REMEDIAL MEASURES

Work continued on July 12, 2020 to mitigate the condition. Surveys were conducted to confirm the perimeter of the liner. Ground and overhead drone photos were taken and compared to construction period photos to establish

the critical components of the work zone (i.e., the liner perimeter, the liner base elevations, and the CV-023 foundation).

On July 13, 2020, using a surveyed line as a guide, an excavator was utilized to pull the crushed ore pile from the conveyor away from the edge of the lined HLF containment facility with the material cast to the north (fully within the HLF) and then loaded and trucked to another portion of the HLF for more even distribution. When the crushed ore pile had been excavated closer to the liner edge, a smaller excavator was utilized to prevent any damage to the liner.

By July 19, 2020, the edge of the HLF liner perimeter was exposed (see Photo 2-3 to 2-5) from the roadway to approximately 5 metres below the CV-023 tower supports. The excavation cannot move further until the stacker can be moved as part of the full grasshopper HLF move project (scheduled to commence within three weeks of the date of this report); otherwise the stacker would be undermined and unstable. More specifically, if the liner trench is excavated all the way up to the stacker elevation there will be insufficient material to establish a safe slope grade/area for workers to perform final clean on the liner in the trench. Also, in excavating the trench up to the stacker, the stability of the stacker would be compromised. Currently, there is sufficient containment to capture any leakage from the pile and convey it towards the In-heap Pond. Prior to the stacker and grasshopper move, the area will be continually monitored for seepage.



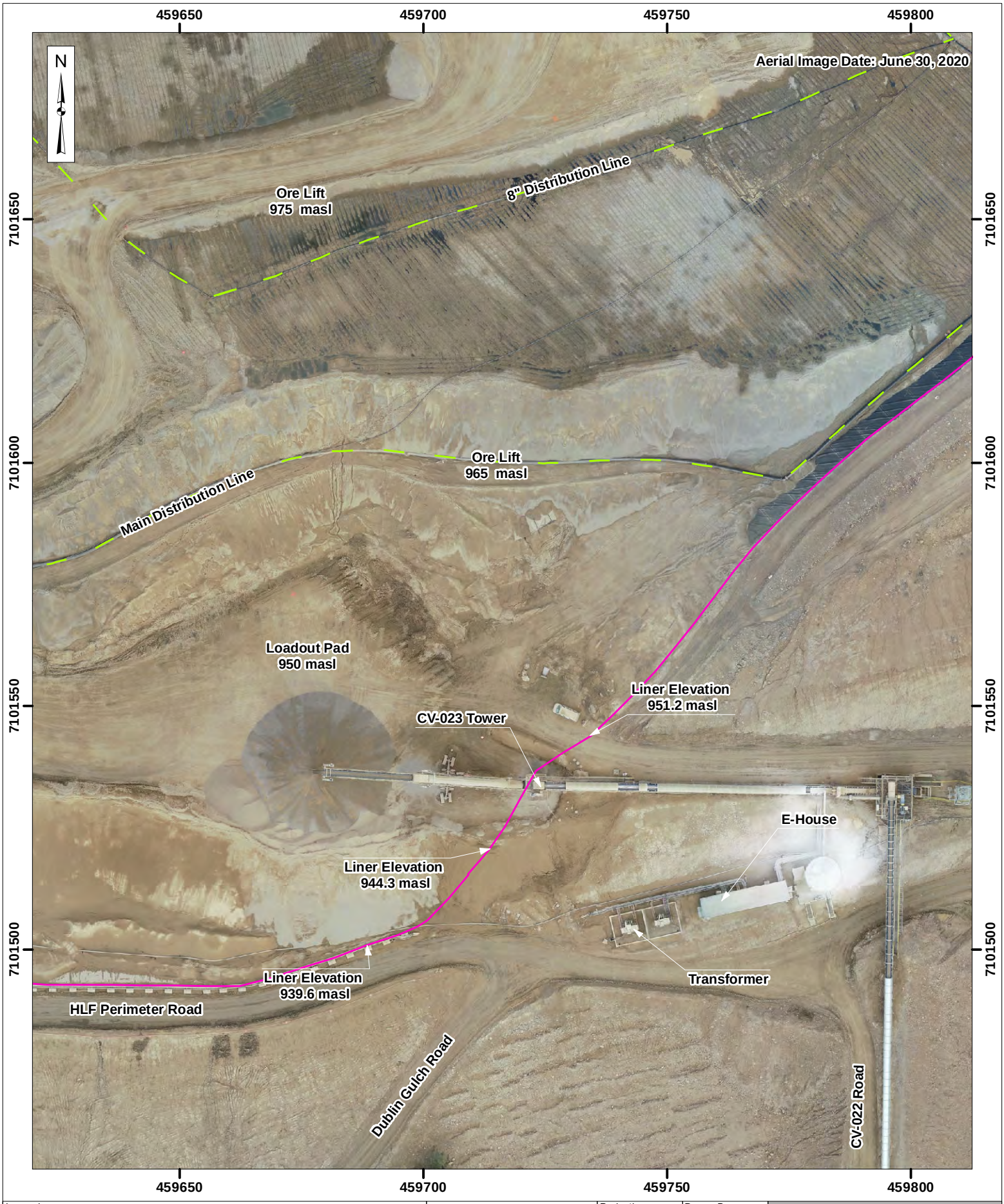
Photo 2-3: Excavation Area to Expose Eastern Edge Liner Perimeter Looking East- July 19, 2020



Photo 2-4: Extent of Excavated Trench (Along HLF Perimeter Road) Looking West - July 19, 2020



Photo 2-5: Extent of Remedial Measures to Pull Back Ore Stockpile Looking West - July 19, 2020



Legend:

- Liner Perimeter
- PLS Line

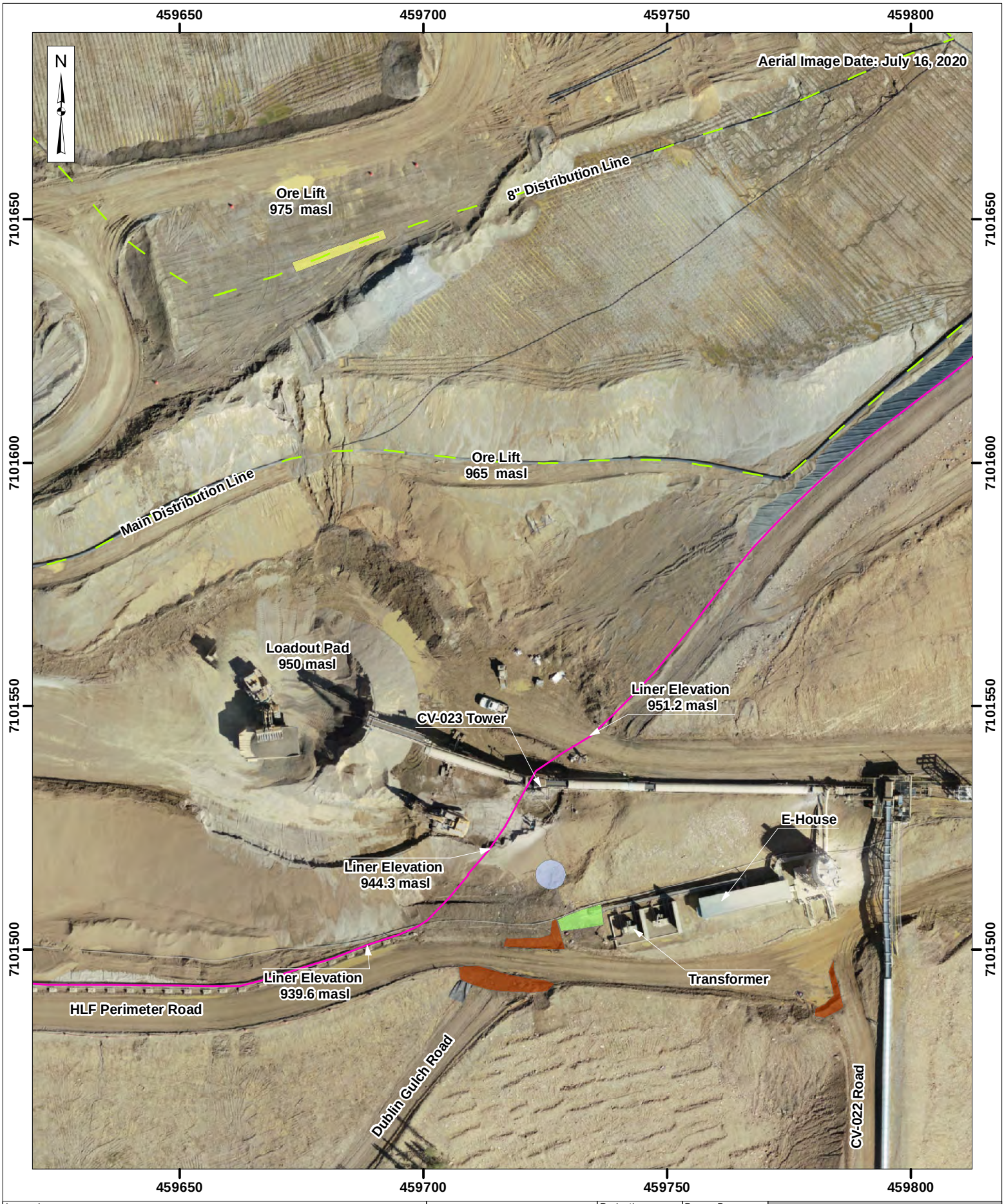
VICTORIA GOLD CORP

0 5 10 20
Metres

Projection:	Drawn By:
NAD 83 UTM Zone 8N	HC
Date:	Figure:
2020/07/22	2-1

EAGLE GOLD PROJECT
YUKON TERRITORY

Event Summary Map
Pre-Incident
June 30, 2020



Legend:

- Liner Perimeter
- PLS Line
- Seep Zone
- Containment Berm
- Spinlock Decoupling Area
- Pooling Area

VICTORIA GOLD CORP

0 5 10 20
Metres

Projection:	Drawn By:
NAD 83 UTM Zone 8N	HC
Date:	Figure:
2020/07/22	2-2

EAGLE GOLD PROJECT
YUKON TERRITORY

Event Summary Map
Post-Incident
July 16, 2020



Legend:

- Liner Perimeter
- Seep Zone
- Surface Water Sample
- Groundwater Sample
- Climate Station

VICTORIA GOLD CORP

0 150 300
Meters

Projection:	Drawn By:	EAGLE GOLD PROJECT YUKON TERRITORY
NAD 83 UTM Zone 8N	HC	
Date:	Figure:	Monitoring Locations
2020/07/22	2-3	

3 RELEASE DETAILS

3.1 FLOW ESTIMATE

Flow from the seep was estimated using the bucket method as the flow was too low for any alternate accurate measurements. Two separate measurements were conducted. Each measurement was conducted by filling up a 1 liter wide-mouth bottle five times from the seep flow that was dribbling over rocks in the pile. The two measurements were conducted at 10:00 and 10:10 on July 11, 2020. The overall flow rate was approximated to be 10 liters/minute based on an average of the two measurements.

The seep is estimated to have begun around 01:30 (based on when the pool began to form on the loadout). The seep was fully contained and flowing back into the pad by 09:00 on the same day. Thus, the seep was flowing for 7.5 hours, which resulted in approximately 4.5 m^3 of diluted process solution leaving containment.

Photo 3-1 shows the seep around 07:00 July 11. Based on when the seep was first observed at 04:00 and when the seep flow was contained at 09:00, there was little variability observed in the rate of flow.



Photo 3-1: Seep Flow Looking North - July 11, 2020

3.2 SEEP SAMPLING

A sample was collected from the seep on the morning of July 11 at 08:17. Onsite analyses was performed on the sample for free cyanide using a silver nitrate test, which yielded a concentration of 175 ppm. External (off-site third party) analyses were also actioned with ALS Burnaby where a sample was analyzed for total cyanide, weak acid dissociable (WAD) cyanide, cyanate, and thiocyanate. Preliminary results yielded a concentration of 199 ppm total Cyanide.

Based on the quantity of solution released (4.5 m^3 or 4,500 kg) and a seep concentration of 195 g/kg yields a total of ~880 g of cyanide released outside of containment. Converting to NaCN (sodium cyanide) and assuming the molecular masses of NaCN and CN yields approximately 1.6 kg of NaCN in solution released outside of containment.

3.3 RECEIVING ENVIRONMENT MONITORING

3.3.1 Surface Water Quality Sampling

The receiving water body related to the Project is Haggart Creek. The Type A Water Use Licence (WUL), and VGC monitoring programs under the EMSAMP has established monitoring locations and water quality objectives on Haggart Creek. The following locations considered in the WUL and the EMSAMP as shown on Figure 2-3 were sampled on July 11:

- Upstream of the seep on Dublin Gulch at W1;
- On Haggart Creek upstream of Dublin Gulch at W22;
- Downstream on Dublin Gulch at W21;
- On Haggart Creek downstream of Dublin Gulch at W4; and,
- On Haggart Creek further downstream at W29.

In addition, water samples were collected at two additional sites:

- Downstream of the seep on Dublin Gulch at DG1 (referred to as HLFDG1 in the chain-of-custody and laboratory report)
- On Eagle Creek at W61 and upstream of the confluence with Dublin Gulch (referred to as HLFEP1).

There was no detection of total or WAD cyanide in surface water quality samples. The preliminary reports from ALS are provided as Appendix A.

3.3.2 Groundwater Quality Sampling

On July 13, water quality samples were taken from two groundwater wells immediately downgradient of the HLF (MW19 HLF-1b and MW10-AG6 as shown on Figure 2-3). There was no detection of Total or WAD cyanide in either groundwater quality sample. The preliminary report from ALS is provided as Appendix B.

3.3.3 Soil Sampling

On July 16, 2020, in order to determine if cyanide was present in the surrounding soils, soil samples were collected at three locations downgradient of the seep (in potential depositional areas) as shown in Figure 3-1. The samples were analyzed for the presence of total and WAD cyanide. Preliminary laboratory results indicate the presence of cyanide in one of the sampled locations; however, the concentration shown in the preliminary report for total cyanide is below all soil quality guidelines for free cyanide (which is consider in total cyanide results) provided in the Canadian Soil Quality Guidelines for the Protection of Environmental and Human Health (Canadian Council of Ministers of the Environment, 1999). The preliminary report from ALS is provided as Appendix C.

3.3.4 Acute Lethality Testing

In the absence of receipt of the laboratory results confirming that no process solution was detected in surface waters, VGC undertook sampling for acute lethality single concentration tests for 96 hr rainbow trout and 48 hr Daphnia magna in addition to full suite water chemistry on July 11, 2020 at W1, W21, W4, W22 and W29.

The results for acute toxicity tests are included in Appendix D. The results for these tests show that water quality in the receiving environment was not acutely lethal, (Table 3-4).

Table 3-1: Acute Lethality Testing Results

Sample Location on July 11, 2020	Percent survival in 100% (v/v) sample	
	Rainbow Trout	*Daphnia magna*
W21	100	100
W4	90	100
W1	100	100
W29	100	100
W22	100	100



Legend:

- Soil Sample Locations
- Liner Perimeter
- Seep Zone
- Containment Berm

VICTORIA GOLD CORP

0 15 30
Meters

Projection:	Drawn By:
NAD 83 UTM Zone 8N	HC
Date:	Figure:
2020/07/22	3-1

EAGLE GOLD PROJECT
YUKON TERRITORY

Soil Sample Locations

4 IMPORTANT ENVIRONMENTAL AND SITE FACTORS (ROOT CAUSES)

4.1 ROOT CAUSE

The primary root cause of the release was the stockpile of crushed ore material in the loadout area building up such that the pile went beyond liner containment. While active leaching does not occur on the ore discharge pile it created a potential flow path during rainfall events that have the potential to overwhelm the infiltration rate of the material.

Figure 4-1 provides a cross section which depicts the area of concern on July 17, and indicates that the stockpile had been pushed southward towards the HLF Perimeter Road, towards the E-House and passed the edge of the liner.

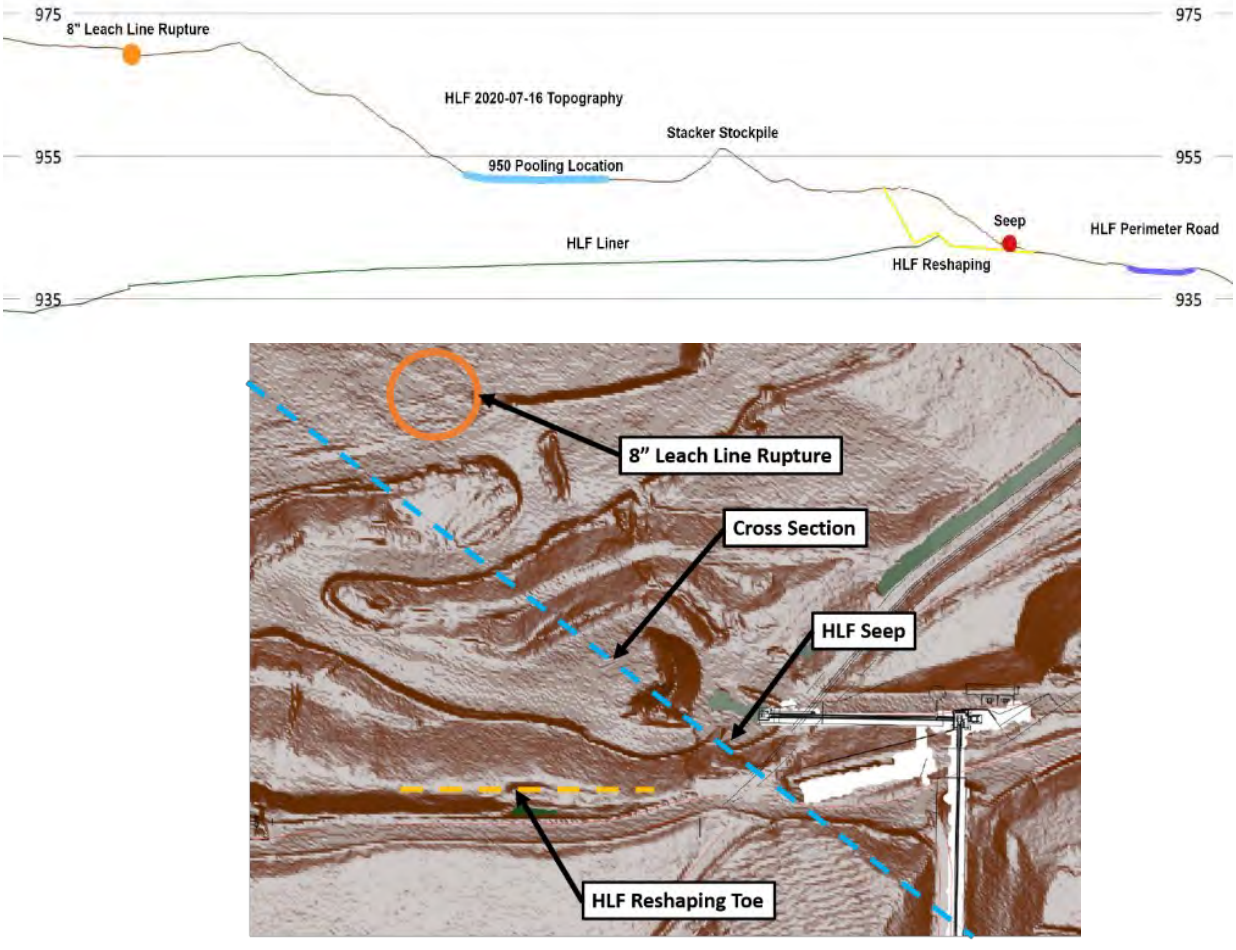


Figure 4-1: HLF South West Corner Cross Section and Plan View Map

Photo 4-1 depicts the location of liner with respect to the July 11 pile location, and illustrates the pile was extended beyond liner containment. The southern edge of the crushed ore pile from the conveyor discharge was pushed approximately 20 metres to south, where there was no lined ditch between the roadway and ore pile.

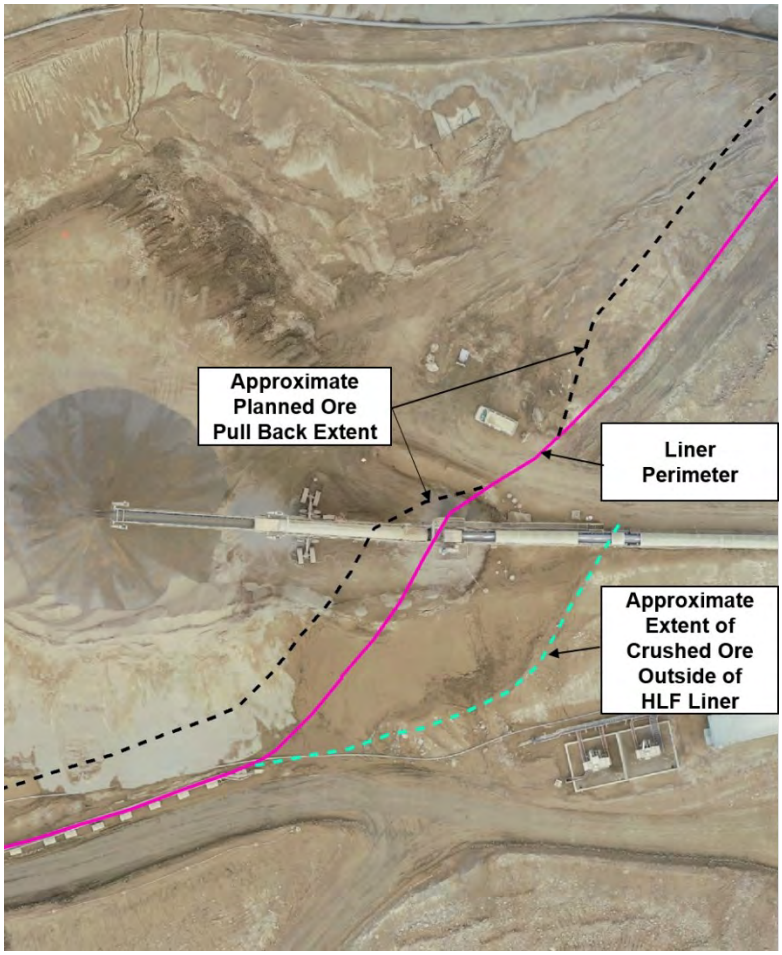


Photo 4-1: Crushed Ore Configuration Relative to HLF Liner - June 30, 2020

The ore pile extended southwards during winter operations in an effort to manage snow on the loadout area, and had not been pulled back fully after freshet. Although the loadout area is not in an active leaching zone, the volume of leakage from the damaged distribution line on the 975 lift and the heavy rainfall resulted in pooling water in a low spot on the 950 lift (shown north of the stockpile on the figure). A temporary berm was constructed to prevent the pool from flowing into the stockpile. While the depth of the pool grew behind the berm, the head in the pool first pushed water into the pad and vertically down to the liner and ultimately to the In-Heap Pond. However, the head also likely created a subsurface water mounding effect leading to sub-horizontal flow in all directions including to the south. As the volume of solution built up behind the liner edge, the solution began to leak over the liner berm wall following preferential pathways until eventual emergence at the seep location.

4.2 CONTRIBUTING FACTORS

A number of contributing environmental and site factors occurred that led to the incident. These included:

- Heavy rains from 23:00 to around 02:00 (~17.6 mm and ~7.2 mm/hr through peak intensity) resulting in additional water pooling on the 950 bench (Table 4-1). Further, substantial rain fell during the previous week that led to wet antecedent moisture conditions and low percolation rates. The Camp Climate Station has recorded ~91.3 mm of precipitation from July 3 to July 21 (Table 4-1) and, examining hourly data, recorded approximately ~43.5 mm of precipitation between 20:00 July 10 and 20:00 July 11, contributing to the onset of the incident. Comparison of Camp and Potato Hills hourly precipitation data supports that the Camp and HLF area received localized microbursts of severe precipitation leading up to and during the incident.

Table 4-1: Climate Station Rainfall Records

Date	Camp Station		Potato Hills	
	Daily Rainfall[1] (mm)	Cumulative Rainfall (mm)	Daily Rainfall[1] (mm)	Cumulative Rainfall (mm)
3-Jul-20	0.00	n/a	0.02	n/a
4-Jul-20	1.05	1.05	0.84	0.86
5-Jul-20	0.27	1.32	0.16	1.02
6-Jul-20	0.72	2.04	0.41	1.43
7-Jul-20	0.00	2.04	0.10	1.53
8-Jul-20	1.49	3.52	1.12	2.65
9-Jul-20	6.45	9.97	0.42	3.07
10-Jul-20	18.23	28.20	9.87	12.94
11-Jul-20	26.68	54.88	14.98	27.93
12-Jul-20	0.00	54.88	0.10	28.03
13-Jul-20	0.04	54.92	0.99	29.02
14-Jul-20	0.00	54.92	0.00	29.02
15-Jul-20	18.07	72.99	6.93	35.96
16-Jul-20	0.00	72.99	0.00	35.96
17-Jul-20	15.56	88.55	10.62	46.57
18-Jul-20	2.75	91.30	3.76	50.33
19-Jul-20	0.00	91.30	0.18	50.52

NOTES
1 - Daily rainfall values are calculated by Geonor Precipitation Gauge. Negative values have been replaced by "zeros". Negative values are reported by Geonor from interference with wind or vibrations.

- 28 spin locks were crushed during road and pad development and distribution line deployment on the 975 lift (Photo 4-2). While the leaked solution originated from the 8-inch distribution line, if the damage to the lines was recognized earlier, or if it occurred on a different location of the pad, the leak from containment likely would not have occurred.



Photo 4-2: Damaged Spin Locks Decoupled from 8" Distribution Line - July 12, 2020

- Extended periods of loadout area use resulted in layers of compacted ore and possibly snow lensing, resulting in lateral preferential pathways of infiltrating water.
- Pooling of loadout area (held behind berm). The berm was built to ~1.5 m high while the pool was at least 1.0 deep; this constant head boundary formed a groundwater mound which resulted in vertical and lateral migration (using preferential pathways) rather than primarily downward migration of solution (see Figure 4-1)

5 SPILL REPORTING

5.1 YUKON GOVERNMENT AND FNNND

On July 12, 2020, the day following the solution release, notification was provided to regulators and the FNNND of the release of HLF solution outside of primary containment. The following people and/or agencies were included in these notifications:

- Yukon Spill Reporting hotline
- Natural Resource Officer, Inspector Major Mines - Compliance Monitoring and Inspection, Department of Energy, Mines and Resources (EMR)
- Director - Minerals Resource Branch, EMR,
- Enforcement Officer - Enforcement Branch, Environment and Climate Change Canada (ECCC), and
- FNNND Lands and Resources Manager.

A copy of this report will be provided to all parties contacted during the preliminary event.

6 FINAL REMEDIATION MEASURES

To ensure that there is no recurrence of this issue, the ore stack discharge from the CV-023 conveyor will continue to be pulled back from the HLF lined footprint to negate the ability for a flow path to be formed. The extent of the push back is depicted in Photo 6-1. This work is currently ongoing. In the meantime, berms and trenches have been constructed to prevent the potential for a future release of process solution and rainwater outside of containment. A Standard Operating Procedure will be developed to ensure that potential ore stack creep is captured in routine surveillance of the HLF.

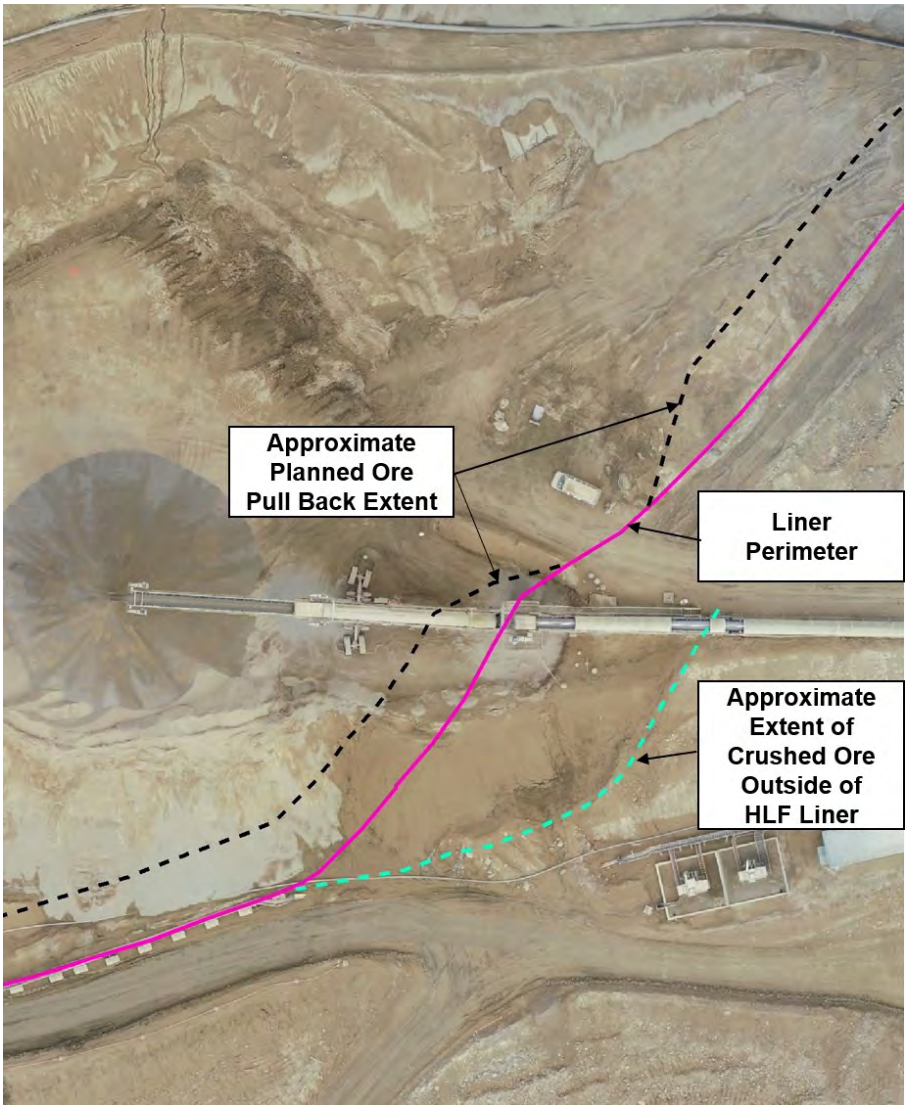


Photo 6-1: Approximate Ore Pull Back Extent Relative to Liner

APPENDIX A

External Laboratory Surface Water Quality Results

ALS Environmental

CERTIFICATE OF ANALYSIS

Work Order	: **VA20B0240**	Page	: 1 of 6
Amendment	: **(Preliminary Report)**		
Client	: **Victoria Gold (Yukon) Corp.**	Laboratory	: Vancouver - Environmental
Contact	: Bill Bowden	Account Manager	: Hilary Woods
Address	: Suite 1000 - 1050 W. Pender St Vancouver BC Canada V6E 3S7	Address	: 8081 Lougheed Highway Burnaby BC Canada V5A 1W9
Telephone	: 867.456.7700 ext. 6381	Telephone	: +1 604 253 4188
Project	: HLF DG-EP - Jul 11	Date Samples Received	: 13-Jul-2020 11:10
PO	: 15673	Date Analysis Commenced	: 13-Jul-2020
C-O-C number	: 20200711d	Issue Date	: 16-Jul-2020 11:26
Sampler	: KB/KT		
Site	: ----		
Quote number	: Q68199		
No. of samples received	: 2		
No. of samples analysed	: 2		

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QC Interpretive report to assist with Quality Review and Sample Receipt Notification (SRN).

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is conducted in accordance with US FDA 21 CFR Part 11.

Signatories	*Position*	*Laboratory Department*
Angelo Salandanan	Lab Assistant	Metals, Burnaby, British Columbia
Annabelle Prasad	Analyst	Metals, Burnaby, British Columbia
Bruna Botti	Analyst	Inorganics - Water Quality, Burnaby, British Columbia
Dee Lee	Analyst	Metals, Burnaby, British Columbia
Jon Fisher	Department Manager - Inorganics	Inorganics, Waterloo, Ontario
Kevin Duarte	Team Leader - Inorganics	Inorganics - Water Quality, Burnaby, British Columbia
Lindsay Gung	Supervisor - Water Chemistry	Inorganics - Water Quality, Burnaby, British Columbia
Muneeb Alam	Analyst	Metals, Burnaby, British Columbia
Owen Cheng		Metals, Burnaby, British Columbia
Robin Weeks	Team Leader - Metals	Metals, Burnaby, British Columbia
Tracy Harley	Supervisor - Water Quality Instrumentation	Inorganics - Water Quality, Burnaby, British Columbia

General Comments

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Refer to the ALS Quality Control Interpretive report (QCI) for applicable references and methodology summaries. Reference methods may incorporate modifications to improve performance.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

Please refer to Quality Control Interpretive report (QCI) for information regarding Holding Time compliance.

Key : CAS Number: Chemical Abstracts Services number is a unique identifier assigned to discrete substances
LOR: Limit of Reporting (detection limit).

Unit	*Description*
-	No Unit
%	percent
µS/cm	Microsiemens per centimetre
meq/L	milliequivalents per litre
mg/L	milligrams per litre
NTU	nephelometric turbidity units
pH units	pH units

<: less than.

>: greater than.

Surrogate: An analyte that is similar in behavior to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.

Test results reported relate only to the samples as received by the laboratory.

UNLESS OTHERWISE STATED on SRN or QCI Report, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

Analytical results in reports identified as "Preliminary Report" are considered authorized for use.

Sample Comments

Sample	Client Id	*Comment*
VA20B0240-001	HLFDG1	Sample HLFDG1: Water sample(s) for dissolved mercury analysis was not submitted in glass or PTFE container with HCl preservative. Results may be biased low.

Qualifiers

Qualifier	*Description*
DLM	*Detection Limit Adjusted due to sample matrix effects (e.g. chemical interference, colour, turbidity).*
RRV	*Reported result verified by repeat analysis.*

Analytical Results

Sub-Matrix: **Water**
(Matrix: **Water**)

Analyte	CAS Number	Method	LOR	Unit	Client sample ID	HLFDG1	HLFEP1	----	----	----
					Client sampling date / time	11-Jul-2020 09:00	11-Jul-2020 10:00	----	----	----
						VA20B0240-001	VA20B0240-002	--------	--------	--------
						Result	Result	----	----	----
Physical Tests										
alkalinity, total (as CaCO3)	----	E290	1.0	mg/L		39.6	155	----	----	----
conductivity	----	E100	2.0	µS/cm		105	372	----	----	----
hardness (as CaCO3), dissolved	----	EC100	0.60	mg/L		47.1	197	----	----	----
hardness (as CaCO3), from total Ca/Mg	----	EC100A	0.60	mg/L		56.3	189	----	----	----
pH	----	E108	0.10	pH units		7.55	8.21	----	----	----
solids, total dissolved [TDS], calculated	----	EC103	1.0	mg/L		72.6	225	----	----	----
solids, total suspended [TSS]	----	E160-H	3.0	mg/L		223	22.0	----	----	----
turbidity	----	E121	0.10	NTU		183	23.7	----	----	----
Anions and Nutrients										
ammonia, total (as N)	7664-41-7	E298	0.0050	mg/L		<0.0050	<0.0050	----	----	----
bromide	24959-67-9	E235.Br-L	0.050	mg/L		<0.050	<0.050	----	----	----
chloride	16887-00-6	E235.Cl	0.50	mg/L		<0.50	0.54	----	----	----
cyanate	88402-73-7	E343	0.20	mg/L		<0.20	<0.20	----	----	----
fluoride	16984-48-8	E235.F	0.020	mg/L		0.086	0.177	----	----	----
Kjeldahl nitrogen, total [TKN]	----	E318	0.050	mg/L		0.356	0.213	----	----	----
nitrate (as N)	14797-55-8	E235.NO3-L	0.0050	mg/L		0.0450	0.215	----	----	----
nitrite (as N)	14797-65-0	E235.NO2-L	0.0010	mg/L		<0.0010	<0.0010	----	----	----
nitrogen, total	7727-37-9	E366	0.030	mg/L		0.292 RRV	0.370	----	----	----
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0010	mg/L		0.0035	0.0017	----	----	----
phosphorus, total	7723-14-0	E372-U	0.0020	mg/L		0.155	0.0296	----	----	----
phosphorus, total dissolved	7723-14-0	E375-T	0.0020	mg/L		0.0056	0.0061	----	----	----
sulfate (as SO4)	14808-79-8	E235.SO4	0.30	mg/L		12.1	45.7	----	----	----
Cyanides										
cyanide, total	----	E333	0.0050	mg/L		<0.0050	<0.0050	----	----	----
cyanide, weak acid dissociable	----	E336	0.0050	mg/L		<0.0050	<0.0050	----	----	----
thiocyanate	302-04-5	E344	0.50	mg/L		<0.50	<0.50	----	----	----
Organic / Inorganic Carbon										
carbon, dissolved organic [DOC]	----	E358-L	0.50	mg/L		3.89	3.54	----	----	----
carbon, total organic [TOC]	----	E355-L	0.50	mg/L		6.42	4.84	----	----	----
Ion Balance										
anion sum	----	EC101	0.10	meq/L		1.05	4.09	----	----	----

Analytical Results

Sub-Matrix: **Water**
(Matrix: **Water**)

Analyte	CAS Number	Method	LOR	Unit	Client sample ID	HLFDG1	HLFEP1	----	----	----
					Client sampling date / time	11-Jul-2020 09:00	11-Jul-2020 10:00	----	----	----
						VA20B0240-001	VA20B0240-002	--------	--------	--------
						Result	Result	----	----	----
Ion Balance										
cation sum	----	EC101	0.10	meq/L		1.04	4.10	----	----	----
ion balance (cation-anion difference)	----	EC101	0.010	%		0.478	0.122	----	----	----
Total Metals										
aluminum, total	7429-90-5	E420	0.0030	mg/L		5.00	1.05	----	----	----
antimony, total	7440-36-0	E420	0.00010	mg/L		0.00210	0.00323	----	----	----
arsenic, total	7440-38-2	E420	0.00010	mg/L		0.0763	0.0978	----	----	----
barium, total	7440-39-3	E420	0.00010	mg/L		0.128	0.0807	----	----	----
beryllium, total	7440-41-7	E420	0.000020	mg/L		0.000318	0.000064	----	----	----
bismuth, total	7440-69-9	E420	0.000050	mg/L		0.000205	0.000108	----	----	----
boron, total	7440-42-8	E420	0.010	mg/L		<0.010	<0.010	----	----	----
cadmium, total	7440-43-9	E420	0.0000050	mg/L		0.0000650	0.0000369	----	----	----
calcium, total	7440-70-2	E420	0.050	mg/L		13.8	38.9	----	----	----
chromium, total	7440-47-3	E420.Cr-L	0.00010	mg/L		0.00834	0.00138	----	----	----
cobalt, total	7440-48-4	E420	0.00010	mg/L		0.00329	0.00068	----	----	----
copper, total	7440-50-8	E420	0.00050	mg/L		0.0108	0.00271	----	----	----
iron, total	7439-89-6	E420	0.010	mg/L		8.83	1.53	----	----	----
lead, total	7439-92-1	E420	0.000050	mg/L		0.00591	0.00251	----	----	----
lithium, total	7439-93-2	E420	0.0010	mg/L		0.0080	0.0111	----	----	----
magnesium, total	7439-95-4	E420	0.100	mg/L		5.29	22.4	----	----	----
manganese, total	7439-96-5	E420	0.00010	mg/L		0.117	0.0491	----	----	----
mercury, total	7439-97-6	E508	0.0000050	mg/L		0.0000139 DLM	<0.0000050	----	----	----
molybdenum, total	7439-98-7	E420	0.000050	mg/L		0.00184	0.00137	----	----	----
nickel, total	7440-02-0	E420	0.00050	mg/L		0.00793	0.00219	----	----	----
phosphorus, total	7723-14-0	E420	0.050	mg/L		0.153	<0.050	----	----	----
potassium, total	7440-09-7	E420	0.100	mg/L		1.61	1.80	----	----	----
selenium, total	7782-49-2	E420	0.000050	mg/L		0.000220	0.000585	----	----	----
silicon, total	7440-21-3	E420	0.10	mg/L		11.7	6.25	----	----	----
silver, total	7440-22-4	E420	0.000010	mg/L		0.000064	0.000022	----	----	----
sodium, total	7440-23-5	E420	0.050	mg/L		1.61	2.87	----	----	----
strontium, total	7440-24-6	E420	0.00020	mg/L		0.0901	0.345	----	----	----
sulfur, total	7704-34-9	E420	0.50	mg/L		4.01	15.5	----	----	----
thallium, total	7440-28-0	E420	0.000010	mg/L		0.000136	0.000022	----	----	----

Analytical Results

Sub-Matrix: **Water**
(Matrix: **Water**)

Analyte	CAS Number	Method	LOR	Unit	Client sample ID	HLFDG1	HLFEP1	----	----	----
					Client sampling date / time	11-Jul-2020 09:00	11-Jul-2020 10:00	----	----	----
						VA20B0240-001	VA20B0240-002	--------	--------	--------
						Result	Result	----	----	----
Total Metals										
tin, total	7440-31-5	E420	0.00010	mg/L		0.00013	<0.00010	----	----	----
titanium, total	7440-32-6	E420	0.00030	mg/L		0.225	0.0479	----	----	----
uranium, total	7440-61-1	E420	0.000010	mg/L		0.00136	0.0107	----	----	----
vanadium, total	7440-62-2	E420	0.00050	mg/L		0.0117	0.00208	----	----	----
zinc, total	7440-66-6	E420	0.0030	mg/L		0.0216	0.0076	----	----	----
zirconium, total	7440-67-7	E420	0.00030	mg/L		0.00037	0.00069	----	----	----
Dissolved Metals										
aluminum, dissolved	7429-90-5	E421	0.0010	mg/L		0.0733	0.0158	----	----	----
antimony, dissolved	7440-36-0	E421	0.00010	mg/L		0.00097	0.00248	----	----	----
arsenic, dissolved	7440-38-2	E421	0.00010	mg/L		0.0262	0.0656	----	----	----
barium, dissolved	7440-39-3	E421	0.00010	mg/L		0.0397	0.0684	----	----	----
beryllium, dissolved	7440-41-7	E421	0.000020	mg/L		<0.000020	<0.000020	----	----	----
bismuth, dissolved	7440-69-9	E421	0.000050	mg/L		<0.000050	<0.000050	----	----	----
boron, dissolved	7440-42-8	E421	0.010	mg/L		<0.010	<0.010	----	----	----
cadmium, dissolved	7440-43-9	E421	0.0000050	mg/L		0.0000052	0.0000151	----	----	----
calcium, dissolved	7440-70-2	E421	0.050	mg/L		12.7	40.4	----	----	----
chromium, dissolved	7440-47-3	E421.Cr-L	0.00010	mg/L		0.00013	<0.00010	----	----	----
cobalt, dissolved	7440-48-4	E421	0.00010	mg/L		0.00017	0.00014	----	----	----
copper, dissolved	7440-50-8	E421	0.00020	mg/L		0.00073	0.00111	----	----	----
iron, dissolved	7439-89-6	E421	0.010	mg/L		0.107	0.082	----	----	----
lead, dissolved	7439-92-1	E421	0.000050	mg/L		0.000057	0.000082	----	----	----
lithium, dissolved	7439-93-2	E421	0.0010	mg/L		0.0017	0.0102	----	----	----
magnesium, dissolved	7439-95-4	E421	0.100	mg/L		3.72	23.2	----	----	----
manganese, dissolved	7439-96-5	E421	0.00010	mg/L		0.0137	0.0307	----	----	----
mercury, dissolved	7439-97-6	E509	0.0000050	mg/L		<0.0000050	<0.0000050	----	----	----
molybdenum, dissolved	7439-98-7	E421	0.000050	mg/L		0.00196	0.00133	----	----	----
nickel, dissolved	7440-02-0	E421	0.00050	mg/L		0.00054	0.00076	----	----	----
phosphorus, dissolved	7723-14-0	E421	0.050	mg/L		<0.050	<0.050	----	----	----
potassium, dissolved	7440-09-7	E421	0.100	mg/L		0.650	1.53	----	----	----
selenium, dissolved	7782-49-2	E421	0.000050	mg/L		0.000160	0.000685	----	----	----
silicon, dissolved	7440-21-3	E421	0.050	mg/L		5.07	4.81	----	----	----
silver, dissolved	7440-22-4	E421	0.000010	mg/L		<0.000010	<0.000010	----	----	----

Analytical Results

Sub-Matrix: **Water**
(Matrix: **Water**)

Analyte	CAS Number	Method	LOR	Unit	Client sample ID	HLFDG1	HLFEP1	----	----	----
					Client sampling date / time	11-Jul-2020 09:00	11-Jul-2020 10:00	----	----	----
						VA20B0240-001	VA20B0240-002	--------	--------	--------
						Result	Result	----	----	----
Dissolved Metals										
sodium, dissolved	7440-23-5	E421	0.050	mg/L		1.52	2.88	----	----	----
strontium, dissolved	7440-24-6	E421	0.00020	mg/L		0.0808	0.343	----	----	----
sulfur, dissolved	7704-34-9	E421	0.50	mg/L		3.94	15.0	----	----	----
thallium, dissolved	7440-28-0	E421	0.000010	mg/L		<0.000010	<0.000010	----	----	----
tin, dissolved	7440-31-5	E421	0.00010	mg/L		<0.00010	<0.00010	----	----	----
titanium, dissolved	7440-32-6	E421	0.00030	mg/L		0.00270	<0.00030	----	----	----
uranium, dissolved	7440-61-1	E421	0.000010	mg/L		0.000510	0.0106	----	----	----
vanadium, dissolved	7440-62-2	E421	0.00050	mg/L		<0.00050	<0.00050	----	----	----
zinc, dissolved	7440-66-6	E421	0.0010	mg/L		<0.0010	0.0018	----	----	----
zirconium, dissolved	7440-67-7	E421	0.00030	mg/L		<0.00030	<0.00030	----	----	----
dissolved mercury filtration location	----	EP509	-	-		Laboratory	Field	----	----	----
dissolved metals filtration location	----	EP421	-	-		Laboratory	Field	----	----	----

Please refer to the General Comments section for an explanation of any qualifiers detected.

ALS Environmental

CERTIFICATE OF ANALYSIS

Work Order	: **VA20B0234**	Page	: 1 of 6
Amendment	: **(Preliminary Report)**		
Client	: **Victoria Gold (Yukon) Corp.**	Laboratory	: Vancouver - Environmental
Contact	: Bill Bowden	Account Manager	: Hilary Woods
Address	: Suite 1000 - 1050 W. Pender St Vancouver BC Canada V6E 3S7	Address	: 8081 Lougheed Highway Burnaby BC Canada V5A 1W9
Telephone	: 867.456.7700 ext. 6381	Telephone	: +1 604 253 4188
Project	: HLF Dublin Haggart - Jul 11	Date Samples Received	: 13-Jul-2020 11:10
PO	: 15673	Date Analysis Commenced	: 13-Jul-2020
C-O-C number	: 20200711e	Issue Date	: 20-Jul-2020 10:46
Sampler	: KB/KT		
Site	: ----		
Quote number	: Q68199		
No. of samples received	: 5		
No. of samples analysed	: 5		

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QC Interpretive report to assist with Quality Review and Sample Receipt Notification (SRN).

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is conducted in accordance with US FDA 21 CFR Part 11.

Signatories	*Position*	*Laboratory Department*
Angelo Salandanan	Lab Assistant	Metals, Burnaby, British Columbia
Annabelle Prasad	Analyst	Metals, Burnaby, British Columbia
Bruna Botti	Analyst	Inorganics - Water Quality, Burnaby, British Columbia
Dee Lee	Analyst	Metals, Burnaby, British Columbia
Jon Fisher	Department Manager - Inorganics	Inorganics, Waterloo, Ontario
Kevin Duarte	Team Leader - Inorganics	Inorganics - Water Quality, Burnaby, British Columbia
Lindsay Gung	Supervisor - Water Chemistry	Inorganics - Water Quality, Burnaby, British Columbia
Muneeb Alam	Analyst	Metals, Burnaby, British Columbia
Owen Cheng		Metals, Burnaby, British Columbia
Robin Weeks	Team Leader - Metals	Inorganics - Water Quality, Burnaby, British Columbia
Robin Weeks	Team Leader - Metals	Metals, Burnaby, British Columbia

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meq/L	milliequivalents per litre
mg/L	milligrams per litre
NTU	nephelometric turbidity units
pH units	pH units

<: less than.

>: greater than.

Surrogate: An analyte that is similar in behavior to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.

Test results reported relate only to the samples as received by the laboratory.

UNLESS OTHERWISE STATED on SRN or QCI Report, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

Analytical results in reports identified as "Preliminary Report" are considered authorized for use.

Sample Comments

Sample	Client Id	*Comment*
VA20B0234-001	W4	Sample(s) W4, W21, W29 and W22: Water sample(s) for dissolved mercury analysis was not submitted in glass or PTFE container with HCl preservative. Results may be biased low.

Qualifiers

Qualifier	*Description*
DTC	*Dissolved concentration exceeds total. Results were confirmed by re-analysis.*

Analytical Results

Sub-Matrix: **Water**
(Matrix: **Water**)

Analyte	CAS Number	Method	LOR	Unit	Client sample ID	W4	W21	W1	W29	W22
					Client sampling date / time	11-Jul-2020 11:20	11-Jul-2020 11:40	11-Jul-2020 14:00	11-Jul-2020 14:40	11-Jul-2020 15:00
						VA20B0234-001	VA20B0234-002	VA20B0234-003	VA20B0234-004	VA20B0234-005
						Result	Result	Result	Result	Result
Physical Tests										
alkalinity, total (as CaCO3)	----	E290	1.0	mg/L		50.2	51.0	30.2	57.1	53.2
conductivity	----	E100	2.0	µS/cm		191	142	82.0	204	195
hardness (as CaCO3), dissolved	----	EC100	0.60	mg/L		88.0	63.6	35.5	94.7	91.1
hardness (as CaCO3), from total Ca/Mg	----	EC100A	0.60	mg/L		89.8	72.1	37.3	97.6	95.3
pH	----	E108	0.10	pH units		7.68	7.74	7.65	7.84	7.77
solids, total dissolved [TDS], calculated	----	EC103	1.0	mg/L		120	90.6	60.5	129	125
solids, total suspended [TSS]	----	E160-H	3.0	mg/L		95.6	181	21.0	53.4	50.4
turbidity	----	E121	0.10	NTU		81.9	196	1.87	26.8	27.0
Anions and Nutrients										
ammonia, total (as N)	7664-41-7	E298	0.0050	mg/L		0.0051	0.0070	<0.0050	0.0811	0.0122
bromide	24959-67-9	E235.Br-L	0.050	mg/L		<0.050	<0.050	<0.050	<0.050	<0.050
chloride	16887-00-6	E235.Cl	0.50	mg/L		1.21	0.55	<0.50	<0.50	<0.50
cyanate	88402-73-7	E343	0.20	mg/L		<0.20	<0.20	<0.20	<0.20	<0.20
fluoride	16984-48-8	E235.F	0.020	mg/L		0.087	0.096	0.080	0.093	0.088
Kjeldahl nitrogen, total [TKN]	----	E318	0.050	mg/L		0.315	0.347	0.094	0.314	0.360
nitrate (as N)	14797-55-8	E235.NO3-L	0.0050	mg/L		0.0573	0.0522	0.0204	0.0490	0.0520
nitrite (as N)	14797-65-0	E235.NO2-L	0.0010	mg/L		<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
nitrogen, total	7727-37-9	E366	0.030	mg/L		0.350	0.292	0.107	0.353	0.306
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0010	mg/L		0.0010	0.0038	0.0015	<0.0010	<0.0010
phosphorus, total	7723-14-0	E372-U	0.0020	mg/L		0.0725	0.141	0.0134	0.0284	0.0305
phosphorus, total dissolved	7723-14-0	E375-T	0.0020	mg/L		0.0042	0.0065	0.0027	0.0033	0.0035
sulfate (as SO4)	14808-79-8	E235.SO4	0.30	mg/L		37.9	17.5	9.26	41.9	41.1
Cyanides										
cyanide, total	----	E333	0.0050	mg/L		<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
cyanide, weak acid dissociable	----	E336	0.0050	mg/L		<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
thiocyanate	302-04-5	E344	0.50	mg/L		0.94	<0.50	<0.50	<0.50	<0.50
Organic / Inorganic Carbon										
carbon, dissolved organic [DOC]	----	E358-L	0.50	mg/L		8.21	3.68	2.90	8.27	9.16
carbon, total organic [TOC]	----	E355-L	0.50	mg/L		10.0	6.44	3.36	9.06	9.60
Ion Balance										
anion sum	----	EC101	0.10	meq/L		1.84	1.41	0.80	2.03	1.93

Analytical Results

Sub-Matrix: **Water**
(Matrix: **Water**)

Analyte	CAS Number	Method	LOR	Unit	Client sample ID	W4	W21	W1	W29	W22
					Client sampling date / time	11-Jul-2020 11:20	11-Jul-2020 11:40	11-Jul-2020 14:00	11-Jul-2020 14:40	11-Jul-2020 15:00
						VA20B0234-001	VA20B0234-002	VA20B0234-003	VA20B0234-004	VA20B0234-005
						Result	Result	Result	Result	Result
Ion Balance										
cation sum	----	EC101	0.10	meq/L		1.85	1.38	0.80	1.98	1.90
ion balance (cation-anion difference)	----	EC101	0.010	%		0.271	1.08	<0.010	1.25	0.783
Total Metals										
aluminum, total	7429-90-5	E420	0.0030	mg/L		2.06	5.32	0.472	0.805	0.818
antimony, total	7440-36-0	E420	0.00010	mg/L		0.00245	0.00398	0.00132	0.00077	0.00052
arsenic, total	7440-38-2	E420	0.00010	mg/L		0.0448	0.117	0.0456	0.0114	0.00638
barium, total	7440-39-3	E420	0.00010	mg/L		0.0642	0.136	0.0444	0.0459	0.0451
beryllium, total	7440-41-7	E420	0.000020	mg/L		0.000130	0.000347	0.000034	0.000048	0.000047
bismuth, total	7440-69-9	E420	0.000050	mg/L		0.000421	0.000895	<0.000050	0.000059	<0.000050
boron, total	7440-42-8	E420	0.010	mg/L		<0.010	<0.010	<0.010	<0.010	<0.010
cadmium, total	7440-43-9	E420	0.0000050	mg/L		0.0000884	0.0000868	0.0000170	0.0000437	0.0000458
calcium, total	7440-70-2	E420	0.050	mg/L		23.0	16.8	11.3	24.9	24.4
chromium, total	7440-47-3	E420.Cr-L	0.00010	mg/L		0.00362	0.00895	0.00078	0.00137	0.00135
cobalt, total	7440-48-4	E420	0.00010	mg/L		0.00199	0.00377	0.00029	0.00083	0.00085
copper, total	7440-50-8	E420	0.00050	mg/L		0.00677	0.0130	0.00087	0.00319	0.00325
iron, total	7439-89-6	E420	0.010	mg/L		4.36	9.89	0.598	1.62	1.65
lead, total	7439-92-1	E420	0.000050	mg/L		0.00789	0.00961	0.000864	0.00214	0.00187
lithium, total	7439-93-2	E420	0.0010	mg/L		0.0065	0.0093	0.0021	0.0050	0.0050
magnesium, total	7439-95-4	E420	0.100	mg/L		7.86	7.30	2.21	8.60	8.37
manganese, total	7439-96-5	E420	0.00010	mg/L		0.0969	0.138	0.0182	0.0557	0.0573
mercury, total	7439-97-6	E508	0.0000050	mg/L		0.0000139	0.0000168	<0.0000050	0.0000079	0.0000086
molybdenum, total	7439-98-7	E420	0.000050	mg/L		0.000563	0.00174	0.00200	0.000302	0.000090
nickel, total	7440-02-0	E420	0.00050	mg/L		0.00561	0.00945	0.00091	0.00305	0.00332
phosphorus, total	7723-14-0	E420	0.050	mg/L		0.055	0.165	<0.050	<0.050	<0.050
potassium, total	7440-09-7	E420	0.100	mg/L		1.35	2.04	0.685	0.831	0.765
selenium, total	7782-49-2	E420	0.000050	mg/L		0.000242	0.000298	0.000117	0.000158	0.000168
silicon, total	7440-21-3	E420	0.10	mg/L		5.96	12.2	6.38	4.40	4.16
silver, total	7440-22-4	E420	0.000010	mg/L		0.000075	0.000117	0.000010	0.000027	0.000024
sodium, total	7440-23-5	E420	0.050	mg/L		1.51	2.59	1.58	1.30	1.17
strontium, total	7440-24-6	E420	0.00020	mg/L		0.120	0.116	0.0719	0.130	0.125
sulfur, total	7704-34-9	E420	0.50	mg/L		12.8	5.89	3.33	14.7	14.4
thallium, total	7440-28-0	E420	0.000010	mg/L		0.000059	0.000154	0.000011	0.000022	0.000020

Analytical Results

Sub-Matrix: **Water**
(Matrix: **Water**)

Analyte	CAS Number	Method	LOR	Unit	Client sample ID	W4	W21	W1	W29	W22
					Client sampling date / time	11-Jul-2020 11:20	11-Jul-2020 11:40	11-Jul-2020 14:00	11-Jul-2020 14:40	11-Jul-2020 15:00
						VA20B0234-001	VA20B0234-002	VA20B0234-003	VA20B0234-004	VA20B0234-005
						Result	Result	Result	Result	Result
Total Metals										
tin, total	7440-31-5	E420	0.00010	mg/L		<0.00010	0.00015	<0.00010	<0.00010	<0.00010
titanium, total	7440-32-6	E420	0.00030	mg/L		0.0766	0.226	0.0240	0.0240	0.0220
uranium, total	7440-61-1	E420	0.000010	mg/L		0.000802	0.00212	0.000556	0.000740	0.000519
vanadium, total	7440-62-2	E420	0.00050	mg/L		0.00450	0.0124	0.00117	0.00180	0.00184
zinc, total	7440-66-6	E420	0.0030	mg/L		0.0163	0.0291	0.0035	0.0082	0.0072
zirconium, total	7440-67-7	E420	0.00030	mg/L		0.00046	0.00042	<0.00030	0.00034	0.00041
Dissolved Metals										
aluminum, dissolved	7429-90-5	E421	0.0010	mg/L		0.0513	0.0589	0.0287	0.0553	0.0596
antimony, dissolved	7440-36-0	E421	0.00010	mg/L		0.00050	0.00122	0.00102	0.00046	0.00027
arsenic, dissolved	7440-38-2	E421	0.00010	mg/L		0.00537	0.0294	0.0366	0.00464	0.00098
barium, dissolved	7440-39-3	E421	0.00010	mg/L		0.0334	0.0408	0.0338	0.0354	0.0326
beryllium, dissolved	7440-41-7	E421	0.000020	mg/L		<0.000020	<0.000020	<0.000020	<0.000020	<0.000020
bismuth, dissolved	7440-69-9	E421	0.000050	mg/L		<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
boron, dissolved	7440-42-8	E421	0.010	mg/L		<0.010	<0.010	<0.010	<0.010	<0.010
cadmium, dissolved	7440-43-9	E421	0.0000050	mg/L		0.0000161	0.0000066	0.0000064	0.0000160	0.0000181
calcium, dissolved	7440-70-2	E421	0.050	mg/L		22.9	16.2	10.8	24.1	23.7
chromium, dissolved	7440-47-3	E421.Cr-L	0.00010	mg/L		0.00016	0.00011	<0.00010	0.00015	0.00019
cobalt, dissolved	7440-48-4	E421	0.00010	mg/L		0.00025	0.00016	<0.00010	0.00018	0.00019
copper, dissolved	7440-50-8	E421	0.00020	mg/L		0.00149	0.00084	0.00044	0.00137	0.00139
iron, dissolved	7439-89-6	E421	0.010	mg/L		0.111	0.104	0.014	0.114	0.136
lead, dissolved	7439-92-1	E421	0.000050	mg/L		0.000148	0.000102	<0.000050	0.000112	0.000109
lithium, dissolved	7439-93-2	E421	0.0010	mg/L		0.0038	0.0030	0.0016	0.0040	0.0041
magnesium, dissolved	7439-95-4	E421	0.100	mg/L		7.46	5.60	2.08	8.39	7.72
manganese, dissolved	7439-96-5	E421	0.00010	mg/L		0.0272	0.0176	0.00075	0.0255	0.0254
mercury, dissolved	7439-97-6	E509	0.0000050	mg/L		<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050
molybdenum, dissolved	7439-98-7	E421	0.000050	mg/L		0.000420	0.00184	0.00205	0.000258	0.000055
nickel, dissolved	7440-02-0	E421	0.00050	mg/L		0.00166	0.00062	<0.00050	0.00156	0.00168
phosphorus, dissolved	7723-14-0	E421	0.050	mg/L		<0.050	<0.050	<0.050	<0.050	<0.050
potassium, dissolved	7440-09-7	E421	0.100	mg/L		0.711	0.832	0.587	0.670	0.577
selenium, dissolved	7782-49-2	E421	0.000050	mg/L		0.000142	0.000240	0.000249 DTC	0.000177	0.000190
silicon, dissolved	7440-21-3	E421	0.050	mg/L		3.41	4.92	5.52	3.51	3.26
silver, dissolved	7440-22-4	E421	0.000010	mg/L		<0.000010	<0.000010	<0.000010	<0.000010	<0.000010

Analytical Results

Sub-Matrix: **Water**
(Matrix: **Water**)

Analyte	CAS Number	Method	LOR	Unit	Client sample ID	W4	W21	W1	W29	W22
					Client sampling date / time	11-Jul-2020 11:20	11-Jul-2020 11:40	11-Jul-2020 14:00	11-Jul-2020 14:40	11-Jul-2020 15:00
						VA20B0234-001	VA20B0234-002	VA20B0234-003	VA20B0234-004	VA20B0234-005
						Result	Result	Result	Result	Result
Dissolved Metals										
sodium, dissolved	7440-23-5	E421	0.050	mg/L		1.47	1.79	1.54	1.28	1.11
strontium, dissolved	7440-24-6	E421	0.00020	mg/L		0.122	0.108	0.0723	0.128	0.127
sulfur, dissolved	7704-34-9	E421	0.50	mg/L		12.7	6.23	2.85	13.9	13.8
thallium, dissolved	7440-28-0	E421	0.000010	mg/L		<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
tin, dissolved	7440-31-5	E421	0.00010	mg/L		<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
titanium, dissolved	7440-32-6	E421	0.00030	mg/L		0.00112	0.00228	<0.00030	0.00067	0.00063
uranium, dissolved	7440-61-1	E421	0.000010	mg/L		0.000562	0.00136	0.000383	0.000638	0.000429
vanadium, dissolved	7440-62-2	E421	0.00050	mg/L		<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
zinc, dissolved	7440-66-6	E421	0.0010	mg/L		<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
zirconium, dissolved	7440-67-7	E421	0.00030	mg/L		0.00036	<0.00030	<0.00030	0.00035	0.00040
dissolved mercury filtration location	----	EP509	-	-		Laboratory	Laboratory	Field	Laboratory	Laboratory
dissolved metals filtration location	----	EP421	-	-		Laboratory	Laboratory	Field	Laboratory	Laboratory

Please refer to the General Comments section for an explanation of any qualifiers detected.

APPENDIX B

External Laboratory Groundwater Quality Results

ALS Environmental

CERTIFICATE OF ANALYSIS

Work Order	: **VA20B0441**	Page	: 1 of 4
Amendment	: **(Preliminary Report)**		
Client	: **Victoria Gold (Yukon) Corp.**	Laboratory	: Vancouver - Environmental
Contact	: Lindsay Rear	Account Manager	: Hilary Woods
Address	: Suite 1000 - 1050 W. Pender St Vancouver BC Canada V6E 3S7	Address	: 8081 Lougheed Highway Burnaby BC Canada V5A 1W9
Telephone	: ----	Telephone	: +1 604 253 4188
Project	: GWQ (HLF)	Date Samples Received	: 15-Jul-2020 16:50
PO	: 14043	Date Analysis Commenced	: 15-Jul-2020
C-O-C number	: 20200714a	Issue Date	: 20-Jul-2020 09:43
Sampler	: KT/KB/JJ/SB		
Site	: ----		
Quote number	: Q68199		
No. of samples received	: 2		
No. of samples analysed	: 2		

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QC Interpretive report to assist with Quality Review and Sample Receipt Notification (SRN).

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is conducted in accordance with US FDA 21 CFR Part 11.

Signatories	*Position*	*Laboratory Department*
Angelo Salandanan	Lab Assistant	Metals, Burnaby, British Columbia
Dee Lee	Analyst	Metals, Burnaby, British Columbia
Kevin Duarte	Team Leader - Inorganics	Inorganics - Water Quality, Burnaby, British Columbia
Kim Jensen	Department Manager - Metals	Metals, Burnaby, British Columbia
Tracy Harley	Supervisor - Water Quality Instrumentation	Inorganics - Water Quality, Burnaby, British Columbia

General Comments

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Refer to the ALS Quality Control Interpretive report (QCI) for applicable references and methodology summaries. Reference methods may incorporate modifications to improve performance.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

Please refer to Quality Control Interpretive report (QCI) for information regarding Holding Time compliance.

Key : CAS Number: Chemical Abstracts Services number is a unique identifier assigned to discrete substances
LOR: Limit of Reporting (detection limit).

Unit	*Description*
-	No Unit
µS/cm	Microsiemens per centimetre
mg/L	milligrams per litre
pH units	pH units

<: less than.

>: greater than.

Surrogate: An analyte that is similar in behavior to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.

Test results reported relate only to the samples as received by the laboratory.

UNLESS OTHERWISE STATED on SRN or QCI Report, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

Analytical results in reports identified as "Preliminary Report" are considered authorized for use.

Qualifiers

Qualifier	*Description*
SFT	*Sample was filtered due to turbidity interference. Result reflects soluble analyte concentration.*

Analytical Results

Sub-Matrix: **Water**
(Matrix: **Water**)

Analyte	CAS Number	Method	LOR	Unit	Client sample ID	MW19 HLF-1b	MWAG-6	----	----	----
					Client sampling date / time	13-Jul-2020 08:45	13-Jul-2020 09:30	----	----	----
						VA20B0441-001	VA20B0441-002	--------	--------	--------
						Result	Result	----	----	----
Physical Tests										
conductivity	----	E100	2.0	µS/cm		274	207	----	----	----
hardness (as CaCO3), dissolved	----	EC100	0.60	mg/L		132	95.1	----	----	----
pH	----	E108	0.10	pH units		7.36	6.91	----	----	----
Anions and Nutrients										
bromide	24959-67-9	E235.Br-L	0.050	mg/L		<0.050	<0.050	----	----	----
chloride	16887-00-6	E235.Cl	0.50	mg/L		<0.50	1.58	----	----	----
fluoride	16984-48-8	E235.F	0.020	mg/L		0.464	0.328	----	----	----
nitrate (as N)	14797-55-8	E235.NO3-L	0.0050	mg/L		0.0395	0.528	----	----	----
nitrite (as N)	14797-65-0	E235.NO2-L	0.0010	mg/L		<0.0010	<0.0010	----	----	----
phosphorus, total	7723-14-0	E372-U	0.0020	mg/L		<0.0020	0.0182	----	----	----
sulfate (as SO4)	14808-79-8	E235.SO4	0.30	mg/L		32.2	25.7	----	----	----
Cyanides										
cyanide, total	----	E333	0.0050	mg/L		<0.0050	<0.0050	----	----	----
cyanide, weak acid dissociable	----	E336	0.0050	mg/L		<0.0050	<0.0050	----	----	----
thiocyanate	302-04-5	E344	0.50	mg/L		<0.50	<0.50 SFT	----	----	----
Dissolved Metals										
aluminum, dissolved	7429-90-5	E421	0.0010	mg/L		<0.0010	0.0074	----	----	----
antimony, dissolved	7440-36-0	E421	0.00010	mg/L		<0.00010	0.00019	----	----	----
arsenic, dissolved	7440-38-2	E421	0.00010	mg/L		0.00320	0.0375	----	----	----
barium, dissolved	7440-39-3	E421	0.00010	mg/L		0.00201	0.00284	----	----	----
beryllium, dissolved	7440-41-7	E421	0.000020	mg/L		<0.000020	<0.000020	----	----	----
bismuth, dissolved	7440-69-9	E421	0.000050	mg/L		<0.000050	<0.000050	----	----	----
boron, dissolved	7440-42-8	E421	0.010	mg/L		<0.010	<0.010	----	----	----
cadmium, dissolved	7440-43-9	E421	0.0000050	mg/L		0.0000058	0.0000175	----	----	----
calcium, dissolved	7440-70-2	E421	0.050	mg/L		28.8	19.5	----	----	----
chromium, dissolved	7440-47-3	E421.Cr-L	0.00010	mg/L		<0.00010	<0.00010	----	----	----
cobalt, dissolved	7440-48-4	E421	0.00010	mg/L		<0.00010	<0.00010	----	----	----
copper, dissolved	7440-50-8	E421	0.00020	mg/L		<0.00020	0.00057	----	----	----
iron, dissolved	7439-89-6	E421	0.010	mg/L		0.276	0.011	----	----	----
lead, dissolved	7439-92-1	E421	0.000050	mg/L		<0.000050	<0.000050	----	----	----
lithium, dissolved	7439-93-2	E421	0.0010	mg/L		0.0751	0.0321	----	----	----

Analytical Results

Sub-Matrix: **Water**
(Matrix: **Water**)

Analyte	CAS Number	Method	LOR	Unit	Client sample ID	MW19 HLF-1b	MWAG-6	----	----	----
					Client sampling date / time	13-Jul-2020 08:45	13-Jul-2020 09:30	----	----	----
						VA20B0441-001	VA20B0441-002	--------	--------	--------
						Result	Result	----	----	----
Dissolved Metals										
magnesium, dissolved	7439-95-4	E421	0.100	mg/L		14.5	11.2	----	----	----
manganese, dissolved	7439-96-5	E421	0.00010	mg/L		0.0461	0.00048	----	----	----
mercury, dissolved	7439-97-6	E509	0.0000050	mg/L		<0.0000050	<0.0000050	----	----	----
molybdenum, dissolved	7439-98-7	E421	0.000050	mg/L		<0.000050	0.000314	----	----	----
nickel, dissolved	7440-02-0	E421	0.00050	mg/L		<0.00050	0.00088	----	----	----
phosphorus, dissolved	7723-14-0	E421	0.050	mg/L		<0.050	<0.050	----	----	----
potassium, dissolved	7440-09-7	E421	0.100	mg/L		1.92	1.38	----	----	----
selenium, dissolved	7782-49-2	E421	0.000050	mg/L		0.000958	0.00116	----	----	----
silicon, dissolved	7440-21-3	E421	0.050	mg/L		5.66	5.79	----	----	----
silver, dissolved	7440-22-4	E421	0.000010	mg/L		<0.000010	0.000010	----	----	----
sodium, dissolved	7440-23-5	E421	0.050	mg/L		2.89	2.47	----	----	----
strontium, dissolved	7440-24-6	E421	0.00020	mg/L		0.184	0.134	----	----	----
sulfur, dissolved	7704-34-9	E421	0.50	mg/L		10.8	7.96	----	----	----
thallium, dissolved	7440-28-0	E421	0.000010	mg/L		<0.000010	<0.000010	----	----	----
tin, dissolved	7440-31-5	E421	0.00010	mg/L		<0.00010	<0.00010	----	----	----
titanium, dissolved	7440-32-6	E421	0.00030	mg/L		<0.00030	0.00040	----	----	----
uranium, dissolved	7440-61-1	E421	0.000010	mg/L		0.000522	0.000106	----	----	----
vanadium, dissolved	7440-62-2	E421	0.00050	mg/L		<0.00050	<0.00050	----	----	----
zinc, dissolved	7440-66-6	E421	0.0010	mg/L		<0.0010	0.0019	----	----	----
zirconium, dissolved	7440-67-7	E421	0.00030	mg/L		<0.00030	<0.00030	----	----	----
dissolved mercury filtration location	----	EP509	-	-		Field	Field	----	----	----
dissolved metals filtration location	----	EP421	-	-		Field	Field	----	----	----

Please refer to the General Comments section for an explanation of any qualifiers detected.

APPENDIX C

External Laboratory Soil Quality Results

ALS Environmental

CERTIFICATE OF ANALYSIS

Work Order	: **WR2000502**	Page	: 1 of 2
Client	: **Victoria Gold (Yukon) Corp.**	Laboratory	: Whitehorse - Environmental
Contact	: Lindsay Rear	Account Manager	: Hilary Woods
Address	: Suite 1000 - 1050 W. Pender St Vancouver BC Canada V6E 3S7	Address	: #12 151 Industrial Road Whitehorse YT Canada Y1A 2V3
Telephone	: ----	Telephone	: +1 867 668 6689
Project	: HLF Soil	Date Samples Received	: 17-Jul-2020 11:07
PO	: 15673	Date Analysis Commenced	: 19-Jul-2020
C-O-C number	: 20200716b	Issue Date	: 21-Jul-2020 13:58
Sampler	: KT/KB		
Site	: ----		
Quote number	: Q68199		
No. of samples received	: 3		
No. of samples analysed	: 3		

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QC Interpretive report to assist with Quality Review and Sample Receipt Notification (SRN).

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is conducted in accordance with US FDA 21 CFR Part 11.

Signatories	*Position*	*Laboratory Department*
Lindsay Gung	Supervisor - Water Chemistry	Inorganics - Water Quality, Burnaby, British Columbia
Ophelia Chiu	Supervisor - Organics Instrumentation	Organics, Burnaby, British Columbia

General Comments

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Refer to the ALS Quality Control Interpretive report (QCI) for applicable references and methodology summaries. Reference methods may incorporate modifications to improve performance.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

Please refer to Quality Control Interpretive report (QCI) for information regarding Holding Time compliance.

Key : CAS Number: Chemical Abstracts Services number is a unique identifier assigned to discrete substances
LOR: Limit of Reporting (detection limit).

Unit	*Description*
%	percent
mg/kg	milligrams per kilogram

<: less than.

>: greater than.

Surrogate: An analyte that is similar in behavior to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.

Test results reported relate only to the samples as received by the laboratory.

UNLESS OTHERWISE STATED on SRN or QCI Report, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

Analytical results in reports identified as "Preliminary Report" are considered authorized for use.

Analytical Results

Sub-Matrix: **Solid**
(Matrix: **Soil/Solid**)

Analyte	*CAS Number*	*Method*	*LOR*	*Unit*	*Client sample ID*	**HLF-DG1-Soil**	**HLF-DG2-Soil**	**HLF-DG3-Soil**	**----**	**----**
					Client sampling date / time	16-Jul-2020 07:55	16-Jul-2020 08:05	16-Jul-2020 08:10	----	----
						WR2000502-001	**WR2000502-002**	**WR2000502-003**	**--------**	**--------**
						Result	Result	Result	----	----
Physical Tests										
moisture	----	E144	0.25	%		10.8	22.9	19.4	----	----
Cyanides										
cyanide, total	----	E333	0.050	mg/kg		<0.050	<0.051	0.214	----	----
cyanide, weak acid dissociable	----	E336	0.050	mg/kg		<0.050	<0.051	0.089	----	----

Please refer to the General Comments section for an explanation of any qualifiers detected.

APPENDIX D

Acute Toxicity Results

Acute Toxicity Test Results

Samples VA20B0234-001 W4, VA20B0234-002 W21, VA20B0234-003 W1, VA20B0234-004 W29 and VA20B0234-005 W22,
collected July 11, 2020

Final Report

July 21, 2020

Submitted to: **ALS Environmental**
Burnaby, BC

8664 Commerce Court, Burnaby, BC V5A 4N7

SAMPLE INFORMATION

Sample ID	Dates				Receipt temp.
	Collected	Received	Rainbow trout test initiation	*Daphnia magna* test initiation	
VA20B0234-001 W4	11-Jul-20 at 1120h	13-Jun-20 at 1457h	14-Jul-20 at 1722h	14-Jul-20 at 1305h	2.8 – 5.1°C
VA20B0234-002 W21	11-Jul-20 at 1140h	13-Jun-20 at 1457h	14-Jul-20 at 1718h	14-Jul-20 at 1305h	2.8 – 5.1°C
VA20B0234-003 W1	11-Jul-20 at 1400h	13-Jun-20 at 1457h	14-Jul-20 at 1720h	14-Jul-20 at 1305h	2.8 – 5.1°C
VA20B0234-004 W29	11-Jul-20 at 1440h	13-Jun-20 at 1457h	14-Jul-20 at 1705h	14-Jul-20 at 1305h	2.8 – 5.1°C
VA20B0234-005 W22	11-Jul-20 at 1500h	13-Jun-20 at 1457h	14-Jul-20 at 1708h	14-Jul-20 at 1305h	2.8 – 5.1°C

TESTS

- Rainbow trout 96-h single concentration screening test
- *Daphnia magna* 48-h single concentration screening test

RESULTS

Toxicity test results

Sample ID	Percent survival in 100% (v/v) sample	
	Rainbow trout	*Daphnia magna*
VA20B0234-001 W4	90	100
VA20B0234-002 W21	100	100
VA20B0234-003 W1	100	100
VA20B0234-004 W29	100	100
VA20B0234-005 W22	100	100

QA/QC

QA/QC summary	Rainbow trout	*Daphnia magna*
Reference toxicant LC50 (95% CL)	70.7 (51.9 – 96.1) µg/L Zn[1]	7.8 (5.5 – 11.0) g/L NaCl[2]
Reference toxicant historical mean (2 SD range)	88.2 (35.4 – 219.9) µg/L Zn	6.3 (4.8 – 8.2) g/L NaCl
Reference toxicant CV	48%	13%
Organism health history	Acceptable	Acceptable
Protocol deviations	None	None
Water quality range deviations	None	None
Control performance	Acceptable	Acceptable
Test performance	Valid	Valid

[1] Test date: July 14, 2020; [2] Test Date: July 8, 2020, LC = Lethal Concentration, CL = Confidence Limits, SD = Standard Deviation, CV = Coefficient of Variation

Report By:
Yvonne Lam, B.Sc.
Laboratory Biologist

Reviewed By:
Edmund Canaria, R.P. Bio.
Senior Analyst

This report has been prepared by Nautilus Environmental Company Inc. based on data and/or samples provided by our client and the results of this study are for their sole benefit. Any reliance on the data by a third party is at the sole and exclusive risk of that party. The results presented here relate only to the samples tested.

APPENDIX A – Summary of test conditions

Table 1. Summary of test conditions: 96-h rainbow trout (*Oncorhynchus mykiss*) single concentration test.

Test species	*Oncorhynchus mykiss*
Organism source	Hatchery
Organism age	Juvenile
Test type	Static
Test duration	96 hours
Test vessel	20-L glass aquarium
Test volume	10 to 20 L (depending on size of fish)
Test solution depth	≥15 cm
Test concentrations	100% (undiluted) sample, plus laboratory control
Test replicates	1 per treatment
Number of organisms	10 per replicate
Control/dilution water	Dechlorinated Metro Vancouver municipal tapwater
Test solution renewal	None
Test temperature	15 ± 1°C
Feeding	None
Light intensity	100 to 500 lux
Photoperiod	16 hours light / 8 hours dark
Aeration	6.5 ± 1 mL/min/L
Test measurements	Temperature, dissolved oxygen and pH measured daily; salinity measured in the undiluted sample at test initiation; conductivity measured at test initiation and termination; survival checked daily
Test protocol	Environment Canada (2000), EPS 1/RM/13, with 2007 & 2016 amendments
Test endpoints	Survival
Test acceptability criterion for controls	Survival ≥90%
Reference toxicant	Zinc (added as $ZnSO_4$)

Table 2. Summary of test conditions: 48-h *Daphnia magna* single concentration test.

Test species	*Daphnia magna*
Organism source	In-house culture
Organism age	<24-hour old neonates
Test type	Static
Test duration	48 hours
Test vessel	250-mL glass beaker
Test volume	200 mL
Test solution depth	6 cm
Test concentrations	100% (undiluted) sample, plus laboratory control
Test replicates	3 per treatment
Number of organisms	10 per replicate
Control/dilution water	Moderately-hard reconstituted water + 2.5 µg/L Se
Test solution renewal	None
Test temperature	20 ± 2°C
Feeding	None
Light intensity	400 to 800 lux
Photoperiod	16 hours light / 8 hours dark
Aeration	None
Test measurements	Temperature, dissolved oxygen and pH measured daily; salinity, hardness and alkalinity measured in the undiluted sample at test initiation; conductivity measured at test initiation and termination; survival checked daily
Test protocol	Environment Canada (2000), EPS 1/RM/14, with 2016 amendments
Test endpoint	Survival
Test acceptability criterion for controls	Survival ≥90%
Reference toxicant	Sodium chloride (NaCl)

APPENDIX B – Toxicity test data

Rainbow Trout Summary Sheet

Client: ALS Environmental

Start Date/Time: 14Jul20 @ 1722h

Work Order No.: 201300

Test Species: *Oncorhynchus mykiss*

Test Validity Criteria:
≥ 90% control survival
WQ Ranges:
T (°C) = 15 ± 1; DO (mg/L) = 7.0 to 10.3; pH = 5.5 to 8.5

Sample Information:

Sample ID: VA20B0234-001 W4
Sample Date: 11Jul20
Date Received: 13Jul20
Sample Volume: 2x 10L
Other: —

Dilution Water:

Type: Dechlorinated Municipal Tap Water
Hardness (mg/L $CaCO_3$): 13
Alkalinity (mg/L $CaCO_3$): 16

Test Organism Information:

Batch No.: 062220a
Source: Lyndon Fish Hatcheries
No. Fish/Volume (L): 10/12L
Loading Density (g/L): 0.24
Mean Length ± SD (mm): 31 ± 3 Range: 26 - 35
Mean Weight ± SD (g): 0.29 ± 0.07 Range: 0.15 - 0.41

Zinc Reference Toxicant Results:

Reference Toxicant ID: RTZnL063
Stock Solution ID: 20Zn02
Date Initiated: 14Jul20
96-h LC50 (95% CL): 70.7 (51.9 - 96.1) µg/L Zn

Reference Toxicant Mean and Historical Range: 88.2 (35.4 - 219.9) µg/L Zn
Reference Toxicant CV (%): 48%

Test Results: 90% survival at 96h in the 100% (v/v) undiluted sample.

Reviewed by: [signature]

Date reviewed: July 21, 2020

96-Hour Rainbow Trout Toxicity Test Data Sheet

Client/Project#: ALS Environmental
Sample I.D. VA20B0234-001 W4
W.O. # 201300
RBT Batch #: 062220a
Date Collected/Time: July 11/20 @ 11:20h
Date Setup/Time: July 14/20 @ 17:22h
CER #: 8
Sample Setup By: [signature]

Thermometer: cer8
D.O. meter/probe: 2 / D2
Cond./Salinity meter/probe: 2 / CP2
pH meter/probe: 2 / P2

Number Fish/Volume: 10/12L
7-d % Mortality: 1.7
Total Pre-aeration Time (mins): 105
Aeration rate adjusted to 6.5 ± 1 mL/min/L? (Y/N): Y

Undiluted Sample WQ			
Parameters	Initial WQ	Adjustment	30 min WQ
Temp °C	15.5		16.0
D.O. (mg/L)	10.6		10.2
pH	7.3		7.3
Cond. (µS/cm)	179		178
Salinity (ppt)	0.1		0.1

Concentration	# Survivors							Temperature (°C)					Dissolved Oxygen (mg/L)					pH					Conductivity (µS/cm)	
(% v/v)	1	2	4	24	48	72	96	0	24	48	72	96	0	24	48	72	96	0	24	48	72	96	0	96
Ctrl				10	10	10	10	15.0	16.0	16.0	15.0	15.0	9.9	9.6	8.9	9.3	9.5	7.1	7.1	7.4	7.2	7.1	32	38
100				10	10	10	9	16.0	16.0	16.0	15.0	15.0	9.9	9.7	9.1	9.4	9.5	7.3	8.0	7.3	7.3	7.3	176	188
Initials				[initials]	[initials]	[initials]	[initials]	[initials]	[initials]	[initials]	[initials]	[initials]	[initials]	[initials]	[initials]	[initials]	[initials]	[initials]	[initials]	[initials]	[initials]	[initials]	[initials]	[initials]

Sample Description/Comments: turbid, light brown sample, fine particulates, no odor

Fish Description at 96 h Remaining fish appears Normal Number of Stressed Fish at 96 h 0

Other Observations:

Reviewed by: [signature] Date Reviewed: July 21, 2020

Rainbow Trout Summary Sheet

Client: ALS Environmental

Start Date/Time: 14Jul20 @ 1718h

Work Order No.: 201300

Test Species: *Oncorhynchus mykiss*

Test Validity Criteria:
≥ 90% control survival
WQ Ranges:
T (°C) = 15 ± 1; DO (mg/L) = 7.0 to 10.3; pH = 5.5 to 8.5

Sample Information:

Sample ID: VA20B0234-002 W21
Sample Date: 11Jul20
Date Received: 13Jul20
Sample Volume: 2x 10L
Other: —

Dilution Water:

Type: Dechlorinated Municipal Tap Water
Hardness (mg/L $CaCO_3$): 13
Alkalinity (mg/L $CaCO_3$): 16

Test Organism Information:

Batch No.: 062220a
Source: Lyndon Fish Hatcheries
No. Fish/Volume (L): 10/12L
Loading Density (g/L): 0.22
Mean Length ± SD (mm): 32 ± 2 Range: 28 - 36
Mean Weight ± SD (g): 0.29 ± 0.08 Range: 0.19 - 0.42

Zinc Reference Toxicant Results:

Reference Toxicant ID: RT2nL063
Stock Solution ID: 20Zn02
Date Initiated: 14Jul20
96-h LC50 (95% CL): 70.7 (51.9 - 96.1) µg/L Zn

Reference Toxicant Mean and Historical Range: 88.2 (35.4 - 219.9) µg/L Zn
Reference Toxicant CV (%): 48%

Test Results: 100% survival at 96h in the 100% (v/v) undiluted sample.

Reviewed by: [signature]

Date reviewed: July 21, 2020

96-Hour Rainbow Trout Toxicity Test Data Sheet

Client/Project#: ALS Environmental
Sample I.D. VA20B0234-002 W21
W.O. # 201300
RBT Batch #: 062220a
Date Collected/Time: July 11/20 @ 11:40h
Date Setup/Time: July 14/20 @ 17:18h
CER #: 8
Sample Setup By: [signature]

Thermometer: cer8
D.O. meter/probe: 2 / D2
Cond./Salinity meter/probe: 2 / P2
pH meter/probe: 2 / P2

Number Fish/Volume: 10/12L
7-d % Mortality: 1.7
Total Pre-aeration Time (mins): 100
Aeration rate adjusted to 6.5 ± 1 mL/min/L? (Y/N): Y

Undiluted Sample WQ			
Parameters	Initial WQ	Adjustment	30 min WQ
Temp °C	16.0		16.0
D.O. (mg/L)	10.1		10.0
pH	7.5		7.4
Cond. (µS/cm)	137		137
Salinity (ppt)	0.1		0.1

Concentration	# Survivors							Temperature (°C)					Dissolved Oxygen (mg/L)					pH					Conductivity (µS/cm)	
(% v/v)	1	2	4	24	48	72	96	0	24	48	72	96	0	24	48	72	96	0	24	48	72	96	0	96
Ctrl				10	9	9	9	15.0	16.0	16.0	15.0	15.0	9.9	9.6	8.9	9.4	9.5	7.1	7.1	7.5	7.2	7.1	32	41
100				10	10	10	10	16.0	16.0	16.0	15.0	15.0	9.9	9.6	9.1	9.5	9.5	7.4	8.1	7.4	7.3	7.3	137	145
Initials				[signature]	[signature]	[signature]	[signature]	[signature]	[signature]	[signature]	[signature]	[signature]	[signature]	[signature]	[signature]	[signature]	[signature]	[signature]	[signature]	[signature]	[signature]	[signature]	[signature]	[signature]

Sample Description/Comments: turbid, yellow-brown colored sample, no particulates, no odor

Fish Description at 96 h Remaining fish appear Normal Number of Stressed Fish at 96 h 0

Other Observations:

Reviewed by: [signature] Date Reviewed: July 21, 2020

Version 2.5; Issued July 19, 2017

Nautilus Environmental Company Inc.

Rainbow Trout Summary Sheet

Client: ALS Environmental

Start Date/Time: 14 Jul 20 @ 1720h

Work Order No.: 201300

Test Species: *Oncorhynchus mykiss*

Test Validity Criteria:
≥ 90% control survival
WQ Ranges:
T (°C) = 15 ± 1; DO (mg/L) = 7.0 to 10.3; pH = 5.5 to 8.5

Sample Information:

Sample ID: VA20B0234-003 W1
Sample Date: 11 Jul 20
Date Received: 13 Jul 20
Sample Volume: 2 x 10L
Other: —

Dilution Water:

Type: Dechlorinated Municipal Tap Water
Hardness (mg/L $CaCO_3$): 13
Alkalinity (mg/L $CaCO_3$): 16

Test Organism Information:

Batch No.: 062220a
Source: Lyndon Fish Hatcheries
No. Fish/Volume (L): 10/12L
Loading Density (g/L): 0.26
Mean Length ± SD (mm): ~~0.2~~ 32 ± 3 Range: 28 - 36
Mean Weight ± SD (g): 0.31 ± 0.11 Range: 0.20 - 0.50

Zinc Reference Toxicant Results:

Reference Toxicant ID: RTZnL063
Stock Solution ID: 20Zn02
Date Initiated: 14 Jul 20
96-h LC50 (95% CL): 70.7 (51.9 - 96.1) µg/L Zn

Reference Toxicant Mean and Historical Range: 88.2 (35.4 - 219.9) µg/L Zn
Reference Toxicant CV (%): 48%

Test Results: 100% survival at 96h in the 100% (v/v) undiluted sample.

Reviewed by: [signature]

Date reviewed: July 21, 2020

96-Hour Rainbow Trout Toxicity Test Data Sheet

Client/Project#: ALS Environmental
Sample I.D. VA20B0234-003 W1
W.O. # 201300
RBT Batch #: 062220a
Date Collected/Time: July 11/20 @ 14:00h
Date Setup/Time: July 14/20 @ 17:20h
CER #: 8
Sample Setup By:

Thermometer: CER8
D.O. meter/probe: 2/D2
Cond./Salinity meter/probe: 2/CP2
pH meter/probe: 2/P2

Number Fish/Volume: 10/12L
7-d % Mortality: 1.7
Total Pre-aeration Time (mins): 105
Aeration rate adjusted to 6.5 ± 1 mL/min/L? (Y/N): Y

Undiluted Sample WQ			
Parameters	Initial WQ	Adjustment	30 min WQ
Temp °C	16.0		~~15.9~~ 16.0
D.O. (mg/L)	10.2		10.0
pH	7.1		7.4
Cond. (µS/cm)	79		79
Salinity (ppt)	0		0

Concentration	# Survivors							Temperature (°C)					Dissolved Oxygen (mg/L)					pH					Conductivity (µS/cm)	
(% v/v)	1	2	4	24	48	72	96	0	24	48	72	96	0	24	48	72	96	0	24	48	72	96	0	96
Ctrl				10	10	10	10	15.0	16.0	16.0	15.0	15.0	10.0	9.6	9.2	9.5	9.6	7.1	7.1	7.3	7.2	7.1	32	38
100				10	10	10	10	16.0	16.0	16.0	15.0	15.0	9.9	9.5	9.3	9.5	9.6	7.4	7.9	7.2	7.0	7.1	79	86
Initials				SM	SM	SM	SM		SM	SM	SM	SM		SM	SM	SM	SM		SM	SM	SM	SM		

Sample Description/Comments: clear, slightly yellow sample, no particulates, no odor

Fish Description at 96 h: All fish appear Normal — Number of Stressed Fish at 96 h: 0

Other Observations:

Reviewed by: — Date Reviewed: July 21, 2020

Rainbow Trout Summary Sheet

Client: ALS Environmental

Start Date/Time: 14 Jul 20 @ 1705h

Work Order No.: 201300

Test Species: *Oncorhynchus mykiss*

Test Validity Criteria:
≥ 90% control survival
WQ Ranges:
T (°C) = 15 ± 1; DO (mg/L) = 7.0 to 10.3; pH = 5.5 to 8.5

Sample Information:

Sample ID: VA20B0234-004 W29
Sample Date: 11 Jul 20
Date Received: 13 Jul 20
Sample Volume: 2 × 10L
Other: —

Dilution Water:

Type: Dechlorinated Municipal Tap Water
Hardness (mg/L $CaCO_3$): 13
Alkalinity (mg/L $CaCO_3$): 16

Test Organism Information:

Batch No.: 062220a
Source: Lyndon Fish Hatcheries
No. Fish/Volume (L): 10/12L
Loading Density (g/L): 0.25
Mean Length ± SD (mm): 32 ± 2 Range: 27 - 34
Mean Weight ± SD (g): 0.30 ± 0.06 Range: 0.21 - 0.39

Zinc Reference Toxicant Results:

Reference Toxicant ID: RTZnL063
Stock Solution ID: 20Zn02
Date Initiated: 14 Jul 20
96-h LC50 (95% CL): 70.7 (51.9 - 96.1) µg/L Zn

Reference Toxicant Mean and Historical Range: 88.2 (35.4 - 219.9) µg/L Zn
Reference Toxicant CV (%): 48%

Test Results: 100% survival at 96h in the 100% (v/v) undiluted sample.

Reviewed by: [signature]

Date reviewed: July 21, 2020

96-Hour Rainbow Trout Toxicity Test Data Sheet

Client/Project#: ALS Environmental
Sample I.D. VA20B0234-004 W29
W.O. # 201300
RBT Batch #: 062220a
Date Collected/Time: July 11/20 @ 14:40h
Date Setup/Time: July 14/20 @ 17:05h
CER #: 8
Sample Setup By:

Thermometer: ER8
D.O. meter/probe: 2 / D2
Cond./Salinity meter/probe: 2 / CP2
pH meter/probe: 2 / P2

Number Fish/Volume: 10/12L
7-d % Mortality: 1.7
Total Pre-aeration Time (mins): 30
Aeration rate adjusted to 6.5 ± 1 mL/min/L? (Y/N): Y

Undiluted Sample WQ			
Parameters	Initial WQ	Adjustment	30 min WQ
Temp °C	16.0		16.0
D.O. (mg/L)	10.0		9.8
pH	7.4		7.3
Cond. (µS/cm)	198		198
Salinity (ppt)	0.1		0.1

Concentration	# Survivors							Temperature (°C)					Dissolved Oxygen (mg/L)					pH @ 7.1					Conductivity (µS/cm)	
(% v/v)	1	2	4	24	48	72	96	0	24	48	72	96	0	24	48	72	96	0	24	48	72	96	0	96
Ctrl				10	10	10	10	16.0	16.0	16.0	15.0	15.0	9.6	9.6	9.1	9.4	9.6	7.1	7.1	7.1	7.1	7.1	32	38
100				10	10	10	10	16.0	16.0	16.0	15.0	15.0	9.8	9.7	9.2	9.5	9.6	7.3	8.0	7.4	7.3	7.4	198	808
Initials				SM	JW	CM	SR	CM	CM	JW	SM	SR	SM	SM	JW	SM	SR	MS	CM	JW	SM	SR	SM	SR

Sample Description/Comments: Semi-turbid yellow odourless liquid with no particulates

Fish Description at 96 h: All fish appear Normal Number of Stressed Fish at 96 h: 0

Other Observations:

Reviewed by: Date Reviewed: July 21, 2020

Rainbow Trout Summary Sheet

Client: ALS Environmental

Start Date/Time: 14 Jul 20 @ 1708h

Work Order No.: 201300

Test Species: *Oncorhynchus mykiss*

Test Validity Criteria:
≥ 90% control survival
WQ Ranges:
T (°C) = 15 ± 1; DO (mg/L) = 7.0 to 10.3; pH = 5.5 to 8.5

Sample Information:

Sample ID: VA20B0234-005 W22
Sample Date: 11 Jul 20
Date Received: 14 Jul 20
Sample Volume: 2 x 10L
Other: —

Dilution Water:

Type: Dechlorinated Municipal Tap Water
Hardness (mg/L $CaCO_3$): 13
Alkalinity (mg/L $CaCO_3$): 16

Test Organism Information:

Batch No.: 062220a
Source: Lyndon Fish Hatcheries
No. Fish/Volume (L): 10/12L
Loading Density (g/L): 0.28
Mean Length ± SD (mm): 33 ± 3 Range: 28 - 36
Mean Weight ± SD (g): 0.34 ± 0.08 Range: 0.21 - 0.48

Zinc Reference Toxicant Results:

Reference Toxicant ID: RTZnL063
Stock Solution ID: 20Zn02
Date Initiated: 14 Jul 20
96-h LC50 (95% CL): 70.7 (51.9 - 96.1) µg/L Zn

Reference Toxicant Mean and Historical Range: 88.2 (35.4 - 219.9) µg/L Zn
Reference Toxicant CV (%): 48%

Test Results: 100% survival at 96h in the 100% (v/v) undiluted sample.

Reviewed by: [signature] Date reviewed: July 21, 2020

96-Hour Rainbow Trout Toxicity Test Data Sheet

Client/Project#: ALS Environmental
Sample I.D. VA20B0234-005 W22
W.O. # 201300
RBT Batch #: 062220a
Date Collected/Time: July 11/20 @ 15:00h
Date Setup/Time: July 14/20 @ 17:00h
CER #: 8
Sample Setup By:

Thermometer: CER8
D.O. meter/probe: 2/D2
Cond./Salinity meter/probe: 2/C2
pH meter/probe: 2/P2

Number Fish/Volume: 10/12L
7-d % Mortality: 1.7
Total Pre-aeration Time (mins): 30
Aeration rate adjusted to 6.5 ± 1 mL/min/L? (Y/N): Y

Undiluted Sample WQ			
Parameters	Initial WQ	Adjustment	30 min WQ
Temp °C	16.0		16.0
D.O. (mg/L)	10.2		9.8
pH	7.3		7.5
Cond. (µS/cm)	190		190
Salinity (ppt)	0.1		0.1

Concentration	# Survivors							Temperature (°C)					Dissolved Oxygen (mg/L)					pH (①7.1)					Conductivity (µS/cm)	
(% v/v)	1	2	4	24	48	72	96	0	24	48	72	96	0	24	48	72	96	0	24	48	72	96	0	96
Ctrl				10	10	10	10	16.0	16.0	16.0	15.0	15.0	9.5	9.7	9.2	9.5	9.6	7.1	7.1	7.6	7.1	7.1	31	39
100				10	10	10	10	16.0	16.0	16.0	15.0	15.0	9.8	9.6	9.5	9.6	9.6	7.5	8.1	7.4	7.4	7.5	190	199
Initials				GM	JSW	M	DR	GM	GM	JSW	M	DR	GM	GM	JSW	GM	DR	GM	GM	JSW	GM	DR	GM	DR

Sample Description/Comments: Slightly turbid, brown colored sample, no particulates, no odor

Fish Description at 96 h: All fish appear Normal Number of Stressed Fish at 96 h: 0

Other Observations:

Reviewed by: Date Reviewed: July 21, 2020

Daphnia magna Summary Sheet

Client: ALS Environmental
Work Order No.: 201299

Start Date/Time: July 14/2020 @ 1305 h
Test Species: *Daphnia magna*
Set up by: MMC

Sample Information:

Sample ID: VA20B0234-001 W4
Sample Date: July 11/2020
Date Received: July 13/2020
Sample Volume: 2 x 20 L
10 mL

Test Validity Criteria:

≥ 90% mean control survival and/or mobility and ≤2 daphnids exibit immobility and/or mortality in any single control replicate.

WQ Ranges:

T (°C) = 20 ± 2; DO (mg/L) = 3.6 to 9.4; pH = 6 to 8.5

Test Organism Information:

Broodstock No.: 062420A
Age of young (Day 0): <24 h
Avg No. young per brood in previous 7 d: 16
Mortality (%) in previous 7 d: 0
Days to first brood: 7

NaCl Reference Toxicant Results:

Reference Toxicant ID: DmDC53
Stock Solution ID: 20NaO3
Date Initiated: July 08/2020
48-h LC50 (95% CL): 7.8 (5.5 - 11.0) g/LNaCL

Reference Toxicant Mean and Historical Range: 6.3 (4.8 - 8.2) g/L NaCL
Reference Toxicant CV (%): 13

Test Results: 100% survival at 48h in the undiluted 100% (v/v) sample.

Reviewed by: [signature]

Date reviewed: July 21, 2020

Freshwater Acute
48 Hour Toxicity Test Data Sheet

Client: ALS Environmental
Sample ID: VA20B0234-001 W4
Work Order No.: 201299

Start Date/Time: July 14/2020 @ 1305 h
CER #: 5
No. Organisms/volume: 10/200mL
Test Organism: D.magna
Set up by: MF

Thermometer: CER#5 pH meter/probe: 6 / 6 DO meter/probe: 6 / 6 Cond./Salinity meter/probe: 6 / 6

Concentration % (v/v)	Rep	Number of Live Organisms 24	48	No. Immobilized 48	Temperature (°C) 0	24	48	Dissolved oxygen (mg/L) 0	24	48	pH 0	24	48	Conductivity (µS/cm) 0	48
Control	A	10	10	0	19.0	19.0	19.0	8.6	8.4	8.6	8.0	8.1	8.1	346	352
	B	10	10	0											
	C	10	10	0											
	D														
100	A	10	10	0	19.0	19.0	19.0	9.3	8.5	8.6	7.6	7.6	7.8	182	185
	B	10	10	0											
	C	10	10	0											
	D														
	A														
	B														
	C														
	D														
	A														
	B														
	C														
	D														
	A														
	B														
	C														
	D														
	A														
	B														
	C														
	D														
Technician Initials		MF	MF	MF	MF	MF	MF	MF	MF	MF	MF	MF	MF	MF	MF

	Hardness*	Alkalinity*
Concentration	*(mg/L as CaCo3)	
Control (MHW)	96	80
Highest conc.	88	54
Hardness adjusted		

	Initial WQ	Adjustment	Adjusted WQ
Temp (°C)	19.0		
DO (mg/L)	9.3		
pH	7.6		
Cond (µS/cm)	182		
Salinity (ppt)	0.1		

Comments: _____ Mortality: Heartbeat checked under microscope not reqd

Sample Description: Turbid, light brown, no odour, some particulates

Batch#: 062420A 7-d previous # young/brood: 16 Previous 7-d Mortality (%): 0 Day of 1st Brood: 7

Reviewed by: _____ Date reviewed: July 21, 2020

Daphnia magna Summary Sheet

Client: ALS Environmental
Work Order No.: 201289

Start Date/Time: July 14/2020 @ 1305 h
Test Species: *Daphnia magna*
Set up by: MMC

Sample Information:

Sample ID: VA20B0234-002 W21
Sample Date: July 11/2020
Date Received: July 13/2020
Sample Volume: 2 x 20 L
10 mL

Test Validity Criteria:

≥ 90% mean control survival and/or mobility and ≤2 daphnids exibit immobility and/or mortality in any single control replicate.

WQ Ranges:

T (°C) = 20 ± 2; DO (mg/L) = 3.6 to 9.4; pH = 6 to 8.5

Test Organism Information:

Broodstock No.: 062420A
Age of young (Day 0): <24 h
Avg No. young per brood in previous 7 d: 16
Mortality (%) in previous 7 d: 0
Days to first brood: 7

NaCl Reference Toxicant Results:

Reference Toxicant ID: DmDC53
Stock Solution ID: 20NaC03
Date Initiated: July 08/2020
48-h LC50 (95% CL): 7.8 (5.5 - 11.0) g/LNaCL

Reference Toxicant Mean and Historical Range: 6.3 (4.8 - 8.2) g/L NaCL
Reference Toxicant CV (%): 13

Test Results: 100% survival at 48h in the undiluted 100% (v/v) sample.

Reviewed by: [signature]
Date reviewed: July 21, 2020

Freshwater Acute
48 Hour Toxicity Test Data Sheet

Client: ALS Environmental
Sample ID: VA20B0234-002 W21
Work Order No.: 201299

Start Date/Time: July 14/2020 @ 1305 h
CER #: 5
No. Organisms/volume: 10/200mL
Test Organism: *D.magna*
Set up by: MK

Thermometer: CER#5 pH meter/probe: 6 / 6 DO meter/probe: 6 / 6 Cond./Salinity meter/probe: 6 / 6

Concentration % (v/v)	Rep	Number of Live Organisms 24	Number of Live Organisms 48	No. Immobilized 48	Temperature (°C) 0	Temperature (°C) 24	Temperature (°C) 48	Dissolved oxygen (mg/L) 0	Dissolved oxygen (mg/L) 24	Dissolved oxygen (mg/L) 48	pH 0	pH 24	pH 48	Conductivity (µS/cm) 0	Conductivity (µS/cm) 48
Control	A	10	10	0	19.0	19.0	19.0	8.6	8.4	8.6	8.0	8.1	8.1	346	352
	B	10	10	0											
	C	10	10	0											
	D														
100	A	10	10	0	19.0	19.0	19.0	9.1	8.5	8.5	7.8	7.8	7.9	141	143
	B	10	10	0											
	C	10	10	0											
	D														
	A														
	B														
	C														
	D														
	A														
	B														
	C														
	D														
	A														
	B														
	C														
	D														
	A														
	B														
	C														
	D														
Technician Initials		MK	MK	MK	MK	MK	MK	MK	MK	MK	MK	MK	MK	MK	MK

Concentration	Hardness*	Alkalinity*
	*(mg/L as CaCo3)	
Control (MHW)	96	80
Highest conc.	66	58
Hardness adjusted	—	—

	Initial WQ	Adjustment	Adjusted WQ
Temp (°C)	MK ~~14~~ 19.0		
DO (mg/L)	9.1		
pH	7.8		
Cond (µS/cm)	141		
Salinity (ppt)	0.1		

Comments: _____ Mortality: Heartbeat checked under microscope not req'd

Sample Description: turbid, yellow brown, no odour, no particulates

Batch#: 062420A 7-d previous # young/brood: 16 Previous 7-d Mortality (%): 0 Day of 1st Brood: 7.

Reviewed by: _____ Date reviewed: July 21, 2020

Daphnia magna Summary Sheet

Client: ALS Environmental
Work Order No.: 201299

Start Date/Time: July 14/2020 @ 1305
Test Species: *Daphnia magna*
Set up by: MC

Sample Information:

Sample ID: VA20B0234-003 W1
Sample Date: July 11/2020
Date Received: July 13/2020
Sample Volume: 2 x 20L
10 mL

Test Validity Criteria:

≥ 90% mean control survival and/or mobility and ≤2 daphnids exibit immobility and/or mortality in any single control replicate.

WQ Ranges:

T (°C) = 20 ± 2; DO (mg/L) = 3.6 to 9.4; pH = 6 to 8.5

Test Organism Information:

Broodstock No.: 062420A
Age of young (Day 0): <24 h
Avg No. young per brood in previous 7 d: 16
Mortality (%) in previous 7 d: 0
Days to first brood: 7

NaCl Reference Toxicant Results:

Reference Toxicant ID: Dm DC53
Stock Solution ID: 20NaO3
Date Initiated: July 08/2020
48-h LC50 (95% CL): 7.8 (5.5 - 11.0) g/L NaCL

Reference Toxicant Mean and Historical Range: 6.3 (4.8-8.2) g/L NaCL
Reference Toxicant CV (%): 13

Test Results: 100% survival at 48h in the undiluted 100% (v/v) sample.

Reviewed by: [signature]

Date reviewed: July 21, 2020

Freshwater Acute
48 Hour Toxicity Test Data Sheet

Client: ALS Environmental
Sample ID: VA20B0234-003 W1
Work Order No.: 201299

Start Date/Time: July 14/2020 @1305h
CER #: 5
No. Organisms/volume: 10/200mL
Test Organism: D.magna
Set up by: MK

Thermometer: CER#5 pH meter/probe: 6/6 DO meter/probe: 6/6 Cond./Salinity meter/probe: 6/6

Concentration 2(v/v)	Rep	Number of Live Organisms 24	Number of Live Organisms 48	No. Immobilized 48	Temperature (°C) 0	Temperature (°C) 24	Temperature (°C) 48	Dissolved oxygen (mg/L) 0	Dissolved oxygen (mg/L) 24	Dissolved oxygen (mg/L) 48	pH 0	pH 24	pH 48	Conductivity (µS/cm) 0	Conductivity (µS/cm) 48
Control	A	10	10	0	19.0	19.0	19.0	8.6	8.4	8.6	8.0	8.1	8.1	346	352
	B	10	10	0							8.0				
	C	10	10	0							MK				
	D														
100	A	10	10	0	19.0	19.0	19.0	8.9	8.5	8.7	7.7	7.7	7.7	82	85
	B	10	10	0											
	C	10	10	0											
	D														
	A														
	B														
	C														
	D														
	A														
	B														
	C														
	D														
	A														
	B														
	C														
	D														
	A														
	B														
	C														
	D														
Technician Initials		MK	MK	MK	MK	MK	MK	MK	MK	MK	MK	MK	MK	MK	MK

	Hardness*	Alkalinity*
Concentration	*(mg/L as CaCo3)	
Control (MHW)	96	80
Highest conc.	38	36
Hardness adjusted		

	Initial WQ	Adjustment	Adjusted WQ
Temp (°C)	19.0		
DO (mg/L)	8.9		
pH	7.7		
Cond (µS/cm)	82		
Salinity (ppt)	0.0		

Comments: _____ Mortality: Heartbeat checked under microscope not req'd

Sample Description: clear, slightly yellow, no odour, no particulates

Batch#: 062420A 7-d previous # young/brood: 16 Previous 7-d Mortality (%): 0 Day of 1st Brood: 7.

Reviewed by: _____ Date reviewed: July 21, 2020

Daphnia magna Summary Sheet

Client: ALS Environmental
Work Order No.: 201299

Start Date/Time: July 14/2020 @ 1305
Test Species: *Daphnia magna*
Set up by: MC

Sample Information:

Sample ID: VA20B0234-004 W29
Sample Date: July 11/2020
Date Received: July 13/2020
Sample Volume: 2 x 4 L
10 mf

Test Validity Criteria:

≥ 90% mean control survival and/or mobility and ≤2 daphnids exibit immobility and/or mortality in any single control replicate.

WQ Ranges:

T (°C) = 20 ± 2; DO (mg/L) = 3.6 to 9.4; pH = 6 to 8.5

Test Organism Information:

Broodstock No.: 062420A
Age of young (Day 0): <24 h
Avg No. young per brood in previous 7 d: 16
Mortality (%) in previous 7 d: 0
Days to first brood: 7

NaCl Reference Toxicant Results:

Reference Toxicant ID: Dm DC53
Stock Solution ID: 20NaO3
Date Initiated: July 08/2020
48-h LC50 (95% CL): 7.8 (5.5 - 11.0) g/LNaCL

Reference Toxicant Mean and Historical Range: 6.3 (4.8-8.2) g/L NaCL
Reference Toxicant CV (%): 13

Test Results: 100% survival at 48h in the undiluted 100% (v/v) sample.

Reviewed by: [signature]

Date reviewed: July 21, 2020

Freshwater Acute
48 Hour Toxicity Test Data Sheet

Client: ALS Environmental
Sample ID: VA20B0234-004 W29
Work Order No.: 201299

Start Date/Time: July 14/2020 @1305 h
CER #: 5
No. Organisms/volume: 10/200mL
Test Organism: *D.magna*
Set up by: MF

Thermometer: CER#5 pH meter/probe: 6/6 DO meter/probe: 6/6 Cond./Salinity meter/probe: 6/6

Concentration % (v/v)	Rep	Number of Live Organisms 24	Number of Live Organisms 48	No. Immobilized 48	Temperature (°C) 0	Temperature (°C) 24	Temperature (°C) 48	Dissolved oxygen (mg/L) 0	Dissolved oxygen (mg/L) 24	Dissolved oxygen (mg/L) 48	pH 0	pH 24	pH 48	Conductivity (µS/cm) 0	Conductivity (µS/cm) 48
control	A	10	10	0	19.0	19.0	19.0	8.6	8.4	8.6	8.0	8.1	8.1	346	352
	B	10	10	0											
	C	10	10	0											
	D														
100	A	10	10	0	19.0	19.0	19.0	9.2	8.4	8.7	7.7	7.8	7.9	203	203
	B	10	10	0											
	C	10	10	0											
	D														
	A														
	B														
	C														
	D														
	A														
	B														
	C														
	D														
	A														
	B														
	C														
	D														
	A														
	B														
	C														
	D														
Technician Initials		MF	MF	MF	MF	MF	MF	MF	MF	MF	MF	MF	MF	MF	MF

Concentration	Hardness*	Alkalinity*
	*(mg/L as CaCo3)	
Control (MHW)	96	80
Highest conc.	94	62
Hardness adjusted		

	Initial WQ	Adjustment	Adjusted WQ
Temp (°C)	19.0		
DO (mg/L)	9.2		
pH	7.7		
Cond (µS/cm)	203		
Salinity (ppt)	0.1		

Comments: _____ Mortality: Heartbeat checked under microscope not required

Sample Description: slightly turbid, yellow, no odour, no particulates

Batch#: 062420A 7-d previous # young/brood: 16 Previous 7-d Mortality (%): 0 Day of 1st Brood: 7.

Reviewed by: _____ Date reviewed: July 21, 2020

Daphnia magna Summary Sheet

Client: ALS Environmental
Work Order No.: 201299

Start Date/Time: July 14/2020 @ 1305 h
Test Species: *Daphnia magna*
Set up by: MMC

Sample Information:

Sample ID: VA20B0234-005 W22
Sample Date: July 11/2020
Date Received: July 13/2020
Sample Volume: 2 x 8 L
10 mL

Test Validity Criteria:

≥ 90% mean control survival and/or mobility and ≤2 daphnids exibit immobility and/or mortality in any single control replicate.

WQ Ranges:

T (°C) = 20 ± 2; DO (mg/L) = 3.6 to 9.4; pH = 6 to 8.5

Test Organism Information:

Broodstock No.: 062420A
Age of young (Day 0): <24 h
Avg No. young per brood in previous 7 d: 16
Mortality (%) in previous 7 d: 0
Days to first brood: 7

NaCl Reference Toxicant Results:

Reference Toxicant ID: DmDC53
Stock Solution ID: 20NaD3
Date Initiated: July 08/2020
48-h LC50 (95% CL): 7.8 (5.5 - 11.0) g/L NaCL

Reference Toxicant Mean and Historical Range: 6.3 (4.8-8.2) g/L NaCL
Reference Toxicant CV (%): 13

Test Results: 100% survival at 48h in the undiluted 100% (v/v) sample.

Reviewed by: [signature]

Date reviewed: July 21, 2020

Freshwater Acute
48 Hour Toxicity Test Data Sheet

Client: ALS Environmental
Sample ID: VA20B0234-005 WZZ.
Work Order No.: 201299

Start Date/Time: July 14/2020 @ 1305 h
CER #: 5
No. Organisms/volume: 10/200mL
Test Organism: D.magna
Set up by: MK

Thermometer: CER#5 pH meter/probe: 6/6 DO meter/probe: 6/6 Cond./Salinity meter/probe: 6/6

Concentration % (v/v)	Rep	Number of Live Organisms 24	Number of Live Organisms 48	No. Immobilized 48	Temperature (°C) 0	Temperature (°C) 24	Temperature (°C) 48	Dissolved oxygen (mg/L) 0	Dissolved oxygen (mg/L) 24	Dissolved oxygen (mg/L) 48	pH 0	pH 24	pH 48	Conductivity (µS/cm) 0	Conductivity (µS/cm) 48
Control	A	10	10	0	19.0	19.0	19.0	8.6	8.4	8.6	8.0	8.1	8.1	346	352
	B	10	10	0											
	C	10	10	0											
	D														
100	A	10	10	0	19.0	19.0	19.5	9.1	8.4	8.8	7.6	7.8	7.9	194	196
	B	10	10	0											
	C	10	10	0											
	D														
	A														
	B														
	C														
	D														
	A														
	B														
	C														
	D														
	A														
	B														
	C														
	D														
	A														
	B														
	C														
	D														
Technician Initials		MK	MK	MK	MK	MK	MK	MK	MK	MK	MK	MK	MK	MK	MK

	Hardness*	Alkalinity*
Concentration	*(mg/L as CaCo3)	
Control (MHW)	96	80
Highest conc.	92	58
Hardness adjusted	—	—

	Initial WQ	Adjustment	Adjusted WQ
Temp (°C)	19.0		
DO (mg/L)	9.1		
pH	7.6		
Cond (µS/cm)	194		
Salinity (ppt)	0.1		

Comments: _____ Mortality: Heartbeat checked under microscope not req'd

Sample Description: slightly turbid, brown, no odour, no particulates.

Batch#: 062420A 7-d previous # young/brood: 16 Previous 7-d Mortality (%): 0 Day of 1st Brood: 7.

Reviewed by: _____ Date reviewed: July 21, 2020

APPENDIX C – Chain-of-custody form

Chain of Custody

Vancouver - Environmental
8081 Lougheed Highway
Burnaby BC Canada V5A 1W9

3034

Destination Lab:	**Nautilus Environmental (Burnaby)**
Address:	8664 Commerce Court Burnaby BC Canada V5A 4N7
Client:	Victoria Gold (Yukon) Corp.
Work Order Number:	**VA20B0234**
Original Receipt Date/Time	Instructions Received
13/07/2020 11:10	

Relinquished By
Date/Time
Received By
Date/Time
Receipt Temp

Return as indicated: Results: Invoice: Electronic Data:

Attention: Hilary Woods

ALS Sample ID	Client ID	Matrix	Container Type	Test Codes	Method Description	Due Date	Sampling Date and Time	Remarks
VA20B0234-001	W4	Water	HDPE carboy LC50	DAP-LC50-48	Survival/LC50 Daphnia Magna (48 hours)	14-07-2020	11/07/2020 11:20	
VA20B0234-001	W4	Water	HDPE carboy LC50	TRT-LC50-96	Survival/LC50 Rainbow Trout (96 hours)	14-07-2020	11/07/2020 11:20	
VA20B0234-002	W21	Water	HDPE carboy LC50	DAP-LC50-48	Survival/LC50 Daphnia Magna (48 hours)	14-07-2020	11/07/2020 11:40	
VA20B0234-002	W21	Water	HDPE carboy LC50	TRT-LC50-96	Survival/LC50 Rainbow Trout (96 hours)	14-07-2020	11/07/2020 11:40	
VA20B0234-003	W1	Water	HDPE carboy LC50	DAP-LC50-48	Survival/LC50 Daphnia Magna (48 hours)	14-07-2020	11/07/2020 14:00	
VA20B0234-003	W1	Water	HDPE carboy LC50	TRT-LC50-96	Survival/LC50 Rainbow Trout (96 hours)	14-07-2020	11/07/2020 14:00	
VA20B0234-004	W29	Water	HDPE carboy LC50	DAP-LC50-48	Survival/LC50 Daphnia Magna (48 hours)	14-07-2020	11/07/2020 14:40	
VA20B0234-004	W29	Water	HDPE carboy LC50	TRT-LC50-96	Survival/LC50 Rainbow Trout (96 hours)	14-07-2020	11/07/2020 14:40	
VA20B0234-005	W22	Water	HDPE carboy LC50	DAP-LC50-48	Survival/LC50 Daphnia Magna (48 hours)	14-07-2020	11/07/2020 15:00	
VA20B0234-005	W22	Water	HDPE carboy LC50	TRT-LC50-96	Survival/LC50 Rainbow Trout (96 hours)	14-07-2020	11/07/2020 15:00	

2x10

2x10

2x10

2x10

2x11

Emergency TAT

please confirm with AM

- all single concentration testing

TH

2.8-5.1°C

July 13/20 @ 14:57

201299 - DM plt

201300 - RBJ plt

END OF REPORT

APPENDIX E

PHLF Embankment and Event Pond Erosion Control Plan Exhibit

75 0 75

(In Meters)
1 cm = 25 M
(1 : 2,500)

PROCESS PLANT

HEAD OF IN-HEAP POND SPILLWAY

EMBANKMENT CREST

AS-BUILT UNDERDRAIN LINES

IN-HEAP POND SPILLWAY

RIPRAP FOR EROSION CONTROL

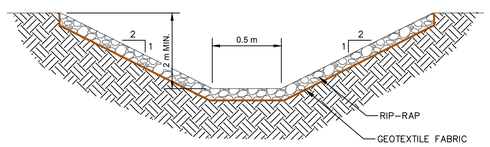
EVENT POND

AS-BUILT MONITORING VAULT

DIVERSION CHANNEL AROUND MONITORING VAULT (SEE DETAIL A THIS SHEET)

EMERGENCY SPILLWAY

EVENT POND UNDERDRAIN OUTLET



DIVERSION CHANNEL TYPICAL SECTION

A
-

SCALE: NTS

ISSUE	DATE	DESCRIPTION		DSGN	CHKD	APPD
	092920		SMC			

COORD SYSTEM: NAD 83 UTM ZONE 8

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FDI PROJECT NO: 1090505

PREPARED BY:

FORTE DYNAMICS
120 COMMERCE DRIVE, UNITS 3 & 4
FORT COLLINS, CO 80524

VICTORIA EAGLE GOLD, PHLF

PHLF EMBANKMENT AND EVENT POND EROSION CONTROL PLAN

YUKON, CANADA

DRAWING NUMBER:

EXH-F000

[scrank] [Nov 17, 2020 – 8:23am] [C:\Users\Scrank\Documents\Work from Home\Victoria\CAD\DRAWINGS\WORKING–TEMPORARY\Geology Maps.dwg]



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APPENDIX C1

April Discharge Final Report for QZ14-041-1

EAGLE GOLD PROJECT

FINAL REPORT

LDSP (CONTROL POND) DISCHARGE (APRIL 20 TO 28, 2020) EXCEEDANCE REPORT

MAY 19, 2020

Prepared By:
Victoria Gold (Yukon) Corp.
Eagle Gold Project

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Appendix A External Laboratory Water Quality Results

Appendix B Acute Toxicity Results

1 INTRODUCTION

This discharge exceedance report summarizes the implementation of certain water management strategies that were necessary to address rapid snowmelt, reduction of the main control pond capacity and the decision to discharge pond water above WUL discharge criteria to an exfiltration sump during the period of April 20-28, 2020. The exfiltration sump is located approximately 300 meters upgradient of the Lower Dublin South Pond (LDSP) (also referred to as the Control Pond), in the lower Dublin Gulch Valley. The sump area is occupied by a thick (over 20 m) sequence of placer deposits and alluvium that overlies bedrock. The sump was previously used successfully in 2018 during construction activities, and at that time was deemed to be an acceptable measure for addressing an excess of runoff water collected from construction activities. Thus, in this case, exfiltrating the water to ground was ascertained to have the lowest potential for an adverse response in the receiving environment as it allows for natural mitigation of total suspended solids (TSS), the main parameter of concern, through natural filtration, as opposed to direct discharge to receiving waters (e.g., Haggart Creek).

On April 20, 2020, prior to any discharge, notification was provided to regulators and the FNNND regarding the planned discharge of water from the control pond to the exfiltration sump. The following were notified:

- Yukon Energy Mines and Resources (EMR) Compliance Inspector,
- Environment and Climate Change Canada (ECCC) Compliance Inspector, and
- FNNND Lands and Resources Manager.

On April 30, 2020, and within 24 hours of receiving the analytical laboratory results, notification was provided to the Yukon Spill Reporting hotline for water quality exceeding licence criteria (total suspended solids [TSS] and total arsenic) from the discharge water pumped to the exfiltration sump. Subsequent to the notification provided to the Yukon Spill Reporting hotline, additional laboratory results were received and an exceedance of licence criteria for total iron was also identified.

This report provides an event summary, release details, environmental factors and pre-discharge responses leading up to the release, and spill reporting.

2 EVENT SUMMARY

Through the winter of 2019-2020, Victoria Gold (Yukon) Corp. (VGC) developed a water management strategy for the 2020 freshet period at the Eagle Gold Project (Project) that involved the controlled release of site contact waters through the LDSP in accordance with the terms of the Type A Water Use Licence QZ14-041-1 (WUL). In addition to the controlled discharge, a portion of the water within the LDSP was also to be transferred to the Events Pond for use as process water. In preparation for the execution of this strategy, a number of pre-discharge water quality samples were sent for analysis at ALS Laboratories to confirm that the water quality within the LDSP was suitable for release in accordance with WUL criteria. The laboratory results for samples taken April 9 to April 15, 2020 showed water quality within the LDSP was acceptable for discharge.

The water management strategy involving a release of water from the LDSP, instead of full retention for use as process water, was in response to the highest recorded snowfall since measurements began in 2007 (about 45% higher than previous maximum).

In the days prior to the planned execution of the controlled discharge, above average seasonal temperatures in mid-April 2020 were experienced, leading to a substantial amount of snowmelt runoff, which resulted in high flow rates and high total suspended solids (TSS) within site ditches draining to the LDSP. The high flows caused a minor breach along ditch A (on the afternoon of April 15) and, as a result, water reported directly into the LDSP rather than into the forebay, thereby shortening the circuit for settling. During the short term that the breach was open, inflow water bypassed the forebay, degrading the overall water quality at the planned discharge point (i.e., the low level outlet or LLO of the LDSP). Plans were in place to transfer water to the Events Pond, but based on the recorded pond fill rate, additional measures such as exfiltration were deemed necessary to avoid a direct discharge from the LDSP to Haggart Creek. As noted above, exfiltrating the water to ground was ascertained to have the lowest potential for an adverse response in the receiving environment as opposed to a direct discharge to Haggart Creek.

Pumping was initiated first to the Events Pond at a rate of approximately 150 m^3/hr at 14:00 on April 19, 2020, and then pumping to the exfiltration sump was initiated at a rate of approximately 185 m^3/hr at 16:00 on April 20, 2020. Daily monitoring of the LDSP water levels, pump outflows and ditch inflows continued and demonstrated that continued pumping to both the Events Pond and the sump would allow a return to a safe operating capacity (deemed to be sufficient to hold a 5-year rainfall runoff event) in the LDSP over time. The time period required was dependent on weather conditions (and ultimately snowmelt rate) and pumping rates.

Based on monitoring data results, discharge into an exfiltration sump for a period of nine days (April 20-28, 2020), was undertaken at which time the safe operating capacity of the pond was reached. While the exfiltration pumps were turned off, pumping to the Events Pond has continued to be necessary to address continuing high snowmelt runoff rates and to maintain the safe operating capacity.

In general, during a discharge the WUL requires daily monitoring of flow and field parameters (e.g., pH, specific conductance, dissolved oxygen and temperature), a weekly collection of water samples to be analyzed for a full suite of parameters and a monthly collection of water samples for acute lethality testing. Water quality results for this discharge event indicated that WUL Effluent Quality Standards (EQS) were exceeded for three parameters, TSS, total arsenic and total iron.

3 RELEASE DETAILS

3.1 PRE-DISCHARGE SAMPLING

In preparation for the planned release of contact water from the LDSP water quality samples were collected for lab analyses on April 9, 13, 14, 15, and 16 at station LDSPs (i.e., the LDSP shoreline adjacent to the pump caisson low level outlet which is a pre-discharge sampling location). The sample collected on April 16 was taken after the breach of Ditch A. Pertinent water quality results are shown in Table 3-1 (full results in Appendix A), and shows that TSS of the April 16 sample was above WUL criterion of 15 mg/L and had increased significantly (2.6X) from the previous day reflecting water quality deterioration associated with the low residence time. Based on visual observations of the deteriorating water clarity in the pond (and before final lab results were received), the planned discharge to Haggart Creek was cancelled.

Table 3-1: LDSPs Pre-Discharge Water Quality Results

Date of Sample	Time Sampled	Analysis Type	TSS (mg/L)	Total Arsenic (mg/L)	Total Iron (mg/L)	Result Receipt Date	ALS Sample ID
April 9, 2020	10:00	ALS Full Suite	3.1	0.0498	0.038	Prelim April 16, 2020 Final April 27, 2020	VA20A4682-002
April 13, 2020	12:00	TSS & TDS	4.8	N/S	N/S	Prelim April 19, 2020 Final April 20, 2020	L2437811-1
April 14 2020	13:00	TSS & TDS	8.4	N/S	N/S	Prelim April 19, 2020 Final April 20, 2020	L2437811-2
April 15, 2020	13:00	TSS & TDS	10.4	N/S	N/S	Prelim April 19, 2020 Final April 20, 2020	L2437811-3
April 16, 2020	11:55	ALS Full Suite	27.2	0.0393	1.47	Final April 27, 2020	VA20A5041-001

NOTES:
N/S – not sampled

To comply with the requirements of the *Metals and Diamond Mining Effluent* (MDMER) and the WUL, a pre-discharge sample for acute lethality single concentration test for 96 hr rainbow trout and 48 hr Daphnia magna (was taken on April 9, 2020 and sent to Nautilus Environmental Labs in Burnaby, BC. The results for these tests are included in Appendix B. The results for these tests indicated that the contact water within the LDSP was not acutely lethal, and showed 100% survival for both rainbow trout and Daphnia magna.

3.2 EVENT DESCRIPTION

During the few days leading up to the release, it became apparent through daily monitoring of the LDSP water levels that the available capacity of the pond was decreasing rapidly. While considering the volume of the remaining snowpack on north facing areas of the Project, and to ensure that a controlled discharge could be undertaken with the lowest potential for environmental impact, the decision was made to pump water from the LDSP to the exfiltration sump in the Dublin Gulch valley used previously during the construction phase of the Project (identified as FDP#5 under MDMER filings made by VGC). Pumping to the exfiltration sump commenced on April 20, 2020 at 16:30 and continued to April 28, 2020 at 07:30. Water quality sampling and flow monitoring at the frequencies and scope required by the WUL and the MDMER for effluent and the receiving water bodies were collected during the discharge from April 20 – 28, 2020. As per WUL criteria, a full suite of parameters was

collected at FDP#5 twice during the nine days (April 21 and April 27), while all other days only field parameters were collected. No water samples were collected before the pump was shut off in the early morning of April 28, 2020.

The analytical results for discharge at FDP#5 are provided in Table 3-2 below for April 20-27, 2020. Analytical results are included in Appendix A.

Table 3-2: Summary of Water Quality Deposited to FDP#5 and WUL EQS

Date of Sample Collection	Time Sampled	TSS (mg/L)	EQS for TSS (mg/L)	Total Arsenic (mg/L)	EQS for Total Arsenic (mg/L)	Total Iron (mg/L)	EQS for Total Iron (mg/L)	Estimated Discharge Quantity (m^3)	Result Receipt Date	ALS Sample ID
April 20, 2020	18:30	61.9		0.142		4.36		2,960	Final April 29, 2020	VA20A5185-001
April 21, 2020	13:40	52.9		0.167		5.08		8,880	Prelim April 30, 2020 Final May 7, 2020	VA20A5153
April 22, 2020	14:41	N/S		N/S		N/S		6,720		
April 23, 2020	10:50	N/S		N/S		N/S		6,350		
April 24, 2020	8:28	N/S	15.00	N/S	0.053	N/S	6.4	4,935		
April 25, 2020	11:30	N/S		N/S		N/S		2,350		
April 26, 2020	15:25	N/S		N/S		N/S		5,640		
April 27, 2020	10:40	52.8		0.226		6.95		4,355	Prelim May 7, 2020 Final May 19, 2020	WR2000165-001
April 28, 2020	-	N/S		N/S		N/S		940		
Total Discharge Volume								**43,130**		

Notes:
N/S – Not required under WUL - not sampled

Laboratory results indicated that on April 20, 21 and 27, 2020 the EQS for this discharge event exceeded WUL criteria for TSS and total arsenic, and exceeded WUL criteria for total iron on April 27, 2020. All other parameters were within WUL criteria.

During discharge to the exfiltration sump, water from the LDSP continued to be pumped to the Events Pond as per the freshet management strategy noted above. When exfiltration pumps were turned off in the early morning of April 28, water transfers from the LDSP to the Events Pond were still necessary and have been ongoing to the present day.

3.3 RECEIVING ENVIRONMENT MONITORING

The receiving water body related to the Project is Haggart Creek. The WUL, and VGC monitoring programs under the Environmental Monitoring, Surveillance and Adaptive Management Plan (EMSAMP), consider monitoring locations and water quality objectives on Haggart Creek. The locations considered in the WUL and the EMSAMP were monitored throughout the discharge event at the following locations:

- Upstream of the Project influence (W22);
- Within the Project influence downstream of the Dublin Gulch and Ditch C (W4) confluences; and,
- Downstream of inflows from Eagle Creek (W29) (downstream of W4).

Dublin Gulch was also monitored at upstream (W1) and downstream (W21) locations on April 21, 2020 to evaluate how background freshet runoff was impacting downstream water quality in Haggart Creek. The analytical results for receiving water body compliance locations are provided in Table 3-3 below for April 20-27, 2020.

Table 3-3: Receiving Environment and Project Area Watercourse Water Quality Results

STATION	DATE	TIME	Temp °C	DO mg/L	SPC uS/cm	pH	Turbidity NTU	TSS mg/L	Total Arsenic mg/L	Dissolved Arsenic mg/L	Total Iron mg/L
			Field Parameters Internal					External			
W22	20-Apr-20	17:30	0.0	11.99	334.6	7.43	1.5	3.7	0.00109	0.00066	0.215
	21-Apr-20	11:50	0.0	11.71	297.6	7.26	2.39	<3.0	0.00123	0.00075	0.278
	22-Apr-20	14:05	0.0	11.84	268.3	7.23	0.41	<3.0	0.00106	0.00079	0.264
	23-Apr-20	10:20	0.0	12.05	270.9	7.28	0.0	<3.0	0.00095	0.00086	0.217
	24-Apr-20	10:05	0.0	12.12	319.4	7.40	0.0	<3.0	0.00108	0.00105	0.234
	25-Apr-20	10:50	0.0	12.00	346.9	7.58	0.0	<3.0	0.00097	0.00086	0.221
	26-Apr-20	14:19	0.0	11.99	382.4	7.60	0.09	<3.0	0.00093	0.00193	0.199
	27-Apr-20	09:40	0.0	11.97	390.5	7.58	0.0	<3.0	0.00089	0.00075	0.126
STATION	**DATE**	**TIME**	**Temp °C**	**DO mg/L**	**SPC uS/cm**	**pH**	**Turbidity NTU**	**TSS mg/L**	**Total Arsenic mg/L**	**Dissolved Arsenic mg/L**	**Total Iron mg/L**
W4	20-Apr-20	17:10	0.0	12.63	243.8	7.55	905.77	2020	0.158	0.0120	10.8
	21-Apr-20	11:15	0.1	12.36	253.2	7.39	137	308	0.128	0.0102	8.03
	22-Apr-20	13:10	0.1	12.36	278	7.41	141.2	280	0.116	0.00851	7.86
	23-Apr-20	9:33	0.0	12.44	272.5	7.45	30.21	49.8	0.0326	0.00718	1.85
	24-Apr-20	9:25	0.0	12.98	352.8	7.62	53.23	9.2	0.0121	0.00592	0.510
	25-Apr-20	10:20	0.0	12.12	324.9	7.55	6.09	13.0	0.0125	0.00520	0.586
	26-Apr-20	13:40	0.0	12.23	359.1	7.67	25.35	67.8	0.0315	0.00824	1.77
	27-Apr-20	09:05	0.0	12.18	379.2	7.67	4.7	4.8	0.0124	0.00694	0.400
STATION	**DATE**	**TIME**	**Temp °C**	**DO mg/L**	**SPC uS/cm**	**pH**	**Turbidity NTU**	**TSS mg/L**	**Total Arsenic mg/L**	**Dissolved Arsenic mg/L**	**Total Iron mg/L**
W29	20-Apr-20	16:45	0.1	12.7	285.2	7.71	398.26	490	0.233	0.0144	13.8
	21-Apr-20	10:50	0.2	12.38	268.2	7.81	163.32	164	0.157	0.0148	6.90
	22-Apr-20	12:44	0.3	12.83	286.3	7.6	190.43	N/S	N/S	N/S	N/S
	23-Apr-20	09:10	0.0	12.86	303.8	7.51	159.86	N/S	N/S	N/S	N/S
	24-Apr-20	09:05	0.0	12.98	352.8	7.62	53.23	N/S	N/S	N/S	N/S
	25-Apr-20	10:00	0.0	12.90	372.2	7.69	9.64	N/S	N/S	N/S	N/S
	26-Apr-20	13:20	0.1	12.66	386.8	7.78	40.92	N/S	N/S	N/S	N/S
	27-Apr-20	08:15	0.0	12.82	402.5	7.77	13.77	6.8	0.0202	0.00870	0.738
STATION	**DATE**	**TIME**	**Temp °C**	**DO Mg/L**	**SPC uS/cm**	**pH**	**Turbidity NTU**	**TSS mg/L**	**Total Arsenic mg/L**	**Dissolved Arsenic mg/L**	**Total Iron mg/L**
W1	21-Apr-20	13:00	0.0	12.97	106.4	7.31	9.84	12.8	0.0322	0.0296	0.330
W21*	21-Apr-20	12:20	0.0	13.2	159.8	7.77	487.56	940	0.311	0.0291	21.2

Notes:
N/S – Not required under WUL - not sampled

Water quality in Haggart showed an increase in TSS and total arsenic between the upstream (W22) and downstream (W4) sites. On April 21, dissolved and total arsenic in W21 was 2.9X and 2.4X, respectively, the concentration in W4, indicating that the high concentrations of dissolved and total As in W1 and W21 are the chief reasons for the increase in dissolved and total As in W4; also the dissolved As concentration (i.e., most likely the bioavailable form) does not increase from W1 to W21 (both about 30 ppb), indicating that the main source of dissolved arsenic in Haggart Creek and Dublin Gulch originates in upper Dublin Gulch.

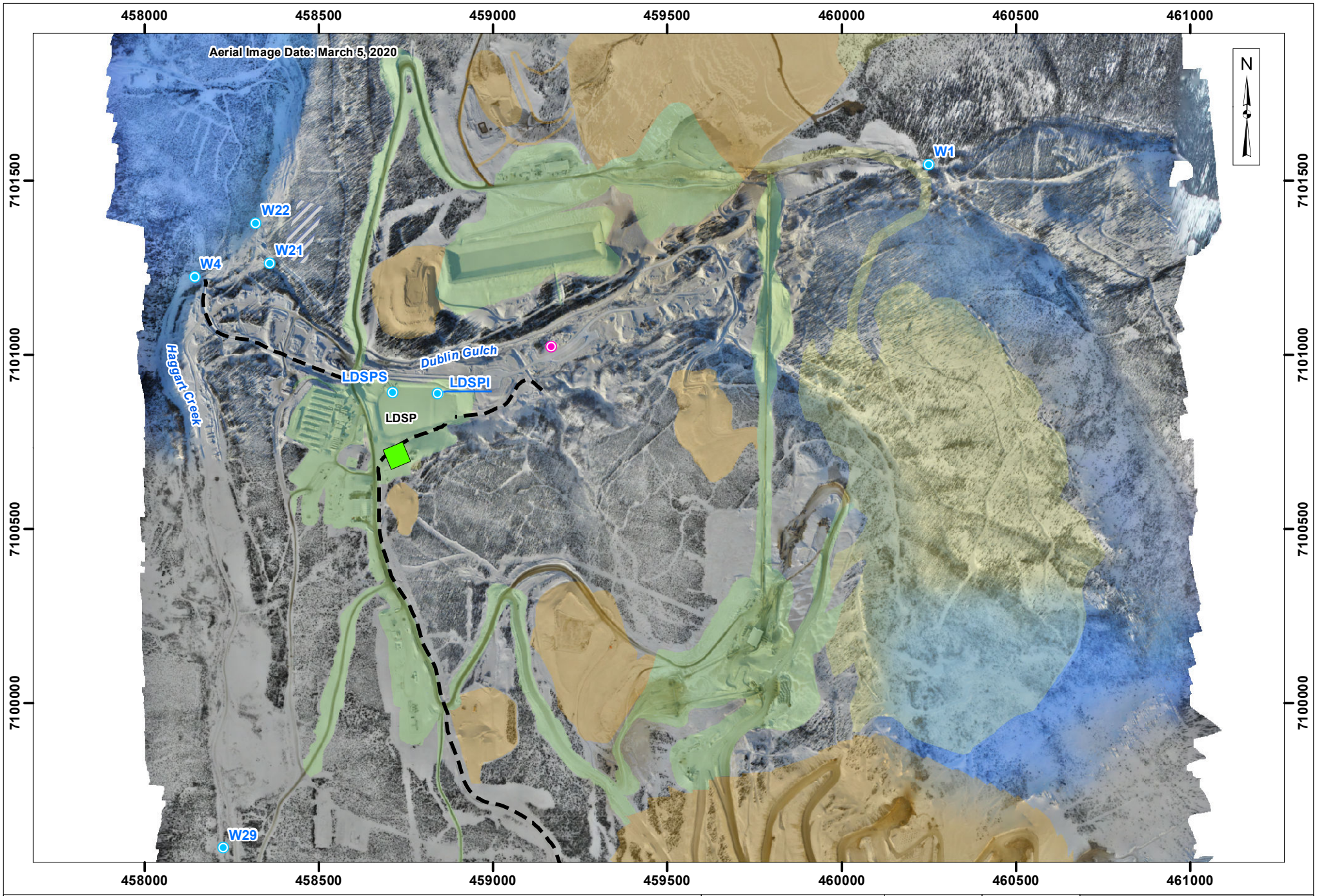
Based on April 21 sampling, TSS in Dublin Gulch W21 (940 mg/L) is the chief reason for the increase in TSS in Haggart Creek between W22 (<3.0 mg/L) and W4 (308 mg/L); also the total TSS concentration increases substantially from W1 to W21, indicating that the main source of TSS in the streams originates from the reaches along Dublin Gulch between W1 and W21. Importantly, at the same time (April 21), the TSS in the water discharged to the exfiltration sump was only 53 mg/L, substantially lower than the TSS in W21.This data most likely reflects the difficulty in managing snowmelt generated sediment-laden runoff coming from the Dublin Gulch road (and not any effect from the discharge to the sump), which has been documented in previous years to have high TSS during freshet.

3.4 ACUTE LETHALITY TESTING

A full suite water sample including an acute lethality single concentration test for 96 hr rainbow trout and 48 hr Daphnia magna and a sublethal toxicity test was taken on April 21, 2020 of the water being exfiltrated to the sump (FDP#5). The same sample suite was conducted at the inlet to the control pond (i.e., LDSPI). The results for acute toxicity tests are included in Appendix B. The results for these tests show that the discharged water and LDSP inflow were not acutely lethal, and showed 100% survival for both rainbow trout and Daphnia magna for the exfiltrated water and 97% survival for Daphnia magna for the LDSP inflow water (Table 3-4). Sublethal test results are still pending.

Table 3-4: Acute Lethality Testing Results

Sample Location on April 21, 2020	Percent survival in 100% (v/v) sample	
	Rainbow Trout	*Daphnia magna*
LDSPI (Work Order #VA20A5149)	100	97
FDP#5 (Work Order #VA20A5153)	100	100



Legend:

- Exfiltration Sump (FDP#5)
- Water Quality Monitoring Station
- Breach Location
- Water Conveyances
- Reserved Area
- Construction Complete
- Partial Development
- Not Constructed

VICTORIA GOLD CORP

0 100 200 400
Metres

Projection: NAD 83 UTM Zone 8N

Drawn By: HC

Date: 2020/05/20

Figure: 3.1

EAGLE GOLD PROJECT
YUKON TERRITORY

FDP#5 Effluent Deposit Location

4 IMPORTANT ENVIRONMENTAL AND SITE FACTORS

Despite early planning efforts by VGC, a number of environmental and site factors occurred that influenced the field decision to discharge contact water to ground. These included:

- Record snowfall about 45% above previously recorded maximum resulted in extremely high volumes of snowmelt reporting to the LDSP.
- As demonstrated in Figure 4-1, unseasonably warm temperatures were sustained from April 15 to April 22, where it was the first time in the year that temperatures ranged up to 10ºC and when both day and night temperatures were essentially above freezing. This condition occurred after a lengthy cold period that extended to April 12. While above zero temperatures occurred during the short period from April 12 to April 15, overall temperatures were not warm enough over a long enough stretch to generate significant snowmelt. Based on the temperature data alone, snowmelt rates would have increased substantially during April 15 to 22, especially during the 18th and 19th of April.

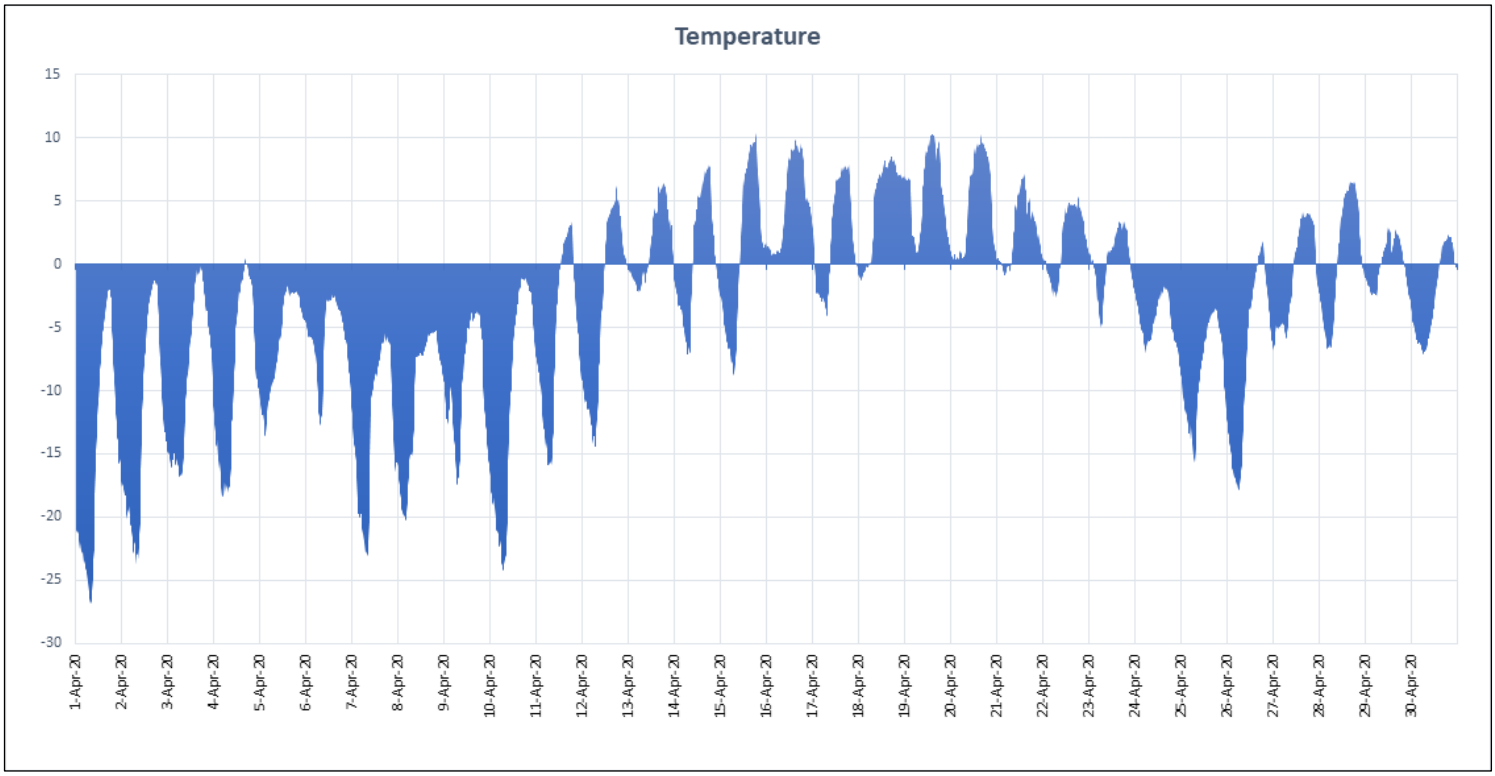


Figure 4.1: Camp Weather Station Temperature Data - April 2020

- The COVID-19 pandemic situation reduced staff capacity and restricted access to the site for potential replacement workers, either through isolation or health requirements mandated by the Yukon Chief

Medical Officer. This made it difficult for workers to proactively respond to necessary water management set up required through March and April as travel and health restrictions came into effect across the Yukon during this time.

- LDSP pumping infrastructure to the Events Pond:
    - An 8-inch pipeline and pump was previously installed in 2019, but had been decommissioned for the winter. Re-installation of the line in 2020 was challenging with frozen conditions, high snowpack and a reduced workforce delaying the overall progress, thus not allowing sufficient time to reduce LDSP water levels by pumping to the Events Pond prior to the onset of the snowmelt. The pipeline is now a permanent installation and will remain in place for next spring freshet and ongoing management of LDSP water levels.
    - The 150 m^3/hr submersible pump located in the LDSP was not fully winterized and required maintenance before it could convey water to the Events Pond this spring. This pump will receive pre-winterization maintenance in 2020, and will be tested next spring prior to freshet.
    - Additional pumping infrastructure from the LDSP to the Events Pond was required to keep up with the substantial inflows to the LDSP due to the high snowpack and fast melt. The additional line and pump will be made available next spring prior to freshet.
- Ditch A infrastructure:
    - Ditch A is a riprap lined ditch designed to convey the 100-year runoff event. During the amendment of the WUL, a management strategy requiring the use of pipes to address potential seepage losses in the ditch was required by the Yukon Water Board. To address this requirement, a 24-inch pipe was placed in the ditch to convey flows from the Ditch A sump at the base of the Platinum Gulch Waste Rock Storage Area to the LDSP. The pipe and ditch configuration has reduced the carrying capacity of the ditch and also limits efficient cleanout of the ditch. The inability to effectively remove sediment from Ditch A due to the presence of the pipe contributed to the breach of the ditch and the subsequent release of sediment laden runoff into the lined portion of the LDSP, bypassing the forebay inlet and thus losing the settling time required for the runoff to achieve discharge criteria.



Photo 1: LDSP is still frozen with no documented inflow from ditches, April 14, 2020

5 SPILL REPORTING

5.1 YUKON GOVERNMENT AND FNNND

On April 20, 2020, prior to any discharge, notification was provided to regulators and the FNNND of the planned discharge of mine contact water from the control pond to an exfiltration sump located east of the control pond. The following people were included in these notifications:

- Yukon Energy Mines and Resources (EMR) Compliance Inspector.
- Environment and Climate Change Canada (ECCC) Compliance Inspector.
- FNNND Lands and Resources Manager.

On April 30, 2020 upon receipt of analytical laboratory results, notification was provided within 24 hours to the Yukon Spill Reporting hotline for water quality exceeding regulatory criteria (total suspended solids [TSS] and total arsenic) within discharge water to the exfiltration sump. Follow up notification was provided to the above regulators and the FNNND with information on the water quality exceedance.

APPENDIX A

External Laboratory Results Water Quality

ALS Environmental

CERTIFICATE OF ANALYSIS

Work Order	: **VA20A4682**	Page	: 1 of 6
Client	: **Victoria Gold (Yukon) Corp.**	Laboratory	: Vancouver - Environmental
Contact	: Bill Bowden	Account Manager	: Hilary Woods
Address	: Suite 1000 - 1050 W. Pender St Vancouver BC Canada V6E 3S7	Address	: 8081 Lougheed Highway Burnaby BC Canada V5A 1W9
Telephone	: 867.456.7700 ext. 6381	Telephone	: +1 604 253 4188
Project	: Containment Pond Pre-Discharge	Date Samples Received	: 10-Apr-2020 14:35
PO	: 14043	Date Analysis Commenced	: 11-Apr-2020
C-O-C number	: 20200409	Issue Date	: 27-Apr-2020 16:20
Sampler	: KT/BB		
Site	: ----		
Quote number	: Q68199		
No. of samples received	: 2		
No. of samples analysed	: 2		

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QC Interpretive report to assist with Quality Review and Sample Receipt Notification (SRN).

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is conducted in accordance with US FDA 21 CFR Part 11.

Signatories	*Position*	*Laboratory Department*
Aaron Yu	Laboratory Analyst	Metals, Burnaby, British Columbia
Amy Liang	Analsyt	Inorganics - Water Quality, Burnaby, British Columbia
Courtney Cox	Analsyt	Inorganics - Water Quality, Burnaby, British Columbia
Dan Gebert		Metals, Burnaby, British Columbia
Harsha Attanayake	Analsyt	Inorganics - Water Quality, Burnaby, British Columbia
Hilary Woods	Account Manager	Internal Subcontracting, Fort Collins, Colorado
Janice Pearson	Account Manager Assistant	External Subcontracting, Burnaby, British Columbia
Jashan Kaur	Lab Assistant	Metals, Burnaby, British Columbia
Kenson Lo		Metals, Burnaby, British Columbia
Kim Jensen	Department Manager - Metals	Inorganics - Water Quality, Burnaby, British Columbia
Lindsay Gung	Supervisor - Water Chemistry	Inorganics - Water Quality, Burnaby, British Columbia
Richard Chong		Inorganics - Water Quality, Burnaby, British Columbia

General Comments

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Refer to the ALS Quality Control Interpretive report (QCI) for applicable references and methodology summaries. Reference methods may incorporate modifications to improve performance.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

Please refer to Quality Control Interpretive report (QCI) for information regarding Holding Time compliance.

Key : CAS Number: Chemical Abstracts Services number is a unique identifier assigned to discrete substances
LOR: Limit of Reporting (detection limit).

Unit	*Description*
-	No Unit
%	percent
µS/cm	Microsiemens per centimetre
Bq/L	Becquerels per litre
meq/L	milliequivalents per litre
mg/L	milligrams per litre
NTU	nephelometric turbidity units
pH units	pH units

<: less than.

>: greater than.

Surrogate: An analyte that is similar in behavior to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.

Test results reported relate only to the samples as received by the laboratory.

UNLESS OTHERWISE STATED on SRN or QCI Report, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

Analytical results in reports identified as "Preliminary Report" are considered authorized for use.

Analytical Results

Sub-Matrix: **Water**
(Matrix: **Water**)

Analyte	CAS Number	Method	LOR	Unit	Client sample ID	Events Pond	LDSPS	----	----	----
					Client sampling date / time	08-Apr-2020 15:00	09-Apr-2020 10:00	----	----	----
						VA20A4682-001	VA20A4682-002	--------	--------	--------
						Result	Result	----	----	----
Physical Tests										
alkalinity, total (as CaCO3)	----	E290	1.0	mg/L		82.8	222	----	----	----
conductivity	----	E100	2.0	µS/cm		220	601	----	----	----
hardness (as CaCO3), dissolved	----	EC100	0.60	mg/L		125	327	----	----	----
hardness (as CaCO3), from total Ca/Mg	----	EC100A	0.60	mg/L		122	337	----	----	----
pH	----	E108	0.10	pH units		7.81	7.67	----	----	----
solids, total dissolved [TDS], calculated	----	EC103	1.0	mg/L		151	414	----	----	----
solids, total suspended [TSS]	----	E160-H	3.0	mg/L		3.1	3.1	----	----	----
turbidity	----	E121	0.10	NTU		20.9	0.47	----	----	----
pH @ 15°C (WSER)	----	E108A	0.10	pH units		8.02	7.81	----	----	----
Anions and Nutrients										
ammonia, total (as N)	7664-41-7	E298	0.0050	mg/L		0.133	0.0253	----	----	----
ammonia, un-ionized (as N), 15C (WSER)	7664-41-7	EC298	0.0010	mg/L		0.0037	<0.0010	----	----	----
bromide	24959-67-9	E235.Br-L	0.050	mg/L		<0.050	<0.050	----	----	----
chloride	16887-00-6	E235.Cl	0.50	mg/L		3.94	4.26	----	----	----
fluoride	16984-48-8	E235.F	0.020	mg/L		0.132	0.182	----	----	----
Kjeldahl nitrogen, total [TKN]	----	E318	0.050	mg/L		0.236	0.196	----	----	----
nitrate (as N)	14797-55-8	E235.NO3-L	0.0050	mg/L		0.215	0.182	----	----	----
nitrite (as N)	14797-65-0	E235.NO2-L	0.0010	mg/L		0.0223	<0.0010	----	----	----
nitrogen, total	7727-37-9	E366	0.030	mg/L		0.443	0.316	----	----	----
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0010	mg/L		<0.0010	0.0036	----	----	----
phosphorus, total	7723-14-0	E372-U	0.0020	mg/L		0.0121	0.0067	----	----	----
phosphorus, total dissolved	7723-14-0	E375-T	0.0020	mg/L		0.0032	0.0049	----	----	----
sulfate (as SO4)	14808-79-8	E235.SO4	0.30	mg/L		37.9	141	----	----	----
Cyanides										
cyanide, total	----	E333	0.0050	mg/L		0.0053	<0.0050	----	----	----
cyanide, weak acid dissociable	----	E336	0.0050	mg/L		<0.0050	<0.0050	----	----	----
Organic / Inorganic Carbon										
carbon, dissolved organic [DOC]	----	E358-L	0.50	mg/L		2.92	3.52	----	----	----
carbon, total organic [TOC]	----	E355-L	0.50	mg/L		3.48	3.57	----	----	----
Bioassays										

Analytical Results

Sub-Matrix: **Water**
(Matrix: **Water**)

Analyte	CAS Number	Method	LOR	Unit	Client sample ID	Events Pond	LDSPS	----	----	----
					Client sampling date / time	08-Apr-2020 15:00	09-Apr-2020 10:00	----	----	----
						VA20A4682-001	VA20A4682-002	--------	--------	--------
						Result	Result	----	----	----
Bioassays										
Daphnia magna LC50	----	DAP-LC50-48	-	-		see attached	see attached	----	----	----
trout bioassay LC50	----	TRT-LC50-96	-	-		see attached	see attached	----	----	----
Ion Balance										
anion sum	----	EC101	0.10	meq/L		2.58	7.52	----	----	----
cation sum	----	EC101	0.10	meq/L		2.72	6.90	----	----	----
ion balance (cation-anion difference)	----	EC101	0.010	%		2.64	4.30	----	----	----
Total Metals										
aluminum, total	7429-90-5	E420	0.0030	mg/L		0.793	0.0298	----	----	----
antimony, total	7440-36-0	E420	0.00010	mg/L		0.00456	0.00446	----	----	----
arsenic, total	7440-38-2	E420	0.00010	mg/L		0.0417	0.0498	----	----	----
barium, total	7440-39-3	E420	0.00010	mg/L		0.0259	0.0923	----	----	----
beryllium, total	7440-41-7	E420	0.000020	mg/L		0.000033	<0.000020	----	----	----
bismuth, total	7440-69-9	E420	0.000050	mg/L		0.000355	0.000053	----	----	----
boron, total	7440-42-8	E420	0.010	mg/L		<0.010	<0.010	----	----	----
cadmium, total	7440-43-9	E420	0.0000050	mg/L		0.0000539	0.0000224	----	----	----
calcium, total	7440-70-2	E420	0.050	mg/L		31.8	75.3	----	----	----
chromium, total	7440-47-3	E420.Cr-L	0.00010	mg/L		0.00096	0.00020	----	----	----
cobalt, total	7440-48-4	E420	0.00010	mg/L		0.00055	0.00010	----	----	----
copper, total	7440-50-8	E420	0.00050	mg/L		0.00222	0.00150	----	----	----
iron, total	7439-89-6	E420	0.010	mg/L		0.590	0.038	----	----	----
lead, total	7439-92-1	E420	0.000050	mg/L		0.00115	0.000070	----	----	----
lithium, total	7439-93-2	E420	0.0010	mg/L		0.0224	0.0136	----	----	----
magnesium, total	7439-95-4	E420	0.100	mg/L		10.4	36.3	----	----	----
manganese, total	7439-96-5	E420	0.00010	mg/L		0.0361	0.00594	----	----	----
mercury, total	7439-97-6	E508	0.0000050	mg/L		<0.0000050	<0.0000050	----	----	----
molybdenum, total	7439-98-7	E420	0.000050	mg/L		0.000956	0.00179	----	----	----
nickel, total	7440-02-0	E420	0.00050	mg/L		0.00297	0.00410	----	----	----
phosphorus, total	7723-14-0	E420	0.050	mg/L		<0.050	<0.050	----	----	----
potassium, total	7440-09-7	E420	0.100	mg/L		2.63	4.23	----	----	----
selenium, total	7782-49-2	E420	0.000050	mg/L		0.000349	0.000424	----	----	----
silicon, total	7440-21-3	E420	0.10	mg/L		3.46	4.61	----	----	----

Analytical Results

Sub-Matrix: **Water**
(Matrix: **Water**)

Analyte	CAS Number	Method	LOR	Unit	Client sample ID	Events Pond	LDSPS	----	----	----
					Client sampling date / time	08-Apr-2020 15:00	09-Apr-2020 10:00	----	----	----
						VA20A4682-001	VA20A4682-002	--------	--------	--------
						Result	Result	----	----	----
Total Metals										
silver, total	7440-22-4	E420	0.000010	mg/L		0.000025	<0.000010	----	----	----
sodium, total	7440-23-5	E420	0.050	mg/L		3.00	5.98	----	----	----
strontium, total	7440-24-6	E420	0.00020	mg/L		0.166	0.470	----	----	----
sulfur, total	7704-34-9	E420	0.50	mg/L		15.0	48.8	----	----	----
thallium, total	7440-28-0	E420	0.000010	mg/L		0.000014	<0.000010	----	----	----
tin, total	7440-31-5	E420	0.00010	mg/L		0.00033	<0.00010	----	----	----
titanium, total	7440-32-6	E420	0.00030	mg/L		0.0166	0.00112	----	----	----
uranium, total	7440-61-1	E420	0.000010	mg/L		0.00161	0.00783	----	----	----
vanadium, total	7440-62-2	E420	0.00050	mg/L		0.00141	0.00056	----	----	----
zinc, total	7440-66-6	E420	0.0030	mg/L		0.0097	0.0041	----	----	----
zirconium, total	7440-67-7	E420	0.00030	mg/L		0.00042	<0.00030	----	----	----
Dissolved Metals										
aluminum, dissolved	7429-90-5	E421	0.0010	mg/L		0.0140	0.0026	----	----	----
antimony, dissolved	7440-36-0	E421	0.00010	mg/L		0.00398	0.00431	----	----	----
arsenic, dissolved	7440-38-2	E421	0.00010	mg/L		0.0366	0.0516	----	----	----
barium, dissolved	7440-39-3	E421	0.00010	mg/L		0.0178	0.0907	----	----	----
beryllium, dissolved	7440-41-7	E421	0.000020	mg/L		<0.000020	<0.000020	----	----	----
bismuth, dissolved	7440-69-9	E421	0.000050	mg/L		<0.000050	<0.000050	----	----	----
boron, dissolved	7440-42-8	E421	0.010	mg/L		<0.010	<0.010	----	----	----
cadmium, dissolved	7440-43-9	E421	0.0000050	mg/L		0.0000318	0.0000132	----	----	----
calcium, dissolved	7440-70-2	E421	0.050	mg/L		33.3	73.2	----	----	----
chromium, dissolved	7440-47-3	E421.Cr-L	0.00010	mg/L		0.00018	0.00013	----	----	----
cobalt, dissolved	7440-48-4	E421	0.00010	mg/L		0.00022	0.00010	----	----	----
copper, dissolved	7440-50-8	E421	0.00020	mg/L		0.00099	0.00136	----	----	----
iron, dissolved	7439-89-6	E421	0.010	mg/L		<0.010	<0.010	----	----	----
lead, dissolved	7439-92-1	E421	0.000050	mg/L		<0.000050	<0.000050	----	----	----
lithium, dissolved	7439-93-2	E421	0.0010	mg/L		0.0233	0.0138	----	----	----
magnesium, dissolved	7439-95-4	E421	0.100	mg/L		10.3	35.0	----	----	----
manganese, dissolved	7439-96-5	E421	0.00010	mg/L		0.0245	0.00164	----	----	----
mercury, dissolved	7439-97-6	E509	0.0000050	mg/L		<0.0000050	<0.0000050	----	----	----
molybdenum, dissolved	7439-98-7	E421	0.000050	mg/L		0.000925	0.00169	----	----	----

Analytical Results

Sub-Matrix: **Water**
(Matrix: **Water**)

Analyte	CAS Number	Method	LOR	Unit	Client sample ID	Events Pond	LDSPS	----	----	----
					Client sampling date / time	08-Apr-2020 15:00	09-Apr-2020 10:00	----	----	----
						VA20A4682-001	**VA20A4682-002**	--------	--------	--------
						Result	Result	----	----	----
Dissolved Metals										
nickel, dissolved	7440-02-0	E421	0.00050	mg/L		0.00156	0.00543	----	----	----
phosphorus, dissolved	7723-14-0	E421	0.050	mg/L		<0.050	<0.050	----	----	----
potassium, dissolved	7440-09-7	E421	0.100	mg/L		2.43	4.26	----	----	----
selenium, dissolved	7782-49-2	E421	0.000050	mg/L		0.000330	0.000488	----	----	----
silicon, dissolved	7440-21-3	E421	0.050	mg/L		2.39	4.51	----	----	----
silver, dissolved	7440-22-4	E421	0.000010	mg/L		<0.000010	<0.000010	----	----	----
sodium, dissolved	7440-23-5	E421	0.050	mg/L		3.07	5.97	----	----	----
strontium, dissolved	7440-24-6	E421	0.00020	mg/L		0.156	0.455	----	----	----
sulfur, dissolved	7704-34-9	E421	0.50	mg/L		15.0	47.6	----	----	----
thallium, dissolved	7440-28-0	E421	0.000010	mg/L		<0.000010	<0.000010	----	----	----
tin, dissolved	7440-31-5	E421	0.00010	mg/L		0.00024	<0.00010	----	----	----
titanium, dissolved	7440-32-6	E421	0.00030	mg/L		<0.00030	<0.00030	----	----	----
uranium, dissolved	7440-61-1	E421	0.000010	mg/L		0.00155	0.00750	----	----	----
vanadium, dissolved	7440-62-2	E421	0.00050	mg/L		<0.00050	<0.00050	----	----	----
zinc, dissolved	7440-66-6	E421	0.0010	mg/L		0.0047	0.0022	----	----	----
zirconium, dissolved	7440-67-7	E421	0.00030	mg/L		<0.00030	<0.00030	----	----	----
dissolved metals filtration location	----	EP421	-	-		Field	Field	----	----	----
dissolved mercury filtration location	----	EP509	-	-		Field	Field	----	----	----
Radiological Parameters										
radium-226	13982-63-3	RA226-MMER	0.01	Bq/L		See attached	See attached	----	----	----

Please refer to the General Comments section for an explanation of any qualifiers detected.

STRATAGOLD CORPORATION
ATTN: Bill Bowden
Suite 1000 - 1050 W. Pender St
Vancouver BC V6E 3S7

Date Received: 16-APR-20
Report Date: 20-APR-20 16:35 (MT)
Version: FINAL

Client Phone: 604-682-5122

Certificate of Analysis

Lab Work Order #: L2437811

Project P.O. #: 14043
Job Reference: LDSPS INTERNAL
C of C Numbers: 1 OF 1
Legal Site Desc:

Hilary Woods
Account Manager

[This report shall not be reproduced except in full without the written authority of the Laboratory.]

ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID	L2437811-1	L2437811-2	L2437811-3		
	Description	Water	Water	Water		
	Sampled Date	13-APR-20	14-APR-20	15-APR-20		
	Sampled Time					
	Client ID	LDSPS	LDSPS	LDSPS		
Grouping	**Analyte**					
WATER						
Physical Tests	pH (pH)	8.23	8.22	8.21		
	Total Suspended Solids (mg/L)	4.8	8.4	10.4		
	Total Dissolved Solids (mg/L)	425	372	314		
	Turbidity (NTU)	1.28	5.07	10.0		

Reference Information

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
EC-SCREEN-VA	Water	Conductivity Screen (Internal Use Only)	APHA 2510
Qualitative analysis of conductivity where required during preparation of other tests - e.g. TDS, metals, etc.			
PH-PCT-VA	Water	pH by Meter (Automated)	APHA 4500-H pH Value
This analysis is carried out using procedures adapted from APHA Method 4500-H "pH Value". The pH is determined in the laboratory using a pH electrode It is recommended that this analysis be conducted in the field.			
TDS-VA	Water	Total Dissolved Solids by Gravimetric	APHA 2540 C - GRAVIMETRIC
This analysis is carried out using procedures adapted from APHA Method 2540 "Solids". Solids are determined gravimetrically. Total Dissolved Solids (TDS) are determined by filtering a sample through a glass fibre filter, TDS is determined by evaporating the filtrate to dryness at 180 degrees celsius.			
TSS-VA	Water	Total Suspended Solids by Gravimetric	APHA 2540 D - GRAVIMETRIC
This analysis is carried out using procedures adapted from APHA Method 2540 "Solids". Solids are determined gravimetrically. Total Suspended Solids (TSS) are determined by filtering a sample through a glass fibre filter, TSS is determined by drying the filter at 104 degrees celsius. Samples containing very high dissolved solid content (i.e. seawaters, brackish waters) may produce a positive bias by this method. Alternate analysis methods are available for these types of samples.			
TURBIDITY-VA	Water	Turbidity by Meter	APHA 2130 Turbidity
This analysis is carried out using procedures adapted from APHA Method 2130 "Turbidity". Turbidity is determined by the nephelometric method.			

** ALS test methods may incorporate modifications from specified reference methods to improve performance.

The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:

Laboratory Definition Code	Laboratory Location
VA	ALS ENVIRONMENTAL - VANCOUVER, BRITISH COLUMBIA, CANADA

Chain of Custody Numbers:

1 OF 1

GLOSSARY OF REPORT TERMS

Surrogate - A compound that is similar in behaviour to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.
mg/kg - milligrams per kilogram based on dry weight of sample.
mg/kg wwt - milligrams per kilogram based on wet weight of sample.
mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight of sample.
mg/L - milligrams per litre.
< - Less than.
D.L. - The reported Detection Limit, also known as the Limit of Reporting (LOR).
N/A - Result not available. Refer to qualifier code and definition for explanation.

Test results reported relate only to the samples as received by the laboratory.
UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.
Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.

ALS Environmental

www.alsglobal.com

Chain of Custody Reques

Canada Toll Free

L2437811-COFC

de label here
nly)

COC Number:

Page of

Report To	Contact and company name below will appear on the final report
Company:	StrataGold Corporation
Contact:	Bill Bowden
Phone:	867-456-7700 x 6381
	Company address below will appear on the final report
Street:	100-1050 West Pender Street
City/Province:	Vancouver, BC
Postal Code:	V6E 3S7
Invoice To	Same as Report To ☐ YES ☑ NO
	Copy of Invoice with Report ☑ YES ☐ NO
Company:	STR125-EAGLEGOLD-VA
Contact:	

Selec	
Quali	
☐ Co	
Selec	
Email 1 or Fax	kbabin@vitgoldcorp.com, swilbur@vitgoldcorp.com
Email 2	pemerson@vitgoldcorp.com, lrear@vitgoldcorp.com
Email 3	bbowden@vitgoldcorp.com, hcoyle@vitgoldcorp.co

Invoice Distribution

Select Invoice Distribution: ☐ EMAIL ☐ MAIL ☐ FAX

Email 1 or Fax	accountspayable@vitgoldcorp.com
Email 2	bbowden@vitgoldcorp.com

Project Information

ALS Account # / Quote #:	STRG100 Q68199
Job #:	LDSPS internal
PO / AFE:	14043
LSD:	

Oil and Gas Required Fields (client use)

AFE/Cost Center:	PO#
Major/Minor Code:	Routing Code:
Requisitioner:	
Location:	

ALS Lab Work Order # (lab use only):

ALS Contact: Hilary Woods **Sampler:** bb

ALS Sample # (lab use only)	Sample Identification and/or Coordinates (This description will appear on the report)	Date (dd-mmm-yy)	Time (hh:mm)	Sample Type	pH, TSS, TDS, Turb	SAMPLES ON HOLD	Sample is hazardous (please provide further detail)	NUMBER OF CONTAINERS
	LDSPS	13-Apr-20		water	E1			1
	LDSPS	14-Apr-20		water	E1			1
	LDSPS	15-Apr-20		water	E1			1

Select Service Level Below - Contact your AM to confirm all E&P TATs (surcharges may apply)

Regular [R] ☑ Standard TAT if received by 3 pm - business days - no surcharges apply

(Business days)
- 4 day [P4-20%] ☐
- 3 day [P3-25%] ☐
- 2 day [P2-50%] ☐

EMERGENCY
- 1 Business day [E1 - 100%] ☑
- Same Day, Weekend or Statutory holiday [E2 -200% (Laboratory opening fees may apply)] ☐

Date and Time Required for all E&P TATs:

For tests that can not be performed according to the service level selected, you will be contacted.

Analysis Request

Indicate Filtered (F), Preserved (P) or Filtered and Preserved (F/P) below

Drinking Water (DW) Samples[1] (client use)

Are samples taken from a Regulated DW System? ☐ YES ☑ NO

Are samples for human consumption/ use? ☐ YES ☑ NO

Special Instructions / Specify Criteria to add on report by clicking on the drop-down list below (electronic COC only)

Please include Yukon Government EQWin format

SAMPLE CONDITION AS RECEIVED (lab use only)

Frozen ☐ SIF Observations Yes ☐ No ☐

Ice Packs ☐ Ice Cubes ☐ Custody seal intact Yes ☐ No ☐

Cooling Initiated ☐

INITIAL COOLER TEMPERATURES °C	FINAL COOLER TEMPERATURES °C
13.0	5°C (Avg of 7)

SHIPMENT RELEASE (client use)

Released by:		Time:
Bill Bowden	April 15 2020	16:00

INITIAL SHIPMENT RECEPTION (lab use only)

Received by:	Date:	Time:
	16/4/2020	2:45

FINAL SHIPMENT RECEPTION (lab use only)

Received by:	Date:	Time:
JG	17 April	3:30 PM

REFER TO BACK PAGE FOR ALS LOCATIONS AND SAMPLING INFORMATION

WHITE - LABORATORY COPY YELLOW - CLIENT COPY

SEPT 2017 FRONT

Failure to complete all portions of this form may delay analysis. Please fill in this form LEGIBLY. By the use of this form the user acknowledges and agrees with the Terms and Conditions as specified on the back page of the white - report copy.

1. If any water samples are taken from a **Regulated Drinking Water (DW) System**, please submit using an **Authorized DW COC form**.

ALS Environmental

CERTIFICATE OF ANALYSIS

Work Order	: **VA20A5041**	Page	: 1 of 6
Client	: **Victoria Gold (Yukon) Corp.**	Laboratory	: Vancouver - Environmental
Contact	: Bill Bowden	Account Manager	: Hilary Woods
Address	: Suite 1000 - 1050 W. Pender St Vancouver BC Canada V6E 3S7	Address	: 8081 Lougheed Highway Burnaby BC Canada V5A 1W9
Telephone	: 867.456.7700 ext. 6381	Telephone	: +1 604 253 4188
Project	: Freshnet	Date Samples Received	: 20-Apr-2020 15:50
PO	: 14043	Date Analysis Commenced	: 20-Apr-2020
C-O-C number	: 20200416	Issue Date	: 27-Apr-2020 09:54
Sampler	: JW, PS		
Site	: ----		
Quote number	: Q68199		
No. of samples received	: 2		
No. of samples analysed	: 2		

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QC Interpretive report to assist with Quality Review and Sample Receipt Notification (SRN).

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is conducted in accordance with US FDA 21 CFR Part 11.

Signatories	*Position*	*Laboratory Department*
Angelo Salandanan	Lab Assistant	Metals, Burnaby, British Columbia
Bruna Botti	Analyst	Inorganics - Water Quality, Burnaby, British Columbia
Caitlin Macey	Team Leader - Inorganics	Inorganics - Water Quality, Burnaby, British Columbia
Cristina Alexandre	Supervisor - Metals ICP Instrumentation	Metals, Burnaby, British Columbia
Erick Magalhaes	Laboratory Analyst	Inorganics - Water Quality, Burnaby, British Columbia
Evan Ben-Oliel	Metal Analyst	Metals, Burnaby, British Columbia
Kevin Duarte	Team Leader - Inorganics	Inorganics - Water Quality, Burnaby, British Columbia
Lindsay Gung	Supervisor - Water Chemistry	Inorganics - Water Quality, Burnaby, British Columbia

General Comments

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Refer to the ALS Quality Control Interpretive report (QCI) for applicable references and methodology summaries. Reference methods may incorporate modifications to improve performance.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

Please refer to Quality Control Interpretive report (QCI) for information regarding Holding Time compliance.

Key : CAS Number: Chemical Abstracts Services number is a unique identifier assigned to discrete substances
LOR: Limit of Reporting (detection limit).

Unit	*Description*
-	No Unit
%	percent
µS/cm	Microsiemens per centimetre
meq/L	milliequivalents per litre
mg/L	milligrams per litre
NTU	nephelometric turbidity units
pH units	pH units

<: less than.

>: greater than.

Surrogate: An analyte that is similar in behavior to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.

Test results reported relate only to the samples as received by the laboratory.

UNLESS OTHERWISE STATED on SRN or QCI Report, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

Analytical results in reports identified as "Preliminary Report" are considered authorized for use.

Qualifiers

Qualifier	*Description*
DTS	*Dissolved Sulfur concentration exceeds total. Negative bias on Total Sulfur suspected due to presence of volatile sulfur species lost during digestion.*

Analytical Results

Sub-Matrix: **Water**
(Matrix: **Water**)

Analyte	CAS Number	Method	LOR	Unit	Client sample ID	LDSPS	LLO	----	----	----
					Client sampling date / time	16-Apr-2020 11:55	16-Apr-2020 12:05	----	----	----
						VA20A5041-001	VA20A5041-002	--------	--------	--------
						Result	Result	----	----	----
Physical Tests										
alkalinity, total (as CaCO3)	----	E290	1.0	mg/L		36.6	95.0	----	----	----
conductivity	----	E100	2.0	µS/cm		172	15400	----	----	----
hardness (as CaCO3), dissolved	----	EC100	0.60	mg/L		81.0	123	----	----	----
hardness (as CaCO3), from total Ca/Mg	----	EC100A	0.60	mg/L		71.2	106	----	----	----
pH	----	E108	0.10	pH units		7.73	7.46	----	----	----
solids, total dissolved [TDS], calculated	----	EC103	1.0	mg/L		98.5	196	----	----	----
solids, total suspended [TSS]	----	E160-H	3.0	mg/L		27.2	11.8	----	----	----
turbidity	----	E121	0.10	NTU		29.0	18.8	----	----	----
Anions and Nutrients										
ammonia, total (as N)	7664-41-7	E298	0.0050	mg/L		0.0847	0.0687	----	----	----
bromide	24959-67-9	E235.Br-L	0.050	mg/L		<0.050	<0.050	----	----	----
chloride	16887-00-6	E235.Cl	0.50	mg/L		7.37	5.49	----	----	----
fluoride	16984-48-8	E235.F	0.020	mg/L		0.059	0.133	----	----	----
Kjeldahl nitrogen, total [TKN]	----	E318	0.050	mg/L		0.381	0.343	----	----	----
nitrate (as N)	14797-55-8	E235.NO3-L	0.0050	mg/L		0.264	0.382	----	----	----
nitrite (as N)	14797-65-0	E235.NO2-L	0.0010	mg/L		0.0055	0.0102	----	----	----
nitrogen, total	7727-37-9	E366	0.030	mg/L		0.568	0.640	----	----	----
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0010	mg/L		0.0054	0.0047	----	----	----
phosphorus, total	7723-14-0	E372-U	0.0020	mg/L		0.0520	0.0220	----	----	----
phosphorus, total dissolved	7723-14-0	E375-T	0.0020	mg/L		0.0099	0.0032	----	----	----
sulfate (as SO4)	14808-79-8	E235.SO4	0.30	mg/L		31.9	78.4	----	----	----
Organic / Inorganic Carbon										
carbon, dissolved organic [DOC]	----	E358-L	0.50	mg/L		1.78	2.13	----	----	----
carbon, total organic [TOC]	----	E355-L	0.50	mg/L		1.64	2.11	----	----	----
Ion Balance										
anion sum	----	EC101	0.10	meq/L		1.63	3.72	----	----	----
cation sum	----	EC101	0.10	meq/L		1.73	2.63	----	----	----
ion balance (cation-anion difference)	----	EC101	0.010	%		2.98	17.2	----	----	----
Total Metals										
aluminum, total	7429-90-5	E420	0.0030	mg/L		0.997	0.481	----	----	----

Analytical Results

Sub-Matrix: **Water**
(Matrix: **Water**)

Analyte	CAS Number	Method	LOR	Unit	Client sample ID	LDSPS	LLO	----	----	----
					Client sampling date / time	16-Apr-2020 11:55	16-Apr-2020 12:05	----	----	----
						VA20A5041-001	VA20A5041-002	--------	--------	--------
						Result	Result	----	----	----
Total Metals										
antimony, total	7440-36-0	E420	0.00010	mg/L		0.00407	0.00320	----	----	----
arsenic, total	7440-38-2	E420	0.00010	mg/L		0.0393	0.0392	----	----	----
barium, total	7440-39-3	E420	0.00010	mg/L		0.0252	0.0346	----	----	----
beryllium, total	7440-41-7	E420	0.000020	mg/L		0.000072	0.000038	----	----	----
bismuth, total	7440-69-9	E420	0.000050	mg/L		0.00242	0.000526	----	----	----
boron, total	7440-42-8	E420	0.010	mg/L		<0.010	<0.010	----	----	----
cadmium, total	7440-43-9	E420	0.0000050	mg/L		0.000118	0.000136	----	----	----
calcium, total	7440-70-2	E420	0.050	mg/L		22.4	28.4	----	----	----
chromium, total	7440-47-3	E420.Cr-L	0.00010	mg/L		0.00136	0.00085	----	----	----
cobalt, total	7440-48-4	E420	0.00010	mg/L		0.00123	0.00122	----	----	----
copper, total	7440-50-8	E420	0.00050	mg/L		0.00379	0.00414	----	----	----
iron, total	7439-89-6	E420	0.010	mg/L		1.47	0.966	----	----	----
lead, total	7439-92-1	E420	0.000050	mg/L		0.00882	0.00430	----	----	----
lithium, total	7439-93-2	E420	0.0010	mg/L		0.0035	0.0056	----	----	----
magnesium, total	7439-95-4	E420	0.100	mg/L		3.74	8.61	----	----	----
manganese, total	7439-96-5	E420	0.00010	mg/L		0.0494	0.0485	----	----	----
mercury, total	7439-97-6	E508	0.0000050	mg/L		0.0000051	0.0000056	----	----	----
molybdenum, total	7439-98-7	E420	0.000050	mg/L		0.00102	0.00129	----	----	----
nickel, total	7440-02-0	E420	0.00050	mg/L		0.00221	0.00252	----	----	----
phosphorus, total	7723-14-0	E420	0.050	mg/L		<0.050	<0.050	----	----	----
potassium, total	7440-09-7	E420	0.100	mg/L		1.50	2.09	----	----	----
selenium, total	7782-49-2	E420	0.000050	mg/L		0.000168	0.000401	----	----	----
silicon, total	7440-21-3	E420	0.10	mg/L		1.82	1.80	----	----	----
silver, total	7440-22-4	E420	0.000010	mg/L		0.000053	0.000024	----	----	----
sodium, total	7440-23-5	E420	0.050	mg/L		1.21	2.11	----	----	----
strontium, total	7440-24-6	E420	0.00020	mg/L		0.0860	0.132	----	----	----
sulfur, total	7704-34-9	E420	0.50	mg/L		9.17	18.4	----	----	----
thallium, total	7440-28-0	E420	0.000010	mg/L		0.000022	0.000014	----	----	----
tin, total	7440-31-5	E420	0.00010	mg/L		0.00016	0.00018	----	----	----
titanium, total	7440-32-6	E420	0.00030	mg/L		0.0417	0.0175	----	----	----
uranium, total	7440-61-1	E420	0.000010	mg/L		0.00118	0.00196	----	----	----

Analytical Results

Sub-Matrix: **Water**
(Matrix: **Water**)

Analyte	CAS Number	Method	LOR	Unit	Client sample ID	LDSPS	LLO	----	----	----
					Client sampling date / time	16-Apr-2020 11:55	16-Apr-2020 12:05	----	----	----
						VA20A5041-001	VA20A5041-002	--------	--------	--------
						Result	Result	----	----	----
Total Metals										
vanadium, total	7440-62-2	E420	0.00050	mg/L		0.00151	0.00096	----	----	----
zinc, total	7440-66-6	E420	0.0030	mg/L		0.0210	0.0142	----	----	----
zirconium, total	7440-67-7	E420	0.00030	mg/L		0.00040	<0.00030	----	----	----
Dissolved Metals										
aluminum, dissolved	7429-90-5	E421	0.0010	mg/L		0.0112	0.0094	----	----	----
antimony, dissolved	7440-36-0	E421	0.00010	mg/L		0.00152	0.00210	----	----	----
arsenic, dissolved	7440-38-2	E421	0.00010	mg/L		0.0131	0.0144	----	----	----
barium, dissolved	7440-39-3	E421	0.00010	mg/L		0.0143	0.0325	----	----	----
beryllium, dissolved	7440-41-7	E421	0.000020	mg/L		<0.000020	<0.000020	----	----	----
bismuth, dissolved	7440-69-9	E421	0.000050	mg/L		<0.000050	<0.000050	----	----	----
boron, dissolved	7440-42-8	E421	0.010	mg/L		<0.010	<0.010	----	----	----
cadmium, dissolved	7440-43-9	E421	0.0000050	mg/L		0.0000725	0.0000671	----	----	----
calcium, dissolved	7440-70-2	E421	0.050	mg/L		25.5	32.0	----	----	----
chromium, dissolved	7440-47-3	E421.Cr-L	0.00010	mg/L		<0.00010	0.00012	----	----	----
cobalt, dissolved	7440-48-4	E421	0.00010	mg/L		0.00051	0.00055	----	----	----
copper, dissolved	7440-50-8	E421	0.00020	mg/L		0.00080	0.00144	----	----	----
iron, dissolved	7439-89-6	E421	0.010	mg/L		<0.010	<0.010	----	----	----
lead, dissolved	7439-92-1	E421	0.000050	mg/L		<0.000050	<0.000050	----	----	----
lithium, dissolved	7439-93-2	E421	0.0010	mg/L		0.0032	0.0058	----	----	----
magnesium, dissolved	7439-95-4	E421	0.100	mg/L		4.18	10.6	----	----	----
manganese, dissolved	7439-96-5	E421	0.00010	mg/L		0.0296	0.0220	----	----	----
mercury, dissolved	7439-97-6	E509	0.0000050	mg/L		<0.0000050	<0.0000050	----	----	----
molybdenum, dissolved	7439-98-7	E421	0.000050	mg/L		0.000897	0.00121	----	----	----
nickel, dissolved	7440-02-0	E421	0.00050	mg/L		0.00072	0.00135	----	----	----
phosphorus, dissolved	7723-14-0	E421	0.050	mg/L		<0.050	<0.050	----	----	----
potassium, dissolved	7440-09-7	E421	0.100	mg/L		1.37	2.18	----	----	----
selenium, dissolved	7782-49-2	E421	0.000050	mg/L		0.000187	0.000346	----	----	----
silicon, dissolved	7440-21-3	E421	0.050	mg/L		0.563	1.50	----	----	----
silver, dissolved	7440-22-4	E421	0.000010	mg/L		<0.000010	<0.000010	----	----	----
sodium, dissolved	7440-23-5	E421	0.050	mg/L		1.44	2.34	----	----	----
strontium, dissolved	7440-24-6	E421	0.00020	mg/L		0.0955	0.151	----	----	----

Analytical Results

Sub-Matrix: **Water**
(Matrix: **Water**)

Analyte	CAS Number	Method	LOR	Unit	Client sample ID	LDSPS	LLO	----	----	----
					Client sampling date / time	16-Apr-2020 11:55	16-Apr-2020 12:05	----	----	----
						VA20A5041-001	VA20A5041-002	--------	--------	--------
						Result	Result	----	----	----
Dissolved Metals										
sulfur, dissolved	7704-34-9	E421	0.50	mg/L		12.4 DTS	21.0	----	----	----
thallium, dissolved	7440-28-0	E421	0.000010	mg/L		<0.000010	<0.000010	----	----	----
tin, dissolved	7440-31-5	E421	0.00010	mg/L		0.00012	0.00015	----	----	----
titanium, dissolved	7440-32-6	E421	0.00030	mg/L		<0.00030	<0.00030	----	----	----
uranium, dissolved	7440-61-1	E421	0.000010	mg/L		0.000966	0.00245	----	----	----
vanadium, dissolved	7440-62-2	E421	0.00050	mg/L		<0.00050	<0.00050	----	----	----
zinc, dissolved	7440-66-6	E421	0.0010	mg/L		0.0080	0.0057	----	----	----
zirconium, dissolved	7440-67-7	E421	0.00030	mg/L		<0.00030	<0.00030	----	----	----
dissolved mercury filtration location	----	EP509	-	-		Field	Field	----	----	----
dissolved metals filtration location	----	EP421	-	-		Field	Field	----	----	----

Please refer to the General Comments section for an explanation of any qualifiers detected.

CERTIFICATE OF ANALYSIS

Work Order	: **VA20A5186**	Page	: 1 of 10
Client	: **Victoria Gold (Yukon) Corp.**	Laboratory	: Vancouver - Environmental
Contact	: Bill Bowden	Account Manager	: Hilary Woods
Address	: Suite 1000 - 1050 W. Pender St Vancouver BC Canada V6E 3S7	Address	: 8081 Lougheed Highway Burnaby BC Canada V5A 1W9
Telephone	: 867.456.7700 ext. 6381	Telephone	: +1 604 253 4188
Project	: SWQ (Month)	Date Samples Received	: 22-Apr-2020 14:15
PO	: 14043	Date Analysis Commenced	: 22-Apr-2020
C-O-C number	: 20200420A	Issue Date	: 30-Apr-2020 16:20
Sampler	: ----		
Site	: ----		
Quote number	: Q68199		
No. of samples received	: 6		
No. of samples analysed	: 6		

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QC Interpretive report to assist with Quality Review and Sample Receipt Notification (SRN).

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is conducted in accordance with US FDA 21 CFR Part 11.

Signatories	*Position*	*Laboratory Department*
Aaron Yu	Laboratory Analyst	Metals, Burnaby, British Columbia
Angela Ren	Team Leader - Metals	Metals, Burnaby, British Columbia
Bruna Botti	Analyst	Inorganics - Water Quality, Burnaby, British Columbia
Caitlin Macey	Team Leader - Inorganics	Inorganics - Water Quality, Burnaby, British Columbia
Ilnaz Badbezanchi	Team Leader - Metals preparation	Metals, Burnaby, British Columbia
Jon Fisher	Department Manager - Inorganics	Inorganics, Waterloo, Ontario
Kim Jensen	Department Manager - Metals	Metals, Burnaby, British Columbia
Kinny Wu	Laboratory Analyst	Metals, Burnaby, British Columbia
Lindsay Gung	Supervisor - Water Chemistry	Inorganics - Water Quality, Burnaby, British Columbia
Robin Weeks	Team Leader - Metals	Inorganics - Water Quality, Burnaby, British Columbia
Robin Weeks	Team Leader - Metals	Metals, Burnaby, British Columbia
Shaneel Dayal	Metal Analyst	Metals, Burnaby, British Columbia
Tracy Harley	Supervisor - Water Quality Instrumentation	Inorganics - Water Quality, Burnaby, British Columbia

General Comments

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Refer to the ALS Quality Control Interpretive report (QCI) for applicable references and methodology summaries. Reference methods may incorporate modifications to improve performance.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

Please refer to Quality Control Interpretive report (QCI) for information regarding Holding Time compliance.

Key : CAS Number: Chemical Abstracts Services number is a unique identifier assigned to discrete substances
LOR: Limit of Reporting (detection limit).

Unit	*Description*
-	No Unit
%	percent
µS/cm	Microsiemens per centimetre
meq/L	milliequivalents per litre
mg/L	milligrams per litre
NTU	nephelometric turbidity units
pH units	pH units

<: less than.

>: greater than.

Surrogate: An analyte that is similar in behavior to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.

Test results reported relate only to the samples as received by the laboratory.

UNLESS OTHERWISE STATED on SRN or QCI Report, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

Analytical results in reports identified as "Preliminary Report" are considered authorized for use.

Qualifiers

Qualifier	*Description*
DLM	*Detection Limit Adjusted due to sample matrix effects (e.g. chemical interference, colour, turbidity).*
DTC	*Dissolved concentration exceeds total. Results were confirmed by re-analysis.*

Analytical Results

Sub-Matrix: **Water**
(Matrix: **Water**)

Analyte	CAS Number	Method	LOR	Unit	Client sample ID	LLO	LDSPI	W29	W4	W22
					Client sampling date / time	19-Apr-2020 13:20	19-Apr-2020 13:05	20-Apr-2020 16:45	19-Apr-2020 17:10	20-Apr-2020 17:30
						VA20A5186-001	VA20A5186-002	VA20A5186-003	VA20A5186-004	VA20A5186-005
						Result	Result	Result	Result	Result
Physical Tests										
alkalinity, total (as CaCO3)	----	E290	1.0	mg/L		115	83.9	71.1	65.3	86.5
conductivity	----	E100	2.0	µS/cm		439	348	282	245	332
hardness (as CaCO3), dissolved	----	EC100	0.60	mg/L		218	156	132	113	161
hardness (as CaCO3), from total Ca/Mg	----	EC100A	0.60	mg/L		218	179	158	154	174
pH	----	E108	0.10	pH units		8.13	7.91	7.84	7.69	7.91
solids, total dissolved [TDS], calculated	----	EC103	1.0	mg/L		276	211	178	156	208
solids, total suspended [TSS]	----	E160-H	3.0	mg/L		42.3	97.9	490	2020	3.7
turbidity	----	E121	0.10	NTU		83.1	230	602	2940	2.20
Anions and Nutrients										
ammonia, total (as N)	7664-41-7	E298	0.0050	mg/L		0.0410	0.0919	0.0250	0.0391	0.0120
bromide	24959-67-9	E235.Br-L	0.050	mg/L		0.058	0.057	<0.050	<0.050	<0.050
chloride	16887-00-6	E235.Cl	0.50	mg/L		15.5	16.5	8.15	5.65	2.44
cyanate	88402-73-7	E343	0.20	mg/L		----	----	<0.20	<0.20	0.40
fluoride	16984-48-8	E235.F	0.020	mg/L		0.152	0.149	0.119	0.126	0.116
Kjeldahl nitrogen, total [TKN]	----	E318	0.050	mg/L		0.392	0.572	0.636	0.532	0.174
nitrate (as N)	14797-55-8	E235.NO3-L	0.0050	mg/L		0.587	0.602	0.141	0.172	0.126
nitrite (as N)	14797-65-0	E235.NO2-L	0.0010	mg/L		0.0153	0.0341	0.0029	0.0035	0.0010
nitrogen, total	7727-37-9	E366	0.030	mg/L		0.781	0.968	0.671	<0.600 DLM	0.290
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0010	mg/L		<0.0010	<0.0010	0.0023	0.0026	0.0015
phosphorus, total	7723-14-0	E372-U	0.0020	mg/L		0.0480	0.0941	0.243	0.573	0.0095
phosphorus, total dissolved	7723-14-0	E375-T	0.0020	mg/L		0.0049	0.0080	0.0120	0.0111	0.0054
sulfate (as SO4)	14808-79-8	E235.SO4	0.30	mg/L		92.8	63.5	57.0	48.4	80.8
Cyanides										
cyanide, total	----	E333	0.0050	mg/L		<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
cyanide, weak acid dissociable	----	E336	0.0050	mg/L		<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
thiocyanate	302-04-5	E344	0.50	mg/L		----	----	<0.50	<0.50	<0.50
Organic / Inorganic Carbon										
carbon, dissolved organic [DOC]	----	E358-L	0.50	mg/L		4.43	7.43	11.1	10.4	5.19
carbon, total organic [TOC]	----	E355-L	0.50	mg/L		4.18	7.53	13.5	11.5	5.08
Ion Balance										

Analytical Results

Sub-Matrix: **Water**
(Matrix: **Water**)

Analyte	CAS Number	Method	LOR	Unit	Client sample ID	LLO	LDSPI	W29	W4	W22
					Client sampling date / time	19-Apr-2020 13:20	19-Apr-2020 13:05	20-Apr-2020 16:45	19-Apr-2020 17:10	20-Apr-2020 17:30
						VA20A5186-001	VA20A5186-002	VA20A5186-003	VA20A5186-004	VA20A5186-005
						Result	Result	Result	Result	Result
Ion Balance										
anion sum	----	EC101	0.10	meq/L		4.72	3.52	2.85	2.49	3.49
cation sum	----	EC101	0.10	meq/L		4.70	3.43	2.86	2.44	3.35
ion balance (cation-anion difference)	----	EC101	0.010	%		0.212	1.29	0.175	1.01	2.05
Total Metals										
aluminum, total	7429-90-5	E420	0.0030	mg/L		1.02	4.10	6.41	5.77	0.0472
antimony, total	7440-36-0	E420	0.00010	mg/L		0.00630	0.0163	0.00879	0.00506	0.00026
arsenic, total	7440-38-2	E420	0.00010	mg/L		0.0658	0.207	0.233	0.158	0.00109
barium, total	7440-39-3	E420	0.00010	mg/L		0.0802	0.0956	0.147	0.301	0.0354
beryllium, total	7440-41-7	E420	0.000020	mg/L		0.000080	0.000371	0.000526	0.000825	<0.000020
bismuth, total	7440-69-9	E420	0.000050	mg/L		0.000367	0.00410	0.00210	0.000960	<0.000050
boron, total	7440-42-8	E420	0.010	mg/L		<0.010	<0.010	<0.010	<0.010	<0.010
cadmium, total	7440-43-9	E420	0.0000050	mg/L		0.0000984	0.000377	0.000380	0.000778	0.0000208
calcium, total	7440-70-2	E420	0.050	mg/L		56.2	51.6	37.7	38.8	42.1
chromium, total	7440-47-3	E420.Cr-L	0.00010	mg/L		0.00188	0.00592	0.0110	0.0105	0.00020
cobalt, total	7440-48-4	E420	0.00010	mg/L		0.00147	0.00450	0.00827	0.0159	0.00020
copper, total	7440-50-8	E420	0.00050	mg/L		0.00537	0.0174	0.0253	0.0283	0.00069
iron, total	7439-89-6	E420	0.010	mg/L		2.17	7.30	13.8	10.8	0.215
lead, total	7439-92-1	E420	0.000050	mg/L		0.00773	0.0348	0.0377	0.0463	0.000140
lithium, total	7439-93-2	E420	0.0010	mg/L		0.0100	0.0111	0.0147	0.0154	0.0067
magnesium, total	7439-95-4	E420	0.100	mg/L		19.0	12.2	15.4	13.9	16.9
manganese, total	7439-96-5	E420	0.00010	mg/L		0.0762	0.198	0.411	1.05	0.0546
mercury, total	7439-97-6	E508	0.0000050	mg/L		0.0000112	0.0000304	0.0000432	0.000152	<0.0000050
molybdenum, total	7439-98-7	E420	0.000050	mg/L		0.00244	0.00453	0.000581	0.000429	0.000061
nickel, total	7440-02-0	E420	0.00050	mg/L		0.00376	0.0104	0.0167	0.0206	0.00163
phosphorus, total	7723-14-0	E420	0.050	mg/L		0.056	0.104	0.169	0.268	<0.050
potassium, total	7440-09-7	E420	0.100	mg/L		3.58	4.36	4.20	4.18	1.50
selenium, total	7782-49-2	E420	0.000050	mg/L		0.000539	0.000704	0.000321	0.000243	0.000140
silicon, total	7440-21-3	E420	0.10	mg/L		3.99	8.03	11.7	9.50	3.66
silver, total	7440-22-4	E420	0.000010	mg/L		0.000045	0.000229	0.000271	0.000132	0.000011
sodium, total	7440-23-5	E420	0.050	mg/L		5.21	4.93	3.39	2.82	2.27
strontium, total	7440-24-6	E420	0.00020	mg/L		0.293	0.272	0.204	0.203	0.212

Analytical Results

Sub-Matrix: **Water**
(Matrix: **Water**)

Analyte	CAS Number	Method	LOR	Unit	Client sample ID	LLO	LDSPI	W29	W4	W22
					Client sampling date / time	19-Apr-2020 13:20	19-Apr-2020 13:05	20-Apr-2020 16:45	19-Apr-2020 17:10	20-Apr-2020 17:30
						VA20A5186-001	VA20A5186-002	VA20A5186-003	VA20A5186-004	VA20A5186-005
						Result	Result	Result	Result	Result
Total Metals										
sulfur, total	7704-34-9	E420	0.50	mg/L		31.0	21.7	19.7	15.5	27.1
thallium, total	7440-28-0	E420	0.000010	mg/L		0.000033	0.000085	0.000172	0.000135	<0.000010
tin, total	7440-31-5	E420	0.00010	mg/L		<0.00010	0.00018	0.00018	0.00012	<0.00010
titanium, total	7440-32-6	E420	0.00030	mg/L		0.0574	0.0894	0.161	0.107	<0.00090 DLM
uranium, total	7440-61-1	E420	0.000010	mg/L		0.00536	0.00552	0.00218	0.00268	0.00100
vanadium, total	7440-62-2	E420	0.00050	mg/L		0.00248	0.00711	0.0129	0.0122	<0.00050
zinc, total	7440-66-6	E420	0.0030	mg/L		0.0125	0.0534	0.0589	0.0706	0.0039
zirconium, total	7440-67-7	E420	0.00030	mg/L		0.00039	0.00031	0.00152	0.00074	<0.00030
Dissolved Metals										
aluminum, dissolved	7429-90-5	E421	0.0010	mg/L		0.0040	0.0239	0.0330	0.0429	0.0122
antimony, dissolved	7440-36-0	E421	0.00010	mg/L		0.00480	0.00640	0.00139	0.00097	0.00020
arsenic, dissolved	7440-38-2	E421	0.00010	mg/L		0.0221	0.0195	0.0144	0.0120	0.00066
barium, dissolved	7440-39-3	E421	0.00010	mg/L		0.0586	0.0380	0.0335	0.0277	0.0347
beryllium, dissolved	7440-41-7	E421	0.000020	mg/L		<0.000020	<0.000020	<0.000020	<0.000020	<0.000020
bismuth, dissolved	7440-69-9	E421	0.000050	mg/L		<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
boron, dissolved	7440-42-8	E421	0.010	mg/L		<0.010	<0.010	<0.010	<0.010	<0.010
cadmium, dissolved	7440-43-9	E421	0.0000050	mg/L		0.0000418	0.0000601	0.0000570	0.0000261	0.0000181
calcium, dissolved	7440-70-2	E421	0.050	mg/L		56.3	44.9	33.3	28.2	38.0
chromium, dissolved	7440-47-3	E421.Cr-L	0.00010	mg/L		0.00012	<0.00010	0.00012	0.00016	<0.00010
cobalt, dissolved	7440-48-4	E421	0.00010	mg/L		0.00027	0.00074	0.00046	0.00032	0.00015
copper, dissolved	7440-50-8	E421	0.00020	mg/L		0.00122	0.00154	0.00197	0.00175	0.00056
iron, dissolved	7439-89-6	E421	0.010	mg/L		<0.010	0.022	0.112	0.169	0.048
lead, dissolved	7439-92-1	E421	0.000050	mg/L		<0.000050	0.000140	0.000290	0.000377	<0.000050
lithium, dissolved	7439-93-2	E421	0.0010	mg/L		0.0085	0.0063	0.0052	0.0050	0.0063
magnesium, dissolved	7439-95-4	E421	0.100	mg/L		18.9	10.6	12.0	10.2	16.0
manganese, dissolved	7439-96-5	E421	0.00010	mg/L		0.0312	0.0963	0.0755	0.0526	0.0480
mercury, dissolved	7439-97-6	E509	0.0000050	mg/L		<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050
molybdenum, dissolved	7439-98-7	E421	0.000050	mg/L		0.00319	0.00461	0.000563	0.000594 DTC	<0.000050
nickel, dissolved	7440-02-0	E421	0.00050	mg/L		0.00139	0.00180	0.00178	0.00159	0.00160
phosphorus, dissolved	7723-14-0	E421	0.050	mg/L		<0.050	<0.050	<0.050	<0.050	<0.050
potassium, dissolved	7440-09-7	E421	0.100	mg/L		3.70	3.66	2.37	2.04	1.54

Analytical Results

Sub-Matrix: **Water**
(Matrix: **Water**)

Analyte	CAS Number	Method	LOR	Unit	Client sample ID	LLO	LDSPI	W29	W4	W22
					Client sampling date / time	19-Apr-2020 13:20	19-Apr-2020 13:05	20-Apr-2020 16:45	19-Apr-2020 17:10	20-Apr-2020 17:30
						VA20A5186-001	VA20A5186-002	VA20A5186-003	VA20A5186-004	VA20A5186-005
						Result	Result	Result	Result	Result
Dissolved Metals										
selenium, dissolved	7782-49-2	E421	0.000050	mg/L		0.000587	0.000660	0.000209	0.000191	0.000157
silicon, dissolved	7440-21-3	E421	0.050	mg/L		2.67	2.16	2.86	3.02	3.52
silver, dissolved	7440-22-4	E421	0.000010	mg/L		<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
sodium, dissolved	7440-23-5	E421	0.050	mg/L		5.43	4.66	3.21	2.80	2.13
strontium, dissolved	7440-24-6	E421	0.00020	mg/L		0.288	0.236	0.164	0.137	0.188
sulfur, dissolved	7704-34-9	E421	0.50	mg/L		30.8	20.3	18.7	15.8	26.8
thallium, dissolved	7440-28-0	E421	0.000010	mg/L		<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
tin, dissolved	7440-31-5	E421	0.00010	mg/L		<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
titanium, dissolved	7440-32-6	E421	0.00030	mg/L		<0.00030	0.00054	0.00144	0.00201	<0.00030
uranium, dissolved	7440-61-1	E421	0.000010	mg/L		0.00516	0.00443	0.00113	0.000969	0.000940
vanadium, dissolved	7440-62-2	E421	0.00050	mg/L		<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
zinc, dissolved	7440-66-6	E421	0.0010	mg/L		0.0013	0.0013	0.0037	0.0015	0.0031
zirconium, dissolved	7440-67-7	E421	0.00030	mg/L		<0.00030	<0.00030	<0.00030	<0.00030	<0.00030
dissolved mercury filtration location	----	EP509	-	-		Field	Field	Field	Field	Field
dissolved metals filtration location	----	EP421	-	-		Field	Field	Field	Field	Field

Please refer to the General Comments section for an explanation of any qualifiers detected.

Analytical Results

Sub-Matrix: **Water**
(Matrix: **Water**)

Analyte	CAS Number	Method	LOR	Unit	Client sample ID	LDSPI	----	----	----	----
					Client sampling date / time	20-Apr-2020 19:00	----	----	----	----
						VA20A5186-006	--------	--------	--------	--------
						Result	----	----	----	----
Physical Tests										
alkalinity, total (as CaCO3)	----	E290	1.0	mg/L		118	----	----	----	----
conductivity	----	E100	2.0	µS/cm		441	----	----	----	----
hardness (as CaCO3), dissolved	----	EC100	0.60	mg/L		209	----	----	----	----
hardness (as CaCO3), from total Ca/Mg	----	EC100A	0.60	mg/L		223	----	----	----	----
pH	----	E108	0.10	pH units		8.12	----	----	----	----
solids, total dissolved [TDS], calculated	----	EC103	1.0	mg/L		278	----	----	----	----
solids, total suspended [TSS]	----	E160-H	3.0	mg/L		18.7	----	----	----	----
turbidity	----	E121	0.10	NTU		46.4	----	----	----	----
Anions and Nutrients										
ammonia, total (as N)	7664-41-7	E298	0.0050	mg/L		0.0799	----	----	----	----
bromide	24959-67-9	E235.Br-L	0.050	mg/L		0.069	----	----	----	----
chloride	16887-00-6	E235.Cl	0.50	mg/L		19.0	----	----	----	----
fluoride	16984-48-8	E235.F	0.020	mg/L		0.166	----	----	----	----
Kjeldahl nitrogen, total [TKN]	----	E318	0.050	mg/L		0.373	----	----	----	----
nitrate (as N)	14797-55-8	E235.NO3-L	0.0050	mg/L		0.574	----	----	----	----
nitrite (as N)	14797-65-0	E235.NO2-L	0.0010	mg/L		0.0306	----	----	----	----
nitrogen, total	7727-37-9	E366	0.030	mg/L		0.853	----	----	----	----
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0010	mg/L		<0.0010	----	----	----	----
phosphorus, total	7723-14-0	E372-U	0.0020	mg/L		0.0333	----	----	----	----
phosphorus, total dissolved	7723-14-0	E375-T	0.0020	mg/L		0.0079	----	----	----	----
sulfate (as SO4)	14808-79-8	E235.SO4	0.30	mg/L		87.4	----	----	----	----
Cyanides										
cyanide, total	----	E333	0.0050	mg/L		<0.0050	----	----	----	----
cyanide, weak acid dissociable	----	E336	0.0050	mg/L		<0.0050	----	----	----	----
Organic / Inorganic Carbon										
carbon, dissolved organic [DOC]	----	E358-L	0.50	mg/L		6.98	----	----	----	----
carbon, total organic [TOC]	----	E355-L	0.50	mg/L		6.40	----	----	----	----
Ion Balance										
anion sum	----	EC101	0.10	meq/L		4.77	----	----	----	----
cation sum	----	EC101	0.10	meq/L		4.54	----	----	----	----
ion balance (cation-anion difference)	----	EC101	0.010	%		2.47	----	----	----	----

Analytical Results

Sub-Matrix: **Water**
(Matrix: **Water**)

Analyte	CAS Number	Method	LOR	Unit	Client sample ID	LDSPI	----	----	----	----
					Client sampling date / time	20-Apr-2020 19:00	----	----	----	----
						VA20A5186-006	--------	--------	--------	--------
						Result	----	----	----	----
Total Metals										
aluminum, total	7429-90-5	E420	0.0030	mg/L		0.793	----	----	----	----
antimony, total	7440-36-0	E420	0.00010	mg/L		0.00892	----	----	----	----
arsenic, total	7440-38-2	E420	0.00010	mg/L		0.0637	----	----	----	----
barium, total	7440-39-3	E420	0.00010	mg/L		0.0627	----	----	----	----
beryllium, total	7440-41-7	E420	0.000020	mg/L		0.000076	----	----	----	----
bismuth, total	7440-69-9	E420	0.000050	mg/L		0.000839	----	----	----	----
boron, total	7440-42-8	E420	0.010	mg/L		<0.010	----	----	----	----
cadmium, total	7440-43-9	E420	0.0000050	mg/L		0.000147	----	----	----	----
calcium, total	7440-70-2	E420	0.050	mg/L		62.2	----	----	----	----
chromium, total	7440-47-3	E420.Cr-L	0.00010	mg/L		0.00118	----	----	----	----
cobalt, total	7440-48-4	E420	0.00010	mg/L		0.00161	----	----	----	----
copper, total	7440-50-8	E420	0.00050	mg/L		0.00459	----	----	----	----
iron, total	7439-89-6	E420	0.010	mg/L		1.38	----	----	----	----
lead, total	7439-92-1	E420	0.000050	mg/L		0.00714	----	----	----	----
lithium, total	7439-93-2	E420	0.0010	mg/L		0.0095	----	----	----	----
magnesium, total	7439-95-4	E420	0.100	mg/L		16.5	----	----	----	----
manganese, total	7439-96-5	E420	0.00010	mg/L		0.134	----	----	----	----
mercury, total	7439-97-6	E508	0.0000050	mg/L		0.0000095	----	----	----	----
molybdenum, total	7439-98-7	E420	0.000050	mg/L		0.00446	----	----	----	----
nickel, total	7440-02-0	E420	0.00050	mg/L		0.00355	----	----	----	----
phosphorus, total	7723-14-0	E420	0.050	mg/L		<0.050	----	----	----	----
potassium, total	7440-09-7	E420	0.100	mg/L		4.17	----	----	----	----
selenium, total	7782-49-2	E420	0.000050	mg/L		0.000642	----	----	----	----
silicon, total	7440-21-3	E420	0.10	mg/L		3.75	----	----	----	----
silver, total	7440-22-4	E420	0.000010	mg/L		0.000058	----	----	----	----
sodium, total	7440-23-5	E420	0.050	mg/L		5.87	----	----	----	----
strontium, total	7440-24-6	E420	0.00020	mg/L		0.339	----	----	----	----
sulfur, total	7704-34-9	E420	0.50	mg/L		29.0	----	----	----	----
thallium, total	7440-28-0	E420	0.000010	mg/L		0.000022	----	----	----	----
tin, total	7440-31-5	E420	0.00010	mg/L		<0.00010	----	----	----	----
titanium, total	7440-32-6	E420	0.00030	mg/L		0.0226	----	----	----	----

Analytical Results

Sub-Matrix: **Water**
(Matrix: **Water**)

Analyte	CAS Number	Method	LOR	Unit	Client sample ID	LDSPI	----	----	----	----
					Client sampling date / time	20-Apr-2020 19:00	----	----	----	----
						VA20A5186-006	--------	--------	--------	--------
						Result	----	----	----	----
Total Metals										
uranium, total	7440-61-1	E420	0.000010	mg/L		0.00594	----	----	----	----
vanadium, total	7440-62-2	E420	0.00050	mg/L		0.00160	----	----	----	----
zinc, total	7440-66-6	E420	0.0030	mg/L		0.0114	----	----	----	----
zirconium, total	7440-67-7	E420	0.00030	mg/L		<0.00030	----	----	----	----
Dissolved Metals										
aluminum, dissolved	7429-90-5	E421	0.0010	mg/L		0.0069	----	----	----	----
antimony, dissolved	7440-36-0	E421	0.00010	mg/L		0.00653	----	----	----	----
arsenic, dissolved	7440-38-2	E421	0.00010	mg/L		0.0227	----	----	----	----
barium, dissolved	7440-39-3	E421	0.00010	mg/L		0.0495	----	----	----	----
beryllium, dissolved	7440-41-7	E421	0.000020	mg/L		<0.000020	----	----	----	----
bismuth, dissolved	7440-69-9	E421	0.000050	mg/L		<0.000050	----	----	----	----
boron, dissolved	7440-42-8	E421	0.010	mg/L		<0.010	----	----	----	----
cadmium, dissolved	7440-43-9	E421	0.0000050	mg/L		0.0000656	----	----	----	----
calcium, dissolved	7440-70-2	E421	0.050	mg/L		58.6	----	----	----	----
chromium, dissolved	7440-47-3	E421.Cr-L	0.00010	mg/L		<0.00010	----	----	----	----
cobalt, dissolved	7440-48-4	E421	0.00010	mg/L		0.00084	----	----	----	----
copper, dissolved	7440-50-8	E421	0.00020	mg/L		0.00149	----	----	----	----
iron, dissolved	7439-89-6	E421	0.010	mg/L		<0.010	----	----	----	----
lead, dissolved	7439-92-1	E421	0.000050	mg/L		0.000057	----	----	----	----
lithium, dissolved	7439-93-2	E421	0.0010	mg/L		0.0084	----	----	----	----
magnesium, dissolved	7439-95-4	E421	0.100	mg/L		15.3	----	----	----	----
manganese, dissolved	7439-96-5	E421	0.00010	mg/L		0.112	----	----	----	----
mercury, dissolved	7439-97-6	E509	0.0000050	mg/L		<0.0000050	----	----	----	----
molybdenum, dissolved	7439-98-7	E421	0.000050	mg/L		0.00455	----	----	----	----
nickel, dissolved	7440-02-0	E421	0.00050	mg/L		0.00198	----	----	----	----
phosphorus, dissolved	7723-14-0	E421	0.050	mg/L		<0.050	----	----	----	----
potassium, dissolved	7440-09-7	E421	0.100	mg/L		4.12	----	----	----	----
selenium, dissolved	7782-49-2	E421	0.000050	mg/L		0.000695	----	----	----	----
silicon, dissolved	7440-21-3	E421	0.050	mg/L		2.67	----	----	----	----
silver, dissolved	7440-22-4	E421	0.000010	mg/L		<0.000010	----	----	----	----
sodium, dissolved	7440-23-5	E421	0.050	mg/L		5.53	----	----	----	----

Analytical Results

Sub-Matrix: **Water**
(Matrix: **Water**)

Analyte	CAS Number	Method	LOR	Unit	Client sample ID	LDSPI	----	----	----	----
					Client sampling date / time	20-Apr-2020 19:00	----	----	----	----
						VA20A5186-006	--------	--------	--------	--------
						Result	----	----	----	----
Dissolved Metals										
strontium, dissolved	7440-24-6	E421	0.00020	mg/L		0.306	----	----	----	----
sulfur, dissolved	7704-34-9	E421	0.50	mg/L		28.7	----	----	----	----
thallium, dissolved	7440-28-0	E421	0.000010	mg/L		<0.000010	----	----	----	----
tin, dissolved	7440-31-5	E421	0.00010	mg/L		<0.00010	----	----	----	----
titanium, dissolved	7440-32-6	E421	0.00030	mg/L		<0.00030	----	----	----	----
uranium, dissolved	7440-61-1	E421	0.000010	mg/L		0.00566	----	----	----	----
vanadium, dissolved	7440-62-2	E421	0.00050	mg/L		<0.00050	----	----	----	----
zinc, dissolved	7440-66-6	E421	0.0010	mg/L		0.0016	----	----	----	----
zirconium, dissolved	7440-67-7	E421	0.00030	mg/L		<0.00030	----	----	----	----
dissolved mercury filtration location	----	EP509	-	-		Field	----	----	----	----
dissolved metals filtration location	----	EP421	-	-		Field	----	----	----	----

Please refer to the General Comments section for an explanation of any qualifiers detected.

ALS Environmental

CERTIFICATE OF ANALYSIS

Work Order	: **VA20A5185**	Page	: 1 of 6
Client	: **Victoria Gold (Yukon) Corp.**	Laboratory	: Vancouver - Environmental
Contact	: Bill Bowden	Account Manager	: Hilary Woods
Address	: Suite 1000 - 1050 W. Pender St Vancouver BC Canada V6E 3S7	Address	: 8081 Lougheed Highway Burnaby BC Canada V5A 1W9
Telephone	: 867.456.7700 ext. 6381	Telephone	: +1 604 253 4188
Project	: LDSP (April 21)	Date Samples Received	: 22-Apr-2020 14:15
PO	: 14043	Date Analysis Commenced	: 22-Apr-2020
C-O-C number	: 20200420B	Issue Date	: 29-Apr-2020 16:48
Sampler	: PE		
Site	: ----		
Quote number	: Q68199		
No. of samples received	: 1		
No. of samples analysed	: 1		

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QC Interpretive report to assist with Quality Review and Sample Receipt Notification (SRN).

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is conducted in accordance with US FDA 21 CFR Part 11.

Signatories	*Position*	*Laboratory Department*
Aaron Yu	Laboratory Analyst	Metals, Burnaby, British Columbia
Angela Ren	Team Leader - Metals	Metals, Burnaby, British Columbia
Bruna Botti	Analyst	Inorganics - Water Quality, Burnaby, British Columbia
Caitlin Macey	Team Leader - Inorganics	Inorganics - Water Quality, Burnaby, British Columbia
Ilnaz Badbezanchi	Team Leader - Metals preparation	Metals, Burnaby, British Columbia
Kinny Wu	Laboratory Analyst	Metals, Burnaby, British Columbia
Lindsay Gung	Supervisor - Water Chemistry	Inorganics - Water Quality, Burnaby, British Columbia
Robin Weeks	Team Leader - Metals	Inorganics - Water Quality, Burnaby, British Columbia
Robin Weeks	Team Leader - Metals	Metals, Burnaby, British Columbia

General Comments

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Refer to the ALS Quality Control Interpretive report (QCI) for applicable references and methodology summaries. Reference methods may incorporate modifications to improve performance.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

Please refer to Quality Control Interpretive report (QCI) for information regarding Holding Time compliance.

Key : CAS Number: Chemical Abstracts Services number is a unique identifier assigned to discrete substances
LOR: Limit of Reporting (detection limit).

Unit	*Description*
-	No Unit
%	percent
µS/cm	Microsiemens per centimetre
meq/L	milliequivalents per litre
mg/L	milligrams per litre
NTU	nephelometric turbidity units
pH units	pH units

<: less than.

>: greater than.

Surrogate: An analyte that is similar in behavior to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.

Test results reported relate only to the samples as received by the laboratory.

UNLESS OTHERWISE STATED on SRN or QCI Report, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

Analytical results in reports identified as "Preliminary Report" are considered authorized for use.

Analytical Results

Sub-Matrix: **Water**
(Matrix: **Water**)

Analyte	CAS Number	Method	LOR	Unit	Client sample ID	FDP5	----	----	----	----
					Client sampling date / time	20-Apr-2020	----	----	----	----
						VA20A5185-001	--------	--------	--------	--------
						Result	----	----	----	----
Physical Tests										
alkalinity, total (as CaCO3)	----	E290	1.0	mg/L		114	----	----	----	----
conductivity	----	E100	2.0	µS/cm		433	----	----	----	----
hardness (as CaCO3), dissolved	----	EC100	0.60	mg/L		202	----	----	----	----
hardness (as CaCO3), from total Ca/Mg	----	EC100A	0.60	mg/L		209	----	----	----	----
pH	----	E108	0.10	pH units		8.00	----	----	----	----
solids, total dissolved [TDS], calculated	----	EC103	1.0	mg/L		271	----	----	----	----
solids, total suspended [TSS]	----	E160-H	3.0	mg/L		61.9	----	----	----	----
turbidity	----	E121	0.10	NTU		147	----	----	----	----
Anions and Nutrients										
ammonia, total (as N)	7664-41-7	E298	0.0050	mg/L		0.0783	----	----	----	----
bromide	24959-67-9	E235.Br-L	0.050	mg/L		0.069	----	----	----	----
chloride	16887-00-6	E235.Cl	0.50	mg/L		18.4	----	----	----	----
fluoride	16984-48-8	E235.F	0.020	mg/L		0.167	----	----	----	----
Kjeldahl nitrogen, total [TKN]	----	E318	0.050	mg/L		0.531	----	----	----	----
nitrate (as N)	14797-55-8	E235.NO3-L	0.0050	mg/L		0.586	----	----	----	----
nitrite (as N)	14797-65-0	E235.NO2-L	0.0010	mg/L		0.0304	----	----	----	----
nitrogen, total	7727-37-9	E366	0.030	mg/L		0.898	----	----	----	----
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0010	mg/L		<0.0010	----	----	----	----
phosphorus, total	7723-14-0	E372-U	0.0020	mg/L		0.0718	----	----	----	----
phosphorus, total dissolved	7723-14-0	E375-T	0.0020	mg/L		0.0070	----	----	----	----
sulfate (as SO4)	14808-79-8	E235.SO4	0.30	mg/L		86.2	----	----	----	----
Cyanides										
cyanide, total	----	E333	0.0050	mg/L		<0.0050	----	----	----	----
cyanide, weak acid dissociable	----	E336	0.0050	mg/L		<0.0050	----	----	----	----
Organic / Inorganic Carbon										
carbon, dissolved organic [DOC]	----	E358-L	0.50	mg/L		7.09	----	----	----	----
carbon, total organic [TOC]	----	E355-L	0.50	mg/L		7.25	----	----	----	----
Ion Balance										
anion sum	----	EC101	0.10	meq/L		4.65	----	----	----	----
cation sum	----	EC101	0.10	meq/L		4.39	----	----	----	----
ion balance (cation-anion difference)	----	EC101	0.010	%		2.88	----	----	----	----

Analytical Results

Sub-Matrix: **Water**
(Matrix: **Water**)

Analyte	CAS Number	Method	LOR	Unit	Client sample ID	FDP5	----	----	----	----
					Client sampling date / time	20-Apr-2020	----	----	----	----
						VA20A5185-001	--------	--------	--------	--------
						Result	----	----	----	----
Total Metals										
aluminum, total	7429-90-5	E420	0.0030	mg/L		2.36	----	----	----	----
antimony, total	7440-36-0	E420	0.00010	mg/L		0.0119	----	----	----	----
arsenic, total	7440-38-2	E420	0.00010	mg/L		0.142	----	----	----	----
barium, total	7440-39-3	E420	0.00010	mg/L		0.0804	----	----	----	----
beryllium, total	7440-41-7	E420	0.000020	mg/L		0.000170	----	----	----	----
bismuth, total	7440-69-9	E420	0.000050	mg/L		0.00202	----	----	----	----
boron, total	7440-42-8	E420	0.010	mg/L		<0.010	----	----	----	----
cadmium, total	7440-43-9	E420	0.0000050	mg/L		0.000222	----	----	----	----
calcium, total	7440-70-2	E420	0.050	mg/L		56.6	----	----	----	----
chromium, total	7440-47-3	E420.Cr-L	0.00010	mg/L		0.00368	----	----	----	----
cobalt, total	7440-48-4	E420	0.00010	mg/L		0.00315	----	----	----	----
copper, total	7440-50-8	E420	0.00050	mg/L		0.0110	----	----	----	----
iron, total	7439-89-6	E420	0.010	mg/L		4.36	----	----	----	----
lead, total	7439-92-1	E420	0.000050	mg/L		0.0174	----	----	----	----
lithium, total	7439-93-2	E420	0.0010	mg/L		0.0095	----	----	----	----
magnesium, total	7439-95-4	E420	0.100	mg/L		16.4	----	----	----	----
manganese, total	7439-96-5	E420	0.00010	mg/L		0.176	----	----	----	----
mercury, total	7439-97-6	E508	0.0000050	mg/L		0.0000192	----	----	----	----
molybdenum, total	7439-98-7	E420	0.000050	mg/L		0.00432	----	----	----	----
nickel, total	7440-02-0	E420	0.00050	mg/L		0.00719	----	----	----	----
phosphorus, total	7723-14-0	E420	0.050	mg/L		0.062	----	----	----	----
potassium, total	7440-09-7	E420	0.100	mg/L		4.42	----	----	----	----
selenium, total	7782-49-2	E420	0.000050	mg/L		0.000739	----	----	----	----
silicon, total	7440-21-3	E420	0.10	mg/L		6.48	----	----	----	----
silver, total	7440-22-4	E420	0.000010	mg/L		0.000115	----	----	----	----
sodium, total	7440-23-5	E420	0.050	mg/L		5.83	----	----	----	----
strontium, total	7440-24-6	E420	0.00020	mg/L		0.307	----	----	----	----
sulfur, total	7704-34-9	E420	0.50	mg/L		28.0	----	----	----	----
thallium, total	7440-28-0	E420	0.000010	mg/L		0.000052	----	----	----	----
tin, total	7440-31-5	E420	0.00010	mg/L		<0.00010	----	----	----	----
titanium, total	7440-32-6	E420	0.00030	mg/L		0.0716	----	----	----	----
uranium, total	7440-61-1	E420	0.000010	mg/L		0.00614	----	----	----	----

Analytical Results

Sub-Matrix: **Water**
(Matrix: **Water**)

Analyte	CAS Number	Method	LOR	Unit	Client sample ID	FDP5	----	----	----	----
					Client sampling date / time	20-Apr-2020	----	----	----	----
						VA20A5185-001	--------	--------	--------	--------
						Result	----	----	----	----
Total Metals										
vanadium, total	7440-62-2	E420	0.00050	mg/L		0.00456	----	----	----	----
zinc, total	7440-66-6	E420	0.0030	mg/L		0.0314	----	----	----	----
zirconium, total	7440-67-7	E420	0.00030	mg/L		0.00081	----	----	----	----
Dissolved Metals										
aluminum, dissolved	7429-90-5	E421	0.0010	mg/L		0.0076	----	----	----	----
antimony, dissolved	7440-36-0	E421	0.00010	mg/L		0.00651	----	----	----	----
arsenic, dissolved	7440-38-2	E421	0.00010	mg/L		0.0210	----	----	----	----
barium, dissolved	7440-39-3	E421	0.00010	mg/L		0.0524	----	----	----	----
beryllium, dissolved	7440-41-7	E421	0.000020	mg/L		<0.000020	----	----	----	----
bismuth, dissolved	7440-69-9	E421	0.000050	mg/L		<0.000050	----	----	----	----
boron, dissolved	7440-42-8	E421	0.010	mg/L		<0.010	----	----	----	----
cadmium, dissolved	7440-43-9	E421	0.0000050	mg/L		0.0000681	----	----	----	----
calcium, dissolved	7440-70-2	E421	0.050	mg/L		56.3	----	----	----	----
chromium, dissolved	7440-47-3	E421.Cr-L	0.00010	mg/L		<0.00010	----	----	----	----
cobalt, dissolved	7440-48-4	E421	0.00010	mg/L		0.00081	----	----	----	----
copper, dissolved	7440-50-8	E421	0.00020	mg/L		0.00161	----	----	----	----
iron, dissolved	7439-89-6	E421	0.010	mg/L		0.012	----	----	----	----
lead, dissolved	7439-92-1	E421	0.000050	mg/L		0.000078	----	----	----	----
lithium, dissolved	7439-93-2	E421	0.0010	mg/L		0.0082	----	----	----	----
magnesium, dissolved	7439-95-4	E421	0.100	mg/L		15.0	----	----	----	----
manganese, dissolved	7439-96-5	E421	0.00010	mg/L		0.112	----	----	----	----
mercury, dissolved	7439-97-6	E509	0.0000050	mg/L		<0.0000050	----	----	----	----
molybdenum, dissolved	7439-98-7	E421	0.000050	mg/L		0.00424	----	----	----	----
nickel, dissolved	7440-02-0	E421	0.00050	mg/L		0.00208	----	----	----	----
phosphorus, dissolved	7723-14-0	E421	0.050	mg/L		<0.050	----	----	----	----
potassium, dissolved	7440-09-7	E421	0.100	mg/L		4.00	----	----	----	----
selenium, dissolved	7782-49-2	E421	0.000050	mg/L		0.000767	----	----	----	----
silicon, dissolved	7440-21-3	E421	0.050	mg/L		2.61	----	----	----	----
silver, dissolved	7440-22-4	E421	0.000010	mg/L		<0.000010	----	----	----	----
sodium, dissolved	7440-23-5	E421	0.050	mg/L		5.32	----	----	----	----
strontium, dissolved	7440-24-6	E421	0.00020	mg/L		0.295	----	----	----	----
sulfur, dissolved	7704-34-9	E421	0.50	mg/L		28.0	----	----	----	----

Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	FDP5	----	----	----	----
					Client sampling date / time	20-Apr-2020	----	----	----	----
Analyte	CAS Number	Method	LOR	Unit		VA20A5185-001	--------	--------	--------	--------
						Result	----	----	----	----
Dissolved Metals										
thallium, dissolved	7440-28-0	E421	0.000010	mg/L		<0.000010	----	----	----	----
tin, dissolved	7440-31-5	E421	0.00010	mg/L		<0.00010	----	----	----	----
titanium, dissolved	7440-32-6	E421	0.00030	mg/L		<0.00030	----	----	----	----
uranium, dissolved	7440-61-1	E421	0.000010	mg/L		0.00540	----	----	----	----
vanadium, dissolved	7440-62-2	E421	0.00050	mg/L		<0.00050	----	----	----	----
zinc, dissolved	7440-66-6	E421	0.0010	mg/L		0.0021	----	----	----	----
zirconium, dissolved	7440-67-7	E421	0.00030	mg/L		<0.00030	----	----	----	----
dissolved mercury filtration location	----	EP509	-	-		Field	----	----	----	----
dissolved metals filtration location	----	EP421	-	-		Field	----	----	----	----

Please refer to the General Comments section for an explanation of any qualifiers detected.

ALS Environmental

CERTIFICATE OF ANALYSIS

Work Order	: **VA20A5153**	Page	: 1 of 7
Client	: **Victoria Gold (Yukon) Corp.**	Laboratory	: Vancouver - Environmental
Contact	: Bill Bowden	Account Manager	: Hilary Woods
Address	: Suite 1000 - 1050 W. Pender St Vancouver BC Canada V6E 3S7	Address	: 8081 Lougheed Highway Burnaby BC Canada V5A 1W9
Telephone	: 867.456.7700 ext. 6381	Telephone	: +1 604 253 4188
Project	: LDSP (April 21)	Date Samples Received	: 22-Apr-2020 14:15
PO	: 14043	Date Analysis Commenced	: 22-Apr-2020
C-O-C number	: 20200421a	Issue Date	: 07-May-2020 15:26
Sampler	: PE		
Site	: ----		
Quote number	: Q68199		
No. of samples received	: 1		
No. of samples analysed	: 1		

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QC Interpretive report to assist with Quality Review and Sample Receipt Notification (SRN).

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is conducted in accordance with US FDA 21 CFR Part 11.

Signatories	*Position*	*Laboratory Department*
Bruna Botti	Analyst	Inorganics - Water Quality, Burnaby, British Columbia
Caitlin Macey	Team Leader - Inorganics	Inorganics - Water Quality, Burnaby, British Columbia
Cindy Tang	Team Leader - Inorganics	Inorganics - Water Quality, Burnaby, British Columbia
Erick Magalhaes	Laboratory Analyst	Inorganics - Water Quality, Burnaby, British Columbia
Evan Ben-Oliel	Metal Analyst	Metals, Burnaby, British Columbia
Hilary Woods	Account Manager	Internal Subcontracting, Fort Collins, Colorado
Ilnaz Badbezanchi	Team Leader - Metals preparation	Metals, Burnaby, British Columbia
Kaitlyn Gardner	Account Manager Assistant	External Subcontracting, Burnaby, British Columbia
Kevin Duarte	Team Leader - Inorganics	Inorganics - Water Quality, Burnaby, British Columbia
Kim Jensen	Department Manager - Metals	Metals, Burnaby, British Columbia
Kinny Wu	Laboratory Analyst	Metals, Burnaby, British Columbia
Lindsay Gung	Supervisor - Water Chemistry	Inorganics - Water Quality, Burnaby, British Columbia
Robin Weeks	Team Leader - Metals	Inorganics - Water Quality, Burnaby, British Columbia
Robin Weeks	Team Leader - Metals	Metals, Burnaby, British Columbia

General Comments

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Refer to the ALS Quality Control Interpretive report (QCI) for applicable references and methodology summaries. Reference methods may incorporate modifications to improve performance.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

Please refer to Quality Control Interpretive report (QCI) for information regarding Holding Time compliance.

Key : CAS Number: Chemical Abstracts Services number is a unique identifier assigned to discrete substances
LOR: Limit of Reporting (detection limit).

Unit	*Description*
-	No Unit
%	percent
µS/cm	Microsiemens per centimetre
Bq/L	Becquerels per litre
meq/L	milliequivalents per litre
mg/L	milligrams per litre
NTU	nephelometric turbidity units
pH units	pH units

<: less than.

>: greater than.

Surrogate: An analyte that is similar in behavior to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.

Test results reported relate only to the samples as received by the laboratory.

UNLESS OTHERWISE STATED on SRN or QCI Report, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

Analytical results in reports identified as "Preliminary Report" are considered authorized for use.

Workorder Comments

A matrix spike was carried out for at least one analytical batch of E358 analysis, but is not found in the attached QC report. ALS Data Quality Objectives for recovery were met

A matrix spike was carried out for at least one analytical batch of E375-T analysis, but is not found in the attached QC report. ALS Data Quality Objectives for recovery were met

Analytical Results

Sub-Matrix: **Water**
(Matrix: **Water**)

Analyte	CAS Number	Method	LOR	Unit	Client sample ID	FDP5	----	----	----	----
					Client sampling date / time	21-Apr-2020	----	----	----	----
						VA20A5153-001	--------	--------	--------	--------
						Result	----	----	----	----
Physical Tests										
alkalinity, total (as CaCO3)	----	E290	1.0	mg/L		105	----	----	----	----
conductivity	----	E100	2.0	µS/cm		400	----	----	----	----
hardness (as CaCO3), dissolved	----	EC100	0.60	mg/L		186	----	----	----	----
hardness (as CaCO3), from total Ca/Mg	----	EC100A	0.60	mg/L		190	----	----	----	----
pH	----	E108	0.10	pH units		7.91	----	----	----	----
solids, total dissolved [TDS], calculated	----	EC103	1.0	mg/L		246	----	----	----	----
solids, total suspended [TSS]	----	E160-H	3.0	mg/L		52.9	----	----	----	----
turbidity	----	E121	0.10	NTU		160	----	----	----	----
pH @ 15°C (WSER)	----	E108A	0.10	pH units		7.61	----	----	----	----
Anions and Nutrients										
ammonia, total (as N)	7664-41-7	E298	0.0050	mg/L		0.109	----	----	----	----
ammonia, un-ionized (as N), 15C (WSER)	7664-41-7	EC298	0.0010	mg/L		0.0012	----	----	----	----
bromide	24959-67-9	E235.Br-L	0.050	mg/L		0.069	----	----	----	----
chloride	16887-00-6	E235.Cl	0.50	mg/L		16.6	----	----	----	----
fluoride	16984-48-8	E235.F	0.020	mg/L		0.134	----	----	----	----
Kjeldahl nitrogen, total [TKN]	----	E318	0.050	mg/L		0.440	----	----	----	----
nitrate (as N)	14797-55-8	E235.NO3-L	0.0050	mg/L		0.555	----	----	----	----
nitrite (as N)	14797-65-0	E235.NO2-L	0.0010	mg/L		0.0307	----	----	----	----
nitrogen, total	7727-37-9	E366	0.030	mg/L		0.932	----	----	----	----
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0010	mg/L		<0.0010	----	----	----	----
phosphorus, total	7723-14-0	E372-U	0.0020	mg/L		0.0923	----	----	----	----
phosphorus, total dissolved	7723-14-0	E375-T	0.0020	mg/L		0.0062	----	----	----	----
sulfate (as SO4)	14808-79-8	E235.SO4	0.30	mg/L		74.7	----	----	----	----
Cyanides										
cyanide, total	----	E333	0.0050	mg/L		<0.0050	----	----	----	----
cyanide, weak acid dissociable	----	E336	0.0050	mg/L		<0.0050	----	----	----	----
Organic / Inorganic Carbon										
carbon, dissolved organic [DOC]	----	E358-L	0.50	mg/L		6.51	----	----	----	----
carbon, total organic [TOC]	----	E355-L	0.50	mg/L		7.78	----	----	----	----
Bioassays										
Daphnia magna LC50	----	DAP-LC50-48	-	-		see attached	----	----	----	----

Analytical Results

Sub-Matrix: **Water**
(Matrix: **Water**)

Analyte	CAS Number	Method	LOR	Unit	Client sample ID	FDP5	----	----	----	----
					Client sampling date / time	21-Apr-2020	----	----	----	----
						VA20A5153-001	--------	--------	--------	--------
						Result	----	----	----	----
Bioassays										
trout bioassay LC50	----	TRT-LC50-96	-	-		see attached	----	----	----	----
Ion Balance										
anion sum	----	EC101	0.10	meq/L		4.17	----	----	----	----
cation sum	----	EC101	0.10	meq/L		4.06	----	----	----	----
ion balance (cation-anion difference)	----	EC101	0.010	%		1.34	----	----	----	----
Total Metals										
aluminum, total	7429-90-5	E420	0.0030	mg/L		2.77	----	----	----	----
antimony, total	7440-36-0	E420	0.00010	mg/L		0.0120	----	----	----	----
arsenic, total	7440-38-2	E420	0.00010	mg/L		0.167	----	----	----	----
barium, total	7440-39-3	E420	0.00010	mg/L		0.0850	----	----	----	----
beryllium, total	7440-41-7	E420	0.000020	mg/L		0.000213	----	----	----	----
bismuth, total	7440-69-9	E420	0.000050	mg/L		0.00203	----	----	----	----
boron, total	7440-42-8	E420	0.010	mg/L		<0.010	----	----	----	----
cadmium, total	7440-43-9	E420	0.0000050	mg/L		0.000249	----	----	----	----
calcium, total	7440-70-2	E420	0.050	mg/L		54.2	----	----	----	----
chromium, total	7440-47-3	E420.Cr-L	0.00010	mg/L		0.00438	----	----	----	----
cobalt, total	7440-48-4	E420	0.00010	mg/L		0.00333	----	----	----	----
copper, total	7440-50-8	E420	0.00050	mg/L		0.0127	----	----	----	----
iron, total	7439-89-6	E420	0.010	mg/L		5.08	----	----	----	----
lead, total	7439-92-1	E420	0.000050	mg/L		0.0189	----	----	----	----
lithium, total	7439-93-2	E420	0.0010	mg/L		0.0108	----	----	----	----
magnesium, total	7439-95-4	E420	0.100	mg/L		13.1	----	----	----	----
manganese, total	7439-96-5	E420	0.00010	mg/L		0.202	----	----	----	----
mercury, total	7439-97-6	E508	0.0000050	mg/L		0.0000203	----	----	----	----
molybdenum, total	7439-98-7	E420	0.000050	mg/L		0.00416	----	----	----	----
nickel, total	7440-02-0	E420	0.00050	mg/L		0.00770	----	----	----	----
phosphorus, total	7723-14-0	E420	0.050	mg/L		0.080	----	----	----	----
potassium, total	7440-09-7	E420	0.100	mg/L		4.44	----	----	----	----
selenium, total	7782-49-2	E420	0.000050	mg/L		0.000782	----	----	----	----
silicon, total	7440-21-3	E420	0.10	mg/L		6.70	----	----	----	----
silver, total	7440-22-4	E420	0.000010	mg/L		0.000135	----	----	----	----
sodium, total	7440-23-5	E420	0.050	mg/L		4.94	----	----	----	----

Analytical Results

Sub-Matrix: **Water**
(Matrix: **Water**)

Analyte	CAS Number	Method	LOR	Unit	Client sample ID	FDP5	----	----	----	----
					Client sampling date / time	21-Apr-2020	----	----	----	----
						VA20A5153-001	--------	--------	--------	--------
						Result	----	----	----	----
Total Metals										
strontium, total	7440-24-6	E420	0.00020	mg/L		0.263	----	----	----	----
sulfur, total	7704-34-9	E420	0.50	mg/L		26.8	----	----	----	----
thallium, total	7440-28-0	E420	0.000010	mg/L		0.000060	----	----	----	----
tin, total	7440-31-5	E420	0.00010	mg/L		0.00015	----	----	----	----
titanium, total	7440-32-6	E420	0.00030	mg/L		0.0822	----	----	----	----
uranium, total	7440-61-1	E420	0.000010	mg/L		0.00567	----	----	----	----
vanadium, total	7440-62-2	E420	0.00050	mg/L		0.00548	----	----	----	----
zinc, total	7440-66-6	E420	0.0030	mg/L		0.0306	----	----	----	----
zirconium, total	7440-67-7	E420	0.00030	mg/L		0.00043	----	----	----	----
Dissolved Metals										
aluminum, dissolved	7429-90-5	E421	0.0010	mg/L		0.0308	----	----	----	----
antimony, dissolved	7440-36-0	E421	0.00010	mg/L		0.00647	----	----	----	----
arsenic, dissolved	7440-38-2	E421	0.00010	mg/L		0.0200	----	----	----	----
barium, dissolved	7440-39-3	E421	0.00010	mg/L		0.0546	----	----	----	----
beryllium, dissolved	7440-41-7	E421	0.000020	mg/L		<0.000020	----	----	----	----
bismuth, dissolved	7440-69-9	E421	0.000050	mg/L		<0.000050	----	----	----	----
boron, dissolved	7440-42-8	E421	0.010	mg/L		<0.010	----	----	----	----
cadmium, dissolved	7440-43-9	E421	0.0000050	mg/L		0.0000615	----	----	----	----
calcium, dissolved	7440-70-2	E421	0.050	mg/L		52.6	----	----	----	----
chromium, dissolved	7440-47-3	E421.Cr-L	0.00010	mg/L		0.00051	----	----	----	----
cobalt, dissolved	7440-48-4	E421	0.00010	mg/L		0.00086	----	----	----	----
copper, dissolved	7440-50-8	E421	0.00020	mg/L		0.00268	----	----	----	----
iron, dissolved	7439-89-6	E421	0.010	mg/L		0.055	----	----	----	----
lead, dissolved	7439-92-1	E421	0.000050	mg/L		0.000198	----	----	----	----
lithium, dissolved	7439-93-2	E421	0.0010	mg/L		0.0073	----	----	----	----
magnesium, dissolved	7439-95-4	E421	0.100	mg/L		13.3	----	----	----	----
manganese, dissolved	7439-96-5	E421	0.00010	mg/L		0.142	----	----	----	----
mercury, dissolved	7439-97-6	E509	0.0000050	mg/L		<0.0000050	----	----	----	----
molybdenum, dissolved	7439-98-7	E421	0.000050	mg/L		0.00444	----	----	----	----
nickel, dissolved	7440-02-0	E421	0.00050	mg/L		0.00216	----	----	----	----
phosphorus, dissolved	7723-14-0	E421	0.050	mg/L		<0.050	----	----	----	----
potassium, dissolved	7440-09-7	E421	0.100	mg/L		3.93	----	----	----	----

Analytical Results

Sub-Matrix: **Water**
(Matrix: **Water**)

Analyte	CAS Number	Method	LOR	Unit	Client sample ID	FDP5	----	----	----	----
					Client sampling date / time	21-Apr-2020	----	----	----	----
						VA20A5153-001	--------	--------	--------	--------
						Result	----	----	----	----
Dissolved Metals										
selenium, dissolved	7782-49-2	E421	0.000050	mg/L		0.000597	----	----	----	----
silicon, dissolved	7440-21-3	E421	0.050	mg/L		2.67	----	----	----	----
silver, dissolved	7440-22-4	E421	0.000010	mg/L		0.000010	----	----	----	----
sodium, dissolved	7440-23-5	E421	0.050	mg/L		5.16	----	----	----	----
strontium, dissolved	7440-24-6	E421	0.00020	mg/L		0.287	----	----	----	----
sulfur, dissolved	7704-34-9	E421	0.50	mg/L		25.4	----	----	----	----
thallium, dissolved	7440-28-0	E421	0.000010	mg/L		<0.000010	----	----	----	----
tin, dissolved	7440-31-5	E421	0.00010	mg/L		<0.00010	----	----	----	----
titanium, dissolved	7440-32-6	E421	0.00030	mg/L		0.00183	----	----	----	----
uranium, dissolved	7440-61-1	E421	0.000010	mg/L		0.00511	----	----	----	----
vanadium, dissolved	7440-62-2	E421	0.00050	mg/L		<0.00050	----	----	----	----
zinc, dissolved	7440-66-6	E421	0.0010	mg/L		0.0027	----	----	----	----
zirconium, dissolved	7440-67-7	E421	0.00030	mg/L		<0.00030	----	----	----	----
dissolved mercury filtration location	----	EP509	-	-		Field	----	----	----	----
dissolved metals filtration location	----	EP421	-	-		Field	----	----	----	----
Radiological Parameters										
radium-226	13982-63-3	RA226-MMER	0.01	Bq/L		See attached	----	----	----	----

Please refer to the General Comments section for an explanation of any qualifiers detected.

ALS Environmental

CERTIFICATE OF ANALYSIS

Work Order	: **VA20A5149**	Page	: 1 of 7
Client	: **Victoria Gold (Yukon) Corp.**	Laboratory	: Vancouver - Environmental
Contact	: Bill Bowden	Account Manager	: Hilary Woods
Address	: Suite 1000 - 1050 W. Pender St Vancouver BC Canada V6E 3S7	Address	: 8081 Lougheed Highway Burnaby BC Canada V5A 1W9
Telephone	: 867.456.7700 ext. 6381	Telephone	: +1 604 253 4188
Project	: WUL SWQ Discharge	Date Samples Received	: 22-Apr-2020 14:15
PO	: 14043	Date Analysis Commenced	: 22-Apr-2020
C-O-C number	: 20200421b	Issue Date	: 07-May-2020 15:23
Sampler	: PE		
Site	: ----		
Quote number	: Q68199		
No. of samples received	: 2		
No. of samples analysed	: 2		

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QC Interpretive report to assist with Quality Review and Sample Receipt Notification (SRN).

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is conducted in accordance with US FDA 21 CFR Part 11.

Signatories	*Position*	*Laboratory Department*
Angela Ren	Team Leader - Metals	Metals, Burnaby, British Columbia
Brieanna Allen	Department Manager - Organics	Metals, Burnaby, British Columbia
Bruna Botti	Analyst	Inorganics - Water Quality, Burnaby, British Columbia
Caitlin Macey	Team Leader - Inorganics	Inorganics - Water Quality, Burnaby, British Columbia
Dan Gebert		Metals, Burnaby, British Columbia
Erick Magalhaes	Laboratory Analyst	Metals, Burnaby, British Columbia
Evan Ben-Oliel	Metal Analyst	Metals, Burnaby, British Columbia
Hilary Woods	Account Manager	Internal Subcontracting, Fort Collins, Colorado
Ilnaz Badbezanchi	Team Leader - Metals preparation	Metals, Burnaby, British Columbia
Jon Fisher	Department Manager - Inorganics	Inorganics, Waterloo, Ontario
Kaitlyn Gardner	Account Manager Assistant	External Subcontracting, Burnaby, British Columbia
Kinny Wu	Laboratory Analyst	Metals, Burnaby, British Columbia
Lindsay Gung	Supervisor - Water Chemistry	Inorganics - Water Quality, Burnaby, British Columbia
Miles Gropen	Department Manager - Inorganics	Inorganics - Water Quality, Burnaby, British Columbia
Robin Weeks	Team Leader - Metals	Metals, Burnaby, British Columbia
Tracy Harley	Supervisor - Water Quality Instrumentation	Inorganics - Water Quality, Burnaby, British Columbia

General Comments

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Refer to the ALS Quality Control Interpretive report (QCI) for applicable references and methodology summaries. Reference methods may incorporate modifications to improve performance.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

Please refer to Quality Control Interpretive report (QCI) for information regarding Holding Time compliance.

Key : CAS Number: Chemical Abstracts Services number is a unique identifier assigned to discrete substances
LOR: Limit of Reporting (detection limit).

Unit	*Description*
-	No Unit
%	percent
µS/cm	Microsiemens per centimetre
Bq/L	Becquerels per litre
meq/L	milliequivalents per litre
mg/L	milligrams per litre
NTU	nephelometric turbidity units
pH units	pH units

<: less than.

>: greater than.

Surrogate: An analyte that is similar in behavior to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.

Test results reported relate only to the samples as received by the laboratory.

UNLESS OTHERWISE STATED on SRN or QCI Report, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

Analytical results in reports identified as "Preliminary Report" are considered authorized for use.

Qualifiers

Qualifier	*Description*
DLA	*Detection Limit adjusted for required dilution.*

Analytical Results

Sub-Matrix: **Water**
(Matrix: **Water**)

Analyte	CAS Number	Method	LOR	Unit	Client sample ID	W29	LDSPI	----	----	----
					Client sampling date / time	21-Apr-2020	21-Apr-2020	----	----	----
						VA20A5149-001	VA20A5149-002	--------	--------	--------
						Result	Result	----	----	----
Physical Tests										
alkalinity, total (as CaCO3)	----	E290	1.0	mg/L		70.0	107	----	----	----
conductivity	----	E100	2.0	µS/cm		272	411	----	----	----
hardness (as CaCO3), dissolved	----	EC100	0.60	mg/L		134	202	----	----	----
hardness (as CaCO3), from total Ca/Mg	----	EC100A	0.60	mg/L		137	190	----	----	----
pH	----	E108	0.10	pH units		7.83	7.94	----	----	----
solids, total dissolved [TDS], calculated	----	EC103	1.0	mg/L		172	260	----	----	----
solids, total suspended [TSS]	----	E160-H	3.0	mg/L		164	17.9	----	----	----
turbidity	----	E121	0.10	NTU		235	70.1	----	----	----
Anions and Nutrients										
ammonia, total (as N)	7664-41-7	E298	0.0050	mg/L		0.0113	0.0828	----	----	----
bromide	24959-67-9	E235.Br-L	0.050	mg/L		<0.050	0.066	----	----	----
chloride	16887-00-6	E235.Cl	0.50	mg/L		6.11	17.6	----	----	----
cyanate	88402-73-7	E343	0.20	mg/L		<0.20	----	----	----	----
fluoride	16984-48-8	E235.F	0.020	mg/L		0.124	0.165	----	----	----
Kjeldahl nitrogen, total [TKN]	----	E318	0.050	mg/L		0.523	0.390	----	----	----
nitrate (as N)	14797-55-8	E235.NO3-L	0.0050	mg/L		0.190	0.576	----	----	----
nitrite (as N)	14797-65-0	E235.NO2-L	0.0010	mg/L		0.0053	0.0316	----	----	----
nitrogen, total	7727-37-9	E366	0.030	mg/L		0.671	0.942	----	----	----
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0010	mg/L		0.0014	<0.0010	----	----	----
phosphorus, total	7723-14-0	E372-U	0.0020	mg/L		0.0974	0.0517	----	----	----
phosphorus, total dissolved	7723-14-0	E375-T	0.0020	mg/L		0.0051	0.0044	----	----	----
sulfate (as SO4)	14808-79-8	E235.SO4	0.30	mg/L		55.9	79.8	----	----	----
Cyanides										
cyanide, total	----	E333	0.0050	mg/L		<0.0050	<0.0050	----	----	----
cyanide, weak acid dissociable	----	E336	0.0050	mg/L		<0.0050	<0.0050	----	----	----
thiocyanate	302-04-5	E344	0.50	mg/L		<0.50	----	----	----	----
Organic / Inorganic Carbon										
carbon, dissolved organic [DOC]	----	E358-L	0.50	mg/L		6.86	6.95	----	----	----
carbon, total organic [TOC]	----	E355-L	0.50	mg/L		14.1	7.51	----	----	----
Bioassays										
Daphnia magna LC50	----	DAP-LC50-48	-	-		----	see attached	----	----	----

Analytical Results

Sub-Matrix: **Water**
(Matrix: **Water**)

Analyte	CAS Number	Method	LOR	Unit	Client sample ID	W29	LDSPI	----	----	----
					Client sampling date / time	21-Apr-2020	21-Apr-2020	----	----	----
						VA20A5149-001	VA20A5149-002	--------	--------	--------
						Result	Result	----	----	----
Bioassays										
trout bioassay LC50	----	TRT-LC50-96	-	-		----	see attached	----	----	----
Ion Balance										
anion sum	----	EC101	0.10	meq/L		2.76	4.34	----	----	----
cation sum	----	EC101	0.10	meq/L		2.86	4.41	----	----	----
ion balance (cation-anion difference)	----	EC101	0.010	%		1.78	0.800	----	----	----
Total Metals										
aluminum, total	7429-90-5	E420	0.0030	mg/L		3.66	1.26	----	----	----
antimony, total	7440-36-0	E420	0.00010	mg/L		0.00758	0.00945	----	----	----
arsenic, total	7440-38-2	E420	0.00010	mg/L		0.157	0.0851	----	----	----
barium, total	7440-39-3	E420	0.00010	mg/L		0.0790	0.0672	----	----	----
beryllium, total	7440-41-7	E420	0.000020	mg/L		0.000276	0.000080	----	----	----
bismuth, total	7440-69-9	E420	0.000050	mg/L		0.00289	0.000974	----	----	----
boron, total	7440-42-8	E420	0.010	mg/L		<0.010	<0.010 DLA	----	----	----
cadmium, total	7440-43-9	E420	0.0000050	mg/L		0.000270	0.000190	----	----	----
calcium, total	7440-70-2	E420	0.050	mg/L		33.4	53.6	----	----	----
chromium, total	7440-47-3	E420.Cr-L	0.00010	mg/L		0.00557	0.00180	----	----	----
cobalt, total	7440-48-4	E420	0.00010	mg/L		0.00434	0.00196	----	----	----
copper, total	7440-50-8	E420	0.00050	mg/L		0.0156	0.00700	----	----	----
iron, total	7439-89-6	E420	0.010	mg/L		6.90	2.18	----	----	----
lead, total	7439-92-1	E420	0.000050	mg/L		0.0219	0.0100	----	----	----
lithium, total	7439-93-2	E420	0.0010	mg/L		0.0092	0.0076	----	----	----
magnesium, total	7439-95-4	E420	0.100	mg/L		13.0	13.6	----	----	----
manganese, total	7439-96-5	E420	0.00010	mg/L		0.189	0.171	----	----	----
mercury, total	7439-97-6	E508	0.0000050	mg/L		0.0000268	0.0000140	----	----	----
molybdenum, total	7439-98-7	E420	0.000050	mg/L		0.000843	0.00429	----	----	----
nickel, total	7440-02-0	E420	0.00050	mg/L		0.0100	0.00448	----	----	----
phosphorus, total	7723-14-0	E420	0.050	mg/L		0.114	<0.050 DLA	----	----	----
potassium, total	7440-09-7	E420	0.100	mg/L		3.20	4.11	----	----	----
selenium, total	7782-49-2	E420	0.000050	mg/L		0.000333	0.000655	----	----	----
silicon, total	7440-21-3	E420	0.10	mg/L		8.85	4.56	----	----	----
silver, total	7440-22-4	E420	0.000010	mg/L		0.000128	0.000081	----	----	----
sodium, total	7440-23-5	E420	0.050	mg/L		2.91	5.36	----	----	----

Analytical Results

Sub-Matrix: **Water**
(Matrix: **Water**)

Analyte	CAS Number	Method	LOR	Unit	Client sample ID	W29	LDSPI	----	----	----
					Client sampling date / time	21-Apr-2020	21-Apr-2020	----	----	----
						VA20A5149-001	VA20A5149-002	--------	--------	--------
						Result	Result	----	----	----
Total Metals										
strontium, total	7440-24-6	E420	0.00020	mg/L		0.162	0.276	----	----	----
sulfur, total	7704-34-9	E420	0.50	mg/L		17.8	25.3	----	----	----
thallium, total	7440-28-0	E420	0.000010	mg/L		0.000080	0.000031	----	----	----
tin, total	7440-31-5	E420	0.00010	mg/L		0.00011	<0.00010 DLA	----	----	----
titanium, total	7440-32-6	E420	0.00030	mg/L		0.0962	0.0349	----	----	----
uranium, total	7440-61-1	E420	0.000010	mg/L		0.00186	0.00599	----	----	----
vanadium, total	7440-62-2	E420	0.00050	mg/L		0.00654	0.00242	----	----	----
zinc, total	7440-66-6	E420	0.0030	mg/L		0.0433	0.0154	----	----	----
zirconium, total	7440-67-7	E420	0.00030	mg/L		0.00098	0.00074 DLA	----	----	----
Dissolved Metals										
aluminum, dissolved	7429-90-5	E421	0.0010	mg/L		0.0520	0.0269	----	----	----
antimony, dissolved	7440-36-0	E421	0.00010	mg/L		0.00136	0.00678	----	----	----
arsenic, dissolved	7440-38-2	E421	0.00010	mg/L		0.0148	0.0202	----	----	----
barium, dissolved	7440-39-3	E421	0.00010	mg/L		0.0344	0.0560	----	----	----
beryllium, dissolved	7440-41-7	E421	0.000020	mg/L		<0.000020	<0.000020	----	----	----
bismuth, dissolved	7440-69-9	E421	0.000050	mg/L		<0.000050	<0.000050	----	----	----
boron, dissolved	7440-42-8	E421	0.010	mg/L		<0.010	<0.010	----	----	----
cadmium, dissolved	7440-43-9	E421	0.0000050	mg/L		0.0000485	0.0000787	----	----	----
calcium, dissolved	7440-70-2	E421	0.050	mg/L		32.8	56.9	----	----	----
chromium, dissolved	7440-47-3	E421.Cr-L	0.00010	mg/L		0.00015	0.00011	----	----	----
cobalt, dissolved	7440-48-4	E421	0.00010	mg/L		0.00044	0.00092	----	----	----
copper, dissolved	7440-50-8	E421	0.00020	mg/L		0.00208	0.00177	----	----	----
iron, dissolved	7439-89-6	E421	0.010	mg/L		0.129	0.039	----	----	----
lead, dissolved	7439-92-1	E421	0.000050	mg/L		0.000376	0.000120	----	----	----
lithium, dissolved	7439-93-2	E421	0.0010	mg/L		0.0056	0.0077	----	----	----
magnesium, dissolved	7439-95-4	E421	0.100	mg/L		12.5	14.7	----	----	----
manganese, dissolved	7439-96-5	E421	0.00010	mg/L		0.0635	0.145	----	----	----
mercury, dissolved	7439-97-6	E509	0.0000050	mg/L		<0.0000050	<0.0000050	----	----	----
molybdenum, dissolved	7439-98-7	E421	0.000050	mg/L		0.000880	0.00461	----	----	----
nickel, dissolved	7440-02-0	E421	0.00050	mg/L		0.00223	0.00204	----	----	----
phosphorus, dissolved	7723-14-0	E421	0.050	mg/L		<0.050	<0.050	----	----	----
potassium, dissolved	7440-09-7	E421	0.100	mg/L		2.31	4.14	----	----	----

Analytical Results

Sub-Matrix: **Water**
(Matrix: **Water**)

Analyte	CAS Number	Method	LOR	Unit	Client sample ID	W29	LDSPI	----	----	----
					Client sampling date / time	21-Apr-2020	21-Apr-2020	----	----	----
						VA20A5149-001	VA20A5149-002	--------	--------	--------
						Result	Result	----	----	----
Dissolved Metals										
selenium, dissolved	7782-49-2	E421	0.000050	mg/L		0.000224	0.000655	----	----	----
silicon, dissolved	7440-21-3	E421	0.050	mg/L		3.38	2.74	----	----	----
silver, dissolved	7440-22-4	E421	0.000010	mg/L		<0.000010	<0.000010	----	----	----
sodium, dissolved	7440-23-5	E421	0.050	mg/L		2.79	5.55	----	----	----
strontium, dissolved	7440-24-6	E421	0.00020	mg/L		0.166	0.302	----	----	----
sulfur, dissolved	7704-34-9	E421	0.50	mg/L		18.1	27.3	----	----	----
thallium, dissolved	7440-28-0	E421	0.000010	mg/L		<0.000010	<0.000010	----	----	----
tin, dissolved	7440-31-5	E421	0.00010	mg/L		<0.00010	<0.00010	----	----	----
titanium, dissolved	7440-32-6	E421	0.00030	mg/L		0.00172	0.00184	----	----	----
uranium, dissolved	7440-61-1	E421	0.000010	mg/L		0.00126	0.00543	----	----	----
vanadium, dissolved	7440-62-2	E421	0.00050	mg/L		<0.00050	<0.00050	----	----	----
zinc, dissolved	7440-66-6	E421	0.0010	mg/L		0.0038	0.0020	----	----	----
zirconium, dissolved	7440-67-7	E421	0.00030	mg/L		<0.00030	<0.00030	----	----	----
dissolved mercury filtration location	----	EP509	-	-		Field	Field	----	----	----
dissolved metals filtration location	----	EP421	-	-		Field	Field	----	----	----
Radiological Parameters										
radium-226	13982-63-3	RA226-MMER	0.01	Bq/L		----	See attached	----	----	----

Please refer to the General Comments section for an explanation of any qualifiers detected.

ALS Environmental

CERTIFICATE OF ANALYSIS

Work Order	: **VA20A5167**	Page	: 1 of 7
Client	: **Victoria Gold (Yukon) Corp.**	Laboratory	: Vancouver - Environmental
Contact	: Bill Bowden	Account Manager	: Hilary Woods
Address	: Suite 1000 - 1050 W. Pender St Vancouver BC Canada V6E 3S7	Address	: 8081 Lougheed Highway Burnaby BC Canada V5A 1W9
Telephone	: 867.456.7700 ext. 6381	Telephone	: +1 604 253 4188
Project	: Receiving /Reference Apr 21	Date Samples Received	: 22-Apr-2020 14:15
PO	: 14043	Date Analysis Commenced	: 22-Apr-2020
C-O-C number	: 20200421b	Issue Date	: 07-May-2020 15:57
Sampler	: PE		
Site	: ----		
Quote number	: Q68199		
No. of samples received	: 3		
No. of samples analysed	: 2		

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QC Interpretive report to assist with Quality Review and Sample Receipt Notification (SRN).

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is conducted in accordance with US FDA 21 CFR Part 11.

Signatories	*Position*	*Laboratory Department*
Aaron Yu	Laboratory Analyst	Metals, Burnaby, British Columbia
Bruna Botti	Analyst	Inorganics - Water Quality, Burnaby, British Columbia
Caitlin Macey	Team Leader - Inorganics	Inorganics - Water Quality, Burnaby, British Columbia
Evan Ben-Oliel	Metal Analyst	Metals, Burnaby, British Columbia
Hilary Woods	Account Manager	Internal Subcontracting, Fort Collins, Colorado
Ilnaz Badbezanchi	Team Leader - Metals preparation	Metals, Burnaby, British Columbia
Jon Fisher	Department Manager - Inorganics	Inorganics, Waterloo, Ontario
Kevin Duarte	Team Leader - Inorganics	Inorganics - Water Quality, Burnaby, British Columbia
Kinny Wu	Laboratory Analyst	Metals, Burnaby, British Columbia
Lindsay Gung	Supervisor - Water Chemistry	Inorganics - Water Quality, Burnaby, British Columbia
Matthew Woods	Lab Assistant	Metals, Burnaby, British Columbia
Robin Weeks	Team Leader - Metals	Inorganics - Water Quality, Burnaby, British Columbia
Robin Weeks	Team Leader - Metals	Metals, Burnaby, British Columbia
Tracy Harley	Supervisor - Water Quality Instrumentation	Inorganics - Water Quality, Burnaby, British Columbia

General Comments

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Refer to the ALS Quality Control Interpretive report (QCI) for applicable references and methodology summaries. Reference methods may incorporate modifications to improve performance.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

Please refer to Quality Control Interpretive report (QCI) for information regarding Holding Time compliance.

Key : CAS Number: Chemical Abstracts Services number is a unique identifier assigned to discrete substances
LOR: Limit of Reporting (detection limit).

Unit	*Description*
-	No Unit
%	percent
µS/cm	Microsiemens per centimetre
Bq/L	Becquerels per litre
meq/L	milliequivalents per litre
mg/L	milligrams per litre
NTU	nephelometric turbidity units
pH units	pH units

<: less than.

>: greater than.

Surrogate: An analyte that is similar in behavior to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.

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UNLESS OTHERWISE STATED on SRN or QCI Report, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

Analytical results in reports identified as "Preliminary Report" are considered authorized for use.

Analytical Results

Sub-Matrix: **Water**
(Matrix: **Water**)

Analyte	CAS Number	Method	LOR	Unit	Client sample ID: W4	W22	----	----	----
					Client sampling date / time: 21-Apr-2020 11:15	21-Apr-2020 11:50	----	----	----
					VA20A5167-001	VA20A5167-002	--------	--------	--------
					Result	Result	----	----	----
Physical Tests									
alkalinity, total (as CaCO3)	----	E290	1.0	mg/L	62.9	74.3	----	----	----
conductivity	----	E100	2.0	µS/cm	258	304	----	----	----
hardness (as CaCO3), dissolved	----	EC100	0.60	mg/L	123	149	----	----	----
hardness (as CaCO3), from total Ca/Mg	----	EC100A	0.60	mg/L	134	147	----	----	----
pH	----	E108	0.10	pH units	7.80	7.86	----	----	----
solids, total dissolved [TDS], calculated	----	EC103	1.0	mg/L	168	193	----	----	----
solids, total suspended [TSS]	----	E160-H	3.0	mg/L	308	<3.0	----	----	----
turbidity	----	E121	0.10	NTU	167	1.80	----	----	----
pH @ 15°C (WSER)	----	E108A	0.10	pH units	7.47	7.50	----	----	----
Anions and Nutrients									
ammonia, total (as N)	7664-41-7	E298	0.0050	mg/L	0.0170	<0.0050	----	----	----
ammonia, un-ionized (as N), 15C (WSER)	7664-41-7	EC298	0.0010	mg/L	<0.0010	<0.0010	----	----	----
bromide	24959-67-9	E235.Br-L	0.050	mg/L	<0.050	<0.050	----	----	----
chloride	16887-00-6	E235.Cl	0.50	mg/L	4.61	2.45	----	----	----
cyanate	88402-73-7	E343	0.20	mg/L	0.25	<0.20	----	----	----
fluoride	16984-48-8	E235.F	0.020	mg/L	0.122	0.116	----	----	----
Kjeldahl nitrogen, total [TKN]	----	E318	0.050	mg/L	0.596	0.326	----	----	----
nitrate (as N)	14797-55-8	E235.NO3-L	0.0050	mg/L	0.177	0.102	----	----	----
nitrite (as N)	14797-65-0	E235.NO2-L	0.0010	mg/L	0.0020	<0.0010	----	----	----
nitrogen, total	7727-37-9	E366	0.030	mg/L	0.629	0.410	----	----	----
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0010	mg/L	0.0014	<0.0010	----	----	----
phosphorus, total	7723-14-0	E372-U	0.0020	mg/L	0.130	0.0160	----	----	----
phosphorus, total dissolved	7723-14-0	E375-T	0.0020	mg/L	0.0107	0.0082	----	----	----
sulfate (as SO4)	14808-79-8	E235.SO4	0.30	mg/L	56.8	71.5	----	----	----
Cyanides									
cyanide, total	----	E333	0.0050	mg/L	<0.0050	<0.0050	----	----	----
cyanide, weak acid dissociable	----	E336	0.0050	mg/L	<0.0050	<0.0050	----	----	----
thiocyanate	302-04-5	E344	0.50	mg/L	<0.50	<0.50	----	----	----
Organic / Inorganic Carbon									
carbon, dissolved organic [DOC]	----	E358-L	0.50	mg/L	13.2	10.8	----	----	----

Analytical Results

Sub-Matrix: **Water**
(Matrix: **Water**)

Analyte	CAS Number	Method	LOR	Unit	Client sample ID	W4	W22	----	----	----
					Client sampling date / time	21-Apr-2020 11:15	21-Apr-2020 11:50	----	----	----
						VA20A5167-001	VA20A5167-002	--------	--------	--------
						Result	Result	----	----	----
Organic / Inorganic Carbon										
carbon, total organic [TOC]	----	E355-L	0.50	mg/L		13.8	10.7	----	----	----
Ion Balance										
anion sum	----	EC101	0.10	meq/L		2.59	3.06	----	----	----
cation sum	----	EC101	0.10	meq/L		2.61	3.13	----	----	----
ion balance (cation-anion difference)	----	EC101	0.010	%		0.385	1.13	----	----	----
Total Metals										
aluminum, total	7429-90-5	E420	0.0030	mg/L		3.58	0.0789	----	----	----
antimony, total	7440-36-0	E420	0.00010	mg/L		0.00482	0.00024	----	----	----
arsenic, total	7440-38-2	E420	0.00010	mg/L		0.128	0.00123	----	----	----
barium, total	7440-39-3	E420	0.00010	mg/L		0.0922	0.0360	----	----	----
beryllium, total	7440-41-7	E420	0.000020	mg/L		0.000270	<0.000020	----	----	----
bismuth, total	7440-69-9	E420	0.000050	mg/L		0.00101	<0.000050	----	----	----
boron, total	7440-42-8	E420	0.010	mg/L		<0.010	<0.010	----	----	----
cadmium, total	7440-43-9	E420	0.0000050	mg/L		0.000156	0.0000235	----	----	----
calcium, total	7440-70-2	E420	0.050	mg/L		32.4	35.2	----	----	----
chromium, total	7440-47-3	E420.Cr-L	0.00010	mg/L		0.00634	0.00015	----	----	----
cobalt, total	7440-48-4	E420	0.00010	mg/L		0.00389	0.00021	----	----	----
copper, total	7440-50-8	E420	0.00050	mg/L		0.0125	0.00106	----	----	----
iron, total	7439-89-6	E420	0.010	mg/L		8.03	0.278	----	----	----
lead, total	7439-92-1	E420	0.000050	mg/L		0.0154	0.000124	----	----	----
lithium, total	7439-93-2	E420	0.0010	mg/L		0.0115	0.0064	----	----	----
magnesium, total	7439-95-4	E420	0.100	mg/L		12.8	14.4	----	----	----
manganese, total	7439-96-5	E420	0.00010	mg/L		0.184	0.0527	----	----	----
mercury, total	7439-97-6	E508	0.0000050	mg/L		0.0000249	<0.0000050	----	----	----
molybdenum, total	7439-98-7	E420	0.000050	mg/L		0.000575	0.000052	----	----	----
nickel, total	7440-02-0	E420	0.00050	mg/L		0.0105	0.00196	----	----	----
phosphorus, total	7723-14-0	E420	0.050	mg/L		0.116	<0.050	----	----	----
potassium, total	7440-09-7	E420	0.100	mg/L		3.14	1.69	----	----	----
selenium, total	7782-49-2	E420	0.000050	mg/L		0.000276	0.000153	----	----	----
silicon, total	7440-21-3	E420	0.10	mg/L		8.26	3.54	----	----	----
silver, total	7440-22-4	E420	0.000010	mg/L		0.000119	<0.000010	----	----	----

Analytical Results

Sub-Matrix: **Water**
(Matrix: **Water**)

Analyte	CAS Number	Method	LOR	Unit	Client sample ID	W4	W22	----	----	----
					Client sampling date / time	21-Apr-2020 11:15	21-Apr-2020 11:50	----	----	----
						VA20A5167-001	VA20A5167-002	--------	--------	--------
						Result	Result	----	----	----
Total Metals										
sodium, total	7440-23-5	E420	0.050	mg/L		2.33	1.90	----	----	----
strontium, total	7440-24-6	E420	0.00020	mg/L		0.155	0.165	----	----	----
sulfur, total	7704-34-9	E420	0.50	mg/L		18.7	24.4	----	----	----
thallium, total	7440-28-0	E420	0.000010	mg/L		0.000109	<0.000010	----	----	----
tin, total	7440-31-5	E420	0.00010	mg/L		0.00014	<0.00010	----	----	----
titanium, total	7440-32-6	E420	0.00030	mg/L		0.141	0.00169	----	----	----
uranium, total	7440-61-1	E420	0.000010	mg/L		0.00143	0.000824	----	----	----
vanadium, total	7440-62-2	E420	0.00050	mg/L		0.00752	<0.00050	----	----	----
zinc, total	7440-66-6	E420	0.0030	mg/L		0.0297	0.0048	----	----	----
zirconium, total	7440-67-7	E420	0.00030	mg/L		0.00094	<0.00030	----	----	----
Dissolved Metals										
aluminum, dissolved	7429-90-5	E421	0.0010	mg/L		0.0503	0.0322	----	----	----
antimony, dissolved	7440-36-0	E421	0.00010	mg/L		0.00068	0.00020	----	----	----
arsenic, dissolved	7440-38-2	E421	0.00010	mg/L		0.0102	0.00075	----	----	----
barium, dissolved	7440-39-3	E421	0.00010	mg/L		0.0368	0.0362	----	----	----
beryllium, dissolved	7440-41-7	E421	0.000020	mg/L		<0.000020	<0.000020	----	----	----
bismuth, dissolved	7440-69-9	E421	0.000050	mg/L		<0.000050	<0.000050	----	----	----
boron, dissolved	7440-42-8	E421	0.010	mg/L		<0.010	<0.010	----	----	----
cadmium, dissolved	7440-43-9	E421	0.0000050	mg/L		0.0000245	0.0000218	----	----	----
calcium, dissolved	7440-70-2	E421	0.050	mg/L		29.0	32.5	----	----	----
chromium, dissolved	7440-47-3	E421.Cr-L	0.00010	mg/L		0.00013	<0.00010	----	----	----
cobalt, dissolved	7440-48-4	E421	0.00010	mg/L		0.00023	<0.00010	----	----	----
copper, dissolved	7440-50-8	E421	0.00020	mg/L		0.00145	0.00096	----	----	----
iron, dissolved	7439-89-6	E421	0.010	mg/L		0.124	0.077	----	----	----
lead, dissolved	7439-92-1	E421	0.000050	mg/L		0.000145	<0.000050	----	----	----
lithium, dissolved	7439-93-2	E421	0.0010	mg/L		0.0058	0.0059	----	----	----
magnesium, dissolved	7439-95-4	E421	0.100	mg/L		12.2	16.5	----	----	----
manganese, dissolved	7439-96-5	E421	0.00010	mg/L		0.0390	0.0291	----	----	----
mercury, dissolved	7439-97-6	E509	0.0000050	mg/L		0.0000057	0.0000050	----	----	----
molybdenum, dissolved	7439-98-7	E421	0.000050	mg/L		0.000379	<0.000050	----	----	----
nickel, dissolved	7440-02-0	E421	0.00050	mg/L		0.00192	0.00180	----	----	----

Analytical Results

Sub-Matrix: **Water**
(Matrix: **Water**)

Analyte	CAS Number	Method	LOR	Unit	Client sample ID	W4	W22	----	----	----
					Client sampling date / time	21-Apr-2020 11:15	21-Apr-2020 11:50	----	----	----
						VA20A5167-001	VA20A5167-002	--------	--------	--------
						Result	Result	----	----	----
Dissolved Metals										
phosphorus, dissolved	7723-14-0	E421	0.050	mg/L		<0.050	<0.050	----	----	----
potassium, dissolved	7440-09-7	E421	0.100	mg/L		1.90	1.79	----	----	----
selenium, dissolved	7782-49-2	E421	0.000050	mg/L		0.000238	0.000167	----	----	----
silicon, dissolved	7440-21-3	E421	0.050	mg/L		3.59	3.61	----	----	----
silver, dissolved	7440-22-4	E421	0.000010	mg/L		<0.000010	<0.000010	----	----	----
sodium, dissolved	7440-23-5	E421	0.050	mg/L		2.15	2.14	----	----	----
strontium, dissolved	7440-24-6	E421	0.00020	mg/L		0.150	0.172	----	----	----
sulfur, dissolved	7704-34-9	E421	0.50	mg/L		18.2	24.1	----	----	----
thallium, dissolved	7440-28-0	E421	0.000010	mg/L		<0.000010	<0.000010	----	----	----
tin, dissolved	7440-31-5	E421	0.00010	mg/L		0.00010	<0.00010	----	----	----
titanium, dissolved	7440-32-6	E421	0.00030	mg/L		0.00111	<0.00030	----	----	----
uranium, dissolved	7440-61-1	E421	0.000010	mg/L		0.000928	0.000735	----	----	----
vanadium, dissolved	7440-62-2	E421	0.00050	mg/L		<0.00050	<0.00050	----	----	----
zinc, dissolved	7440-66-6	E421	0.0010	mg/L		0.0031	0.0036	----	----	----
zirconium, dissolved	7440-67-7	E421	0.00030	mg/L		<0.00030	<0.00030	----	----	----
dissolved mercury filtration location	----	EP509	-	-		Field	Field	----	----	----
dissolved metals filtration location	----	EP421	-	-		Field	Laboratory	----	----	----
Radiological Parameters										
radium-226	13982-63-3	RA226-MMER	0.01	Bq/L		See attached	See attached	----	----	----

Please refer to the General Comments section for an explanation of any qualifiers detected.

ALS Environmental

CERTIFICATE OF ANALYSIS

Work Order	: **WR2000145**	Page	: 1 of 6
Client	: **Victoria Gold (Yukon) Corp.**	Laboratory	: Whitehorse - Environmental
Contact	: Bill Bowden	Account Manager	: Hilary Woods
Address	: Suite 1000 - 1050 W. Pender St Vancouver BC Canada V6E 3S7	Address	: #12 151 Industrial Road Whitehorse YT Canada Y1A 2V3
Telephone	: 867.456.7700 ext. 6381	Telephone	: +1 867 668 6689
Project	: SWQ APR	Date Samples Received	: 23-Apr-2020 09:00
PO	: 14043	Date Analysis Commenced	: 26-Apr-2020
C-O-C number	: 20200421	Issue Date	: 04-May-2020 13:51
Sampler	: JW, PS		
Site	: ----		
Quote number	: Q68199		
No. of samples received	: 2		
No. of samples analysed	: 2		

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Signatories

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Signatories	*Position*	*Laboratory Department*
Angela Ren	Team Leader - Metals	Metals, Burnaby, British Columbia
Angelo Salandanan	Lab Assistant	Metals, Burnaby, British Columbia
Bruna Botti	Analyst	Inorganics - Water Quality, Burnaby, British Columbia
Caitlin Macey	Team Leader - Inorganics	Inorganics - Water Quality, Burnaby, British Columbia
Evan Ben-Oliel	Metal Analyst	Metals, Burnaby, British Columbia
Ilnaz Badbezanchi	Team Leader - Metals preparation	Metals, Burnaby, British Columbia
Lindsay Gung	Supervisor - Water Chemistry	Inorganics - Water Quality, Burnaby, British Columbia
Robin Weeks	Team Leader - Metals	Inorganics - Water Quality, Burnaby, British Columbia
Robin Weeks	Team Leader - Metals	Metals, Burnaby, British Columbia

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-	No Unit
%	percent
µS/cm	Microsiemens per centimetre
meq/L	milliequivalents per litre
mg/L	milligrams per litre
NTU	nephelometric turbidity units
pH units	pH units

<: less than.

>: greater than.

Surrogate: An analyte that is similar in behavior to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.

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Analytical results in reports identified as "Preliminary Report" are considered authorized for use.

Qualifiers

Qualifier	*Description*
DTC	*Dissolved concentration exceeds total. Results were confirmed by re-analysis.*

Analytical Results

Sub-Matrix: **Water**
(Matrix: **Water**)

Analyte	CAS Number	Method	LOR	Unit	Client sample ID	W21	W1	----	----	----
					Client sampling date / time	21-Apr-2020 12:20	21-Apr-2020 13:00	----	----	----
						WR2000145-001	WR2000145-002	--------	--------	--------
						Result	Result	----	----	----
Physical Tests										
alkalinity, total (as CaCO3)	----	E290	1.0	mg/L		49.5	38.2	----	----	----
conductivity	----	E100	2.0	µS/cm		179	110	----	----	----
hardness (as CaCO3), dissolved	----	EC100	0.60	mg/L		85.7	55.1	----	----	----
hardness (as CaCO3), from total Ca/Mg	----	EC100A	0.60	mg/L		108	53.1	----	----	----
pH	----	E108	0.10	pH units		7.69	7.75	----	----	----
solids, total dissolved [TDS], calculated	----	EC103	1.0	mg/L		123	83.3	----	----	----
solids, total suspended [TSS]	----	E160-H	3.0	mg/L		940	12.8	----	----	----
turbidity	----	E121	0.10	NTU		726	3.74	----	----	----
Anions and Nutrients										
ammonia, total (as N)	7664-41-7	E298	0.0050	mg/L		0.0336	0.0210	----	----	----
bromide	24959-67-9	E235.Br-L	0.050	mg/L		<0.050	<0.050	----	----	----
chloride	16887-00-6	E235.Cl	0.50	mg/L		4.13	<0.50	----	----	----
fluoride	16984-48-8	E235.F	0.020	mg/L		0.091	0.090	----	----	----
Kjeldahl nitrogen, total [TKN]	----	E318	0.050	mg/L		1.01	0.300	----	----	----
nitrate (as N)	14797-55-8	E235.NO3-L	0.0050	mg/L		0.298	0.118	----	----	----
nitrite (as N)	14797-65-0	E235.NO2-L	0.0010	mg/L		0.0032	<0.0010	----	----	----
nitrogen, total	7727-37-9	E366	0.030	mg/L		0.812	0.387	----	----	----
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0010	mg/L		0.0019	0.0037	----	----	----
phosphorus, total	7723-14-0	E372-U	0.0020	mg/L		0.514	0.0226	----	----	----
phosphorus, total dissolved	7723-14-0	E375-T	0.0020	mg/L		0.0076	0.0061	----	----	----
sulfate (as SO4)	14808-79-8	E235.SO4	0.30	mg/L		29.2	14.1	----	----	----
Organic / Inorganic Carbon										
carbon, dissolved organic [DOC]	----	E358-L	0.50	mg/L		15.7	8.87	----	----	----
carbon, total organic [TOC]	----	E355-L	0.50	mg/L		18.6	9.17	----	----	----
Ion Balance										
anion sum	----	EC101	0.10	meq/L		1.74	1.07	----	----	----
cation sum	----	EC101	0.10	meq/L		1.89	1.23	----	----	----
ion balance (cation-anion difference)	----	EC101	0.010	%		4.13	6.96	----	----	----
Total Metals										
aluminum, total	7429-90-5	E420	0.0030	mg/L		10.0	0.216	----	----	----

Analytical Results

Sub-Matrix: **Water**
(Matrix: **Water**)

Analyte	CAS Number	Method	LOR	Unit	Client sample ID	W21	W1	----	----	----
					Client sampling date / time	21-Apr-2020 12:20	21-Apr-2020 13:00	----	----	----
						WR2000145-001	WR2000145-002	--------	--------	--------
						Result	Result	----	----	----
Total Metals										
antimony, total	7440-36-0	E420	0.00010	mg/L		0.00850	0.00115	----	----	----
arsenic, total	7440-38-2	E420	0.00010	mg/L		0.311	0.0322	----	----	----
barium, total	7440-39-3	E420	0.00010	mg/L		0.203	0.0499	----	----	----
beryllium, total	7440-41-7	E420	0.000020	mg/L		0.000791	0.000024	----	----	----
bismuth, total	7440-69-9	E420	0.000050	mg/L		0.00309	0.000097	----	----	----
boron, total	7440-42-8	E420	0.010	mg/L		<0.010	<0.010	----	----	----
cadmium, total	7440-43-9	E420	0.0000050	mg/L		0.000430	0.0000246	----	----	----
calcium, total	7440-70-2	E420	0.050	mg/L		24.5	15.3	----	----	----
chromium, total	7440-47-3	E420.Cr-L	0.00010	mg/L		0.0170	0.00046	----	----	----
cobalt, total	7440-48-4	E420	0.00010	mg/L		0.0114	0.00020	----	----	----
copper, total	7440-50-8	E420	0.00050	mg/L		0.0336	0.00105	----	----	----
iron, total	7439-89-6	E420	0.010	mg/L		21.2	0.330	----	----	----
lead, total	7439-92-1	E420	0.000050	mg/L		0.0513	0.000546	----	----	----
lithium, total	7439-93-2	E420	0.0010	mg/L		0.0228	0.0029	----	----	----
magnesium, total	7439-95-4	E420	0.100	mg/L		11.4	3.61	----	----	----
manganese, total	7439-96-5	E420	0.00010	mg/L		0.493	0.0149	----	----	----
mercury, total	7439-97-6	E508	0.0000050	mg/L		0.0000617	0.0000056	----	----	----
molybdenum, total	7439-98-7	E420	0.000050	mg/L		0.000795 DTC	0.00170	----	----	----
nickel, total	7440-02-0	E420	0.00050	mg/L		0.0239	0.00124	----	----	----
phosphorus, total	7723-14-0	E420	0.050	mg/L		0.314	<0.050	----	----	----
potassium, total	7440-09-7	E420	0.100	mg/L		5.10	1.06	----	----	----
selenium, total	7782-49-2	E420	0.000050	mg/L		0.000455	0.000196	----	----	----
silicon, total	7440-21-3	E420	0.10	mg/L		17.6	5.30	----	----	----
silver, total	7440-22-4	E420	0.000010	mg/L		0.000382	<0.000010	----	----	----
sodium, total	7440-23-5	E420	0.050	mg/L		2.33	1.43	----	----	----
strontium, total	7440-24-6	E420	0.00020	mg/L		0.147	0.0792	----	----	----
sulfur, total	7704-34-9	E420	0.50	mg/L		10.1	4.68	----	----	----
thallium, total	7440-28-0	E420	0.000010	mg/L		0.000290	<0.000010	----	----	----
tin, total	7440-31-5	E420	0.00010	mg/L		0.00020	<0.00010	----	----	----
titanium, total	7440-32-6	E420	0.00030	mg/L		0.307	0.00896	----	----	----
uranium, total	7440-61-1	E420	0.000010	mg/L		0.00286	0.000610	----	----	----

Analytical Results

Sub-Matrix: **Water**
(Matrix: **Water**)

Analyte	CAS Number	Method	LOR	Unit	Client sample ID	W21	W1	----	----	----
					Client sampling date / time	21-Apr-2020 12:20	21-Apr-2020 13:00	----	----	----
						WR2000145-001	WR2000145-002	--------	--------	--------
						Result	Result	----	----	----
Total Metals										
vanadium, total	7440-62-2	E420	0.00050	mg/L		0.0202	0.00059	----	----	----
zinc, total	7440-66-6	E420	0.0030	mg/L		0.0740	0.0041	----	----	----
zirconium, total	7440-67-7	E420	0.00030	mg/L		0.00117	<0.00030	----	----	----
Dissolved Metals										
aluminum, dissolved	7429-90-5	E421	0.0010	mg/L		0.104	0.111	----	----	----
antimony, dissolved	7440-36-0	E421	0.00010	mg/L		0.00164	0.00104	----	----	----
arsenic, dissolved	7440-38-2	E421	0.00010	mg/L		0.0291	0.0296	----	----	----
barium, dissolved	7440-39-3	E421	0.00010	mg/L		0.0281	0.0508	----	----	----
beryllium, dissolved	7440-41-7	E421	0.000020	mg/L		<0.000020	<0.000020	----	----	----
bismuth, dissolved	7440-69-9	E421	0.000050	mg/L		<0.000050	<0.000050	----	----	----
boron, dissolved	7440-42-8	E421	0.010	mg/L		<0.010	<0.010	----	----	----
cadmium, dissolved	7440-43-9	E421	0.0000050	mg/L		0.0000301	0.0000180	----	----	----
calcium, dissolved	7440-70-2	E421	0.050	mg/L		21.5	15.3	----	----	----
chromium, dissolved	7440-47-3	E421.Cr-L	0.00010	mg/L		0.00028	0.00030	----	----	----
cobalt, dissolved	7440-48-4	E421	0.00010	mg/L		0.00040	0.00012	----	----	----
copper, dissolved	7440-50-8	E421	0.00020	mg/L		0.00237	0.00083	----	----	----
iron, dissolved	7439-89-6	E421	0.010	mg/L		0.212	0.107	----	----	----
lead, dissolved	7439-92-1	E421	0.000050	mg/L		0.000356	0.000097	----	----	----
lithium, dissolved	7439-93-2	E421	0.0010	mg/L		0.0052	0.0025	----	----	----
magnesium, dissolved	7439-95-4	E421	0.100	mg/L		7.78	4.08	----	----	----
manganese, dissolved	7439-96-5	E421	0.00010	mg/L		0.0378	0.00830	----	----	----
mercury, dissolved	7439-97-6	E509	0.0000050	mg/L		<0.0000050	<0.0000050	----	----	----
molybdenum, dissolved	7439-98-7	E421	0.000050	mg/L		0.000902 DTC	0.00161	----	----	----
nickel, dissolved	7440-02-0	E421	0.00050	mg/L		0.00221	0.00095	----	----	----
phosphorus, dissolved	7723-14-0	E421	0.050	mg/L		<0.050	<0.050	----	----	----
potassium, dissolved	7440-09-7	E421	0.100	mg/L		2.22	1.22	----	----	----
selenium, dissolved	7782-49-2	E421	0.000050	mg/L		0.000377	0.000178	----	----	----
silicon, dissolved	7440-21-3	E421	0.050	mg/L		3.22	5.19	----	----	----
silver, dissolved	7440-22-4	E421	0.000010	mg/L		<0.000010	<0.000010	----	----	----
sodium, dissolved	7440-23-5	E421	0.050	mg/L		2.22	1.69	----	----	----
strontium, dissolved	7440-24-6	E421	0.00020	mg/L		0.120	0.0840	----	----	----

Analytical Results

Sub-Matrix: **Water**
(Matrix: **Water**)

Analyte	CAS Number	Method	LOR	Unit	Client sample ID	W21	W1	----	----	----
					Client sampling date / time	21-Apr-2020 12:20	21-Apr-2020 13:00	----	----	----
						WR2000145-001	WR2000145-002	--------	--------	--------
						Result	Result	----	----	----
Dissolved Metals										
sulfur, dissolved	7704-34-9	E421	0.50	mg/L		9.37	4.45	----	----	----
thallium, dissolved	7440-28-0	E421	0.000010	mg/L		<0.000010	<0.000010	----	----	----
tin, dissolved	7440-31-5	E421	0.00010	mg/L		<0.00010	<0.00010	----	----	----
titanium, dissolved	7440-32-6	E421	0.00030	mg/L		0.00294	0.00379	----	----	----
uranium, dissolved	7440-61-1	E421	0.000010	mg/L		0.00132	0.000548	----	----	----
vanadium, dissolved	7440-62-2	E421	0.00050	mg/L		<0.00050	<0.00050	----	----	----
zinc, dissolved	7440-66-6	E421	0.0010	mg/L		0.0039	0.0016	----	----	----
zirconium, dissolved	7440-67-7	E421	0.00030	mg/L		0.00034	<0.00030	----	----	----
dissolved mercury filtration location	----	EP509	-	-		Field	Field	----	----	----
dissolved metals filtration location	----	EP421	-	-		Field	Field	----	----	----

Please refer to the General Comments section for an explanation of any qualifiers detected.

ALS Environmental

CERTIFICATE OF ANALYSIS

Work Order	: **WR2000154**	Page	: 1 of 7
Client	: **Victoria Gold (Yukon) Corp.**	Laboratory	: Whitehorse - Environmental
Contact	: Hugh Coyle	Account Manager	: Hilary Woods
Address	: Suite 1000 - 1050 W. Pender St Vancouver BC Canada V6E 3S7	Address	: #12 151 Industrial Road Whitehorse YT Canada Y1A 2V3
Telephone	: 604 682 5122	Telephone	: +1 867 668 6689
Project	: WUL SWQ Discharge	Date Samples Received	: 27-Apr-2020 12:05
PO	: 14043	Date Analysis Commenced	: 30-Apr-2020
C-O-C number	: 20200424	Issue Date	: 07-May-2020 13:49
Sampler	: JW, PS		
Site	: ----		
Quote number	: Q68199		
No. of samples received	: 5		
No. of samples analysed	: 5		

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QC Interpretive report to assist with Quality Review and Sample Receipt Notification (SRN).

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is conducted in accordance with US FDA 21 CFR Part 11.

Signatories	*Position*	*Laboratory Department*
Aaron Yu	Laboratory Analyst	Metals, Burnaby, British Columbia
Angela Ren	Team Leader - Metals	Metals, Burnaby, British Columbia
Bruna Botti	Analyst	Inorganics - Water Quality, Burnaby, British Columbia
Caitlin Macey	Team Leader - Inorganics	Inorganics - Water Quality, Burnaby, British Columbia
Cristina Alexandre	Supervisor - Metals ICP Instrumentation	Metals, Burnaby, British Columbia
Erick Magalhaes	Laboratory Analyst	Metals, Burnaby, British Columbia
Kevin Duarte	Team Leader - Inorganics	Inorganics - Water Quality, Burnaby, British Columbia
Lindsay Gung	Supervisor - Water Chemistry	Inorganics - Water Quality, Burnaby, British Columbia
Matthew Woods	Lab Assistant	Metals, Burnaby, British Columbia
Richard Chong		Metals, Burnaby, British Columbia
Walt Kippenhuck	Team Leader - Inorganics	Inorganics, Waterloo, Ontario

General Comments

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Refer to the ALS Quality Control Interpretive report (QCI) for applicable references and methodology summaries. Reference methods may incorporate modifications to improve performance.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

Please refer to Quality Control Interpretive report (QCI) for information regarding Holding Time compliance.

Key : CAS Number: Chemical Abstracts Services number is a unique identifier assigned to discrete substances
LOR: Limit of Reporting (detection limit).

Unit	*Description*
-	No Unit
%	percent
µS/cm	Microsiemens per centimetre
meq/L	milliequivalents per litre
mg/L	milligrams per litre
NTU	nephelometric turbidity units
pH units	pH units

<: less than.

>: greater than.

Surrogate: An analyte that is similar in behavior to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.

Test results reported relate only to the samples as received by the laboratory.

UNLESS OTHERWISE STATED on SRN or QCI Report, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

Analytical results in reports identified as "Preliminary Report" are considered authorized for use.

Workorder Comments

Sample W4 dissolved mercury analysis was submitted in empty glass vial. Will be run from the plastic bottle provided. Results may be biased low.

Sample Comments

Sample	Client Id	*Comment*
WR2000154-004	W4	Sample 4: Water sample for dissolved mercury analysis was not submitted in glass or PTFE container with HCl preservative. Results may be biased low.

Qualifiers

Qualifier	*Description*

RRV	*Reported result verified by repeat analysis.*

Analytical Results

Sub-Matrix: **Water**
(Matrix: **Water**)

Analyte	CAS Number	Method	LOR	Unit	Client sample ID	FDP5	LDSPI	W22	W4	W29
					Client sampling date / time	22-Apr-2020 14:21	22-Apr-2020 14:57	22-Apr-2020 14:05	22-Apr-2020 13:10	22-Apr-2020 12:44
						WR2000154-001	WR2000154-002	WR2000154-003	WR2000154-004	WR2000154-005
						Result	Result	Result	Result	Result
Physical Tests										
alkalinity, total (as CaCO3)	----	E290	1.0	mg/L		----	----	62.9	63.6	----
conductivity	----	E100	2.0	µS/cm		----	----	262	273	----
hardness (as CaCO3), dissolved	----	EC100	0.60	mg/L		----	----	125	126	----
hardness (as CaCO3), from total Ca/Mg	----	EC100A	0.60	mg/L		----	----	119	123	----
pH	----	E108	0.10	pH units		----	----	7.48	7.60	----
solids, total dissolved [TDS], calculated	----	EC103	1.0	mg/L		----	----	168	171	----
solids, total suspended [TSS]	----	E160-H	3.0	mg/L		----	----	<3.0	280	----
turbidity	----	E121	0.10	NTU		----	----	0.92	28.0	----
Anions and Nutrients										
ammonia, total (as N)	7664-41-7	E298	0.0050	mg/L		----	----	<0.0050	0.0156 RRV	----
bromide	24959-67-9	E235.Br-L	0.050	mg/L		----	----	<0.050	<0.050	----
chloride	16887-00-6	E235.Cl	0.50	mg/L		----	----	1.16	3.48	----
cyanate	88402-73-7	E343	0.20	mg/L		----	----	<0.20	<0.20	<0.20
fluoride	16984-48-8	E235.F	0.020	mg/L		----	----	0.092	0.098	----
Kjeldahl nitrogen, total [TKN]	----	E318	0.050	mg/L		----	----	0.456	0.659	----
nitrate (as N)	14797-55-8	E235.NO3-L	0.0050	mg/L		----	----	0.0664	0.209	----
nitrite (as N)	14797-65-0	E235.NO2-L	0.0010	mg/L		----	----	<0.0010	0.0011	----
nitrogen, total	7727-37-9	E366	0.030	mg/L		----	----	0.520	0.716	----
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0010	mg/L		----	----	0.0017	<0.0010	----
phosphorus, total	7723-14-0	E372-U	0.0020	mg/L		----	----	0.0204	0.147	----
phosphorus, total dissolved	7723-14-0	E375-T	0.0020	mg/L		----	----	0.0117	0.0089	----
sulfate (as SO4)	14808-79-8	E235.SO4	0.30	mg/L		----	----	57.4	58.1	----
Cyanides										
cyanide, total	----	E333	0.0050	mg/L		<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
cyanide, weak acid dissociable	----	E336	0.0050	mg/L		<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
thiocyanate	302-04-5	E344	0.50	mg/L		----	----	0.73	0.66	0.69
Organic / Inorganic Carbon										
carbon, dissolved organic [DOC]	----	E358-L	0.50	mg/L		----	----	17.4	14.5	----
carbon, total organic [TOC]	----	E355-L	0.50	mg/L		----	----	15.5	14.5	----
Ion Balance										

Analytical Results

Sub-Matrix: **Water**
(Matrix: **Water**)

Analyte	CAS Number	Method	LOR	Unit	Client sample ID	FDP5	LDSPI	W22	W4	W29
					Client sampling date / time	22-Apr-2020 14:21	22-Apr-2020 14:57	22-Apr-2020 14:05	22-Apr-2020 13:10	22-Apr-2020 12:44
						WR2000154-001	WR2000154-002	WR2000154-003	WR2000154-004	WR2000154-005
						Result	Result	Result	Result	Result
Ion Balance										
anion sum	----	EC101	0.10	meq/L		----	----	2.50	2.60	----
cation sum	----	EC101	0.10	meq/L		----	----	2.62	2.66	----
ion balance (cation-anion difference)	----	EC101	0.010	%		----	----	2.34	1.14	----
Total Metals										
aluminum, total	7429-90-5	E420	0.0030	mg/L		----	----	0.0981	3.94	----
antimony, total	7440-36-0	E420	0.00010	mg/L		----	----	0.00020	0.00454	----
arsenic, total	7440-38-2	E420	0.00010	mg/L		----	----	0.00106	0.116	----
barium, total	7440-39-3	E420	0.00010	mg/L		----	----	0.0308	0.0901	----
beryllium, total	7440-41-7	E420	0.000020	mg/L		----	----	<0.000020	0.000243	----
bismuth, total	7440-69-9	E420	0.000050	mg/L		----	----	<0.000050	0.000893	----
boron, total	7440-42-8	E420	0.010	mg/L		----	----	<0.010	<0.010	----
cadmium, total	7440-43-9	E420	0.0000050	mg/L		----	----	0.0000334	0.000150	----
calcium, total	7440-70-2	E420	0.050	mg/L		----	----	28.2	28.2	----
chromium, total	7440-47-3	E420.Cr-L	0.00010	mg/L		----	----	0.00012	0.00652	----
cobalt, total	7440-48-4	E420	0.00010	mg/L		----	----	0.00021	0.00424	----
copper, total	7440-50-8	E420	0.00050	mg/L		----	----	0.00152	0.0129	----
iron, total	7439-89-6	E420	0.010	mg/L		----	----	0.264	7.86	----
lead, total	7439-92-1	E420	0.000050	mg/L		----	----	0.000158	0.0146	----
lithium, total	7439-93-2	E420	0.0010	mg/L		----	----	0.0054	0.0114	----
magnesium, total	7439-95-4	E420	0.100	mg/L		----	----	11.8	12.9	----
manganese, total	7439-96-5	E420	0.00010	mg/L		----	----	0.0452	0.185	----
mercury, total	7439-97-6	E508	0.0000050	mg/L		----	----	0.0000062	0.0000246	----
molybdenum, total	7439-98-7	E420	0.000050	mg/L		----	----	<0.000050	0.000466	----
nickel, total	7440-02-0	E420	0.00050	mg/L		----	----	0.00205	0.00998	----
phosphorus, total	7723-14-0	E420	0.050	mg/L		----	----	<0.050	0.119	----
potassium, total	7440-09-7	E420	0.100	mg/L		----	----	1.47	2.89	----
selenium, total	7782-49-2	E420	0.000050	mg/L		----	----	0.000116	0.000249	----
silicon, total	7440-21-3	E420	0.10	mg/L		----	----	3.28	8.17	----
silver, total	7440-22-4	E420	0.000010	mg/L		----	----	<0.000010	0.000128	----
sodium, total	7440-23-5	E420	0.050	mg/L		----	----	1.38	1.93	----
strontium, total	7440-24-6	E420	0.00020	mg/L		----	----	0.143	0.150	----

Analytical Results

Sub-Matrix: **Water**
(Matrix: **Water**)

Analyte	CAS Number	Method	LOR	Unit	Client sample ID	FDP5	LDSPI	W22	W4	W29
					Client sampling date / time	22-Apr-2020 14:21	22-Apr-2020 14:57	22-Apr-2020 14:05	22-Apr-2020 13:10	22-Apr-2020 12:44
						WR2000154-001	WR2000154-002	WR2000154-003	WR2000154-004	WR2000154-005
						Result	Result	Result	Result	Result
Total Metals										
sulfur, total	7704-34-9	E420	0.50	mg/L		----	----	20.1	17.6	----
thallium, total	7440-28-0	E420	0.000010	mg/L		----	----	<0.000010	0.000104	----
tin, total	7440-31-5	E420	0.00010	mg/L		----	----	<0.00010	0.00018	----
titanium, total	7440-32-6	E420	0.00030	mg/L		----	----	0.00146	0.140	----
uranium, total	7440-61-1	E420	0.000010	mg/L		----	----	0.000558	0.00133	----
vanadium, total	7440-62-2	E420	0.00050	mg/L		----	----	<0.00050	0.00800	----
zinc, total	7440-66-6	E420	0.0030	mg/L		----	----	0.0052	0.0332	----
zirconium, total	7440-67-7	E420	0.00030	mg/L		----	----	<0.00030	0.00095	----
Dissolved Metals										
aluminum, dissolved	7429-90-5	E421	0.0010	mg/L		----	----	0.0586	0.0540	----
antimony, dissolved	7440-36-0	E421	0.00010	mg/L		----	----	0.00018	0.00071	----
arsenic, dissolved	7440-38-2	E421	0.00010	mg/L		----	----	0.00079	0.00851	----
barium, dissolved	7440-39-3	E421	0.00010	mg/L		----	----	0.0310	0.0342	----
beryllium, dissolved	7440-41-7	E421	0.000020	mg/L		----	----	<0.000020	<0.000020	----
bismuth, dissolved	7440-69-9	E421	0.000050	mg/L		----	----	<0.000050	<0.000050	----
boron, dissolved	7440-42-8	E421	0.010	mg/L		----	----	<0.010	<0.010	----
cadmium, dissolved	7440-43-9	E421	0.0000050	mg/L		----	----	0.0000294	0.0000245	----
calcium, dissolved	7440-70-2	E421	0.050	mg/L		----	----	29.7	30.0	----
chromium, dissolved	7440-47-3	E421.Cr-L	0.00010	mg/L		----	----	0.00011	0.00018	----
cobalt, dissolved	7440-48-4	E421	0.00010	mg/L		----	----	0.00015	0.00022	----
copper, dissolved	7440-50-8	E421	0.00020	mg/L		----	----	0.00153	0.00164	----
iron, dissolved	7439-89-6	E421	0.010	mg/L		----	----	0.133	0.138	----
lead, dissolved	7439-92-1	E421	0.000050	mg/L		----	----	<0.000050	0.000144	----
lithium, dissolved	7439-93-2	E421	0.0010	mg/L		----	----	0.0053	0.0060	----
magnesium, dissolved	7439-95-4	E421	0.100	mg/L		----	----	12.3	12.3	----
manganese, dissolved	7439-96-5	E421	0.00010	mg/L		----	----	0.0366	0.0388	----
mercury, dissolved	7439-97-6	E509	0.0000050	mg/L		----	----	0.0000053	0.0000051	----
molybdenum, dissolved	7439-98-7	E421	0.000050	mg/L		----	----	<0.000050	0.000371	----
nickel, dissolved	7440-02-0	E421	0.00050	mg/L		----	----	0.00203	0.00191	----
phosphorus, dissolved	7723-14-0	E421	0.050	mg/L		----	----	<0.050	<0.050	----
potassium, dissolved	7440-09-7	E421	0.100	mg/L		----	----	1.52	1.83	----

Analytical Results

Sub-Matrix: **Water**
(Matrix: **Water**)

Analyte	CAS Number	Method	LOR	Unit	Client sample ID	FDP5	LDSPI	W22	W4	W29
					Client sampling date / time	22-Apr-2020 14:21	22-Apr-2020 14:57	22-Apr-2020 14:05	22-Apr-2020 13:10	22-Apr-2020 12:44
						WR2000154-001	WR2000154-002	WR2000154-003	WR2000154-004	WR2000154-005
						Result	Result	Result	Result	Result
Dissolved Metals										
selenium, dissolved	7782-49-2	E421	0.000050	mg/L		----	----	0.000106	0.000242	----
silicon, dissolved	7440-21-3	E421	0.050	mg/L		----	----	3.24	3.30	----
silver, dissolved	7440-22-4	E421	0.000010	mg/L		----	----	<0.000010	<0.000010	----
sodium, dissolved	7440-23-5	E421	0.050	mg/L		----	----	1.58	2.05	----
strontium, dissolved	7440-24-6	E421	0.00020	mg/L		----	----	0.135	0.152	----
sulfur, dissolved	7704-34-9	E421	0.50	mg/L		----	----	20.4	20.1	----
thallium, dissolved	7440-28-0	E421	0.000010	mg/L		----	----	<0.000010	<0.000010	----
tin, dissolved	7440-31-5	E421	0.00010	mg/L		----	----	<0.00010	<0.00010	----
titanium, dissolved	7440-32-6	E421	0.00030	mg/L		----	----	0.00047	0.00109	----
uranium, dissolved	7440-61-1	E421	0.000010	mg/L		----	----	0.000536	0.000975	----
vanadium, dissolved	7440-62-2	E421	0.00050	mg/L		----	----	<0.00050	<0.00050	----
zinc, dissolved	7440-66-6	E421	0.0010	mg/L		----	----	0.0045	0.0036	----
zirconium, dissolved	7440-67-7	E421	0.00030	mg/L		----	----	<0.00030	<0.00030	----
dissolved mercury filtration location	----	EP509	-	-		----	----	Field	Field	----
dissolved metals filtration location	----	EP421	-	-		----	----	Field	Field	----

Please refer to the General Comments section for an explanation of any qualifiers detected.

CERTIFICATE OF ANALYSIS

Work Order	: **WR2000153**	Page	: 1 of 6
Client	: **Victoria Gold (Yukon) Corp.**	Laboratory	: Whitehorse - Environmental
Contact	: Hugh Coyle	Account Manager	: Hilary Woods
Address	: Suite 1000 - 1050 W. Pender St Vancouver BC Canada V6E 3S7	Address	: #12 151 Industrial Road Whitehorse YT Canada Y1A 2V3
Telephone	: 604 682 5122	Telephone	: +1 867 668 6689
Project	: WUL SWQ Discharge	Date Samples Received	: 27-Apr-2020 12:05
PO	: 14043	Date Analysis Commenced	: 30-Apr-2020
C-O-C number	: 20200424	Issue Date	: 07-May-2020 13:56
Sampler	: JW, PS		
Site	: ----		
Quote number	: Q68199		
No. of samples received	: 5		
No. of samples analysed	: 5		

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QC Interpretive report to assist with Quality Review and Sample Receipt Notification (SRN).

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is conducted in accordance with US FDA 21 CFR Part 11.

Signatories	*Position*	*Laboratory Department*
Aaron Yu	Laboratory Analyst	Metals, Burnaby, British Columbia
Angela Ren	Team Leader - Metals	Metals, Burnaby, British Columbia
Bruna Botti	Analyst	Inorganics - Water Quality, Burnaby, British Columbia
Caitlin Macey	Team Leader - Inorganics	Inorganics - Water Quality, Burnaby, British Columbia
Cristina Alexandre	Supervisor - Metals ICP Instrumentation	Metals, Burnaby, British Columbia
Erick Magalhaes	Laboratory Analyst	Metals, Burnaby, British Columbia
Kevin Duarte	Team Leader - Inorganics	Inorganics - Water Quality, Burnaby, British Columbia
Lindsay Gung	Supervisor - Water Chemistry	Inorganics - Water Quality, Burnaby, British Columbia
Walt Kippenhuck	Team Leader - Inorganics	Inorganics, Waterloo, Ontario

General Comments

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Refer to the ALS Quality Control Interpretive report (QCI) for applicable references and methodology summaries. Reference methods may incorporate modifications to improve performance.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

Please refer to Quality Control Interpretive report (QCI) for information regarding Holding Time compliance.

Key : CAS Number: Chemical Abstracts Services number is a unique identifier assigned to discrete substances
LOR: Limit of Reporting (detection limit).

Unit	*Description*
-	No Unit
%	percent
µS/cm	Microsiemens per centimetre
meq/L	milliequivalents per litre
mg/L	milligrams per litre
NTU	nephelometric turbidity units
pH units	pH units

<: less than.

>: greater than.

Surrogate: An analyte that is similar in behavior to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.

Test results reported relate only to the samples as received by the laboratory.

UNLESS OTHERWISE STATED on SRN or QCI Report, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

Analytical results in reports identified as "Preliminary Report" are considered authorized for use.

Analytical Results

Sub-Matrix: **Water**
(Matrix: **Water**)

Analyte	CAS Number	Method	LOR	Unit	Client sample ID	FDP5	LDSPI	W22	W4	W29
					Client sampling date / time	23-Apr-2020 10:50	23-Apr-2020 10:59	23-Apr-2020 10:20	23-Apr-2020 09:33	23-Apr-2020 09:10
						WR2000153-001	WR2000153-002	WR2000153-003	WR2000153-004	WR2000153-005
						Result	Result	Result	Result	Result
Physical Tests										
alkalinity, total (as CaCO3)	----	E290	1.0	mg/L		----	----	69.7	69.6	----
conductivity	----	E100	2.0	µS/cm		----	----	279	279	----
hardness (as CaCO3), dissolved	----	EC100	0.60	mg/L		----	----	131	132	----
hardness (as CaCO3), from total Ca/Mg	----	EC100A	0.60	mg/L		----	----	131	132	----
pH	----	E108	0.10	pH units		----	----	7.60	7.74	----
solids, total dissolved [TDS], calculated	----	EC103	1.0	mg/L		----	----	177	178	----
solids, total suspended [TSS]	----	E160-H	3.0	mg/L		----	----	<3.0	49.8	----
turbidity	----	E121	0.10	NTU		----	----	<0.10	28.3	----
Anions and Nutrients										
ammonia, total (as N)	7664-41-7	E298	0.0050	mg/L		----	----	<0.0050	<0.0050	----
bromide	24959-67-9	E235.Br-L	0.050	mg/L		----	----	<0.050	<0.050	----
chloride	16887-00-6	E235.Cl	0.50	mg/L		----	----	1.00	2.43	----
cyanate	88402-73-7	E343	0.20	mg/L		----	----	<0.20	<0.20	<0.20
fluoride	16984-48-8	E235.F	0.020	mg/L		----	----	0.090	0.092	----
Kjeldahl nitrogen, total [TKN]	----	E318	0.050	mg/L		----	----	0.464	0.443	----
nitrate (as N)	14797-55-8	E235.NO3-L	0.0050	mg/L		----	----	0.0759	0.187	----
nitrite (as N)	14797-65-0	E235.NO2-L	0.0010	mg/L		----	----	<0.0010	<0.0010	----
nitrogen, total	7727-37-9	E366	0.030	mg/L		----	----	0.524	0.601	----
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0010	mg/L		----	----	<0.0010	<0.0010	----
phosphorus, total	7723-14-0	E372-U	0.0020	mg/L		----	----	0.0174	0.0379	----
phosphorus, total dissolved	7723-14-0	E375-T	0.0020	mg/L		----	----	0.0102	0.0089	----
sulfate (as SO4)	14808-79-8	E235.SO4	0.30	mg/L		----	----	60.0	59.0	----
Cyanides										
cyanide, total	----	E333	0.0050	mg/L		<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
cyanide, weak acid dissociable	----	E336	0.0050	mg/L		<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
thiocyanate	302-04-5	E344	0.50	mg/L		----	----	0.70	0.60	<0.50
Organic / Inorganic Carbon										
carbon, dissolved organic [DOC]	----	E358-L	0.50	mg/L		----	----	17.3	16.4	----
carbon, total organic [TOC]	----	E355-L	0.50	mg/L		----	----	16.7	14.9	----
Ion Balance										

Analytical Results

Sub-Matrix: **Water**
(Matrix: **Water**)

Analyte	CAS Number	Method	LOR	Unit	Client sample ID	FDP5	LDSPI	W22	W4	W29
					Client sampling date / time	23-Apr-2020 10:50	23-Apr-2020 10:59	23-Apr-2020 10:20	23-Apr-2020 09:33	23-Apr-2020 09:10
						WR2000153-001	WR2000153-002	WR2000153-003	WR2000153-004	WR2000153-005
						Result	Result	Result	Result	Result
Ion Balance										
anion sum	----	EC101	0.10	meq/L		----	----	2.68	2.70	----
cation sum	----	EC101	0.10	meq/L		----	----	2.75	2.78	----
ion balance (cation-anion difference)	----	EC101	0.010	%		----	----	1.29	1.46	----
Total Metals										
aluminum, total	7429-90-5	E420	0.0030	mg/L		----	----	0.0771	1.02	----
antimony, total	7440-36-0	E420	0.00010	mg/L		----	----	0.00021	0.00174	----
arsenic, total	7440-38-2	E420	0.00010	mg/L		----	----	0.00095	0.0326	----
barium, total	7440-39-3	E420	0.00010	mg/L		----	----	0.0367	0.0489	----
beryllium, total	7440-41-7	E420	0.000020	mg/L		----	----	<0.000020	0.000065	----
bismuth, total	7440-69-9	E420	0.000050	mg/L		----	----	<0.000050	0.000255	----
boron, total	7440-42-8	E420	0.010	mg/L		----	----	<0.010	<0.010	----
cadmium, total	7440-43-9	E420	0.0000050	mg/L		----	----	0.0000316	0.0000571	----
calcium, total	7440-70-2	E420	0.050	mg/L		----	----	31.3	31.4	----
chromium, total	7440-47-3	E420.Cr-L	0.00010	mg/L		----	----	0.00015	0.00151	----
cobalt, total	7440-48-4	E420	0.00010	mg/L		----	----	0.00018	0.00096	----
copper, total	7440-50-8	E420	0.00050	mg/L		----	----	0.00159	0.00418	----
iron, total	7439-89-6	E420	0.010	mg/L		----	----	0.217	1.85	----
lead, total	7439-92-1	E420	0.000050	mg/L		----	----	0.000054	0.00328	----
lithium, total	7439-93-2	E420	0.0010	mg/L		----	----	0.0054	0.0072	----
magnesium, total	7439-95-4	E420	0.100	mg/L		----	----	12.8	12.9	----
manganese, total	7439-96-5	E420	0.00010	mg/L		----	----	0.0414	0.0657	----
mercury, total	7439-97-6	E508	0.0000050	mg/L		----	----	0.0000058	0.0000099	----
molybdenum, total	7439-98-7	E420	0.000050	mg/L		----	----	0.000054	0.000383	----
nickel, total	7440-02-0	E420	0.00050	mg/L		----	----	0.00204	0.00392	----
phosphorus, total	7723-14-0	E420	0.050	mg/L		----	----	<0.050	<0.050	----
potassium, total	7440-09-7	E420	0.100	mg/L		----	----	1.44	1.95	----
selenium, total	7782-49-2	E420	0.000050	mg/L		----	----	0.000160	0.000212	----
silicon, total	7440-21-3	E420	0.10	mg/L		----	----	3.29	4.63	----
silver, total	7440-22-4	E420	0.000010	mg/L		----	----	<0.000010	0.000075	----
sodium, total	7440-23-5	E420	0.050	mg/L		----	----	1.59	1.91	----
strontium, total	7440-24-6	E420	0.00020	mg/L		----	----	0.160	0.168	----

Analytical Results

Sub-Matrix: **Water**
(Matrix: **Water**)

Analyte	CAS Number	Method	LOR	Unit	Client sample ID	FDP5	LDSPI	W22	W4	W29
					Client sampling date / time	23-Apr-2020 10:50	23-Apr-2020 10:59	23-Apr-2020 10:20	23-Apr-2020 09:33	23-Apr-2020 09:10
						WR2000153-001	WR2000153-002	WR2000153-003	WR2000153-004	WR2000153-005
						Result	Result	Result	Result	Result
Total Metals										
sulfur, total	7704-34-9	E420	0.50	mg/L		----	----	20.4	20.3	----
thallium, total	7440-28-0	E420	0.000010	mg/L		----	----	<0.000010	0.000028	----
tin, total	7440-31-5	E420	0.00010	mg/L		----	----	<0.00010	<0.00010	----
titanium, total	7440-32-6	E420	0.00030	mg/L		----	----	0.00062	0.0376	----
uranium, total	7440-61-1	E420	0.000010	mg/L		----	----	0.000759	0.00112	----
vanadium, total	7440-62-2	E420	0.00050	mg/L		----	----	<0.00050	0.00203	----
zinc, total	7440-66-6	E420	0.0030	mg/L		----	----	0.0051	0.0111	----
zirconium, total	7440-67-7	E420	0.00030	mg/L		----	----	0.00039	0.00077	----
Dissolved Metals										
aluminum, dissolved	7429-90-5	E421	0.0010	mg/L		----	----	0.0612	0.0584	----
antimony, dissolved	7440-36-0	E421	0.00010	mg/L		----	----	0.00018	0.00060	----
arsenic, dissolved	7440-38-2	E421	0.00010	mg/L		----	----	0.00086	0.00718	----
barium, dissolved	7440-39-3	E421	0.00010	mg/L		----	----	0.0339	0.0350	----
beryllium, dissolved	7440-41-7	E421	0.000020	mg/L		----	----	<0.000020	<0.000020	----
bismuth, dissolved	7440-69-9	E421	0.000050	mg/L		----	----	<0.000050	<0.000050	----
boron, dissolved	7440-42-8	E421	0.010	mg/L		----	----	<0.010	<0.010	----
cadmium, dissolved	7440-43-9	E421	0.0000050	mg/L		----	----	0.0000290	0.0000271	----
calcium, dissolved	7440-70-2	E421	0.050	mg/L		----	----	31.5	32.4	----
chromium, dissolved	7440-47-3	E421.Cr-L	0.00010	mg/L		----	----	0.00011	0.00012	----
cobalt, dissolved	7440-48-4	E421	0.00010	mg/L		----	----	0.00016	0.00018	----
copper, dissolved	7440-50-8	E421	0.00020	mg/L		----	----	0.00150	0.00173	----
iron, dissolved	7439-89-6	E421	0.010	mg/L		----	----	0.136	0.130	----
lead, dissolved	7439-92-1	E421	0.000050	mg/L		----	----	<0.000050	0.000090	----
lithium, dissolved	7439-93-2	E421	0.0010	mg/L		----	----	0.0055	0.0062	----
magnesium, dissolved	7439-95-4	E421	0.100	mg/L		----	----	12.8	12.5	----
manganese, dissolved	7439-96-5	E421	0.00010	mg/L		----	----	0.0358	0.0331	----
mercury, dissolved	7439-97-6	E509	0.0000050	mg/L		----	----	0.0000069	0.0000060	----
molybdenum, dissolved	7439-98-7	E421	0.000050	mg/L		----	----	<0.000050	0.000298	----
nickel, dissolved	7440-02-0	E421	0.00050	mg/L		----	----	0.00207	0.00201	----
phosphorus, dissolved	7723-14-0	E421	0.050	mg/L		----	----	<0.050	<0.050	----
potassium, dissolved	7440-09-7	E421	0.100	mg/L		----	----	1.39	1.57	----

Analytical Results

Sub-Matrix: **Water**
(Matrix: **Water**)

Analyte	CAS Number	Method	LOR	Unit	Client sample ID	FDP5	LDSPI	W22	W4	W29
					Client sampling date / time	23-Apr-2020 10:50	23-Apr-2020 10:59	23-Apr-2020 10:20	23-Apr-2020 09:33	23-Apr-2020 09:10
						WR2000153-001	WR2000153-002	WR2000153-003	WR2000153-004	WR2000153-005
						Result	Result	Result	Result	Result
Dissolved Metals										
selenium, dissolved	7782-49-2	E421	0.000050	mg/L		----	----	0.000154	0.000195	----
silicon, dissolved	7440-21-3	E421	0.050	mg/L		----	----	3.33	3.42	----
silver, dissolved	7440-22-4	E421	0.000010	mg/L		----	----	<0.000010	<0.000010	----
sodium, dissolved	7440-23-5	E421	0.050	mg/L		----	----	1.73	1.95	----
strontium, dissolved	7440-24-6	E421	0.00020	mg/L		----	----	0.158	0.157	----
sulfur, dissolved	7704-34-9	E421	0.50	mg/L		----	----	20.7	20.6	----
thallium, dissolved	7440-28-0	E421	0.000010	mg/L		----	----	<0.000010	<0.000010	----
tin, dissolved	7440-31-5	E421	0.00010	mg/L		----	----	<0.00010	<0.00010	----
titanium, dissolved	7440-32-6	E421	0.00030	mg/L		----	----	0.00056	0.00083	----
uranium, dissolved	7440-61-1	E421	0.000010	mg/L		----	----	0.000653	0.000899	----
vanadium, dissolved	7440-62-2	E421	0.00050	mg/L		----	----	<0.00050	<0.00050	----
zinc, dissolved	7440-66-6	E421	0.0010	mg/L		----	----	0.0044	0.0048	----
zirconium, dissolved	7440-67-7	E421	0.00030	mg/L		----	----	<0.00030	<0.00030	----
dissolved mercury filtration location	----	EP509	-	-		----	----	Field	Field	----
dissolved metals filtration location	----	EP421	-	-		----	----	Field	Field	----

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ALS Environmental

CERTIFICATE OF ANALYSIS

Work Order	: **WR2000152**	Page	: 1 of 18
Client	: **Victoria Gold (Yukon) Corp.**	Laboratory	: Whitehorse - Environmental
Contact	: Hugh Coyle	Account Manager	: Hilary Woods
Address	: Suite 1000 - 1050 W. Pender St Vancouver BC Canada V6E 3S7	Address	: #12 151 Industrial Road Whitehorse YT Canada Y1A 2V3
Telephone	: 604 682 5122	Telephone	: +1 867 668 6689
Project	: WUL SWQ Discharge	Date Samples Received	: 27-Apr-2020 12:05
PO	: 14043	Date Analysis Commenced	: 29-Apr-2020
C-O-C number	: 20200426	Issue Date	: 07-May-2020 14:18
Sampler	: ----		
Site	: ----		
Quote number	: Q68199		
No. of samples received	: 16		
No. of samples analysed	: 16		

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- Analytical Results

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Signatories

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Signatories	*Position*	*Laboratory Department*
Angela Ren	Team Leader - Metals	Metals, Burnaby, British Columbia
Bruna Botti	Analyst	Inorganics - Water Quality, Burnaby, British Columbia
Caitlin Macey	Team Leader - Inorganics	Inorganics - Water Quality, Burnaby, British Columbia
Cristina Alexandre	Supervisor - Metals ICP Instrumentation	Metals, Burnaby, British Columbia
Erick Magalhaes	Laboratory Analyst	Metals, Burnaby, British Columbia
Evan Ben-Oliel	Metal Analyst	Metals, Burnaby, British Columbia
Kevin Duarte	Team Leader - Inorganics	Inorganics - Water Quality, Burnaby, British Columbia
Lindsay Gung	Supervisor - Water Chemistry	Inorganics - Water Quality, Burnaby, British Columbia
Matthew Woods	Lab Assistant	Metals, Burnaby, British Columbia
Tracy Harley	Supervisor - Water Quality Instrumentation	Inorganics - Water Quality, Burnaby, British Columbia
Walt Kippenhuck	Team Leader - Inorganics	Inorganics, Waterloo, Ontario

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Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

Please refer to Quality Control Interpretive report (QCI) for information regarding Holding Time compliance.

Key : CAS Number: Chemical Abstracts Services number is a unique identifier assigned to discrete substances
LOR: Limit of Reporting (detection limit).

Unit	*Description*
-	No Unit
%	percent
µS/cm	Microsiemens per centimetre
meq/L	milliequivalents per litre
mg/L	milligrams per litre
NTU	nephelometric turbidity units
pH units	pH units

<: less than.

>: greater than.

Surrogate: An analyte that is similar in behavior to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.

Test results reported relate only to the samples as received by the laboratory.

UNLESS OTHERWISE STATED on SRN or QCI Report, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

Analytical results in reports identified as "Preliminary Report" are considered authorized for use.

Qualifiers

Qualifier	*Description*
DTMF	*Dissolved concentration exceeds total for field-filtered metals sample. Metallic contaminants may have been introduced to dissolved sample during field filtration.*

Analytical Results

Sub-Matrix: **Water**
(Matrix: **Water**)

Analyte	CAS Number	Method	LOR	Unit	Client sample ID	FDP5	LDSPI	W22	W4	W29
					Client sampling date / time	24-Apr-2020 08:28	24-Apr-2020 08:45	24-Apr-2020 10:05	24-Apr-2020 09:25	24-Apr-2020 09:05
						WR2000152-001	WR2000152-002	WR2000152-003	WR2000152-004	WR2000152-005
						Result	Result	Result	Result	Result
Physical Tests										
alkalinity, total (as CaCO3)	----	E290	1.0	mg/L		----	----	85.8	84.3	----
conductivity	----	E100	2.0	µS/cm		----	----	313	310	----
hardness (as CaCO3), dissolved	----	EC100	0.60	mg/L		----	----	169	160	----
hardness (as CaCO3), from total Ca/Mg	----	EC100A	0.60	mg/L		----	----	157	157	----
pH	----	E108	0.10	pH units		----	----	8.09	8.11	----
solids, total dissolved [TDS], calculated	----	EC103	1.0	mg/L		----	----	205	199	----
solids, total suspended [TSS]	----	E160-H	3.0	mg/L		----	----	<3.0	9.2	----
turbidity	----	E121	0.10	NTU		----	----	0.13	7.82	----
Anions and Nutrients										
ammonia, total (as N)	7664-41-7	E298	0.0050	mg/L		----	----	<0.0050	<0.0050	----
bromide	24959-67-9	E235.Br-L	0.050	mg/L		----	----	<0.050	<0.050	----
chloride	16887-00-6	E235.Cl	0.50	mg/L		----	----	0.87	1.68	----
cyanate	88402-73-7	E343	0.20	mg/L		----	----	<0.20	<0.20	<0.20
fluoride	16984-48-8	E235.F	0.020	mg/L		----	----	0.099	0.099	----
Kjeldahl nitrogen, total [TKN]	----	E318	0.050	mg/L		----	----	0.335	0.346	----
nitrate (as N)	14797-55-8	E235.NO3-L	0.0050	mg/L		----	----	0.103	0.173	----
nitrite (as N)	14797-65-0	E235.NO2-L	0.0010	mg/L		----	----	<0.0010	0.0010	----
nitrogen, total	7727-37-9	E366	0.030	mg/L		----	----	0.444	0.499	----
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0010	mg/L		----	----	<0.0010	<0.0010	----
phosphorus, total	7723-14-0	E372-U	0.0020	mg/L		----	----	0.0115	0.0152	----
phosphorus, total dissolved	7723-14-0	E375-T	0.0020	mg/L		----	----	0.0081	0.0097	----
sulfate (as SO4)	14808-79-8	E235.SO4	0.30	mg/L		----	----	67.0	64.4	----
Cyanides										
cyanide, total	----	E333	0.0050	mg/L		<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
cyanide, weak acid dissociable	----	E336	0.0050	mg/L		<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
thiocyanate	302-04-5	E344	0.50	mg/L		----	----	0.75	0.68	0.62
Organic / Inorganic Carbon										
carbon, dissolved organic [DOC]	----	E358-L	0.50	mg/L		----	----	14.2	13.5	----
carbon, total organic [TOC]	----	E355-L	0.50	mg/L		----	----	14.0	13.1	----
Ion Balance										

Analytical Results

Sub-Matrix: **Water**
(Matrix: **Water**)

Analyte	CAS Number	Method	LOR	Unit	Client sample ID	FDP5	LDSPI	W22	W4	W29
					Client sampling date / time	24-Apr-2020 08:28	24-Apr-2020 08:45	24-Apr-2020 10:05	24-Apr-2020 09:25	24-Apr-2020 09:05
						WR2000152-001	WR2000152-002	WR2000152-003	WR2000152-004	WR2000152-005
						Result	Result	Result	Result	Result
Ion Balance										
anion sum	----	EC101	0.10	meq/L		----	----	3.15	3.09	----
cation sum	----	EC101	0.10	meq/L		----	----	3.50	3.34	----
ion balance (cation-anion difference)	----	EC101	0.010	%		----	----	5.26	3.89	----
Total Metals										
aluminum, total	7429-90-5	E420	0.0030	mg/L		----	----	0.0658	0.266	----
antimony, total	7440-36-0	E420	0.00010	mg/L		----	----	0.00020	0.00074	----
arsenic, total	7440-38-2	E420	0.00010	mg/L		----	----	0.00108	0.0121	----
barium, total	7440-39-3	E420	0.00010	mg/L		----	----	0.0369	0.0412	----
beryllium, total	7440-41-7	E420	0.000020	mg/L		----	----	<0.000020	<0.000020	----
bismuth, total	7440-69-9	E420	0.000050	mg/L		----	----	<0.000050	0.000060	----
boron, total	7440-42-8	E420	0.010	mg/L		----	----	<0.010	<0.010	----
cadmium, total	7440-43-9	E420	0.0000050	mg/L		----	----	0.0000185	0.0000200	----
calcium, total	7440-70-2	E420	0.050	mg/L		----	----	36.6	37.1	----
chromium, total	7440-47-3	E420.Cr-L	0.00010	mg/L		----	----	0.00012	0.00039	----
cobalt, total	7440-48-4	E420	0.00010	mg/L		----	----	0.00022	0.00038	----
copper, total	7440-50-8	E420	0.00050	mg/L		----	----	0.00137	0.00194	----
iron, total	7439-89-6	E420	0.010	mg/L		----	----	0.234	0.510	----
lead, total	7439-92-1	E420	0.000050	mg/L		----	----	<0.000050	0.000748	----
lithium, total	7439-93-2	E420	0.0010	mg/L		----	----	0.0062	0.0071	----
magnesium, total	7439-95-4	E420	0.100	mg/L		----	----	16.0	15.5	----
manganese, total	7439-96-5	E420	0.00010	mg/L		----	----	0.0558	0.0528	----
mercury, total	7439-97-6	E508	0.0000050	mg/L		----	----	0.0000067	0.0000074	----
molybdenum, total	7439-98-7	E420	0.000050	mg/L		----	----	<0.000050	0.000280	----
nickel, total	7440-02-0	E420	0.00050	mg/L		----	----	0.00225	0.00240	----
phosphorus, total	7723-14-0	E420	0.050	mg/L		----	----	<0.050	<0.050	----
potassium, total	7440-09-7	E420	0.100	mg/L		----	----	1.36	1.58	----
selenium, total	7782-49-2	E420	0.000050	mg/L		----	----	0.000138	0.000244	----
silicon, total	7440-21-3	E420	0.10	mg/L		----	----	3.70	4.07	----
silver, total	7440-22-4	E420	0.000010	mg/L		----	----	<0.000010	0.000010	----
sodium, total	7440-23-5	E420	0.050	mg/L		----	----	2.13	2.32	----
strontium, total	7440-24-6	E420	0.00020	mg/L		----	----	0.194	0.200	----

Analytical Results

Sub-Matrix: **Water**
(Matrix: **Water**)

Analyte	CAS Number	Method	LOR	Unit	Client sample ID	FDP5	LDSPI	W22	W4	W29
					Client sampling date / time	24-Apr-2020 08:28	24-Apr-2020 08:45	24-Apr-2020 10:05	24-Apr-2020 09:25	24-Apr-2020 09:05
						WR2000152-001	WR2000152-002	WR2000152-003	WR2000152-004	WR2000152-005
						Result	Result	Result	Result	Result
Total Metals										
sulfur, total	7704-34-9	E420	0.50	mg/L		----	----	23.7	22.8	----
thallium, total	7440-28-0	E420	0.000010	mg/L		----	----	<0.000010	<0.000010	----
tin, total	7440-31-5	E420	0.00010	mg/L		----	----	<0.00010	<0.00010	----
titanium, total	7440-32-6	E420	0.00030	mg/L		----	----	0.00065	0.00805	----
uranium, total	7440-61-1	E420	0.000010	mg/L		----	----	0.00101	0.00131	----
vanadium, total	7440-62-2	E420	0.00050	mg/L		----	----	<0.00050	0.00054	----
zinc, total	7440-66-6	E420	0.0030	mg/L		----	----	0.0044	0.0060	----
zirconium, total	7440-67-7	E420	0.00030	mg/L		----	----	<0.00030	0.00032	----
Dissolved Metals										
aluminum, dissolved	7429-90-5	E421	0.0010	mg/L		----	----	0.0562	0.0520	----
antimony, dissolved	7440-36-0	E421	0.00010	mg/L		----	----	0.00021	0.00056	----
arsenic, dissolved	7440-38-2	E421	0.00010	mg/L		----	----	0.00105	0.00592	----
barium, dissolved	7440-39-3	E421	0.00010	mg/L		----	----	0.0388	0.0416	----
beryllium, dissolved	7440-41-7	E421	0.000020	mg/L		----	----	<0.000020	<0.000020	----
bismuth, dissolved	7440-69-9	E421	0.000050	mg/L		----	----	<0.000050	<0.000050	----
boron, dissolved	7440-42-8	E421	0.010	mg/L		----	----	<0.010	<0.010	----
cadmium, dissolved	7440-43-9	E421	0.0000050	mg/L		----	----	0.0000264	0.0000379 DTMF	----
calcium, dissolved	7440-70-2	E421	0.050	mg/L		----	----	41.2	38.5	----
chromium, dissolved	7440-47-3	E421.Cr-L	0.00010	mg/L		----	----	0.00010	<0.00010	----
cobalt, dissolved	7440-48-4	E421	0.00010	mg/L		----	----	0.00020	0.00020	----
copper, dissolved	7440-50-8	E421	0.00020	mg/L		----	----	0.00137	0.00146	----
iron, dissolved	7439-89-6	E421	0.010	mg/L		----	----	0.136	0.128	----
lead, dissolved	7439-92-1	E421	0.000050	mg/L		----	----	0.000069	0.000074	----
lithium, dissolved	7439-93-2	E421	0.0010	mg/L		----	----	0.0067	0.0073	----
magnesium, dissolved	7439-95-4	E421	0.100	mg/L		----	----	16.0	15.5	----
manganese, dissolved	7439-96-5	E421	0.00010	mg/L		----	----	0.0483	0.0430	----
mercury, dissolved	7439-97-6	E509	0.0000050	mg/L		----	----	0.0000069	0.0000070	----
molybdenum, dissolved	7439-98-7	E421	0.000050	mg/L		----	----	0.000060	0.000302	----
nickel, dissolved	7440-02-0	E421	0.00050	mg/L		----	----	0.00199	0.00207	----
phosphorus, dissolved	7723-14-0	E421	0.050	mg/L		----	----	<0.050	<0.050	----
potassium, dissolved	7440-09-7	E421	0.100	mg/L		----	----	1.33	1.53	----

Analytical Results

Sub-Matrix: **Water**
(Matrix: **Water**)

Analyte	CAS Number	Method	LOR	Unit	Client sample ID	FDP5	LDSPI	W22	W4	W29
					Client sampling date / time	24-Apr-2020 08:28	24-Apr-2020 08:45	24-Apr-2020 10:05	24-Apr-2020 09:25	24-Apr-2020 09:05
						WR2000152-001	WR2000152-002	WR2000152-003	WR2000152-004	WR2000152-005
						Result	Result	Result	Result	Result
Dissolved Metals										
selenium, dissolved	7782-49-2	E421	0.000050	mg/L		----	----	0.000164	0.000166	----
silicon, dissolved	7440-21-3	E421	0.050	mg/L		----	----	3.68	3.70	----
silver, dissolved	7440-22-4	E421	0.000010	mg/L		----	----	<0.000010	<0.000010	----
sodium, dissolved	7440-23-5	E421	0.050	mg/L		----	----	1.84	2.07	----
strontium, dissolved	7440-24-6	E421	0.00020	mg/L		----	----	0.208	0.202	----
sulfur, dissolved	7704-34-9	E421	0.50	mg/L		----	----	22.8	21.1	----
thallium, dissolved	7440-28-0	E421	0.000010	mg/L		----	----	<0.000010	<0.000010	----
tin, dissolved	7440-31-5	E421	0.00010	mg/L		----	----	<0.00010	<0.00010	----
titanium, dissolved	7440-32-6	E421	0.00030	mg/L		----	----	0.00085	0.00080	----
uranium, dissolved	7440-61-1	E421	0.000010	mg/L		----	----	0.000944	0.00115	----
vanadium, dissolved	7440-62-2	E421	0.00050	mg/L		----	----	<0.00050	<0.00050	----
zinc, dissolved	7440-66-6	E421	0.0010	mg/L		----	----	0.0043	0.0042	----
zirconium, dissolved	7440-67-7	E421	0.00030	mg/L		----	----	<0.00030	<0.00030	----
dissolved mercury filtration location	----	EP509	-	-		----	----	Field	Field	----
dissolved metals filtration location	----	EP421	-	-		----	----	Field	Field	----

Please refer to the General Comments section for an explanation of any qualifiers detected.

Analytical Results

Sub-Matrix: **Water**
(Matrix: **Water**)

Analyte	CAS Number	Method	LOR	Unit	Client sample ID	FDP5	LDSPI	W22	W4	W29
					Client sampling date / time	25-Apr-2020 11:30	25-Apr-2020 11:20	25-Apr-2020 10:50	25-Apr-2020 10:20	25-Apr-2020 10:00
						WR2000152-006	WR2000152-007	WR2000152-008	WR2000152-009	WR2000152-010
						Result	Result	Result	Result	Result
Physical Tests										
alkalinity, total (as CaCO3)	----	E290	1.0	mg/L		----	----	97.4	97.4	----
conductivity	----	E100	2.0	µS/cm		----	----	343	340	----
hardness (as CaCO3), dissolved	----	EC100	0.60	mg/L		----	----	183	176	----
hardness (as CaCO3), from total Ca/Mg	----	EC100A	0.60	mg/L		----	----	176	178	----
pH	----	E108	0.10	pH units		----	----	8.15	8.19	----
solids, total dissolved [TDS], calculated	----	EC103	1.0	mg/L		----	----	222	218	----
solids, total suspended [TSS]	----	E160-H	3.0	mg/L		----	----	<3.0	13.0	----
turbidity	----	E121	0.10	NTU		----	----	0.12	7.77	----
Anions and Nutrients										
ammonia, total (as N)	7664-41-7	E298	0.0050	mg/L		----	----	<0.0050	<0.0050	----
bromide	24959-67-9	E235.Br-L	0.050	mg/L		----	----	<0.050	<0.050	----
chloride	16887-00-6	E235.Cl	0.50	mg/L		----	----	0.64	1.44	----
cyanate	88402-73-7	E343	0.20	mg/L		----	----	<0.20	<0.20	<0.20
fluoride	16984-48-8	E235.F	0.020	mg/L		----	----	0.107	0.110	----
Kjeldahl nitrogen, total [TKN]	----	E318	0.050	mg/L		----	----	0.258	0.260	----
nitrate (as N)	14797-55-8	E235.NO3-L	0.0050	mg/L		----	----	0.114	0.175	----
nitrite (as N)	14797-65-0	E235.NO2-L	0.0010	mg/L		----	----	<0.0010	<0.0010	----
nitrogen, total	7727-37-9	E366	0.030	mg/L		----	----	0.347	0.411	----
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0010	mg/L		----	----	<0.0010	<0.0010	----
phosphorus, total	7723-14-0	E372-U	0.0020	mg/L		----	----	0.0074	0.0139	----
phosphorus, total dissolved	7723-14-0	E375-T	0.0020	mg/L		----	----	0.0057	0.0062	----
sulfate (as SO4)	14808-79-8	E235.SO4	0.30	mg/L		----	----	76.2	73.2	----
Cyanides										
cyanide, total	----	E333	0.0050	mg/L		<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
cyanide, weak acid dissociable	----	E336	0.0050	mg/L		<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
thiocyanate	302-04-5	E344	0.50	mg/L		----	----	0.56	0.61	0.66
Organic / Inorganic Carbon										
carbon, dissolved organic [DOC]	----	E358-L	0.50	mg/L		----	----	10.3	10.2	----
carbon, total organic [TOC]	----	E355-L	0.50	mg/L		----	----	10.2	9.64	----
Ion Balance										
anion sum	----	EC101	0.10	meq/L		----	----	3.56	3.53	----

Analytical Results

Sub-Matrix: **Water**
(Matrix: **Water**)

Analyte	CAS Number	Method	LOR	Unit	Client sample ID	FDP5	LDSPI	W22	W4	W29
					Client sampling date / time	25-Apr-2020 11:30	25-Apr-2020 11:20	25-Apr-2020 10:50	25-Apr-2020 10:20	25-Apr-2020 10:00
						WR2000152-006	WR2000152-007	WR2000152-008	WR2000152-009	WR2000152-010
						Result	Result	Result	Result	Result
Ion Balance										
cation sum	----	EC101	0.10	meq/L		----	----	3.79	3.67	----
ion balance (cation-anion difference)	----	EC101	0.010	%		----	----	3.13	1.94	----
Total Metals										
aluminum, total	7429-90-5	E420	0.0030	mg/L		----	----	0.0487	0.293	----
antimony, total	7440-36-0	E420	0.00010	mg/L		----	----	0.00021	0.00078	----
arsenic, total	7440-38-2	E420	0.00010	mg/L		----	----	0.00097	0.0125	----
barium, total	7440-39-3	E420	0.00010	mg/L		----	----	0.0383	0.0449	----
beryllium, total	7440-41-7	E420	0.000020	mg/L		----	----	<0.000020	<0.000020	----
bismuth, total	7440-69-9	E420	0.000050	mg/L		----	----	<0.000050	0.000058	----
boron, total	7440-42-8	E420	0.010	mg/L		----	----	<0.010	<0.010	----
cadmium, total	7440-43-9	E420	0.0000050	mg/L		----	----	0.0000153	0.0000244	----
calcium, total	7440-70-2	E420	0.050	mg/L		----	----	40.5	40.8	----
chromium, total	7440-47-3	E420.Cr-L	0.00010	mg/L		----	----	0.00010	0.00046	----
cobalt, total	7440-48-4	E420	0.00010	mg/L		----	----	0.00022	0.00042	----
copper, total	7440-50-8	E420	0.00050	mg/L		----	----	0.00112	0.00186	----
iron, total	7439-89-6	E420	0.010	mg/L		----	----	0.221	0.586	----
lead, total	7439-92-1	E420	0.000050	mg/L		----	----	<0.000050	0.000838	----
lithium, total	7439-93-2	E420	0.0010	mg/L		----	----	0.0070	0.0079	----
magnesium, total	7439-95-4	E420	0.100	mg/L		----	----	18.1	18.4	----
manganese, total	7439-96-5	E420	0.00010	mg/L		----	----	0.0595	0.0603	----
mercury, total	7439-97-6	E508	0.0000050	mg/L		----	----	0.0000071	0.0000069	----
molybdenum, total	7439-98-7	E420	0.000050	mg/L		----	----	0.000052	0.000277	----
nickel, total	7440-02-0	E420	0.00050	mg/L		----	----	0.00209	0.00252	----
phosphorus, total	7723-14-0	E420	0.050	mg/L		----	----	<0.050	<0.050	----
potassium, total	7440-09-7	E420	0.100	mg/L		----	----	1.37	1.68	----
selenium, total	7782-49-2	E420	0.000050	mg/L		----	----	0.000139	0.000206	----
silicon, total	7440-21-3	E420	0.10	mg/L		----	----	3.99	4.40	----
silver, total	7440-22-4	E420	0.000010	mg/L		----	----	<0.000010	<0.000010	----
sodium, total	7440-23-5	E420	0.050	mg/L		----	----	2.24	2.61	----
strontium, total	7440-24-6	E420	0.00020	mg/L		----	----	0.209	0.212	----
sulfur, total	7704-34-9	E420	0.50	mg/L		----	----	27.2	26.6	----

Analytical Results

Sub-Matrix: **Water**
(Matrix: **Water**)

Analyte	CAS Number	Method	LOR	Unit	Client sample ID	FDP5	LDSPI	W22	W4	W29
					Client sampling date / time	25-Apr-2020 11:30	25-Apr-2020 11:20	25-Apr-2020 10:50	25-Apr-2020 10:20	25-Apr-2020 10:00
						WR2000152-006	WR2000152-007	WR2000152-008	WR2000152-009	WR2000152-010
						Result	Result	Result	Result	Result
Total Metals										
thallium, total	7440-28-0	E420	0.000010	mg/L		----	----	<0.000010	<0.000010	----
tin, total	7440-31-5	E420	0.00010	mg/L		----	----	<0.00010	<0.00010	----
titanium, total	7440-32-6	E420	0.00030	mg/L		----	----	0.00059	0.00934	----
uranium, total	7440-61-1	E420	0.000010	mg/L		----	----	0.00116	0.00144	----
vanadium, total	7440-62-2	E420	0.00050	mg/L		----	----	<0.00050	0.00057	----
zinc, total	7440-66-6	E420	0.0030	mg/L		----	----	0.0041	0.0056	----
zirconium, total	7440-67-7	E420	0.00030	mg/L		----	----	<0.00030	<0.00030	----
Dissolved Metals										
aluminum, dissolved	7429-90-5	E421	0.0010	mg/L		----	----	0.0371	0.0337	----
antimony, dissolved	7440-36-0	E421	0.00010	mg/L		----	----	0.00020	0.00053	----
arsenic, dissolved	7440-38-2	E421	0.00010	mg/L		----	----	0.00086	0.00520	----
barium, dissolved	7440-39-3	E421	0.00010	mg/L		----	----	0.0398	0.0414	----
beryllium, dissolved	7440-41-7	E421	0.000020	mg/L		----	----	<0.000020	<0.000020	----
bismuth, dissolved	7440-69-9	E421	0.000050	mg/L		----	----	<0.000050	<0.000050	----
boron, dissolved	7440-42-8	E421	0.010	mg/L		----	----	<0.010	<0.010	----
cadmium, dissolved	7440-43-9	E421	0.0000050	mg/L		----	----	0.0000232	0.0000209	----
calcium, dissolved	7440-70-2	E421	0.050	mg/L		----	----	43.2	42.1	----
chromium, dissolved	7440-47-3	E421.Cr-L	0.00010	mg/L		----	----	<0.00010	0.00010	----
cobalt, dissolved	7440-48-4	E421	0.00010	mg/L		----	----	0.00020	0.00019	----
copper, dissolved	7440-50-8	E421	0.00020	mg/L		----	----	0.00098	0.00114	----
iron, dissolved	7439-89-6	E421	0.010	mg/L		----	----	0.109	0.096	----
lead, dissolved	7439-92-1	E421	0.000050	mg/L		----	----	<0.000050	<0.000050	----
lithium, dissolved	7439-93-2	E421	0.0010	mg/L		----	----	0.0074	0.0078	----
magnesium, dissolved	7439-95-4	E421	0.100	mg/L		----	----	18.2	17.3	----
manganese, dissolved	7439-96-5	E421	0.00010	mg/L		----	----	0.0524	0.0438	----
mercury, dissolved	7439-97-6	E509	0.0000050	mg/L		----	----	0.0000057	0.0000056	----
molybdenum, dissolved	7439-98-7	E421	0.000050	mg/L		----	----	<0.000050	0.000271	----
nickel, dissolved	7440-02-0	E421	0.00050	mg/L		----	----	0.00198	0.00192	----
phosphorus, dissolved	7723-14-0	E421	0.050	mg/L		----	----	<0.050	<0.050	----
potassium, dissolved	7440-09-7	E421	0.100	mg/L		----	----	1.38	1.47	----
selenium, dissolved	7782-49-2	E421	0.000050	mg/L		----	----	0.000130	0.000205	----

Analytical Results

Sub-Matrix: **Water**
(Matrix: **Water**)

Analyte	CAS Number	Method	LOR	Unit	Client sample ID	FDP5	LDSPI	W22	W4	W29
					Client sampling date / time	25-Apr-2020 11:30	25-Apr-2020 11:20	25-Apr-2020 10:50	25-Apr-2020 10:20	25-Apr-2020 10:00
						WR2000152-006	WR2000152-007	WR2000152-008	WR2000152-009	WR2000152-010
						Result	Result	Result	Result	Result
Dissolved Metals										
silicon, dissolved	7440-21-3	E421	0.050	mg/L		----	----	3.91	4.10	----
silver, dissolved	7440-22-4	E421	0.000010	mg/L		----	----	<0.000010	<0.000010	----
sodium, dissolved	7440-23-5	E421	0.050	mg/L		----	----	2.02	2.16	----
strontium, dissolved	7440-24-6	E421	0.00020	mg/L		----	----	0.216	0.216	----
sulfur, dissolved	7704-34-9	E421	0.50	mg/L		----	----	25.2	24.7	----
thallium, dissolved	7440-28-0	E421	0.000010	mg/L		----	----	<0.000010	<0.000010	----
tin, dissolved	7440-31-5	E421	0.00010	mg/L		----	----	0.00047 DTMF	<0.00010	----
titanium, dissolved	7440-32-6	E421	0.00030	mg/L		----	----	0.00044	0.00052	----
uranium, dissolved	7440-61-1	E421	0.000010	mg/L		----	----	0.00107	0.00130	----
vanadium, dissolved	7440-62-2	E421	0.00050	mg/L		----	----	<0.00050	<0.00050	----
zinc, dissolved	7440-66-6	E421	0.0010	mg/L		----	----	0.0040	0.0035	----
zirconium, dissolved	7440-67-7	E421	0.00030	mg/L		----	----	<0.00030	<0.00030	----
dissolved mercury filtration location	----	EP509	-	-		----	----	Field	Field	----
dissolved metals filtration location	----	EP421	-	-		----	----	Field	Field	----

Please refer to the General Comments section for an explanation of any qualifiers detected.

Analytical Results

Sub-Matrix: **Water**
(Matrix: **Water**)

Analyte	CAS Number	Method	LOR	Unit	Client sample ID	FDP5	LDSPI	W22	W4	W29
					Client sampling date / time	26-Apr-2020 15:25	26-Apr-2020 15:05	26-Apr-2020 14:19	26-Apr-2020 13:40	26-Apr-2020 13:20
						WR2000152-011	WR2000152-012	WR2000152-013	WR2000152-014	WR2000152-015
						Result	Result	Result	Result	Result
Physical Tests										
alkalinity, total (as CaCO3)	----	E290	1.0	mg/L		----	----	106	104	----
conductivity	----	E100	2.0	µS/cm		----	----	364	346	----
hardness (as CaCO3), dissolved	----	EC100	0.60	mg/L		----	----	187	176	----
hardness (as CaCO3), from total Ca/Mg	----	EC100A	0.60	mg/L		----	----	183	176	----
pH	----	E108	0.10	pH units		----	----	8.22	8.20	----
solids, total dissolved [TDS], calculated	----	EC103	1.0	mg/L		----	----	230	220	----
solids, total suspended [TSS]	----	E160-H	3.0	mg/L		----	----	<3.0	67.8	----
turbidity	----	E121	0.10	NTU		----	----	0.90	18.7	----
Anions and Nutrients										
ammonia, total (as N)	7664-41-7	E298	0.0050	mg/L		----	----	<0.0050	<0.0050	----
bromide	24959-67-9	E235.Br-L	0.050	mg/L		----	----	<0.050	<0.050	----
chloride	16887-00-6	E235.Cl	0.50	mg/L		----	----	0.58	1.52	----
cyanate	88402-73-7	E343	0.20	mg/L		----	----	<0.20	<0.20	<0.20
fluoride	16984-48-8	E235.F	0.020	mg/L		----	----	0.110	0.111	----
Kjeldahl nitrogen, total [TKN]	----	E318	0.050	mg/L		----	----	0.172	0.205	----
nitrate (as N)	14797-55-8	E235.NO3-L	0.0050	mg/L		----	----	0.125	0.192	----
nitrite (as N)	14797-65-0	E235.NO2-L	0.0010	mg/L		----	----	<0.0010	<0.0010	----
nitrogen, total	7727-37-9	E366	0.030	mg/L		----	----	0.277	0.371	----
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0010	mg/L		----	----	<0.0010	<0.0010	----
phosphorus, total	7723-14-0	E372-U	0.0020	mg/L		----	----	0.0048	0.0272	----
phosphorus, total dissolved	7723-14-0	E375-T	0.0020	mg/L		----	----	0.0032	0.0044	----
sulfate (as SO4)	14808-79-8	E235.SO4	0.30	mg/L		----	----	80.6	73.8	----
Cyanides										
cyanide, total	----	E333	0.0050	mg/L		<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
cyanide, weak acid dissociable	----	E336	0.0050	mg/L		<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
thiocyanate	302-04-5	E344	0.50	mg/L		----	----	0.57	0.52	0.55
Organic / Inorganic Carbon										
carbon, dissolved organic [DOC]	----	E358-L	0.50	mg/L		----	----	7.02	6.69	----
carbon, total organic [TOC]	----	E355-L	0.50	mg/L		----	----	6.81	6.67	----
Ion Balance										
anion sum	----	EC101	0.10	meq/L		----	----	3.82	3.68	----

Analytical Results

Sub-Matrix: **Water**
(Matrix: **Water**)

Analyte	CAS Number	Method	LOR	Unit	Client sample ID	FDP5	LDSPI	W22	W4	W29
					Client sampling date / time	26-Apr-2020 15:25	26-Apr-2020 15:05	26-Apr-2020 14:19	26-Apr-2020 13:40	26-Apr-2020 13:20
						WR2000152-011	WR2000152-012	WR2000152-013	WR2000152-014	WR2000152-015
						Result	Result	Result	Result	Result
Ion Balance										
cation sum	----	EC101	0.10	meq/L		----	----	3.88	3.67	----
ion balance (cation-anion difference)	----	EC101	0.010	%		----	----	0.779	0.136	----
Total Metals										
aluminum, total	7429-90-5	E420	0.0030	mg/L		----	----	0.0293	0.803	----
antimony, total	7440-36-0	E420	0.00010	mg/L		----	----	0.00021	0.00158	----
arsenic, total	7440-38-2	E420	0.00010	mg/L		----	----	0.00093	0.0315	----
barium, total	7440-39-3	E420	0.00010	mg/L		----	----	0.0385	0.0500	----
beryllium, total	7440-41-7	E420	0.000020	mg/L		----	----	<0.000020	0.000051	----
bismuth, total	7440-69-9	E420	0.000050	mg/L		----	----	<0.000050	0.000198	----
boron, total	7440-42-8	E420	0.010	mg/L		----	----	<0.010	<0.010	----
cadmium, total	7440-43-9	E420	0.0000050	mg/L		----	----	0.0000134	0.0000416	----
calcium, total	7440-70-2	E420	0.050	mg/L		----	----	41.5	40.7	----
chromium, total	7440-47-3	E420.Cr-L	0.00010	mg/L		----	----	<0.00010	0.00144	----
cobalt, total	7440-48-4	E420	0.00010	mg/L		----	----	0.00019	0.00094	----
copper, total	7440-50-8	E420	0.00050	mg/L		----	----	0.00075	0.00318	----
iron, total	7439-89-6	E420	0.010	mg/L		----	----	0.199	1.77	----
lead, total	7439-92-1	E420	0.000050	mg/L		----	----	<0.000050	0.00284	----
lithium, total	7439-93-2	E420	0.0010	mg/L		----	----	0.0072	0.0091	----
magnesium, total	7439-95-4	E420	0.100	mg/L		----	----	19.2	18.0	----
manganese, total	7439-96-5	E420	0.00010	mg/L		----	----	0.0597	0.0799	----
mercury, total	7439-97-6	E508	0.0000050	mg/L		----	----	0.0000053	0.0000060	----
molybdenum, total	7439-98-7	E420	0.000050	mg/L		----	----	0.000078	0.000422	----
nickel, total	7440-02-0	E420	0.00050	mg/L		----	----	0.00185	0.00337	----
phosphorus, total	7723-14-0	E420	0.050	mg/L		----	----	<0.050	<0.050	----
potassium, total	7440-09-7	E420	0.100	mg/L		----	----	1.34	1.78	----
selenium, total	7782-49-2	E420	0.000050	mg/L		----	----	0.000153	0.000211	----
silicon, total	7440-21-3	E420	0.10	mg/L		----	----	4.06	5.30	----
silver, total	7440-22-4	E420	0.000010	mg/L		----	----	<0.000010	0.000021	----
sodium, total	7440-23-5	E420	0.050	mg/L		----	----	2.32	2.53	----
strontium, total	7440-24-6	E420	0.00020	mg/L		----	----	0.228	0.220	----
sulfur, total	7704-34-9	E420	0.50	mg/L		----	----	28.7	26.3	----

Analytical Results

Sub-Matrix: **Water**
(Matrix: **Water**)

Analyte	CAS Number	Method	LOR	Unit	Client sample ID	FDP5	LDSPI	W22	W4	W29
					Client sampling date / time	26-Apr-2020 15:25	26-Apr-2020 15:05	26-Apr-2020 14:19	26-Apr-2020 13:40	26-Apr-2020 13:20
						WR2000152-011	WR2000152-012	WR2000152-013	WR2000152-014	WR2000152-015
						Result	Result	Result	Result	Result
Total Metals										
thallium, total	7440-28-0	E420	0.000010	mg/L		----	----	<0.000010	0.000026	----
tin, total	7440-31-5	E420	0.00010	mg/L		----	----	<0.00010	<0.00010	----
titanium, total	7440-32-6	E420	0.00030	mg/L		----	----	0.00039	0.0323	----
uranium, total	7440-61-1	E420	0.000010	mg/L		----	----	0.00126	0.00170	----
vanadium, total	7440-62-2	E420	0.00050	mg/L		----	----	<0.00050	0.00169	----
zinc, total	7440-66-6	E420	0.0030	mg/L		----	----	<0.0030	0.0095	----
zirconium, total	7440-67-7	E420	0.00030	mg/L		----	----	<0.00030	0.00043	----
Dissolved Metals										
aluminum, dissolved	7429-90-5	E421	0.0010	mg/L		----	----	0.0256	0.0221	----
antimony, dissolved	7440-36-0	E421	0.00010	mg/L		----	----	0.00022	0.00079	----
arsenic, dissolved	7440-38-2	E421	0.00010	mg/L		----	----	0.00193 DTMF	0.00824	----
barium, dissolved	7440-39-3	E421	0.00010	mg/L		----	----	0.0384	0.0418	----
beryllium, dissolved	7440-41-7	E421	0.000020	mg/L		----	----	<0.000020	<0.000020	----
bismuth, dissolved	7440-69-9	E421	0.000050	mg/L		----	----	<0.000050	<0.000050	----
boron, dissolved	7440-42-8	E421	0.010	mg/L		----	----	<0.010	<0.010	----
cadmium, dissolved	7440-43-9	E421	0.0000050	mg/L		----	----	0.0000129	0.0000183	----
calcium, dissolved	7440-70-2	E421	0.050	mg/L		----	----	44.9	42.2	----
chromium, dissolved	7440-47-3	E421.Cr-L	0.00010	mg/L		----	----	<0.00010	0.00023	----
cobalt, dissolved	7440-48-4	E421	0.00010	mg/L		----	----	0.00018	0.00018	----
copper, dissolved	7440-50-8	E421	0.00020	mg/L		----	----	0.00072	0.00097	----
iron, dissolved	7439-89-6	E421	0.010	mg/L		----	----	0.091	0.069	----
lead, dissolved	7439-92-1	E421	0.000050	mg/L		----	----	<0.000050	0.000066	----
lithium, dissolved	7439-93-2	E421	0.0010	mg/L		----	----	0.0076	0.0083	----
magnesium, dissolved	7439-95-4	E421	0.100	mg/L		----	----	18.3	17.3	----
manganese, dissolved	7439-96-5	E421	0.00010	mg/L		----	----	0.0498	0.0402	----
mercury, dissolved	7439-97-6	E509	0.0000050	mg/L		----	----	<0.0000050	<0.0000050	----
molybdenum, dissolved	7439-98-7	E421	0.000050	mg/L		----	----	<0.000050	0.000394	----
nickel, dissolved	7440-02-0	E421	0.00050	mg/L		----	----	0.00174	0.00160	----
phosphorus, dissolved	7723-14-0	E421	0.050	mg/L		----	----	<0.050	<0.050	----
potassium, dissolved	7440-09-7	E421	0.100	mg/L		----	----	1.31	1.49	----
selenium, dissolved	7782-49-2	E421	0.000050	mg/L		----	----	0.000142	0.000274	----

Analytical Results

Sub-Matrix: **Water**
(Matrix: **Water**)

Analyte	CAS Number	Method	LOR	Unit	Client sample ID	FDP5	LDSPI	W22	W4	W29
					Client sampling date / time	26-Apr-2020 15:25	26-Apr-2020 15:05	26-Apr-2020 14:19	26-Apr-2020 13:40	26-Apr-2020 13:20
						WR2000152-011	WR2000152-012	WR2000152-013	WR2000152-014	WR2000152-015
						Result	Result	Result	Result	Result
Dissolved Metals										
silicon, dissolved	7440-21-3	E421	0.050	mg/L		----	----	4.09	4.14	----
silver, dissolved	7440-22-4	E421	0.000010	mg/L		----	----	<0.000010	<0.000010	----
sodium, dissolved	7440-23-5	E421	0.050	mg/L		----	----	2.09	2.26	----
strontium, dissolved	7440-24-6	E421	0.00020	mg/L		----	----	0.229	0.222	----
sulfur, dissolved	7704-34-9	E421	0.50	mg/L		----	----	27.3	25.7	----
thallium, dissolved	7440-28-0	E421	0.000010	mg/L		----	----	<0.000010	<0.000010	----
tin, dissolved	7440-31-5	E421	0.00010	mg/L		----	----	<0.00010	<0.00010	----
titanium, dissolved	7440-32-6	E421	0.00030	mg/L		----	----	0.00101 DTMF	0.00061	----
uranium, dissolved	7440-61-1	E421	0.000010	mg/L		----	----	0.00112	0.00152	----
vanadium, dissolved	7440-62-2	E421	0.00050	mg/L		----	----	<0.00050	<0.00050	----
zinc, dissolved	7440-66-6	E421	0.0010	mg/L		----	----	0.0034	0.0034	----
zirconium, dissolved	7440-67-7	E421	0.00030	mg/L		----	----	<0.00030	<0.00030	----
dissolved mercury filtration location	----	EP509	-	-		----	----	Field	Field	----
dissolved metals filtration location	----	EP421	-	-		----	----	Field	Field	----

Please refer to the General Comments section for an explanation of any qualifiers detected.

Analytical Results

Sub-Matrix: **Water**
(Matrix: **Water**)

Analyte	CAS Number	Method	LOR	Unit	Client sample ID	W2201	----	----	----	----
					Client sampling date / time	26-Apr-2020 14:20	----	----	----	----
						WR2000152-016	--------	--------	--------	--------
						Result	----	----	----	----
Physical Tests										
alkalinity, total (as CaCO3)	----	E290	1.0	mg/L		106	----	----	----	----
conductivity	----	E100	2.0	µS/cm		369	----	----	----	----
hardness (as CaCO3), dissolved	----	EC100	0.60	mg/L		192	----	----	----	----
hardness (as CaCO3), from total Ca/Mg	----	EC100A	0.60	mg/L		184	----	----	----	----
pH	----	E108	0.10	pH units		8.21	----	----	----	----
solids, total dissolved [TDS], calculated	----	EC103	1.0	mg/L		231	----	----	----	----
solids, total suspended [TSS]	----	E160-H	3.0	mg/L		<3.0	----	----	----	----
turbidity	----	E121	0.10	NTU		0.95	----	----	----	----
Anions and Nutrients										
ammonia, total (as N)	7664-41-7	E298	0.0050	mg/L		<0.0050	----	----	----	----
bromide	24959-67-9	E235.Br-L	0.050	mg/L		<0.050	----	----	----	----
chloride	16887-00-6	E235.Cl	0.50	mg/L		0.58	----	----	----	----
fluoride	16984-48-8	E235.F	0.020	mg/L		0.112	----	----	----	----
Kjeldahl nitrogen, total [TKN]	----	E318	0.050	mg/L		0.162	----	----	----	----
nitrate (as N)	14797-55-8	E235.NO3-L	0.0050	mg/L		0.124	----	----	----	----
nitrite (as N)	14797-65-0	E235.NO2-L	0.0010	mg/L		<0.0010	----	----	----	----
nitrogen, total	7727-37-9	E366	0.030	mg/L		0.291	----	----	----	----
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0010	mg/L		<0.0010	----	----	----	----
phosphorus, total	7723-14-0	E372-U	0.0020	mg/L		0.0039	----	----	----	----
phosphorus, total dissolved	7723-14-0	E375-T	0.0020	mg/L		0.0027	----	----	----	----
sulfate (as SO4)	14808-79-8	E235.SO4	0.30	mg/L		80.4	----	----	----	----
Organic / Inorganic Carbon										
carbon, dissolved organic [DOC]	----	E358-L	0.50	mg/L		6.73	----	----	----	----
carbon, total organic [TOC]	----	E355-L	0.50	mg/L		6.59	----	----	----	----
Ion Balance										
anion sum	----	EC101	0.10	meq/L		3.82	----	----	----	----
cation sum	----	EC101	0.10	meq/L		3.97	----	----	----	----
ion balance (cation-anion difference)	----	EC101	0.010	%		1.92	----	----	----	----
Total Metals										
aluminum, total	7429-90-5	E420	0.0030	mg/L		0.0312	----	----	----	----
antimony, total	7440-36-0	E420	0.00010	mg/L		0.00021	----	----	----	----

Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	W2201	----	----	----	----
					Client sampling date / time	26-Apr-2020 14:20	----	----	----	----
Analyte	CAS Number	Method	LOR	Unit		WR2000152-016	--------	--------	--------	--------
						Result	----	----	----	----
Total Metals										
arsenic, total	7440-38-2	E420	0.00010	mg/L		0.00093	----	----	----	----
barium, total	7440-39-3	E420	0.00010	mg/L		0.0373	----	----	----	----
beryllium, total	7440-41-7	E420	0.000020	mg/L		<0.000020	----	----	----	----
bismuth, total	7440-69-9	E420	0.000050	mg/L		<0.000050	----	----	----	----
boron, total	7440-42-8	E420	0.010	mg/L		<0.010	----	----	----	----
cadmium, total	7440-43-9	E420	0.0000050	mg/L		0.0000171	----	----	----	----
calcium, total	7440-70-2	E420	0.050	mg/L		42.0	----	----	----	----
chromium, total	7440-47-3	E420.Cr-L	0.00010	mg/L		<0.00010	----	----	----	----
cobalt, total	7440-48-4	E420	0.00010	mg/L		0.00021	----	----	----	----
copper, total	7440-50-8	E420	0.00050	mg/L		0.00078	----	----	----	----
iron, total	7439-89-6	E420	0.010	mg/L		0.200	----	----	----	----
lead, total	7439-92-1	E420	0.000050	mg/L		<0.000050	----	----	----	----
lithium, total	7439-93-2	E420	0.0010	mg/L		0.0073	----	----	----	----
magnesium, total	7439-95-4	E420	0.100	mg/L		19.2	----	----	----	----
manganese, total	7439-96-5	E420	0.00010	mg/L		0.0602	----	----	----	----
mercury, total	7439-97-6	E508	0.0000050	mg/L		0.0000052	----	----	----	----
molybdenum, total	7439-98-7	E420	0.000050	mg/L		0.000088	----	----	----	----
nickel, total	7440-02-0	E420	0.00050	mg/L		0.00202	----	----	----	----
phosphorus, total	7723-14-0	E420	0.050	mg/L		<0.050	----	----	----	----
potassium, total	7440-09-7	E420	0.100	mg/L		1.33	----	----	----	----
selenium, total	7782-49-2	E420	0.000050	mg/L		0.000183	----	----	----	----
silicon, total	7440-21-3	E420	0.10	mg/L		4.07	----	----	----	----
silver, total	7440-22-4	E420	0.000010	mg/L		<0.000010	----	----	----	----
sodium, total	7440-23-5	E420	0.050	mg/L		2.36	----	----	----	----
strontium, total	7440-24-6	E420	0.00020	mg/L		0.223	----	----	----	----
sulfur, total	7704-34-9	E420	0.50	mg/L		28.6	----	----	----	----
thallium, total	7440-28-0	E420	0.000010	mg/L		<0.000010	----	----	----	----
tin, total	7440-31-5	E420	0.00010	mg/L		<0.00010	----	----	----	----
titanium, total	7440-32-6	E420	0.00030	mg/L		0.00039	----	----	----	----
uranium, total	7440-61-1	E420	0.000010	mg/L		0.00126	----	----	----	----
vanadium, total	7440-62-2	E420	0.00050	mg/L		<0.00050	----	----	----	----

Analytical Results

Sub-Matrix: **Water**
(Matrix: **Water**)

Analyte	CAS Number	Method	LOR	Unit	Client sample ID	W2201	----	----	----	----
					Client sampling date / time	26-Apr-2020 14:20	----	----	----	----
						WR2000152-016	--------	--------	--------	--------
						Result	----	----	----	----
Total Metals										
zinc, total	7440-66-6	E420	0.0030	mg/L		0.0034	----	----	----	----
zirconium, total	7440-67-7	E420	0.00030	mg/L		<0.00030	----	----	----	----
Dissolved Metals										
aluminum, dissolved	7429-90-5	E421	0.0010	mg/L		0.0294	----	----	----	----
antimony, dissolved	7440-36-0	E421	0.00010	mg/L		0.00021	----	----	----	----
arsenic, dissolved	7440-38-2	E421	0.00010	mg/L		0.00094	----	----	----	----
barium, dissolved	7440-39-3	E421	0.00010	mg/L		0.0407	----	----	----	----
beryllium, dissolved	7440-41-7	E421	0.000020	mg/L		<0.000020	----	----	----	----
bismuth, dissolved	7440-69-9	E421	0.000050	mg/L		<0.000050	----	----	----	----
boron, dissolved	7440-42-8	E421	0.010	mg/L		<0.010	----	----	----	----
cadmium, dissolved	7440-43-9	E421	0.0000050	mg/L		0.0000122	----	----	----	----
calcium, dissolved	7440-70-2	E421	0.050	mg/L		45.5	----	----	----	----
chromium, dissolved	7440-47-3	E421.Cr-L	0.00010	mg/L		0.00010	----	----	----	----
cobalt, dissolved	7440-48-4	E421	0.00010	mg/L		0.00019	----	----	----	----
copper, dissolved	7440-50-8	E421	0.00020	mg/L		0.00080	----	----	----	----
iron, dissolved	7439-89-6	E421	0.010	mg/L		0.087	----	----	----	----
lead, dissolved	7439-92-1	E421	0.000050	mg/L		<0.000050	----	----	----	----
lithium, dissolved	7439-93-2	E421	0.0010	mg/L		0.0077	----	----	----	----
magnesium, dissolved	7439-95-4	E421	0.100	mg/L		19.0	----	----	----	----
manganese, dissolved	7439-96-5	E421	0.00010	mg/L		0.0517	----	----	----	----
mercury, dissolved	7439-97-6	E509	0.0000050	mg/L		0.0000054	----	----	----	----
molybdenum, dissolved	7439-98-7	E421	0.000050	mg/L		0.000054	----	----	----	----
nickel, dissolved	7440-02-0	E421	0.00050	mg/L		0.00183	----	----	----	----
phosphorus, dissolved	7723-14-0	E421	0.050	mg/L		<0.050	----	----	----	----
potassium, dissolved	7440-09-7	E421	0.100	mg/L		1.34	----	----	----	----
selenium, dissolved	7782-49-2	E421	0.000050	mg/L		0.000172	----	----	----	----
silicon, dissolved	7440-21-3	E421	0.050	mg/L		4.07	----	----	----	----
silver, dissolved	7440-22-4	E421	0.000010	mg/L		<0.000010	----	----	----	----
sodium, dissolved	7440-23-5	E421	0.050	mg/L		2.10	----	----	----	----
strontium, dissolved	7440-24-6	E421	0.00020	mg/L		0.230	----	----	----	----
sulfur, dissolved	7704-34-9	E421	0.50	mg/L		26.9	----	----	----	----

Analytical Results

Sub-Matrix: **Water**
(Matrix: **Water**)

Analyte	CAS Number	Method	LOR	Unit	Client sample ID	W2201	----	----	----	----
					Client sampling date / time	26-Apr-2020 14:20	----	----	----	----
						WR2000152-016	--------	--------	--------	--------
						Result	----	----	----	----
Dissolved Metals										
thallium, dissolved	7440-28-0	E421	0.000010	mg/L		<0.000010	----	----	----	----
tin, dissolved	7440-31-5	E421	0.00010	mg/L		<0.00010	----	----	----	----
titanium, dissolved	7440-32-6	E421	0.00030	mg/L		0.00143 DTMF	----	----	----	----
uranium, dissolved	7440-61-1	E421	0.000010	mg/L		0.00118	----	----	----	----
vanadium, dissolved	7440-62-2	E421	0.00050	mg/L		<0.00050	----	----	----	----
zinc, dissolved	7440-66-6	E421	0.0010	mg/L		0.0048	----	----	----	----
zirconium, dissolved	7440-67-7	E421	0.00030	mg/L		<0.00030	----	----	----	----
dissolved mercury filtration location	----	EP509	-	-		Field	----	----	----	----
dissolved metals filtration location	----	EP421	-	-		Field	----	----	----	----

Please refer to the General Comments section for an explanation of any qualifiers detected.

ALS Environmental

CERTIFICATE OF ANALYSIS

Work Order	: **WR2000165**	Page	: 1 of 6
Client	: **Victoria Gold (Yukon) Corp.**	Laboratory	: Whitehorse - Environmental
Contact	: Hugh Coyle	Account Manager	: Hilary Woods
Address	: Suite 1000 - 1050 W. Pender St Vancouver BC Canada V6E 3S7	Address	: #12 151 Industrial Road Whitehorse YT Canada Y1A 2V3
Telephone	: 604 682 5122	Telephone	: +1 867 668 6689
Project	: WUL SWQ Discharge	Date Samples Received	: 29-Apr-2020 10:03
PO	: 14043	Date Analysis Commenced	: 30-Apr-2020
C-O-C number	: 20200427	Issue Date	: 19-May-2020 12:51
Sampler	: PE		
Site	: ----		
Quote number	: Q68199		
No. of samples received	: 5		
No. of samples analysed	: 5		

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QC Interpretive report to assist with Quality Review and Sample Receipt Notification (SRN).

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is conducted in accordance with US FDA 21 CFR Part 11.

Signatories	*Position*	*Laboratory Department*
Angela Ren	Team Leader - Metals	Metals, Burnaby, British Columbia
Bruna Botti	Analyst	Inorganics - Water Quality, Burnaby, British Columbia
Caitlin Macey	Team Leader - Inorganics	Inorganics - Water Quality, Burnaby, British Columbia
Evan Ben-Oliel	Metal Analyst	Metals, Burnaby, British Columbia
Hilary Woods	Account Manager	Internal Subcontracting, Fort Collins, Colorado
Kevin Duarte	Team Leader - Inorganics	Inorganics - Water Quality, Burnaby, British Columbia
Lindsay Gung	Supervisor - Water Chemistry	Inorganics - Water Quality, Burnaby, British Columbia
Matthew Woods	Lab Assistant	Metals, Burnaby, British Columbia
Robin Weeks	Team Leader - Metals	Inorganics - Water Quality, Burnaby, British Columbia
Robin Weeks	Team Leader - Metals	Metals, Burnaby, British Columbia
Tracy Harley	Supervisor - Water Quality Instrumentation	Inorganics - Water Quality, Burnaby, British Columbia
Walt Kippenhuck	Team Leader - Inorganics	Inorganics, Waterloo, Ontario

General Comments

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Refer to the ALS Quality Control Interpretive report (QCI) for applicable references and methodology summaries. Reference methods may incorporate modifications to improve performance.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

Please refer to Quality Control Interpretive report (QCI) for information regarding Holding Time compliance.

Key : CAS Number: Chemical Abstracts Services number is a unique identifier assigned to discrete substances
LOR: Limit of Reporting (detection limit).

Unit	*Description*
-	No Unit
%	percent
µS/cm	Microsiemens per centimetre
Bq/L	Becquerels per litre
meq/L	milliequivalents per litre
mg/L	milligrams per litre
NTU	nephelometric turbidity units
pH units	pH units

<: less than.

>: greater than.

Surrogate: An analyte that is similar in behavior to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.

Test results reported relate only to the samples as received by the laboratory.

UNLESS OTHERWISE STATED on SRN or QCI Report, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

Analytical results in reports identified as "Preliminary Report" are considered authorized for use.

Qualifiers

Qualifier	*Description*
DLM	*Detection Limit Adjusted due to sample matrix effects (e.g. chemical interference, colour, turbidity).*
SP	*Sample was preserved at the laboratory.*

Analytical Results

Sub-Matrix: **Water**
(Matrix: **Water**)

Analyte	CAS Number	Method	LOR	Unit	Client sample ID	FDP5	LDSPI	W22	W4	W29
					Client sampling date / time	27-Apr-2020 10:40	27-Apr-2020 10:20	27-Apr-2020 09:40	27-Apr-2020 09:05	27-Apr-2020 08:15
						WR2000165-001	WR2000165-002	WR2000165-003	WR2000165-004	WR2000165-005
						Result	Result	Result	Result	Result
Physical Tests										
alkalinity, total (as CaCO3)	----	E290	1.0	mg/L		73.7	77.4	115	107	115
conductivity	----	E100	2.0	µS/cm		280	285	392	363	383
hardness (as CaCO3), dissolved	----	EC100	0.60	mg/L		133	128	186	169	184
hardness (as CaCO3), from total Ca/Mg	----	EC100A	0.60	mg/L		127	142	181	174	184
pH	----	E108	0.10	pH units		7.79	7.82	8.15	8.21	8.24
solids, total dissolved [TDS], calculated	----	EC103	1.0	mg/L		181	184	239	223	240
solids, total suspended [TSS]	----	E160-H	3.0	mg/L		52.8	187	<3.0	4.8	6.8
turbidity	----	E121	0.10	NTU		168	208	0.40	5.80	13.6
pH @ 15°C (WSER)	----	E108A	0.10	pH units		7.62	----	----	----	----
Anions and Nutrients										
ammonia, total (as N)	7664-41-7	E298	0.0050	mg/L		0.0187	0.0188	<0.0050	<0.0050	<0.0050
ammonia, un-ionized (as N), 15C (WSER)	7664-41-7	EC298	0.0010	mg/L		<0.0010	----	----	----	----
bromide	24959-67-9	E235.Br-L	0.050	mg/L		<0.050	<0.050	<0.050	<0.050	<0.050
chloride	16887-00-6	E235.Cl	0.50	mg/L		8.16	4.04	0.70	1.44	3.25
cyanate	88402-73-7	E343	0.20	mg/L		----	----	<0.20	<0.20	<0.20
fluoride	16984-48-8	E235.F	0.020	mg/L		0.092	0.086	0.116	0.119	0.125
Kjeldahl nitrogen, total [TKN]	----	E318	0.050	mg/L		0.544	0.624	0.142	0.140	0.184
nitrate (as N)	14797-55-8	E235.NO3-L	0.0050	mg/L		0.318	0.161	0.136	0.183	0.199
nitrite (as N)	14797-65-0	E235.NO2-L	0.0010	mg/L		0.0127	0.0012	<0.0010	<0.0010	0.0012
nitrogen, total	7727-37-9	E366	0.030	mg/L		0.784	0.831 DLM	0.272	0.329	0.380
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0010	mg/L		0.0010	0.0018	<0.0010	<0.0010	0.0010
phosphorus, total	7723-14-0	E372-U	0.0020	mg/L		0.0873	0.143	0.0036	0.0073	0.0102
phosphorus, total dissolved	7723-14-0	E375-T	0.0020	mg/L		0.0106	0.0131	<0.0020	0.0030	0.0035
sulfate (as SO4)	14808-79-8	E235.SO4	0.30	mg/L		51.1	56.5	85.6	79.5	82.8
Cyanides										
cyanide, total	----	E333	0.0050	mg/L		<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
cyanide, weak acid dissociable	----	E336	0.0050	mg/L		<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
thiocyanate	302-04-5	E344	0.50	mg/L		----	----	<0.50	<0.50 SP	0.55
Organic / Inorganic Carbon										
carbon, dissolved organic [DOC]	----	E358-L	0.50	mg/L		15.4	19.5	5.81	5.64	7.02

Analytical Results

Sub-Matrix: **Water**
(Matrix: **Water**)

Analyte	CAS Number	Method	LOR	Unit	Client sample ID	FDP5	LDSPI	W22	W4	W29
					Client sampling date / time	27-Apr-2020 10:40	27-Apr-2020 10:20	27-Apr-2020 09:40	27-Apr-2020 09:05	27-Apr-2020 08:15
						WR2000165-001	WR2000165-002	WR2000165-003	WR2000165-004	WR2000165-005
						Result	Result	Result	Result	Result
Organic / Inorganic Carbon										
carbon, total organic [TOC]	----	E355-L	0.50	mg/L		14.8	18.2	5.79	5.70	6.20
Ion Balance										
anion sum	----	EC101	0.10	meq/L		2.80	2.85	4.12	3.85	4.14
cation sum	----	EC101	0.10	meq/L		2.90	2.75	3.86	3.52	3.85
ion balance (cation-anion difference)	----	EC101	0.010	%		1.75	1.78	3.26	4.48	3.63
Total Metals										
aluminum, total	7429-90-5	E420	0.0030	mg/L		3.71	5.77	0.0216	0.205	0.582
antimony, total	7440-36-0	E420	0.00010	mg/L		0.0124	0.0131	0.00023	0.00090	0.00189
arsenic, total	7440-38-2	E420	0.00010	mg/L		0.226	0.273	0.00089	0.0124	0.0202
barium, total	7440-39-3	E420	0.00010	mg/L		0.0891	0.116	0.0411	0.0446	0.0504
beryllium, total	7440-41-7	E420	0.000020	mg/L		0.000292	0.000430	<0.000020	0.000021	0.000033
bismuth, total	7440-69-9	E420	0.000050	mg/L		0.00272	0.00389	<0.000050	<0.000050	0.000122
boron, total	7440-42-8	E420	0.010	mg/L		<0.010	<0.010	<0.010	<0.010	<0.010
cadmium, total	7440-43-9	E420	0.0000050	mg/L		0.000320	0.000407	0.0000171	0.0000220	0.0000458
calcium, total	7440-70-2	E420	0.050	mg/L		34.7	35.2	43.0	41.6	44.2
chromium, total	7440-47-3	E420.Cr-L	0.00010	mg/L		0.00523	0.00966	<0.00010	0.00036	0.00081
cobalt, total	7440-48-4	E420	0.00010	mg/L		0.00385	0.00546	0.00018	0.00032	0.00045
copper, total	7440-50-8	E420	0.00050	mg/L		0.0176	0.0224	0.00065	0.00118	0.00212
iron, total	7439-89-6	E420	0.010	mg/L		6.95	10.6	0.126	0.400	0.738
lead, total	7439-92-1	E420	0.000050	mg/L		0.0285	0.0368	<0.000050	0.000680	0.00163
lithium, total	7439-93-2	E420	0.0010	mg/L		0.0088	0.0131	0.0071	0.0079	0.0081
magnesium, total	7439-95-4	E420	0.100	mg/L		9.86	13.2	18.0	17.1	17.9
manganese, total	7439-96-5	E420	0.00010	mg/L		0.194	0.245	0.0545	0.0463	0.0623
mercury, total	7439-97-6	E508	0.0000050	mg/L		0.0000298	0.0000358	<0.0000050	<0.0000050	0.0000059
molybdenum, total	7439-98-7	E420	0.000050	mg/L		0.00271	0.00189	0.000170	0.000362	0.000554
nickel, total	7440-02-0	E420	0.00050	mg/L		0.0100	0.0135	0.00184	0.00203	0.00228
phosphorus, total	7723-14-0	E420	0.050	mg/L		0.081	0.121	<0.050	<0.050	<0.050
potassium, total	7440-09-7	E420	0.100	mg/L		3.53	3.87	1.36	1.58	1.97
selenium, total	7782-49-2	E420	0.000050	mg/L		0.000525	0.000456	0.000195	0.000231	0.000257
silicon, total	7440-21-3	E420	0.10	mg/L		8.04	11.4	4.27	4.62	5.01
silver, total	7440-22-4	E420	0.000010	mg/L		0.000207	0.000242	<0.000010	<0.000010	0.000016

Analytical Results

Sub-Matrix: **Water**
(Matrix: **Water**)

Analyte	CAS Number	Method	LOR	Unit	Client sample ID	FDP5	LDSPI	W22	W4	W29
					Client sampling date / time	27-Apr-2020 10:40	27-Apr-2020 10:20	27-Apr-2020 09:40	27-Apr-2020 09:05	27-Apr-2020 08:15
						WR2000165-001	WR2000165-002	WR2000165-003	WR2000165-004	WR2000165-005
						Result	Result	Result	Result	Result
Total Metals										
sodium, total	7440-23-5	E420	0.050	mg/L		3.09	2.51	2.23	2.23	2.75
strontium, total	7440-24-6	E420	0.00020	mg/L		0.185	0.195	0.227	0.221	0.234
sulfur, total	7704-34-9	E420	0.50	mg/L		17.5	19.4	29.9	27.8	28.5
thallium, total	7440-28-0	E420	0.000010	mg/L		0.000078	0.000132	<0.000010	<0.000010	0.000013
tin, total	7440-31-5	E420	0.00010	mg/L		0.00015	0.00022	<0.00010	<0.00010	<0.00010
titanium, total	7440-32-6	E420	0.00030	mg/L		0.0988	0.177	<0.00030	0.00765	0.0200
uranium, total	7440-61-1	E420	0.000010	mg/L		0.00332	0.00305	0.00121	0.00146	0.00185
vanadium, total	7440-62-2	E420	0.00050	mg/L		0.00707	0.0112	<0.00050	0.00069	0.00136
zinc, total	7440-66-6	E420	0.0030	mg/L		0.0458	0.0676	0.0054	0.0046	0.0059
zirconium, total	7440-67-7	E420	0.00030	mg/L		0.00064	0.00072	<0.00030	<0.00030	0.00049
Dissolved Metals										
aluminum, dissolved	7429-90-5	E421	0.0010	mg/L		0.0656	0.0894	0.0182	0.0168	0.0189
antimony, dissolved	7440-36-0	E421	0.00010	mg/L		0.00379	0.00253	0.00021	0.00060	0.00132
arsenic, dissolved	7440-38-2	E421	0.00010	mg/L		0.0255	0.0338	0.00075	0.00694	0.00870
barium, dissolved	7440-39-3	E421	0.00010	mg/L		0.0369	0.0376	0.0370	0.0388	0.0395
beryllium, dissolved	7440-41-7	E421	0.000020	mg/L		0.000027	<0.000020	<0.000020	<0.000020	<0.000020
bismuth, dissolved	7440-69-9	E421	0.000050	mg/L		<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
boron, dissolved	7440-42-8	E421	0.010	mg/L		<0.010	<0.010	<0.010	<0.010	<0.010
cadmium, dissolved	7440-43-9	E421	0.0000050	mg/L		0.0000921	0.0000611	0.0000131	0.0000199	0.0000310
calcium, dissolved	7440-70-2	E421	0.050	mg/L		37.8	32.0	43.8	38.5	42.3
chromium, dissolved	7440-47-3	E421.Cr-L	0.00010	mg/L		0.00017	0.00019	<0.00010	<0.00010	<0.00010
cobalt, dissolved	7440-48-4	E421	0.00010	mg/L		0.00069	0.00056	0.00016	0.00016	0.00020
copper, dissolved	7440-50-8	E421	0.00020	mg/L		0.00318	0.00291	0.00075	0.00089	0.00120
iron, dissolved	7439-89-6	E421	0.010	mg/L		0.127	0.151	0.070	0.064	0.060
lead, dissolved	7439-92-1	E421	0.000050	mg/L		0.000491	0.000439	<0.000050	<0.000050	0.000106
lithium, dissolved	7439-93-2	E421	0.0010	mg/L		0.0056	0.0054	0.0066	0.0071	0.0070
magnesium, dissolved	7439-95-4	E421	0.100	mg/L		9.45	11.7	18.7	17.7	19.0
manganese, dissolved	7439-96-5	E421	0.00010	mg/L		0.104	0.0948	0.0509	0.0388	0.0516
mercury, dissolved	7439-97-6	E509	0.0000050	mg/L		0.0000058	0.0000075	<0.0000050	<0.0000050	<0.0000050
molybdenum, dissolved	7439-98-7	E421	0.000050	mg/L		0.00240	0.00154	0.000131	0.000390	0.000607
nickel, dissolved	7440-02-0	E421	0.00050	mg/L		0.00232	0.00231	0.00178	0.00163	0.00169

Analytical Results

Sub-Matrix: **Water**
(Matrix: **Water**)

Analyte	CAS Number	Method	LOR	Unit	Client sample ID	FDP5	LDSPI	W22	W4	W29
					Client sampling date / time	27-Apr-2020 10:40	27-Apr-2020 10:20	27-Apr-2020 09:40	27-Apr-2020 09:05	27-Apr-2020 08:15
						WR2000165-001	WR2000165-002	WR2000165-003	WR2000165-004	WR2000165-005
						Result	Result	Result	Result	Result
Dissolved Metals										
phosphorus, dissolved	7723-14-0	E421	0.050	mg/L		<0.050	<0.050	<0.050	<0.050	<0.050
potassium, dissolved	7440-09-7	E421	0.100	mg/L		3.09	2.36	1.29	1.42	1.70
selenium, dissolved	7782-49-2	E421	0.000050	mg/L		0.000472	0.000270	0.000137	0.000204	0.000231
silicon, dissolved	7440-21-3	E421	0.050	mg/L		2.34	2.94	4.16	4.19	3.93
silver, dissolved	7440-22-4	E421	0.000010	mg/L		<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
sodium, dissolved	7440-23-5	E421	0.050	mg/L		3.25	2.42	2.18	2.27	2.89
strontium, dissolved	7440-24-6	E421	0.00020	mg/L		0.180	0.180	0.224	0.220	0.238
sulfur, dissolved	7704-34-9	E421	0.50	mg/L		17.1	17.3	28.8	26.3	27.2
thallium, dissolved	7440-28-0	E421	0.000010	mg/L		<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
tin, dissolved	7440-31-5	E421	0.00010	mg/L		<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
titanium, dissolved	7440-32-6	E421	0.00030	mg/L		0.00278	0.00156	<0.00030	<0.00030	0.00037
uranium, dissolved	7440-61-1	E421	0.000010	mg/L		0.00280	0.00226	0.00117	0.00147	0.00181
vanadium, dissolved	7440-62-2	E421	0.00050	mg/L		<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
zinc, dissolved	7440-66-6	E421	0.0010	mg/L		0.0042	0.0036	0.0036	0.0033	0.0058
zirconium, dissolved	7440-67-7	E421	0.00030	mg/L		<0.00030	<0.00030	<0.00030	<0.00030	<0.00030
dissolved mercury filtration location	----	EP509	-	-		Field	Field	Field	Field	Field
dissolved metals filtration location	----	EP421	-	-		Field	Field	Field	Field	Field
Radiological Parameters										
radium-226	13982-63-3	RA226-MMER	0.0088	Bq/L		<0.0088	----	----	----	----

Please refer to the General Comments section for an explanation of any qualifiers detected.

APPENDIX B

Acute Toxicity Results

Acute Toxicity Test Results

Sample VA20A5149,
collected April 21, 2020

Final Report

May 5, 2020

Submitted to: **ALS Environmental**
Burnaby, BC

8664 Commerce Court, Burnaby, BC V5A 4N7

SAMPLE INFORMATION

Sample ID	Dates				Receipt temp.
	Collected	Received	Rainbow trout test initiation	*Daphnia magna* test initiation	
VA20A5149	21-Apr-20 at 1423h	22-Apr-20 at 1554h	23-Apr-20 at 1125h	23-Apr-20 at 1255h	7.3 – 8.4°C

TESTS

- Rainbow trout 96-h single concentration screening test
- *Daphnia magna* 48-h single concentration screening test

RESULTS

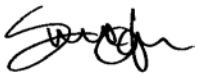
Toxicity test results

Sample ID	Percent survival in 100% (v/v) sample	
	Rainbow trout	*Daphnia magna*
VA20A5149	100	97

QA/QC

QA/QC summary	Rainbow trout	Daphnia magna
Reference toxicant LC50 (95% CL)	57.9 (43.4 – 77.2) µg/L Zn[1]	6.3 (5.2 – 7.7) g/L NaCl[2]
Reference toxicant historical mean (2 SD range)	96.8 (53.0 – 176.8) µg/L Zn	6.1 (4.4 – 8.5) g/L NaCl
Reference toxicant CV	31%	17%
Organism health history	Acceptable	Acceptable
Protocol deviations	None	None
Water quality range deviations	None	None
Control performance	Acceptable	Acceptable
Test performance	Valid	Valid

[1] Test date: April 20, 2020; [2] Test Date: April 14, 2020, LC = Lethal Concentration, CL = Confidence Limits, SD = Standard Deviation, CV = Coefficient of Variation



Report By:
Yvonne Lam, B.Sc.
Laboratory Biologist



Reviewed By:
Edmund Canaria, R.P. Bio
Senior Analyst

This report has been prepared by Nautilus Environmental Company Inc. based on data and/or samples provided by our client and the results of this study are for their sole benefit. Any reliance on the data by a third party is at the sole and exclusive risk of that party. The results presented here relate only to the samples tested.

APPENDIX A – Summary of test conditions

Table 1. Summary of test conditions: 96-h rainbow trout (*Oncorhynchus mykiss*) single concentration test.

Test species	*Oncorhynchus mykiss*
Organism source	Hatchery
Organism age	Juvenile
Test type	Static
Test duration	96 hours
Test vessel	20-L glass aquarium
Test volume	10 to 20 L (depending on size of fish)
Test solution depth	≥15 cm
Test concentrations	100% (undiluted) sample, plus laboratory control
Test replicates	1 per treatment
Number of organisms	10 per replicate
Control/dilution water	Dechlorinated Metro Vancouver municipal tapwater
Test solution renewal	None
Test temperature	15 ± 1°C
Feeding	None
Light intensity	100 to 500 lux
Photoperiod	16 hours light / 8 hours dark
Aeration	6.5 ± 1 mL/min/L
Test measurements	Temperature, dissolved oxygen and pH measured daily; salinity measured in the undiluted sample at test initiation; conductivity measured at test initiation and termination; survival checked daily
Test protocol	Environment Canada (2000), EPS 1/RM/13, with 2007 & 2016 amendments
Test endpoint	Survival
Test acceptability criterion for controls	Survival ≥90%
Reference toxicant	Zinc (added as $ZnSO_4$)

Table 2. Summary of test conditions: 48-h *Daphnia magna* single concentration test.

Test species	*Daphnia magna*
Organism source	In-house culture
Organism age	<24-hour old neonates
Test type	Static
Test duration	48 hours
Test vessel	250-mL glass beaker
Test volume	200 mL
Test solution depth	6 cm
Test concentrations	100% (undiluted) sample, plus laboratory control
Test replicates	3 per treatment
Number of organisms	10 per replicate
Control/dilution water	Moderately-hard reconstituted water + 2.5 µg/L Se
Test solution renewal	None
Test temperature	20 ± 2°C
Feeding	None
Light intensity	400 to 800 lux
Photoperiod	16 hours light / 8 hours dark
Aeration	None
Test measurements	Temperature, dissolved oxygen and pH measured daily; salinity, hardness and alkalinity measured in the undiluted sample at test initiation; conductivity measured at test initiation and termination; survival checked daily
Test protocol	Environment Canada (2000), EPS 1/RM/14, with 2016 amendments
Test endpoint	Survival
Test acceptability criterion for controls	Survival ≥90%
Reference toxicant	Sodium chloride (NaCl)

APPENDIX B – Toxicity test data

Rainbow Trout Summary Sheet

Client: ALS Environmental

Start Date/Time: 23Apr20 @ 1125h

Work Order No.: 200674

Test Species: *Oncorhynchus mykiss*

Test Validity Criteria:
≥ 90% control survival
WQ Ranges:
T (°C) = 15 ± 1; DO (mg/L) = 7.0 to 10.3; pH = 5.5 to 8.5

Sample Information:

Sample ID: VA20A5149
Sample Date: 21Apr20
Date Received: 21Apr20
Sample Volume: 2 x 10L
Other: —

Dilution Water:

Type: Dechlorinated Municipal Tap Water
Hardness (mg/L $CaCO_3$): 12
Alkalinity (mg/L $CaCO_3$): 12

Test Organism Information:

Batch No.: 040120b
Source: Lyndon Fish Hatcheries
No. Fish/Volume (L): 10/12L
Loading Density (g/L): 0.33
Mean Length ± SD (mm): 38 ± 2 Range: 35 - 41
Mean Weight ± SD (g): 0.39 ± 0.07 Range: 0.31 - 0.52

Zinc Reference Toxicant Results:

Reference Toxicant ID: RTZnL052
Stock Solution ID: 20Zn02
Date Initiated: 20Apr20
96-h LC50 (95% CL): 57.9 (43.4 - 77.2) µg/L Zn

Reference Toxicant Mean and Historical Range: 96.8 (53.0 - 176.8) µg/L Zn
Reference Toxicant CV (%): 31%

Test Results: 100% survival at 96h in the 100% (v/v) undiluted sample.

Reviewed by: [signature] Date reviewed: April 30, 2020

96-Hour Rainbow Trout Toxicity Test Data Sheet

Client/Project#: ALS Environmental
Sample I.D. VA20A5149
W.O. # 200674
RBT Batch #: 040120
Date Collected/Time: Apr 21/20 @ 14:23h
Date Setup/Time: Apr 23/20 @ 1125h
CER #: 8
Sample Setup By:

Thermometer: Ger8
D.O. meter/probe: 5 / P5
Cond./Salinity meter/probe: 5 / CP5
pH meter/probe: 5 / P5

Number Fish/Volume: 10/12L
7-d % Mortality: 0.5%
Total Pre-aeration Time (mins): 30
Aeration rate adjusted to 6.5 ± 1 mL/min/L? (Y/N): Y

Undiluted Sample WQ			
Parameters	Initial WQ	Adjustment	30 min WQ
Temp °C	14.5		14.5
D.O. (mg/L)	9.6		9.8
pH	7.4		7.5
Cond. (µS/cm)	406		407
Salinity (ppt)	0.2		0.2

Concentration	# Survivors							Temperature (°C)					Dissolved Oxygen (mg/L)					pH					Conductivity (µS/cm)	
(% v/v)	1	2	4	24	48	72	96	0	24	48	72	96	0	24	48	72	96	0	24	48	72	96	0	96
Ctrl				10	10	10	10	15.0	15.0	15.0	15.0	15.0	9.9	9.8	9.3	9.6	9.6	7.2	7.3	7.3	7.2	7.2	33	39
100				10	10	10	10	14.5	15.0	15.0	15.0	15.0	9.8	9.7	9.4	9.5	9.4	7.5	7.9	8.4	8.4	8.4	407	414
Initials				SM	SM	SM	SM	SM	SM	SM	SM	SM	SM	SM	SM	SM	SM	SM	SM	SM	SM	SM	SM	SM

Sample Description/Comments: turbid, pale yellow sample, organic particulates, no odor

Fish Description at 96 h: all remaining fish appear normal Number of Stressed Fish at 96 h: 0

Other Observations:

Reviewed by: Date Reviewed: April 30, 2020

Daphnia magna Summary Sheet

Client: ALS Environmental
Work Order No.: 200675

Start Date/Time: Apr 23/2020 @ 1755h
Test Species: *Daphnia magna*
Set up by: MWE

Sample Information:

Sample ID: MWE ~~UA20A5144~~ UA20A5149
Sample Date: Apr 21/2020
Date Received: Apr 22/2020
Sample Volume: 2 x 10L

Test Validity Criteria:

≥ 90% mean control survival and/or mobility and ≤2 daphnids exibit immobility and/or mortality in any single control replicate.

WQ Ranges:

T (°C) = 20 ± 2; DO (mg/L) = 3.6 to 9.4; pH = 6 to 8.5

Test Organism Information:

Broodstock No.: 040820ATB
Age of young (Day 0): <24 h
Avg No. young per brood in previous 7 d: 18
Mortality (%) in previous 7 d: 0
Days to first brood: 9

NaCl Reference Toxicant Results:

Reference Toxicant ID: Dm DC 49
Stock Solution ID: 20 NaCl
Date Initiated: Apr 14/2020
48-h LC50 (95% CL): 6.3 (5.2 - 7.7) g/L NaCL

Reference Toxicant Mean and Historical Range: 6.1 (4.4 - 8.5) g/L NaCL
Reference Toxicant CV (%): 17

Test Results: 97 % survival at 48 h in the 100 % (v/v) undiluted sample.

Reviewed by: [signature]

Date reviewed: April 30, 2020

Freshwater Acute
48 Hour Toxicity Test Data Sheet

Client: ALS Environmental
Sample ID: VA20A5149
Work Order No.: 200675

Start Date/Time: Apr 23/2020 @ 1255h.
CER #: 5
No. Organisms/volume: 10/200mL
Test Organism: D.magna
Set up by: [signature]

Thermometer: CER#5 pH meter/probe: 6 / 6 DO meter/probe: 6 / 6 Cond./Salinity meter/probe: 6 / 6

Concentration % (v/v)	Rep	Number of Live Organisms 24	Number of Live Organisms 48	No. Immobilized 48	Temperature (°C) 0	Temperature (°C) 24	Temperature (°C) 48	Dissolved oxygen (mg/L) 0	Dissolved oxygen (mg/L) 24	Dissolved oxygen (mg/L) 48	pH 0	pH 24	pH 48	Conductivity (µS/cm) 0	Conductivity (µS/cm) 48
Control	A	10	10	1	19.0	19.0	19.0	9.0	8.4	8.2	8.1	8.0	7.7	344	351
	B	10	10	0											
	C	10	10	0											
	D														
100	A	10	10	0	19.0	19.0	19.0	9.3	8.4	8.3	7.7	7.9	7.9	412	413
	B	10	9	0											
	C	10	10	1											
	D														
	A														
	B														
	C														
	D														
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	C														
	D														
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	A														
	B														
	C														
	D														
Technician Initials		[initials]	[initials]	[initials]	[initials]	[initials]	[initials]	[initials]	[initials]	[initials]	[initials]	[initials]	[initials]	[initials]	[initials]

Concentration	Hardness*	Alkalinity*
	*(mg/L as CaCo3)	
Control (MHW)	98	84
Highest conc.	220	130
Hardness adjusted	—	—

	Initial WQ	Adjustment	Adjusted WQ
Temp (°C)	19.0		
DO (mg/L)	9.3		
pH	7.7		
Cond (µS/cm)	412		
Salinity (ppt)	0.2		

Comments: _____ Mortality: Heartbeat checked under microscope yes

Sample Description: turbid, light yellow, no odour, some particulates

Batch#: 040820A1B 7-d previous # young/brood: 18 Previous 7-d Mortality (%): 0 Day of 1st Brood: 9

Reviewed by: [signature] Date reviewed: April 30, 2020

APPENDIX C – Chain-of-custody form

Chain of Custody

Vancouver - Environmental
8081 Lougheed Highway
Burnaby British Columbia
Canada V5A 1W9

1266

Destination Lab:	**Nautilus Environmental**	Due Date: 29/04/2020	Relinquished By
Address:	(Burnaby) erce Court	HT Expiry:	Date/Time
Client:	Victoria Gold (Yukon) Corp.	Consignment company and Number	Received By
Work Order Number:	**VA20A5149**		Date/Time
Original Receipt Date/Time	Instructions Received		Receipt Temp
22/04/2020 14:15			

ALS Lab ID	Bottle Code	Matrix	Submatrix	Container Type	Test Codes	Task Remarks
VA20A5149	002-AJ	Water	Water	HDPE carboy LC50	DAP-LC50-48	
VA20A5149	002-AK	Water	Water	HDPE carboy LC50	TRT-LC50-96	

Sampling Date is April 21
Time is on the individual carboys
14:23
- see attached COC for client instructions

Account Manager: Hilary Woods

ALSEVDataSublet@ALSGlobal.com (PDF / EXCEL/ B2B)
ALS Vancouver Phone Number: 604-253-4188

TH
7.3 - 8.4°C
Apr. 22/20 @ 15:54
200674 - Rbt P/F
200675 - DM P/F
2x10L

ALS Environmental
www.alsglobal.com

Chain of Custody (COC) / Analytical Request Form

Canada Toll Free: 1 800 668 9878

Affix ALS barcode label here
(lab use only)

COC Number: 20200421b

Page of

Report To	Contact and company name below will appear on the final report
Company:	StrataGold Corporation
Contact:	Bill Bowden
Phone:	867-456-7700 x 6381
	Company address below will appear on the final report
Street:	100-1050 West Pender Street
City/Province:	Vancouver, BC
Postal Code:	V6E 3S7
Invoice To	Same as Report To ☐ YES ☑ NO
	Copy of Invoice with Report ☑ YES ☐ NO
Company:	STR125-EAGLEGOLD-VA
Contact:	

Report Format / Distribution

Select Report Format: ☑ PDF ☑ EXCEL ☑ EDD (DIGITAL)
Quality Control (QC) Report with Report ☐ YES ☐ NO
☐ Compare Results to Criteria on Report - provide details below if box checked
Select Distribution: ☑ EMAIL ☐ MAIL ☐ FAX
Email 1 or Fax kbabin@vitgoldcorp.com, swilbur@vitgoldcorp.com
Email 2 pemerson@vitgoldcorp.com, lrear@vitgoldcorp.com
Email 3 bbowden@vitgoldcorp.com, hcoyle@vitgoldcorp.co

Invoice Distribution

Select Invoice Distribution: ☐ EMAIL ☐ MAIL ☐ FAX
Email 1 or Fax accountspayable@vitgoldcorp.com
Email 2 bbowden@vitgoldcorp.com

Select Service Level Below - Contact your AM to confirm all E&P TATs (surcharges may apply)

Regular [R] ☑ Standard TAT if received by 3 pm - business days - no surcharges apply

PRIORITY (Business Days): 4 day [P4-20%] ☐ 3 day [P3-25%] ☐ 2 day [P2-50%] ☐

EMERGENCY: 1 Business day [E1 - 100%] ☐ Same Day, Weekend or Statutory holiday [E2 -200% (Laboratory opening fees may apply)] ☐

Date and Time Required for all E&P TATs:

For tests that can not be performed according to the service level selected, you will be contacted.

Project Information

ALS Account # / Quote #: STRG100 Q68199
Job #: WUL SWQ Discharge
PO / AFE: 14043
LSD:

Oil and Gas Required Fields (client use)

AFE/Cost Center: PO#
Major/Minor Code: Routing Code:
Requisitioner:
Location:

ALS Lab Work Order # (lab use only):
ALS Contact: Hilary Woods Sampler: PE

Analysis Request

Indicate Filtered (F), Preserved (P) or Filtered and Preserved (F/P) below

ALS Sample # (lab use only)	Sample Identification and/or Coordinates (This description will appear on the report)	Date (dd-mmm-yy)	Time (hh:mm)	Sample Type	ESW + T Phosphate	CN1	CN2	RAD-226	NH3	MDMER-WQ	Acute lethality to Rainbow Trout Test Method EPS/1/RM/13	Acute lethality to Daphnia magna Test Method EPS/1/RM/14	SAMPLES ON HOLD	Sample is hazardous (please provide further detail)	NUMBER OF CONTAINERS
	W29	21-Apr-20		Water	R	R									12
	LDSPI	21-Apr-20		Water	R		R	R			R	R			13

Environmental Division
Vancouver
Work Order Reference
VA20A5149

Telephone : +1 604 253 4188

Drinking Water (DW) Samples[1] (client use)

Are samples taken from a Regulated DW System? ☐ YES ☑ NO
Are samples for human consumption/ use? ☐ YES ☑ NO

Special instr... ...g on the drop-down list below

Please include Yukon Government EQWin format

SAMPLE CONDITION AS RECEIVED (lab use only)

Frozen ☐ SIF Observations Yes ☐ No ☐
Ice Packs ☑ Ice Cubes ☐ Custody seal intact Yes ☐ No ☐
Cooling Initiated ☐

INITIAL COOLER TEMPERATURES °C | FINAL COOLER TEMPERATURES °C

SHIPMENT RELEASE (client use)			INITIAL SHIPMENT RECEPTION (lab use only)			FINAL SHIPMENT RECEPTION (lab use only)		
Released by: Phil Emerson	Date: April 21, 2020	Time: 14:00	Received by:	Date:	Time:	Received by: Cm	Date: 22 April 2020	Time: 2:15 pm

REFER TO BACK PAGE FOR ALS LOCATIONS AND SAMPLING INFORMATION WHITE - LABORATORY COPY YELLOW - CLIENT COPY

Failure to complete all portions of this form may delay analysis. Please fill in this form LEGIBLY. By the use of this form the user acknowledges and agrees with the Terms and Conditions as specified on the back page of the white - report copy.

1. If any water samples are taken from a Regulated Drinking Water (DW) System, please submit using an Authorized DW COC form.

SEPF2017 FRONT

A1

END OF REPORT

Acute Toxicity Test Results

Sample VA20A5153,
collected April 21, 2020

Final Report

May 5, 2020

Submitted to: **ALS Environmental**
Burnaby, BC

8664 Commerce Court, Burnaby, BC V5A 4N7

SAMPLE INFORMATION

Sample ID	Dates				Receipt temp.
	Collected	Received	Rainbow trout test initiation	*Daphnia magna* test initiation	
VA20A5153	21-Apr-20 at 1340h	22-Apr-20 at 1554h	23-Apr-20 at 11124h	23-Apr-20 at 1255h	6.1 – 6.3°C

TESTS

- Rainbow trout 96-h single concentration screening test
- *Daphnia magna* 48-h single concentration screening test

RESULTS

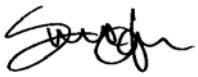
Toxicity test results

Sample ID	Percent survival in 100% (v/v) sample	
	Rainbow trout	*Daphnia magna*
VA20A5153	100	100

QA/QC

QA/QC summary	Rainbow trout	Daphnia magna
Reference toxicant LC50 (95% CL)	57.9 (43.4 – 77.2) µg/L Zn[1]	6.3 (5.2 – 7.7) g/L NaCl[2]
Reference toxicant historical mean (2 SD range)	96.8 (53.0 – 176.8) µg/L Zn	6.1 (4.4 – 8.5) g/L NaCl
Reference toxicant CV	31%	17%
Organism health history	Acceptable	Acceptable
Protocol deviations	None	None
Water quality range deviations	None	None
Control performance	Acceptable	Acceptable
Test performance	Valid	Valid

[1] Test date: April 20, 2020; [2] Test Date: April 14, 2020, LC = Lethal Concentration, CL = Confidence Limits, SD = Standard Deviation, CV = Coefficient of Variation



Report By:
Yvonne Lam, B.Sc.
Laboratory Biologist



Reviewed By:
Edmund Canaria, R.P. Bio
Senior Analyst

This report has been prepared by Nautilus Environmental Company Inc. based on data and/or samples provided by our client and the results of this study are for their sole benefit. Any reliance on the data by a third party is at the sole and exclusive risk of that party. The results presented here relate only to the samples tested.

APPENDIX A – Summary of test conditions

Table 1. Summary of test conditions: 96-h rainbow trout (*Oncorhynchus mykiss*) single concentration test.

Test species	*Oncorhynchus mykiss*
Organism source	Hatchery
Organism age	Juvenile
Test type	Static
Test duration	96 hours
Test vessel	20-L glass aquarium
Test volume	10 to 20 L (depending on size of fish)
Test solution depth	≥15 cm
Test concentrations	100% (undiluted) sample, plus laboratory control
Test replicates	1 per treatment
Number of organisms	10 per replicate
Control/dilution water	Dechlorinated Metro Vancouver municipal tapwater
Test solution renewal	None
Test temperature	15 ± 1°C
Feeding	None
Light intensity	100 to 500 lux
Photoperiod	16 hours light / 8 hours dark
Aeration	6.5 ± 1 mL/min/L
Test measurements	Temperature, dissolved oxygen and pH measured daily; salinity measured in the undiluted sample at test initiation; conductivity measured at test initiation and termination; survival checked daily
Test protocol	Environment Canada (2000), EPS 1/RM/13, with 2007 & 2016 amendments
Test endpoint	Survival
Test acceptability criterion for controls	Survival ≥90%
Reference toxicant	Zinc (added as $ZnSO_4$)

Table 2. Summary of test conditions: 48-h *Daphnia magna* single concentration test.

Test species	*Daphnia magna*
Organism source	In-house culture
Organism age	<24-hour old neonates
Test type	Static
Test duration	48 hours
Test vessel	250-mL glass beaker
Test volume	200 mL
Test solution depth	6 cm
Test concentrations	100% (undiluted) sample, plus laboratory control
Test replicates	3 per treatment
Number of organisms	10 per replicate
Control/dilution water	Moderately-hard reconstituted water + 2.5 µg/L Se
Test solution renewal	None
Test temperature	20 ± 2°C
Feeding	None
Light intensity	400 to 800 lux
Photoperiod	16 hours light / 8 hours dark
Aeration	None
Test measurements	Temperature, dissolved oxygen and pH measured daily; salinity, hardness and alkalinity measured in the undiluted sample at test initiation; conductivity measured at test initiation and termination; survival checked daily
Test protocol	Environment Canada (2000), EPS 1/RM/14, with 2016 amendments
Test endpoint	Survival
Test acceptability criterion for controls	Survival ≥90%
Reference toxicant	Sodium chloride (NaCl)

APPENDIX B – Toxicity test data

Rainbow Trout Summary Sheet

Client: ALS Environmental

Start Date/Time: 23Apr20 @ 1124h

Work Order No.: 206676

Test Species: *Oncorhynchus mykiss*

Test Validity Criteria:
≥ 90% control survival
WQ Ranges:
T (°C) = 15 ± 1; DO (mg/L) = 7.0 to 10.3; pH = 5.5 to 8.5

Sample Information:

Sample ID: VA20A5153
Sample Date: 21Apr20
Date Received: 22Apr20
Sample Volume: 6 x 10L
Other: —

Dilution Water:

Type: Dechlorinated Municipal Tap Water
Hardness (mg/L $CaCO_3$): 12
Alkalinity (mg/L $CaCO_3$): 12

Test Organism Information:

Batch No.: 040120b
Source: Lyndon Fish Hatcheries
No. Fish/Volume (L): 10/12L
Loading Density (g/L): 0.30
Mean Length ± SD (mm): 36 ± 3 Range: 34 - 41
Mean Weight ± SD (g): 0.36 ± 0.08 Range: 0.27 - 0.53

Zinc Reference Toxicant Results:

Reference Toxicant ID: RTZnL052
Stock Solution ID: 20Zn02
Date Initiated: 20Apr20
96-h LC50 (95% CL): 57.9 (43.4 - 77.2) µg/L Zn

Reference Toxicant Mean and Historical Range: 96.8 (53.0 - 176.8) µg/L Zn
Reference Toxicant CV (%): 31%

Test Results: 100% survival at 96h in the 100% (v/v) undiluted sample.

Reviewed by: [signature]

Date reviewed: April 30, 2020

96-Hour Rainbow Trout Toxicity Test Data Sheet

Client/Project#: ALS Environmental
Sample I.D. VA20A5153
W.O. # 200676
RBT Batch #: 040120b
Date Collected/Time: Apr 21/20 @ 13:40h
Date Setup/Time: Apr 23/20 @ 1124h
CER #: 8
Sample Setup By:

Thermometer: 6er8
D.O. meter/probe: 5 / P5
Cond./Salinity meter/probe: 5 / CP5
pH meter/probe: 5 / P5

Number Fish/Volume: 10/12L
7-d % Mortality: 0.5%
Total Pre-aeration Time (mins): 30
Aeration rate adjusted to 6.5 ± 1 mL/min/L? (Y/N): Y

Undiluted Sample WQ			
Parameters	Initial WQ	Adjustment	30 min WQ
Temp °C	14.5		14.5
D.O. (mg/L)	9.8		9.9
pH	7.5		7.6
Cond. (µS/cm)	396		396
Salinity (ppt)	0.2		0.2

Concentration	# Survivors							Temperature (°C)					Dissolved Oxygen (mg/L)					pH					Conductivity (µS/cm)	
(% v/v)	1	2	4	24	48	72	96	0	24	48	72	96	0	24	48	72	96	0	24	48	72	96	0	96
Ctrl				10	10	10	10	15.0	15.0	15.0	15.2	15.0	9.7	9.8	9.4	9.6	9.5	7.2	7.3	7.3	7.4	7.3	33	39
100				10	10	10	10	14.5	15.0	15.0	15.2	15.0	9.9	9.7	9.4	9.7	9.6	7.6	8.0	8.4	8.4	8.4	396	402
Initials				SM	AL	AL	SM	SM	SM	AL	AL	CM	SM	SM	AL	AL	SM	SM	SM	~	AL	SM	SM	SM

Sample Description/Comments: turbid, pale yellow sample, few particulates, no odor

Fish Description at 96 h: all fish appear normal — Number of Stressed Fish at 96 h: 0

Other Observations:

Reviewed by: — Date Reviewed: April 30, 2020

Daphnia magna Summary Sheet

Client: ALS Environmental
Work Order No.: 200677

Start Date/Time: Apr 23/2020 @ 12:55h
Test Species: *Daphnia magna*
Set up by: MW

Sample Information:

Sample ID: VA20A5153
Sample Date: Apr 21/2020
Date Received: Apr 22/2020
Sample Volume: 6 x 10L

Test Validity Criteria:

≥ 90% mean control survival and/or mobility and ≤2 daphnids exibit immobility and/or mortality in any single control replicate.

WQ Ranges:

T (°C) = 20 ± 2; DO (mg/L) = 3.6 to 9.4; pH = 6 to 8.5

Test Organism Information:

Broodstock No.: 040820A+B
Age of young (Day 0): <24 h
Avg No. young per brood in previous 7 d: 18
Mortality (%) in previous 7 d: 0
Days to first brood: 9

NaCl Reference Toxicant Results:

Reference Toxicant ID: Dm DC 49
Stock Solution ID: 20 NaCl
Date Initiated: Apr 14/2020
48-h LC50 (95% CL): 6.3 (5.2 - 7.7) g/LNaCL

Reference Toxicant Mean and Historical Range: 6.1 (4.4 - 8.5) g/L NaCL
Reference Toxicant CV (%): 17

Test Results: ~~The 48h LC50 is estimated to be.~~
100 % survived at 48 h in the 100 % (v/v) undiluted sample.

Reviewed by: [signature]

Date reviewed: April 30, 2020

Freshwater Acute
48 Hour Toxicity Test Data Sheet

Client: AJS Environmental
Sample ID: VA20A5153
Work Order No.: 200677

Start Date/Time: Apr 23/2020 @ 1235L
CER #: 5
No. Organisms/volume: 10/200mL
Test Organism: *D.magna*
Set up by: MME

Thermometer: CER#5 pH meter/probe: 6 / 6 DO meter/probe: 6 / 6 Cond./Salinity meter/probe: 6 / 6

Concentration % (v/v)	Rep	Number of Live Organisms 24	Number of Live Organisms 48	No. Immobilized 48	Temperature (°C) 0	Temperature (°C) 24	Temperature (°C) 48	Dissolved oxygen (mg/L) 0	Dissolved oxygen (mg/L) 24	Dissolved oxygen (mg/L) 48	pH 0	pH 24	pH 48	Conductivity (µS/cm) 0	Conductivity (µS/cm) 48
Control	A	10	10	1	19.0	19.0	19.0	9.0	8.4	8.2	8.1	8.0	7.7	344	351
	B	10	10	0											
	C	10	10	0											
	D														
100	A	10	10	0	19.0	19.0	19.0	9.2	8.2	8.2	7.7	7.8	7.9	400	401
	B	10	10	0											
	C	10	10	0											
	D														
	A														
	B														
	C														
	D														
	A														
	B														
	C														
	D														
	A														
	B														
	C														
	D														
	A														
	B														
	C														
	D														
Technician Initials		MME	n	n	MME	MME	n	MME	MME	n	MME	MME	n	MME	n

Concentration	Hardness*	Alkalinity*
	*(mg/L as CaCo3)	
Control (MHW)	98	84
Highest conc.	230	120
Hardness adjusted	—	

	Initial WQ	Adjustment	Adjusted WQ
Temp (°C)	19.0		
DO (mg/L)	9.2		
pH	7.7		
Cond (µS/cm)	400		
Salinity (ppt)	0.2		

Comments: _____ Mortality: Heartbeat checked under microscope ~~yes~~ no not required

Sample Description: turbid, pale yellow, no odour, some particulates

Batch#: 040820A1B 7-d previous # young/brood: 18 Previous 7-d Mortality (%): 0 Day of 1st Brood: 9

Reviewed by: _____ Date reviewed: April 30, 2020

APPENDIX C – Chain-of-custody form

Chain of Custody
Vancouver - Environmental
8081 Lougheed Highway
Burnaby British Columbia
Canada V5A 1W9

COPY

1271

Destination Lab:	**Nautilus Environmental**	Due Date: 29/04/2020	Relinquished By
Address:	(Burnaby)erce Court	HT Expiry:	Date/Time
Client:	Victoria Gold (Yukon) Corp.	Consignment company and Number	Received By
Work Order Number:	**VA20A5153**		Date/Time
Original Receipt Date/Time	Instructions Received		Receipt Temp
22/04/2020 15:06			

ALS Lab ID	Bottle Code	Matrix	Submatrix	Container Type	Test Codes	Task Remarks
VA20A5153	001-AI	Water	Water	HDPE carboy LC50	DAP-LC50-48 96 plp , TRT-LC50- plp	
VA20A5153	001-AJ	Water	Water	HDPE carboy LC50		
VA20A5153	001-AK	Water	Water	HDPE carboy LC50		
VA20A5153	001-AL	Water	Water	HDPE carboy LC50		
VA20A5153	001-AM	Water	Water	HDPE carboy LC50		
VA20A5153	001-AN	Water	Water	HDPE carboy LC50		

Samplins Date: April 21
13:40

- See attached CoC for client instructi

Apr. 22/20 @ 15:54
TH
6.1-6.3°C
6x10L
200676 - Rbt LC50 plp
200677 - D.M. LC50 plp
200678 - Fathead
200679 - Ceriо
200680 - P. Subcap.
200681 - L. minor

Account Manager: Hilary Woods

ALSEVDataSublet@ALSGlobal.com (PDF / EXCEL/ B2B)
ALS Vancouver Phone Number: 604-253-4188

- Rainbow trout
- Daphnic Magna
- Fathead Minnow
- C. Dubia
- P. Subcapitata
- Lemna Minor

Sample Description: turbid, pale yellow sample, few particulates, no odour

Chain of Custody (COC) / Analytical Request Form

ALS Environmental

Canada Toll Free: 1 800 668 9878

www.alsglobal.com

Affix ALS barcode label here (lab use only)

COC Number: 20 20 00 42 13

Page of

Report To	Contact and company name below will appear on the final report
Company:	StrataGold Corporation
Contact:	Bill Bowden
Phone:	867-456-7700 x 6381
	Company address below will appear on the final report
Street:	100-1050 West Pender Street
City/Province:	Vancouver, BC
Postal Code:	V6E 3S7
Invoice To	Same as Report To ☐ YES ☑ NO
	Copy of Invoice with Report ☑ YES ☐ NO
Company:	STR125-EAGLEGOLD-VA
Contact:	

Report Format / Distribution	
Select Report Format:	☑ PDF ☑ EXCEL ☑ EDD (DIGITAL)
Quality Control (QC) Report with Report	☐ YES ☐ NO
☐ Compare Results to Criteria on Report - provide details below if box checked	
Select Distribution:	☑ EMAIL ☐ MAIL ☐ FAX
Email 1 or Fax	kbabin@vitgoldcorp.com, swilbur@vitgoldcorp.com
Email 2	pemerson@vitgoldcorp.com, lrear@vitgoldcorp.com
Email 3	bbowden@vitgoldcorp.com, hcoyle@vitgoldcorp.co

Invoice Distribution	
Select Invoice Distribution:	☐ EMAIL ☐ MAIL ☐ FAX
Email 1 or Fax	accountspayable@vitgoldcorp.com
Email 2	bbowden@vitgoldcorp.com

Select Service Level Below - Contact your AM to confirm all E&P TATs (surcharges may apply)

Regular [R] ☑ Standard TAT if received by 3 pm - business days - no surcharges apply

PRIORITY (Business Days): 4 day [P4-20%] ☐ | 3 day [P3-25%] ☐ | 2 day [P2-50%] ☐

EMERGENCY: 1 Business day [E1 - 100%] ☐ | Same Day, Weekend or Statutory holiday [E2 -200% (Laboratory opening fees may apply)] ☐

Date and Time Required for all E&P TATs:

For tests that can not be performed according to the service level selected, you will be contacted.

Project Information		Oil and Gas Required Fields (client use)	
ALS Account # / Quote #:	STRG100 Q88199	AFE/Cost Center:	PO#
Job #:	LDSP (April 21)	Major/Minor Code:	Routing Code:
PO / AFE:	14043	Requisitioner:	
LSD:		Location:	

ALS Lab Work Order # (lab use only):

ALS Contact: Hilary Woods | Sampler: PE

Analysis Request

Indicate Filtered (F), Preserved (P) or Filtered and Preserved (F/P) below

ALS Sample # (lab use only)	Sample Identification and/or Coordinates (This description will appear on the report)	Date (dd-mmm-yy)	Time (hh:mm)	Sample Type	ESW + T. Phosphate	NH3	CN2	RAD-226	MDMER-EFF	MDMER-DEL	Acute lethality to Rainbow Trout Test Method EPS/1/RM/13	Acute lethality to Daphnia magna Test Method EPS/1/RM/14	Sublethal Tox (Fathead Minnow, C. dubia, P. subcapitata, Lemna minor)	SAMPLES ON HOLD	Sample is hazardous (please provide further detail)	NUMBER OF CONTAINERS
	FDP5	21-Apr-20		water	R	R	R	R			R	R	R			17

COPY

Environmental Division
Vancouver
Work Order Reference
VA20A5153

Telephone : +1 604 253 4188

Drinking Water (DW) Samples[1] (client use)	Special Instructions / Specify Criteria to add on report by clicking on the drop-down list below (electronic COC only)
Are samples taken from a Regulated DW System? ☐ YES ☑ NO	
Are samples for human consumption/ use? ☐ YES ☑ NO	Please include Yukon Government EQWin format

(lab use only)

Frozen ☐ SIF Observations Yes ☐ No ☐

Ice Packs ☑ Ice Cubes ☐ Custody seal intact Yes ☐ No ☐

Cooling Initiated ☐

INITIAL COOLER TEMPERATURES °C	FINAL COOLER TEMPERATURES °C
	4

SHIPMENT RELEASE (client use)			INITIAL SHIPMENT RECEPTION (lab use only)			FINAL SHIPMENT RECEPTION (lab use only)		
Released by: P. Emerson	Date: April 21, 2020	Time: 14:00	Received by:	Date:	Time:	Received by: HA	Date: 22/4/20	Time: 2:15 Pm

REFER TO BACK PAGE FOR ALS LOCATIONS AND SAMPLING INFORMATION

WHITE - LABORATORY COPY YELLOW - CLIENT COPY

SEPT 2017 FRONT

Failure to complete all portions of this form may delay analysis. Please fill in this form LEGIBLY. By the use of this form the user acknowledges and agrees with the Terms and Conditions as specified on the back page of the white - report copy.

1. If any water samples are taken from a Regulated Drinking Water (DW) System, please submit using an Authorized DW COC form.

END OF REPORT

APPENDIX C2

April Discharge Final Report Pursuant to the MDMER

VICTORIA GOLD CORP

EAGLE GOLD PROJECT

FINAL REPORT

LDSP DISCHARGE TO FDP#5 (APRIL 20 TO 28, 2020) EXCEEDANCE REPORT

JUNE 18, 2020

Prepared By:
Victoria Gold (Yukon) Corp.
Eagle Gold Project

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Appendix B Acute Toxicity Results

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1 INTRODUCTION

This discharge exceedance report summarizes the implementation of water management strategies that were necessary to address rapid snowmelt, which led to a reduction of the Lower Dublin South Pond (LDSP) available capacity, and the decision to discharge water from the LDSP to the LDSP Contingency Sump during the period of April 20-28, 2020. The water discharged subsequently yielded results above the *Metal and Diamond Mining Effluent Regulations* (MDMER) Schedule 4 deleterious substance criteria.

The LDSP Contingency Sump is registered with Environment and Climate Change Canada (ECCC) as Final Discharge Point #5 (FDP#5), and is located approximately 300 meters upgradient of the LDSP, in the lower Dublin Gulch Valley. FDP#5 is an exfiltration sump and is located in an area occupied by a thick (over 20 m) sequence of placer deposits and alluvium that overlies bedrock. Thus, in this case, exfiltrating the water to ground at FDP#5 was ascertained to have the lowest potential for an adverse response in potential receiving environments as it allows for natural mitigation of total suspended solids (TSS), the main parameter of concern, through natural filtration, as opposed to direct discharge via FDP#3 to receiving waters (i.e., Haggart Creek).

On April 20, 2020, prior to any discharge, notification was provided to ECCC regarding the planned discharge of water from the LDSP to FDP #5.

On April 30, 2020, and within 24 hours of receiving the analytical laboratory results, notification was provided to the Yukon Spill Reporting hotline of the discharge of water to FDP#5 with TSS concentrations exceeding MDMER criteria (TSS). With the exception of TSS, monitoring during the discharge demonstrated compliance with all other monthly mean and grab sample deleterious substance authorised limits.

This report provides an event summary, discharge details, environmental factors and pre-discharge responses leading up to the controlled discharge, and spill reporting.

2 EVENT SUMMARY

Through the winter of 2019-2020, Victoria Gold (Yukon) Corp. (VGC) developed a water management strategy for the 2020 freshet period at the Eagle Gold Project (Project) that involved the controlled discharge of site contact waters through the LDSP in accordance with the MDMER. In addition to the controlled discharge, a portion of the water within the LDSP was also to be transferred to the Events Pond for use as process water. In preparation for the execution of this strategy, a number of pre-discharge water quality samples were sent for analysis at ALS Laboratories to confirm that the water quality within the LDSP was suitable for release in accordance with Schedule 4, deleterious substance criteria. The laboratory results for samples taken April 9 to April 15, 2020 showed water quality within the LDSP was acceptable for discharge.

The water management strategy involving a release of water from the LDSP, instead of full retention for use as process water, was in response to an expected large volume of snowmelt that would be generated from the highest recorded snowfall since measurements began at the Project site in 2007 (about 45% higher than previous maximum).

In the days prior to the planned execution of the controlled discharge, a relatively quick change from cold (below freezing) to unseasonably warm temperatures occurred in mid-April 2020, leading to a rapid increase in snowmelt runoff, high flow rates in site ditches and water with elevated TSS draining to the LDSP. The high flows caused a minor breach along ditch A (on the afternoon of April 15) and, as a result, water reported directly into the LDSP rather than into the forebay, thereby shortening the designed treatment circuit for settling solids in the LDSP. During the short term that the breach was open, inflow water bypassed the forebay, degrading the overall water quality at the planned discharge point (i.e., the low-level outlet or LLO of the LDSP identified as FDP#3). Plans were in place to transfer water to the Events Pond, but based on the recorded pond fill rate, an additional measure, such as exfiltration to FDP#5, was deemed necessary to avoid a direct discharge from the LDSP to Haggart Creek through FDP#3. As noted above, exfiltrating the water to ground was ascertained to have the lowest potential for an adverse response in potential receiving environments as opposed to a direct discharge to Haggart Creek.

Pumping was initiated first to the Events Pond at 14:00 on April 19, 2020, and then pumping to FDP#5 was initiated at 16:00 on April 20, 2020. Verbal notification was given to an Enforcement Officer from ECCC, on the morning of April 20, prior to discharge to FDP#5 commencing, and a follow up written notification was provided later that day. Monitoring of the LDSP water levels, pump outflows and ditch inflows continued over the next week and demonstrated that continued pumping to both the Events Pond and the sump would allow a return to a safe operating capacity (deemed to be sufficient to hold a 5-year rainfall runoff event) in the LDSP over time. The time period required was dependent on weather conditions (and ultimately snowmelt rate) and pumping rates.

Based on monitoring data, discharge to ground at FDP#5 for a period of nine days (April 20-28, 2020), was undertaken at which time the safe operating capacity of the pond was reached. Following cessation of discharge to FDP #5 on April 28, pumping to the Events Pond continued to be necessary to address continuing high snowmelt runoff rates and to maintain the safe operating capacity.

The MDMER requires a weekly collection of water samples to be analyzed for Schedule 4, deleterious substance criteria and a monthly collection of water samples for effluent characterisation and acute lethality testing. Water quality results for these sample events indicated that Schedule 4 criteria were exceeded for the monthly mean and grab sample TSS criteria. The water quality results characterised the discharge water prior to filtering though sump alluvium.

3 RELEASE DETAILS

3.1 PRE-DISCHARGE SAMPLING

In preparation for the planned release of contact water from the LDSP, water quality samples were collected on April 9, 13, 14, 15, and 16 at station LDSPs (i.e., the LDSP shoreline adjacent to the pump caisson low level outlet which is a pre-discharge sampling location) for lab analyses. The sample collected on April 16 was taken after the breach of Ditch A. Pertinent water quality results are shown in Table 3-1 (full results in Appendix A), and shows that TSS of the April 16 sample had increased significantly (2.6X) from the previous day reflecting water quality deterioration at the LLO after the breach. Based on visual observations of the water clarity in the pond (and before final lab results were received), the planned discharge to Haggart Creek, through FDP#3, was cancelled.

Table 3-1: LDSPs Pre-Discharge TSS Water Quality Results

Date of Sample	Time Sampled	Analysis Type	TSS (mg/L)	Result Receipt Date	ALS Sample ID
April 9, 2020	10:00	ALS Full Suite	3.1	Prelim April 16, 2020 Final April 27, 2020	VA20A4682-002
April 13, 2020	12:00	TSS & TDS	4.8	Prelim April 19, 2020 Final April 20, 2020	L2437811-1
April 14 2020	13:00	TSS & TDS	8.4	Prelim April 19, 2020 Final April 20, 2020	L2437811-2
April 15, 2020	13:00	TSS & TDS	10.4	Prelim April 19, 2020 Final April 20, 2020	L2437811-3
April 16, 2020	11:55	ALS Full Suite	27.2	Final April 27, 2020	VA20A5041-001

In preparation for the initially planned discharge to FDP#3, a pre-discharge sample was collected on April 9, 2020 from LDSPs and an acute lethality single concentration test for 96 hr rainbow trout and 48 hr Daphnia magna was performed by Nautilus Environmental Labs in Burnaby, BC. The results for these tests are included in Appendix B. The results for these tests indicated that the contact water within the LDSP was not acutely lethal, and showed 100% survival for both rainbow trout and Daphnia magna.

3.2 EVENT DESCRIPTION

During the few days leading up to the release, it became apparent through daily monitoring of the LDSP water levels that the available capacity of the pond was rapidly decreasing. While considering the volume of the remaining snowpack on north facing areas of the Project, and to ensure that a controlled discharge could be undertaken with the lowest potential for environmental impact, the decision was made to pump water from the LDSP to FDP#5 in the Dublin Gulch valley in concert with the transfer of a portion of the LDSP water to the Events Pond. Pumping to FDP#5 commenced on April 20, 2020 at 16:30 and continued to April 28, 2020 at 07:30. Water quality sampling and flow monitoring at the frequencies and scope required by the MDMER for effluent and the potential receiving water body were collected during the discharge from April 20 – 28, 2020., A deleterious substance sample was collected at FDP#5 twice during the nine days (April 20 and April 27, once per week). The quarterly effluent characterisation sample, along with the monthly acute lethality sample for Daphnia Magna and

Rainbow Trout was taken on April 21. The acute lethality sample was taken as soon as practicable subject to sample logistics and holding time considerations. Field parameters were collected on all other days.

The discharge volumes and TSS Schedule 4 exceedances at FDP#5 are provided in Table 3-2 below for April 20-28, 2020. Analytical results are included in Appendix A.

Table 3-2: Summary of Water Volumes Deposited to FDP#5 and TSS Schedule 4 Authorised Limit Exceedances

Date of Sample Collection	Time Sampled	TSS (mg/L)	MDMER TSS Limit (mg/L)	Estimated Discharge Quantity (m^3)	Sample Designation	Result Receipt Date	ALS Sample ID
April 20, 2020	18:30	61.9	30.00	2,960	Deleterious Substance Sample	Final June 10, 2020	VA20A5185-001
April 21, 2020	13:40	52.9		8,880	Effluent Characterisation Sample	Prelim April 30, 2020 Final May 7, 2020	VA20A5153
April 22, 2020	14:41	N/S		6,720	-	-	-
April 23, 2020	10:50	N/S		6,350	-	-	-
April 24, 2020	8:28	N/S		4,935	-	-	-
April 25, 2020	11:30	N/S		2,350	-	-	-
April 26, 2020	15:25	N/S		5,640	-	-	-
April 27, 2020	10:40	52.8		4,355	Deleterious Substance Sample	Prelim May 7, 2020 Final May 19, 2020	WR2000165-001
April 28, 2020	-	N/S		940	-	-	-
Mean Monthly TSS		55.9	15	-			
Total Discharge Volume				**43,130**			

Notes:
N/S – Not sampled, parameter analysis not required under MDMER

Laboratory results indicated that on April 20, 21 and 27, 2020 the Schedule 4 authorized discharge limits for the controlled discharge exceeded MDMER criteria for grab and monthly mean TSS. All other parameters were within Schedule 4 deleterious substance criteria.

During discharge to FDP#5, water from the LDSP continued to be pumped to the Events Pond, minimizing total discharge to FDP#5, as per the freshet management strategy noted above. When the exfiltration pumps were turned off in the early morning of April 28, water transfers from the LDSP to the Events Pond continued, to restore desired available storage capacity within the LDSP.

3.3 RECEIVING ENVIRONMENT MONITORING

Quarterly effluent characterisation water quality samples were taken at the Project reference and exposure stations on Haggart Creek shown below for Effluent and Water Quality Monitoring Studies under the MDMER:

- Upstream of the Project influence (W22); and,
- Within the Project influence downstream of the Dublin Gulch and Ditch C (W4) confluences

The field parameter and TSS analytical results for the April 21 samples on W4 and W22 are provided in Table 3-3 below.

Table 3-3: Receiving Environment and Project Area Watercourse Water Quality Results

STATION	DATE	TIME	Temp °C	DO mg/L	SPC uS/cm	pH	Turbidity NTU	TSS mg/L
			Field Parameters Internal					External
W22	21-Apr-20	11:50	0.0	11.71	297.6	7.26	2.39	<3.0
W4	21-Apr-20	11:15	0.1	12.36	253.2	7.39	137	308

Water quality in Haggart showed an increase in TSS between the reference (W22) and exposure (W4) Water Quality monitoring sites. Measured TSS from the FDP#5 effluent characterization sample on April 21 (53 mg/L) was well below the TSS levels seen at the potential receiving environment monitoring station W4 (308 mg/L), supporting the assumption that water discharged to FDP#5 would represent an insignificant source of TSS loading to the downgradient exposure site compared to TSS loadings released from the existing area.

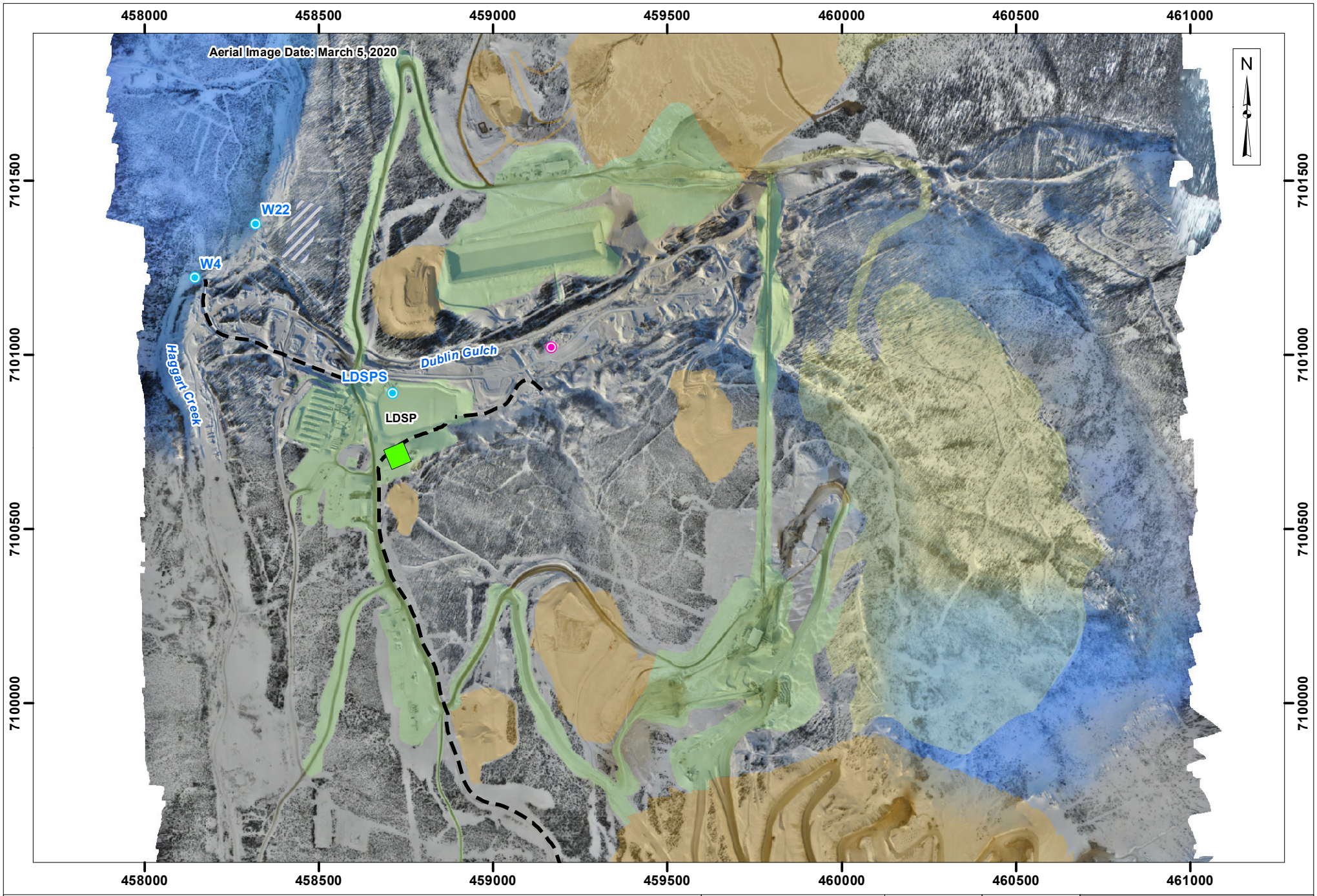
Furthermore, TSS results from the April 21 effluent characterization samples at the reference and exposure Water Quality monitoring stations, W22 (<3.0mg/L) and W4 (308mg/L), respectively, supports the assumption that the main source of TSS in the streams originates from the reaches along Dublin Gulch which discharges into Haggart Creek between W22 and W4. This data is indicative of melt water interacting with the historical Dublin Gulch Road, and remaining placer tailings and material within the Dublin Gulch Valley, which has been documented in previous years to have high TSS during freshet.

3.4 ACUTE LETHALITY TESTING

An effluent characterisation sample was collected on April 21, 2020 from water to be exfiltrated to FDP#5, and analyzed for an acute lethality single concentration test for 96-hour Rainbow trout and 48-hour Daphnia magna, and a sublethal toxicity test. The toxicity tests were taken as soon as practicable, subject to sample holding times and logistical constraints, within 24 hours of discharge commencement. The results for acute toxicity tests are included in Appendix B. The results for these tests show that the discharged water from the LDSP was not acutely lethal, and showed 100% survival for both Rainbow trout and Daphnia magna for the exfiltrated water (Table 3-4). Sublethal test results will be uploaded to the Environmental Effects Monitoring Electronic Reporter (EEMER) upon submittal of the Annual Report.

Table 3-4: Acute Lethality Testing Results

Sample Location on April 21, 2020	Percent survival in 100% (v/v) sample	
	Rainbow Trout	*Daphnia magna*
FDP#5 (Work Order #VA20A5153)	100	100



Legend:

- Exfiltration Sump (FDP#5)
- Water Quality Monitoring Station
- Breach Location
- Water Conveyances
- Reserved Area
- Construction Complete
- Partial Development
- Not Constructed

VICTORIA GOLD CORP

0 100 200 400
Metres

Projection:	Drawn By:	EAGLE GOLD PROJECT YUKON TERRITORY
NAD 83 UTM Zone 8N	HC	
Date:	Figure:	FDP#5 Effluent Deposit Location
2020/06/17	3.1	

4 IMPORTANT ENVIRONMENTAL AND SITE FACTORS

Despite early planning efforts by VGC, a number of environmental and site factors occurred that influenced the field decision to discharge contact water to ground at FDP#5. These included:

- Record snowfall about 45% above previously recorded maximum resulted in extremely high volumes of snowmelt reporting to the LDSP.
- As demonstrated in Figure 4-1, unseasonably warm temperatures were sustained from April 15 to April 22, where it was the first time in the year that temperatures ranged up to 10ºC and when both day and night temperatures were essentially above freezing. This condition occurred after a lengthy cold period that extended to April 12. While above zero temperatures occurred during the short period from April 12 to April 15, overall temperatures were not warm enough over a long enough stretch to generate significant snowmelt. Based on the temperature data alone, snowmelt rates would have increased substantially during April 15 to 22, especially during the 18th and 19th of April.

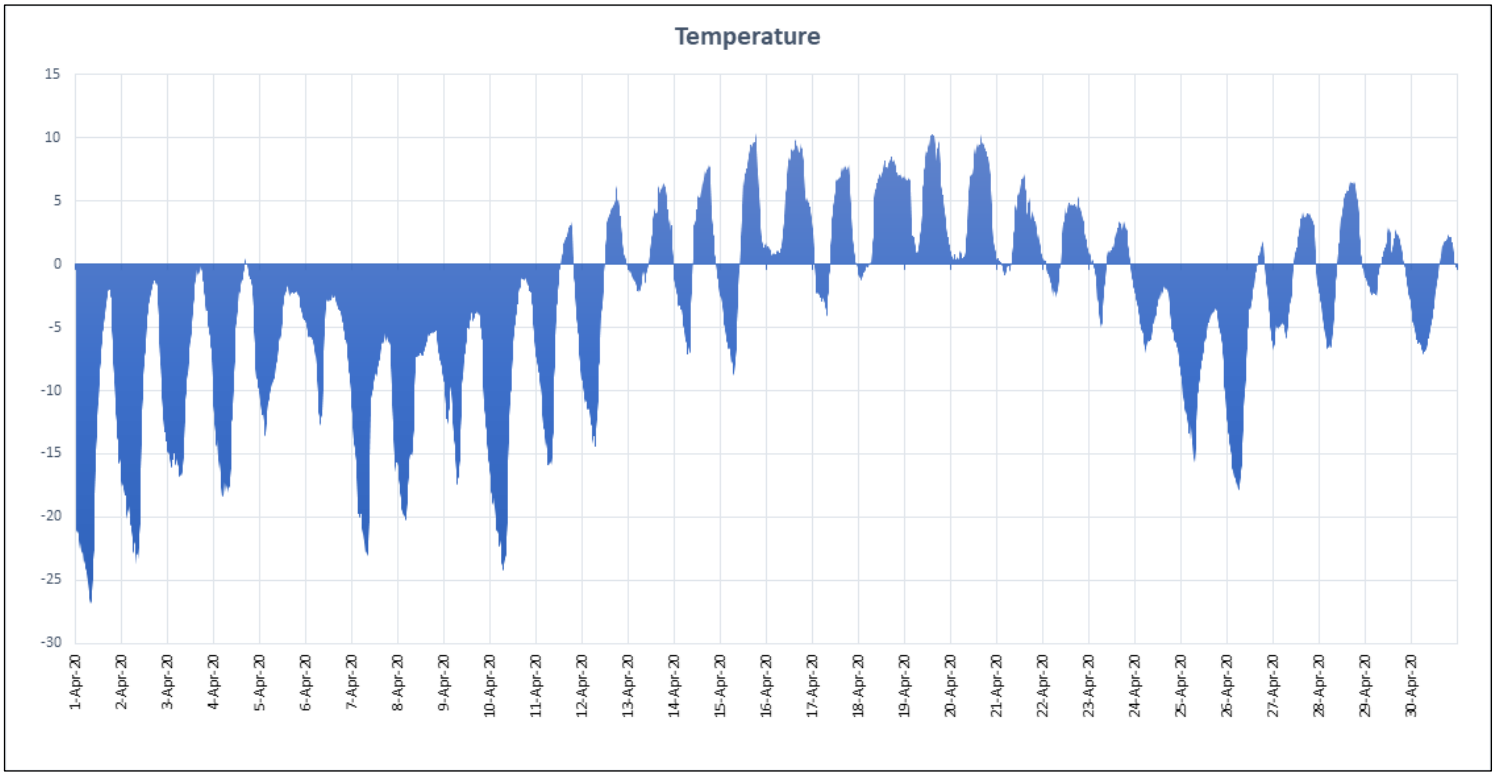


Figure 4.1: Camp Weather Station Temperature Data - April 2020

- Frozen conditions and ice cover in the LDSP prior to and during the rapid onset of freshet and ditch inflows severely impacted the ability to set up in pond flocculant treatment capabilities. Flocculant treatment

options that have the potential to be operable during freshet and LDSP ice cover conditions will be further investigated in 2020.

- The COVID-19 pandemic situation reduced staff capacity and restricted access to the site for potential replacement workers, either through isolation or health requirements mandated by the Yukon Chief Medical Officer. This made it harder for workers to proactively respond to necessary water management set up during late March and throughout April.
- LDSP pumping infrastructure to the Events Pond:
    - An 8-inch pipeline and pump was previously installed in 2019, but had been decommissioned for the winter. Re-installation of the line in 2020 was challenging with frozen conditions, high snowpack and a reduced workforce delaying the overall progress, thus not allowing sufficient time to reduce LDSP water levels by pumping to the Events Pond prior to the onset of the snowmelt. The pipeline is now a permanent installation and will remain in place for next spring freshet and ongoing management of LDSP water levels.
    - The 150 m^3/hr submersible pump located in the LDSP was not fully winterized and required maintenance before it could convey water to the Events Pond this spring. This pump will receive pre-winterization maintenance in 2020, and will be tested next spring prior to freshet.
    - Additional pumping infrastructure from the LDSP to the Events Pond was required to keep up with the substantial inflows to the LDSP due to the high snowpack and fast melt. The additional line and pump will be made available next spring prior to freshet.
- Snowpack and non-contact water management:
    - Snow pack management and non-contact surface water diversion was undertaken where possible at various locations around the Project prior to freshet. These efforts reduced the generation of mine contact water and the overall volume of water reporting to the LDSP. Snow was stockpiled away from sensitive water courses and LDSP infrastructure.



Photo 1: LDSP is still frozen with no documented inflow from ditches, April 14, 2020

5 SPILL REPORTING

5.1 YUKON GOVERNMENT, ECCC AND FNNND

On April 20, 2020, prior to any discharge, notification was provided to regulators and the First Nation of Na-Cho Nyak Dun (FNNND) of the planned discharge of mine contact water from the control pond to FDP#5 located east of the LDSP. The following people were included in these notifications:

- Yukon Energy Mines and Resources (EMR) Compliance Inspector.
- ECCC Enforcement Officer.
- FNNND Lands and Resources Manager.

On April 30, 2020, upon receipt of analytical laboratory results, notification was provided to the Yukon Spill Reporting hotline of water quality exceeding regulatory criteria discharged to the exfiltration sump. Follow up notification was provided to the above regulators and the FNNND with information on the water quality exceedance.

APPENDIX A

External Laboratory Results Water Quality

ALS Environmental

CERTIFICATE OF ANALYSIS

Work Order	: **VA20A4682**	Page	: 1 of 6
Client	: **Victoria Gold (Yukon) Corp.**	Laboratory	: Vancouver - Environmental
Contact	: Bill Bowden	Account Manager	: Hilary Woods
Address	: Suite 1000 - 1050 W. Pender St Vancouver BC Canada V6E 3S7	Address	: 8081 Lougheed Highway Burnaby BC Canada V5A 1W9
Telephone	: 867.456.7700 ext. 6381	Telephone	: +1 604 253 4188
Project	: Containment Pond Pre-Discharge	Date Samples Received	: 10-Apr-2020 14:35
PO	: 14043	Date Analysis Commenced	: 11-Apr-2020
C-O-C number	: 20200409	Issue Date	: 27-Apr-2020 16:20
Sampler	: KT/BB		
Site	: ----		
Quote number	: Q68199		
No. of samples received	: 2		
No. of samples analysed	: 2		

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QC Interpretive report to assist with Quality Review and Sample Receipt Notification (SRN).

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is conducted in accordance with US FDA 21 CFR Part 11.

Signatories	*Position*	*Laboratory Department*
Aaron Yu	Laboratory Analyst	Metals, Burnaby, British Columbia
Amy Liang	Analsyt	Inorganics - Water Quality, Burnaby, British Columbia
Courtney Cox	Analsyt	Inorganics - Water Quality, Burnaby, British Columbia
Dan Gebert		Metals, Burnaby, British Columbia
Harsha Attanayake	Analsyt	Inorganics - Water Quality, Burnaby, British Columbia
Hilary Woods	Account Manager	Internal Subcontracting, Fort Collins, Colorado
Janice Pearson	Account Manager Assistant	External Subcontracting, Burnaby, British Columbia
Jashan Kaur	Lab Assistant	Metals, Burnaby, British Columbia
Kenson Lo		Metals, Burnaby, British Columbia
Kim Jensen	Department Manager - Metals	Inorganics - Water Quality, Burnaby, British Columbia
Lindsay Gung	Supervisor - Water Chemistry	Inorganics - Water Quality, Burnaby, British Columbia
Richard Chong		Inorganics - Water Quality, Burnaby, British Columbia

General Comments

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Refer to the ALS Quality Control Interpretive report (QCI) for applicable references and methodology summaries. Reference methods may incorporate modifications to improve performance.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

Please refer to Quality Control Interpretive report (QCI) for information regarding Holding Time compliance.

Key : CAS Number: Chemical Abstracts Services number is a unique identifier assigned to discrete substances
LOR: Limit of Reporting (detection limit).

Unit	*Description*
-	No Unit
%	percent
µS/cm	Microsiemens per centimetre
Bq/L	Becquerels per litre
meq/L	milliequivalents per litre
mg/L	milligrams per litre
NTU	nephelometric turbidity units
pH units	pH units

<: less than.

>: greater than.

Surrogate: An analyte that is similar in behavior to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.

Test results reported relate only to the samples as received by the laboratory.

UNLESS OTHERWISE STATED on SRN or QCI Report, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

Analytical results in reports identified as "Preliminary Report" are considered authorized for use.

Analytical Results

Sub-Matrix: **Water**
(Matrix: **Water**)

Analyte	CAS Number	Method	LOR	Unit	Client sample ID	Events Pond	LDSPS	----	----	----
					Client sampling date / time	08-Apr-2020 15:00	09-Apr-2020 10:00	----	----	----
						VA20A4682-001	VA20A4682-002	--------	--------	--------
						Result	Result	----	----	----
Physical Tests										
alkalinity, total (as CaCO3)	----	E290	1.0	mg/L		82.8	222	----	----	----
conductivity	----	E100	2.0	µS/cm		220	601	----	----	----
hardness (as CaCO3), dissolved	----	EC100	0.60	mg/L		125	327	----	----	----
hardness (as CaCO3), from total Ca/Mg	----	EC100A	0.60	mg/L		122	337	----	----	----
pH	----	E108	0.10	pH units		7.81	7.67	----	----	----
solids, total dissolved [TDS], calculated	----	EC103	1.0	mg/L		151	414	----	----	----
solids, total suspended [TSS]	----	E160-H	3.0	mg/L		3.1	3.1	----	----	----
turbidity	----	E121	0.10	NTU		20.9	0.47	----	----	----
pH @ 15°C (WSER)	----	E108A	0.10	pH units		8.02	7.81	----	----	----
Anions and Nutrients										
ammonia, total (as N)	7664-41-7	E298	0.0050	mg/L		0.133	0.0253	----	----	----
ammonia, un-ionized (as N), 15C (WSER)	7664-41-7	EC298	0.0010	mg/L		0.0037	<0.0010	----	----	----
bromide	24959-67-9	E235.Br-L	0.050	mg/L		<0.050	<0.050	----	----	----
chloride	16887-00-6	E235.Cl	0.50	mg/L		3.94	4.26	----	----	----
fluoride	16984-48-8	E235.F	0.020	mg/L		0.132	0.182	----	----	----
Kjeldahl nitrogen, total [TKN]	----	E318	0.050	mg/L		0.236	0.196	----	----	----
nitrate (as N)	14797-55-8	E235.NO3-L	0.0050	mg/L		0.215	0.182	----	----	----
nitrite (as N)	14797-65-0	E235.NO2-L	0.0010	mg/L		0.0223	<0.0010	----	----	----
nitrogen, total	7727-37-9	E366	0.030	mg/L		0.443	0.316	----	----	----
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0010	mg/L		<0.0010	0.0036	----	----	----
phosphorus, total	7723-14-0	E372-U	0.0020	mg/L		0.0121	0.0067	----	----	----
phosphorus, total dissolved	7723-14-0	E375-T	0.0020	mg/L		0.0032	0.0049	----	----	----
sulfate (as SO4)	14808-79-8	E235.SO4	0.30	mg/L		37.9	141	----	----	----
Cyanides										
cyanide, total	----	E333	0.0050	mg/L		0.0053	<0.0050	----	----	----
cyanide, weak acid dissociable	----	E336	0.0050	mg/L		<0.0050	<0.0050	----	----	----
Organic / Inorganic Carbon										
carbon, dissolved organic [DOC]	----	E358-L	0.50	mg/L		2.92	3.52	----	----	----
carbon, total organic [TOC]	----	E355-L	0.50	mg/L		3.48	3.57	----	----	----
Bioassays										

Analytical Results

Sub-Matrix: **Water**
(Matrix: **Water**)

Analyte	CAS Number	Method	LOR	Unit	Client sample ID	Events Pond	LDSPS	----	----	----
					Client sampling date / time	08-Apr-2020 15:00	09-Apr-2020 10:00	----	----	----
						VA20A4682-001	VA20A4682-002	--------	--------	--------
						Result	Result	----	----	----
Bioassays										
Daphnia magna LC50	----	DAP-LC50-48	-	-		see attached	see attached	----	----	----
trout bioassay LC50	----	TRT-LC50-96	-	-		see attached	see attached	----	----	----
Ion Balance										
anion sum	----	EC101	0.10	meq/L		2.58	7.52	----	----	----
cation sum	----	EC101	0.10	meq/L		2.72	6.90	----	----	----
ion balance (cation-anion difference)	----	EC101	0.010	%		2.64	4.30	----	----	----
Total Metals										
aluminum, total	7429-90-5	E420	0.0030	mg/L		0.793	0.0298	----	----	----
antimony, total	7440-36-0	E420	0.00010	mg/L		0.00456	0.00446	----	----	----
arsenic, total	7440-38-2	E420	0.00010	mg/L		0.0417	0.0498	----	----	----
barium, total	7440-39-3	E420	0.00010	mg/L		0.0259	0.0923	----	----	----
beryllium, total	7440-41-7	E420	0.000020	mg/L		0.000033	<0.000020	----	----	----
bismuth, total	7440-69-9	E420	0.000050	mg/L		0.000355	0.000053	----	----	----
boron, total	7440-42-8	E420	0.010	mg/L		<0.010	<0.010	----	----	----
cadmium, total	7440-43-9	E420	0.0000050	mg/L		0.0000539	0.0000224	----	----	----
calcium, total	7440-70-2	E420	0.050	mg/L		31.8	75.3	----	----	----
chromium, total	7440-47-3	E420.Cr-L	0.00010	mg/L		0.00096	0.00020	----	----	----
cobalt, total	7440-48-4	E420	0.00010	mg/L		0.00055	0.00010	----	----	----
copper, total	7440-50-8	E420	0.00050	mg/L		0.00222	0.00150	----	----	----
iron, total	7439-89-6	E420	0.010	mg/L		0.590	0.038	----	----	----
lead, total	7439-92-1	E420	0.000050	mg/L		0.00115	0.000070	----	----	----
lithium, total	7439-93-2	E420	0.0010	mg/L		0.0224	0.0136	----	----	----
magnesium, total	7439-95-4	E420	0.100	mg/L		10.4	36.3	----	----	----
manganese, total	7439-96-5	E420	0.00010	mg/L		0.0361	0.00594	----	----	----
mercury, total	7439-97-6	E508	0.0000050	mg/L		<0.0000050	<0.0000050	----	----	----
molybdenum, total	7439-98-7	E420	0.000050	mg/L		0.000956	0.00179	----	----	----
nickel, total	7440-02-0	E420	0.00050	mg/L		0.00297	0.00410	----	----	----
phosphorus, total	7723-14-0	E420	0.050	mg/L		<0.050	<0.050	----	----	----
potassium, total	7440-09-7	E420	0.100	mg/L		2.63	4.23	----	----	----
selenium, total	7782-49-2	E420	0.000050	mg/L		0.000349	0.000424	----	----	----
silicon, total	7440-21-3	E420	0.10	mg/L		3.46	4.61	----	----	----

Analytical Results

Sub-Matrix: **Water**
(Matrix: **Water**)

Analyte	CAS Number	Method	LOR	Unit	Client sample ID	Events Pond	LDSPS	----	----	----
					Client sampling date / time	08-Apr-2020 15:00	09-Apr-2020 10:00	----	----	----
						VA20A4682-001	VA20A4682-002	--------	--------	--------
						Result	Result	----	----	----
Total Metals										
silver, total	7440-22-4	E420	0.000010	mg/L		0.000025	<0.000010	----	----	----
sodium, total	7440-23-5	E420	0.050	mg/L		3.00	5.98	----	----	----
strontium, total	7440-24-6	E420	0.00020	mg/L		0.166	0.470	----	----	----
sulfur, total	7704-34-9	E420	0.50	mg/L		15.0	48.8	----	----	----
thallium, total	7440-28-0	E420	0.000010	mg/L		0.000014	<0.000010	----	----	----
tin, total	7440-31-5	E420	0.00010	mg/L		0.00033	<0.00010	----	----	----
titanium, total	7440-32-6	E420	0.00030	mg/L		0.0166	0.00112	----	----	----
uranium, total	7440-61-1	E420	0.000010	mg/L		0.00161	0.00783	----	----	----
vanadium, total	7440-62-2	E420	0.00050	mg/L		0.00141	0.00056	----	----	----
zinc, total	7440-66-6	E420	0.0030	mg/L		0.0097	0.0041	----	----	----
zirconium, total	7440-67-7	E420	0.00030	mg/L		0.00042	<0.00030	----	----	----
Dissolved Metals										
aluminum, dissolved	7429-90-5	E421	0.0010	mg/L		0.0140	0.0026	----	----	----
antimony, dissolved	7440-36-0	E421	0.00010	mg/L		0.00398	0.00431	----	----	----
arsenic, dissolved	7440-38-2	E421	0.00010	mg/L		0.0366	0.0516	----	----	----
barium, dissolved	7440-39-3	E421	0.00010	mg/L		0.0178	0.0907	----	----	----
beryllium, dissolved	7440-41-7	E421	0.000020	mg/L		<0.000020	<0.000020	----	----	----
bismuth, dissolved	7440-69-9	E421	0.000050	mg/L		<0.000050	<0.000050	----	----	----
boron, dissolved	7440-42-8	E421	0.010	mg/L		<0.010	<0.010	----	----	----
cadmium, dissolved	7440-43-9	E421	0.0000050	mg/L		0.0000318	0.0000132	----	----	----
calcium, dissolved	7440-70-2	E421	0.050	mg/L		33.3	73.2	----	----	----
chromium, dissolved	7440-47-3	E421.Cr-L	0.00010	mg/L		0.00018	0.00013	----	----	----
cobalt, dissolved	7440-48-4	E421	0.00010	mg/L		0.00022	0.00010	----	----	----
copper, dissolved	7440-50-8	E421	0.00020	mg/L		0.00099	0.00136	----	----	----
iron, dissolved	7439-89-6	E421	0.010	mg/L		<0.010	<0.010	----	----	----
lead, dissolved	7439-92-1	E421	0.000050	mg/L		<0.000050	<0.000050	----	----	----
lithium, dissolved	7439-93-2	E421	0.0010	mg/L		0.0233	0.0138	----	----	----
magnesium, dissolved	7439-95-4	E421	0.100	mg/L		10.3	35.0	----	----	----
manganese, dissolved	7439-96-5	E421	0.00010	mg/L		0.0245	0.00164	----	----	----
mercury, dissolved	7439-97-6	E509	0.0000050	mg/L		<0.0000050	<0.0000050	----	----	----
molybdenum, dissolved	7439-98-7	E421	0.000050	mg/L		0.000925	0.00169	----	----	----

Analytical Results

Sub-Matrix: **Water**
(Matrix: **Water**)

Analyte	CAS Number	Method	LOR	Unit	Client sample ID	Events Pond	LDSPS	----	----	----
					Client sampling date / time	08-Apr-2020 15:00	09-Apr-2020 10:00	----	----	----
						VA20A4682-001	**VA20A4682-002**	--------	--------	--------
						Result	Result	----	----	----
Dissolved Metals										
nickel, dissolved	7440-02-0	E421	0.00050	mg/L		0.00156	0.00543	----	----	----
phosphorus, dissolved	7723-14-0	E421	0.050	mg/L		<0.050	<0.050	----	----	----
potassium, dissolved	7440-09-7	E421	0.100	mg/L		2.43	4.26	----	----	----
selenium, dissolved	7782-49-2	E421	0.000050	mg/L		0.000330	0.000488	----	----	----
silicon, dissolved	7440-21-3	E421	0.050	mg/L		2.39	4.51	----	----	----
silver, dissolved	7440-22-4	E421	0.000010	mg/L		<0.000010	<0.000010	----	----	----
sodium, dissolved	7440-23-5	E421	0.050	mg/L		3.07	5.97	----	----	----
strontium, dissolved	7440-24-6	E421	0.00020	mg/L		0.156	0.455	----	----	----
sulfur, dissolved	7704-34-9	E421	0.50	mg/L		15.0	47.6	----	----	----
thallium, dissolved	7440-28-0	E421	0.000010	mg/L		<0.000010	<0.000010	----	----	----
tin, dissolved	7440-31-5	E421	0.00010	mg/L		0.00024	<0.00010	----	----	----
titanium, dissolved	7440-32-6	E421	0.00030	mg/L		<0.00030	<0.00030	----	----	----
uranium, dissolved	7440-61-1	E421	0.000010	mg/L		0.00155	0.00750	----	----	----
vanadium, dissolved	7440-62-2	E421	0.00050	mg/L		<0.00050	<0.00050	----	----	----
zinc, dissolved	7440-66-6	E421	0.0010	mg/L		0.0047	0.0022	----	----	----
zirconium, dissolved	7440-67-7	E421	0.00030	mg/L		<0.00030	<0.00030	----	----	----
dissolved metals filtration location	----	EP421	-	-		Field	Field	----	----	----
dissolved mercury filtration location	----	EP509	-	-		Field	Field	----	----	----
Radiological Parameters										
radium-226	13982-63-3	RA226-MMER	0.01	Bq/L		See attached	See attached	----	----	----

Please refer to the General Comments section for an explanation of any qualifiers detected.

STRATAGOLD CORPORATION
ATTN: Bill Bowden
Suite 1000 - 1050 W. Pender St
Vancouver BC V6E 3S7

Date Received: 16-APR-20
Report Date: 20-APR-20 16:35 (MT)
Version: FINAL

Client Phone: 604-682-5122

Certificate of Analysis

Lab Work Order #: L2437811

Project P.O. #: 14043
Job Reference: LDSPS INTERNAL
C of C Numbers: 1 OF 1
Legal Site Desc:

Hilary Woods
Account Manager

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ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID	L2437811-1	L2437811-2	L2437811-3		
	Description	Water	Water	Water		
	Sampled Date	13-APR-20	14-APR-20	15-APR-20		
	Sampled Time					
	Client ID	LDSPS	LDSPS	LDSPS		
Grouping	**Analyte**					
WATER						
Physical Tests	pH (pH)	8.23	8.22	8.21		
	Total Suspended Solids (mg/L)	4.8	8.4	10.4		
	Total Dissolved Solids (mg/L)	425	372	314		
	Turbidity (NTU)	1.28	5.07	10.0		

Reference Information

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
EC-SCREEN-VA	Water	Conductivity Screen (Internal Use Only)	APHA 2510
Qualitative analysis of conductivity where required during preparation of other tests - e.g. TDS, metals, etc.			
PH-PCT-VA	Water	pH by Meter (Automated)	APHA 4500-H pH Value
This analysis is carried out using procedures adapted from APHA Method 4500-H "pH Value". The pH is determined in the laboratory using a pH electrode It is recommended that this analysis be conducted in the field.			
TDS-VA	Water	Total Dissolved Solids by Gravimetric	APHA 2540 C - GRAVIMETRIC
This analysis is carried out using procedures adapted from APHA Method 2540 "Solids". Solids are determined gravimetrically. Total Dissolved Solids (TDS) are determined by filtering a sample through a glass fibre filter, TDS is determined by evaporating the filtrate to dryness at 180 degrees celsius.			
TSS-VA	Water	Total Suspended Solids by Gravimetric	APHA 2540 D - GRAVIMETRIC
This analysis is carried out using procedures adapted from APHA Method 2540 "Solids". Solids are determined gravimetrically. Total Suspended Solids (TSS) are determined by filtering a sample through a glass fibre filter, TSS is determined by drying the filter at 104 degrees celsius. Samples containing very high dissolved solid content (i.e. seawaters, brackish waters) may produce a positive bias by this method. Alternate analysis methods are available for these types of samples.			
TURBIDITY-VA	Water	Turbidity by Meter	APHA 2130 Turbidity
This analysis is carried out using procedures adapted from APHA Method 2130 "Turbidity". Turbidity is determined by the nephelometric method.			

** ALS test methods may incorporate modifications from specified reference methods to improve performance.

The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:

Laboratory Definition Code	Laboratory Location
VA	ALS ENVIRONMENTAL - VANCOUVER, BRITISH COLUMBIA, CANADA

Chain of Custody Numbers:

1 OF 1

GLOSSARY OF REPORT TERMS

Surrogate - A compound that is similar in behaviour to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.
mg/kg - milligrams per kilogram based on dry weight of sample.
mg/kg wwt - milligrams per kilogram based on wet weight of sample.
mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight of sample.
mg/L - milligrams per litre.
< - Less than.
D.L. - The reported Detection Limit, also known as the Limit of Reporting (LOR).
N/A - Result not available. Refer to qualifier code and definition for explanation.

Test results reported relate only to the samples as received by the laboratory.
UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.
Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.

ALS Environmental

www.alsglobal.com

Chain of Custody Reques

Canada Toll Free

L2437811-COFC

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nly)

COC Number:

Page of

Report To	Contact and company name below will appear on the final report
Company:	StrataGold Corporation
Contact:	Bill Bowden
Phone:	867-456-7700 x 6381
	Company address below will appear on the final report
Street:	100-1050 West Pender Street
City/Province:	Vancouver, BC
Postal Code:	V6E 3S7
Invoice To	Same as Report To ☐ YES ☑ NO
	Copy of Invoice with Report ☑ YES ☐ NO
Company:	STR125-EAGLEGOLD-VA
Contact:	

Selec	
Quali	
☐ Co	
Selec	
Email 1 or Fax	kbabin@vitgoldcorp.com, swilbur@vitgoldcorp.com
Email 2	pemerson@vitgoldcorp.com, lrear@vitgoldcorp.com
Email 3	bbowden@vitgoldcorp.com, hcoyle@vitgoldcorp.co

Invoice Distribution

Select Invoice Distribution: ☐ EMAIL ☐ MAIL ☐ FAX

Email 1 or Fax	accountspayable@vitgoldcorp.com
Email 2	bbowden@vitgoldcorp.com

Project Information

ALS Account # / Quote #:	STRG100 Q68199
Job #:	LDSPS internal
PO / AFE:	14043
LSD:	

Oil and Gas Required Fields (client use)

AFE/Cost Center:	PO#
Major/Minor Code:	Routing Code:
Requisitioner:	
Location:	

ALS Lab Work Order # (lab use only):

ALS Contact: Hilary Woods **Sampler:** bb

ALS Sample # (lab use only)	Sample Identification and/or Coordinates (This description will appear on the report)	Date (dd-mmm-yy)	Time (hh:mm)	Sample Type	pH, TSS, TDS, Turb	SAMPLES ON HOLD	Sample is hazardous (please provide further detail)	NUMBER OF CONTAINERS
	LDSPS	13-Apr-20		water	E1			1
	LDSPS	14-Apr-20		water	E1			1
	LDSPS	15-Apr-20		water	E1			1

Select Service Level Below - Contact your AM to confirm all E&P TATs (surcharges may apply)

Regular [R] ☑ Standard TAT if received by 3 pm - business days - no surcharges apply

(Business days)
- 4 day [P4-20%] ☐
- 3 day [P3-25%] ☐
- 2 day [P2-50%] ☐

EMERGENCY
- 1 Business day [E1 - 100%] ☑
- Same Day, Weekend or Statutory holiday [E2 -200% (Laboratory opening fees may apply)] ☐

Date and Time Required for all E&P TATs:

For tests that can not be performed according to the service level selected, you will be contacted.

Analysis Request

Indicate Filtered (F), Preserved (P) or Filtered and Preserved (F/P) below

Drinking Water (DW) Samples[1] (client use)

Are samples taken from a Regulated DW System? ☐ YES ☑ NO

Are samples for human consumption/ use? ☐ YES ☑ NO

Special Instructions / Specify Criteria to add on report by clicking on the drop-down list below (electronic COC only)

Please include Yukon Government EQWin format

SAMPLE CONDITION AS RECEIVED (lab use only)

Frozen ☐ SIF Observations Yes ☐ No ☐

Ice Packs ☐ Ice Cubes ☐ Custody seal intact Yes ☐ No ☐

Cooling Initiated ☐

INITIAL COOLER TEMPERATURES °C	FINAL COOLER TEMPERATURES °C
13.0	5°C (Avg of 7)

SHIPMENT RELEASE (client use)

Released by:		Time:
Bill Bowden	April 15 2020	16:00

INITIAL SHIPMENT RECEPTION (lab use only)

Received by:	Date:	Time:
	16/4/2020	2:45

FINAL SHIPMENT RECEPTION (lab use only)

Received by:	Date:	Time:
JG	17 April	3:30 PM

REFER TO BACK PAGE FOR ALS LOCATIONS AND SAMPLING INFORMATION

WHITE - LABORATORY COPY YELLOW - CLIENT COPY

SEPT 2017 FRONT

Failure to complete all portions of this form may delay analysis. Please fill in this form LEGIBLY. By the use of this form the user acknowledges and agrees with the Terms and Conditions as specified on the back page of the white - report copy.

1. If any water samples are taken from a **Regulated Drinking Water (DW) System**, please submit using an **Authorized DW COC form**.

ALS Environmental

CERTIFICATE OF ANALYSIS

Work Order	: **VA20A5041**	Page	: 1 of 6
Client	: **Victoria Gold (Yukon) Corp.**	Laboratory	: Vancouver - Environmental
Contact	: Bill Bowden	Account Manager	: Hilary Woods
Address	: Suite 1000 - 1050 W. Pender St Vancouver BC Canada V6E 3S7	Address	: 8081 Lougheed Highway Burnaby BC Canada V5A 1W9
Telephone	: 867.456.7700 ext. 6381	Telephone	: +1 604 253 4188
Project	: Freshnet	Date Samples Received	: 20-Apr-2020 15:50
PO	: 14043	Date Analysis Commenced	: 20-Apr-2020
C-O-C number	: 20200416	Issue Date	: 27-Apr-2020 09:54
Sampler	: JW, PS		
Site	: ----		
Quote number	: Q68199		
No. of samples received	: 2		
No. of samples analysed	: 2		

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QC Interpretive report to assist with Quality Review and Sample Receipt Notification (SRN).

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is conducted in accordance with US FDA 21 CFR Part 11.

Signatories	*Position*	*Laboratory Department*
Angelo Salandanan	Lab Assistant	Metals, Burnaby, British Columbia
Bruna Botti	Analyst	Inorganics - Water Quality, Burnaby, British Columbia
Caitlin Macey	Team Leader - Inorganics	Inorganics - Water Quality, Burnaby, British Columbia
Cristina Alexandre	Supervisor - Metals ICP Instrumentation	Metals, Burnaby, British Columbia
Erick Magalhaes	Laboratory Analyst	Inorganics - Water Quality, Burnaby, British Columbia
Evan Ben-Oliel	Metal Analyst	Metals, Burnaby, British Columbia
Kevin Duarte	Team Leader - Inorganics	Inorganics - Water Quality, Burnaby, British Columbia
Lindsay Gung	Supervisor - Water Chemistry	Inorganics - Water Quality, Burnaby, British Columbia

General Comments

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Refer to the ALS Quality Control Interpretive report (QCI) for applicable references and methodology summaries. Reference methods may incorporate modifications to improve performance.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

Please refer to Quality Control Interpretive report (QCI) for information regarding Holding Time compliance.

Key : CAS Number: Chemical Abstracts Services number is a unique identifier assigned to discrete substances
LOR: Limit of Reporting (detection limit).

Unit	*Description*
-	No Unit
%	percent
µS/cm	Microsiemens per centimetre
meq/L	milliequivalents per litre
mg/L	milligrams per litre
NTU	nephelometric turbidity units
pH units	pH units

<: less than.

>: greater than.

Surrogate: An analyte that is similar in behavior to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.

Test results reported relate only to the samples as received by the laboratory.

UNLESS OTHERWISE STATED on SRN or QCI Report, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

Analytical results in reports identified as "Preliminary Report" are considered authorized for use.

Qualifiers

Qualifier	*Description*
DTS	*Dissolved Sulfur concentration exceeds total. Negative bias on Total Sulfur suspected due to presence of volatile sulfur species lost during digestion.*

Analytical Results

Sub-Matrix: **Water**
(Matrix: **Water**)

Analyte	CAS Number	Method	LOR	Unit	Client sample ID	LDSPS	LLO	----	----	----
					Client sampling date / time	16-Apr-2020 11:55	16-Apr-2020 12:05	----	----	----
						VA20A5041-001	VA20A5041-002	--------	--------	--------
						Result	Result	----	----	----
Physical Tests										
alkalinity, total (as CaCO3)	----	E290	1.0	mg/L		36.6	95.0	----	----	----
conductivity	----	E100	2.0	µS/cm		172	15400	----	----	----
hardness (as CaCO3), dissolved	----	EC100	0.60	mg/L		81.0	123	----	----	----
hardness (as CaCO3), from total Ca/Mg	----	EC100A	0.60	mg/L		71.2	106	----	----	----
pH	----	E108	0.10	pH units		7.73	7.46	----	----	----
solids, total dissolved [TDS], calculated	----	EC103	1.0	mg/L		98.5	196	----	----	----
solids, total suspended [TSS]	----	E160-H	3.0	mg/L		27.2	11.8	----	----	----
turbidity	----	E121	0.10	NTU		29.0	18.8	----	----	----
Anions and Nutrients										
ammonia, total (as N)	7664-41-7	E298	0.0050	mg/L		0.0847	0.0687	----	----	----
bromide	24959-67-9	E235.Br-L	0.050	mg/L		<0.050	<0.050	----	----	----
chloride	16887-00-6	E235.Cl	0.50	mg/L		7.37	5.49	----	----	----
fluoride	16984-48-8	E235.F	0.020	mg/L		0.059	0.133	----	----	----
Kjeldahl nitrogen, total [TKN]	----	E318	0.050	mg/L		0.381	0.343	----	----	----
nitrate (as N)	14797-55-8	E235.NO3-L	0.0050	mg/L		0.264	0.382	----	----	----
nitrite (as N)	14797-65-0	E235.NO2-L	0.0010	mg/L		0.0055	0.0102	----	----	----
nitrogen, total	7727-37-9	E366	0.030	mg/L		0.568	0.640	----	----	----
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0010	mg/L		0.0054	0.0047	----	----	----
phosphorus, total	7723-14-0	E372-U	0.0020	mg/L		0.0520	0.0220	----	----	----
phosphorus, total dissolved	7723-14-0	E375-T	0.0020	mg/L		0.0099	0.0032	----	----	----
sulfate (as SO4)	14808-79-8	E235.SO4	0.30	mg/L		31.9	78.4	----	----	----
Organic / Inorganic Carbon										
carbon, dissolved organic [DOC]	----	E358-L	0.50	mg/L		1.78	2.13	----	----	----
carbon, total organic [TOC]	----	E355-L	0.50	mg/L		1.64	2.11	----	----	----
Ion Balance										
anion sum	----	EC101	0.10	meq/L		1.63	3.72	----	----	----
cation sum	----	EC101	0.10	meq/L		1.73	2.63	----	----	----
ion balance (cation-anion difference)	----	EC101	0.010	%		2.98	17.2	----	----	----
Total Metals										
aluminum, total	7429-90-5	E420	0.0030	mg/L		0.997	0.481	----	----	----

Analytical Results

Sub-Matrix: **Water**
(Matrix: **Water**)

Analyte	CAS Number	Method	LOR	Unit	Client sample ID	LDSPS	LLO	----	----	----
					Client sampling date / time	16-Apr-2020 11:55	16-Apr-2020 12:05	----	----	----
						VA20A5041-001	VA20A5041-002	--------	--------	--------
						Result	Result	----	----	----
Total Metals										
antimony, total	7440-36-0	E420	0.00010	mg/L		0.00407	0.00320	----	----	----
arsenic, total	7440-38-2	E420	0.00010	mg/L		0.0393	0.0392	----	----	----
barium, total	7440-39-3	E420	0.00010	mg/L		0.0252	0.0346	----	----	----
beryllium, total	7440-41-7	E420	0.000020	mg/L		0.000072	0.000038	----	----	----
bismuth, total	7440-69-9	E420	0.000050	mg/L		0.00242	0.000526	----	----	----
boron, total	7440-42-8	E420	0.010	mg/L		<0.010	<0.010	----	----	----
cadmium, total	7440-43-9	E420	0.0000050	mg/L		0.000118	0.000136	----	----	----
calcium, total	7440-70-2	E420	0.050	mg/L		22.4	28.4	----	----	----
chromium, total	7440-47-3	E420.Cr-L	0.00010	mg/L		0.00136	0.00085	----	----	----
cobalt, total	7440-48-4	E420	0.00010	mg/L		0.00123	0.00122	----	----	----
copper, total	7440-50-8	E420	0.00050	mg/L		0.00379	0.00414	----	----	----
iron, total	7439-89-6	E420	0.010	mg/L		1.47	0.966	----	----	----
lead, total	7439-92-1	E420	0.000050	mg/L		0.00882	0.00430	----	----	----
lithium, total	7439-93-2	E420	0.0010	mg/L		0.0035	0.0056	----	----	----
magnesium, total	7439-95-4	E420	0.100	mg/L		3.74	8.61	----	----	----
manganese, total	7439-96-5	E420	0.00010	mg/L		0.0494	0.0485	----	----	----
mercury, total	7439-97-6	E508	0.0000050	mg/L		0.0000051	0.0000056	----	----	----
molybdenum, total	7439-98-7	E420	0.000050	mg/L		0.00102	0.00129	----	----	----
nickel, total	7440-02-0	E420	0.00050	mg/L		0.00221	0.00252	----	----	----
phosphorus, total	7723-14-0	E420	0.050	mg/L		<0.050	<0.050	----	----	----
potassium, total	7440-09-7	E420	0.100	mg/L		1.50	2.09	----	----	----
selenium, total	7782-49-2	E420	0.000050	mg/L		0.000168	0.000401	----	----	----
silicon, total	7440-21-3	E420	0.10	mg/L		1.82	1.80	----	----	----
silver, total	7440-22-4	E420	0.000010	mg/L		0.000053	0.000024	----	----	----
sodium, total	7440-23-5	E420	0.050	mg/L		1.21	2.11	----	----	----
strontium, total	7440-24-6	E420	0.00020	mg/L		0.0860	0.132	----	----	----
sulfur, total	7704-34-9	E420	0.50	mg/L		9.17	18.4	----	----	----
thallium, total	7440-28-0	E420	0.000010	mg/L		0.000022	0.000014	----	----	----
tin, total	7440-31-5	E420	0.00010	mg/L		0.00016	0.00018	----	----	----
titanium, total	7440-32-6	E420	0.00030	mg/L		0.0417	0.0175	----	----	----
uranium, total	7440-61-1	E420	0.000010	mg/L		0.00118	0.00196	----	----	----

Analytical Results

Sub-Matrix: **Water**
(Matrix: **Water**)

Analyte	CAS Number	Method	LOR	Unit	Client sample ID	LDSPS	LLO	----	----	----
					Client sampling date / time	16-Apr-2020 11:55	16-Apr-2020 12:05	----	----	----
						VA20A5041-001	VA20A5041-002	--------	--------	--------
						Result	Result	----	----	----
Total Metals										
vanadium, total	7440-62-2	E420	0.00050	mg/L		0.00151	0.00096	----	----	----
zinc, total	7440-66-6	E420	0.0030	mg/L		0.0210	0.0142	----	----	----
zirconium, total	7440-67-7	E420	0.00030	mg/L		0.00040	<0.00030	----	----	----
Dissolved Metals										
aluminum, dissolved	7429-90-5	E421	0.0010	mg/L		0.0112	0.0094	----	----	----
antimony, dissolved	7440-36-0	E421	0.00010	mg/L		0.00152	0.00210	----	----	----
arsenic, dissolved	7440-38-2	E421	0.00010	mg/L		0.0131	0.0144	----	----	----
barium, dissolved	7440-39-3	E421	0.00010	mg/L		0.0143	0.0325	----	----	----
beryllium, dissolved	7440-41-7	E421	0.000020	mg/L		<0.000020	<0.000020	----	----	----
bismuth, dissolved	7440-69-9	E421	0.000050	mg/L		<0.000050	<0.000050	----	----	----
boron, dissolved	7440-42-8	E421	0.010	mg/L		<0.010	<0.010	----	----	----
cadmium, dissolved	7440-43-9	E421	0.0000050	mg/L		0.0000725	0.0000671	----	----	----
calcium, dissolved	7440-70-2	E421	0.050	mg/L		25.5	32.0	----	----	----
chromium, dissolved	7440-47-3	E421.Cr-L	0.00010	mg/L		<0.00010	0.00012	----	----	----
cobalt, dissolved	7440-48-4	E421	0.00010	mg/L		0.00051	0.00055	----	----	----
copper, dissolved	7440-50-8	E421	0.00020	mg/L		0.00080	0.00144	----	----	----
iron, dissolved	7439-89-6	E421	0.010	mg/L		<0.010	<0.010	----	----	----
lead, dissolved	7439-92-1	E421	0.000050	mg/L		<0.000050	<0.000050	----	----	----
lithium, dissolved	7439-93-2	E421	0.0010	mg/L		0.0032	0.0058	----	----	----
magnesium, dissolved	7439-95-4	E421	0.100	mg/L		4.18	10.6	----	----	----
manganese, dissolved	7439-96-5	E421	0.00010	mg/L		0.0296	0.0220	----	----	----
mercury, dissolved	7439-97-6	E509	0.0000050	mg/L		<0.0000050	<0.0000050	----	----	----
molybdenum, dissolved	7439-98-7	E421	0.000050	mg/L		0.000897	0.00121	----	----	----
nickel, dissolved	7440-02-0	E421	0.00050	mg/L		0.00072	0.00135	----	----	----
phosphorus, dissolved	7723-14-0	E421	0.050	mg/L		<0.050	<0.050	----	----	----
potassium, dissolved	7440-09-7	E421	0.100	mg/L		1.37	2.18	----	----	----
selenium, dissolved	7782-49-2	E421	0.000050	mg/L		0.000187	0.000346	----	----	----
silicon, dissolved	7440-21-3	E421	0.050	mg/L		0.563	1.50	----	----	----
silver, dissolved	7440-22-4	E421	0.000010	mg/L		<0.000010	<0.000010	----	----	----
sodium, dissolved	7440-23-5	E421	0.050	mg/L		1.44	2.34	----	----	----
strontium, dissolved	7440-24-6	E421	0.00020	mg/L		0.0955	0.151	----	----	----

Analytical Results

Sub-Matrix: **Water**
(Matrix: **Water**)

Analyte	CAS Number	Method	LOR	Unit	Client sample ID	LDSPS	LLO	----	----	----
					Client sampling date / time	16-Apr-2020 11:55	16-Apr-2020 12:05	----	----	----
						VA20A5041-001	VA20A5041-002	--------	--------	--------
						Result	Result	----	----	----
Dissolved Metals										
sulfur, dissolved	7704-34-9	E421	0.50	mg/L		12.4 DTS	21.0	----	----	----
thallium, dissolved	7440-28-0	E421	0.000010	mg/L		<0.000010	<0.000010	----	----	----
tin, dissolved	7440-31-5	E421	0.00010	mg/L		0.00012	0.00015	----	----	----
titanium, dissolved	7440-32-6	E421	0.00030	mg/L		<0.00030	<0.00030	----	----	----
uranium, dissolved	7440-61-1	E421	0.000010	mg/L		0.000966	0.00245	----	----	----
vanadium, dissolved	7440-62-2	E421	0.00050	mg/L		<0.00050	<0.00050	----	----	----
zinc, dissolved	7440-66-6	E421	0.0010	mg/L		0.0080	0.0057	----	----	----
zirconium, dissolved	7440-67-7	E421	0.00030	mg/L		<0.00030	<0.00030	----	----	----
dissolved mercury filtration location	----	EP509	-	-		Field	Field	----	----	----
dissolved metals filtration location	----	EP421	-	-		Field	Field	----	----	----

Please refer to the General Comments section for an explanation of any qualifiers detected.

ALS Environmental

CERTIFICATE OF ANALYSIS

Work Order	: **VA20A5185**	Page	: 1 of 6
Client	: **Victoria Gold (Yukon) Corp.**	Laboratory	: Vancouver - Environmental
Contact	: Bill Bowden	Account Manager	: Hilary Woods
Address	: Suite 1000 - 1050 W. Pender St Vancouver BC Canada V6E 3S7	Address	: 8081 Lougheed Highway Burnaby BC Canada V5A 1W9
Telephone	: 867.456.7700 ext. 6381	Telephone	: +1 604 253 4188
Project	: LDSP (April 21)	Date Samples Received	: 22-Apr-2020 14:15
PO	: 14043	Date Analysis Commenced	: 22-Apr-2020
C-O-C number	: 20200420B	Issue Date	: 29-Apr-2020 16:48
Sampler	: PE		
Site	: ----		
Quote number	: Q68199		
No. of samples received	: 1		
No. of samples analysed	: 1		

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QC Interpretive report to assist with Quality Review and Sample Receipt Notification (SRN).

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is conducted in accordance with US FDA 21 CFR Part 11.

Signatories	*Position*	*Laboratory Department*
Aaron Yu	Laboratory Analyst	Metals, Burnaby, British Columbia
Angela Ren	Team Leader - Metals	Metals, Burnaby, British Columbia
Bruna Botti	Analyst	Inorganics - Water Quality, Burnaby, British Columbia
Caitlin Macey	Team Leader - Inorganics	Inorganics - Water Quality, Burnaby, British Columbia
Ilnaz Badbezanchi	Team Leader - Metals preparation	Metals, Burnaby, British Columbia
Kinny Wu	Laboratory Analyst	Metals, Burnaby, British Columbia
Lindsay Gung	Supervisor - Water Chemistry	Inorganics - Water Quality, Burnaby, British Columbia
Robin Weeks	Team Leader - Metals	Inorganics - Water Quality, Burnaby, British Columbia
Robin Weeks	Team Leader - Metals	Metals, Burnaby, British Columbia

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Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

Please refer to Quality Control Interpretive report (QCI) for information regarding Holding Time compliance.

Key : CAS Number: Chemical Abstracts Services number is a unique identifier assigned to discrete substances
LOR: Limit of Reporting (detection limit).

Unit	*Description*
-	No Unit
%	percent
µS/cm	Microsiemens per centimetre
meq/L	milliequivalents per litre
mg/L	milligrams per litre
NTU	nephelometric turbidity units
pH units	pH units

<: less than.

>: greater than.

Surrogate: An analyte that is similar in behavior to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.

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UNLESS OTHERWISE STATED on SRN or QCI Report, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

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Analytical Results

Sub-Matrix: **Water**
(Matrix: **Water**)

Analyte	CAS Number	Method	LOR	Unit	Client sample ID	FDP5	----	----	----	----
					Client sampling date / time	20-Apr-2020	----	----	----	----
						VA20A5185-001	--------	--------	--------	--------
						Result	----	----	----	----
Physical Tests										
alkalinity, total (as CaCO3)	----	E290	1.0	mg/L		114	----	----	----	----
conductivity	----	E100	2.0	µS/cm		433	----	----	----	----
hardness (as CaCO3), dissolved	----	EC100	0.60	mg/L		202	----	----	----	----
hardness (as CaCO3), from total Ca/Mg	----	EC100A	0.60	mg/L		209	----	----	----	----
pH	----	E108	0.10	pH units		8.00	----	----	----	----
solids, total dissolved [TDS], calculated	----	EC103	1.0	mg/L		271	----	----	----	----
solids, total suspended [TSS]	----	E160-H	3.0	mg/L		61.9	----	----	----	----
turbidity	----	E121	0.10	NTU		147	----	----	----	----
Anions and Nutrients										
ammonia, total (as N)	7664-41-7	E298	0.0050	mg/L		0.0783	----	----	----	----
bromide	24959-67-9	E235.Br-L	0.050	mg/L		0.069	----	----	----	----
chloride	16887-00-6	E235.Cl	0.50	mg/L		18.4	----	----	----	----
fluoride	16984-48-8	E235.F	0.020	mg/L		0.167	----	----	----	----
Kjeldahl nitrogen, total [TKN]	----	E318	0.050	mg/L		0.531	----	----	----	----
nitrate (as N)	14797-55-8	E235.NO3-L	0.0050	mg/L		0.586	----	----	----	----
nitrite (as N)	14797-65-0	E235.NO2-L	0.0010	mg/L		0.0304	----	----	----	----
nitrogen, total	7727-37-9	E366	0.030	mg/L		0.898	----	----	----	----
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0010	mg/L		<0.0010	----	----	----	----
phosphorus, total	7723-14-0	E372-U	0.0020	mg/L		0.0718	----	----	----	----
phosphorus, total dissolved	7723-14-0	E375-T	0.0020	mg/L		0.0070	----	----	----	----
sulfate (as SO4)	14808-79-8	E235.SO4	0.30	mg/L		86.2	----	----	----	----
Cyanides										
cyanide, total	----	E333	0.0050	mg/L		<0.0050	----	----	----	----
cyanide, weak acid dissociable	----	E336	0.0050	mg/L		<0.0050	----	----	----	----
Organic / Inorganic Carbon										
carbon, dissolved organic [DOC]	----	E358-L	0.50	mg/L		7.09	----	----	----	----
carbon, total organic [TOC]	----	E355-L	0.50	mg/L		7.25	----	----	----	----
Ion Balance										
anion sum	----	EC101	0.10	meq/L		4.65	----	----	----	----
cation sum	----	EC101	0.10	meq/L		4.39	----	----	----	----
ion balance (cation-anion difference)	----	EC101	0.010	%		2.88	----	----	----	----

Analytical Results

Sub-Matrix: **Water**
(Matrix: **Water**)

Analyte	CAS Number	Method	LOR	Unit	Client sample ID	FDP5	----	----	----	----
					Client sampling date / time	20-Apr-2020	----	----	----	----
						VA20A5185-001	--------	--------	--------	--------
						Result	----	----	----	----
Total Metals										
aluminum, total	7429-90-5	E420	0.0030	mg/L		2.36	----	----	----	----
antimony, total	7440-36-0	E420	0.00010	mg/L		0.0119	----	----	----	----
arsenic, total	7440-38-2	E420	0.00010	mg/L		0.142	----	----	----	----
barium, total	7440-39-3	E420	0.00010	mg/L		0.0804	----	----	----	----
beryllium, total	7440-41-7	E420	0.000020	mg/L		0.000170	----	----	----	----
bismuth, total	7440-69-9	E420	0.000050	mg/L		0.00202	----	----	----	----
boron, total	7440-42-8	E420	0.010	mg/L		<0.010	----	----	----	----
cadmium, total	7440-43-9	E420	0.0000050	mg/L		0.000222	----	----	----	----
calcium, total	7440-70-2	E420	0.050	mg/L		56.6	----	----	----	----
chromium, total	7440-47-3	E420.Cr-L	0.00010	mg/L		0.00368	----	----	----	----
cobalt, total	7440-48-4	E420	0.00010	mg/L		0.00315	----	----	----	----
copper, total	7440-50-8	E420	0.00050	mg/L		0.0110	----	----	----	----
iron, total	7439-89-6	E420	0.010	mg/L		4.36	----	----	----	----
lead, total	7439-92-1	E420	0.000050	mg/L		0.0174	----	----	----	----
lithium, total	7439-93-2	E420	0.0010	mg/L		0.0095	----	----	----	----
magnesium, total	7439-95-4	E420	0.100	mg/L		16.4	----	----	----	----
manganese, total	7439-96-5	E420	0.00010	mg/L		0.176	----	----	----	----
mercury, total	7439-97-6	E508	0.0000050	mg/L		0.0000192	----	----	----	----
molybdenum, total	7439-98-7	E420	0.000050	mg/L		0.00432	----	----	----	----
nickel, total	7440-02-0	E420	0.00050	mg/L		0.00719	----	----	----	----
phosphorus, total	7723-14-0	E420	0.050	mg/L		0.062	----	----	----	----
potassium, total	7440-09-7	E420	0.100	mg/L		4.42	----	----	----	----
selenium, total	7782-49-2	E420	0.000050	mg/L		0.000739	----	----	----	----
silicon, total	7440-21-3	E420	0.10	mg/L		6.48	----	----	----	----
silver, total	7440-22-4	E420	0.000010	mg/L		0.000115	----	----	----	----
sodium, total	7440-23-5	E420	0.050	mg/L		5.83	----	----	----	----
strontium, total	7440-24-6	E420	0.00020	mg/L		0.307	----	----	----	----
sulfur, total	7704-34-9	E420	0.50	mg/L		28.0	----	----	----	----
thallium, total	7440-28-0	E420	0.000010	mg/L		0.000052	----	----	----	----
tin, total	7440-31-5	E420	0.00010	mg/L		<0.00010	----	----	----	----
titanium, total	7440-32-6	E420	0.00030	mg/L		0.0716	----	----	----	----
uranium, total	7440-61-1	E420	0.000010	mg/L		0.00614	----	----	----	----

Analytical Results

Sub-Matrix: **Water**
(Matrix: **Water**)

Analyte	CAS Number	Method	LOR	Unit	Client sample ID	FDP5	----	----	----	----
					Client sampling date / time	20-Apr-2020	----	----	----	----
						VA20A5185-001	--------	--------	--------	--------
						Result	----	----	----	----
Total Metals										
vanadium, total	7440-62-2	E420	0.00050	mg/L		0.00456	----	----	----	----
zinc, total	7440-66-6	E420	0.0030	mg/L		0.0314	----	----	----	----
zirconium, total	7440-67-7	E420	0.00030	mg/L		0.00081	----	----	----	----
Dissolved Metals										
aluminum, dissolved	7429-90-5	E421	0.0010	mg/L		0.0076	----	----	----	----
antimony, dissolved	7440-36-0	E421	0.00010	mg/L		0.00651	----	----	----	----
arsenic, dissolved	7440-38-2	E421	0.00010	mg/L		0.0210	----	----	----	----
barium, dissolved	7440-39-3	E421	0.00010	mg/L		0.0524	----	----	----	----
beryllium, dissolved	7440-41-7	E421	0.000020	mg/L		<0.000020	----	----	----	----
bismuth, dissolved	7440-69-9	E421	0.000050	mg/L		<0.000050	----	----	----	----
boron, dissolved	7440-42-8	E421	0.010	mg/L		<0.010	----	----	----	----
cadmium, dissolved	7440-43-9	E421	0.0000050	mg/L		0.0000681	----	----	----	----
calcium, dissolved	7440-70-2	E421	0.050	mg/L		56.3	----	----	----	----
chromium, dissolved	7440-47-3	E421.Cr-L	0.00010	mg/L		<0.00010	----	----	----	----
cobalt, dissolved	7440-48-4	E421	0.00010	mg/L		0.00081	----	----	----	----
copper, dissolved	7440-50-8	E421	0.00020	mg/L		0.00161	----	----	----	----
iron, dissolved	7439-89-6	E421	0.010	mg/L		0.012	----	----	----	----
lead, dissolved	7439-92-1	E421	0.000050	mg/L		0.000078	----	----	----	----
lithium, dissolved	7439-93-2	E421	0.0010	mg/L		0.0082	----	----	----	----
magnesium, dissolved	7439-95-4	E421	0.100	mg/L		15.0	----	----	----	----
manganese, dissolved	7439-96-5	E421	0.00010	mg/L		0.112	----	----	----	----
mercury, dissolved	7439-97-6	E509	0.0000050	mg/L		<0.0000050	----	----	----	----
molybdenum, dissolved	7439-98-7	E421	0.000050	mg/L		0.00424	----	----	----	----
nickel, dissolved	7440-02-0	E421	0.00050	mg/L		0.00208	----	----	----	----
phosphorus, dissolved	7723-14-0	E421	0.050	mg/L		<0.050	----	----	----	----
potassium, dissolved	7440-09-7	E421	0.100	mg/L		4.00	----	----	----	----
selenium, dissolved	7782-49-2	E421	0.000050	mg/L		0.000767	----	----	----	----
silicon, dissolved	7440-21-3	E421	0.050	mg/L		2.61	----	----	----	----
silver, dissolved	7440-22-4	E421	0.000010	mg/L		<0.000010	----	----	----	----
sodium, dissolved	7440-23-5	E421	0.050	mg/L		5.32	----	----	----	----
strontium, dissolved	7440-24-6	E421	0.00020	mg/L		0.295	----	----	----	----
sulfur, dissolved	7704-34-9	E421	0.50	mg/L		28.0	----	----	----	----

Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	FDP5	----	----	----	----
					Client sampling date / time	20-Apr-2020	----	----	----	----
Analyte	CAS Number	Method	LOR	Unit		VA20A5185-001	--------	--------	--------	--------
						Result	----	----	----	----
Dissolved Metals										
thallium, dissolved	7440-28-0	E421	0.000010	mg/L		<0.000010	----	----	----	----
tin, dissolved	7440-31-5	E421	0.00010	mg/L		<0.00010	----	----	----	----
titanium, dissolved	7440-32-6	E421	0.00030	mg/L		<0.00030	----	----	----	----
uranium, dissolved	7440-61-1	E421	0.000010	mg/L		0.00540	----	----	----	----
vanadium, dissolved	7440-62-2	E421	0.00050	mg/L		<0.00050	----	----	----	----
zinc, dissolved	7440-66-6	E421	0.0010	mg/L		0.0021	----	----	----	----
zirconium, dissolved	7440-67-7	E421	0.00030	mg/L		<0.00030	----	----	----	----
dissolved mercury filtration location	----	EP509	-	-		Field	----	----	----	----
dissolved metals filtration location	----	EP421	-	-		Field	----	----	----	----

Please refer to the General Comments section for an explanation of any qualifiers detected.

ALS Environmental

CERTIFICATE OF ANALYSIS

Work Order	: **VA20A5185**	Page	: 1 of 6
Amendment	: **1**		
Client	: **Victoria Gold (Yukon) Corp.**	Laboratory	: Vancouver - Environmental
Contact	: Bill Bowden	Account Manager	: Hilary Woods
Address	: Suite 1000 - 1050 W. Pender St Vancouver BC Canada V6E 3S7	Address	: 8081 Lougheed Highway Burnaby BC Canada V5A 1W9
Telephone	: 867.456.7700 ext. 6381	Telephone	: +1 604 253 4188
Project	: LDSP (April 21)	Date Samples Received	: 22-Apr-2020 14:15
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C-O-C number	: 20200420B	Issue Date	: 10-Jun-2020 10:14
Sampler	: PE		
Site	: ----		
Quote number	: Q68199		
No. of samples received	: 1		
No. of samples analysed	: 1		

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Angela Ren	Team Leader - Metals	Metals, Burnaby, British Columbia
Bruna Botti	Analyst	Inorganics - Water Quality, Burnaby, British Columbia
Caitlin Macey	Team Leader - Inorganics	Inorganics - Water Quality, Burnaby, British Columbia
Hilary Woods	Account Manager	Internal Subcontracting, Fort Collins, Colorado
Ilnaz Badbezanchi	Team Leader - Metals preparation	Metals, Burnaby, British Columbia
Kinny Wu	Laboratory Analyst	Metals, Burnaby, British Columbia
Lindsay Gung	Supervisor - Water Chemistry	Inorganics - Water Quality, Burnaby, British Columbia
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Robin Weeks	Team Leader - Metals	Metals, Burnaby, British Columbia

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pH units	pH units

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>: greater than.

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Analytical Results

Sub-Matrix: **Water**
(Matrix: **Water**)

Analyte	CAS Number	Method	LOR	Unit	Client sample ID	FDP5	----	----	----	----
					Client sampling date / time	20-Apr-2020	----	----	----	----
						VA20A5185-001	--------	--------	--------	--------
						Result	----	----	----	----
Physical Tests										
alkalinity, total (as CaCO3)	----	E290	1.0	mg/L		114	----	----	----	----
conductivity	----	E100	2.0	µS/cm		433	----	----	----	----
hardness (as CaCO3), dissolved	----	EC100	0.60	mg/L		202	----	----	----	----
hardness (as CaCO3), from total Ca/Mg	----	EC100A	0.60	mg/L		209	----	----	----	----
pH	----	E108	0.10	pH units		8.00	----	----	----	----
solids, total dissolved [TDS], calculated	----	EC103	1.0	mg/L		271	----	----	----	----
solids, total suspended [TSS]	----	E160-H	3.0	mg/L		61.9	----	----	----	----
turbidity	----	E121	0.10	NTU		147	----	----	----	----
Anions and Nutrients										
ammonia, total (as N)	7664-41-7	E298	0.0050	mg/L		0.0783	----	----	----	----
bromide	24959-67-9	E235.Br-L	0.050	mg/L		0.069	----	----	----	----
chloride	16887-00-6	E235.Cl	0.50	mg/L		18.4	----	----	----	----
fluoride	16984-48-8	E235.F	0.020	mg/L		0.167	----	----	----	----
Kjeldahl nitrogen, total [TKN]	----	E318	0.050	mg/L		0.531	----	----	----	----
nitrate (as N)	14797-55-8	E235.NO3-L	0.0050	mg/L		0.586	----	----	----	----
nitrite (as N)	14797-65-0	E235.NO2-L	0.0010	mg/L		0.0304	----	----	----	----
nitrogen, total	7727-37-9	E366	0.030	mg/L		0.898	----	----	----	----
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0010	mg/L		<0.0010	----	----	----	----
phosphorus, total	7723-14-0	E372-U	0.0020	mg/L		0.0718	----	----	----	----
phosphorus, total dissolved	7723-14-0	E375-T	0.0020	mg/L		0.0070	----	----	----	----
sulfate (as SO4)	14808-79-8	E235.SO4	0.30	mg/L		86.2	----	----	----	----
Cyanides										
cyanide, total	----	E333	0.0050	mg/L		<0.0050	----	----	----	----
cyanide, weak acid dissociable	----	E336	0.0050	mg/L		<0.0050	----	----	----	----
Organic / Inorganic Carbon										
carbon, dissolved organic [DOC]	----	E358-L	0.50	mg/L		7.09	----	----	----	----
carbon, total organic [TOC]	----	E355-L	0.50	mg/L		7.25	----	----	----	----
Ion Balance										
anion sum	----	EC101	0.10	meq/L		4.65	----	----	----	----
cation sum	----	EC101	0.10	meq/L		4.39	----	----	----	----
ion balance (cation-anion difference)	----	EC101	0.010	%		2.88	----	----	----	----

Analytical Results

Sub-Matrix: **Water**
(Matrix: **Water**)

Analyte	CAS Number	Method	LOR	Unit	Client sample ID	FDP5	----	----	----	----
					Client sampling date / time	20-Apr-2020	----	----	----	----
						VA20A5185-001	--------	--------	--------	--------
						Result	----	----	----	----
Total Metals										
aluminum, total	7429-90-5	E420	0.0030	mg/L		2.36	----	----	----	----
antimony, total	7440-36-0	E420	0.00010	mg/L		0.0119	----	----	----	----
arsenic, total	7440-38-2	E420	0.00010	mg/L		0.142	----	----	----	----
barium, total	7440-39-3	E420	0.00010	mg/L		0.0804	----	----	----	----
beryllium, total	7440-41-7	E420	0.000020	mg/L		0.000170	----	----	----	----
bismuth, total	7440-69-9	E420	0.000050	mg/L		0.00202	----	----	----	----
boron, total	7440-42-8	E420	0.010	mg/L		<0.010	----	----	----	----
cadmium, total	7440-43-9	E420	0.0000050	mg/L		0.000222	----	----	----	----
calcium, total	7440-70-2	E420	0.050	mg/L		56.6	----	----	----	----
chromium, total	7440-47-3	E420.Cr-L	0.00010	mg/L		0.00368	----	----	----	----
cobalt, total	7440-48-4	E420	0.00010	mg/L		0.00315	----	----	----	----
copper, total	7440-50-8	E420	0.00050	mg/L		0.0110	----	----	----	----
iron, total	7439-89-6	E420	0.010	mg/L		4.36	----	----	----	----
lead, total	7439-92-1	E420	0.000050	mg/L		0.0174	----	----	----	----
lithium, total	7439-93-2	E420	0.0010	mg/L		0.0095	----	----	----	----
magnesium, total	7439-95-4	E420	0.100	mg/L		16.4	----	----	----	----
manganese, total	7439-96-5	E420	0.00010	mg/L		0.176	----	----	----	----
mercury, total	7439-97-6	E508	0.0000050	mg/L		0.0000192	----	----	----	----
molybdenum, total	7439-98-7	E420	0.000050	mg/L		0.00432	----	----	----	----
nickel, total	7440-02-0	E420	0.00050	mg/L		0.00719	----	----	----	----
phosphorus, total	7723-14-0	E420	0.050	mg/L		0.062	----	----	----	----
potassium, total	7440-09-7	E420	0.100	mg/L		4.42	----	----	----	----
selenium, total	7782-49-2	E420	0.000050	mg/L		0.000739	----	----	----	----
silicon, total	7440-21-3	E420	0.10	mg/L		6.48	----	----	----	----
silver, total	7440-22-4	E420	0.000010	mg/L		0.000115	----	----	----	----
sodium, total	7440-23-5	E420	0.050	mg/L		5.83	----	----	----	----
strontium, total	7440-24-6	E420	0.00020	mg/L		0.307	----	----	----	----
sulfur, total	7704-34-9	E420	0.50	mg/L		28.0	----	----	----	----
thallium, total	7440-28-0	E420	0.000010	mg/L		0.000052	----	----	----	----
tin, total	7440-31-5	E420	0.00010	mg/L		<0.00010	----	----	----	----
titanium, total	7440-32-6	E420	0.00030	mg/L		0.0716	----	----	----	----
uranium, total	7440-61-1	E420	0.000010	mg/L		0.00614	----	----	----	----

Analytical Results

Sub-Matrix: **Water**
(Matrix: **Water**)

Analyte	CAS Number	Method	LOR	Unit	Client sample ID	FDP5	----	----	----	----
					Client sampling date / time	20-Apr-2020	----	----	----	----
						VA20A5185-001	--------	--------	--------	--------
						Result	----	----	----	----
Total Metals										
vanadium, total	7440-62-2	E420	0.00050	mg/L		0.00456	----	----	----	----
zinc, total	7440-66-6	E420	0.0030	mg/L		0.0314	----	----	----	----
zirconium, total	7440-67-7	E420	0.00030	mg/L		0.00081	----	----	----	----
Dissolved Metals										
aluminum, dissolved	7429-90-5	E421	0.0010	mg/L		0.0076	----	----	----	----
antimony, dissolved	7440-36-0	E421	0.00010	mg/L		0.00651	----	----	----	----
arsenic, dissolved	7440-38-2	E421	0.00010	mg/L		0.0210	----	----	----	----
barium, dissolved	7440-39-3	E421	0.00010	mg/L		0.0524	----	----	----	----
beryllium, dissolved	7440-41-7	E421	0.000020	mg/L		<0.000020	----	----	----	----
bismuth, dissolved	7440-69-9	E421	0.000050	mg/L		<0.000050	----	----	----	----
boron, dissolved	7440-42-8	E421	0.010	mg/L		<0.010	----	----	----	----
cadmium, dissolved	7440-43-9	E421	0.0000050	mg/L		0.0000681	----	----	----	----
calcium, dissolved	7440-70-2	E421	0.050	mg/L		56.3	----	----	----	----
chromium, dissolved	7440-47-3	E421.Cr-L	0.00010	mg/L		<0.00010	----	----	----	----
cobalt, dissolved	7440-48-4	E421	0.00010	mg/L		0.00081	----	----	----	----
copper, dissolved	7440-50-8	E421	0.00020	mg/L		0.00161	----	----	----	----
iron, dissolved	7439-89-6	E421	0.010	mg/L		0.012	----	----	----	----
lead, dissolved	7439-92-1	E421	0.000050	mg/L		0.000078	----	----	----	----
lithium, dissolved	7439-93-2	E421	0.0010	mg/L		0.0082	----	----	----	----
magnesium, dissolved	7439-95-4	E421	0.100	mg/L		15.0	----	----	----	----
manganese, dissolved	7439-96-5	E421	0.00010	mg/L		0.112	----	----	----	----
mercury, dissolved	7439-97-6	E509	0.0000050	mg/L		<0.0000050	----	----	----	----
molybdenum, dissolved	7439-98-7	E421	0.000050	mg/L		0.00424	----	----	----	----
nickel, dissolved	7440-02-0	E421	0.00050	mg/L		0.00208	----	----	----	----
phosphorus, dissolved	7723-14-0	E421	0.050	mg/L		<0.050	----	----	----	----
potassium, dissolved	7440-09-7	E421	0.100	mg/L		4.00	----	----	----	----
selenium, dissolved	7782-49-2	E421	0.000050	mg/L		0.000767	----	----	----	----
silicon, dissolved	7440-21-3	E421	0.050	mg/L		2.61	----	----	----	----
silver, dissolved	7440-22-4	E421	0.000010	mg/L		<0.000010	----	----	----	----
sodium, dissolved	7440-23-5	E421	0.050	mg/L		5.32	----	----	----	----
strontium, dissolved	7440-24-6	E421	0.00020	mg/L		0.295	----	----	----	----
sulfur, dissolved	7704-34-9	E421	0.50	mg/L		28.0	----	----	----	----

Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	FDP5	----	----	----	----
					Client sampling date / time	20-Apr-2020	----	----	----	----
Analyte	CAS Number	Method	LOR	Unit		VA20A5185-001	--------	--------	--------	--------
						Result	----	----	----	----
Dissolved Metals										
thallium, dissolved	7440-28-0	E421	0.000010	mg/L		<0.000010	----	----	----	----
tin, dissolved	7440-31-5	E421	0.00010	mg/L		<0.00010	----	----	----	----
titanium, dissolved	7440-32-6	E421	0.00030	mg/L		<0.00030	----	----	----	----
uranium, dissolved	7440-61-1	E421	0.000010	mg/L		0.00540	----	----	----	----
vanadium, dissolved	7440-62-2	E421	0.00050	mg/L		<0.00050	----	----	----	----
zinc, dissolved	7440-66-6	E421	0.0010	mg/L		0.0021	----	----	----	----
zirconium, dissolved	7440-67-7	E421	0.00030	mg/L		<0.00030	----	----	----	----
dissolved mercury filtration location	----	EP509	-	-		Field	----	----	----	----
dissolved metals filtration location	----	EP421	-	-		Field	----	----	----	----
Radiological Parameters										
radium-226	13982-63-3	RA226-MMER	0.014	Bq/L		<0.014	----	----	----	----

Please refer to the General Comments section for an explanation of any qualifiers detected.

ALS Environmental

CERTIFICATE OF ANALYSIS

Work Order	: **VA20A5153**	Page	: 1 of 7
Client	: **Victoria Gold (Yukon) Corp.**	Laboratory	: Vancouver - Environmental
Contact	: Bill Bowden	Account Manager	: Hilary Woods
Address	: Suite 1000 - 1050 W. Pender St Vancouver BC Canada V6E 3S7	Address	: 8081 Lougheed Highway Burnaby BC Canada V5A 1W9
Telephone	: 867.456.7700 ext. 6381	Telephone	: +1 604 253 4188
Project	: LDSP (April 21)	Date Samples Received	: 22-Apr-2020 14:15
PO	: 14043	Date Analysis Commenced	: 22-Apr-2020
C-O-C number	: 20200421a	Issue Date	: 07-May-2020 15:26
Sampler	: PE		
Site	: ----		
Quote number	: Q68199		
No. of samples received	: 1		
No. of samples analysed	: 1		

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QC Interpretive report to assist with Quality Review and Sample Receipt Notification (SRN).

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is conducted in accordance with US FDA 21 CFR Part 11.

Signatories	*Position*	*Laboratory Department*
Bruna Botti	Analyst	Inorganics - Water Quality, Burnaby, British Columbia
Caitlin Macey	Team Leader - Inorganics	Inorganics - Water Quality, Burnaby, British Columbia
Cindy Tang	Team Leader - Inorganics	Inorganics - Water Quality, Burnaby, British Columbia
Erick Magalhaes	Laboratory Analyst	Inorganics - Water Quality, Burnaby, British Columbia
Evan Ben-Oliel	Metal Analyst	Metals, Burnaby, British Columbia
Hilary Woods	Account Manager	Internal Subcontracting, Fort Collins, Colorado
Ilnaz Badbezanchi	Team Leader - Metals preparation	Metals, Burnaby, British Columbia
Kaitlyn Gardner	Account Manager Assistant	External Subcontracting, Burnaby, British Columbia
Kevin Duarte	Team Leader - Inorganics	Inorganics - Water Quality, Burnaby, British Columbia
Kim Jensen	Department Manager - Metals	Metals, Burnaby, British Columbia
Kinny Wu	Laboratory Analyst	Metals, Burnaby, British Columbia
Lindsay Gung	Supervisor - Water Chemistry	Inorganics - Water Quality, Burnaby, British Columbia
Robin Weeks	Team Leader - Metals	Inorganics - Water Quality, Burnaby, British Columbia
Robin Weeks	Team Leader - Metals	Metals, Burnaby, British Columbia

General Comments

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Refer to the ALS Quality Control Interpretive report (QCI) for applicable references and methodology summaries. Reference methods may incorporate modifications to improve performance.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

Please refer to Quality Control Interpretive report (QCI) for information regarding Holding Time compliance.

Key : CAS Number: Chemical Abstracts Services number is a unique identifier assigned to discrete substances
LOR: Limit of Reporting (detection limit).

Unit	*Description*
-	No Unit
%	percent
µS/cm	Microsiemens per centimetre
Bq/L	Becquerels per litre
meq/L	milliequivalents per litre
mg/L	milligrams per litre
NTU	nephelometric turbidity units
pH units	pH units

<: less than.

>: greater than.

Surrogate: An analyte that is similar in behavior to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.

Test results reported relate only to the samples as received by the laboratory.

UNLESS OTHERWISE STATED on SRN or QCI Report, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

Analytical results in reports identified as "Preliminary Report" are considered authorized for use.

Workorder Comments

A matrix spike was carried out for at least one analytical batch of E358 analysis, but is not found in the attached QC report. ALS Data Quality Objectives for recovery were met

A matrix spike was carried out for at least one analytical batch of E375-T analysis, but is not found in the attached QC report. ALS Data Quality Objectives for recovery were met

Analytical Results

Sub-Matrix: **Water**
(Matrix: **Water**)

Analyte	CAS Number	Method	LOR	Unit	Client sample ID	FDP5	----	----	----	----
					Client sampling date / time	21-Apr-2020	----	----	----	----
						VA20A5153-001	--------	--------	--------	--------
						Result	----	----	----	----
Physical Tests										
alkalinity, total (as CaCO3)	----	E290	1.0	mg/L		105	----	----	----	----
conductivity	----	E100	2.0	µS/cm		400	----	----	----	----
hardness (as CaCO3), dissolved	----	EC100	0.60	mg/L		186	----	----	----	----
hardness (as CaCO3), from total Ca/Mg	----	EC100A	0.60	mg/L		190	----	----	----	----
pH	----	E108	0.10	pH units		7.91	----	----	----	----
solids, total dissolved [TDS], calculated	----	EC103	1.0	mg/L		246	----	----	----	----
solids, total suspended [TSS]	----	E160-H	3.0	mg/L		52.9	----	----	----	----
turbidity	----	E121	0.10	NTU		160	----	----	----	----
pH @ 15°C (WSER)	----	E108A	0.10	pH units		7.61	----	----	----	----
Anions and Nutrients										
ammonia, total (as N)	7664-41-7	E298	0.0050	mg/L		0.109	----	----	----	----
ammonia, un-ionized (as N), 15C (WSER)	7664-41-7	EC298	0.0010	mg/L		0.0012	----	----	----	----
bromide	24959-67-9	E235.Br-L	0.050	mg/L		0.069	----	----	----	----
chloride	16887-00-6	E235.Cl	0.50	mg/L		16.6	----	----	----	----
fluoride	16984-48-8	E235.F	0.020	mg/L		0.134	----	----	----	----
Kjeldahl nitrogen, total [TKN]	----	E318	0.050	mg/L		0.440	----	----	----	----
nitrate (as N)	14797-55-8	E235.NO3-L	0.0050	mg/L		0.555	----	----	----	----
nitrite (as N)	14797-65-0	E235.NO2-L	0.0010	mg/L		0.0307	----	----	----	----
nitrogen, total	7727-37-9	E366	0.030	mg/L		0.932	----	----	----	----
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0010	mg/L		<0.0010	----	----	----	----
phosphorus, total	7723-14-0	E372-U	0.0020	mg/L		0.0923	----	----	----	----
phosphorus, total dissolved	7723-14-0	E375-T	0.0020	mg/L		0.0062	----	----	----	----
sulfate (as SO4)	14808-79-8	E235.SO4	0.30	mg/L		74.7	----	----	----	----
Cyanides										
cyanide, total	----	E333	0.0050	mg/L		<0.0050	----	----	----	----
cyanide, weak acid dissociable	----	E336	0.0050	mg/L		<0.0050	----	----	----	----
Organic / Inorganic Carbon										
carbon, dissolved organic [DOC]	----	E358-L	0.50	mg/L		6.51	----	----	----	----
carbon, total organic [TOC]	----	E355-L	0.50	mg/L		7.78	----	----	----	----
Bioassays										
Daphnia magna LC50	----	DAP-LC50-48	-	-		see attached	----	----	----	----

Analytical Results

Sub-Matrix: **Water**
(Matrix: **Water**)

Analyte	CAS Number	Method	LOR	Unit	Client sample ID	FDP5	----	----	----	----
					Client sampling date / time	21-Apr-2020	----	----	----	----
						VA20A5153-001	--------	--------	--------	--------
						Result	----	----	----	----
Bioassays										
trout bioassay LC50	----	TRT-LC50-96	-	-		see attached	----	----	----	----
Ion Balance										
anion sum	----	EC101	0.10	meq/L		4.17	----	----	----	----
cation sum	----	EC101	0.10	meq/L		4.06	----	----	----	----
ion balance (cation-anion difference)	----	EC101	0.010	%		1.34	----	----	----	----
Total Metals										
aluminum, total	7429-90-5	E420	0.0030	mg/L		2.77	----	----	----	----
antimony, total	7440-36-0	E420	0.00010	mg/L		0.0120	----	----	----	----
arsenic, total	7440-38-2	E420	0.00010	mg/L		0.167	----	----	----	----
barium, total	7440-39-3	E420	0.00010	mg/L		0.0850	----	----	----	----
beryllium, total	7440-41-7	E420	0.000020	mg/L		0.000213	----	----	----	----
bismuth, total	7440-69-9	E420	0.000050	mg/L		0.00203	----	----	----	----
boron, total	7440-42-8	E420	0.010	mg/L		<0.010	----	----	----	----
cadmium, total	7440-43-9	E420	0.0000050	mg/L		0.000249	----	----	----	----
calcium, total	7440-70-2	E420	0.050	mg/L		54.2	----	----	----	----
chromium, total	7440-47-3	E420.Cr-L	0.00010	mg/L		0.00438	----	----	----	----
cobalt, total	7440-48-4	E420	0.00010	mg/L		0.00333	----	----	----	----
copper, total	7440-50-8	E420	0.00050	mg/L		0.0127	----	----	----	----
iron, total	7439-89-6	E420	0.010	mg/L		5.08	----	----	----	----
lead, total	7439-92-1	E420	0.000050	mg/L		0.0189	----	----	----	----
lithium, total	7439-93-2	E420	0.0010	mg/L		0.0108	----	----	----	----
magnesium, total	7439-95-4	E420	0.100	mg/L		13.1	----	----	----	----
manganese, total	7439-96-5	E420	0.00010	mg/L		0.202	----	----	----	----
mercury, total	7439-97-6	E508	0.0000050	mg/L		0.0000203	----	----	----	----
molybdenum, total	7439-98-7	E420	0.000050	mg/L		0.00416	----	----	----	----
nickel, total	7440-02-0	E420	0.00050	mg/L		0.00770	----	----	----	----
phosphorus, total	7723-14-0	E420	0.050	mg/L		0.080	----	----	----	----
potassium, total	7440-09-7	E420	0.100	mg/L		4.44	----	----	----	----
selenium, total	7782-49-2	E420	0.000050	mg/L		0.000782	----	----	----	----
silicon, total	7440-21-3	E420	0.10	mg/L		6.70	----	----	----	----
silver, total	7440-22-4	E420	0.000010	mg/L		0.000135	----	----	----	----
sodium, total	7440-23-5	E420	0.050	mg/L		4.94	----	----	----	----

Analytical Results

Sub-Matrix: **Water**
(Matrix: **Water**)

Analyte	CAS Number	Method	LOR	Unit	Client sample ID	FDP5	----	----	----	----
					Client sampling date / time	21-Apr-2020	----	----	----	----
						VA20A5153-001	--------	--------	--------	--------
						Result	----	----	----	----
Total Metals										
strontium, total	7440-24-6	E420	0.00020	mg/L		0.263	----	----	----	----
sulfur, total	7704-34-9	E420	0.50	mg/L		26.8	----	----	----	----
thallium, total	7440-28-0	E420	0.000010	mg/L		0.000060	----	----	----	----
tin, total	7440-31-5	E420	0.00010	mg/L		0.00015	----	----	----	----
titanium, total	7440-32-6	E420	0.00030	mg/L		0.0822	----	----	----	----
uranium, total	7440-61-1	E420	0.000010	mg/L		0.00567	----	----	----	----
vanadium, total	7440-62-2	E420	0.00050	mg/L		0.00548	----	----	----	----
zinc, total	7440-66-6	E420	0.0030	mg/L		0.0306	----	----	----	----
zirconium, total	7440-67-7	E420	0.00030	mg/L		0.00043	----	----	----	----
Dissolved Metals										
aluminum, dissolved	7429-90-5	E421	0.0010	mg/L		0.0308	----	----	----	----
antimony, dissolved	7440-36-0	E421	0.00010	mg/L		0.00647	----	----	----	----
arsenic, dissolved	7440-38-2	E421	0.00010	mg/L		0.0200	----	----	----	----
barium, dissolved	7440-39-3	E421	0.00010	mg/L		0.0546	----	----	----	----
beryllium, dissolved	7440-41-7	E421	0.000020	mg/L		<0.000020	----	----	----	----
bismuth, dissolved	7440-69-9	E421	0.000050	mg/L		<0.000050	----	----	----	----
boron, dissolved	7440-42-8	E421	0.010	mg/L		<0.010	----	----	----	----
cadmium, dissolved	7440-43-9	E421	0.0000050	mg/L		0.0000615	----	----	----	----
calcium, dissolved	7440-70-2	E421	0.050	mg/L		52.6	----	----	----	----
chromium, dissolved	7440-47-3	E421.Cr-L	0.00010	mg/L		0.00051	----	----	----	----
cobalt, dissolved	7440-48-4	E421	0.00010	mg/L		0.00086	----	----	----	----
copper, dissolved	7440-50-8	E421	0.00020	mg/L		0.00268	----	----	----	----
iron, dissolved	7439-89-6	E421	0.010	mg/L		0.055	----	----	----	----
lead, dissolved	7439-92-1	E421	0.000050	mg/L		0.000198	----	----	----	----
lithium, dissolved	7439-93-2	E421	0.0010	mg/L		0.0073	----	----	----	----
magnesium, dissolved	7439-95-4	E421	0.100	mg/L		13.3	----	----	----	----
manganese, dissolved	7439-96-5	E421	0.00010	mg/L		0.142	----	----	----	----
mercury, dissolved	7439-97-6	E509	0.0000050	mg/L		<0.0000050	----	----	----	----
molybdenum, dissolved	7439-98-7	E421	0.000050	mg/L		0.00444	----	----	----	----
nickel, dissolved	7440-02-0	E421	0.00050	mg/L		0.00216	----	----	----	----
phosphorus, dissolved	7723-14-0	E421	0.050	mg/L		<0.050	----	----	----	----
potassium, dissolved	7440-09-7	E421	0.100	mg/L		3.93	----	----	----	----

Analytical Results

Sub-Matrix: **Water**
(Matrix: **Water**)

Analyte	CAS Number	Method	LOR	Unit	Client sample ID	FDP5	----	----	----	----
					Client sampling date / time	21-Apr-2020	----	----	----	----
						VA20A5153-001	--------	--------	--------	--------
						Result	----	----	----	----
Dissolved Metals										
selenium, dissolved	7782-49-2	E421	0.000050	mg/L		0.000597	----	----	----	----
silicon, dissolved	7440-21-3	E421	0.050	mg/L		2.67	----	----	----	----
silver, dissolved	7440-22-4	E421	0.000010	mg/L		0.000010	----	----	----	----
sodium, dissolved	7440-23-5	E421	0.050	mg/L		5.16	----	----	----	----
strontium, dissolved	7440-24-6	E421	0.00020	mg/L		0.287	----	----	----	----
sulfur, dissolved	7704-34-9	E421	0.50	mg/L		25.4	----	----	----	----
thallium, dissolved	7440-28-0	E421	0.000010	mg/L		<0.000010	----	----	----	----
tin, dissolved	7440-31-5	E421	0.00010	mg/L		<0.00010	----	----	----	----
titanium, dissolved	7440-32-6	E421	0.00030	mg/L		0.00183	----	----	----	----
uranium, dissolved	7440-61-1	E421	0.000010	mg/L		0.00511	----	----	----	----
vanadium, dissolved	7440-62-2	E421	0.00050	mg/L		<0.00050	----	----	----	----
zinc, dissolved	7440-66-6	E421	0.0010	mg/L		0.0027	----	----	----	----
zirconium, dissolved	7440-67-7	E421	0.00030	mg/L		<0.00030	----	----	----	----
dissolved mercury filtration location	----	EP509	-	-		Field	----	----	----	----
dissolved metals filtration location	----	EP421	-	-		Field	----	----	----	----
Radiological Parameters										
radium-226	13982-63-3	RA226-MMER	0.01	Bq/L		See attached	----	----	----	----

Please refer to the General Comments section for an explanation of any qualifiers detected.

ALS Environmental

CERTIFICATE OF ANALYSIS

Work Order	: **VA20A5167**	Page	: 1 of 7
Client	: **Victoria Gold (Yukon) Corp.**	Laboratory	: Vancouver - Environmental
Contact	: Bill Bowden	Account Manager	: Hilary Woods
Address	: Suite 1000 - 1050 W. Pender St Vancouver BC Canada V6E 3S7	Address	: 8081 Lougheed Highway Burnaby BC Canada V5A 1W9
Telephone	: 867.456.7700 ext. 6381	Telephone	: +1 604 253 4188
Project	: Receiving /Reference Apr 21	Date Samples Received	: 22-Apr-2020 14:15
PO	: 14043	Date Analysis Commenced	: 22-Apr-2020
C-O-C number	: 20200421b	Issue Date	: 07-May-2020 15:57
Sampler	: PE		
Site	: ----		
Quote number	: Q68199		
No. of samples received	: 3		
No. of samples analysed	: 2		

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QC Interpretive report to assist with Quality Review and Sample Receipt Notification (SRN).

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is conducted in accordance with US FDA 21 CFR Part 11.

Signatories	*Position*	*Laboratory Department*
Aaron Yu	Laboratory Analyst	Metals, Burnaby, British Columbia
Bruna Botti	Analyst	Inorganics - Water Quality, Burnaby, British Columbia
Caitlin Macey	Team Leader - Inorganics	Inorganics - Water Quality, Burnaby, British Columbia
Evan Ben-Oliel	Metal Analyst	Metals, Burnaby, British Columbia
Hilary Woods	Account Manager	Internal Subcontracting, Fort Collins, Colorado
Ilnaz Badbezanchi	Team Leader - Metals preparation	Metals, Burnaby, British Columbia
Jon Fisher	Department Manager - Inorganics	Inorganics, Waterloo, Ontario
Kevin Duarte	Team Leader - Inorganics	Inorganics - Water Quality, Burnaby, British Columbia
Kinny Wu	Laboratory Analyst	Metals, Burnaby, British Columbia
Lindsay Gung	Supervisor - Water Chemistry	Inorganics - Water Quality, Burnaby, British Columbia
Matthew Woods	Lab Assistant	Metals, Burnaby, British Columbia
Robin Weeks	Team Leader - Metals	Inorganics - Water Quality, Burnaby, British Columbia
Robin Weeks	Team Leader - Metals	Metals, Burnaby, British Columbia
Tracy Harley	Supervisor - Water Quality Instrumentation	Inorganics - Water Quality, Burnaby, British Columbia

General Comments

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Refer to the ALS Quality Control Interpretive report (QCI) for applicable references and methodology summaries. Reference methods may incorporate modifications to improve performance.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

Please refer to Quality Control Interpretive report (QCI) for information regarding Holding Time compliance.

Key : CAS Number: Chemical Abstracts Services number is a unique identifier assigned to discrete substances
LOR: Limit of Reporting (detection limit).

Unit	*Description*
-	No Unit
%	percent
µS/cm	Microsiemens per centimetre
Bq/L	Becquerels per litre
meq/L	milliequivalents per litre
mg/L	milligrams per litre
NTU	nephelometric turbidity units
pH units	pH units

<: less than.

>: greater than.

Surrogate: An analyte that is similar in behavior to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.

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UNLESS OTHERWISE STATED on SRN or QCI Report, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

Analytical results in reports identified as "Preliminary Report" are considered authorized for use.

Analytical Results

Sub-Matrix: **Water**
(Matrix: **Water**)

Analyte	CAS Number	Method	LOR	Unit	Client sample ID: W4	W22	----	----	----
					Client sampling date / time: 21-Apr-2020 11:15	21-Apr-2020 11:50	----	----	----
					VA20A5167-001	VA20A5167-002	--------	--------	--------
					Result	Result	----	----	----
Physical Tests									
alkalinity, total (as CaCO3)	----	E290	1.0	mg/L	62.9	74.3	----	----	----
conductivity	----	E100	2.0	µS/cm	258	304	----	----	----
hardness (as CaCO3), dissolved	----	EC100	0.60	mg/L	123	149	----	----	----
hardness (as CaCO3), from total Ca/Mg	----	EC100A	0.60	mg/L	134	147	----	----	----
pH	----	E108	0.10	pH units	7.80	7.86	----	----	----
solids, total dissolved [TDS], calculated	----	EC103	1.0	mg/L	168	193	----	----	----
solids, total suspended [TSS]	----	E160-H	3.0	mg/L	308	<3.0	----	----	----
turbidity	----	E121	0.10	NTU	167	1.80	----	----	----
pH @ 15°C (WSER)	----	E108A	0.10	pH units	7.47	7.50	----	----	----
Anions and Nutrients									
ammonia, total (as N)	7664-41-7	E298	0.0050	mg/L	0.0170	<0.0050	----	----	----
ammonia, un-ionized (as N), 15C (WSER)	7664-41-7	EC298	0.0010	mg/L	<0.0010	<0.0010	----	----	----
bromide	24959-67-9	E235.Br-L	0.050	mg/L	<0.050	<0.050	----	----	----
chloride	16887-00-6	E235.Cl	0.50	mg/L	4.61	2.45	----	----	----
cyanate	88402-73-7	E343	0.20	mg/L	0.25	<0.20	----	----	----
fluoride	16984-48-8	E235.F	0.020	mg/L	0.122	0.116	----	----	----
Kjeldahl nitrogen, total [TKN]	----	E318	0.050	mg/L	0.596	0.326	----	----	----
nitrate (as N)	14797-55-8	E235.NO3-L	0.0050	mg/L	0.177	0.102	----	----	----
nitrite (as N)	14797-65-0	E235.NO2-L	0.0010	mg/L	0.0020	<0.0010	----	----	----
nitrogen, total	7727-37-9	E366	0.030	mg/L	0.629	0.410	----	----	----
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0010	mg/L	0.0014	<0.0010	----	----	----
phosphorus, total	7723-14-0	E372-U	0.0020	mg/L	0.130	0.0160	----	----	----
phosphorus, total dissolved	7723-14-0	E375-T	0.0020	mg/L	0.0107	0.0082	----	----	----
sulfate (as SO4)	14808-79-8	E235.SO4	0.30	mg/L	56.8	71.5	----	----	----
Cyanides									
cyanide, total	----	E333	0.0050	mg/L	<0.0050	<0.0050	----	----	----
cyanide, weak acid dissociable	----	E336	0.0050	mg/L	<0.0050	<0.0050	----	----	----
thiocyanate	302-04-5	E344	0.50	mg/L	<0.50	<0.50	----	----	----
Organic / Inorganic Carbon									
carbon, dissolved organic [DOC]	----	E358-L	0.50	mg/L	13.2	10.8	----	----	----

Analytical Results

Sub-Matrix: **Water**
(Matrix: **Water**)

Analyte	CAS Number	Method	LOR	Unit	Client sample ID	W4	W22	----	----	----
					Client sampling date / time	21-Apr-2020 11:15	21-Apr-2020 11:50	----	----	----
						VA20A5167-001	VA20A5167-002	--------	--------	--------
						Result	Result	----	----	----
Organic / Inorganic Carbon										
carbon, total organic [TOC]	----	E355-L	0.50	mg/L		13.8	10.7	----	----	----
Ion Balance										
anion sum	----	EC101	0.10	meq/L		2.59	3.06	----	----	----
cation sum	----	EC101	0.10	meq/L		2.61	3.13	----	----	----
ion balance (cation-anion difference)	----	EC101	0.010	%		0.385	1.13	----	----	----
Total Metals										
aluminum, total	7429-90-5	E420	0.0030	mg/L		3.58	0.0789	----	----	----
antimony, total	7440-36-0	E420	0.00010	mg/L		0.00482	0.00024	----	----	----
arsenic, total	7440-38-2	E420	0.00010	mg/L		0.128	0.00123	----	----	----
barium, total	7440-39-3	E420	0.00010	mg/L		0.0922	0.0360	----	----	----
beryllium, total	7440-41-7	E420	0.000020	mg/L		0.000270	<0.000020	----	----	----
bismuth, total	7440-69-9	E420	0.000050	mg/L		0.00101	<0.000050	----	----	----
boron, total	7440-42-8	E420	0.010	mg/L		<0.010	<0.010	----	----	----
cadmium, total	7440-43-9	E420	0.0000050	mg/L		0.000156	0.0000235	----	----	----
calcium, total	7440-70-2	E420	0.050	mg/L		32.4	35.2	----	----	----
chromium, total	7440-47-3	E420.Cr-L	0.00010	mg/L		0.00634	0.00015	----	----	----
cobalt, total	7440-48-4	E420	0.00010	mg/L		0.00389	0.00021	----	----	----
copper, total	7440-50-8	E420	0.00050	mg/L		0.0125	0.00106	----	----	----
iron, total	7439-89-6	E420	0.010	mg/L		8.03	0.278	----	----	----
lead, total	7439-92-1	E420	0.000050	mg/L		0.0154	0.000124	----	----	----
lithium, total	7439-93-2	E420	0.0010	mg/L		0.0115	0.0064	----	----	----
magnesium, total	7439-95-4	E420	0.100	mg/L		12.8	14.4	----	----	----
manganese, total	7439-96-5	E420	0.00010	mg/L		0.184	0.0527	----	----	----
mercury, total	7439-97-6	E508	0.0000050	mg/L		0.0000249	<0.0000050	----	----	----
molybdenum, total	7439-98-7	E420	0.000050	mg/L		0.000575	0.000052	----	----	----
nickel, total	7440-02-0	E420	0.00050	mg/L		0.0105	0.00196	----	----	----
phosphorus, total	7723-14-0	E420	0.050	mg/L		0.116	<0.050	----	----	----
potassium, total	7440-09-7	E420	0.100	mg/L		3.14	1.69	----	----	----
selenium, total	7782-49-2	E420	0.000050	mg/L		0.000276	0.000153	----	----	----
silicon, total	7440-21-3	E420	0.10	mg/L		8.26	3.54	----	----	----
silver, total	7440-22-4	E420	0.000010	mg/L		0.000119	<0.000010	----	----	----

Analytical Results

Sub-Matrix: **Water**
(Matrix: **Water**)

Analyte	CAS Number	Method	LOR	Unit	Client sample ID	W4	W22	----	----	----
					Client sampling date / time	21-Apr-2020 11:15	21-Apr-2020 11:50	----	----	----
						VA20A5167-001	VA20A5167-002	--------	--------	--------
						Result	Result	----	----	----
Total Metals										
sodium, total	7440-23-5	E420	0.050	mg/L		2.33	1.90	----	----	----
strontium, total	7440-24-6	E420	0.00020	mg/L		0.155	0.165	----	----	----
sulfur, total	7704-34-9	E420	0.50	mg/L		18.7	24.4	----	----	----
thallium, total	7440-28-0	E420	0.000010	mg/L		0.000109	<0.000010	----	----	----
tin, total	7440-31-5	E420	0.00010	mg/L		0.00014	<0.00010	----	----	----
titanium, total	7440-32-6	E420	0.00030	mg/L		0.141	0.00169	----	----	----
uranium, total	7440-61-1	E420	0.000010	mg/L		0.00143	0.000824	----	----	----
vanadium, total	7440-62-2	E420	0.00050	mg/L		0.00752	<0.00050	----	----	----
zinc, total	7440-66-6	E420	0.0030	mg/L		0.0297	0.0048	----	----	----
zirconium, total	7440-67-7	E420	0.00030	mg/L		0.00094	<0.00030	----	----	----
Dissolved Metals										
aluminum, dissolved	7429-90-5	E421	0.0010	mg/L		0.0503	0.0322	----	----	----
antimony, dissolved	7440-36-0	E421	0.00010	mg/L		0.00068	0.00020	----	----	----
arsenic, dissolved	7440-38-2	E421	0.00010	mg/L		0.0102	0.00075	----	----	----
barium, dissolved	7440-39-3	E421	0.00010	mg/L		0.0368	0.0362	----	----	----
beryllium, dissolved	7440-41-7	E421	0.000020	mg/L		<0.000020	<0.000020	----	----	----
bismuth, dissolved	7440-69-9	E421	0.000050	mg/L		<0.000050	<0.000050	----	----	----
boron, dissolved	7440-42-8	E421	0.010	mg/L		<0.010	<0.010	----	----	----
cadmium, dissolved	7440-43-9	E421	0.0000050	mg/L		0.0000245	0.0000218	----	----	----
calcium, dissolved	7440-70-2	E421	0.050	mg/L		29.0	32.5	----	----	----
chromium, dissolved	7440-47-3	E421.Cr-L	0.00010	mg/L		0.00013	<0.00010	----	----	----
cobalt, dissolved	7440-48-4	E421	0.00010	mg/L		0.00023	<0.00010	----	----	----
copper, dissolved	7440-50-8	E421	0.00020	mg/L		0.00145	0.00096	----	----	----
iron, dissolved	7439-89-6	E421	0.010	mg/L		0.124	0.077	----	----	----
lead, dissolved	7439-92-1	E421	0.000050	mg/L		0.000145	<0.000050	----	----	----
lithium, dissolved	7439-93-2	E421	0.0010	mg/L		0.0058	0.0059	----	----	----
magnesium, dissolved	7439-95-4	E421	0.100	mg/L		12.2	16.5	----	----	----
manganese, dissolved	7439-96-5	E421	0.00010	mg/L		0.0390	0.0291	----	----	----
mercury, dissolved	7439-97-6	E509	0.0000050	mg/L		0.0000057	0.0000050	----	----	----
molybdenum, dissolved	7439-98-7	E421	0.000050	mg/L		0.000379	<0.000050	----	----	----
nickel, dissolved	7440-02-0	E421	0.00050	mg/L		0.00192	0.00180	----	----	----

Analytical Results

Sub-Matrix: **Water**
(Matrix: **Water**)

Analyte	CAS Number	Method	LOR	Unit	Client sample ID	W4	W22	----	----	----
					Client sampling date / time	21-Apr-2020 11:15	21-Apr-2020 11:50	----	----	----
						VA20A5167-001	VA20A5167-002	--------	--------	--------
						Result	Result	----	----	----
Dissolved Metals										
phosphorus, dissolved	7723-14-0	E421	0.050	mg/L		<0.050	<0.050	----	----	----
potassium, dissolved	7440-09-7	E421	0.100	mg/L		1.90	1.79	----	----	----
selenium, dissolved	7782-49-2	E421	0.000050	mg/L		0.000238	0.000167	----	----	----
silicon, dissolved	7440-21-3	E421	0.050	mg/L		3.59	3.61	----	----	----
silver, dissolved	7440-22-4	E421	0.000010	mg/L		<0.000010	<0.000010	----	----	----
sodium, dissolved	7440-23-5	E421	0.050	mg/L		2.15	2.14	----	----	----
strontium, dissolved	7440-24-6	E421	0.00020	mg/L		0.150	0.172	----	----	----
sulfur, dissolved	7704-34-9	E421	0.50	mg/L		18.2	24.1	----	----	----
thallium, dissolved	7440-28-0	E421	0.000010	mg/L		<0.000010	<0.000010	----	----	----
tin, dissolved	7440-31-5	E421	0.00010	mg/L		0.00010	<0.00010	----	----	----
titanium, dissolved	7440-32-6	E421	0.00030	mg/L		0.00111	<0.00030	----	----	----
uranium, dissolved	7440-61-1	E421	0.000010	mg/L		0.000928	0.000735	----	----	----
vanadium, dissolved	7440-62-2	E421	0.00050	mg/L		<0.00050	<0.00050	----	----	----
zinc, dissolved	7440-66-6	E421	0.0010	mg/L		0.0031	0.0036	----	----	----
zirconium, dissolved	7440-67-7	E421	0.00030	mg/L		<0.00030	<0.00030	----	----	----
dissolved mercury filtration location	----	EP509	-	-		Field	Field	----	----	----
dissolved metals filtration location	----	EP421	-	-		Field	Laboratory	----	----	----
Radiological Parameters										
radium-226	13982-63-3	RA226-MMER	0.01	Bq/L		See attached	See attached	----	----	----

Please refer to the General Comments section for an explanation of any qualifiers detected.

ALS Environmental

CERTIFICATE OF ANALYSIS

Work Order	: **WR2000165**	Page	: 1 of 6
Client	: **Victoria Gold (Yukon) Corp.**	Laboratory	: Whitehorse - Environmental
Contact	: Hugh Coyle	Account Manager	: Hilary Woods
Address	: Suite 1000 - 1050 W. Pender St Vancouver BC Canada V6E 3S7	Address	: #12 151 Industrial Road Whitehorse YT Canada Y1A 2V3
Telephone	: 604 682 5122	Telephone	: +1 867 668 6689
Project	: WUL SWQ Discharge	Date Samples Received	: 29-Apr-2020 10:03
PO	: 14043	Date Analysis Commenced	: 30-Apr-2020
C-O-C number	: 20200427	Issue Date	: 19-May-2020 12:51
Sampler	: PE		
Site	: ----		
Quote number	: Q68199		
No. of samples received	: 5		
No. of samples analysed	: 5		

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- General Comments
- Analytical Results

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Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is conducted in accordance with US FDA 21 CFR Part 11.

Signatories	*Position*	*Laboratory Department*
Angela Ren	Team Leader - Metals	Metals, Burnaby, British Columbia
Bruna Botti	Analyst	Inorganics - Water Quality, Burnaby, British Columbia
Caitlin Macey	Team Leader - Inorganics	Inorganics - Water Quality, Burnaby, British Columbia
Evan Ben-Oliel	Metal Analyst	Metals, Burnaby, British Columbia
Hilary Woods	Account Manager	Internal Subcontracting, Fort Collins, Colorado
Kevin Duarte	Team Leader - Inorganics	Inorganics - Water Quality, Burnaby, British Columbia
Lindsay Gung	Supervisor - Water Chemistry	Inorganics - Water Quality, Burnaby, British Columbia
Matthew Woods	Lab Assistant	Metals, Burnaby, British Columbia
Robin Weeks	Team Leader - Metals	Inorganics - Water Quality, Burnaby, British Columbia
Robin Weeks	Team Leader - Metals	Metals, Burnaby, British Columbia
Tracy Harley	Supervisor - Water Quality Instrumentation	Inorganics - Water Quality, Burnaby, British Columbia
Walt Kippenhuck	Team Leader - Inorganics	Inorganics, Waterloo, Ontario

General Comments

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Refer to the ALS Quality Control Interpretive report (QCI) for applicable references and methodology summaries. Reference methods may incorporate modifications to improve performance.

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Key : CAS Number: Chemical Abstracts Services number is a unique identifier assigned to discrete substances
LOR: Limit of Reporting (detection limit).

Unit	*Description*
-	No Unit
%	percent
µS/cm	Microsiemens per centimetre
Bq/L	Becquerels per litre
meq/L	milliequivalents per litre
mg/L	milligrams per litre
NTU	nephelometric turbidity units
pH units	pH units

<: less than.

>: greater than.

Surrogate: An analyte that is similar in behavior to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.

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Analytical results in reports identified as "Preliminary Report" are considered authorized for use.

Qualifiers

Qualifier	*Description*
DLM	*Detection Limit Adjusted due to sample matrix effects (e.g. chemical interference, colour, turbidity).*
SP	*Sample was preserved at the laboratory.*

Analytical Results

Sub-Matrix: **Water**
(Matrix: **Water**)

Analyte	CAS Number	Method	LOR	Unit	Client sample ID	FDP5	LDSPI	W22	W4	W29
					Client sampling date / time	27-Apr-2020 10:40	27-Apr-2020 10:20	27-Apr-2020 09:40	27-Apr-2020 09:05	27-Apr-2020 08:15
						WR2000165-001	WR2000165-002	WR2000165-003	WR2000165-004	WR2000165-005
						Result	Result	Result	Result	Result
Physical Tests										
alkalinity, total (as CaCO3)	----	E290	1.0	mg/L		73.7	77.4	115	107	115
conductivity	----	E100	2.0	µS/cm		280	285	392	363	383
hardness (as CaCO3), dissolved	----	EC100	0.60	mg/L		133	128	186	169	184
hardness (as CaCO3), from total Ca/Mg	----	EC100A	0.60	mg/L		127	142	181	174	184
pH	----	E108	0.10	pH units		7.79	7.82	8.15	8.21	8.24
solids, total dissolved [TDS], calculated	----	EC103	1.0	mg/L		181	184	239	223	240
solids, total suspended [TSS]	----	E160-H	3.0	mg/L		52.8	187	<3.0	4.8	6.8
turbidity	----	E121	0.10	NTU		168	208	0.40	5.80	13.6
pH @ 15°C (WSER)	----	E108A	0.10	pH units		7.62	----	----	----	----
Anions and Nutrients										
ammonia, total (as N)	7664-41-7	E298	0.0050	mg/L		0.0187	0.0188	<0.0050	<0.0050	<0.0050
ammonia, un-ionized (as N), 15C (WSER)	7664-41-7	EC298	0.0010	mg/L		<0.0010	----	----	----	----
bromide	24959-67-9	E235.Br-L	0.050	mg/L		<0.050	<0.050	<0.050	<0.050	<0.050
chloride	16887-00-6	E235.Cl	0.50	mg/L		8.16	4.04	0.70	1.44	3.25
cyanate	88402-73-7	E343	0.20	mg/L		----	----	<0.20	<0.20	<0.20
fluoride	16984-48-8	E235.F	0.020	mg/L		0.092	0.086	0.116	0.119	0.125
Kjeldahl nitrogen, total [TKN]	----	E318	0.050	mg/L		0.544	0.624	0.142	0.140	0.184
nitrate (as N)	14797-55-8	E235.NO3-L	0.0050	mg/L		0.318	0.161	0.136	0.183	0.199
nitrite (as N)	14797-65-0	E235.NO2-L	0.0010	mg/L		0.0127	0.0012	<0.0010	<0.0010	0.0012
nitrogen, total	7727-37-9	E366	0.030	mg/L		0.784	0.831 DLM	0.272	0.329	0.380
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0010	mg/L		0.0010	0.0018	<0.0010	<0.0010	0.0010
phosphorus, total	7723-14-0	E372-U	0.0020	mg/L		0.0873	0.143	0.0036	0.0073	0.0102
phosphorus, total dissolved	7723-14-0	E375-T	0.0020	mg/L		0.0106	0.0131	<0.0020	0.0030	0.0035
sulfate (as SO4)	14808-79-8	E235.SO4	0.30	mg/L		51.1	56.5	85.6	79.5	82.8
Cyanides										
cyanide, total	----	E333	0.0050	mg/L		<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
cyanide, weak acid dissociable	----	E336	0.0050	mg/L		<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
thiocyanate	302-04-5	E344	0.50	mg/L		----	----	<0.50	<0.50 SP	0.55
Organic / Inorganic Carbon										
carbon, dissolved organic [DOC]	----	E358-L	0.50	mg/L		15.4	19.5	5.81	5.64	7.02

Analytical Results

Sub-Matrix: **Water**
(Matrix: **Water**)

Analyte	CAS Number	Method	LOR	Unit	Client sample ID	FDP5	LDSPI	W22	W4	W29
					Client sampling date / time	27-Apr-2020 10:40	27-Apr-2020 10:20	27-Apr-2020 09:40	27-Apr-2020 09:05	27-Apr-2020 08:15
						WR2000165-001	WR2000165-002	WR2000165-003	WR2000165-004	WR2000165-005
						Result	Result	Result	Result	Result
Organic / Inorganic Carbon										
carbon, total organic [TOC]	----	E355-L	0.50	mg/L		14.8	18.2	5.79	5.70	6.20
Ion Balance										
anion sum	----	EC101	0.10	meq/L		2.80	2.85	4.12	3.85	4.14
cation sum	----	EC101	0.10	meq/L		2.90	2.75	3.86	3.52	3.85
ion balance (cation-anion difference)	----	EC101	0.010	%		1.75	1.78	3.26	4.48	3.63
Total Metals										
aluminum, total	7429-90-5	E420	0.0030	mg/L		3.71	5.77	0.0216	0.205	0.582
antimony, total	7440-36-0	E420	0.00010	mg/L		0.0124	0.0131	0.00023	0.00090	0.00189
arsenic, total	7440-38-2	E420	0.00010	mg/L		0.226	0.273	0.00089	0.0124	0.0202
barium, total	7440-39-3	E420	0.00010	mg/L		0.0891	0.116	0.0411	0.0446	0.0504
beryllium, total	7440-41-7	E420	0.000020	mg/L		0.000292	0.000430	<0.000020	0.000021	0.000033
bismuth, total	7440-69-9	E420	0.000050	mg/L		0.00272	0.00389	<0.000050	<0.000050	0.000122
boron, total	7440-42-8	E420	0.010	mg/L		<0.010	<0.010	<0.010	<0.010	<0.010
cadmium, total	7440-43-9	E420	0.0000050	mg/L		0.000320	0.000407	0.0000171	0.0000220	0.0000458
calcium, total	7440-70-2	E420	0.050	mg/L		34.7	35.2	43.0	41.6	44.2
chromium, total	7440-47-3	E420.Cr-L	0.00010	mg/L		0.00523	0.00966	<0.00010	0.00036	0.00081
cobalt, total	7440-48-4	E420	0.00010	mg/L		0.00385	0.00546	0.00018	0.00032	0.00045
copper, total	7440-50-8	E420	0.00050	mg/L		0.0176	0.0224	0.00065	0.00118	0.00212
iron, total	7439-89-6	E420	0.010	mg/L		6.95	10.6	0.126	0.400	0.738
lead, total	7439-92-1	E420	0.000050	mg/L		0.0285	0.0368	<0.000050	0.000680	0.00163
lithium, total	7439-93-2	E420	0.0010	mg/L		0.0088	0.0131	0.0071	0.0079	0.0081
magnesium, total	7439-95-4	E420	0.100	mg/L		9.86	13.2	18.0	17.1	17.9
manganese, total	7439-96-5	E420	0.00010	mg/L		0.194	0.245	0.0545	0.0463	0.0623
mercury, total	7439-97-6	E508	0.0000050	mg/L		0.0000298	0.0000358	<0.0000050	<0.0000050	0.0000059
molybdenum, total	7439-98-7	E420	0.000050	mg/L		0.00271	0.00189	0.000170	0.000362	0.000554
nickel, total	7440-02-0	E420	0.00050	mg/L		0.0100	0.0135	0.00184	0.00203	0.00228
phosphorus, total	7723-14-0	E420	0.050	mg/L		0.081	0.121	<0.050	<0.050	<0.050
potassium, total	7440-09-7	E420	0.100	mg/L		3.53	3.87	1.36	1.58	1.97
selenium, total	7782-49-2	E420	0.000050	mg/L		0.000525	0.000456	0.000195	0.000231	0.000257
silicon, total	7440-21-3	E420	0.10	mg/L		8.04	11.4	4.27	4.62	5.01
silver, total	7440-22-4	E420	0.000010	mg/L		0.000207	0.000242	<0.000010	<0.000010	0.000016

Analytical Results

Sub-Matrix: **Water**
(Matrix: **Water**)

Analyte	CAS Number	Method	LOR	Unit	Client sample ID	FDP5	LDSPI	W22	W4	W29
					Client sampling date / time	27-Apr-2020 10:40	27-Apr-2020 10:20	27-Apr-2020 09:40	27-Apr-2020 09:05	27-Apr-2020 08:15
						WR2000165-001	WR2000165-002	WR2000165-003	WR2000165-004	WR2000165-005
						Result	Result	Result	Result	Result
Total Metals										
sodium, total	7440-23-5	E420	0.050	mg/L		3.09	2.51	2.23	2.23	2.75
strontium, total	7440-24-6	E420	0.00020	mg/L		0.185	0.195	0.227	0.221	0.234
sulfur, total	7704-34-9	E420	0.50	mg/L		17.5	19.4	29.9	27.8	28.5
thallium, total	7440-28-0	E420	0.000010	mg/L		0.000078	0.000132	<0.000010	<0.000010	0.000013
tin, total	7440-31-5	E420	0.00010	mg/L		0.00015	0.00022	<0.00010	<0.00010	<0.00010
titanium, total	7440-32-6	E420	0.00030	mg/L		0.0988	0.177	<0.00030	0.00765	0.0200
uranium, total	7440-61-1	E420	0.000010	mg/L		0.00332	0.00305	0.00121	0.00146	0.00185
vanadium, total	7440-62-2	E420	0.00050	mg/L		0.00707	0.0112	<0.00050	0.00069	0.00136
zinc, total	7440-66-6	E420	0.0030	mg/L		0.0458	0.0676	0.0054	0.0046	0.0059
zirconium, total	7440-67-7	E420	0.00030	mg/L		0.00064	0.00072	<0.00030	<0.00030	0.00049
Dissolved Metals										
aluminum, dissolved	7429-90-5	E421	0.0010	mg/L		0.0656	0.0894	0.0182	0.0168	0.0189
antimony, dissolved	7440-36-0	E421	0.00010	mg/L		0.00379	0.00253	0.00021	0.00060	0.00132
arsenic, dissolved	7440-38-2	E421	0.00010	mg/L		0.0255	0.0338	0.00075	0.00694	0.00870
barium, dissolved	7440-39-3	E421	0.00010	mg/L		0.0369	0.0376	0.0370	0.0388	0.0395
beryllium, dissolved	7440-41-7	E421	0.000020	mg/L		0.000027	<0.000020	<0.000020	<0.000020	<0.000020
bismuth, dissolved	7440-69-9	E421	0.000050	mg/L		<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
boron, dissolved	7440-42-8	E421	0.010	mg/L		<0.010	<0.010	<0.010	<0.010	<0.010
cadmium, dissolved	7440-43-9	E421	0.0000050	mg/L		0.0000921	0.0000611	0.0000131	0.0000199	0.0000310
calcium, dissolved	7440-70-2	E421	0.050	mg/L		37.8	32.0	43.8	38.5	42.3
chromium, dissolved	7440-47-3	E421.Cr-L	0.00010	mg/L		0.00017	0.00019	<0.00010	<0.00010	<0.00010
cobalt, dissolved	7440-48-4	E421	0.00010	mg/L		0.00069	0.00056	0.00016	0.00016	0.00020
copper, dissolved	7440-50-8	E421	0.00020	mg/L		0.00318	0.00291	0.00075	0.00089	0.00120
iron, dissolved	7439-89-6	E421	0.010	mg/L		0.127	0.151	0.070	0.064	0.060
lead, dissolved	7439-92-1	E421	0.000050	mg/L		0.000491	0.000439	<0.000050	<0.000050	0.000106
lithium, dissolved	7439-93-2	E421	0.0010	mg/L		0.0056	0.0054	0.0066	0.0071	0.0070
magnesium, dissolved	7439-95-4	E421	0.100	mg/L		9.45	11.7	18.7	17.7	19.0
manganese, dissolved	7439-96-5	E421	0.00010	mg/L		0.104	0.0948	0.0509	0.0388	0.0516
mercury, dissolved	7439-97-6	E509	0.0000050	mg/L		0.0000058	0.0000075	<0.0000050	<0.0000050	<0.0000050
molybdenum, dissolved	7439-98-7	E421	0.000050	mg/L		0.00240	0.00154	0.000131	0.000390	0.000607
nickel, dissolved	7440-02-0	E421	0.00050	mg/L		0.00232	0.00231	0.00178	0.00163	0.00169

Analytical Results

Sub-Matrix: **Water**
(Matrix: **Water**)

Analyte	CAS Number	Method	LOR	Unit	Client sample ID	FDP5	LDSPI	W22	W4	W29
					Client sampling date / time	27-Apr-2020 10:40	27-Apr-2020 10:20	27-Apr-2020 09:40	27-Apr-2020 09:05	27-Apr-2020 08:15
						WR2000165-001	WR2000165-002	WR2000165-003	WR2000165-004	WR2000165-005
						Result	Result	Result	Result	Result
Dissolved Metals										
phosphorus, dissolved	7723-14-0	E421	0.050	mg/L		<0.050	<0.050	<0.050	<0.050	<0.050
potassium, dissolved	7440-09-7	E421	0.100	mg/L		3.09	2.36	1.29	1.42	1.70
selenium, dissolved	7782-49-2	E421	0.000050	mg/L		0.000472	0.000270	0.000137	0.000204	0.000231
silicon, dissolved	7440-21-3	E421	0.050	mg/L		2.34	2.94	4.16	4.19	3.93
silver, dissolved	7440-22-4	E421	0.000010	mg/L		<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
sodium, dissolved	7440-23-5	E421	0.050	mg/L		3.25	2.42	2.18	2.27	2.89
strontium, dissolved	7440-24-6	E421	0.00020	mg/L		0.180	0.180	0.224	0.220	0.238
sulfur, dissolved	7704-34-9	E421	0.50	mg/L		17.1	17.3	28.8	26.3	27.2
thallium, dissolved	7440-28-0	E421	0.000010	mg/L		<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
tin, dissolved	7440-31-5	E421	0.00010	mg/L		<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
titanium, dissolved	7440-32-6	E421	0.00030	mg/L		0.00278	0.00156	<0.00030	<0.00030	0.00037
uranium, dissolved	7440-61-1	E421	0.000010	mg/L		0.00280	0.00226	0.00117	0.00147	0.00181
vanadium, dissolved	7440-62-2	E421	0.00050	mg/L		<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
zinc, dissolved	7440-66-6	E421	0.0010	mg/L		0.0042	0.0036	0.0036	0.0033	0.0058
zirconium, dissolved	7440-67-7	E421	0.00030	mg/L		<0.00030	<0.00030	<0.00030	<0.00030	<0.00030
dissolved mercury filtration location	----	EP509	-	-		Field	Field	Field	Field	Field
dissolved metals filtration location	----	EP421	-	-		Field	Field	Field	Field	Field
Radiological Parameters										
radium-226	13982-63-3	RA226-MMER	0.0088	Bq/L		<0.0088	----	----	----	----

Please refer to the General Comments section for an explanation of any qualifiers detected.

APPENDIX B

Acute Toxicity Results

Acute Toxicity Test Results

Sample VA20A5153,
collected April 21, 2020

Final Report

May 5, 2020

Submitted to: **ALS Environmental**
Burnaby, BC

8664 Commerce Court, Burnaby, BC V5A 4N7

SAMPLE INFORMATION

Sample ID	Dates				Receipt temp.
	Collected	Received	Rainbow trout test initiation	*Daphnia magna* test initiation	
VA20A5153	21-Apr-20 at 1340h	22-Apr-20 at 1554h	23-Apr-20 at 11124h	23-Apr-20 at 1255h	6.1 – 6.3°C

TESTS

- Rainbow trout 96-h single concentration screening test
- *Daphnia magna* 48-h single concentration screening test

RESULTS

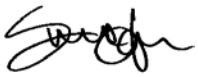
Toxicity test results

Sample ID	Percent survival in 100% (v/v) sample	
	Rainbow trout	*Daphnia magna*
VA20A5153	100	100

QA/QC

QA/QC summary	Rainbow trout	Daphnia magna
Reference toxicant LC50 (95% CL)	57.9 (43.4 – 77.2) µg/L Zn[1]	6.3 (5.2 – 7.7) g/L NaCl[2]
Reference toxicant historical mean (2 SD range)	96.8 (53.0 – 176.8) µg/L Zn	6.1 (4.4 – 8.5) g/L NaCl
Reference toxicant CV	31%	17%
Organism health history	Acceptable	Acceptable
Protocol deviations	None	None
Water quality range deviations	None	None
Control performance	Acceptable	Acceptable
Test performance	Valid	Valid

[1] Test date: April 20, 2020; [2] Test Date: April 14, 2020, LC = Lethal Concentration, CL = Confidence Limits, SD = Standard Deviation, CV = Coefficient of Variation



Report By:
Yvonne Lam, B.Sc.
Laboratory Biologist



Reviewed By:
Edmund Canaria, R.P. Bio
Senior Analyst

This report has been prepared by Nautilus Environmental Company Inc. based on data and/or samples provided by our client and the results of this study are for their sole benefit. Any reliance on the data by a third party is at the sole and exclusive risk of that party. The results presented here relate only to the samples tested.

APPENDIX A – Summary of test conditions

Table 1. Summary of test conditions: 96-h rainbow trout (*Oncorhynchus mykiss*) single concentration test.

Test species	*Oncorhynchus mykiss*
Organism source	Hatchery
Organism age	Juvenile
Test type	Static
Test duration	96 hours
Test vessel	20-L glass aquarium
Test volume	10 to 20 L (depending on size of fish)
Test solution depth	≥15 cm
Test concentrations	100% (undiluted) sample, plus laboratory control
Test replicates	1 per treatment
Number of organisms	10 per replicate
Control/dilution water	Dechlorinated Metro Vancouver municipal tapwater
Test solution renewal	None
Test temperature	15 ± 1°C
Feeding	None
Light intensity	100 to 500 lux
Photoperiod	16 hours light / 8 hours dark
Aeration	6.5 ± 1 mL/min/L
Test measurements	Temperature, dissolved oxygen and pH measured daily; salinity measured in the undiluted sample at test initiation; conductivity measured at test initiation and termination; survival checked daily
Test protocol	Environment Canada (2000), EPS 1/RM/13, with 2007 & 2016 amendments
Test endpoint	Survival
Test acceptability criterion for controls	Survival ≥90%
Reference toxicant	Zinc (added as $ZnSO_4$)

Table 2. Summary of test conditions: 48-h *Daphnia magna* single concentration test.

Test species	*Daphnia magna*
Organism source	In-house culture
Organism age	<24-hour old neonates
Test type	Static
Test duration	48 hours
Test vessel	250-mL glass beaker
Test volume	200 mL
Test solution depth	6 cm
Test concentrations	100% (undiluted) sample, plus laboratory control
Test replicates	3 per treatment
Number of organisms	10 per replicate
Control/dilution water	Moderately-hard reconstituted water + 2.5 µg/L Se
Test solution renewal	None
Test temperature	20 ± 2°C
Feeding	None
Light intensity	400 to 800 lux
Photoperiod	16 hours light / 8 hours dark
Aeration	None
Test measurements	Temperature, dissolved oxygen and pH measured daily; salinity, hardness and alkalinity measured in the undiluted sample at test initiation; conductivity measured at test initiation and termination; survival checked daily
Test protocol	Environment Canada (2000), EPS 1/RM/14, with 2016 amendments
Test endpoint	Survival
Test acceptability criterion for controls	Survival ≥90%
Reference toxicant	Sodium chloride (NaCl)

APPENDIX B – Toxicity test data

Rainbow Trout Summary Sheet

Client: ALS Environmental

Start Date/Time: 23Apr20 @ 1124h

Work Order No.: 206676

Test Species: *Oncorhynchus mykiss*

Test Validity Criteria:
≥ 90% control survival
WQ Ranges:
T (°C) = 15 ± 1; DO (mg/L) = 7.0 to 10.3; pH = 5.5 to 8.5

Sample Information:

Sample ID: VA20A5153
Sample Date: 21Apr20
Date Received: 22Apr20
Sample Volume: 6 x 10L
Other: —

Dilution Water:

Type: Dechlorinated Municipal Tap Water
Hardness (mg/L $CaCO_3$): 12
Alkalinity (mg/L $CaCO_3$): 12

Test Organism Information:

Batch No.: 040120b
Source: Lyndon Fish Hatcheries
No. Fish/Volume (L): 10/12L
Loading Density (g/L): 0.30
Mean Length ± SD (mm): 36 ± 3 Range: 34 - 41
Mean Weight ± SD (g): 0.36 ± 0.08 Range: 0.27 - 0.53

Zinc Reference Toxicant Results:

Reference Toxicant ID: RTZnL052
Stock Solution ID: 20Zn02
Date Initiated: 20Apr20
96-h LC50 (95% CL): 57.9 (43.4 - 77.2) µg/L Zn

Reference Toxicant Mean and Historical Range: 96.8 (53.0 - 176.8) µg/L Zn
Reference Toxicant CV (%): 31%

Test Results: 100% survival at 96h in the 100% (v/v) undiluted sample.

Reviewed by: [signature]

Date reviewed: April 30, 2020

96-Hour Rainbow Trout Toxicity Test Data Sheet

Client/Project#: ALS Environmental
Sample I.D. VA20A5153
W.O. # 200676
RBT Batch #: 040120b
Date Collected/Time: Apr 21/20 @ 13:40h
Date Setup/Time: Apr 23/20 @ 1124h
CER #: 8
Sample Setup By:

Thermometer: 6er8
D.O. meter/probe: 5 / P5
Cond./Salinity meter/probe: 5 / CP5
pH meter/probe: 5 / P5

Number Fish/Volume: 10/12L
7-d % Mortality: 0.5%
Total Pre-aeration Time (mins): 30
Aeration rate adjusted to 6.5 ± 1 mL/min/L? (Y/N): Y

Undiluted Sample WQ			
Parameters	Initial WQ	Adjustment	30 min WQ
Temp °C	14.5		14.5
D.O. (mg/L)	9.8		9.9
pH	7.5		7.6
Cond. (µS/cm)	396		396
Salinity (ppt)	0.2		0.2

Concentration	# Survivors							Temperature (°C)					Dissolved Oxygen (mg/L)					pH					Conductivity (µS/cm)	
(% v/v)	1	2	4	24	48	72	96	0	24	48	72	96	0	24	48	72	96	0	24	48	72	96	0	96
Ctrl				10	10	10	10	15.0	15.0	15.0	15.2	15.0	9.7	9.8	9.4	9.6	9.5	7.2	7.3	7.3	7.4	7.3	33	39
100				10	10	10	10	14.5	15.0	15.0	15.2	15.0	9.9	9.7	9.4	9.7	9.6	7.6	8.0	8.4	8.4	8.4	396	402
Initials				SM	AL	AL	SM	SM	SM	AL	AL	CM	SM	SM	AL	AL	SM	SM	SM	~	AL	SM	SM	SM

Sample Description/Comments: turbid, pale yellow sample, few particulates, no odor

Fish Description at 96 h: all fish appear normal — Number of Stressed Fish at 96 h: 0

Other Observations:

Reviewed by: — Date Reviewed: April 30, 2020

Daphnia magna Summary Sheet

Client: ALS Environmental
Work Order No.: 200677

Start Date/Time: Apr 23/2020 @ 12:55h
Test Species: *Daphnia magna*
Set up by: MW

Sample Information:

Sample ID: VA20A5153
Sample Date: Apr 21/2020
Date Received: Apr 22/2020
Sample Volume: 6 x 10L

Test Validity Criteria:

≥ 90% mean control survival and/or mobility and ≤2 daphnids exibit immobility and/or mortality in any single control replicate.

WQ Ranges:

T (°C) = 20 ± 2; DO (mg/L) = 3.6 to 9.4; pH = 6 to 8.5

Test Organism Information:

Broodstock No.: 040820A+B
Age of young (Day 0): <24 h
Avg No. young per brood in previous 7 d: 18
Mortality (%) in previous 7 d: 0
Days to first brood: 9

NaCl Reference Toxicant Results:

Reference Toxicant ID: Dm DC 49
Stock Solution ID: 20 NaCl
Date Initiated: Apr 14/2020
48-h LC50 (95% CL): 6.3 (5.2 - 7.7) g/LNaCL

Reference Toxicant Mean and Historical Range: 6.1 (4.4 - 8.5) g/L NaCL
Reference Toxicant CV (%): 17

Test Results: ~~The 48h LC50 is estimated to be.~~
100 % survived at 48 h in the 100 % (v/v) undiluted sample.

Reviewed by: [signature]

Date reviewed: April 30, 2020

Freshwater Acute
48 Hour Toxicity Test Data Sheet

Client: AJS Environmental
Sample ID: VA20A5153
Work Order No.: 200677

Start Date/Time: Apr 23/2020 @ 1235L
CER #: 5
No. Organisms/volume: 10/200mL
Test Organism: *D.magna*
Set up by: MME

Thermometer: CER#5 pH meter/probe: 6 / 6 DO meter/probe: 6 / 6 Cond./Salinity meter/probe: 6 / 6

Concentration % (v/v)	Rep	Number of Live Organisms 24	Number of Live Organisms 48	No. Immobilized 48	Temperature (°C) 0	Temperature (°C) 24	Temperature (°C) 48	Dissolved oxygen (mg/L) 0	Dissolved oxygen (mg/L) 24	Dissolved oxygen (mg/L) 48	pH 0	pH 24	pH 48	Conductivity (µS/cm) 0	Conductivity (µS/cm) 48
Control	A	10	10	1	19.0	19.0	19.0	9.0	8.4	8.2	8.1	8.0	7.7	344	351
	B	10	10	0											
	C	10	10	0											
	D														
100	A	10	10	0	19.0	19.0	19.0	9.2	8.2	8.2	7.7	7.8	7.9	400	401
	B	10	10	0											
	C	10	10	0											
	D														
	A														
	B														
	C														
	D														
	A														
	B														
	C														
	D														
	A														
	B														
	C														
	D														
	A														
	B														
	C														
	D														
Technician Initials		MME	n	n	MME	MME	n	MME	MME	n	MME	MME	n	MME	n

Concentration	Hardness*	Alkalinity*
	*(mg/L as CaCo3)	
Control (MHW)	98	84
Highest conc.	230	120
Hardness adjusted	—	

	Initial WQ	Adjustment	Adjusted WQ
Temp (°C)	19.0		
DO (mg/L)	9.2		
pH	7.7		
Cond (µS/cm)	400		
Salinity (ppt)	0.2		

Comments: _____ Mortality: Heartbeat checked under microscope ~~yes~~ no not required

Sample Description: turbid, pale yellow, no odour, some particulates

Batch#: 040820A1B 7-d previous # young/brood: 18 Previous 7-d Mortality (%): 0 Day of 1st Brood: 9

Reviewed by: _____ Date reviewed: April 30, 2020

APPENDIX C – Chain-of-custody form

Chain of Custody
Vancouver - Environmental
8081 Lougheed Highway
Burnaby British Columbia
Canada V5A 1W9

COPY

1271

Destination Lab: **Nautilus Environmental**	Due Date: 29/04/2020	Relinquished By
Address: (Burnaby)erce Court	HT Expiry:	Date/Time
Client: Victoria Gold (Yukon) Corp.	Consignment company and Number	Received By
Work Order Number: **VA20A5153**		Date/Time
Original Receipt Date/Time 22/04/2020 15:06	Instructions Received	Receipt Temp

ALS Lab ID	Bottle Code	Matrix	Submatrix	Container Type	Test Codes	Task Remarks
VA20A5153	001-AI	Water	Water	HDPE carboy LC50	DAP-LC50-48 96 plP . TRT-LC50- plP	
VA20A5153	001-AJ	Water	Water	HDPE carboy LC50		
VA20A5153	001-AK	Water	Water	HDPE carboy LC50		
VA20A5153	001-AL	Water	Water	HDPE carboy LC50		
VA20A5153	001-AM	Water	Water	HDPE carboy LC50		
VA20A5153	001-AN	Water	Water	HDPE carboy LC50		

Samplins Date: April 21
13:40

- See attached CoC for client instructi
- Rainbow trout
- Daphnic Magna
- Fathead Minnow
- C. Dubia
- P. Subcapitata
- Lemna Minor

Account Manager: Hilary Woods

ALSEVDataSublet@ALSGlobal.com (PDF / EXCEL/ B2B)
ALS Vancouver Phone Number: 604-253-4188

Apr. 22/20 @ 15:54
TH
6.1-6.3°C
6x10L
200676 - Rbt LC50 plP
200677 - D.M. LC50 plP
200678 - Fathead
200679 - Ceriod
200680 - P. Subcap.
200681 - L. minor

Sample Description: turbid, pale yellow sample, few particulates, no odour

Chain of Custody (COC) / Analytical Request Form

ALS Environmental

Canada Toll Free: 1 800 668 9878

www.alsglobal.com

Affix ALS barcode label here (lab use only)

COC Number: 20 20 00 42 13

Page of

Report To	Contact and company name below will appear on the final report
Company:	StrataGold Corporation
Contact:	Bill Bowden
Phone:	867-456-7700 x 6381
	Company address below will appear on the final report
Street:	100-1050 West Pender Street
City/Province:	Vancouver, BC
Postal Code:	V6E 3S7
Invoice To	Same as Report To ☐ YES ☑ NO
	Copy of Invoice with Report ☑ YES ☐ NO
Company:	STR125-EAGLEGOLD-VA
Contact:	

Report Format / Distribution	
Select Report Format:	☑ PDF ☑ EXCEL ☑ EDD (DIGITAL)
Quality Control (QC) Report with Report	☐ YES ☐ NO
☐ Compare Results to Criteria on Report - provide details below if box checked	
Select Distribution:	☑ EMAIL ☐ MAIL ☐ FAX
Email 1 or Fax	kbabin@vitgoldcorp.com, swilbur@vitgoldcorp.com
Email 2	pemerson@vitgoldcorp.com, lrear@vitgoldcorp.com
Email 3	bbowden@vitgoldcorp.com, hcoyle@vitgoldcorp.co

Invoice Distribution	
Select Invoice Distribution:	☐ EMAIL ☐ MAIL ☐ FAX
Email 1 or Fax	accountspayable@vitgoldcorp.com
Email 2	bbowden@vitgoldcorp.com

Select Service Level Below - Contact your AM to confirm all E&P TATs (surcharges may apply)

Regular [R] ☑ Standard TAT if received by 3 pm - business days - no surcharges apply

PRIORITY (Business Days): 4 day [P4-20%] ☐ | 3 day [P3-25%] ☐ | 2 day [P2-50%] ☐

EMERGENCY: 1 Business day [E1 - 100%] ☐ | Same Day, Weekend or Statutory holiday [E2 -200% (Laboratory opening fees may apply)] ☐

Date and Time Required for all E&P TATs:

For tests that can not be performed according to the service level selected, you will be contacted.

Project Information		Oil and Gas Required Fields (client use)	
ALS Account # / Quote #:	STRG100 Q88199	AFE/Cost Center:	PO#
Job #:	LDSP (April 21)	Major/Minor Code:	Routing Code:
PO / AFE:	14043	Requisitioner:	
LSD:		Location:	

ALS Lab Work Order # (lab use only):

ALS Contact: Hilary Woods | Sampler: PE

Analysis Request

Indicate Filtered (F), Preserved (P) or Filtered and Preserved (F/P) below

ALS Sample # (lab use only)	Sample Identification and/or Coordinates (This description will appear on the report)	Date (dd-mmm-yy)	Time (hh:mm)	Sample Type	ESW + T. Phosphate	NH3	CN2	RAD-226	MDMER-EFF	MDMER-DEL	Acute lethality to Rainbow Trout Test Method EPS/1/RM/13	Acute lethality to Daphnia magna Test Method EPS/1/RM/14	Sublethal Tox (Fathead Minnow, C. dubia, P. subcapitata, Lemna minor)	SAMPLES ON HOLD	Sample is hazardous (please provide further detail)	NUMBER OF CONTAINERS
	FDP5	21-Apr-20		water	R	R	R	R			R	R	R			17

COPY

Environmental Division
Vancouver
Work Order Reference
VA20A5153

Telephone : +1 604 253 4188

Drinking Water (DW) Samples[1] (client use)	Special Instructions / Specify Criteria to add on report by clicking on the drop-down list below (electronic COC only)
Are samples taken from a Regulated DW System? ☐ YES ☑ NO	
Are samples for human consumption/ use? ☐ YES ☑ NO	Please include Yukon Government EQWin format

(lab use only)

Frozen ☐ SIF Observations Yes ☐ No ☐

Ice Packs ☑ Ice Cubes ☐ Custody seal intact Yes ☐ No ☐

Cooling Initiated ☐

INITIAL COOLER TEMPERATURES °C	FINAL COOLER TEMPERATURES °C
	4

SHIPMENT RELEASE (client use)			INITIAL SHIPMENT RECEPTION (lab use only)			FINAL SHIPMENT RECEPTION (lab use only)		
Released by: P. Emerson	Date: April 21, 2020	Time: 14:00	Received by:	Date:	Time:	Received by: HA	Date: 22/4/20	Time: 2:15 Pm

REFER TO BACK PAGE FOR ALS LOCATIONS AND SAMPLING INFORMATION

WHITE - LABORATORY COPY YELLOW - CLIENT COPY

SEPT 2017 FRONT

Failure to complete all portions of this form may delay analysis. Please fill in this form LEGIBLY. By the use of this form the user acknowledges and agrees with the Terms and Conditions as specified on the back page of the white - report copy.

1. If any water samples are taken from a Regulated Drinking Water (DW) System, please submit using an Authorized DW COC form.

END OF REPORT

APPENDIX D

HLF Solution Information and Ore Placed

Date	Elevation (masl)	Pumpable Vol. (m^3)	Free Volume (m^3)	Total Ore Placed (DMT)	%Mositure	Mositure Volume in Ore (m^3)
1-Jan-20				12,271	1.5%	186
2-Jan-20	923.6	7,638	50,122	23,531	1.5%	356
3-Jan-20	926.0	12,039	45,709	14,012	1.5%	212
4-Jan-20	926.6	13,275	44,471	21,952	1.5%	332
5-Jan-20				13,780	1.5%	209
6-Jan-20	926.6	13,467	44,280	5,421	1.5%	82
7-Jan-20				4,260	1.5%	64
8-Jan-20	927.3	14,938	42,807	0	1.5%	0
9-Jan-20				0	1.5%	0
10-Jan-20	925.7	11,330	46,419	697	1.5%	11
11-Jan-20	925.5	11,034	46,716	3,680	1.5%	56
12-Jan-20				116	1.5%	2
13-Jan-20				3,536	1.5%	54
14-Jan-20				7,325	1.5%	111
15-Jan-20				2,400	1.5%	36
16-Jan-20				8,588	1.5%	130
17-Jan-20				4,925	3.2%	156
18-Jan-20	923.9	8,168	49,590	7,577	1.5%	115
19-Jan-20				12,755	2.1%	269
20-Jan-20	924.4	8,884	48,872	16,287	1.8%	296
21-Jan-20	924.5	9,072	48,683	8,286	3.1%	258
22-Jan-20				0	1.5%	0
23-Jan-20	924.9	9,818	47,934	0	1.5%	0
24-Jan-20	924.7	9,552	48,201	0	1.5%	0
25-Jan-20	924.9	9,862	47,890	0	1.5%	0
26-Jan-20	924.9	9,924	47,828	0	1.5%	0
27-Jan-20				0	1.5%	0
28-Jan-20	925.1	10,288	47,463	0	1.5%	0
29-Jan-20				0	1.5%	0
30-Jan-20				0	1.5%	0
31-Jan-20				0	1.5%	0
1-Feb-20	927.1	14,440	43,306	0	2.1%	0
2-Feb-20	927.3	15,151	42,594	0	2.1%	0
3-Feb-20	927.4	15,333	42,413	6,563	2.1%	140
4-Feb-20	927.2	14,837	42,908	9,285	2.1%	199
5-Feb-20				12,886	2.1%	276
6-Feb-20	927.4	15,333	42,413	9,385	2.1%	201
7-Feb-20				13,980	2.1%	299
8-Feb-20	927.9	16,644	41,102	6,423	2.1%	137
9-Feb-20				0	2.1%	0
10-Feb-20				5,530	2.1%	118
11-Feb-20	928.7	18,643	39,103	4,726	2.1%	101
12-Feb-20				0	2.1%	0
13-Feb-20				7,566	2.1%	162
14-Feb-20				8,272	2.1%	177
15-Feb-20	928.0	16,827	40,919	0	2.1%	0
16-Feb-20				2,424	2.1%	52
17-Feb-20				9,452	2.1%	202
18-Feb-20				3,636	2.1%	78
19-Feb-20				13,936	2.1%	298
20-Feb-20				7,446	2.1%	159
21-Feb-20	929.5	21,205	36,545	9,131	2.1%	195
22-Feb-20	929.7	21,880	35,870	20,725	2.1%	444

Date	Elevation (masl)	Pumpable Vol. (m^3)	Free Volume (m^3)	Total Ore Placed (DMT)	%Mositure	Mositure Volume in Ore (m^3)
23-Feb-20	930.0	22,618	35,134	24,237	2.1%	519
24-Feb-20				0	2.1%	0
25-Feb-20				0	2.1%	0
26-Feb-20	930.5	24,330	33,424	0	2.1%	0
27-Feb-20				0	2.1%	0
28-Feb-20				0	2.1%	0
29-Feb-20	930.6	24,908	32,847	0	2.1%	0
1-Mar-20	929.5	21,250	36,500	5,412	2.7%	146
2-Mar-20				12,576	1.9%	234
3-Mar-20				12,567	1.4%	170
4-Mar-20	927.9	16,644	41,102	18,592	2.3%	418
5-Mar-20				10,129	1.8%	182
6-Mar-20	927.7	16,167	41,578	11,342	2.0%	224
7-Mar-20				12,666	2.0%	247
8-Mar-20				18,796	2.1%	386
9-Mar-20				10,677	1.8%	190
10-Mar-20				14,999	1.3%	190
11-Mar-20	928.3	17,525	40,221	6,375	1.2%	73
12-Mar-20				261	2.3%	6
13-Mar-20				7,059	2.7%	191
14-Mar-20	929.6	21,341	36,409	12,206	1.8%	220
15-Mar-20				22,134	2.3%	509
16-Mar-20	930.5	24,318	33,436	26,394	3.0%	786
17-Mar-20	931.1	26,432	31,325	17,889	0.9%	161
18-Mar-20	928.7	18,643	39,103	24,544	1.3%	319
19-Mar-20	930.0	22,868	34,884	20,141	1.3%	262
20-Mar-20	926.8	13,903	43,842	22,463	2.2%	494
21-Mar-20	929.9	22,300	35,451	21,147	3.2%	677
22-Mar-20				23,616	2.6%	614
23-Mar-20	929.6	21,455	36,295	8,960	1.8%	157
24-Mar-20	929.2	20,344	37,404	29,160	2.6%	758
25-Mar-20	929.5	20,990	36,759	22,151	2.7%	598
26-Mar-20	928.8	18,967	38,780	14,666	2.9%	425
27-Mar-20				17,552	3.0%	518
28-Mar-20	926.3	12,613	45,134	20,251	2.5%	506
29-Mar-20	924.7	9,451	48,303	31,344	3.2%	1,003
30-Mar-20	923.1	6,877	50,887	31,869	2.6%	829
31-Mar-20				32,761	2.7%	885
1-Apr-20	921.7	5,000	52,774	31,155	1.9%	585
2-Apr-20	920.9	4,013	53,767	33,725	2.2%	734
3-Apr-20	919.9	3,022	54,765	10,826	2.5%	266
4-Apr-20	918.4	1,825	55,965	26,888	1.7%	453
5-Apr-20	919.2	2,396	55,393	37,054	2.6%	960
6-Apr-20	920.4	3,472	54,312	29,776	2.7%	800
7-Apr-20	921.5	4,682	53,094	22,473	3.0%	683
8-Apr-20	920.9	4,005	53,775	20,822	2.4%	500
9-Apr-20	919.0	2,272	55,518	29,250	1.8%	517
10-Apr-20	917.5	1,268	56,520	26,432	2.4%	643
11-Apr-20	917.7	1,342	56,447	29,230	1.2%	346
12-Apr-20	917.6	1,321	56,468	14,283	1.9%	278
13-Apr-20	918.1	1,631	56,159	32,086	2.7%	869
14-Apr-20	917.5	1,260	56,529	33,801	2.0%	688
15-Apr-20	919.2	2,376	55,413	4,327	2.0%	86

Date	Elevation (masl)	Pumpable Vol. (m^3)	Free Volume (m^3)	Total Ore Placed (DMT)	%Mositure	Mositure Volume in Ore (m^3)
16-Apr-20	923.5	7,516	50,245	27,269	1.9%	527
17-Apr-20	926.0	12,099	45,649	27,479	3.0%	828
18-Apr-20	926.2	12,414	45,334	16,221	2.6%	418
19-Apr-20	924.6	9,220	48,535	27,952	3.3%	924
20-Apr-20	921.9	5,154	52,619	31,043	2.9%	896
21-Apr-20	917.3	1,166	56,621	37,202	3.1%	1,155
22-Apr-20	918.4	1,841	55,950	20,216	4.1%	830
23-Apr-20	917.4	1,198	56,589	38,615	2.4%	940
24-Apr-20	921.0	4,157	53,623	35,313	2.9%	1,010
25-Apr-20	920.3	3,439	54,345	26,362	2.9%	766
26-Apr-20	923.4	7,350	50,411	14,258	2.0%	288
27-Apr-20	923.6	7,678	50,082	10,397	0.6%	66
28-Apr-20	921.4	4,558	53,219	29,029	1.3%	377
29-Apr-20	921.1	4,197	53,582	29,931	2.0%	587
30-Apr-20	919.1	2,335	55,454	33,539	2.9%	959
1-May-20	919.4	2,589	55,200	31,105	3.3%	1,037
2-May-20	920.4	3,457	54,327	25,743	2.9%	735
3-May-20	920.2	3,268	54,517	27,858	2.8%	773
4-May-20	924.2	8,661	49,095	19,678	4.1%	809
5-May-20	927.6	15,904	41,841	27,447	3.8%	1,055
6-May-20	930.2	23,518	34,235	22,485	2.5%	553
7-May-20	931.3	27,272	30,487	21,050	4.3%	900
8-May-20	931.4	27,597	30,163	12,436	2.2%	273
9-May-20	931.5	27,924	29,836	31,726	2.4%	755
10-May-20	931.8	28,951	28,811	34,929	1.8%	622
11-May-20	932.2	30,730	27,035	20,522	1.9%	390
12-May-20	932.0	30,032	27,731	23,229	2.0%	462
13-May-20	931.8	29,289	28,473	16,674	1.5%	258
14-May-20	931.9	29,573	28,189	23,460	1.4%	333
15-May-20	932.2	30,774	26,991	28,905	1.8%	530
16-May-20	932.7	32,752	25,016	19,368	2.8%	537
17-May-20	932.3	30,950	26,815	14,384	1.8%	260
18-May-20	932.2	30,700	27,064	8,560	1.2%	107
19-May-20	932.6	32,325	25,442	13,685	1.3%	180
20-May-20	932.5	31,902	25,864	26,952	2.3%	613
21-May-20	932.5	32,053	25,714	26,079	3.0%	786
22-May-20	933.0	33,868	23,901	22,608	2.8%	633
23-May-20	933.6	36,908	20,865	20,979	2.4%	505
24-May-20	934.7	42,026	15,751	20,745	3.5%	719
25-May-20	934.2	39,504	18,272	4,795	2.8%	133
26-May-20	933.7	37,377	20,397	32,635	3.8%	1,236
27-May-20	933.7	36,975	20,798	31,844	2.1%	683
28-May-20	933.7	37,193	20,581	30,730	1.8%	555
29-May-20	933.7	37,025	20,748	9,706	1.8%	175
30-May-20	933.6	36,477	21,296	15,183	2.4%	361
31-May-20	933.2	35,011	22,760	11,346	2.7%	307
1-Jun-20	932.8	33,183	24,585	13,591	3.9%	530
2-Jun-20	932.1	30,336	27,428	37,463	3.3%	1,248
3-Jun-20	931.4	27,760	30,000	34,506	3.2%	1,104
4-Jun-20	930.4	24,181	33,573	34,889	2.0%	712
5-Jun-20	930.3	23,677	34,076	35,324	2.7%	971
6-Jun-20	929.9	22,394	35,357	28,157	2.5%	692
7-Jun-20	930.7	25,009	32,746	15,070	2.4%	355

Date	Elevation (masl)	Pumpable Vol. (m^3)	Free Volume (m^3)	Total Ore Placed (DMT)	%Mositure	Mositure Volume in Ore (m^3)
8-Jun-20	930.1	22,975	34,777	29,130	3.5%	1,005
9-Jun-20	930.6	24,618	33,137	27,382	3.7%	1,023
10-Jun-20	930.4	23,934	33,819	29,471	2.1%	626
11-Jun-20	930.6	24,832	32,923	14,535	2.6%	373
12-Jun-20	930.8	25,443	32,313	31,679	2.9%	924
13-Jun-20	930.5	24,530	33,224	24,870	2.4%	592
14-Jun-20	929.3	20,588	37,161	28,276	1.1%	322
15-Jun-20	927.7	16,017	41,729	5,831	3.5%	201
16-Jun-20	926.9	14,066	43,679	26,817	3.5%	925
17-Jun-20	925.8	11,652	46,096	24,842	3.8%	954
18-Jun-20	926.8	13,784	43,962	26,858	3.8%	1,010
19-Jun-20	927.3	14,971	42,774	32,631	2.8%	914
20-Jun-20	929.4	20,855	36,894	29,564	2.2%	642
21-Jun-20	930.3	23,873	33,881	25,662	3.5%	885
22-Jun-20	930.7	25,060	32,695	21,666	4.2%	911
23-Jun-20	933.1	34,404	23,366	2,689	3.5%	93
24-Jun-20	933.6	36,759	21,014	14,236	3.5%	491
25-Jun-20	933.7	37,109	20,665	11,381	3.7%	425
26-Jun-20	933.3	35,139	22,632	5,921	2.1%	127
27-Jun-20	933.2	34,978	22,792	24,079	1.7%	398
28-Jun-20	932.7	32,875	24,893	12,308	2.5%	303
29-Jun-20	932.9	33,633	24,136	18,259	4.3%	790
30-Jun-20	932.8	33,013	24,755	26,858	2.2%	589
1-Jul-20	932.8	33,167	24,601	14,389	2.1%	301
2-Jul-20	932.9	33,727	24,042	6,644	1.6%	108
3-Jul-20	932.9	33,462	24,307	31,474	2.1%	661
4-Jul-20	933.1	34,675	23,096	28,196	1.9%	527
5-Jul-20	933.1	34,357	23,413	19,170	3.0%	569
6-Jul-20	932.9	33,462	24,307	10,783	1.7%	178
7-Jul-20	932.6	32,386	25,381	27,693	4.1%	1,130
8-Jul-20	932.2	30,876	26,888	26,685	2.5%	659
9-Jul-20	931.7	28,839	28,923	22,849	2.3%	526
10-Jul-20				29,363	3.6%	1,057
11-Jul-20	931.5	27,910	29,849	3,759	3.6%	135
12-Jul-20	932.3	31,245	26,520	20,391	4.0%	816
13-Jul-20	932.5	31,722	26,044	638	2.3%	15
14-Jul-20	932.6	32,325	25,442	27,320	3.4%	937
15-Jul-20	932.1	30,162	27,602	33,425	3.2%	1,053
16-Jul-20	932.1	30,162	27,602	11,183	2.8%	315
17-Jul-20	932.2	30,862	26,903	4,747	2.3%	109
18-Jul-20	932.2	30,774	26,991	4,120	2.3%	95
19-Jul-20	933.1	34,373	23,398	5,083	2.3%	117
20-Jul-20	933.0	34,214	23,556	10,994	4.0%	440
21-Jul-20				18,121	2.4%	435
22-Jul-20	933.4	35,967	21,815	19,919	2.5%	498
23-Jul-20	933.5	36,460	21,323	10,280	4.0%	411
24-Jul-20	933.9	38,242	19,546	25,961	2.5%	649
25-Jul-20	934.7	42,191	15,603	13,404	4.0%	536
26-Jul-20	935.0	43,395	14,401	22,170	4.0%	887
27-Jul-20	935.0	43,658	14,138	14,236	4.0%	569
28-Jul-20	935.0	43,714	14,082	14,892	3.6%	536
29-Jul-20	935.4	45,353	12,444	0	0.0%	0
30-Jul-20	935.0	43,339	14,457	0	0.0%	0

Date	Elevation (masl)	Pumpable Vol. (m^3)	Free Volume (m^3)	Total Ore Placed (DMT)	%Mositure	Mositure Volume in Ore (m^3)
31-Jul-20	934.9	43,190	14,606	0	0.0%	0
1-Aug-20	935.1	43,827	13,969	0	2.3%	0
2-Aug-20	934.9	42,948	14,848	1,871	0.0%	0
3-Aug-20	934.6	41,480	16,313	9,468	2.7%	260
4-Aug-20	935.0	43,264	14,531	20,375	2.4%	489
5-Aug-20	932.6	32,523	25,250	26,029	4.5%	1,171
6-Aug-20	931.7	28,839	28,922	9,208	2.3%	212
7-Aug-20	931.1	26,419	31,333	23,584	1.7%	401
8-Aug-20	930.6	24,832	32,914	18,917	4.9%	936
9-Aug-20	931.0	26,013	31,738	22,027	4.0%	874
10-Aug-20	931.0	26,314	31,438	30,508	4.7%	1,419
11-Aug-20	931.2	26,737	31,016	34,096	3.2%	1,083
12-Aug-20	930.8	25,495	32,254	28,333	3.2%	900
13-Aug-20	930.4	24,194	33,551	32,223	4.6%	1,482
14-Aug-20				6,744	5.3%	357
15-Aug-20	929.8	22,241	35,497	26,661	4.6%	1,218
16-Aug-20	930.5	24,480	33,265	30,000	5.1%	1,522
17-Aug-20	930.8	25,405	32,344	20,441	6.7%	1,359
18-Aug-20	930.7	24,958	32,788	34,728	1.5%	528
19-Aug-20	930.4	24,058	33,686	25,851	2.9%	743
20-Aug-20	930.1	23,023	34,718	30,537	2.1%	636
21-Aug-20	929.8	22,066	35,672	25,578	3.6%	929
22-Aug-20	929.7	21,903	35,834	26,892	2.1%	569
23-Aug-20	929.8	22,101	35,637	31,747	2.8%	900
24-Aug-20	929.7	21,838	35,900	20,042	3.3%	661
25-Aug-20	929.6	21,325	36,410	14,226	3.2%	452
26-Aug-20	929.9	22,471	35,268	28,869	4.7%	1,357
27-Aug-20	931.2	26,703	31,049	26,579	2.5%	673
28-Aug-20	931.0	26,284	31,468	25,810	2.1%	533
29-Aug-20	931.3	27,084	30,670	31,202	2.1%	640
30-Aug-20	931.7	28,685	29,075	34,684	2.9%	1,017
31-Aug-20	931.6	28,460	29,299	19,343	2.6%	505
1-Sep-20	932.0	29,987	27,777	27,385	2.7%	735
2-Sep-20	932.9	33,504	24,271	18,284	3.4%	616
3-Sep-20	933.3	35,445	22,336	20,536	2.4%	488
4-Sep-20	932.2	30,731	27,036	28,203	4.0%	1,128
5-Sep-20	933.6	36,531	21,253	32,372	4.0%	1,295
6-Sep-20	933.9	38,026	19,761	22,485	2.1%	465
7-Sep-20	934.0	38,575	19,214	29,049	3.0%	871
8-Sep-20	933.9	38,073	19,715	21,328	2.4%	520
9-Sep-20	934.0	38,434	19,355	21,720	2.2%	471
10-Sep-20				29,771	2.3%	673
11-Sep-20	934.3	40,167	17,624	24,556	2.9%	702
12-Sep-20	934.3	39,930	17,861	23,365	2.3%	537
13-Sep-20	934.3	39,800	17,991	21,226	4.0%	849
14-Sep-20	934.2	39,545	18,245	25,936	2.6%	685
15-Sep-20	933.6	36,831	20,953	21,187	2.5%	530
16-Sep-20	932.7	32,822	24,951	0	0.0%	0
17-Sep-20	931.8	29,182	28,580	7,224	2.3%	166
18-Sep-20	931.2	26,941	30,813	18,431	4.0%	737
19-Sep-20	931.9	29,606	28,157	25,974	2.6%	670
20-Sep-20	931.2	26,864	30,889	30,115	2.1%	632
21-Sep-20	931.4	27,591	30,165	21,251	2.8%	602

Date	Elevation (masl)	Pumpable Vol. (m^3)	Free Volume (m^3)	Total Ore Placed (DMT)	%Mositure	Mositure Volume in Ore (m^3)
22-Sep-20	932.2	30,807	26,959	32,011	2.7%	864
23-Sep-20	931.8	29,104	28,657	32,035	2.5%	794
24-Sep-20				30,166	2.1%	640
25-Sep-20	932.0	30,089	27,675	27,256	2.5%	681
26-Sep-20	931.9	29,668	28,095	28,631	2.8%	813
27-Sep-20	932.4	31,566	26,204	26,022	4.0%	1,041
28-Sep-20				16,194	3.2%	510
29-Sep-20	933.3	35,224	22,557	28,836	1.9%	548
30-Sep-20	933.3	35,494	22,287	23,400	1.4%	328
1-Oct-20	933.2	35,100	22,680	32,309	3.8%	1,239
2-Oct-20	933.6	36,795	20,990	23,867	1.8%	426
3-Oct-20	933.9	37,989	19,798	28,996	2.3%	667
4-Oct-20	934.1	38,910	18,879	24,244	4.0%	970
5-Oct-20	934.1	39,229	18,561	25,796	4.0%	1,032
6-Oct-20	934.6	41,433	16,360	22,994	3.6%	828
7-Oct-20	934.8	42,328	15,467	27,288	2.6%	719
8-Oct-20	934.8	42,687	15,109	23,432	4.0%	937
9-Oct-20	935.2	44,523	13,240	3,684	2.3%	85
10-Oct-20	935.3	44,995	12,768	37,222	2.3%	856
11-Oct-20	935.2	44,691	13,072	33,407	2.1%	708
12-Oct-20	935.4	45,545	12,218	34,073	2.9%	994
13-Oct-20	934.6	41,512	16,250	31,519	3.3%	1,040
14-Oct-20	934.2	39,449	18,314	31,972	2.6%	831
15-Oct-20	932.6	32,308	25,455	28,145	3.6%	1,027
16-Oct-20	930.7	25,251	32,512	22,116	1.6%	354
17-Oct-20	929.4	20,846	36,917	12,592	2.7%	336
18-Oct-20	926.0	12,029	45,734	29,071	2.2%	640
19-Oct-20	927.9	16,659	41,104	18,670	1.9%	362
20-Oct-20	927.9	16,566	41,196	32,343	2.0%	658
21-Oct-20	927.0	14,302	43,461	32,057	2.8%	882
22-Oct-20	927.0	14,345	43,418	29,070	2.7%	779
23-Oct-20	928.2	17,474	40,289	33,775	2.4%	799
24-Oct-20	929.0	19,752	38,011	36,153	2.2%	795
25-Oct-20	929.7	21,636	36,127	25,910	2.3%	596
26-Oct-20	930.3	23,662	34,101	1,527	2.3%	35
27-Oct-20	931.0	26,305	31,458	21,879	3.0%	645
28-Oct-20	931.2	26,827	30,935	10,351	2.2%	228
29-Oct-20	931.2	26,879	30,884	7,879	2.5%	197
30-Oct-20	931.3	27,279	30,484	17,464	2.0%	341
31-Oct-20	931.3	27,106	30,657	18,598	2.0%	372
1-Nov-20	930.9	25,691	32,072	14,790	2.0%	301
2-Nov-20	930.3	23,732	34,031	23,460	3.1%	727
3-Nov-20	929.5	21,136	36,627	533	4.2%	22
4-Nov-20	927.9	16,593	41,170	36,466	3.3%	1,189
5-Nov-20	924.0	8,317	49,446	16,180	4.0%	647
6-Nov-20	919.5	2,699	55,064	9,242	2.2%	203
7-Nov-20	924.8	9,655	48,108	0	0.0%	0
8-Nov-20	929.1	19,921	37,842	0	0.0%	0
9-Nov-20	929.4	20,769	36,993	21,746	2.5%	549
10-Nov-20	930.5	24,557	33,206	21,652	3.3%	720
11-Nov-20	931.2	26,751	31,012	25,856	2.5%	646
12-Nov-20	931.5	28,115	29,647	11,379	2.4%	276
13-Nov-20	931.6	28,510	29,253	24,047	2.8%	673

Date	Elevation (masl)	Pumpable Vol. (m^3)	Free Volume (m^3)	Total Ore Placed (DMT)	%Mositure	Mositure Volume in Ore (m^3)
14-Nov-20	931.6	28,525	29,238	12,886	2.3%	296
15-Nov-20	931.7	28,911	28,851	21,539	1.9%	414
16-Nov-20	931.7	28,555	29,208	9,872	2.3%	227
17-Nov-20	931.2	26,729	31,034	8,225	2.5%	206
18-Nov-20				19,320	2.8%	541
19-Nov-20	928.9	19,378	38,384	9,723	3.4%	331
20-Nov-20				23,213	2.3%	529
21-Nov-20	927.2	14,716	43,047	8,147	2.7%	220
22-Nov-20	925.8	11,656	46,107	15,978	4.0%	639
23-Nov-20	925.1	10,181	47,582	32,320	2.8%	894
24-Nov-20	926.2	12,580	45,183	23,704	1.7%	403
25-Nov-20	927.9	16,653	41,109	24,076	1.9%	449
26-Nov-20	929.6	21,425	36,337	20,924	2.4%	502
27-Nov-20	930.8	25,599	32,164	13,564	2.2%	299
28-Nov-20	931.2	26,875	30,888	23,022	2.0%	460
29-Nov-20	930.9	25,712	32,051	31,481	2.0%	630
30-Nov-20	930.6	24,819	32,944	31,350	2.5%	773
1-Dec-20	930.2	23,398	34,364	30,281	1.9%	587
2-Dec-20				13,213	4.0%	529
3-Dec-20	925.8	11,583	46,180	36,973	2.7%	998
4-Dec-20	924.2	8,644	49,119	33,982	2.7%	912
5-Dec-20	923.8	7,894	49,869	34,045	2.5%	858
6-Dec-20	923.6	7,580	50,183	40,717	2.3%	953
7-Dec-20	923.9	8,090	49,672	38,627	2.4%	914
8-Dec-20	925.2	10,443	47,320	36,411	2.5%	921
9-Dec-20	925.6	11,128	46,635	36,301	2.4%	871
10-Dec-20	925.6	11,134	46,629	28,642	3.2%	904
11-Dec-20	925.4	10,848	46,914	43,763	2.4%	1,072
12-Dec-20	925.4	10,785	46,978	45,292	3.4%	1,563
13-Dec-20	925.6	11,321	46,442	41,107	4.0%	1,644
14-Dec-20	926.2	12,477	45,286	27,522	2.2%	596
15-Dec-20	926.1	12,258	45,505	37,275	2.4%	888
16-Dec-20	926.1	12,305	45,457	23,243	3.5%	814
17-Dec-20	926.8	13,779	43,984	26,424	2.3%	613
18-Dec-20	927.9	16,443	41,320	33,491	2.1%	698
19-Dec-20	928.8	19,178	38,585	30,714	1.8%	553
20-Dec-20	929.4	20,693	37,070	22,597	2.2%	508
21-Dec-20	929.9	22,259	35,504	34,582	1.9%	650
22-Dec-20	930.1	22,999	34,764	32,161	2.3%	745
23-Dec-20	930.3	23,725	34,037	22,914	0.0%	0
24-Dec-20	931.3	27,209	30,554	30,298	2.5%	757
25-Dec-20	932.3	31,110	26,653	36,894	2.8%	1,026
26-Dec-20	932.3	31,110	26,653	38,278	2.4%	938
27-Dec-20	932.2	30,547	27,216	30,799	2.5%	760
28-Dec-20	931.6	28,179	29,583	38,587	1.8%	707
29-Dec-20	931.2	26,813	30,950	28,334	2.0%	578
30-Dec-20	931.0	26,176	31,587	32,491	2.2%	725
31-Dec-20	930.9	25,733	32,029	37,469	3.5%	1,323

APPENDIX E

Streamflow Monitoring Report – 2020 Update

Victoria GOLD CORP

Eagle Gold
Streamflow Monitoring Report – 2020 Update



Project No. A610-1
25 March 2021

Prepared by:
Lorax Environmental Services Ltd.
Vancouver, BC

LORAX ENVIRONMENTAL

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1. Introduction



1. Introduction

1.1 Scope of Report

This report presents a summary of all streamflow data (i.e., baseline, construction and operational data) collected for the Eagle Gold Project (Project) since August 2007, including hydrometric information summarized in previous reports (Jacques Whitford 2008; Stantec 2010; Stantec 2011; Stantec 2012; Knight Piésold 2013, Lorax 2017, Lorax 2018, Lorax 2019 and Lorax 2020).

An overview of the streamflow monitoring program is provided in Section 2. Methods for the measurement of streamflow and stage (both spot and continuous) are presented in Section 3, along with the approach used to develop the rating curves for each station, the paired stage-discharge measurements and associated rating curve error. Stage record corrections (*e.g.*, due to station relocation, frost jacking of the staff gauge, channel aggradation, *etc*.) are also presented.

In Section 4, streamflow data are presented in the following formats:

- Monthly tables showing average, maximum and minimum 15-minute discharge values (m^3/s);
- Monthly tables showing average discharge (m^3/s), average unit yields ($L/s/km^2$) and total runoff (mm);
- Time-series plots of continous average daily discharge (m^3/s) and spot flow measurements (m^3/s), and;
- Time series plots of average daily unit yields ($L/s/km^2$), by year.

1.2 Previous Reports

The streamflow data collected at the Eagle Gold Project site from 2007 up to and including 2018, has been previously summarized in the following reports:

- *Dublin Gulch Project – Climate and Hydrology Environmental Baseline Report* (2008), prepared by Jacques Whitford AXYS (Burnaby, BC) for Strata Gold Corp. (Vancouver, BC).
- *Eagle Gold Project, Environmental Baseline Report: Hydrology* (2010), prepared by Stantec (Burnaby, BC) for Victoria Gold Corp., February 2010.

- *Eagle Gold Project, Environmental Data Summary Report: Hydrology 2011 Update* (2011), prepared by Stantec (Burnaby, BC) for Victoria Gold Corp., June 2011.
- *Eagle Gold Project, Surface Water Balance Model Report* (2011), prepared by Stantec (Burnaby, BC) for Victoria Gold Corp., June 2011.
- *Eagle Gold Project, Environmental Baseline Data Report: Hydrology 2011 Update* (2012), prepared by Stantec (Burnaby, BC) for Victoria Gold Corp., June 2012.
- *Victoria Gold Corp., Eagle Gold Project – Hydrology Baseline Data Summary. VA101-290/6-10,* prepared by Knight Piésold Ltd. (Vancouver, BC) for Victoria Gold Corp., August 2013.
- *Victoria Gold Corp., Eagle Gold Project – Indirect Discharge Measurement at W-29 and Repair of Stream gauges at W-22, W-5 and W-29* (2013), prepared by Laberge Environmental Services (Whitehorse, YT) for Victoria Gold Corp., September 2013.
- *Victoria Gold Corp., Eagle Gold Project – Hydrology Baseline Report* (2017), prepared by Lorax Environmental Ltd. (Vancouver, BC) for Victoria Gold Corp., March 2017.
- *Victoria Gold Corp. Eagle Gold Project – Hydrometeorology Report.* A413-3, prepared by Lorax Environmental Services Ltd. (Vancouver, BC) for Victoria Gold Corp., March 2017.
- *Victoria Gold Corp., Eagle Gold Project – Hydrology Baseline Report* (2018), prepared by Lorax Environmental Ltd. (Vancouver, BC) for Victoria Gold Corp., March 2018.
- *Victoria Gold Corp., Eagle Gold Project – Streamflow Monitoring Report* (2019), prepared by Lorax Environmental Ltd. (Vancouver, BC) for Victoria Gold Corp., March 2019.
- *Victoria Gold Corp., Eagle Gold Project – Streamflow Monitoring Report – 2019 Update* (2020), prepared by Lorax Environmental Ltd. (Vancouver, BC) for Victoria Gold Corp., March 2020.

1.3 Project Area Characteristics

The majority of the Project site lies within the Dublin Gulch watershed, a second order tributary to the larger Haggart Creek watershed, which is a major tributary of the South

McQuesten River. The South McQuesten River joins the Stewart River, which flows west to its eventual confluence with the Yukon River.

The hydrology of the region is characterized by a dominant snowmelt driven freshet signature, which typically peaks between early May and early June. The recession limb of the freshet tapers to a lower summer flow regime reflective of groundwater primarily, which is punctuated by periodic rainfall driven runoff events, typically one to four days in duration. Base flows are lowest in the winter and flow sub-ice; in the smaller creeks, groundwater is depleted in the winter and no flow conditions under the ice are typical of second and third order tributaries.

In larger tributaries, groundwater discharge maintains limited amounts of streamflow below the ice throughout the winter (*i.e.*, November through end March). Aufeis (*i.e.*, groundwater that seeps and freezes onto- and adjacent to local watercourses) is present in several places throughout streams at the Project site. As with shelf ice in the streams, aufeis melts during the freshet, but may in some cases persist into the early summer.

Historical placer mining activities in the Project site streams have altered the natural channel conditions, and in some cases, have also altered the drainage areas of several sub-watersheds. More information is provided in Stantec (2012) as it relates to placer mining near the Project.

2. Streamflow Monitoring Program

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2. Streamflow Monitoring Program

2.1 Data Sources

Data collection was originally undertaken by Hallam Knight Piésold (1993 to 1995), then a new program was initiated in 2007 by Jacques Whitford AXYS (now Stantec Consulting Ltd., or Stantec). Field support for this program was provided by Laberge Environmental Services (Laberge), through to 2018. All streamflow data collected at the Project site up to the end of 2018 has been previously summarized in the reports per Section 1.2.

Laberge continued to participate in the field program, conducting field visits with Victoria Gold staff during freshet and early summer. Since then, Victoria Gold site staff have assumed all hydrometric monitoring activities, with the exception of routine benchmark levelling surveys which were conducted by Laberge in the autumn of 2020. Initial QA/QC of the streamflow data collected in 2020 and associated development and updates of rating curves were undertaken by Lorax Environmental. At the time report preparation, there are eleven continuously recording hydrometric stations operating at the Project site. Of these, continuous data for ten stations are presented in this report, including the W99 station which was installed on Haggart Creek downstream of all Project activity in 2019. The eleventh station, W45, has only a water level record for 2018 through 2020, as the stage and discharge record is not sufficient at this time to develop a preliminary rating curve and a continuous discharge record. A rating curve and continuous discharge time-series will be developed for this station and reported once sufficient data exists with which to do so.

2.2 Project Site Hydrometric Stations

The number of continuously recording hydrometric stations has varied over the period of record, but nine of the eleven stations presented in this report update have the most complete records (the ninth, W21, was installed in 2018, and the tenth, W99 was installed in 2019). In addition, several more stations are monitored as required by the Environmental Monitoring, Surveillance and Adaptive Management Plan (EMSAMP) and Water Use Licence QZ14-041-1. The continuous hydrometric stations and the associated metadata are presented in Table 2-1 and shown in Figure 2-1, while the additional spot flow stations are described in Table 2-2.

Additional manual streamflow measurements have been collected (often concurrently with water quality samples) at an additional 20 locations at the Project site. Previously collected continuous streamflow records for the Eagle Creek Pond (WECP), W13, W20 and W31 stations span shorter durations (1 to 3 years), and are presented in previous reports.

Table 2-1:
Eagle Gold Project continuous hydrometric stations

Station ID	Station Name	Record Period	Northing	Easting	Drainage Area (km^2)	Median Basin Elevation (m)	Notes
W1	Dublin Gulch above Stewart Gulch	2007 – 2020	7,101,545	460,249	7.0	1,303	Continuous discharge time-series 2020 logging period: May 20 to Oct 13
W4	Haggart Creek below Dublin Gulch	2007 – 2020	7,101,223	458,144	76.8	1,125	Continuous discharge time-series 2020 logging period: Apr 18 to Oct 13
W5	Haggart Creek above Lynx Creek	2007 – 2020	7,095,888	457,815	97.7	1,091	Continuous discharge time-series 2020 logging period: May 5 to Oct 17
W6	Lynx Creek above Haggart Creek	2007 – 2020	7,095,964	458,099	100.9	1,049	Continuous discharge time-series 2020 logging period: Jun 4 to Oct 17
W21[2]	Dublin Gulch near the Mouth	2018 - 2020	7,101,261	458,359	10.1	1,216	Continuous discharge time-series 2020 logging period: May 8 to Oct 13
W22	Haggart Creek above Dublin Gulch	2007 – 2020	7,101,377	458,319	66.5	1,113	Continuous discharge time-series 2020 logging period: May 8 to Oct 13
W26	Stewart Gulch	2007 – 2020	7,101,443	460,331	1.4	1,183	Continuous discharge time-series, manual data only for 2007 - 2009, 2011. 2020 logging period: May 20 to Oct 13
W27	Eagle Creek near Camp	2007 – 2020	7,100,997	458,235	2.6	1,037	Continuous discharge time-series, manual data only for 2007 and 2018 2020 logging period: May 20 to Oct 13
W29[3]	Haggart Creek below Eagle Creek	2010 – 2015, 2020	7,099,583	458,225	86.1	1,112	Manual measurements for 2010, continuous data thereafter 2020 logging period: Aug 8 to Oct 13
W45	Eagle Creek at mouth	2018 – 2020	7,099,740	458,243	3.9	1,018	Continuous water level time-series, manual measurements 2020 logging period: May 8 to Oct 13
W99	Haggart Creek above 15 Pup	2019 – 2020	7,098,180	458,322	88.3	1,116	Continuous discharge time-series 2020 logging period: Apr 18 to Oct 13

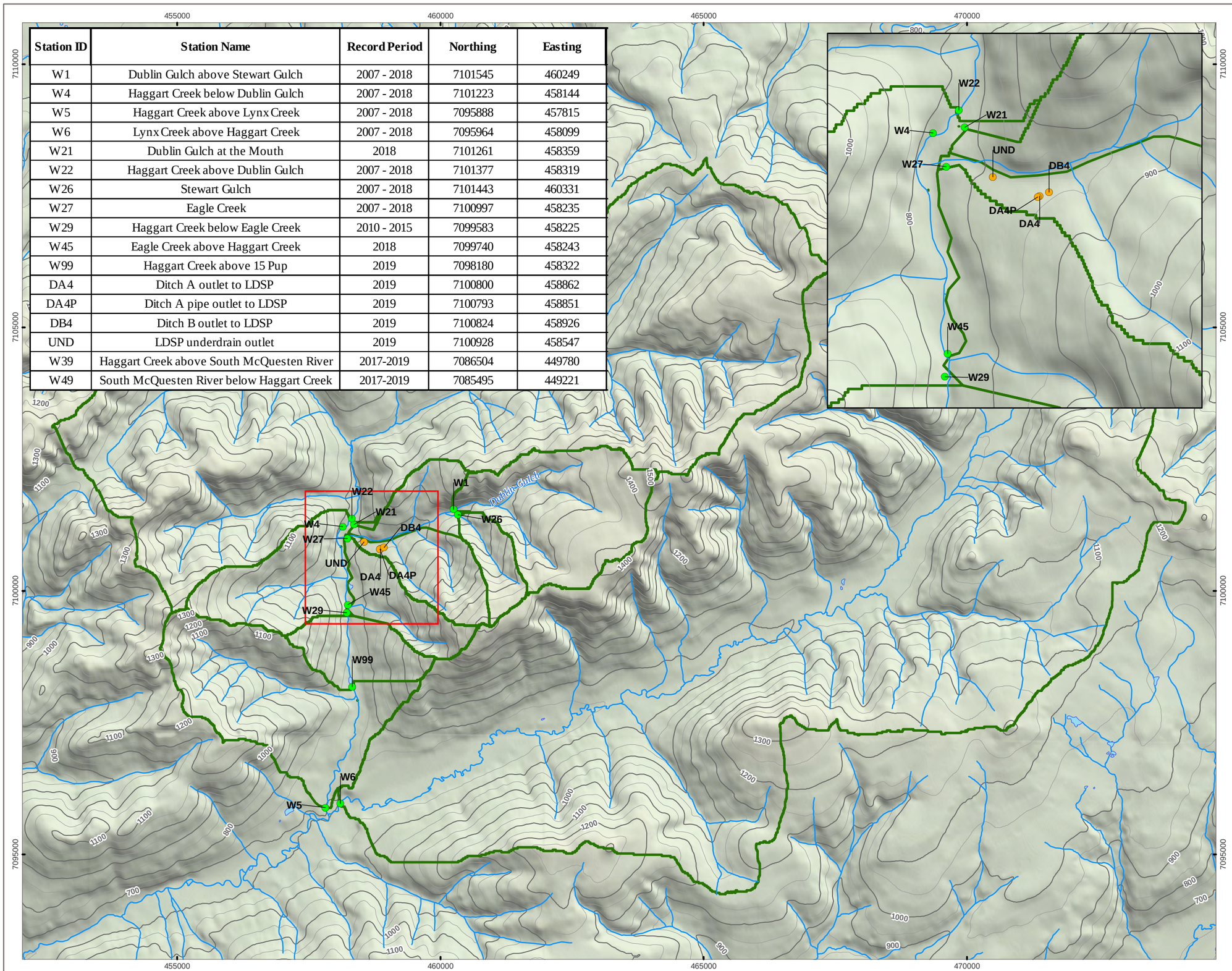
Notes:
1. Source of UTM co-ordinates, drainage area and median basin elevation (Knight-Piésold, 2013).
2. Water level sensor malfunctioned in 2019, therefore no continuous water level data are available for this year.
3. No continuous water level data are available for this station for 2016-2019, however manual measurements continue. See Section 2.2.3 for details.

Table 2-2:
Eagle Gold Project spot flot hydrometric stations

Station ID	Station Name	UTM N	UTM E	Description
PDI*	Ditch A outlet to LDSP	7,100,800	458,862	Transfer between engineered structures
PGS*	Ditch A pipe outlet to LDSP	7,100,793	458,851	Transfer between engineered structures
EPS*	Ditch B outlet to LDSP	7,100,824	458,926	Transfer between engineered structures
UND	LDSP underdrain outlet	7,100,928	458,547	Water management infrastructure
W20	Bawn Boy Gulch	7,101,961	461,945	Receiving Environment
W23	Haggart Creek below Lynx Creek	7,095,683	457,790	Receiving Environment
W39	Haggart Creek above South McQuesten River	7,086,504	449,780	Receiving Environment
W49	South McQuesten River below Haggart Creek	7,085,495	449,221	Receiving Environment

Notes:
- *PDI + PGS + EPS= LDSPI (Lower Dublin Sediment Pond inflow)
- PDI and PGS locations are currently surrogate sites until the Platinum Gulch WRSA rock drain is completed
- EPS location is currently a surrogate site for Ditch B inflow until the full length of Ditch B and the Eagle Pup WRSA rock drain are completed

Station ID	Station Name	Record Period	Northing	Easting
W1	Dublin Gulch above Stewart Gulch	2007 - 2018	7101545	460249
W4	Haggart Creek below Dublin Gulch	2007 - 2018	7101223	458144
W5	Haggart Creek above Lynx Creek	2007 - 2018	7095888	457815
W6	Lynx Creek above Haggart Creek	2007 - 2018	7095964	458099
W21	Dublin Gulch at the Mouth	2018	7101261	458359
W22	Haggart Creek above Dublin Gulch	2007 - 2018	7101377	458319
W26	Stewart Gulch	2007 - 2018	7101443	460331
W27	Eagle Creek	2007 - 2018	7100997	458235
W29	Haggart Creek below Eagle Creek	2010 - 2015	7099583	458225
W45	Eagle Creek above Haggart Creek	2018	7099740	458243
W99	Haggart Creek above 15 Pup	2019	7098180	458322
DA4	Ditch A outlet to LDSP	2019	7100800	458862
DA4P	Ditch A pipe outlet to LDSP	2019	7100793	458851
DB4	Ditch B outlet to LDSP	2019	7100824	458926
UND	LDSP underdrain outlet	2019	7100928	458547
W39	Haggart Creek above South McQuesten River	2017-2019	7086504	449780
W49	South McQuesten River below Haggart Creek	2017-2019	7085495	449221



LEGEND

- Continuous Hydrometric Station
- Manual Spot Flow Measurements
- Watershed Boundary
- Watercourse
- Waterbody
- Contour (100m)
- Contour (50m)

NOTES
Base data source:

STATUS
FOR INTERNAL USE ONLY

EAGLE GOLD PROJECT
YUKON TERRITORY

Hydrometric Station Network

PROJECTION: Transverse Mercator UTM Zone 8				DATUM: NAD83	CLIENT: Victoria Gold Corp
Scale: 1:70,000 (700 350 0 700 Metres)					Lorax Environmental
FILE NO.					
PROJECT: Eagle Gold	DWN: GM	CKD: SJ	APVD: DHF	REV: 1	Figure 1
OFFICE	DATE: March 16, 2020				

Path: P:\@Drafting\Eagle Gold\Drafting Figures\MXD\Hydrometric Stations_20200312.mxd

2.2.1 Hydrometric Station Summary

A brief summary of the hydrometric network history is provided below. Further details are available in the previous baseline reports listed in Section 1.2.

W1

- Installed in 2007 with a continuous water level recorder, staff gauge, and stilling well and survey benchmarks
- Transducer malfunctions in 2013 and 2014 resulted in loss of data
- Channel bed can be unstable at high flows; channel condition reflects historical placer mining activity.
- The water level recorder returned inaccurate stage data for extended periods of time in 2019, and thus no continuous water level record is available from which to calculate discharge prior to August 5, 2019.

W4

- Installed in 2007 with a continuous water level recorder, staff gauge, and stilling well and survey benchmarks
- Datalogger failure resulted in no continuous water level data for 2016

W5

- Installed in 2007 with a continuous water level recorder, staff gauge, and stilling well and survey benchmarks
- Staff gauge was knocked over in the 2013 freshet and repaired in July 2013

W6

- Installed in 2007 with a continuous water level recorder, staff gauge, and stilling well and survey benchmarks
- A portion of the 2014 record is influenced by a beaver dam located downstream of the control section – influence is minimal and it was possible to correct for the artificially elevated stage.

W21

- A staff gauge, stilling well and water level logger were installed on June 13, 2018.
- Six paired staff gauge:discharge measurements are available for this site, therefore the rating curve and estimated discharges are considered preliminary.

- The W21 water level logger experienced a malfunction in 2019 and no usable continuous water level data were collected for this year or in 2020.

W22

- Installed in 2007 with a continuous water level recorder, staff gauge, and stilling well and survey benchmarks
- No data was available for 2011 due to a pressure transducer malfunction. The water level record estimated by Stantec was carried forward in this report.
- Staff gauge was knocked over in the 2013 freshet and repaired in July 2013.
- Technical issues with the datalogger resulted in a data gap from August 11 to September 7, 2020.

W26

- Manual measurements from 2007 to 2009, instrumented with a continuous water level recorder, staff gauge, and stilling well and survey benchmarks in 2009.
- V-notch weir installed in 2009, and replaced with a Parshall flume in August 2011
- Technical issues with datalogger installation in 2011 resulted in loss of continous data – only manual measurements are available for this year.

W27

- Installed in 2007 with a continuous water level recorder, staff gauge, and stilling well and survey benchmarks however data is not reported due to apparent sedimentation in the stilling well resulting in a continuously rising water level
- V-notch weir installed in 2009, and replaced with a Parshall flume in August 2011
- Malfunction of pressure transducer in August 2015 resulted in loss of data for remainder of this year.
- Technical issues with datalogger and/or flume installation in 2018 resulted in loss of continous water level data. Therefore, only manual measurements are available for this year.
- Issues with the datalogger resulted in loss of continuous water level data for the period of July 23 – August 31, 2019.

W29

- Manual measurements in 2010, instrumented with a continuous water level recorder, staff gauge, and stilling well and survey benchmarks in 2011

- Station was destroyed in the 2013 freshet, and a replacement pressure transducer was deployed on an anchor in the streambed just upstream; water levels were surveyed at the old location and the temporary installation to determine the required offset. A new stilling well was installed in July 2015 at the original gauge location.
- Datalogger malfunctions and channel stability issues, including frost jacking of the stilling well resulted in the loss of continuous water level data for 2016 through 2018.
- The stilling well and datalogger were decomissioned in 2019. W99 utilized as a surrogate station by Victoria Gold.
- The station was re-commissioned in July 2020 as a backup for the W99 record and to maintain site in accordance with licence terms.
- Manual measurements continue to be reported for this station in Table 3-12.

W45

- A staff gauge, stilling well and water level logger were installed on June 13, 2018
- Fourteen paired staff gauge:discharge measurements are available for this site, however there is not sufficient range in flow and stage data to develop a rating curve; thus only the stage data are provided with spot discharge measurements.
- As such, a continuous discharge record has not yet been developed for this station. Further refinement of the stage:discharge relationship is required to develop a robust rating curve from which to derive a continuous discharge time-series.

W99

- A staff gauge, stilling well and water level logger were installed on June 7, 2019
- Eleven paired staff gauge:discharge measurements are available for this site, and a stable rating curve has been developed.

W20

- Station re-established in 2016 and has water level records for 2016 and 2017, but not continued in 2018 through 2020.
- Manual flow and stage measurements conducted when access allows.
- Data is not sufficient to develop a rating curve.

2.2.2 Manual Discharge Measurements

Over time, manual discharge measurements have been conducted using the following methods:

- Velocity area techniques using a current meter;
- Salt dilution;
- Calibrated V-notch weir;
- Calibrated Parshall flume;
- Bucket/Bag and stopwatch, and;
- Float-area method.

The majority of the manual discharge measurements were conducted using the velocity-area method, with approximately one quarter made using the salt dilution technique. Most winter measurements were made while ice encroached on the channel, and therefore salt dilution was the preferred method for winter flow measurements. Typically, one discharge measurement was made at each visit, however efforts were made to conduct multiple same-day measurements in 2020 at select stations to further refine the estimates of measurement accuracy.

2.2.3 Stage Measurements and Corrections

All stations were instrumented with metric staff gauges, mounted to vertical angle iron in the stream channel, and regularly surveyed to nearby benchmarks. Continuously recording HOBO pressure transducers were installed in stilling wells and set to record water level every 15 minutes. These readings were corrected for fluctuations in barometric pressure in a post-processing step. During each site visit, the water level was noted on the staff gauge. These readings formed the basis for the continuous water level records, which were adjusted to match the manual stage readings. Regular benchmark surveys were conducted to determine the staff gauge zero datum and water level, and these measurements were used to correct the station records for changes due to shifts in the channel bed (*i.e.*, aggradation or scour), frost-jacking or station relocation following a high-magnitude flood event.

At each station, an annual offset was developed to bring the staff gauge measurements into line with the reference datum from the 2012 benchmark surveys. W27 was the exception, as no survey information was available for 2012, so 2009 was used as the benchmark reference year for this station following Knight Piésold (2013). In this way, the reference datum at each station was kept consistent for the duration of the record period, regardless of station location or streambed conditions.

No notable issues were encountered with the stage records in 2020 at any of the continuous hydrometric stations, noting that flows were significantly higher than the baseline median for the majority of the open water season. Benchmark surveys were conducted for

operating hydrometric stations in September, to allow for stage corrections to be made if evidence of staff gauge shifts was found. There are 4.5 consecutive years with no continuous water level at W29, as channel instability led to the rejection of the 2016 water level record, and in June 2017, the stilling well frost jacked completely out of the streambed. This station was located in a highly mobile channel that has not reached equilibrium yet, following historical placer mining disturbances, and is therefore challenging to gauge. This station was decommissioned and replaced by the new W99 station in 2019, and then recommissioned in July 2020 as a backup to W99 and to satisfy QZ14-041-1 requirements.

3. Streamflow Record Development

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3. Streamflow Record Development

3.1 General Approach

To develop continuous time-series of discharge for the Project streams, spot measurements of stage and discharge are combined with continuous water level records collected by the pressure transducers. Mathematical relationships are derived to describe the relationship between water level and discharge, and then applied to the continuous water level records to estimate discharge. By convention, assembled stage and discharge relationships are commonly referred to as rating curves, where the relationship between stage and discharge are unique and specific to each monitoring station.

3.2 Rating Curve Development

Adjustments for stage (Section 2.2.3) were made prior to the assembly of rating curves. Winter spot flow measurements provided information on the magnitude of winter discharge, but due to ice effects and greater measurement uncertainty for both stage and discharge, these measurements were not employed in the rating curve development process.

Rating curves were developed using the standard rating equation, and the coefficient, offset and exponent were selected to conform to hydraulic theory (*e.g.*, Maidment, 1993) and the stream channel properties.

$$Q = C(h - a)^n$$

Where:

Q = discharge (m^3/s)

C = coefficient (function of channel geometry)

h = stage (m)

a = stage at point of zero flow, offset (m)

n = exponent (function of channel geometry)

The term C is usually 0.5 to 2.5 times the channel width at the control section, and n is often between 1.6 and 3 for moderate gradient streams. The BC RISC standards (RISC, 2009) state that ideally, a rating curve will be based on a minimum of 10 stage-discharge measurements. Given the long duration of monitoring activities at the Project site, all stations meet these guiding criteria. More recently installed stations now have sufficient data with which to construct rating curves, including W21 and W99. W21 was installed in

2018, and now has fifteen paired measurements, noting that there is relatively high average and standard error in the rating curve (Table 3-6 and Table 3-7), and thus it is still considered preliminary. W99 was installed in 2019 and there are now eleven paired flow and stage measurements with relatively low average and standard errors (Table 3-14), indicating that the rating curve is stable. Survey benchmarks are installed at both stations, and will continue to be surveyed annually to confirm stability of the staff gauge, and thus the rating curves.

3.3 Rating Curve Error

The overall quality of the discharge record can be assessed by reviewing the average and standard errors calculated from the differences between the measured discharges, and those estimated from the rating equation. A positive rating curve error is defined where the discharge calculated from the rating curve overestimates the value when compared to the measured discharge, and vice-versa for a negative error. A summary of the error metrics for all stations is presented in Table 3-1, with reporting for each station in Table 3-2 through Table 3-10. Table 3-1 also reports rating curve control percentages by monitoring station. These values indicate the percent of time that a continuously recorded observation (15-minute intervals) falls between the highest and lowest manually recorded measurements for each monitoring station. For example, at the W6 station, 96% of the 15-minute water level measurements are lower than the highest recorded manual stage measurement. Therefore, the measurements used in the rating curve development are able to represent 96% of the entire continuous water level record, and only 4% of the continuous discharge data derived from the rating curve are based on an extrapolation beyond the highest manually recorded stage-discharge measurement.

For monitoring stations where effort is limited to manual flow measurements, period of record data for the stations are presented in Table 3-12 through Table 3-15.

Overall, the rating curves provide reasonable estimates of discharge across a wide range of flows at most of the Project stations. The rating curve errors presented in Table 3-1 indicate that the average errors are relatively low, ranging from -10% (W29) to 4% (W5). The standard error, or the degree of variability about the average error values varies more between stations, from a high of 32% for station W21, to a low of 7% for station W99. Note that continuous discharge data are not currently generated for W21 due to a lack of water level data, and that the W29 data, due to bank and stream section instabilities, are considered only as a potential backup in regards to adaptive management evaluations in the event that data from W99 are not available.

Rating curves for the site hydrometric stations are presented in Figure 3-1 through Figure 3-8. For the 2017 update, the rating equations were compared to those previously

developed for each station to ensure that the coefficients and exponents were consistent through time. After examining the 2018 data, no further updates to the rating curves developed in 2017 were necessary, and the same curves were applied to the 2018 or 2019 continuous water level data. A similar conclusion was drawn based on inclusion of field data collected in 2020 within the rating relations per monitoring station. Note that because stations W26 and W27 are instrumented with Parshall flumes, rating curves were not developed for these stations. The rating curve plot and error table for the relatively new hydrometric station W99, are presented in Figure 3-8 and Table 3-14, and based on measurements collected in 2019 and 2020.

Table 3-1:
Rating curve error metric summary for Eagle Gold Project site hydrometric stations

Station	Measurements (n)	Average Error (%)	Standard Error (%)	Rating Curve Control
W1	52	-4%	22%	97%
W4	55	0%	14%	100%
W5	45	4%	17%	96%
W6	36	-1%	9%	94%
W21	15	4%	32%	79%
W22	46	0%	14%	100%
W26	37	--	--	100%
W27	77	--	--	100%
W29	26	-10%	21%	95%
W99	11	-1%	7%	96%
Average	43	-1%	17%	96%

Notes:
1. Stations W26 and W27 currently have Parshall flumes installed, and therefore rating curves have not been developed for these sites as part of this baseline streamflow update.

Table 3-2:
Station W1 – Discharge Measurement Summary

Date	Method	Stage (m)	Discharge (m^3/s)	Rating Curve Discharge (m^3/s)	Rating Curve Error (%)	Comments
2007-08-14	-	3.5	0.059	0.059	0%	
2007-08-29	-	3.494	0.062	0.055	-12%	
2007-09-12	-	3.513	0.063	0.068	8%	
2007-09-26	-	3.532	0.092	0.084	-9%	
2007-10-19	-	3.514	0.047	0.069	-	Stage affected by snow in channel
2007-11-20	Salt Dilution		0.04	-	-	Stage measurement not available
2008-04-25	Salt Dilution		0.015	-	-	Stage measurement not available
2008-06-09	-		0.072	-	-	Stage measurement not available
2008-08-12	-	3.614	0.177	0.175	-1%	Average of 2 measurements
2008-10-20	-	3.594	0.097	0.148	-	Stage affected by snow in channel
2009-07-19	Current Meter	3.467	0.045	0.039	-14%	
2009-07-26	-	3.454	0.032	0.032	1%	
2009-08-09	-	3.443	0.025	0.028	10%	
2009-08-20	-	3.438	0.044	0.025	-42%	
2009-09-01	Current Meter	3.459	0.074	0.035	-53%	
2009-10-07	Current Meter	3.447	0.055	0.029	-47%	
2009-10-21	-	3.455	0.036	0.033	-9%	
2010-03-31	Salt Dilution		0.021	-	-	Stage measurement not available
2010-05-04	-	3.520	0.055	0.074	-	Stage affected by snow in channel
2010-06-01	-	3.597	0.143	0.152	6%	
2010-06-15	-	3.558	0.113	0.108	-5%	
2010-08-17	-	3.542	0.234	0.092	-60%	
2010-09-23	-	3.509	-	0.065	-	Discharge measurement not available
2010-10-19	Salt Dilution	3.512	0.034	0.067	-	Stage affected by snow in channel
2011-03-30	Salt Dilution	-	0.017	-	-	Stage measurement not available
2011-04-19	Salt Dilution	3.450	0.021	0.031	-	Stage affected by snow in channel
2011-05-04	-	3.484	0.032	0.049	-	Stage affected by snow in channel
2011-05-17	Current Meter	3.593	0.147	0.147	0%	
2011-05-18	Current Meter	3.591	0.172	0.145	-16%	
2011-06-07	Current Meter	3.522	0.073	0.075	3%	
2011-08-16	Current Meter	3.573	0.190	0.124	-35%	
2011-10-17	Current Meter	3.535	0.084	0.086	3%	
2011-11-16	Salt Dilution	-	0.041	-	-	Stage measurement not available
2011-12-06	Salt Dilution	-	0.036	-	-	Stage measurement not available
2012-04-18	Salt Dilution	3.460	0.015	0.035	-	Stage affected by snow in channel
2012-05-06	Current Meter	3.469	0.023	0.040	-	Stage affected by snow in channel
2012-08-15	Current Meter	3.531	0.087	0.083	-5%	
2012-10-16	Current Meter	3.499	0.044	0.058	32%	
2012-11-20	Salt Dilution	-	0.033	-	-	Stage measurement not available
2013-04-15	Salt Dilution	-	0.010	-	-	Stage measurement not available
2013-05-21	Current Meter	0.099	0.051	0.069	34%	
2013-07-25	Current Meter	0.050	0.011	0.019	69%	
2013-09-14	Current Meter	0.064	0.039	0.030	-24%	
2013-10-19	Current Meter	0.065	0.036	0.031	-15%	
2014-05-06	Current Meter	-	0.381	-	-	Stage measurement not available
2014-08-06	Current Meter	0.083	0.055	0.049	-11%	
2014-10-17	-	0.095	-	-	-	Discharge measurement not available
2015-06-18	Current Meter	0.121	0.080	0.101	26%	
2015-07-31	Current Meter	0.159	0.181	0.169	-7%	
2016-07-14	Current Meter	0.178	0.202	0.210	4%	
2016-07-15	Salt dilution	-	0.374	-	-	Stage measurement not available
2016-10-13	Salt dilution	-	0.072	-	-	Stage measurement not available
2017-03-15	Salt dilution	-	0.019	-	-	Stage measurement not available
2017-04-13	Salt dilution	-	0.013	-	-	Stage measurement not available
2017-05-03	Salt dilution	-	0.040	-	-	Stage measurement not available
2017-06-10	Salt dilution	-	0.071	-	-	Stage measurement not available
2017-08-03	Salt dilution	0.078	0.045	0.043	-3%	
2017-08-16	Current Meter	0.079	0.045	0.045	-1%	
2017-10-11	Salt dilution	-	0.167	-	-	Stage affected by ice in channel
2017-12-06	Salt dilution	-	0.040	-	-	Stage affected by ice in channel
2018-01-28	Salt dilution	-	0.021	-	-	Stage affected by ice in channel
2018-03-22	Salt dilution	-	0.013	-	-	Stage affected by ice in channel
2018-04-24	Salt dilution	-	0.011	-	-	Stage affected by ice in channel
2018-08-19	Current Meter	0.118	0.108	0.093	-14%	
2018-08-19	Salt dilution	0.119	0.096	0.095	-1%	
2018-08-26	Salt dilution	0.147	0.117	0.144	23%	
2018-09-22	Salt dilution	0.100	0.085	0.067	-21%	
2018-10-12	Salt dilution	-	0.048	-	-	Stage affected by ice in channel
2018-11-09	Salt dilution	-	0.030	-	-	Stage affected by ice in channel
2018-11-23	Salt dilution	-	0.023	-	-	Stage affected by ice in channel
2018-12-03	Salt dilution	-	0.026	-	-	Stage affected by ice in channel
2018-12-18	Salt dilution	-	0.021	-	-	Stage affected by ice in channel
2019-01-15	Salt dilution	-	0.016	-	-	Stage affected by ice in channel
2019-01-22	Salt dilution	-	0.021	-	-	Stage affected by ice in channel
2019-02-04	Salt dilution	-	0.017	-	-	Stage affected by ice in channel
2019-02-24	Salt dilution	-	0.017	-	-	Stage affected by ice in channel
2019-03-04	Salt dilution	-	0.011	-	-	Stage affected by ice in channel
2019-03-15	Salt dilution	-	0.012	-	-	Stage affected by ice in channel
2019-04-10	Salt dilution	-	0.011	-	-	Stage affected by ice in channel
2019-04-16	Salt dilution	-	0.012	-	-	Stage affected by ice in channel
2019-04-23	Salt dilution	-	0.011	-	-	Stage affected by ice in channel
2019-05-01	Salt dilution	-	0.006	-	-	Stage affected by ice in channel
2019-05-04	Salt dilution	-	0.012	-	-	Stage measurement not available
2019-06-03	Salt dilution	-	0.061	-	-	Stage measurement not available

Date	Method	Stage (m)	Discharge (m^3/s)	Rating Curve Discharge (m^3/s)	Rating Curve Error (%)	Comments
2019-07-01	Salt dilution	0.072	0.037	0.035	-3%	
2019-08-05	Salt dilution	0.063	0.026	0.027	5%	
2019-09-07	Salt dilution	0.061	0.025	0.026	1%	
2019-10-01	Salt dilution	0.076	0.044	0.039	-10%	
2019-10-08	Salt dilution	0.079	0.035	0.042	20%	
2019-10-08	Salt dilution	-	0.035	-	-	Stage measurement not available
2019-12-03	Salt dilution	-	0.002	-	-	Stage affected by ice in channel
2020-05-08	Salt dilution	0.121	0.097	0.098	1%	
2020-06-04	Current Meter	0.204	0.283	0.273	-3%	
2020-06-22	Current Meter	0.235	0.379	0.361	-5%	
2020-07-04	Current Meter	0.167	0.188	0.185	-2%	
2020-07-12	Current Meter	0.170	0.213	0.191	-10%	
2020-07-21	Current Meter	0.164	0.169	0.178	6%	
2020-08-03	Current Meter	0.165	0.157	0.180	15%	
2020-08-10	Current Meter	0.157	0.208	0.163	-21%	
2020-09-02	Current Meter	0.157	0.199	0.163	-18%	
2020-10-06	Salt dilution	0.140	0.164	0.131	-20%	
2020-12-07	Salt dilution	0.080	0.040	0.043	9%	Average of 2 salt dilutions (RPD = 5%)
Average Error (%)					-4%	
Standard Error (%)					22%	

Notes:
1. Measurements highlighted in grey were conducted in ice-affected waters, and were not employed in rating curve development.
2. Stage measurements for the period 2007 to 2012 are as reported in Knight Piésold (2013). Stage measurements for the period 2013 to 2019 are the staff gauge readings relative to the staff gauge datum from 2012.

Table 3-3:
Station W4 – Discharge Measurement Summary

Date	Method	Stage (m)	Discharge (m^3/s)	Rating Curve Discharge (m^3/s)	Rating Curve Error (%)	Comments
2007-08-13	-	-	0.701	-	-	Stage measurement not available
2007-08-15	-	3.046	0.693	0.665	-4%	
2007-08-28	-	3.033	0.631	0.594	-6%	
2007-09-11	-	3.073	0.810	0.829	2%	
2007-09-25	-	3.091	0.737	-	-	Stage affected by snow in channel
2007-10-19	-	3.048	0.442	-	-	Stage affected by snow in channel
2007-11-21	-	-	0.360	-	-	Stage measurement not available
2008-04-25	Salt Dilution	-	0.050	-	-	Stage measurement not available
2008-06-09	-	3.056	0.740	0.724	-2%	
2008-08-12	-	3.164	1.575	1.543	-2%	
2008-10-21	-	3.104	0.926	-	-	Stage affected by snow in channel
2009-07-18	Current Meter	2.983	0.361	0.362	0%	
2009-07-26	Current Meter	2.966	0.303	0.298	-2%	
2009-08-09	Current Meter	2.973	0.298	0.323	8%	
2009-08-20	Current Meter	2.973	0.344	0.323	-6%	
2009-09-02	Current Meter	3.040	0.834	0.632	-24%	
2009-10-07	Current Meter	3.008	0.449	0.469	5%	
2009-10-21	Current Meter	2.999	0.430	0.429	0%	
2010-05-04	Current Meter	3.078	0.970	0.862	-11%	
2010-06-15	-	3.109	1.122	1.081	-4%	
2010-08-17	-	3.053	0.619	0.706	14%	
2010-09-23	-	3.024	-	-	-	Discharge measurement not available
2010-10-19	-	2.406	0.294	-	-	Stage affected by snow in channel
2011-01-27	Salt Dilution	-	0.187	-	-	Stage measurement not available
2011-03-30	Salt Dilution	-	0.212	-	-	Stage measurement not available
2011-04-19	Salt Dilution	-	0.229	-	-	Stage measurement not available
2011-05-04	Current Meter	3.128	0.445	-	-	Stage affected by snow in channel
2011-05-17	Current Meter	3.295	2.050	3.051	49%	
2011-05-18	Current Meter	3.554	-	-	-	Discharge measurement not available
2011-06-07	Current Meter	3.072	0.724	0.823	14%	
2011-06-28	Current Meter	3.032	0.741	0.589	-21%	
2011-08-16	Current Meter	3.169	1.970	1.590	-19%	
2011-10-17	Current Meter	3.065	0.591	0.778	32%	
2011-11-16	Salt Dilution	-	0.333	-	-	Stage measurement not available
2011-12-06	Salt Dilution	-	0.248	-	-	Stage measurement not available
2012-02-14	Salt Dilution	-	0.169	-	-	Stage measurement not available
2012-04-17	Salt Dilution	2.968	0.167	-	-	Stage affected by snow in channel
2012-05-04	Current Meter	3.069	0.759	0.804	6%	
2012-08-15	Current Meter	3.056	0.738	0.724	-2%	
2012-10-16	Current Meter	3.027	0.478	0.562	18%	
2012-11-20	Salt Dilution	-	0.277	-	-	Stage affected by snow in channel
2013-02-19	Salt Dilution	-	0.216	-	-	Stage measurement not available
2013-05-21	Current Meter	0.318	1.183	1.178	0%	
2013-07-24	Current Meter	0.160	0.322	0.325	1%	
2013-09-14	Current Meter	0.236	0.696	0.673	-3%	
2013-10-19	Current Meter	0.171	0.370	0.368	0%	
2014-05-07	-	0.485	-	-	-	Discharge measurement not available
2014-08-06	Current Meter	0.183	0.416	0.418	1%	
2014-10-17	Current Meter	0.212	0.707	0.551	-22%	
2015-06-18	Current Meter	0.234	0.699	0.663	-5%	
2015-07-31	Current Meter	0.349	1.609	1.402	-13%	

Date	Method	Stage (m)	Discharge (m^3/s)	Rating Curve Discharge (m^3/s)	Rating Curve Error (%)	Comments
2015-10-14	-	0.251	-	-	-	Discharge measurement not available
2016-07-14	Current Meter	0.263	0.911	0.825	-9%	
2017-03-15	Current Meter	-	0.054	-	-	
2017-04-13	Current Meter	-	0.150	-	-	
2017-06-08	Current Meter	0.251	0.822	0.756	-8%	
2018-08-03	Current Meter	0.231	0.797	0.647	-19%	
2017-08-16	Current Meter	0.190	0.376	0.449	19%	
2017-10-11	Current Meter	0.265	0.832	0.837	1%	
2017-12-05	Current Meter	-	0.294	-	-	Stage affected by ice in channel
2018-01-28	Current Meter	-	0.198	-	-	Stage affected by ice in channel
2018-02-13	Current Meter	-	0.203	-	-	Stage affected by ice in channel
2018-03-20	Current Meter	-	0.162	-	-	Stage affected by ice in channel
2018-04-25	Current Meter	-	0.151	-	-	Stage affected by ice in channel
2018-05-16	Current Meter	0.500	3.271	2.797	-14%	
2018-06-11	Current Meter	0.371	1.827	1.609	-12%	
2018-07-22	Current Meter	0.218	0.618	0.600	-3%	
2018-08-21	Current Meter	0.261	0.851	0.838	-2%	
2018-09-09	Current Meter	0.258	0.777	0.820	6%	
2018-10-24	Current Meter	-	0.395	-	-	Stage affected by ice in channel
2018-11-06	Current Meter	-	0.275	-	-	Stage affected by ice in channel
2018-11-25	Current Meter	-	0.289	-	-	Stage affected by ice in channel
2018-12-03	Current Meter	-	0.250	-	-	Stage affected by ice in channel
2018-12-17	Current Meter	-	0.251	-	-	Stage affected by ice in channel
2019-01-12	Salt Dilution	-	0.291	-	-	Stage measurement not available
2019-01-22	Salt Dilution	-	0.225	-	-	Stage measurement not available
2019-02-15	Salt Dilution	-	0.160	-	-	Stage measurement not available
2019-02-24	Salt Dilution	-	0.166	-	-	Stage measurement not available
2019-03-04	Salt Dilution	-	0.165	-	-	Stage measurement not available
2019-03-15	Salt Dilution	-	0.160	-	-	Stage measurement not available
2019-04-03	Salt Dilution	-	0.187	-	-	Stage measurement not available
2019-04-15	Salt Dilution	-	0.166	-	-	Stage measurement not available
2019-04-23	Salt Dilution	-	0.201	-	-	Stage measurement not available
2019-04-26	Salt Dilution	-	0.200	-	-	Stage measurement not available
2019-05-05	Current Meter	0.100	0.195	0.142	-27%	
2019-06-03	Current Meter	0.275	1.000	0.923	-8%	
2019-07-02	Current Meter	0.161	0.293	0.342	17%	
2019-08-02	Current Meter	0.178	0.349	0.412	18%	
2019-09-06	Current Meter	0.134	0.230	0.243	6%	
2019-10-03	Salt Dilution	0.171	0.373	0.383	2%	
2019-10-16	Salt Dilution	-	0.336	-	-	Stage measurement not available
2019-11-01	Salt Dilution	-	0.174	-	-	Stage affected by ice in channel
2019-12-03	Salt Dilution	-	0.175	-	-	Stage affected by ice in channel
2020-01-07	Salt Dilution	-	0.136	-	-	Stage measurement not available
2020-02-09	Salt Dilution	-	0.162	-	-	Stage measurement not available
2020-03-09	Salt Dilution	-	0.232	-	-	Stage measurement not available
2020-04-20	Salt Dilution	-	0.254	-	-	Stage measurement not available
2020-04-21	Salt Dilution	-	0.239	-	-	Stage measurement not available
2020-04-22	Salt Dilution	-	0.147	-	-	Stage measurement not available
2020-04-23	Salt Dilution	-	0.321	-	-	Stage measurement not available
2020-04-24	Salt Dilution	-	0.369	-	-	Stage measurement not available
2020-04-25	Salt Dilution	-	0.434	-	-	Stage measurement not available
2020-04-26	Salt Dilution	-	0.557	-	-	Stage measurement not available
2020-04-27	Salt Dilution	-	0.174	-	-	Stage measurement not available
2020-05-06	Current Meter	0.300	1.088	1.078	-1%	
2020-06-04	Current Meter	0.499	2.725	2.776	2%	
2020-06-22	Current Meter	0.601	4.812	3.922	-18%	
2020-07-04	Current Meter	0.413	1.721	1.953	13%	
2020-07-21	Current Meter	0.399	1.498	1.832	22%	
2020-08-03	Current Meter	0.435	1.781	2.151	21%	
2020-08-10	Current Meter	0.426	1.791	2.069	16%	
2020-09-01	Current Meter	0.441	2.223	2.206	-1%	
2020-12-07	Salt Dilution	-	0.381	-	-	Average of 5 salt dilutions (RPD = 17%)
Average Error (%)					0%	
Standard Error (%)					14%	

Notes:
1. Measurements highlighted in grey were conducted in ice-affected waters, and were not employed in rating curve development.
2. Stage measurements for the period 2007 to 2012 are as reported in Knight Piésold (2013). Stage measurements for the period 2013 to 2019 are the staff gauge readings relative to the staff gauge datum from 2012.

Table 3-4:
Station W5 – Discharge Measurement Summary

Date	Method	Stage (m)	Discharge (m^3/s)	Rating Curve Discharge (m^3/s)	Rating Curve Error (%)	Comments
2007-08-12	-	-	0.744	-	-	Stage measurement not available
2007-08-28	-	3.510	0.689	0.691	0%	
2007-09-11	-	3.546	0.896	0.914	2%	
2007-09-25	-	3.559	0.873	1.001	15%	
2007-10-20	-	3.699	0.323	-	-	Stage affected by snow in channel
2007-11-21	Salt Dilution	-	0.280	-	-	Stage measurement not available
2008-04-25	Salt Dilution	-	0.282	-	-	Stage measurement not available
2008-06-10	-	3.506	0.653	0.668	2%	
2008-08-13	-	-	1.900	-	-	Stage measurement not available
2008-10-21	-	3.633	1.230	-	-	Stage affected by snow in channel
2009-07-20	Current Meter	3.499	0.452	0.629	39%	
2009-07-26	-	3.476	0.419	0.507	21%	
2009-08-09	-	3.462	0.385	0.439	14%	
2009-08-20	-	3.456	0.458	0.411	-10%	
2009-09-02	Current Meter	3.526	0.895	0.787	-12%	
2009-10-07	Current Meter	3.473	0.605	0.492	-19%	
2009-10-22	-	3.573	0.466	-	-	Stage affected by snow in channel
2010-05-04	-	-	1.166	-	-	Stage measurement not available
2010-05-30	-	3.617	1.486	1.431	-4%	
2010-06-15	-	3.583	1.043	1.17	12%	
2010-08-17	-	3.509	0.674	0.686	2%	
2011-05-17	-	3.864	3.799	3.987	5%	
2011-06-08	-	3.532	0.868	0.824	-5%	
2011-06-29	Current Meter	3.523	0.965	0.769	-20%	
2011-08-19	-	3.609	1.357	1.367	1%	
2011-10-18	-	3.528	0.778	0.799	3%	
2012-05-04	Current Meter	3.579	1.285	1.141	-11%	
2012-07-18	-	3.612	-	-	-	Discharge measurement not available
2012-08-16	Current Meter	3.553	0.963	0.960	0%	
2012-09-19	-	3.503	-	-	-	Discharge measurement not available
2012-10-17	Current Meter	3.532	0.578	-	-	Stage affected by snow in channel
2012-11-20	Salt Dilution	-	0.278	-	-	Stage measurement not available
2013-05-22	Current Meter	0.280	1.877	1.801	-4%	
2013-08-05	-	0.120	-	-	-	
2013-09-14	Current Meter	0.195	0.948	0.918	-3%	
2013-10-20	Current Meter	0.145	0.510	0.528	4%	
2014-08-05	Current Meter	0.152	0.570	0.577	1%	
2014-10-17	Current Meter	0.185	0.864	0.832	-4%	
2015-06-19	Current Meter	0.175	0.735	0.750	2%	
2015-07-30	Current Meter	0.308	2.032	2.150	6%	
2015-10-14	-	0.200	-	-	-	Discharge measurement not available
2016-07-13	Current Meter	0.219	1.126	1.139	1%	
2017-06-09	Current Meter	0.193	0.933	0.900	-4%	
2017-08-02	Current Meter	0.147	0.607	0.542	-11%	
2017-08-18	Current Meter	0.144	0.580	0.522	-10%	
2017-10-14	Current Meter	-	1.143	-	-	Stage affected by ice in channel
2017-12-06	Salt Dilution	-	0.314	-	-	Stage affected by ice in channel
2018-01-28	Salt Dilution	-	0.219	-	-	Stage affected by ice in channel
2018-05-17	Current Meter	0.450	-	-	-	
2018-06-13	Current Meter	0.279	1.594	1.788	12%	
2018-07-30	Current Meter	0.139	0.516	0.488	-5%	
2018-08-21	Current Meter	0.219	0.993	1.139	15%	
2018-09-10	Current Meter	0.216	0.878	1.110	26%	
2018-10-16	Current Meter	-	0.308	-	-	Stage affected by ice in channel
2018-11-30	Salt Dilution	-	0.402	-	-	Stage affected by ice in channel
2018-12-06	Salt Dilution	-	0.475	-	-	Stage affected by ice in channel
2018-12-18	Salt Dilution	-	0.512	-	-	Stage affected by ice in channel
2019-01-12	Salt Dilution	-	0.377	-	-	Stage affected by ice in channel
2019-01-26	Salt Dilution	-	0.370	-	-	Stage affected by ice in channel
2019-02-19	Salt Dilution	-	0.155	-	-	Stage affected by ice in channel
2019-02-25	Salt Dilution	-	0.169	-	-	Stage affected by ice in channel
2019-04-14	Salt Dilution	-	0.379	-	-	Stage affected by ice in channel
2019-05-03	Salt Dilution	-	0.683	-	-	Stage measurement not available
2019-06-02	Current Meter	0.397	2.871	3.450	20%	
2019-07-02	Current Meter	0.121	0.386	0.377	-2%	
2019-08-02	Current Meter	0.090	0.328	0.217	-34%	
2019-09-05	Current Meter	0.080	0.275	0.174	-36%	
2019-10-02	Salt Dilution	0.151	0.455	0.570	25%	
2019-10-07	Salt Dilution	0.189	-	-	-	Discharge measurement not available
2019-11-01	Salt Dilution	-	0.191	-	-	Stage affected by ice in channel
2019-11-05	Salt Dilution	-	0.022	-	-	Stage affected by ice in channel
2019-12-02	Salt Dilution	-	0.099	-	-	Stage affected by ice in channel
2020-05-05	Current Meter	0.365	1.695	2.428	43%	
2020-06-03	Current Meter	0.432	2.535	3.154	24%	
2020-07-03	Current Meter	0.362	1.802	2.397	33%	
2020-08-06	Current Meter	0.363	2.344	2.408	3%	
2020-09-02	Current Meter	0.388	2.076	2.670	29%	
2020-10-02	Current Meter	-	1.269	-	-	Stage affected by ice in channel
2020-12-05	Salt Dilution	-	0.325	-	-	Stage affected by ice in channel
Average Error (%)					4%	
Standard Error (%)					17%	

Notes:
1. Measurements highlighted in grey were conducted in ice-affected waters, and were not employed in rating curve development.
2. Stage measurements for the period 2007 to 2012 are as reported in Knight Piésold (2013). Stage measurements for the period 2013 to 2019 are the staff gauge readings relative to the staff gauge datum from 2012.

Table 3-5:
Station W6 – Discharge Measurement Summary

Date	Method	Stage (m)	Discharge (m^3/s)	Rating Curve Discharge (m^3/s)	Rating Curve Error (%)	Comments
2007-08-28	-	3.820	0.872	0.850	-2%	
2007-09-11	-	3.901	1.399	1.291	-8%	
2007-09-25	-	3.880	1.059	1.169	10%	
2007-10-20	-	3.787	0.231	-	-	Stage affected by snow in channel
2007-11-21	Salt Dilution	-	0.274	-	-	Stage measurement not available
2008-04-25	Salt Dilution	-	0.335	-	-	Stage measurement not available
2008-06-10	-	3.720	0.433	0.422	-3%	
2008-08-13	-	-	1.810	-	-	Stage measurement not available
2008-10-21	-	3.893	1.179	-	-	Stage affected by snow in channel
2009-07-20	Current Meter	3.701	0.408	0.356	-13%	
2009-07-26	-	3.715	0.533	0.404	-24%	
2009-08-09	-	3.710	0.343	0.386	13%	
2009-08-20	-	3.753	0.499	0.549	10%	
2009-09-02	Current Meter	3.873	1.161	1.130	-3%	
2009-10-07	Current Meter	-	0.771	-	-	Stage measurement not available
2009-10-22	-	-	0.521	-	-	Stage measurement not available
2010-05-04	-	-	2.474	-	-	Stage measurement not available
2010-05-30	-	3.807	0.824	0.787	-4%	
2010-06-15	-	3.846	1.003	0.983	-2%	
2010-08-17	-	3.763	0.550	0.590	7%	
2010-10-19	-	3.460	0.379	-	-	Stage affected by snow in channel
2011-06-09	-	-	0.962	-	-	Stage measurement not available
2011-06-29	Current Meter	2.905	1.216	-	-	Stage affected by snow in channel
2011-08-19	-	3.894	1.253	1.250	0%	
2011-10-18	-	3.786	0.703	0.690	-2%	
2012-05-04	Current Meter	3.959	1.806	1.656	-8%	
2012-07-18	-	3.987	-	-	-	Discharge measurement not available
2012-08-16	-	3.838	0.929	0.941	1%	
2012-09-19	-	3.817	-	0.836	-	Discharge measurement not available
2012-10-17	-	3.781	-	0.667	-	Discharge measurement not available
2013-05-22	Current Meter	0.453	2.971	2.650	-11%	
2013-07-25	-	0.172	-	-	-	Discharge measurement not available
2013-09-14	Current Meter	0.286	1.171	1.227	5%	
2013-10-20	Current Meter	0.196	0.699	0.652	-7%	
2014-08-05	Current Meter	0.245	0.449	-	-	Beaver dam downstream of gauge site, therefore unreliable stage.
2014-10-17	Current Meter	0.250	0.973	0.980	1%	
2015-06-19	Current Meter	0.201	0.702	0.680	-3%	
2015-07-30	Current Meter	0.271	1.173	1.121	-4%	
2016-07-13	Current Meter	0.317	1.345	1.458	8%	
2017-06-09	Current Meter	0.212	0.780	0.743	-5%	
2017-08-02	Current Meter	0.174	0.517	0.534	3%	
2017-08-18	Current Meter	0.177	0.449	0.550	22%	
2017-09-22	Current Meter	0.263	1.161	1.067	-8%	
2017-10-14	Current Meter	-	0.563	0.993	-	Stage affected by ice in channel
2017-12-06	Salt Dilution	-	0.365	-	-	Stage affected by ice in channel
2018-01-28	Salt Dilution	-	0.310	-	-	Stage affected by ice in channel
2018-06-13	Current Meter	0.314	1.437	1.457	1%	
2018-07-30	Current Meter	0.123	0.405	0.306	-24%	
2018-08-21	Current Meter	0.213	0.762	0.764	0%	
2018-09-10	Current Meter	0.238	0.864	0.919	6%	
2018-10-16	Current Meter	-	0.390	-	-	Stage affected by ice in channel
2018-11-30	Salt Dilution	-	0.402	-	-	Stage affected by ice in channel
2018-12-13	Salt Dilution	-	0.235	-	-	Stage affected by ice in channel
2018-12-18	Salt Dilution	-	0.268	-	-	Stage affected by ice in channel
2019-01-12	Salt Dilution	-	0.221	-	-	Stage affected by ice in channel
2019-01-27	Salt Dilution	-	0.219	-	-	Stage affected by ice in channel
2019-02-21	Salt Dilution	-	0.148	-	-	Stage affected by ice in channel
2019-02-25	Salt Dilution	-	0.155	-	-	Stage affected by ice in channel
2019-05-08	Salt Dilution	-	2.802	-	-	Stage affected by ice in channel
2019-06-02	Current Meter	-	2.900	-	-	Stage measurement not available
2019-07-02	Current Meter	0.111	0.258	0.258	0%	
2019-08-02	Current Meter	0.112	0.256	0.262	2%	
2019-09-05	Current Meter	-	0.258	-	-	Stage measurement not available
2019-10-02	Salt Dilution	0.151	0.406	0.431	6%	
2020-07-03	Current Meter	-	1.493	-	-	Stage measurement not available
2020-08-06	Current Meter	0.316	1.384	1.481	7%	
2020-10-02	Current Meter	0.308	1.613	1.419	-12%	
2020-12-05	Salt Dilution	-	0.580	-	-	Stage measurement not available
Average Error (%)					-1%	
Standard Error (%)					9%	

Notes:
1. Measurements highlighted in grey were conducted in ice-affected waters, and were not employed in rating curve development.
2. Stage measurements for the period 2007 to 2012 are as reported in Knight Piésold (2013). Stage measurements for the period 2013 to 2019 are the staff gauge readings relative to the staff gauge datum from 2012.

Table 3-6:
Station W20 – Discharge Measurement Summary

Date	Method	Stage (m)	Discharge (m^3/s)	Comments
2007-08-14	Current Meter	-	0.025	No staff gauge reading available
2007-08-29	Current Meter	-	0.033	No staff gauge reading available
2007-09-12	Current Meter	-	0.028	No staff gauge reading available
2008-06-09	Current Meter	-	0.015	No staff gauge reading available
2008-08-12	Current Meter	-	0.045	No staff gauge reading available
2009-07-19	Current Meter	0.17	0.018	
2009-07-26	Current Meter	0.18	0.022	
2009-08-09	Current Meter	0.16	0.012	
2009-08-20	Current Meter	-	0.014	No staff gauge reading available
2009-10-05	Current Meter	0.18	0.024	
2016-07-14	Current Meter	-	0.064	No staff gauge reading available
2017-05-04	Current Meter	-	0.005	No staff gauge reading available
2017-06-10	Salt Dilution	-	0.025	No staff gauge reading available
2017-08-03	Salt Dilution	-	0.024	No staff gauge reading available
2017-10-12	Salt Dilution	-	0.068	No staff gauge reading available
2017-12-06	Salt Dilution	-	0.014	Stage affected by ice in channel
2018-02-12	Salt Dilution	-	0.004	Stage affected by ice in channel
2018-06-13	Salt Dilution	-	0.040	Stage affected by ice in channel
2018-07-13	Salt Dilution	-	0.044	No staff gauge reading available
2018-08-21	Salt Dilution	-	0.037	No staff gauge reading available
2018-09-22	Salt Dilution	0.291	0.029	
2018-10-12	Salt Dilution	-	0.018	Stage affected by ice in channel
2018-11-09	Salt Dilution	-	0.013	Stage affected by ice in channel
2018-12-31	Salt Dilution	-	0.008	Stage affected by ice in channel
2019-01-25			0.007	Stage affected by ice in channel
2019-01-25			0.007	Stage affected by ice in channel
2019-02-26			0.006	Stage affected by ice in channel
2019-03-01	Salt dilution		0.004	Stage affected by ice in channel
2019-04-19	Salt dilution		0.004	Stage affected by ice in channel
2019-04-19	Salt dilution		0.004	Stage affected by ice in channel
2019-05-11	Salt dilution		0.061	No staff gauge reading available
2019-06-01	Current Meter		0.022	No staff gauge reading available
2019-07-13	Salt dilution		0.006	No staff gauge reading available
2019-08-05	Salt dilution		0.009	No staff gauge reading available
2019-09-19	Salt dilution		0.033	No staff gauge reading available
2019-10-01	Salt dilution		0.013	No staff gauge reading available
2020-06-04	Salt dilution		0.095	No staff gauge reading available
2020-07-10	Salt dilution		0.050	No staff gauge reading available
2020-08-12	Salt dilution		0.053	No staff gauge reading available
2020-09-01	Salt dilution		0.052	No staff gauge reading available

Notes:
[1]Due to the limited number of stage measurements for this station, no rating curve has been developed.

Table 3-7:
Station W21 – Discharge Measurement Summary

Date	Method	Stage (m)	Discharge (m^3/s)	Rating Curve Discharge (m^3/s)	Rating Curve Error (%)	Comments
2007-08-15	Current Meter	-	0.059	-	-	Staff gauge not installed yet
2007-08-28	Current Meter	-	0.05	-	-	Staff gauge not installed yet
2007-09-11	Current Meter	-	0.071	-	-	Staff gauge not installed yet
2007-09-25	Current Meter	-	0.099	-	-	Staff gauge not installed yet
2007-10-19	Current Meter	-	0.043	-	-	Staff gauge not installed yet
2007-11-21	Current Meter	-	0.02	-	-	Staff gauge not installed yet
2008-08-12	Current Meter	-	0.25	-	-	Staff gauge not installed yet
2008-10-21	Current Meter	-	0.098	-	-	Staff gauge not installed yet
2009-07-18	Current Meter	0.150	0.012	-	-	
2009-07-26	Current Meter	0.150	0.008	-	-	
2009-08-09	Current Meter	0.130	0.008	-	-	
2009-08-20	Current Meter	0.160	0.012	-	-	
2009-09-01	Current Meter	0.200	0.067	-	-	
2009-10-20	Current Meter	0.274	0.362	-	-	
2017-12-05	Salt Dilution	-	0.031	-	-	Staff gauge not installed yet
2018-04-24	Salt Dilution	-	0.032	-	-	Staff gauge not installed yet
2018-05-16	Current Meter	-	0.485	-	-	Staff gauge not installed yet
2018-06-11	Current Meter	0.335	0.205	0.206	0%	
2018-08-19	Current Meter	0.302	0.139	0.130	-7%	
2018-09-22	Current Meter	0.291	0.109	0.106	-3%	
2018-10-12	Current Meter	0.273	0.064	0.069	9%	
2018-12-03	Salt Dilution	-	0.024	-	-	Stage affected by ice in channel
2018-12-18	Salt Dilution	-	0.023	-	-	Stage affected by ice in channel
2019-01-15	Salt Dilution	-	0.016	-	-	Stage affected by ice in channel
2019-01-15	Salt Dilution	-	0.010	-	-	Stage affected by ice in channel
2019-01-21	Salt Dilution	-	0.013	-	-	Stage affected by ice in channel
2019-02-25	Salt Dilution	-	0.007	-	-	Stage affected by ice in channel
2019-04-15	Salt Dilution	-	0.021	-	-	Stage affected by ice in channel
2019-04-23	Salt Dilution	-	0.024	-	-	Stage affected by ice in channel
2019-05-04	Salt Dilution	-	0.017	-	-	Stage affected by ice in channel
2019-05-08	Salt Dilution	-	0.019	-	-	Stage measurement not available
2019-05-24	Salt Dilution	-	0.086	-	-	Stage measurement not available
2019-05-27	Salt Dilution	-	0.048	-	-	Stage measurement not available
2019-06-03	Salt Dilution	0.265	0.072	0.054	-25%	
2019-07-05	Salt Dilution	-	0.030	-	-	Stage measurement not available
2019-08-06	Salt Dilution	-	0.018	-	-	Stage measurement not available
2019-09-19	Salt Dilution	0.288	0.100	0.100	0%	
2019-10-01	Salt Dilution	-	0.036	-	-	Stage measurement not available
2019-10-08	Salt Dilution	-	0.016	-	-	Stage measurement not available
2019-11-05	Salt Dilution	-	0.014	-	-	Stage affected by ice in channel
2019-12-03	Salt Dilution	-	0.001	-	-	Stage affected by ice in channel
2020-02-09	Salt Dilution	-	0.009	-	-	Stage affected by ice in channel
2020-04-13	Salt Dilution	-	0.016	-	-	Stage affected by ice in channel
2020-04-21	Salt Dilution	-	0.127	-	-	Stage affected by ice in channel
2020-05-08	Salt Dilution	0.103	0.169	0.201	19%	Average of two measurements (RPD = 26%)
2020-06-04	Current Meter	0.136	0.337	0.282	-16%	
2020-06-22	Current Meter	-	0.937	-	-	Stage measurement not available
2020-07-05	Current Meter	0.115	0.281	0.230	-18%	
2020-07-12	Current Meter	0.119	0.134	0.240	80%	
2020-07-21	Current Meter	0.105	0.377	0.206	-45%	
2020-08-03	Current Meter	0.115	0.188	0.230	23%	
2020-08-10	Current Meter	0.112	0.142	0.223	57%	
2020-09-01	Current Meter	0.114	0.299	0.228	-24%	
2020-10-05	Current Meter	0.096	0.177	0.185	4%	
Average Error (%)					4%	
Standard Error (%)					32%	

Notes:
[1]A rating curve for W21 was not developed in 2009, and no continuous discharge record is available for 2007-2009, therefore no error metrics are reported for this period.

Table 3-8:
Station W22 – Discharge Measurement Summary

Date	Method	Stage (m)	Discharge (m^3/s)	Rating Curve Discharge (m^3/s)	Rating Curve Error (%)	Comments
2007-08-13	-	-	0.597	-	-	Stage measurement not available
2007-08-15	-	2.846	0.577	0.515	-11%	
2007-08-28	-	2.831	0.538	0.414	-23%	
2007-09-11	-	2.898	0.684	0.941	38%	
2007-09-25	-	2.877	0.641	0.755	18%	
2007-10-19	-	2.873	0.372	-	-	Stage affected by snow in channel
2007-11-21	Salt Dilution	-	0.343	-	-	Stage measurement not available
2008-04-25	Salt Dilution	-	0.266	-	-	Stage measurement not available
2008-06-09	-	2.866	0.688	0.666	-3%	
2008-08-12	-	2.927	1.237	1.226	-1%	
2008-10-21	-	2.936	0.741		-	Stage affected by snow in channel
2009-04-21	Salt Dilution	1.570	0.191	-	-	Stage affected by snow in channel
2009-07-18	Current Meter	2.809	0.749	0.284	-62%	
2009-07-26	-	2.809	0.294	0.284	-4%	
2009-08-09	-	2.810	0.278	0.289	4%	
2009-08-20	-	2.811	0.276	0.295	7%	
2009-09-01	Current Meter	2.874	0.749	0.730	-2%	
2009-10-07	Current Meter	2.824	0.361	0.370	3%	
2010-03-31	Salt Dilution	-	0.173	-	-	Stage measurement not available
2010-05-04	-	2.873	0.915	0.722	-21%	
2010-06-15	-	2.905	0.791	1.006	27%	
2010-08-17	-	2.847	0.531	0.522	-2%	
2010-09-23	-	2.816	-	-	-	Discharge measurement not available
2010-10-19	-	2.910	0.265	-	-	Stage affected by snow in channel
2011-01-27	Salt Dilution	-	0.158	-	-	Stage measurement not available
2011-03-30	Salt Dilution	-	0.203	-	-	Stage measurement not available
2011-04-19	Salt Dilution	-	0.194	-	-	Stage measurement not available
2011-05-04	Current Meter	2.975	0.418	-	-	Stage affected by snow in channel
2011-05-17	-	2.964	2.010	-	-	Uncertainty in dataset
2011-05-18	-	2.936	4.989	-	-	Uncertainty in dataset
2011-06-07	-	2.856	0.567	-	-	Uncertainty in dataset
2011-06-28	Current Meter	3.099	0.676	-	-	Uncertainty in dataset
2011-08-16	-	2.968	1.655	-	-	Uncertainty in dataset
2011-10-17	Current Meter	2.962	0.523	-	-	Stage affected by snow in channel
2011-11-16	Salt Dilution	-	0.288	-	-	Stage measurement not available
2011-12-06	Salt Dilution	-	0.207	-	-	Stage measurement not available
2012-03-19	Salt Dilution	-	0.154	-	-	Stage measurement not available
2012-04-17	Salt Dilution	2.790	0.117	-	-	Stage affected by snow in channel
2012-05-04	Current Meter	2.876	0.737	0.747	1%	
2012-07-18	-	2.924	1.055	1.195	13%	
2012-08-15	Current Meter	2.860	0.609	0.619	2%	
2012-09-19	-	2.841	-	-	-	Discharge measurement not available
2012-10-16	Current Meter	2.827	0.403	0.389	-4%	
2012-11-20	Salt Dilution	-	0.245	-	-	Stage measurement not available
2012-12-17	Salt Dilution	-	0.258	-	-	Stage measurement not available
2013-02-19	Salt Dilution	-	0.216	-	-	Stage measurement not available
2013-04-15	Salt Dilution	-	0.159	-	-	Stage measurement not available.
2013-05-21	Current Meter	0.215	0.994	0.935	-6%	
2013-07-24	Current Meter	-	0.264	-	-	Stage measurement not available
2013-08-04	-	0.105	-	-	-	Discharge measurement not available
2013-09-14	Current Meter	0.183	0.698	0.699	0%	
2013-10-19	Current Meter	0.113	0.309	0.293	-5%	
2014-08-06	Current Meter	0.135	0.391	0.404	3%	
2014-10-17	Current Meter	0.165	0.587	0.580	-1%	
2015-06-18	Current Meter	0.178	0.633	0.665	5%	
2015-07-31	Current Meter	0.261	1.379	1.326	-4%	
2015-10-14	-	0.191	-	-	-	Discharge measurement not available
2016-07-14	Current Meter	0.193	0.731	0.769	5%	
2017-05-04	Current Meter	-	0.748	-	-	Stage measurement ice affected
2017-06-08	Current Meter	0.190	0.718	0.748	4%	
2017-08-04	Current Meter	0.155	0.471	0.518	10%	
2017-08-16	Current Meter	0.130	0.377	0.377	0%	
2017-10-11	Current Meter	-	0.698	-	-	Stage affected by ice in channel
2017-12-06	Salt Dilution	-	0.241	-	-	Stage affected by ice in channel
2018-01-28	Salt Dilution	-	0.176	-	-	Stage affected by ice in channel
2018-02-13	Salt Dilution	-	0.182	-	-	Stage affected by ice in channel
2018-03-20	Salt Dilution	-	0.172	-	-	Stage affected by ice in channel
2018-04-25	Current Meter	-	0.098	-	-	Stage affected by ice in channel

Date	Method	Stage (m)	Discharge (m^3/s)	Rating Curve Discharge (m^3/s)	Rating Curve Error (%)	Comments
2018-05-16	Current Meter	0.410	3.015	2.971	-1%	
2018-06-11	Current Meter	0.261	1.544	1.311	-15%	
2018-07-22	Current Meter	0.151	0.473	0.486	3%	
2018-08-21	Current Meter	0.200	0.760	0.809	6%	
2018-09-09	Current Meter	0.190	0.660	0.738	12%	
2018-10-24	Current Meter	-	0.065	-	-	Stage affected by ice in channel
2018-11-06	Salt Dilution	-	0.249	-	-	Stage affected by ice in channel
2018-11-25	Salt Dilution	-	0.189	-	-	Stage affected by ice in channel
2018-12-03	Salt Dilution	-	0.235	-	-	Stage affected by ice in channel
2018-12-17	Salt Dilution	-	0.216	-	-	Stage affected by ice in channel
2019-01-15	Salt Dilution	-	0.153	-	-	Stage measurement not available
2019-01-26	Salt Dilution	-	0.215	-	-	Stage measurement not available
2019-01-26	Salt Dilution	-	0.226	-	-	Stage measurement not available
2019-02-19	Salt Dilution	-	0.341	-	-	Stage measurement not available
2019-02-25	Salt Dilution	-	0.097	-	-	Stage measurement not available
2019-03-04	Salt Dilution	-	0.111	-	-	Stage measurement not available
2019-03-15	Salt Dilution	-	0.132	-	-	Stage measurement not available
2019-04-03	Salt Dilution	-	0.116	-	-	Stage measurement not available
2019-04-15	Salt Dilution	-	0.093	-	-	Stage measurement not available
2019-04-23	Salt Dilution	-	0.287	-	-	Stage measurement not available
2019-04-26	Salt Dilution	-	0.140	-	-	Stage measurement not available
2019-05-05	Salt Dilution	-	0.169	-	-	Stage affected by ice in channel
2019-06-03	Current Meter	0.228	1.030	1.026	0%	
2019-07-02	Current Meter	0.122	0.307	0.331	8%	
2019-08-02	Current Meter	0.109	0.237	0.270	14%	
2019-09-06	Current Meter	0.095	0.233	0.210	-10%	
2019-10-03	Salt Dilution	0.132	0.331	0.381	15%	
2019-10-07	Salt Dilution	-	0.545	-	-	Stage affected by ice in channel
2019-11-01	Salt Dilution	-	0.165	-	-	Stage measurement not available
2019-12-03	Salt Dilution	-	0.185	-	-	Stage measurement not available
2020-01-07	Salt Dilution	-	0.091	-	-	Stage measurement not available
2020-02-09	Salt Dilution	-	0.131	-	-	Stage measurement not available
2020-03-09	Salt Dilution	-	0.127	-	-	Stage measurement not available
2020-04-20	Salt Dilution	-	0.181	-	-	Stage measurement not available
2020-04-21	Salt Dilution	-	0.133	-	-	Stage measurement not available
2020-04-22	Salt Dilution	-	0.324	-	-	Stage measurement not available
2020-04-23	Salt Dilution	-	0.305	-	-	Stage measurement not available
2020-04-24	Salt Dilution	-	0.242	-	-	Stage measurement not available
2020-04-25	Salt Dilution	-	0.198	-	-	Stage measurement not available
2020-04-26	Current Meter	-	0.135	-	-	Stage measurement not available
2020-04-27	Current Meter	-	0.125	-	-	Stage measurement not available
2020-05-07	Current Meter	0.279	1.452	1.479	2%	
2020-06-04	Current Meter	0.353	2.649	2.265	-14%	
2020-07-04	Current Meter	0.228	0.977	1.026	5%	
2020-07-21	Current Meter	0.229	1.067	1.034	-3%	
2020-08-03	Current Meter	0.244	1.188	1.160	-2%	
2020-08-10	Current Meter	0.260	1.320	1.302	-1%	
2020-09-01	Current Meter	-	1.516	-	-	Stage measurement not available
2020-10-05	Current Meter	-	0.902	-	-	Stage affected by ice in channel
2020-12-07	Salt Dilution	-	0.389	-	-	Stage affected by ice in channel
Average Error (%)					0%	
Standard Error (%)					14%	

Notes:
1. Measurements highlighted in grey were conducted in ice-affected waters, and were not employed in rating curve development.
2. Stage measurements for the period 2007 to 2012 are as reported in Knight Piésold (2013). Stage measurements for the period 2013 to 2019 are the staff gauge readings relative to the staff gauge datum from 2012.

Table 3-9:
Station W23 – Discharge Measurement Summary

Date	Method	Discharge (m^3/s)	Date	Method	Discharge (m^3/s)
2007-08-12	Current Meter	1.584	2018-08-20	Current Meter	1.801
2007-08-28	Current Meter	1.695	2018-10-14	Current Meter	0.963
2007-09-11	Current Meter	2.261	2018-12-06	Current Meter	0.517
2007-09-25	Current Meter	2.025	2019-01-18	Salt Dilution	0.716
2007-10-20	Current Meter	0.634	2019-02-19	Salt Dilution	0.489
2008-04-25	Current Meter	0.659	2019-03-21	Salt Dilution	0.545
2008-06-10	Current Meter	1.139	2019-03-21	Salt Dilution	0.502
2008-08-13	Current Meter	4.048	2019-04-19	Salt Dilution	0.603
2008-10-21	Current Meter	2.125	2019-05-03	Salt Dilution	0.64
2009-04-22	Salt Dilution	0.551	2019-05-09	Salt Dilution	1.633
2009-07-20	Current Meter	0.844	2019-06-25	Salt Dilution	0.788
2009-07-26	Current Meter	0.788	2019-07-02	Salt Dilution	0.7
2009-08-09	Current Meter	0.669	2019-08-02	Salt Dilution	0.649
2009-08-20	Current Meter	0.974	2019-09-05	Salt Dilution	0.476
2009-09-02	Current Meter	2.269	2019-10-02	Salt Dilution	0.807
2010-05-04	Current Meter	4.299	2019-11-01	Salt Dilution	0.3
2010-06-01	Current Meter	2.378	2019-11-01	Salt Dilution	0.29
2010-06-15	Current Meter	2.159	2019-12-02	Salt Dilution	0.035
2010-08-17	Current Meter	1.169	2020-01-02	Salt Dilution	0.211
2010-10-19	Current Meter	0.722	2020-01-02	Salt Dilution	0.423
2011-01-27	Salt Dilution	0.5	2020-01-27	Salt Dilution	0.295
2011-06-09	Current Meter	1.979	2020-02-07	Salt Dilution	0.1405
2011-10-18	Current Meter	1.5	2020-03-08	Salt Dilution	0.205
2018-01-28	Current Meter	0.478	2020-04-17	Salt Dilution	0.3175
2018-02-13	Current Meter	0.565	2020-05-05	Salt Dilution	3.102
2018-04-25	Current Meter	0.392	2020-07-03	Salt Dilution	3.259
2018-06-13	Current Meter	3.031	2020-08-05	Salt Dilution	3.251
2018-07-22	Current Meter	1.125	2020-12-05	Salt Dilution	1.572

Table 3-10:
Station W26 – Discharge Measurement Summary

Date	Method	Stage (m)	Discharge (m^3/s)	Comments
2010-06-02	-	0.168	0.030	
2010-06-15	-	0.152	0.023	
2010-06-18	-	0.120	0.013	
2010-09-23	-	0.110	0.010	
2010-10-19	-	0.065	0.003	Stage affected by snow in channel
2011-05-18	-	-	0.121	Stage measurement not available
2011-05-19	-	-	0.142	Stage measurement not available
2011-08-19	-	-	0.017	Stage measurement not available
2011-10-16	Flume	-	0.007	Stage affected by snow in channel
2011-11-16	Flume	-	0.003	Stage measurement not available
2012-07-17	Flume	0.117	0.020	
2012-08-15	Flume	0.090	0.012	
2013-07-25	Flume	-	0.001	Stage measurement not available
2013-09-15	Flume	0.040	0.004	
2014-08-06	Flume	0.047	0.005	
2014-10-17	Flume	0.059	0.007	
2015-07-31	Flume	0.131	0.024	
2015-10-14	Flume	0.192	0.043	
2016-07-14	Flume	0.120	0.017	
2017-08-03	Flume	0.025	0.003	
2017-08-16	Flume	0.330	0.098	
2017-09-20	Flume	0.070	0.009	
2017-10-11	Flume	0.065	0.008	
2018-06-13	Flume	-	0.024	Stage measurement not available
2018-07-13	Flume	0.020	0.002	
2018-08-26	Flume	0.060	0.008	
2018-09-09	Flume	0.070	0.011	
2019-06-01	Flume	-	0.009	Stage measurement not available
2019-08-05	Flume	-	0.000	Stage measurement not available
2019-10-01	Flume	0.023	0.005	
2019-10-08	Flume	0.012	0.003	
2019-11-05	Flume	-	0.002	Stage measurement not available
2020-06-04	Flume	0.105	0.029	
2020-07-05	Flume	0.009	0.019	
2020-08-02	Flume	-	0.015	Stage measurement not available
2020-09-02	Flume	0.011	0.036	
2020-10-06	Flume	-	0.020	Stage measurement not available

Notes:
1. Stage measurements for the period 2007 to 2012 are as reported in Knight Piésold (2013). Stage measurements for the period 2013 to 2018 are the staff gauge readings relative to the staff gauge datum from 2012.
2. A V-notch weir was installed in 2009, and replaced with a Parshall flume in August 2011.

Table 3-11:
Station W27 – Discharge Measurement Summary

Date	Method	Stage (m)	Discharge (m^3/s)	Rating Curve Discharge (m^3/s)	Comments
2007-08-14	Current Meter	-	0.015	-	Stage measurement not available
2007-08-28	-	-	0.039	-	Stage measurement not available
2007-09-12	-	-	0.017	-	Stage measurement not available
2007-09-26	Current Meter	0.146	0.017	-	Stage measurement not available
2007-10-20	-	-	0.011	-	Stage measurement not available
2007-11-21	-	-	0.004	-	Stage measurement not available
2008-04-26	Salt Dilution	-	0.011	-	Stage measurement not available
2008-06-10	-	0.185	0.026	0.023	
2008-08-13	Current Meter	-	0.050	-	Stage measurement not available
2008-10-21	Current Meter	0.250	0.051	0.056	
2009-07-19	-	0.209	0.033	0.034	
2009-07-26	-	0.201	0.033	0.030	
2009-08-09	-	0.187	0.024	0.024	
2009-08-11	-	0.189	0.023	0.025	
2009-08-20	-	0.193	0.026	0.026	
2009-08-26	-	0.221	0.038	0.040	
2009-09-01	-	0.197	0.029	0.028	
2009-10-22	-	-	0.013	-	Stage measurement not available
2010-05-04	Salt Dilution	-0.025	0.072	-	
2010-05-05	Salt Dilution	0.225	0.086	-	Average of 3 measurements
2010-05-06	-	0.209	0.069	-	
2010-06-01	Salt Dilution	0.258	0.035	0.061	Average of 3 measurements
2010-06-02	-	0.261	0.035	0.063	
2010-06-15	-	0.243	0.052	0.052	
2010-06-16	-	0.238	0.049	0.049	
2010-06-18	-	0.227	0.046	0.043	
2010-09-23	-	0.020	0.015	-	Erratic logger data
2010-10-19	-	0.025	0.014	-	Stage affected by snow in channel
2011-03-30	Salt Dilution	-	0.010	-	Stage measurement not available
2011-04-19	Salt Dilution	-	0.009	-	Stage measurement not available
2011-05-17	Current Meter	0.339	0.120	0.127	
2011-05-18	Current Meter	0.363	0.261	-	Erratic logger data
2011-06-06	-	0.165	0.016	0.016	
2011-08-16	-	0.008	0.031	-	Erratic logger data
2011-10-17	-	0.173	0.008	-	Stage affected by snow in channel
2012-03-19	-	-	0.004	-	Unreliable discharge measurement
2012-04-17	-	-	0.007	-	Stage measurement not available
2012-05-06	-	-	0.040	-	Stage affected by snow in channel
2012-07-18	-	0.281	0.025	0.077	
2012-08-15	-	0.207	0.027	0.033	
2012-09-19	-	0.158	0.018	0.014	
2012-10-16	-	-	0.014	-	Stage measurement not available
2013-07-25	Flume	0.127	0.030		
2013-09-15	Flume	0.110	0.023		
2013-10-19	Flume	0.119	0.027		
2014-05-07	Flume	0.130	0.032		
2014-08-05	Flume	0.119	0.027		
2014-10-17	Flume	0.073	0.013		
2015-07-31	Flume	0.187	0.054		
2015-10-14	Flume	0.149	0.038		
2016-05-03	Flume	0.260	0.090		
2016-07-14	Flume	0.145	0.038		
2017-06-09	Flume	0.101	0.024		
2017-08-17	Flume	0.100	0.021		
2017-09-20	Flume	0.072	0.012		
2017-10-11	Flume	0.021	0.002		
2018-05-16	Flume	0.044	0.006		
2018-06-12	Flume	0.018	0.002		
2018-07-13	Flume	0.030	0.004		
2018-08-17	Flume	0.030	0.004		
2018-09-09	Flume	0.040	0.006		
2019-05-04	Flume	-	0.001	-	Stage measurement not available
2019-05-12	Flume	-	0.003	-	Stage measurement not available
2019-05-20	Flume	-	0.005	-	Stage measurement not available
2019-05-27	Flume	-	0.002	-	Stage measurement not available
2019-06-03	Flume	-	0.007	-	Stage measurement not available
2019-07-05	Flume	-	0.008	-	Stage measurement not available
2019-08-06	Flume	-	0.005	-	Stage measurement not available
2019-10-01	Flume	0.039	0.003		
2019-10-08	Flume	-	0.005	-	Stage measurement not available
2020-05-07	Flume	-	0.003	-	Stage measurement not available
2020-06-02	Flume	-	0.008	-	Stage measurement not available
2020-07-05	Flume	-	0.008	-	Stage measurement not available
2020-08-02	Flume	-	0.111	-	Stage measurement not available
2020-09-02	Flume	0.040	0.005	-	
2020-10-04	Flume	0.004	0.002	-	
2020-12-02	Flume	-	0.003	-	Stage measurement not available

Notes:
1. Stage measurements for the period 2007 to 2012 are as reported in Knight Piésold (2013). Stage measurements for the period 2013 to 2018 are the staff gauge readings relative to the staff gauge datum from 2012.
2. A V-notch weir was installed in 2009, and replaced with a Parshall flume in August 2011.

Table 3-12:
Station W29 – Discharge Measurement Summary

Date	Method	Stage (m)	Discharge (m^3/s)	Rating Curve Discharge (m^3/s)	Rating Curve Error (%)	Comments
2010-10-19	Current Meter	-	0.359	-	-	Stage measurement not available
2011-03-30	Salt Dilution	-	0.200	-	-	Stage measurement not available
2011-05-17	Current Meter	-	2.309	-	-	Stage measurement not available
2011-06-08	Current Meter	3.639	0.776	0.791	2%	
2011-06-28	Current Meter	3.630	0.839	0.735	-12%	
2011-08-16	-	3.788	1.971	1.986	1%	
2011-10-17	-	3.647	0.722	-	-	Stage affected by snow in channel
2011-11-16	Salt Dilution	-	0.377	-	-	Stage measurement not available
2011-12-06	Salt Dilution	-	0.269	-	-	Stage measurement not available
2012-05-04	Current Meter	3.644	0.859	-	-	Stage affected by snow in channel
2012-06-14	-	3.749	-	1.591	-5%	Discharge measurement not available
2012-07-18	-	3.702	-	-	-	Discharge measurement not available
2012-08-16	Current Meter	3.626	0.711	0.703	-1%	
2012-10-17	Current Meter	3.581	0.447	-	-	Stage affected by snow in channel
2012-11-20	Salt Dilution	-	0.264	-	-	Stage measurement not available
2012-12-17	Salt Dilution	-	0.281	-	-	Stage measurement not available
2013-02-19	Salt Dilution		0.350			Salt dilution, but based on few concentration determinations
2013-04-15	Current Meter	0.298	0.165	-	-	Stage affected by snow in channel
2013-05-21	Current Meter	0.366	1.513	1.628	8%	
2013-07-25	Current Meter	0.180	0.526	0.476	-9%	
2013-08-04	-	0.151	-	-	-	Discharge measurement not available
2013-09-14	Current Meter	0.275	0.793	0.884	11%	
2013-10-19	Current Meter	0.217	0.566	0.619	9%	
2014-08-05	Current Meter	0.191	0.505	0.516	2%	
2014-10-17	Current Meter	0.274	0.793	-	-	Stage affected by snow in channel
2015-06-18	Current Meter	0.208	0.709	0.582	-18%	
2015-07-31	Current Meter	0.385	1.834	1.534	-16%	
2015-10-14	Salt Dilution	0.274	0.754	-	-	Salt dilution, but based on few concentration determinations
2016-07-14	Current Meter	0.329	1.189	1.332	12%	
2017-06-09	Current Meter	-	0.865	-	-	Stage measurement not available
2017-08-04	Current Meter	0.259	0.600	0.562	-6%	
2017-08-16	Current Meter	-	0.501	-	-	Stage measurement not available
2017-10-13	Salt Dilution	-	1.124	-	-	Stage affected by ice in channel
2018-04-24	Current Meter	-	0.256	-	-	Stage affected by ice in channel
2018-06-12	Current Meter	0.355	1.546	1.406	-9%	
2018-07-22	Current Meter	0.237	0.665	0.735	11%	
2018-08-21	Current Meter	0.275	1.064	0.933	-12%	
2018-09-09	Current Meter	0.275	0.954	0.933	-2%	
2018-10-16	Current Meter	-	0.360	-	-	Stage affected by ice in channel
2018-11-06	Salt Dilution	-	0.380	-	-	Stage affected by ice in channel
2018-11-29	Salt Dilution	-	0.251	-	-	Stage affected by ice in channel
2018-12-04	Salt Dilution	-	0.200	-	-	Stage affected by ice in channel
2018-12-31	Salt Dilution	-	0.210	-	-	Stage affected by ice in channel
2019-01-12	Salt Dilution	-	0.189	-	-	Stage affected by ice in channel
2019-01-21	Salt Dilution	-	0.193	-	-	Stage affected by ice in channel
2019-02-15	Salt Dilution	-	0.205	-	-	Stage affected by ice in channel
2019-02-24	Salt Dilution	-	0.179	-	-	Stage affected by ice in channel
2019-03-03	Salt Dilution	-	0.174	-	-	Stage affected by ice in channel
2019-03-15	Salt Dilution	-	0.541	-	-	Stage affected by ice in channel
2019-03-21	Salt Dilution	-	0.216	-	-	Stage affected by ice in channel
2019-04-03	Salt Dilution	-	0.202	-	-	Stage affected by ice in channel
2019-04-15	Salt Dilution	-	0.217	-	-	Stage affected by ice in channel
2019-04-20	Salt Dilution	-	0.220	-	-	Stage affected by ice in channel
2019-04-26	Salt Dilution	-	0.289	-	-	Stage affected by ice in channel
2019-04-27	Salt Dilution	-	0.217	-	-	Stage affected by ice in channel
2019-05-04	Salt Dilution	-	0.198	-	-	Stage affected by ice in channel
2019-06-10	Current Meter	0.182	1.756	0.481	-73%	
2019-08-02	Current Meter	-	0.282	-	-	Stage measurement not available
2019-08-08	Current Meter	-	0.268	-	-	Stage measurement not available
2019-09-06	Current Meter	0.132	0.279	0.288	3%	
2019-10-03	Salt Dilution	0.174	0.488	0.448	-8%	
2019-11-01	Salt Dilution	-	0.172	-	-	Stage affected by ice in channel
2019-12-03	Salt Dilution	-	0.175	-	-	Stage affected by ice in channel
2020-01-06	Salt Dilution	-	0.130	-	-	Stage affected by ice in channel
2020-02-09	Salt Dilution	-	0.174	-	-	Stage affected by ice in channel
2020-03-09	Salt Dilution	-	0.337	-	-	Stage affected by ice in channel
2020-04-20	Salt Dilution	-	0.316	-	-	Stage affected by ice in channel
2020-04-21	Salt Dilution	-	0.329	-	-	Stage affected by ice in channel
2020-04-22	Salt Dilution	-	0.345	-	-	Stage affected by ice in channel
2020-04-23	Salt Dilution	-	0.363	-	-	Stage affected by ice in channel
2020-04-24	Salt Dilution	-	0.319	-	-	Stage affected by ice in channel
2020-04-25	Salt Dilution	-	0.293	-	-	Stage affected by ice in channel
2020-04-26	Salt Dilution	-	0.284	-	-	Stage affected by ice in channel
2020-04-27	Salt Dilution	-	0.165	-	-	Stage affected by ice in channel
2020-05-06	Salt Dilution	0.226	0.778	0.681	-12%	
2020-07-04	Current Meter	0.256	0.767	0.832	9%	
2020-07-21	Current Meter	0.280	1.886	0.961	-49%	
2020-08-03	Current Meter	-	1.690	-	-	Stage measurement not available
2020-08-10	Current Meter	0.295	2.103	1.045	-50%	
2020-09-01	Current Meter	0.314	1.828	1.154	-37%	
2020-12-07	Salt Dilution	-	0.390	-	-	Stage affected by ice in channel
Average Error (%)					-10%	
Standard Error (%)					21%	

Notes:
1. Measurements highlighted in grey were conducted in ice-affected waters, and were not employed in rating curve development.
2. Stage measurements for the period 2007 to 2012 are as reported in Knight Piésold (2013). Stage measurements for the period 2013 to 2018 are the staff gauge readings relative to the staff gauge datum from 2012.
3. Station measurements considered unreliable. Measurements continued to comply with QZ14-041-1 requirements.

Table 3-13:
Station W45 – Discharge Measurement Summary

Date	Method	Stage (m)	Discharge (m^3/s)	Comments
2017-10-11	Salt Dilution	-	0.016	Stage measurement not available
2018-05-16	Salt Dilution	-	0.086	Stage measurement not available
2018-06-12	Salt Dilution	-	0.006	Stage measurement not available
2018-07-02	Salt Dilution	0.120	0.006	
2018-07-13	Salt Dilution	0.112	0.003	
2018-08-17	Salt Dilution	0.122	0.006	
2018-09-23	Salt Dilution	0.124	0.006	
2018-10-25	Salt Dilution	0.135	0.006	
2018-11-21	Salt Dilution	-	0.007	Stage measurement not available
2018-12-03	Salt Dilution	-	0.004	Stage measurement not available
2018-12-17	Salt Dilution	-	0.005	Stage measurement not available
2019-04-14	Salt Dilution	-	0.013	Stage measurement not available
2019-04-23	Salt Dilution	-	0.014	Stage measurement not available
2019-04-26	Salt Dilution	-	0.004	Stage measurement not available
2019-05-04	Salt Dilution	-	0.003	Stage measurement not available
2019-05-12	Salt Dilution	-	0.014	Stage measurement not available
2019-05-20	Salt Dilution	-	0.006	Stage measurement not available
2019-05-27	Salt Dilution	-	0.003	Stage measurement not available
2019-06-03	Salt Dilution	0.132	0.003	
2019-07-05	Salt Dilution	0.240	0.001	
2019-08-06	Salt Dilution	-	0.001	Stage measurement not available
2019-09-19	Salt Dilution	0.261	0.003	
2019-10-01	Salt Dilution	0.254	0.003	
2019-10-08	Salt Dilution	0.253	0.003	
2019-11-05	Salt Dilution	-	0.002	Stage measurement not available
2019-11-05	Salt Dilution	-	0.004	Stage measurement not available
2020-02-07	Salt Dilution	-	0.002	Stage measurement not available
2020-05-07	Salt Dilution	-	0.019	Stage measurement not available
2020-06-02	Salt Dilution	0.091	0.002	
2020-07-05	Salt Dilution	0.102	0.006	
2020-07-21	Salt Dilution	-	0.004	Stage measurement not available
2020-08-02	Salt Dilution	0.110	0.080	
2020-09-02	Salt Dilution	0.150	0.077	
2020-10-04	Salt Dilution	-	0.010	Stage measurement not available
2020-11-02	Salt Dilution	-	0.007	Stage measurement not available
2020-12-02	Salt Dilution		0.009	Stage measurement not available

Notes:
[1]Due to the limited number of measurements for this station, no rating curve has been developed.

Table 3-14:
Station W99 – Discharge Measurement Summary

Date	Method	Stage (m)	Discharge (m^3/s)	Rating Curve Discharge (m^3/s)	Rating Curve Error (%)	Comments
2019-06-03	Current Meter	-	1.283	-	-	Stage measurement not available
2019-04-14	Salt Dilution	-	1.625	-	-	Stage measurement not available
2019-04-22	Salt Dilution	-	1.035	-	-	Stage measurement not available
2019-05-04	current meter	-	0.254	-	-	Stage measurement not available
2019-06-10	Current Meter	0.178	0.558	0.560	1%	
2019-07-02	Current Meter	0.141	0.373	0.380	2%	
2019-08-02	Current Meter	0.123	0.300	0.303	1%	
2019-10-03	Salt Dilution	0.161	0.426	0.474	11%	
2019-10-07	Salt Dilution	-	0.167	-	-	Stage measurement not available
2019-10-16	Salt Dilution	0.155	0.521	0.445	-15%	
2019-11-01	Salt Dilution	-	3.435	-	-	Stage measurement not available
2019-12-03	Salt Dilution	-	0.280	-	-	Stage measurement not available
2020-01-06	Salt Dilution	-	0.130	-	-	Stage measurement not available
2020-02-09	Salt Dilution	-	0.172	-	-	Stage measurement not available
2020-03-09	Salt Dilution	-	0.132	-	-	Stage measurement not available
2020-04-12	Salt Dilution	-	0.147	-	-	Stage measurement not available
2020-05-06	Current Meter	0.278	1.226	1.181	-4%	
2020-06-04	Current Meter	0.440	2.661	2.537	-5%	
2020-07-04	Current Meter	0.325	1.572	1.532	-3%	
2020-08-03	Current Meter	0.379	1.849	1.979	7%	
2020-09-01	Current Meter	0.400	2.124	2.165	2%	
2020-10-06	Current Meter	0.322	1.596	1.509	-6%	
2020-11-03	Salt Dilution	-	0.750			Stage affected by ice in channel
2020-12-07	Salt Dilution	-	0.521	-	-	Stage affected by ice in channel
Average Error (%)					-1%	
Standard Error (%)					7%	

Table 3-15:
Station W39 and W49- Discharge Measurements Summary

Station ID	Station Name	Date	Discharge (m^3/s)
W39	Haggart Creek above South McQuesten River	2017-08-17	0.995
		2018-08-20	2.125
		2019-05-03	0.995
		2019-07-02	2.125
		2019-11-12	1.065
		2019-11-12	0.672
		2020-07-03	4.872
		2020-12-05	1.660
W49	South McQuesten River below Haggart Creek	2017-08-17	4.523
		2018-06-14	19.334
		2019-05-03	4.975
		2019-07-02	4.562
		2019-11-12	1.283
		2020-01-02	0.296
		2020-05-05	0.851
		2020-09-23	18.131
		2020-11-05	8.9

Notes:
[1]Due to the limited number of measurements for these stations, no rating curves have been developed.
[2]Q1 and Q2 W39 measurements were not achievable due to winter site access restrictions. W39 was relocated to a more accessible location on Haggart creek in July to mitigate this in the future.

Table 3-16:
Station PDI – Ditch A Outlet to LDSP – Discharge Measurement Summary

Date	Discharge (m^3/s)	Date	Discharge (m^3/s)
08-Apr-19	0.008	12-May-19	0.007
11-Apr-19	0.001	13-May-19	0.005
12-Apr-19	0.008	14-May-19	0.020
12-Apr-19	0.001	15-May-19	0.037
12-Apr-19	0.002	16-May-19	0.004
13-Apr-19	0.008	17-May-19	0.005
13-Apr-19	0.010	20-May-19	0.003
14-Apr-19	0.007	21-May-19	0.002
14-Apr-19	0.007	01-Jun-19	0.002
15-Apr-19	0.010	06-Jun-19	0.011
16-Apr-19	0.012	10-Jun-19	0.001
17-Apr-19	0.007	13-Jun-19	0.003
18-Apr-19	0.012	17-Jun-19	0.002
19-Apr-19	0.013	22-Jun-19	0.001
20-Apr-19	0.013	01-Jul-19	0.0003
21-Apr-19	0.010	13-Jul-19	0.0004
22-Apr-19	0.009	05-Aug-19	0.001
23-Apr-19	0.009	19-Sep-19	0.050
26-Apr-19	0.005	08-Sep-20	0.004
28-Apr-19	0.005	20-Apr-20	0.031
29-Apr-19	0.007	16-May-20	0.001
01-May-19	0.005	19-May-20	0.001
02-May-19	0.004	31-May-20	0.001
03-May-19	0.003	02-Jun-20	0.003
04-May-19	0.003	11-Aug-20	0.008
05-May-19	0.003	30-Aug-20	0.006
08-May-19	0.009	03-Sep-20	0.007
09-May-19	0.009	09-Oct-20	0.016
10-May-19	0.007		

Table 3-17:
Station PGS – Ditch A Platinum Gulch Seep - Discharge Measurement Summary

Date	Discharge (m^3/s)	Date	Discharge (m^3/s)
13-Apr-19	0.004	08-May-19	0.017
14-Apr-19	0.005	09-May-19	0.013
14-Apr-19	0.006	10-May-19	0.013
15-Apr-19	0.005	12-May-19	0.011
16-Apr-19	0.005	13-May-19	0.010
17-Apr-19	0.003	16-May-19	0.010
18-Apr-19	0.001	17-May-19	0.006
19-Apr-19	0.000	18-May-19	0.011
21-Apr-19	0.003	20-May-19	0.009
23-Apr-19	0.001	21-May-19	0.009
29-Apr-19	0.005	01-Jun-19	0.003
01-May-19	0.007	06-Jun-19	0.006
02-May-19	0.003	10-Jun-19	0.001
03-May-19	0.002	13-Jun-19	0.005
04-May-19	0.001	17-Jun-19	0.005
05-May-19	0.002		

Table 3-18:
Station EPS/DB4 – Flows from Future Ditch B Outlet to LDSP – Discharge Measurement Summary

Date	Discharge (m^3/s)	Date	Discharge (m^3/s)
08-Apr-19	0.001	04-May-19	0.003
11-Apr-19	0.006	05-May-19	0.001
11-Apr-19	0.002	08-May-19	0.027
12-Apr-19	0.001	09-May-19	0.018
12-Apr-19	0.003	10-May-19	0.036
12-Apr-19	0.001	11-May-19	0.018
13-Apr-19	0.004	12-May-19	0.013
14-Apr-19	0.001	13-May-19	0.009
14-Apr-19	0.002	14-May-19	0.010
15-Apr-19	0.005	15-May-19	0.007
16-Apr-19	0.007	16-May-19	0.012
17-Apr-19	0.005	17-May-19	0.004
18-Apr-19	0.010	18-May-19	0.005
19-Apr-19	0.009	19-May-19	0.006
20-Apr-19	0.007	20-May-19	0.007
21-Apr-19	0.007	21-May-19	0.008
23-Apr-19	0.006	01-Jun-19	0.003
26-Apr-19	0.002	06-Jun-19	0.002
28-Apr-19	0.002	13-Jun-19	0.001
29-Apr-19	0.003	17-Jun-19	0.001
01-May-19	0.012	05-Aug-19	0.001
02-May-19	0.006	19-Sep-19	0.020
03-May-19	0.003	09-Oct-20	0.004

Table 3-19:
Station UND – LDSP Underdrain – Discharge Measurement Summary

Date	Discharge (m^3/s)
19-Jan-20	0.002
06-Feb-20	0.001
07-Mar-20	0.002
08-Apr-20	0.002
10-May-20	0.002
01-Jun-20	0.002
01-Jul-20	0.002
02-Aug-20	0.008
25-Aug-20	0.001
03-Sep-20	0.003
06-Oct-20	0.002
02-Nov-20	0.002
02-Dec-20	0.002

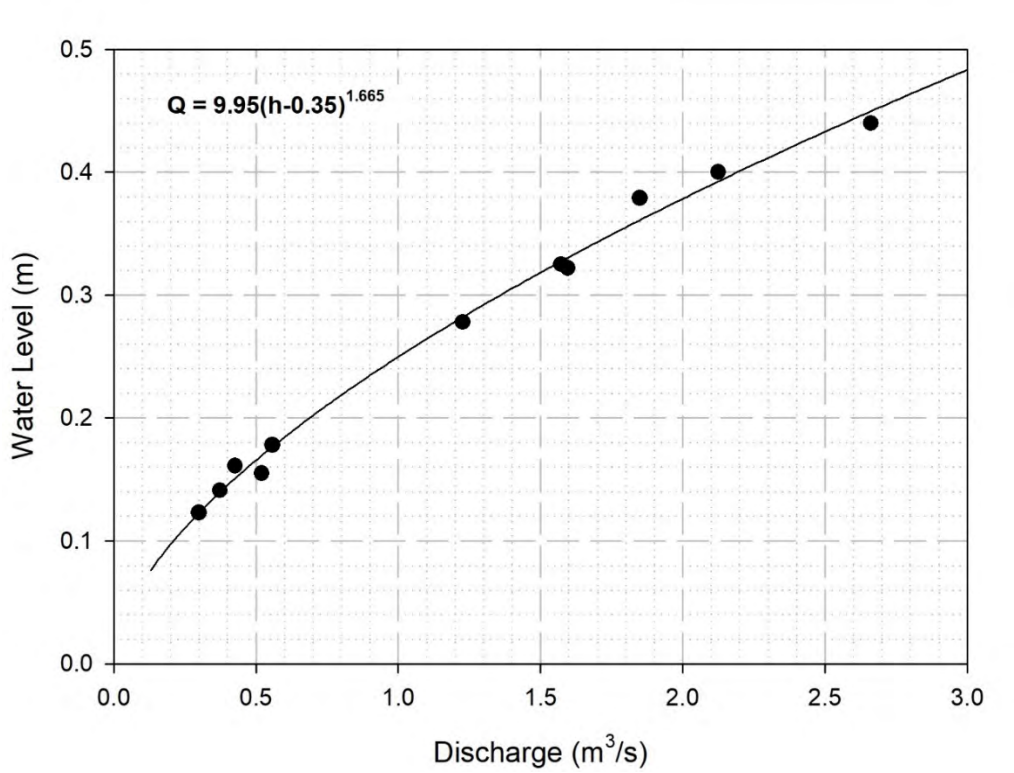

Figure 3-1: Rating curve for station W1 (2012 – 2020).

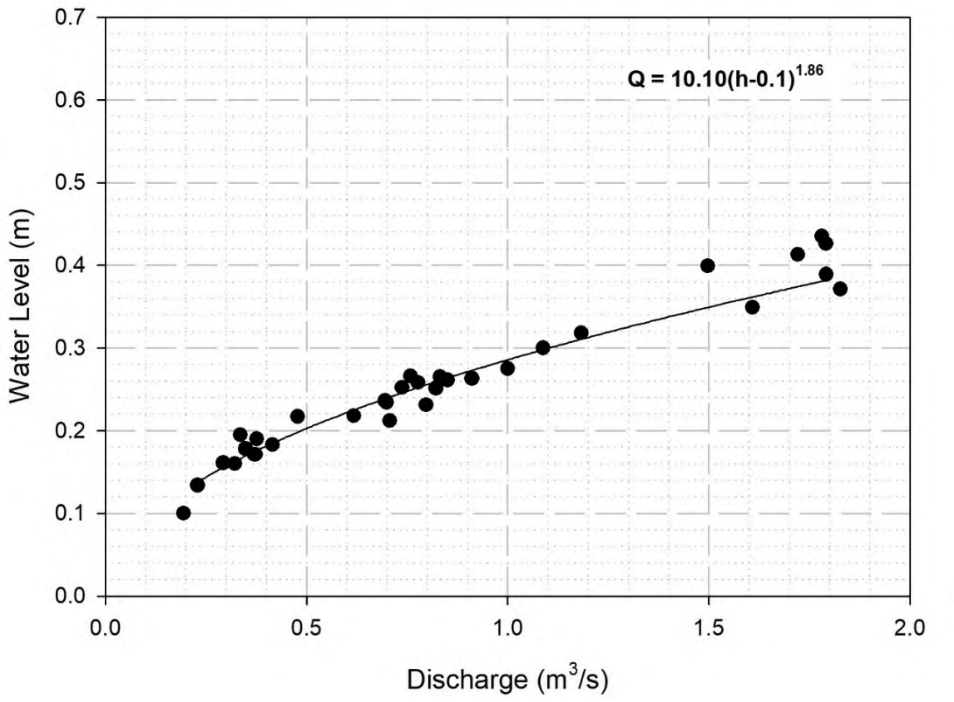

Figure 3-2: Rating curve for station W4 (2012 – 2020).

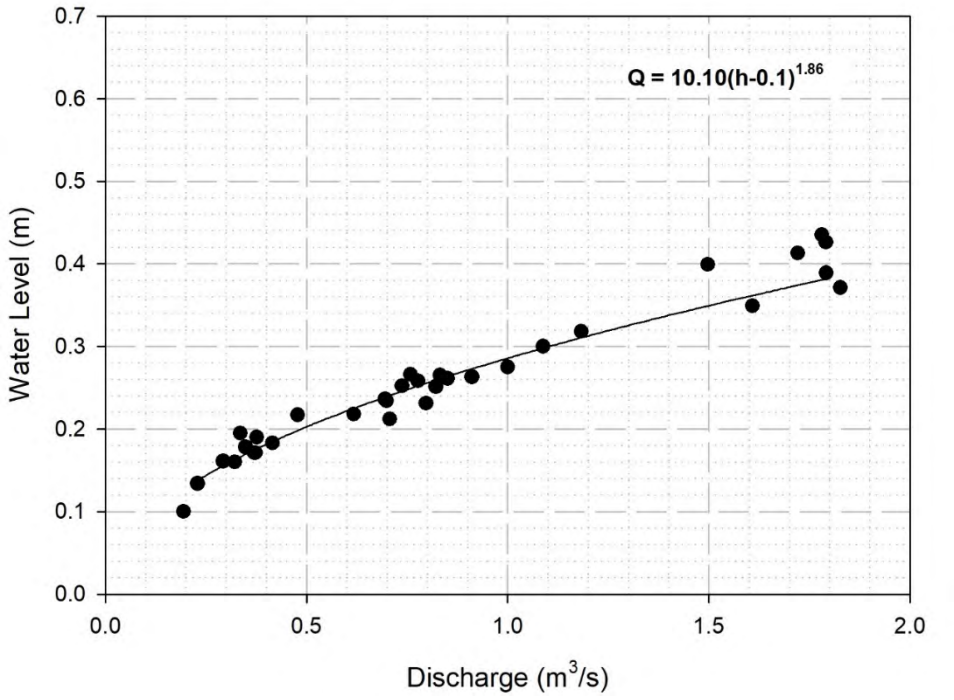

Figure 3-3: Rating curve for station W5 (2012 – 2020).

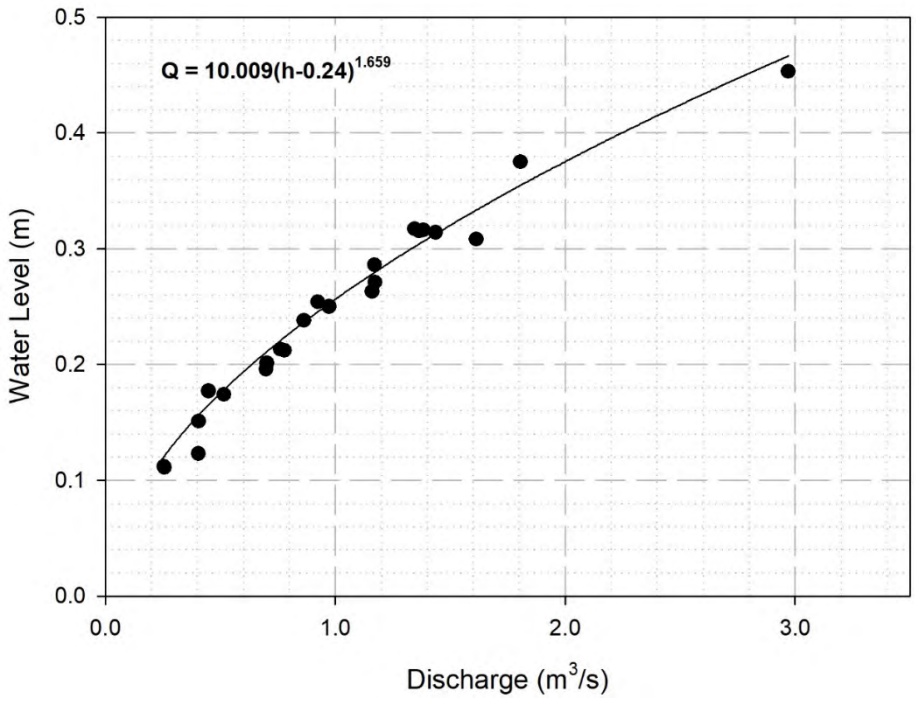

Figure 3-4: Rating curve for station W6 (2012 – 2020).

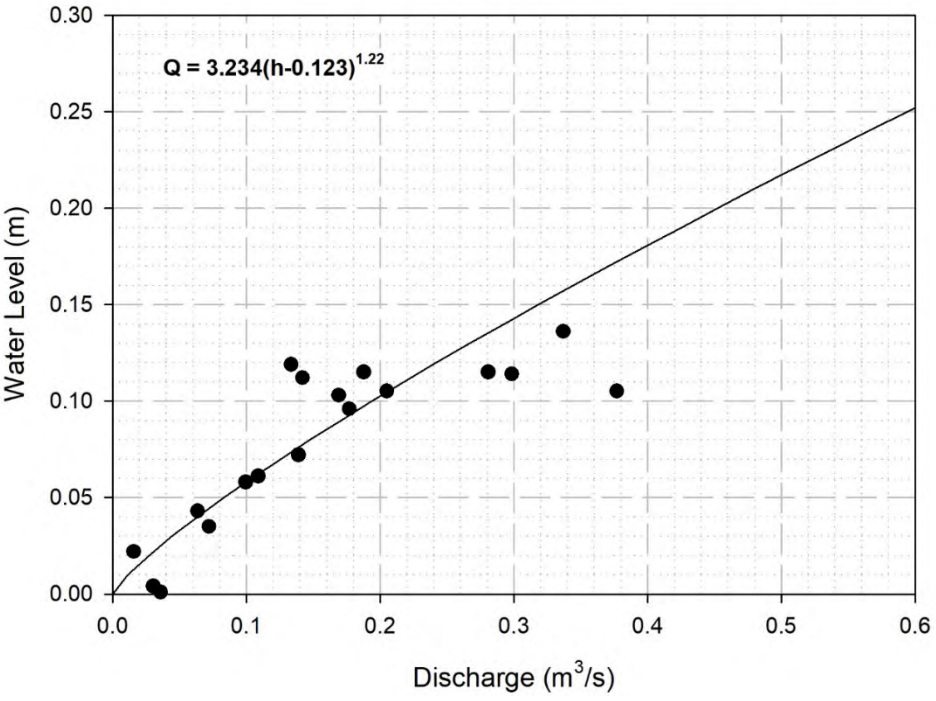

Figure 3-5: Preliminary rating curve for station W21 (2018 – 2020).

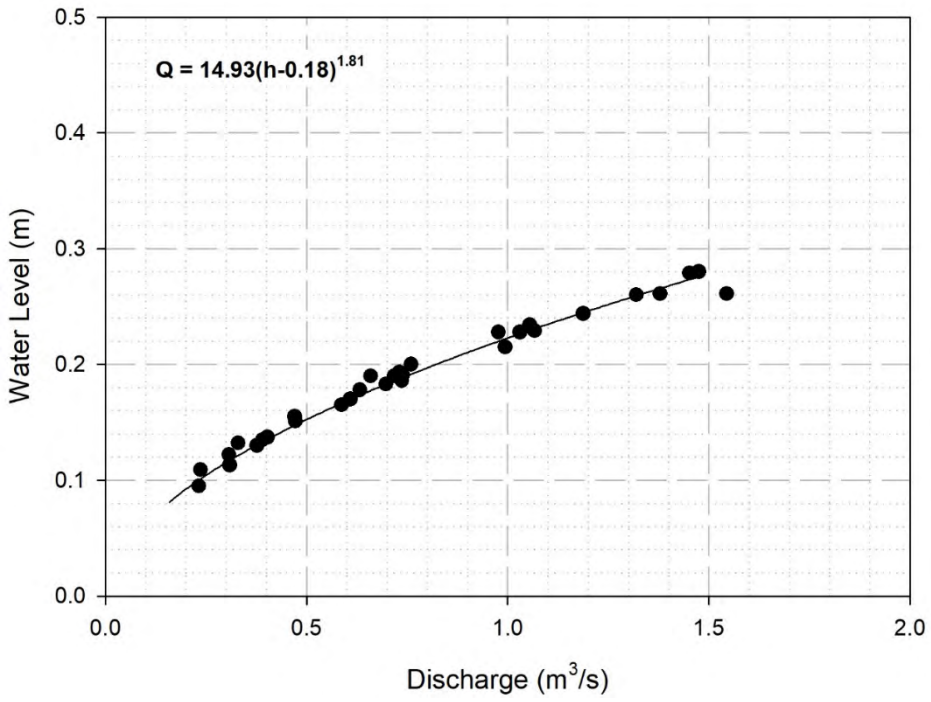

Figure 3-6: Rating curve for station W22 (2012 – 2020).

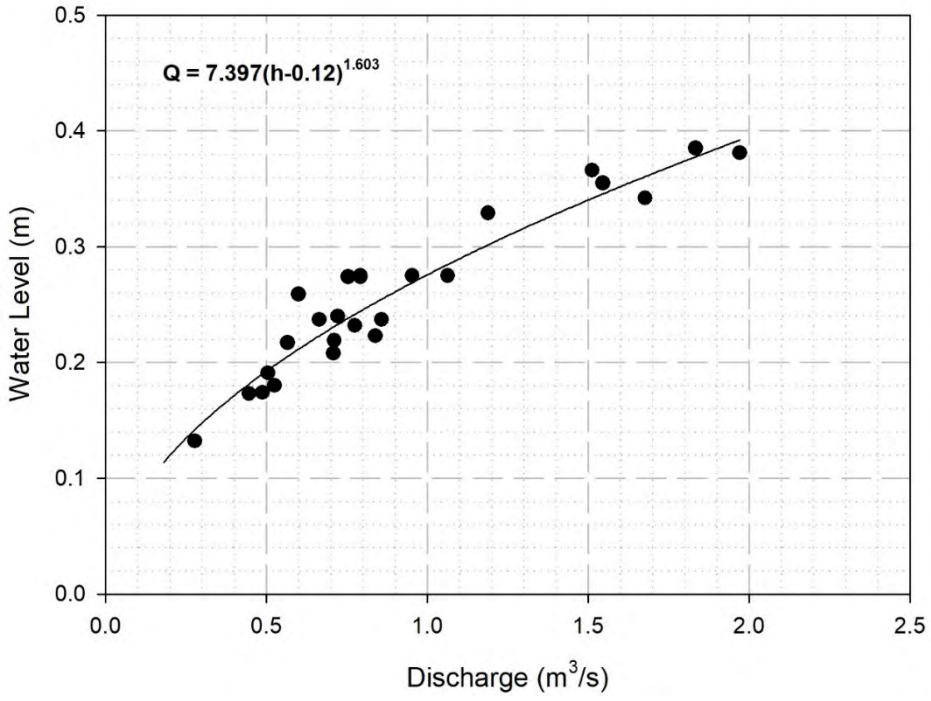

Figure 3-7: Rating curve for station W29 (2012 – 2020).

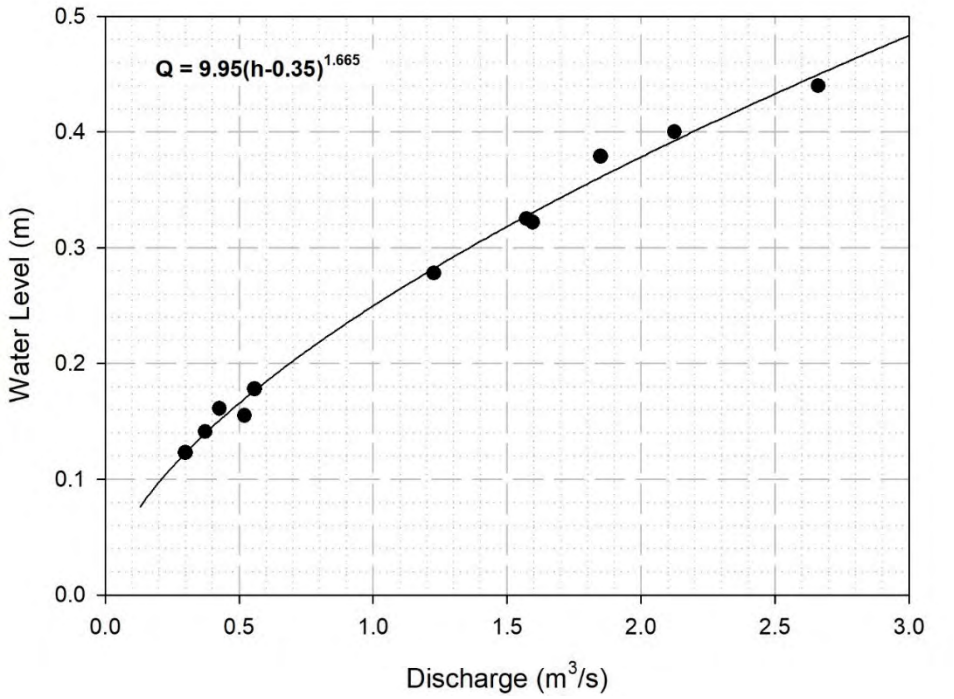

Figure 3-8: Rating curve for station W99 (2020).

3.4 Winter Streamflow Interpolation

Due to extensive channel icing and complete freezing to the bed in some cases, reliable continuous water level data is not available for the winter season (mid-October to early May in most years). However, spot flow measurements collected during the winter water quality sampling trips are available for most years. Where these measurements span the majority of the winter season, streamflows were estimated by interpolating between the spot flow measurements. This was done by assuming that mid-winter melt or rain events do not occur at site, and that the streamflows are a result of recession from the open-water season discharge regime to a steady-state baseflow driven by the local groundwater system discharging to the stream channel. This recession curve is defined by the equation (Maidment, 1993):

$$Q_t = Q_0\, e^{-kt}$$

Where:

Q_t = discharge at time t (m^3/s)

Q_0 = initial discharge (both Q_t and Q_0 are measured within the same straight segment

k = decay rate (negative for declining flows)

t = number of days between spot measurements (interpolation period)

The decay rate, denoted k, was unique to each pair of subsequent discharge measurements, and was commonly in the range of -1×10^{-3} to -0.5×10^{-5}.

4. Results



4. Results

4.1 Streamflow Records – Discharge

The computed flow records for all site stations listed in Table 2-1 are presented as average daily discharge time-series and plotted with spot discharge measurements and interpolated baseflows in Figure 4-1 through Figure 4-11. As a rating curve for W45 has not yet been developed, continuous water level data are presented for this station in Figure 4-10. The same flow records are also presented as unit yield plots, with each plot showing annual data for all stations on a single plot (refer to Figure 4-12 to Figure 4-25).

While discharge magnitude varies with watershed area (*i.e.*, larger basin areas result in higher discharge values), it is more often instructive to compare runoff and/or unit yields to remove the influence of watershed area. The variation in runoff and yields across the gauged basins at the Project site is relatively low, with unit yields averaging 14 ± 2 L/s/km^2 and an average runoff of 184 ± 44 mm for the open water season (Table 4-1).

W4 and W27 display slightly lower average unit yields than the other stations, and W1, W5, W29 and W99 yield slightly more water on average. There appears to be lower than average yields at W26, however, this result is biased lower by the absence of data for the month of May, which is typically the month with the highest proportion of annual runoff. W1 appears to experience the highest overall yields, and in particular, the highest magnitude freshet (in yield terms). Higher than average yields at this station are sustained throughout the seasonal falling limb from September through November.

Table 4-2 through Table 4-21 present the monthly summaries of streamflow as discharge, unit yields and runoff, by station. As noted in Section 2.2.3, reliable continuous water level data is not available for W29 for 2016 through 2019, and much of 2020.

Table 4-1:
Summary of monthly average discharge, unit yield and runoff for Project site hydrometric stations.

Station (Discharge Area)	Variable	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Average/Total
W1 (6.8 km^2)	Average Discharge (m^3/s)	--	--	--	0.024	0.255	0.110	0.093	0.091	0.093	0.107	0.069	--	0.105
	Average Yield (L/s/km^2)	--	--	--	3.5	37.5	16.1	13.6	13.4	13.7	15.7	10.1	--	15.5
	Runoff (mm)	--	--	--	5	63	39	36	34	35	22	4	--	240
W4 (76.9 km^2)	Average Discharge (m^3/s)	--	--	--	0.256	2.260	1.162	0.872	0.882	0.907	0.820	--	--	1.023
	Average Yield (L/s/km^2)	--	--	--	3.3	29.4	15.1	11.3	11.5	11.8	10.7	--	--	13.3
	Runoff (mm)	--	--	--	2	53	37	30	30	31	17	--	--	200
W5 (97.5 km^2)	Average Discharge (m^3/s)	--	--	--	--	3.112	1.454	1.081	1.029	1.050	1.115	--	--	1.474
	Average Yield (L/s/km^2)	--	--	--	--	31.9	14.9	11.1	10.6	10.8	11.4	--	--	15.1
	Runoff (mm)	--	--	--	--	65	36	30	28	28	15	--	--	201
W6 (100.9 km^2)	Average Discharge (m^3/s)	--	--	--	--	3.653	1.158	0.971	1.125	1.219	1.070	0.574	--	1.396
	Average Yield (L/s/km^2)	--	--	--	--	36.2	11.5	9.6	11.1	12.1	10.6	5.7	--	13.8
	Runoff (mm)	--	--	--	--	63	25	24	29	31	16	3	--	193
W21 (10.1 km^2)	Average Discharge (m^3/s)	--	--	--	--	--	0.116	0.075	0.197	0.098	0.060	--	--	0.109
	Average Yield (L/s/km^2)	--	--	--	--	--	14.4	9.2	24.3	12.0	7.4	--	--	13.5
	Runoff (mm)	--	--	--	--	--	17	10	27	31	16	--	--	102
W22 (66.8 km^2)	Average Discharge (m^3/s)	--	--	--	0.531	2.229	1.008	0.726	0.816	0.790	0.762	0.937	--	0.975
	Average Yield (L/s/km^2)	--	--	--	7.9	33.4	15.1	10.9	12.2	11.8	11.4	14.0	--	14.6
	Runoff (mm)	--	--	--	13	60	38	27	29	30	16	15	--	228
W26 (1.3 km^2)	Average Discharge (m^3/s)	--	--	--	--	0.029	0.018	0.012	0.014	0.011	0.009	--	--	0.016
	Average Yield (L/s/km^2)	--	--	--	--	22.3	13.6	9.6	11.0	8.8	6.7	--	--	12.0
	Runoff (mm)	--	--	--	--	40	30	25	29	22	7	--	--	153
W27 (2.7 km^2)	Average Discharge (m^3/s)	--	--	--	--	0.060	0.029	0.025	0.023	0.020	0.025	--	--	0.030
	Average Yield (L/s/km^2)	--	--	--	--	22.1	10.6	9.3	8.5	7.4	9.4	--	--	11.2
	Runoff (mm)	--	--	--	--	42	26	21	22	19	10	--	--	139
W29 (86.1 km^2)	Average Discharge (m^3/s)	--	--	--	--	3.490	1.219	1.224	1.216	1.131	1.007	--	--	1.548
	Average Yield (L/s/km^2)	--	--	--	--	40.5	14.2	14.2	14.1	13.1	11.7	--	--	18.0
	Runoff (mm)	--	--	--	--	44	27	38	37	34	20	--	--	200
W99 (88.3 km^2)	Average Discharge (m^3/s)	--	--	--	1.503	2.657	1.595	1.008	0.925	0.978	1.136	--	--	1.400
	Average Yield (L/s/km^2)	--	--	--	17.0	30.1	18.1	11.4	10.5	11.1	12.9	--	--	15.9
	Runoff (mm)	--	--	--	19	81	45	31	28	29	15	--	--	247

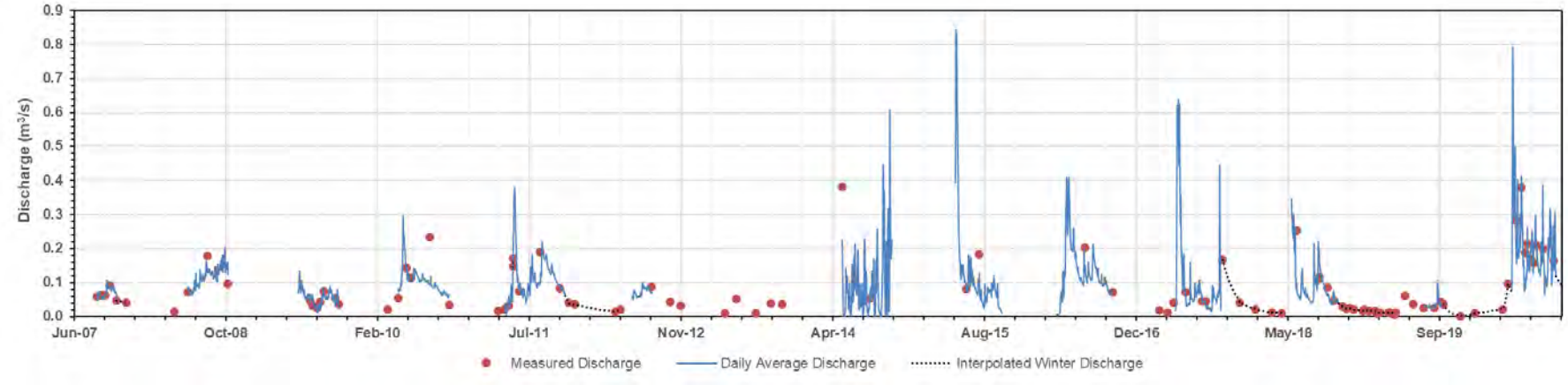

Figure 4-1: W1 Average daily discharge record (2007 to 2020)

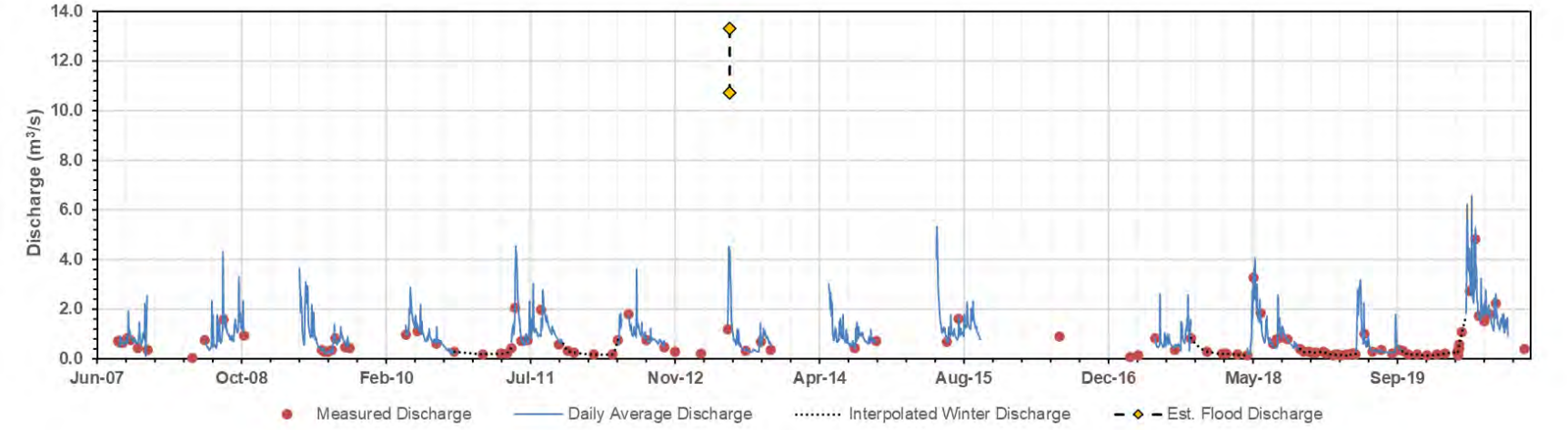

Figure 4-2: W4 Average daily discharge record (2007 to 2020). Note that values for May 29, 2013 are estimates based on high water marks and channel surveys at W29 extrapolated by drainage area to W4 (Laberge, 2013).

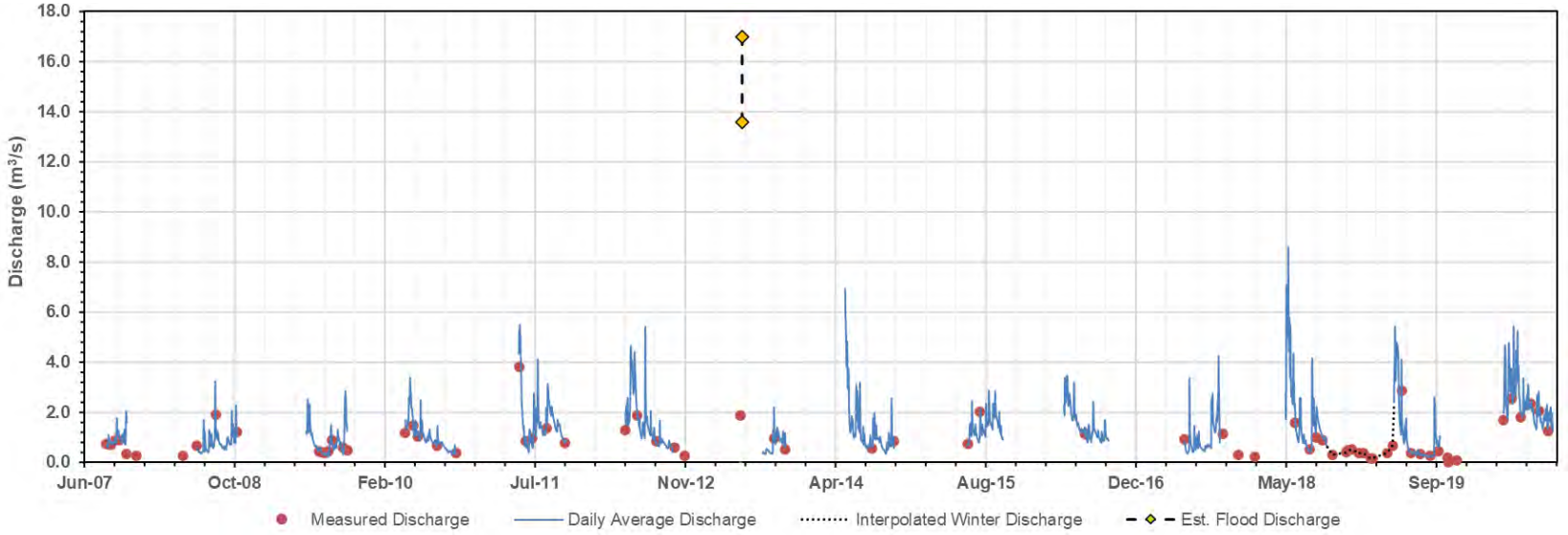

Figure 4-3: W5 Average daily discharge record (2007 to 2020). Note that values for May 29, 2013 are estimates based on high water marks and channel surveys at W29 extrapolated by drainage area to W5 (Laberge, 2013).

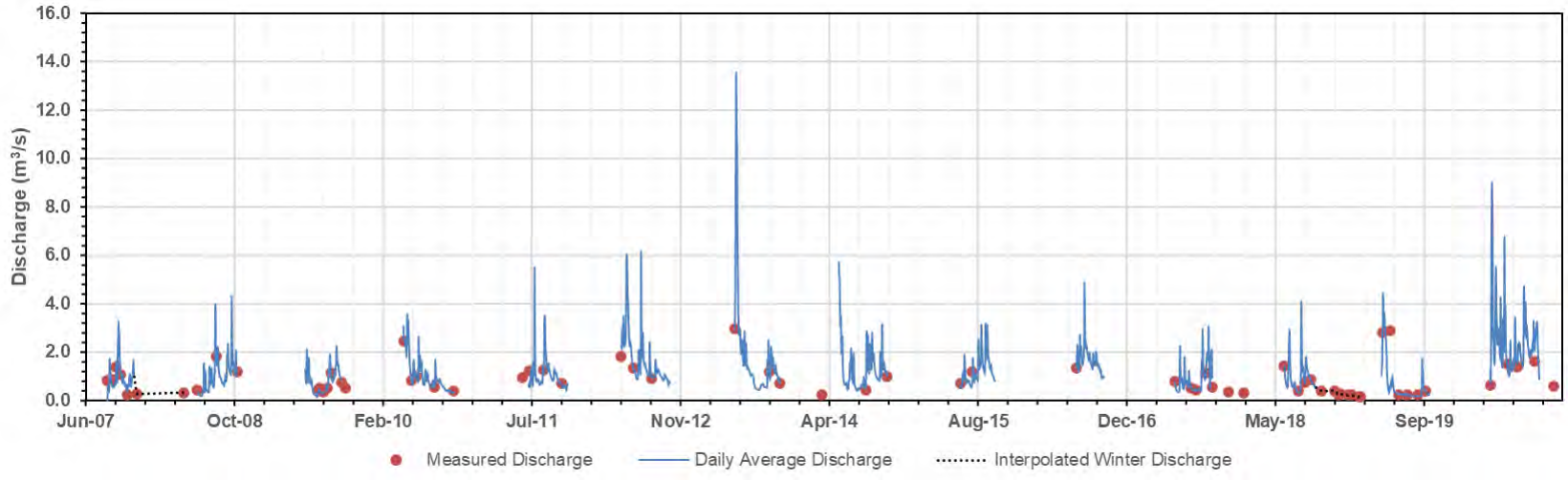

Figure 4-4: W6 Average daily discharge record (2007 to 2020)

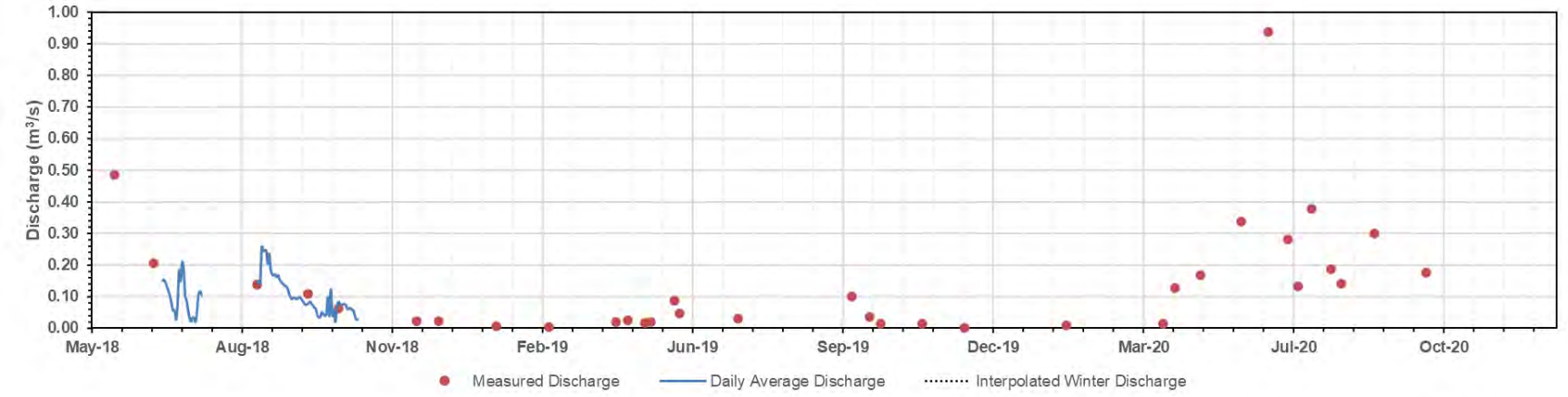

Figure 4-5: Preliminary W21 Average daily discharge record (2018)

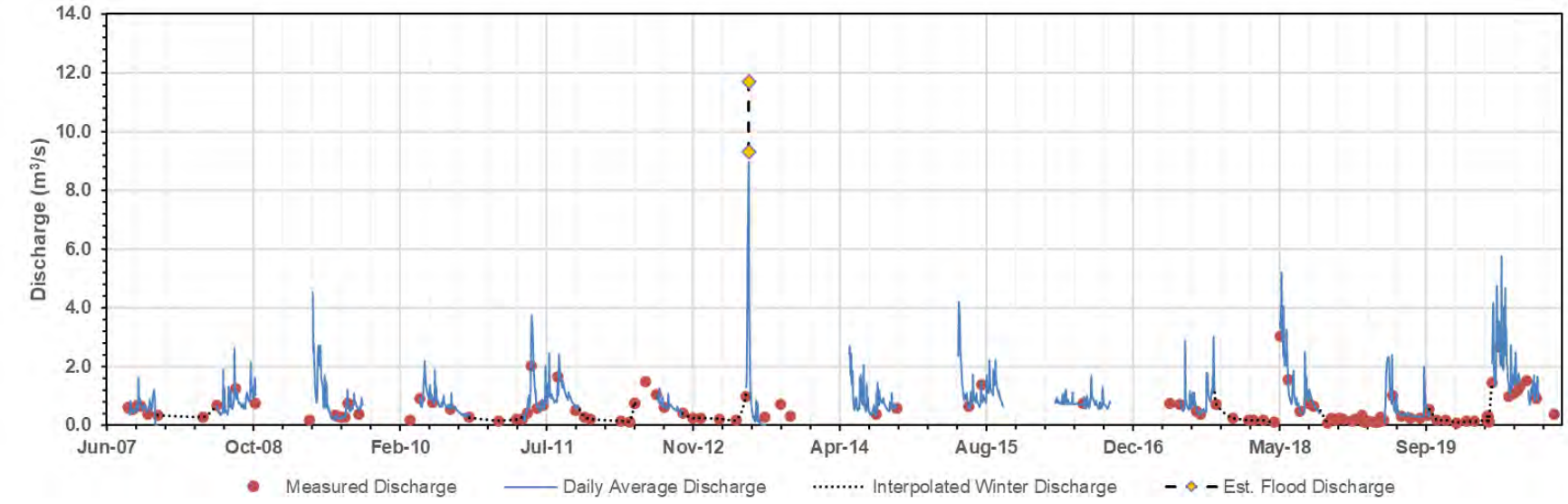

Figure 4-6: W22 Average daily discharge record (2007 to 2020). Note that values for May 29, 2013 are estimates based on high water marks and channel surveys at W29 extrapolated by drainage area to W22 (Laberge, 2013).

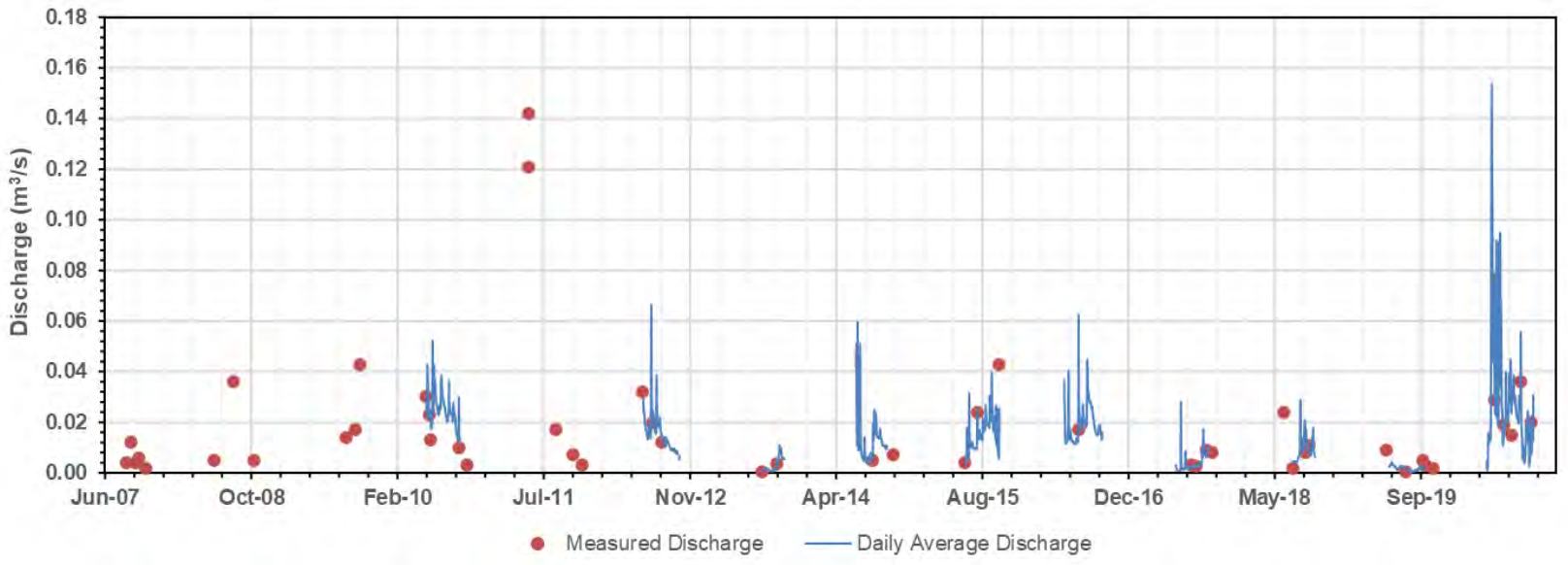

Figure 4-7: W26 Average daily discharge record (2007 to 2020)

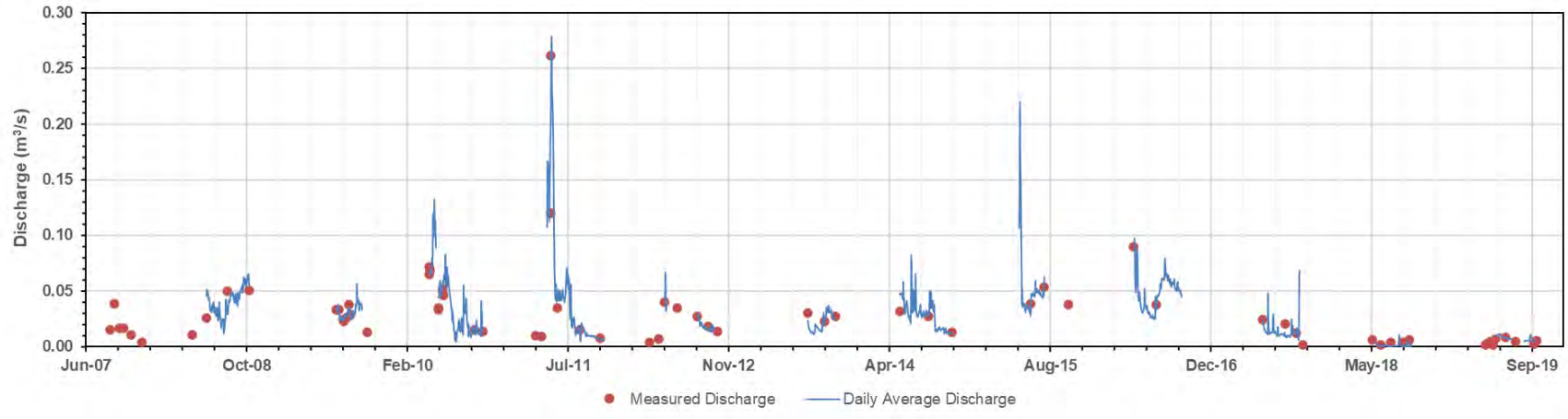

Figure 4-8: W27 Average daily discharge record (2007 to 2020)

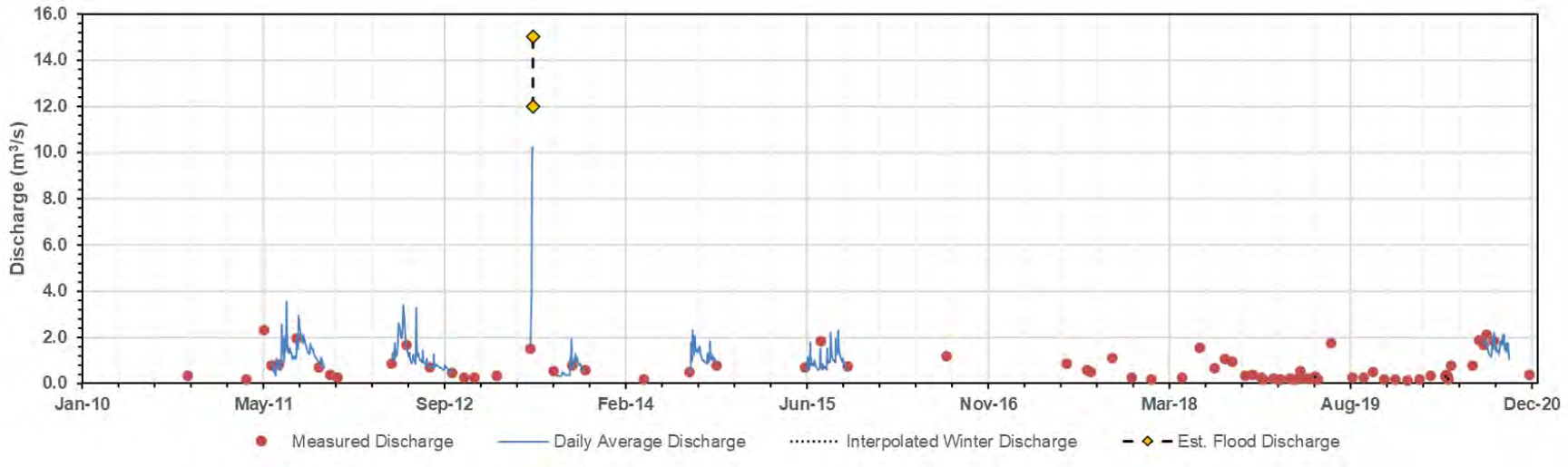

Figure 4-9: W29 Average daily discharge record (2011 to 2020). Note that values for May 29, 2013 are estimates based on high water marks and channel surveys at W29 (Laberge, 2013).

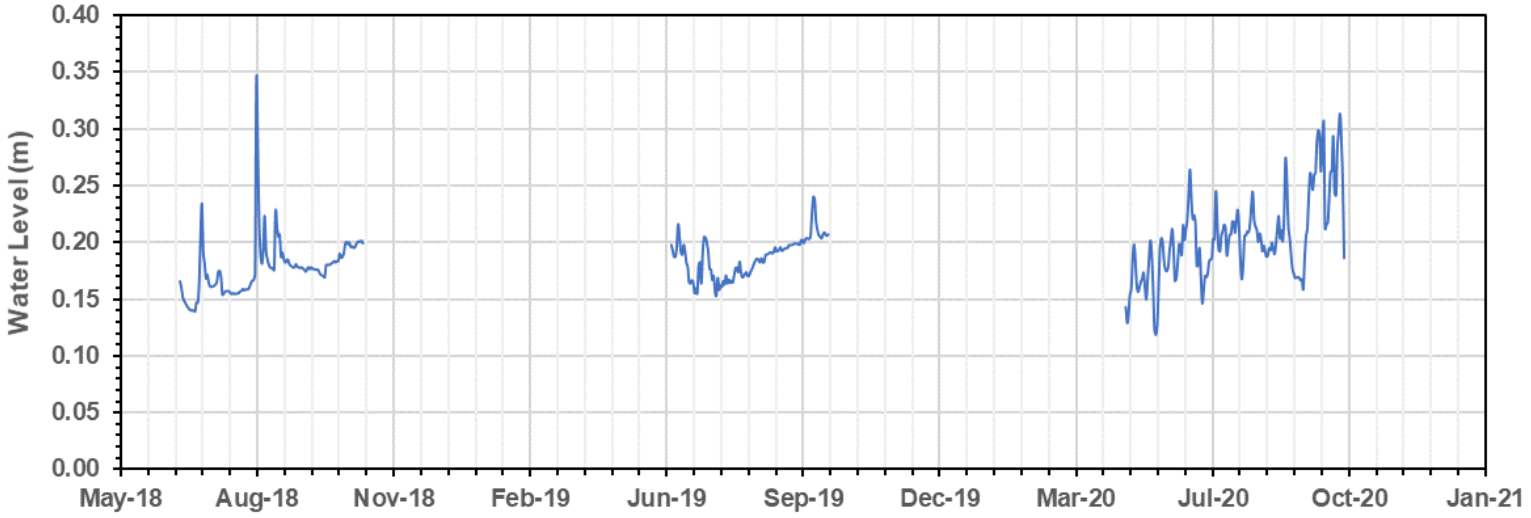

Figure 4-10: W45 Average daily water level record (2018 to 2020).

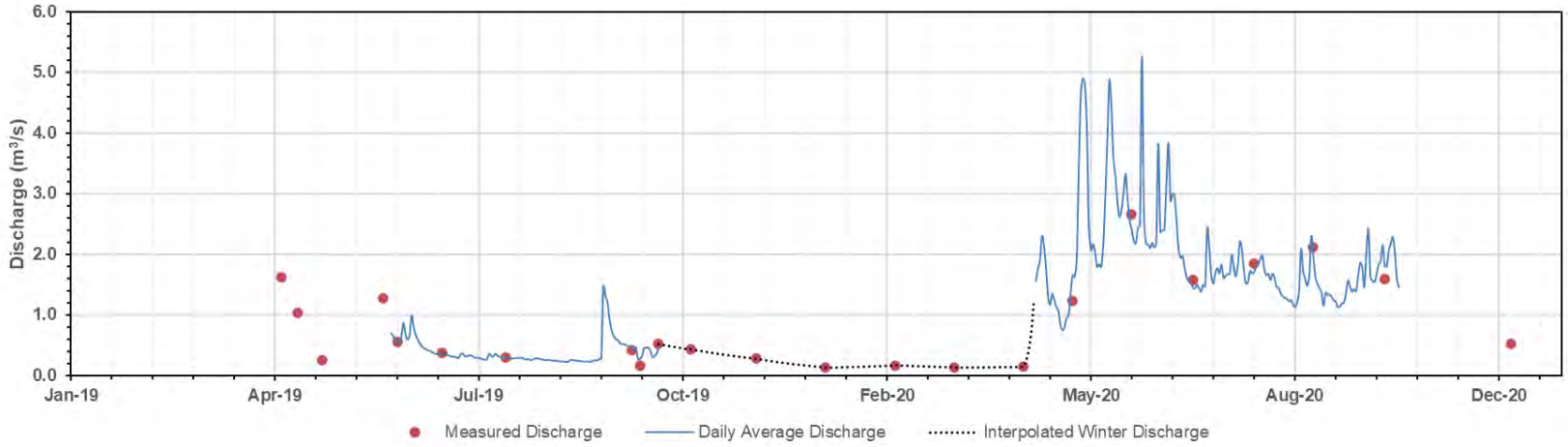

Figure 4-11: W99 Average daily discharge record (2019 to 2020).

4.2 Streamflow Records – Unit Yields

Period of record (Figure 4-12) and unit yield plots per year (Figure 4-13 through Figure 4-26) are presented for the eight hydrometric stations in this section.

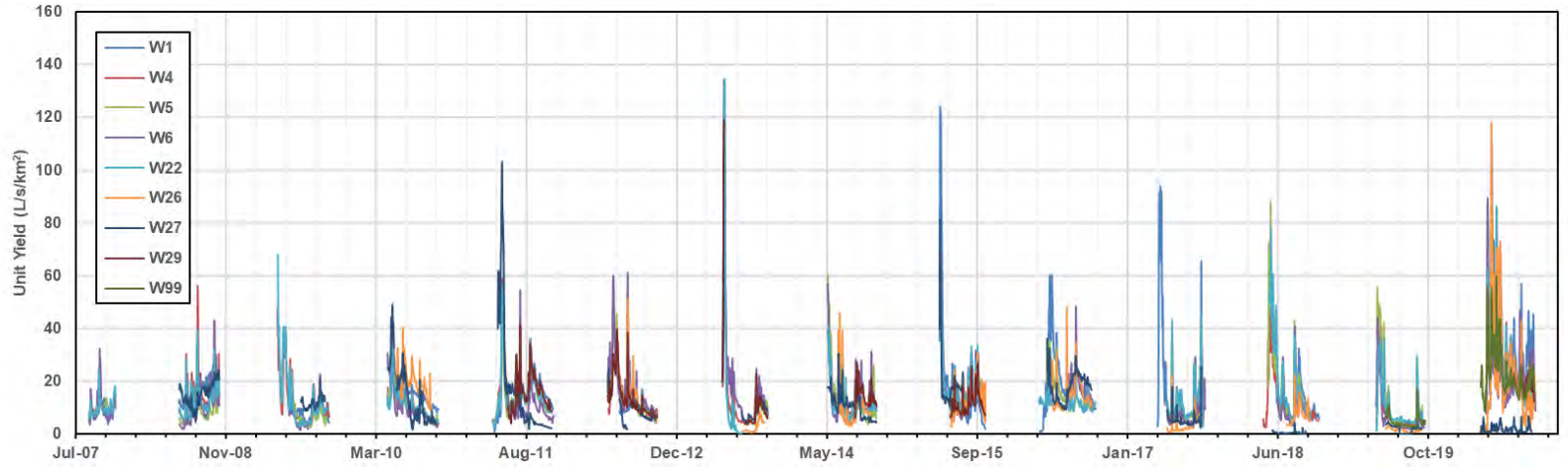

Figure 4-12: Average daily unit yield time-series for Project stations (2007-2020)

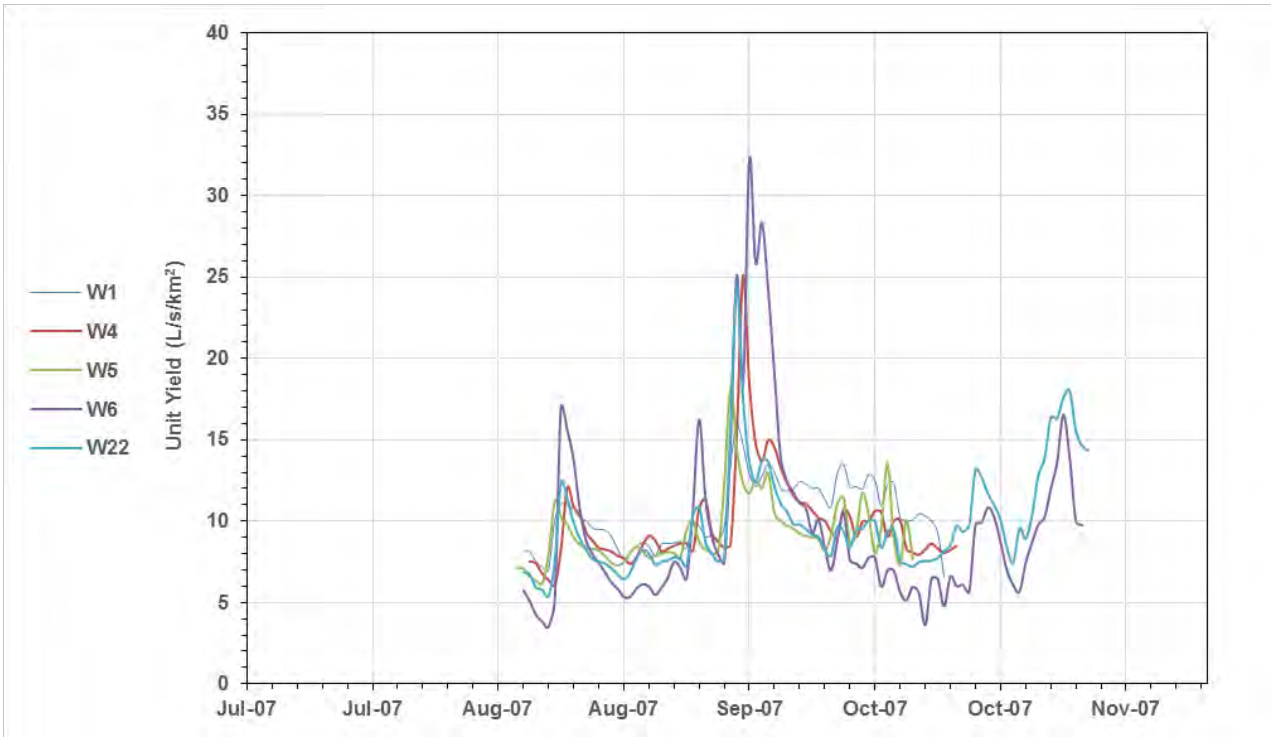

Figure 4-13: Average daily unit yield time-series for Project stations (2007)

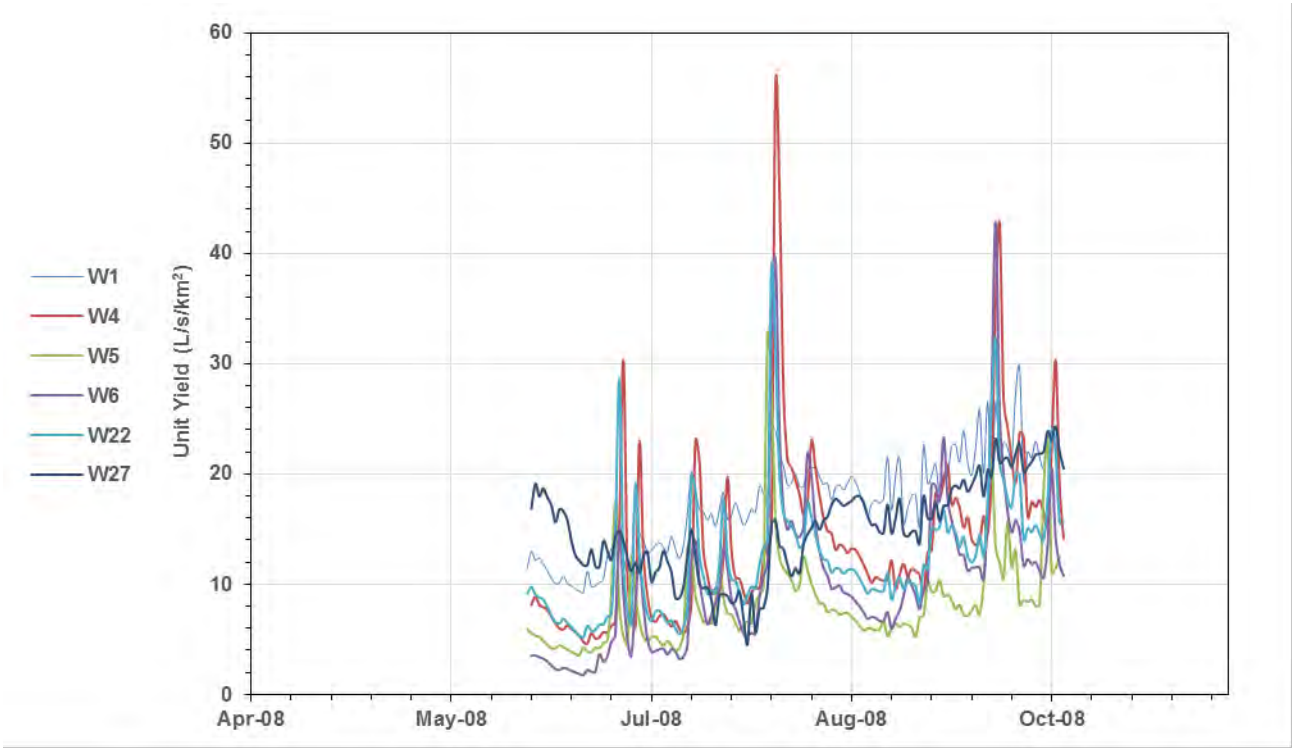

Figure 4-14: Average daily unit yield time-series for Project stations (2008)

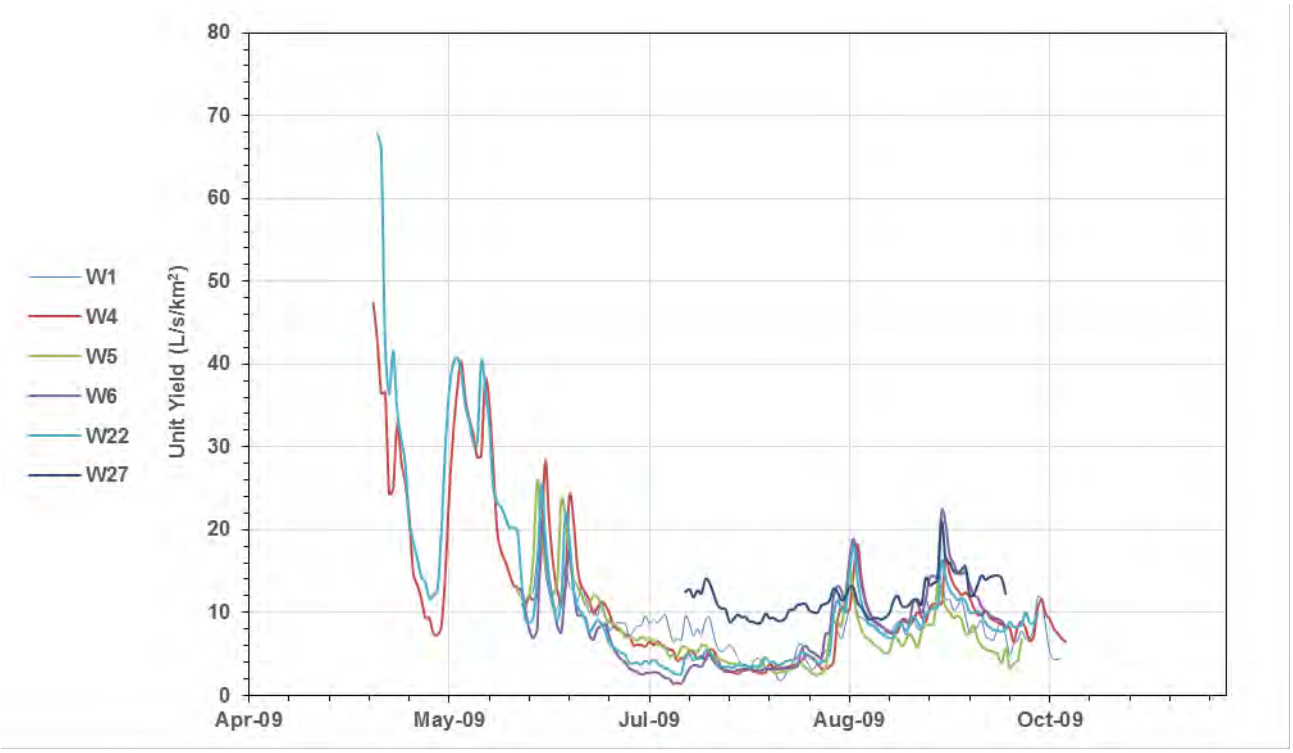

Figure 4-15: Average daily unit yield time-series for Project stations (2009)

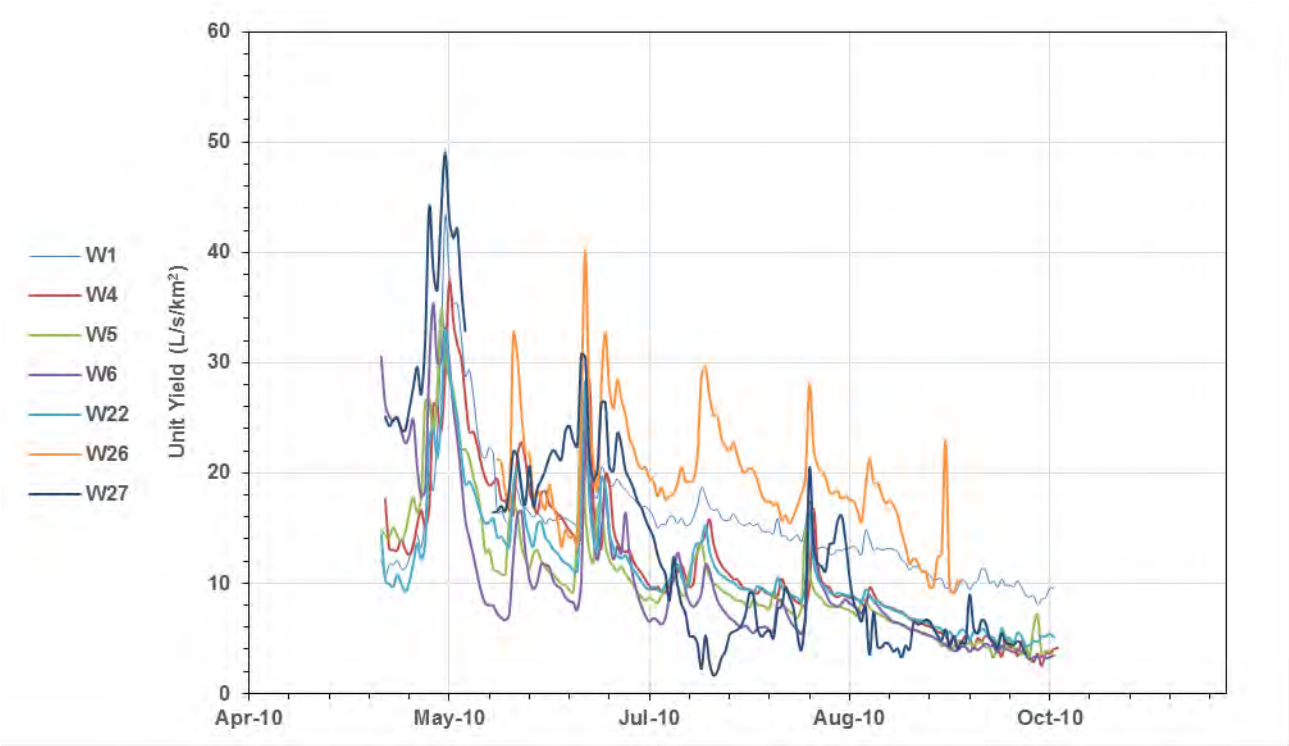

Figure 4-16: Average daily unit yield time-series for Project stations (2010)

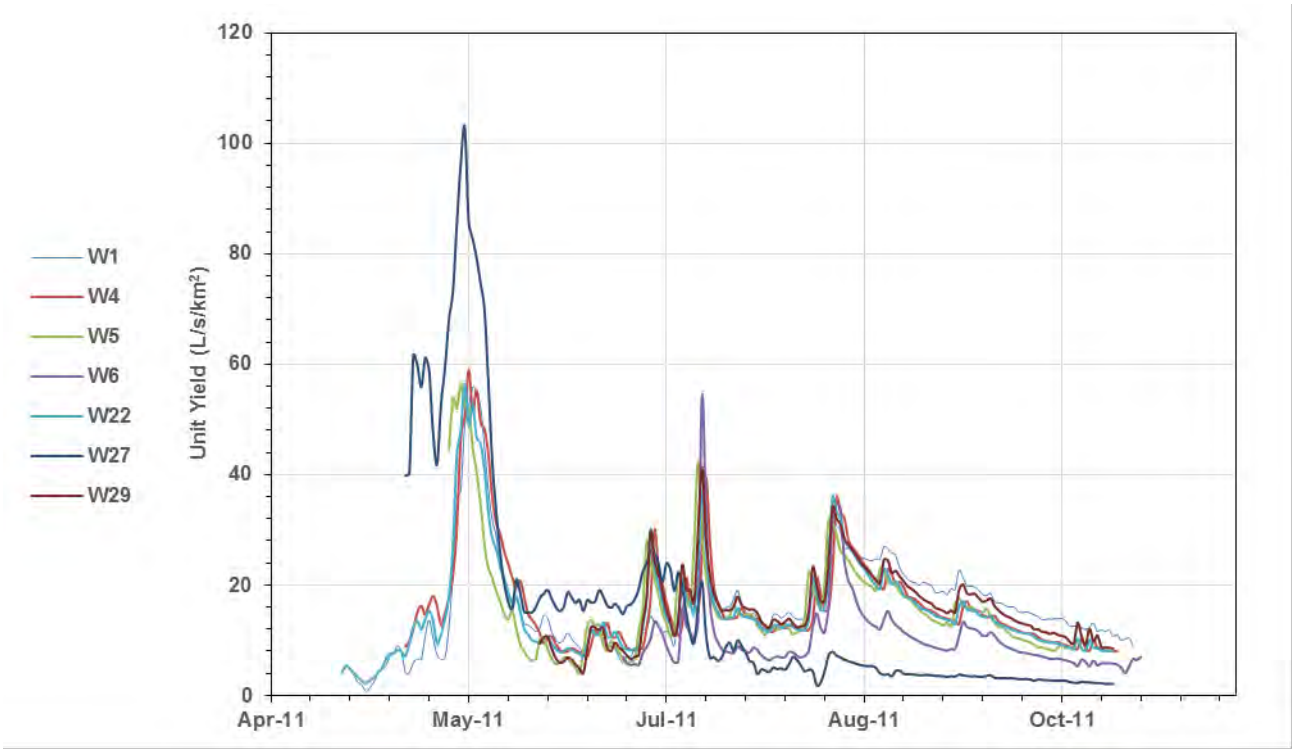

Figure 4-17: Average daily unit yield time-series for Project stations (2011)

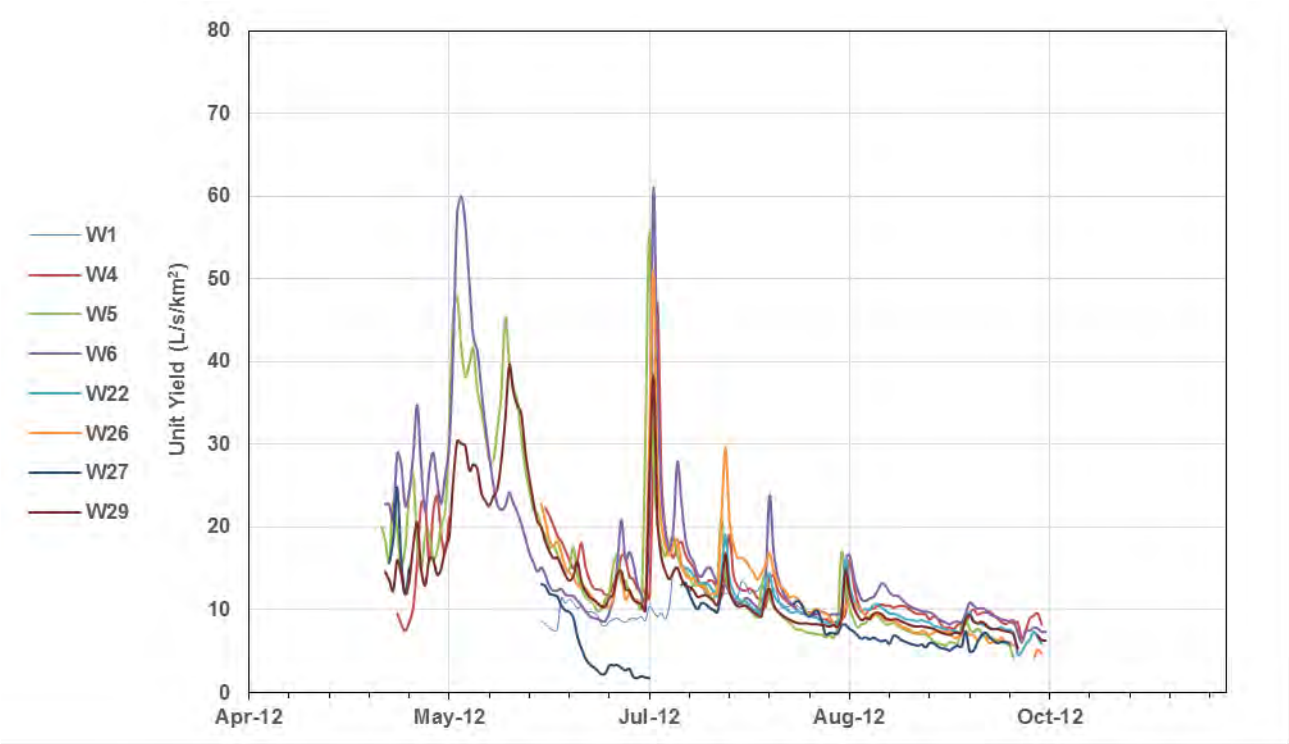

Figure 4-18: Average daily unit yield time-series for Project stations (2012)

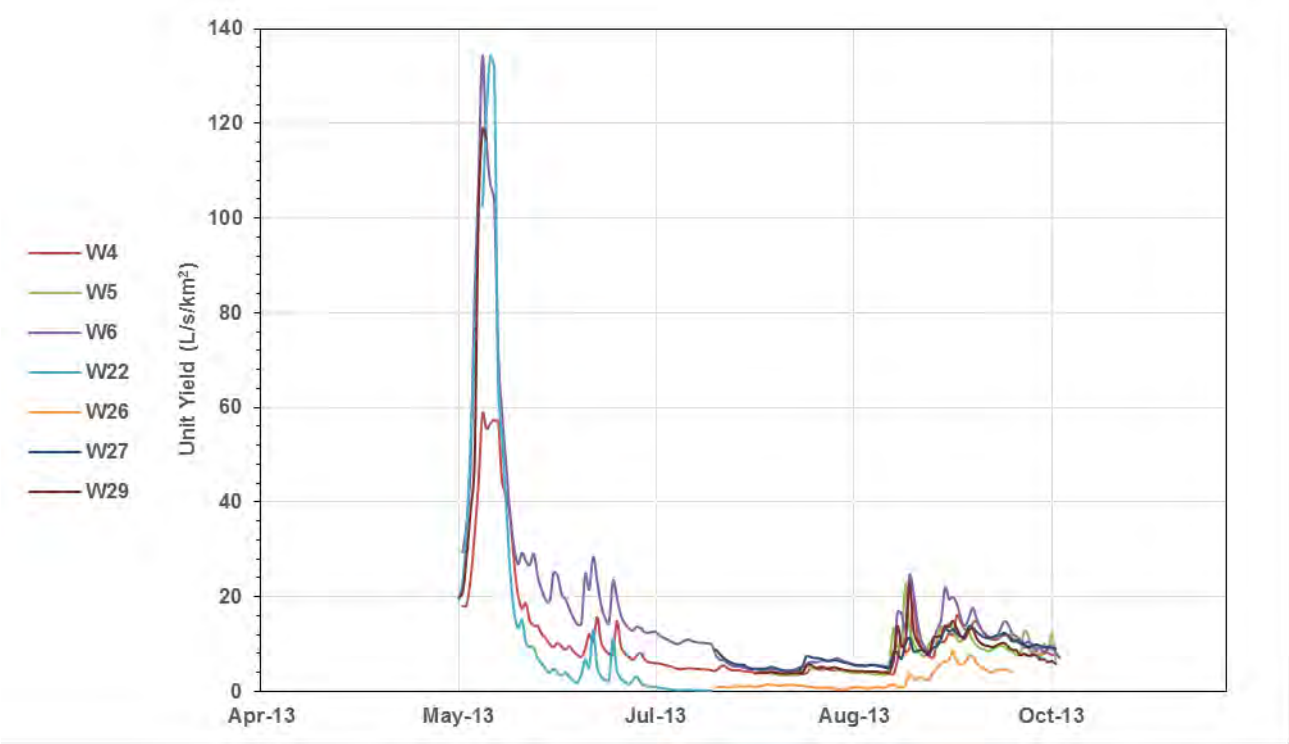

Figure 4-19: Average daily unit yield time-series for Project stations (2013)

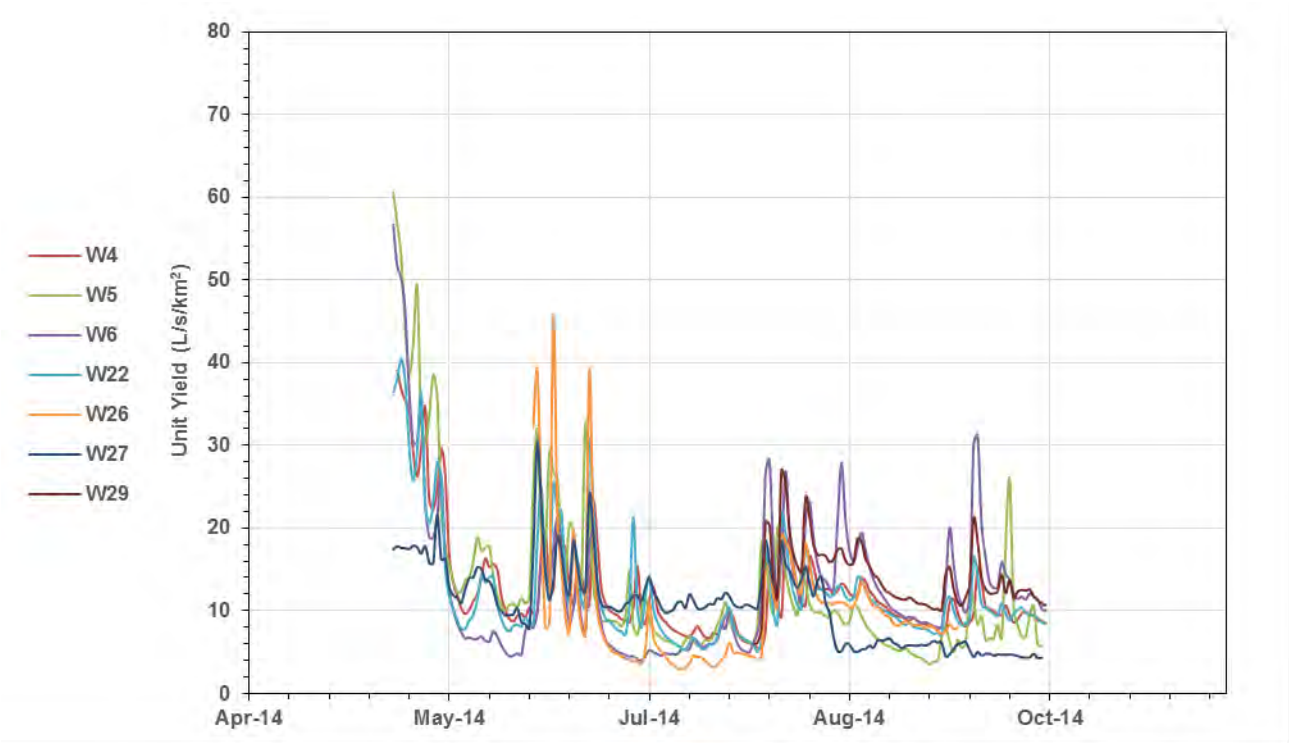

Figure 4-20: Average daily unit yield time-series for Project stations (2014)

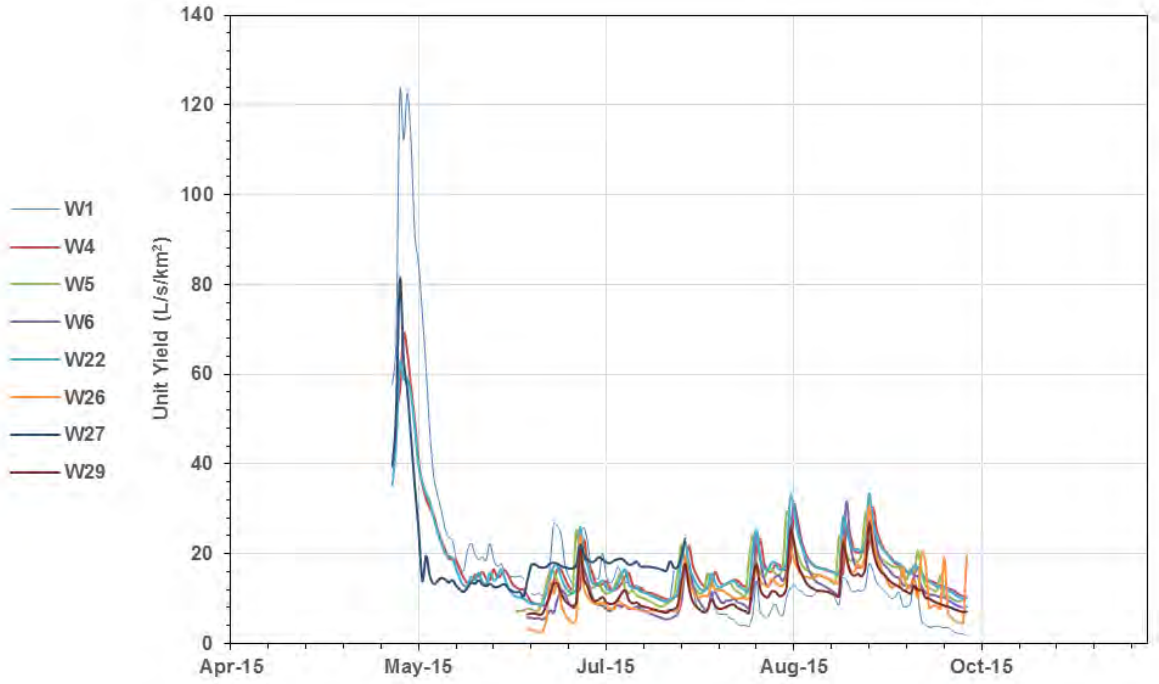

Figure 4-21: Average daily unit yield time-series for Project stations (2015)

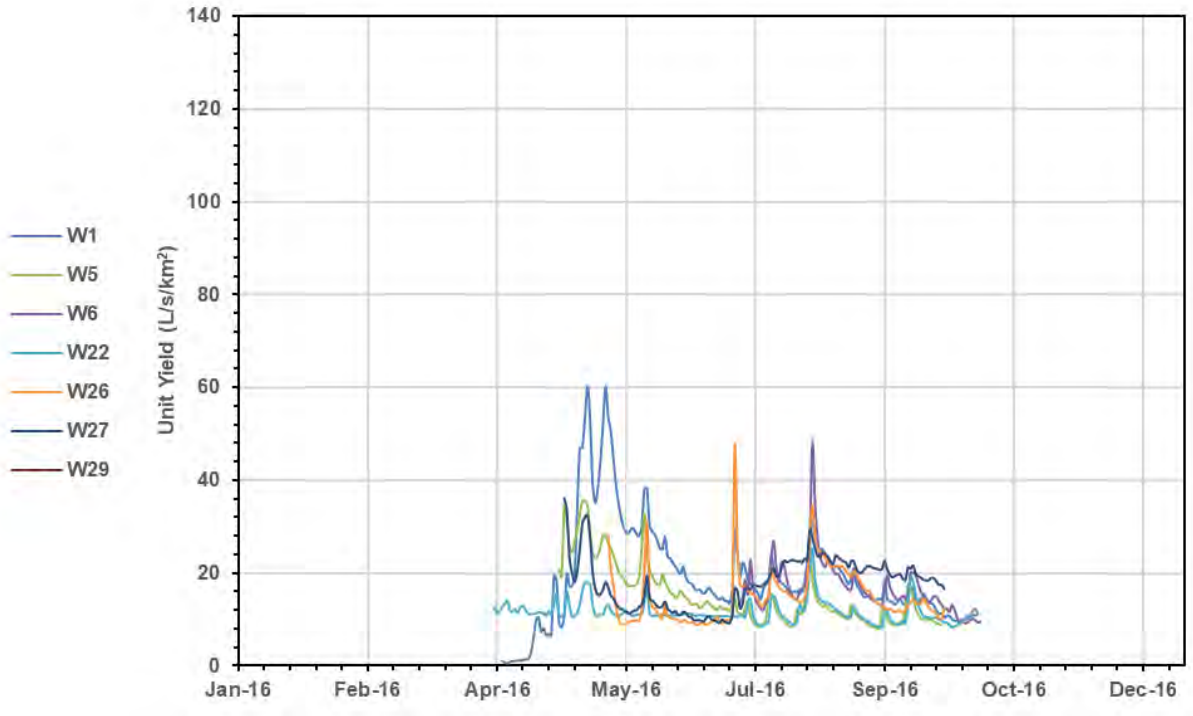

Figure 4-22: Average daily unit yield time-series for Project stations (2016)

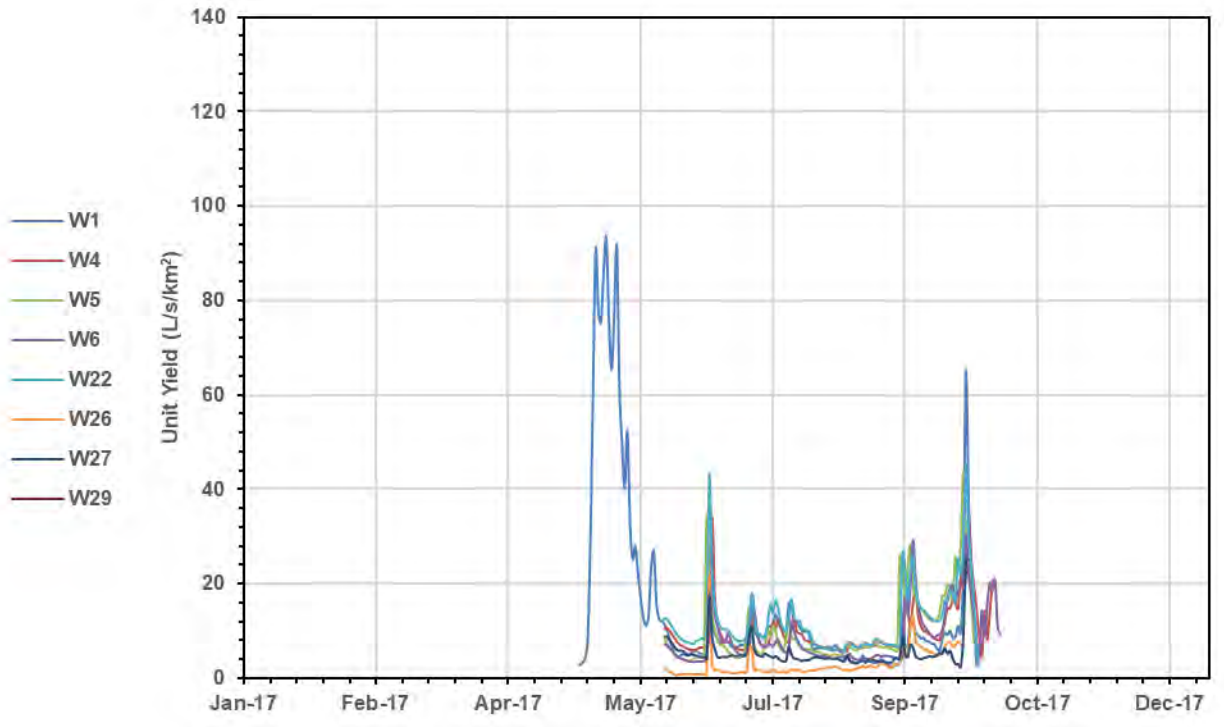

Figure 4-23: Average daily unit yield time-series for Project stations (2017)

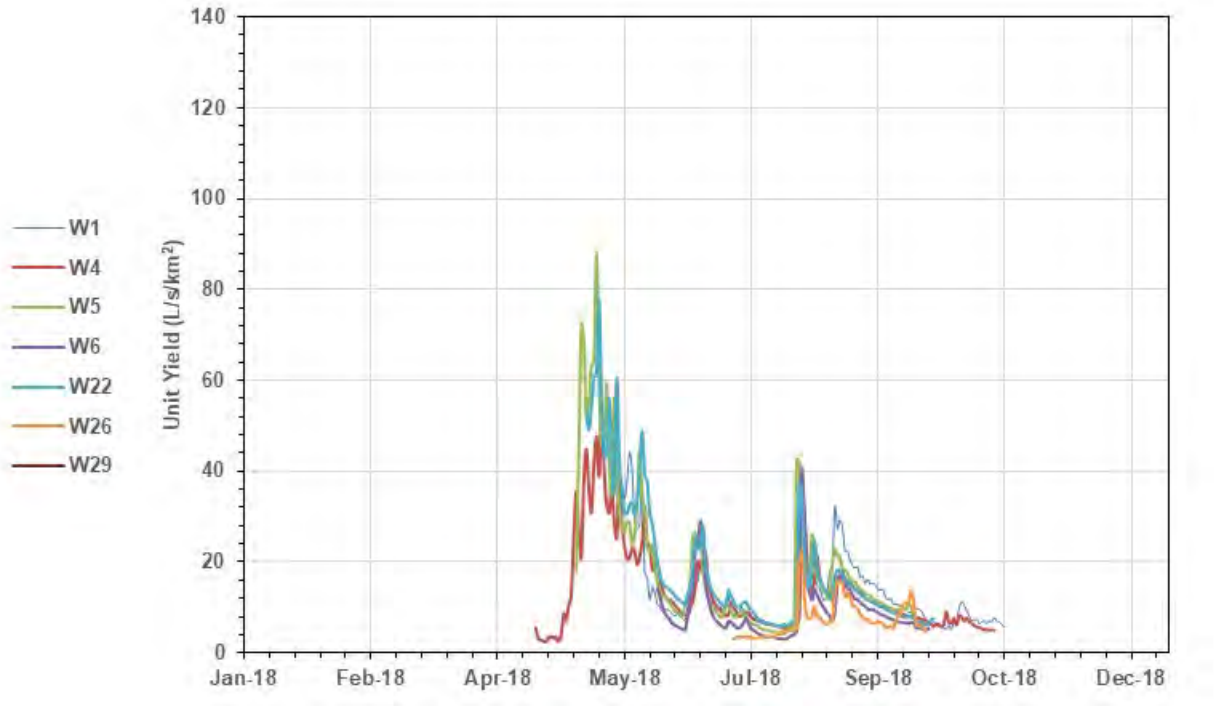

Figure 4-24: Average daily unit yield time-series for Project stations (2018)

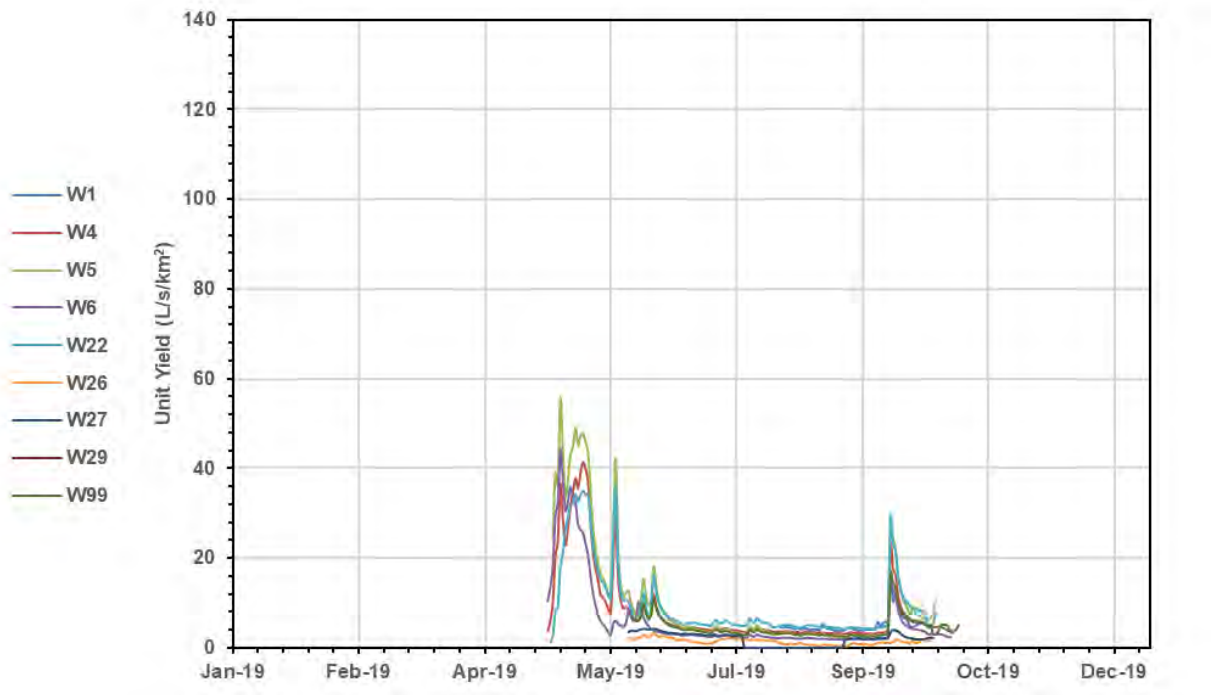

Figure 4-25: Average daily unit yield time-series for Project stations (2019)

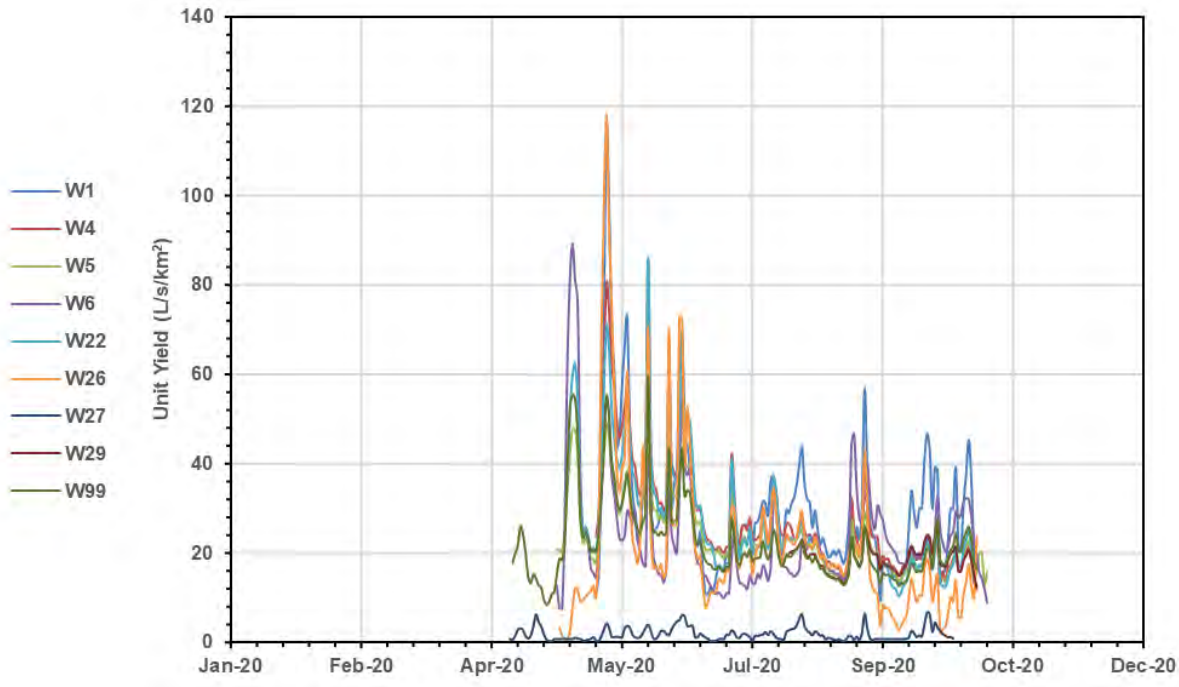

Figure 4-26: Average daily unit yield time-series for Project stations (2020)

4.3 Streamflow Records – Monthly Summary Tables

Monthly summary tables are presented for the ten hydrometric stations in this section.

Table 4-2:
W1 Summary statistics for 15-minute discharge record. All values are in m^3/s.

Year	Variable	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
2007	Average	--	--	--	--	--	--	--	0.062	0.074	0.077	--	--
	Maximum	--	--	--	--	--	--	--	0.096	0.128	0.097	--	--
	Minimum	--	--	--	--	--	--	--	0.044	0.049	0.042	--	--
2008	Average	--	--	--	--	--	0.074	0.102	0.130	0.133	0.154	--	--
	Maximum	--	--	--	--	--	0.106	0.184	0.207	0.251	0.265	--	--
	Minimum	--	--	--	--	--	0.054	0.067	0.091	0.085	0.075	--	--
2009	Average	--	--	--	--	--	0.083	0.054	0.035	0.063	0.049	--	--
	Maximum	--	--	--	--	--	0.244	0.083	0.099	0.109	0.117	--	--
	Minimum	--	--	--	--	--	0.012	0.012	0.002	0.026	0.006	--	--
2010	Average	--	--	--	--	0.149	0.117	0.114	0.097	0.078	0.065	--	--
	Maximum	--	--	--	--	0.344	0.195	0.148	0.164	0.126	0.085	--	--
	Minimum	--	--	--	--	0.060	0.092	0.090	0.075	0.054	0.047	--	--
2011	Average	--	--	--	0.024	0.151	0.075	0.104	0.133	0.143	0.094	0.069	--
	Maximum	--	--	--	0.045	0.482	0.138	0.257	0.290	0.215	0.124	0.091	--
	Minimum	--	--	--	0.003	0.017	0.026	0.034	0.072	0.117	0.063	0.053	--
2012	Average	--	--	--	--	--	0.064	0.075	0.079	--	--	--	--
	Maximum	--	--	--	--	--	0.095	0.123	0.096	--	--	--	--
	Minimum	--	--	--	--	--	0.047	0.052	0.066	--	--	--	--
2013	Average	--	--	--	--	--	--	--	--	--	--	--	--
	Maximum	--	--	--	--	--	--	--	--	--	--	--	--
	Minimum	--	--	--	--	--	--	--	--	--	--	--	--
2014	Average	--	--	--	--	0.076	0.091	0.066	0.091	0.120	0.217	--	--
	Maximum	--	--	--	--	0.781	0.273	0.284	0.289	0.557	0.719	--	--
	Minimum	--	--	--	--	0.000	0.000	0.000	0.000	0.000	0.000	--	--
2015	Average	--	--	--	--	0.433	0.120	0.103	0.056	0.080	0.026	--	--
	Maximum	--	--	--	--	1.304	0.295	0.202	0.250	0.172	0.086	--	--
	Minimum	--	--	--	--	0.116	0.067	0.001	0.022	0.033	0.010	--	--
2016	Average	--	--	--	0.024	0.231	0.163	0.121	0.138	0.096	0.070	--	--
	Maximum	--	--	--	0.104	0.583	0.326	0.346	0.255	0.148	0.093	--	--
	Minimum	--	--	--	0.002	0.033	0.095	0.083	0.089	0.061	0.055	--	--
2017	Average	--	--	--	--	0.335	0.066	0.068	0.036	0.055	0.212	--	--
	Maximum	--	--	--	--	1.006	0.281	0.198	0.076	0.289	0.535	--	--
	Minimum	--	--	--	--	0.001	0.025	0.038	0.017	0.008	0.000	--	--
2018	Average	--	--	--	--	0.269	0.116	0.062	0.115	0.078	0.048	--	--
	Maximum	--	--	--	--	0.415	0.474	0.148	0.311	0.131	0.131	--	--
	Minimum	--	--	--	--	0.169	0.039	0.032	0.033	0.025	0.018	--	--
2019	Average	--	--	--	--	--	--	--	0.029	0.039	--	--	--
	Maximum	--	--	--	--	--	--	--	0.045	0.166	--	--	--
	Minimum	--	--	--	--	--	--	--	0.020	0.021	--	--	--
2020	Average	--	--	--	--	0.415	0.242	0.159	0.189	0.168	0.196	--	--
	Maximum	--	--	--	--	1.147	0.707	0.346	0.503	0.378	0.328	--	--
	Minimum	--	--	--	--	0.049	0.086	0.050	0.113	0.048	0.086	--	--
All Years	Average	--	--	--	0.024	0.260	0.113	0.093	0.094	0.094	0.097	0.069	--
	Maximum	--	--	--	0.104	1.923	0.707	0.346	0.503	0.557	0.719	0.091	--
	Minimum	--	--	--	0.002	0.000	0.000	0.000	0.000	0.000	0.000	0.053	--

Table 4-3:
W1 Summary statistics for daily discharge, unit yield and runoff. Months with incomplete data in italics.

Year	Variable	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
2007	# days with data	--	--	--	--	--	--	--	*18*	30	*20*	--	--
	Average Discharge (m^3/s)	--	--	--	--	--	--	--	*0.06*	0.07	*0.08*	--	--
	Average Yield ($L/s/km^2$)	--	--	--	--	--	--	--	*9.03*	10.85	*11.14*	--	--
	Runoff (mm)	--	--	--	--	--	--	--	*14.0*	28.1	*19.3*	--	--
2008	# days with data	--	--	--	--	--	*22*	31	31	30	*20*	--	--
	Average Discharge (m^3/s)	--	--	--	--	--	*0.07*	0.10	0.13	0.13	*0.15*	--	--
	Average Yield ($L/s/km^2$)	--	--	--	--	--	*10.85*	15.03	19.08	19.55	*22.64*	--	--
	Runoff (mm)	--	--	--	--	--	*20.6*	40.3	51.1	50.7	*39.1*	--	--
2009	# days with data	--	--	--	--	--	*23*	31	31	30	*21*	--	--
	Average Discharge (m^3/s)	--	--	--	--	--	*0.08*	0.05	0.04	0.06	*0.05*	--	--
	Average Yield ($L/s/km^2$)	--	--	--	--	--	*12.19*	7.88	5.18	9.28	*7.21*	--	--
	Runoff (mm)	--	--	--	--	--	*24.2*	21.1	13.9	24.1	*13.1*	--	--
2010	# days with data	--	--	--	--	28	30	31	31	30	19	--	--
	Average Discharge (m^3/s)	--	--	--	--	0.15	0.12	0.11	0.10	0.08	0.07	--	--
	Average Yield ($L/s/km^2$)	--	--	--	--	21.54	17.20	16.72	14.25	11.43	9.61	--	--
	Runoff (mm)	--	--	--	--	52.1	44.6	44.8	38.2	29.6	15.8	--	--
2011	# days with data	--	--	--	*12*	31	30	31	31	30	31	*5*	--
	Average Discharge (m^3/s)	--	--	--	*0.02*	0.15	0.07	0.10	0.13	0.14	0.09	*0.07*	--
	Average Yield ($L/s/km^2$)	--	--	--	*3.38*	22.18	10.99	15.23	19.57	21.04	13.83	*10.10*	--
	Runoff (mm)	--	--	--	*3.5*	59.4	28.5	40.8	52.4	54.5	37.0	*4.4*	--
2012	# days with data	--	--	--	--	--	*18*	31	*18*	--	--	--	--
	Average Discharge (m^3/s)	--	--	--	--	--	*0.06*	0.08	*0.08*	--	--	--	--
	Average Yield ($L/s/km^2$)	--	--	--	--	--	*9.33*	11.03	*11.54*	--	--	--	--
	Runoff (mm)	--	--	--	--	--	*14.5*	29.6	*17.9*	--	--	--	--
2013	# days with data	--	--	--	--	--	--	--	--	--	--	--	--
	Average Discharge (m^3/s)	--	--	--	--	--	--	--	--	--	--	--	--
	Average Yield ($L/s/km^2$)	--	--	--	--	--	--	--	--	--	--	--	--
	Runoff (mm)	--	--	--	--	--	--	--	--	--	--	--	--
2014	# days with data	--	--	--	--	*23*	30	31	31	29	*17*	--	--
	Average Discharge (m^3/s)	--	--	--	--	*0.07*	0.09	0.06	0.08	0.11	*0.20*	--	--
	Average Yield ($L/s/km^2$)	--	--	--	--	*10.85*	13.35	9.27	12.46	16.79	*29.78*	--	--
	Runoff (mm)	--	--	--	--	*21.6*	34.6	24.8	33.4	42.1	*43.7*	--	--
2015	# days with data	--	--	--	--	*18*	29	28	31	30	*14*	--	--
	Average Discharge (m^3/s)	--	--	--	--	*0.43*	0.12	0.10	0.06	0.08	*0.03*	--	--
	Average Yield ($L/s/km^2$)	--	--	--	--	*63.51*	17.26	14.47	8.24	11.71	*3.78*	--	--
	Runoff (mm)	--	--	--	--	*98.8*	43.2	35.0	22.1	30.3	*4.6*	--	--
2016	# days with data	--	--	--	*19*	31	30	31	31	30	*13*	--	--
	Average Discharge (m^3/s)	--	--	--	*0.02*	0.23	0.16	0.12	0.14	0.10	*0.07*	--	--
	Average Yield ($L/s/km^2$)	--	--	--	*3.59*	33.94	23.96	17.80	20.24	14.12	*10.32*	--	--
	Runoff (mm)	--	--	--	*5.9*	90.9	62.1	47.7	54.2	36.6	*11.6*	--	--
2017	# days with data	--	--	--	--	*24*	30	31	31	30	*5*	--	--
	Average Discharge (m^3/s)	--	--	--	--	*0.33*	0.07	0.07	0.04	0.06	*0.20*	--	--
	Average Yield ($L/s/km^2$)	--	--	--	--	*48.73*	9.72	10.01	5.27	8.11	*28.95*	--	--
	Runoff (mm)	--	--	--	--	*101.1*	25.2	26.8	14.1	21.0	*12.5*	--	--
2018	# days with data	--	--	--	--	*6*	30	31	31	30	28	--	--
	Average Discharge (m^3/s)	--	--	--	--	*0.3*	0.1	0.1	0.1	0.1	0.0	--	--
	Average Yield ($L/s/km^2$)	--	--	--	--	*40.9*	17.1	9.1	16.9	11.4	7.1	--	--
	Runoff (mm)	--	--	--	--	*21.2*	44.4	24.4	45.3	29.6	17.2	--	--
2019	# days with data	--	--	--	--	*14*	--	--	*26*	30	--	--	--
	Average Discharge (m^3/s)	--	--	--	--	--	--	--	*0.0*	0.0	--	--	--
	Average Yield ($L/s/km^2$)	--	--	--	--	--	--	--	*4.3*	5.8	--	--	--
	Runoff (mm)	--	--	--	--	--	--	--	*9.6*	15.0	--	--	--
2020	# days with data	--	--	--	--	*12*	30	31	31	30	*13*	--	--
	Average Discharge (m^3/s)	--	--	--	--	*0.4*	0.2	0.2	0.2	0.2	*0.2*	--	--
	Average Yield ($L/s/km^2$)	--	--	--	--	*58.2*	35.6	23.4	27.8	24.8	*28.4*	--	--
	Runoff (mm)	--	--	--	--	*60.3*	92.2	62.6	74.5	64.2	*31.9*	--	--
All Years	Average Discharge (m^3/s)	--	--	--	*0.024*	*0.255*	0.110	0.093	0.091	0.093	*0.107*	*0.069*	--
	Average Yield ($L/s/km^2$)	--	--	--	*3.5*	*37.5*	16.1	13.6	13.4	13.7	*15.7*	*10.1*	--
	Average Runoff (mm)	--	--	--	*4.7*	*63.2*	39.5	36.2	33.9	35.5	*22.3*	*4.4*	--

Table 4-4:
W4 Summary statistics for 15-minute discharge record. All values are in m^3/s.

Year	Variable	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
2007	Average	--	--	--	--	--	--	--	0.641	0.875	0.768	--	--
	Maximum	--	--	--	--	--	--	--	1.047	2.281	2.061	--	--
	Minimum	--	--	--	--	--	--	--	0.416	0.560	0.499	--	--
2008	Average	--	--	--	--	--	0.479	0.868	1.334	1.034	1.666	--	--
	Maximum	--	--	--	--	--	0.742	4.241	6.649	2.237	5.001	--	--
	Minimum	--	--	--	--	--	0.307	0.378	0.543	0.594	0.614	--	--
2009	Average	--	--	--	--	1.949	1.109	0.406	0.426	0.795	0.654	--	--
	Maximum	--	--	--	--	5.288	3.115	0.706	1.565	1.473	1.230	--	--
	Minimum	--	--	--	--	0.060	0.554	0.090	0.159	0.531	0.296	--	--
2010	Average	--	--	--	--	1.619	1.355	0.879	0.723	0.492	0.306	--	--
	Maximum	--	--	--	--	3.059	2.780	1.338	1.558	0.833	0.497	--	--
	Minimum	--	--	--	--	0.764	0.921	0.643	0.555	0.021	0.021	--	--
2011	Average	--	--	--	--	2.218	0.845	1.301	1.430	1.268	0.768	--	--
	Maximum	--	--	--	--	5.350	1.764	3.743	3.321	1.986	1.220	--	--
	Minimum	--	--	--	--	0.614	0.492	0.573	0.802	0.942	0.564	--	--
2012	Average	--	--	--	--	1.224	1.211	1.271	0.833	0.726	0.662	--	--
	Maximum	--	--	--	--	2.086	1.871	4.834	1.484	0.899	0.846	--	--
	Minimum	--	--	--	--	0.475	0.817	0.781	0.591	0.544	0.405	--	--
2013	Average	--	--	--	--	3.341	1.065	0.420	0.317	0.749	0.753	--	--
	Maximum	--	--	--	--	7.034	3.902	0.818	0.421	1.903	0.996	--	--
	Minimum	--	--	--	--	1.155	0.540	0.287	0.259	0.265	0.465	--	--
2014	Average	--	--	--	--	1.664	1.004	0.671	0.899	0.759	0.727	--	--
	Maximum	--	--	--	--	4.388	2.274	2.035	2.456	1.311	1.041	--	--
	Minimum	--	--	--	--	0.614	0.625	0.488	0.383	0.452	0.579	--	--
2015	Average	--	--	--	--	2.781	1.014	1.019	1.271	1.470	0.962	--	--
	Maximum	--	--	--	--	7.008	1.510	2.324	3.133	2.699	1.373	--	--
	Minimum	--	--	--	--	1.144	0.566	0.690	0.825	1.004	0.717	--	--
2016	Average	--	--	--	--	--	--	--	--	--	--	--	--
	Maximum	--	--	--	--	--	--	--	--	--	--	--	--
	Minimum	--	--	--	--	--	--	--	--	--	--	--	--
2017	Average	--	--	--	--	--	0.718	0.665	0.522	0.934	1.254	--	--
	Maximum	--	--	--	--	--	5.411	1.431	0.771	2.545	2.904	--	--
	Minimum	--	--	--	--	--	0.408	0.412	0.404	0.309	0.168	--	--
2018	Average	--	--	--	0.237	1.987	1.266	0.687	1.088	0.693	0.488	--	--
	Maximum	--	--	--	0.592	5.742	2.623	2.121	4.161	1.091	1.247	--	--
	Minimum	--	--	--	0.150	0.136	0.597	0.377	0.384	0.263	0.304	--	--
2019	Average	--	--	--	--	1.814	0.645	0.319	0.267	0.472	0.366	--	--
	Maximum	--	--	--	--	4.105	3.468	0.424	0.329	2.905	0.504	--	--
	Minimum	--	--	--	--	0.178	0.304	0.239	0.224	0.220	0.219	--	--
2020	Average	--	--	--	--	4.136	3.206	1.954	1.710	1.522	1.340	--	--
	Maximum	--	--	--	--	8.079	9.600	3.664	3.049	2.650	1.871	--	--
	Minimum	--	--	--	--	1.531	1.812	1.430	1.041	0.901	0.839	--	--
All Years	Average	--	--	--	0.237	2.106	1.187	0.872	0.889	0.907	0.802	0.847	--
	Maximum	--	--	--	0.592	8.079	9.600	4.834	6.649	2.905	5.001	1.145	--
	Minimum	--	--	--	0.150	0.060	0.304	0.090	0.159	0.021	0.021	0.565	--

Table 4-5:
W4 Summary statistics for daily discharge, unit yield and runoff. Months with incomplete data in italics.

Year	Variable	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
2007	# days with data	--	--	--	--	--	--	--	*18*	30	31	--	--
	Average Discharge (m^3/s)	--	--	--	--	--	--	--	*0.64*	0.87	0.77	--	--
	Average Yield ($L/s/km^2$)	--	--	--	--	--	--	--	*8.30*	11.38	9.98	--	--
	Runoff (mm)	--	--	--	--	--	--	--	*12.9*	29.5	26.7	--	--
2008	# days with data	--	--	--	--	--	*22*	31	31	30	*21*	--	--
	Average Discharge (m^3/s)	--	--	--	--	--	*0.48*	0.87	1.34	1.03	*1.65*	--	--
	Average Yield ($L/s/km^2$)	--	--	--	--	--	*6.30*	11.29	17.40	13.45	*21.48*	--	--
	Runoff (mm)	--	--	--	--	--	*12.0*	30.2	46.6	34.9	*39.0*	--	--
2009	# days with data	--	--	--	--	31	30	31	31	30	*21*	--	--
	Average Discharge (m^3/s)	--	--	--	--	2.01	1.11	0.41	0.43	0.80	*0.65*	--	--
	Average Yield ($L/s/km^2$)	--	--	--	--	26.12	14.42	5.28	5.54	10.34	*8.48*	--	--
	Runoff (mm)	--	--	--	--	70.0	37.4	14.1	14.8	26.8	*15.4*	--	--
2010	# days with data	--	--	--	--	28	30	31	31	30	*19*	--	--
	Average Discharge (m^3/s)	--	--	--	--	1.61	1.35	0.88	0.72	0.49	*0.31*	--	--
	Average Yield ($L/s/km^2$)	--	--	--	--	20.96	17.62	11.43	9.40	6.40	*3.98*	--	--
	Runoff (mm)	--	--	--	--	50.7	45.7	30.6	25.2	16.6	*6.5*	--	--
2011	# days with data	--	--	--	--	28	30	31	31	30	31	--	--
	Average Discharge (m^3/s)	--	--	--	--	2.18	0.85	1.30	1.43	1.27	0.77	--	--
	Average Yield ($L/s/km^2$)	--	--	--	--	28.41	10.99	16.91	18.60	16.49	9.99	--	--
	Runoff (mm)	--	--	--	--	68.7	28.5	45.3	49.8	42.7	26.8	--	--
2012	# days with data	--	--	--	--	*14*	*18*	31	31	30	*16*	--	--
	Average Discharge (m^3/s)	--	--	--	--	*1.23*	*1.23*	1.27	0.83	0.73	*0.66*	--	--
	Average Yield ($L/s/km^2$)	--	--	--	--	*16.02*	*15.93*	16.53	10.83	9.44	*8.57*	--	--
	Runoff (mm)	--	--	--	--	*19.4*	*24.8*	44.3	29.0	24.5	*11.9*	--	--
2013	# days with data	--	--	--	--	*11*	30	31	31	30	*19*	--	--
	Average Discharge (m^3/s)	--	--	--	--	*3.26*	1.07	0.42	0.32	0.75	*0.75*	--	--
	Average Yield ($L/s/km^2$)	--	--	--	--	*42.39*	13.85	5.46	4.12	9.75	*9.72*	--	--
	Runoff (mm)	--	--	--	--	*40.3*	35.9	14.6	11.0	25.3	*15.9*	--	--
2014	# days with data	--	--	--	--	*25*	30	31	31	30	*17*	--	--
	Average Discharge (m^3/s)	--	--	--	--	*1.69*	1.00	0.67	0.90	0.76	*0.72*	--	--
	Average Yield ($L/s/km^2$)	--	--	--	--	*21.93*	13.06	8.73	11.69	9.87	*9.42*	--	--
	Runoff (mm)	--	--	--	--	*47.4*	33.8	23.4	31.3	25.6	*13.8*	--	--
2015	# days with data	--	--	--	--	*18*	30	31	31	30	*14*	--	--
	Average Discharge (m^3/s)	--	--	--	--	*2.81*	1.01	1.02	1.27	1.47	*0.96*	--	--
	Average Yield ($L/s/km^2$)	--	--	--	--	*36.55*	13.18	13.24	16.53	19.11	*12.45*	--	--
	Runoff (mm)	--	--	--	--	*56.8*	34.2	35.5	44.3	49.5	*15.1*	--	--
2016	# days with data	--	--	--	--	--	--	--	--	--	--	--	--
	Average Discharge (m^3/s)	--	--	--	--	--	--	--	--	--	--	--	--
	Average Yield ($L/s/km^2$)	--	--	--	--	--	--	--	--	--	--	--	--
	Runoff (mm)	--	--	--	--	--	--	--	--	--	--	--	--
2017	# days with data	--	--	--	--	--	*23*	31	31	30	*11*	--	--
	Average Discharge (m^3/s)	--	--	--	--	--	*0.72*	0.67	0.52	0.93	*1.26*	--	--
	Average Yield ($L/s/km^2$)	--	--	--	--	--	*9.39*	8.65	6.78	12.14	*16.37*	--	--
	Runoff (mm)	--	--	--	--	--	*18.7*	23.2	18.2	31.5	*15.6*	--	--
2018	# days with data	--	--	--	*6*	31	30	31	31	30	*24*	--	--
	Average Discharge (m^3/s)	--	--	--	*0.3*	2.0	1.3	0.7	1.1	0.7	*0.5*	--	--
	Average Yield ($L/s/km^2$)	--	--	--	*3.3*	25.8	16.5	8.9	14.1	9.0	*6.3*	--	--
	Runoff (mm)	--	--	--	*1.7*	69.2	42.7	23.9	37.9	23.4	*13.1*	--	--
2019	# days with data	--	--	--	--	*26*	30	31	31	30	*13*	--	--
	Average Discharge (m^3/s)	--	--	--	--	*1.8*	0.6	0.3	0.3	0.5	*0.4*	--	--
	Average Yield ($L/s/km^2$)	--	--	--	--	*23.3*	8.4	4.2	3.5	6.1	*4.7*	--	--
	Runoff (mm)	--	--	--	--	*52.3*	21.7	11.1	9.3	15.9	*5.3*	--	--
2020	# days with data	--	--	--	--	*12*	30	31	31	30	*13*	--	--
	Average Discharge (m^3/s)	--	--	--	--	*4.0*	3.2	2.0	1.7	1.5	*1.3*	--	--
	Average Yield ($L/s/km^2$)	--	--	--	--	*52.4*	41.7	25.4	22.2	19.8	*17.2*	--	--
	Runoff (mm)	--	--	--	--	*54.3*	108.0	68.1	59.6	51.3	*19.3*	--	--
All Years	Average Discharge (m^3/s)	--	--	--	*0.256*	2.260	1.162	0.872	0.882	0.907	*0.820*	--	--
	Average Yield ($L/s/km^2$)	--	--	--	*3.3*	29.4	15.1	11.3	11.5	11.8	*10.7*	--	--
	Average Runoff (mm)	--	--	--	*1.7*	52.9	36.9	30.4	30.0	30.6	*17.3*	--	--

Table 4-6:
W5 Summary statistics for 15-minute discharge record. All values are in m^3/s.

Year	Variable	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
2007	Average	--	--	--	--	--	--	--	0.788	0.970	1.083	--	--
	Maximum	--	--	--	--	--	--	--	1.221	2.065	2.135	--	--
	Minimum	--	--	--	--	--	--	--	0.548	0.679	0.678	--	--
2008	Average	--	--	--	--	--	0.431	0.726	0.994	0.703	1.202	--	--
	Maximum	--	--	--	--	--	0.622	3.599	4.574	1.228	4.904	--	--
	Minimum	--	--	--	--	--	0.315	0.336	0.490	0.463	0.410	--	--
2009	Average	--	--	--	--	--	1.425	0.589	0.474	0.768	1.187	--	--
	Maximum	--	--	--	--	--	3.461	0.944	1.669	1.508	2.903	--	--
	Minimum	--	--	--	--	--	0.825	0.225	0.156	0.441	0.156	--	--
2010	Average	--	--	--	--	1.990	1.273	0.991	0.817	0.569	0.423	--	--
	Maximum	--	--	--	--	3.623	3.180	1.428	1.709	0.910	0.916	--	--
	Minimum	--	--	--	--	1.060	0.817	0.742	0.623	0.124	0.081	--	--
2011	Average	--	--	--	--	3.554	0.859	1.681	1.756	1.625	0.984	--	--
	Maximum	--	--	--	--	7.146	1.682	4.928	3.588	2.631	1.586	--	--
	Minimum	--	--	--	--	1.273	0.264	0.447	0.934	1.117	0.551	--	--
2012	Average	--	--	--	--	2.599	2.119	1.626	0.924	0.734	0.621	--	--
	Maximum	--	--	--	--	6.239	5.160	6.883	1.996	1.007	0.794	--	--
	Minimum	--	--	--	--	0.819	0.837	0.871	0.566	0.497	0.344	--	--
2013	Average	--	--	--	--	--	--	--	0.417	0.933	0.893	--	--
	Maximum	--	--	--	--	--	--	--	0.623	3.880	2.321	--	--
	Minimum	--	--	--	--	--	--	--	0.284	0.315	0.579	--	--
2014	Average	--	--	--	--	2.916	1.625	0.769	1.055	0.615	0.926	--	--
	Maximum	--	--	--	--	7.135	4.536	2.807	3.277	1.323	3.345	--	--
	Minimum	--	--	--	--	1.072	0.801	0.488	0.542	0.322	0.496	--	--
2015	Average	--	--	--	--	--	1.066	1.227	1.541	1.762	1.237	--	--
	Maximum	--	--	--	--	--	1.860	2.965	3.814	3.041	3.056	--	--
	Minimum	--	--	--	--	--	0.627	0.734	0.953	1.258	0.883	--	--
2016	Average	--	--	--	--	2.540	1.685	1.152	1.202	1.007	--	--	--
	Maximum	--	--	--	--	4.003	3.725	1.790	2.854	2.334	--	--	--
	Minimum	--	--	--	--	1.578	1.112	0.771	0.755	0.731	--	--	--
2017	Average	--	--	--	--	--	0.772	0.724	0.584	1.557	2.392	--	--
	Maximum	--	--	--	--	--	6.140	1.729	0.840	4.196	4.631	--	--
	Minimum	--	--	--	--	--	0.279	0.360	0.395	0.522	0.231	--	--
2018	Average	--	--	--	--	4.921	1.951	0.857	1.614	1.015	--	--	--
	Maximum	--	--	--	--	11.424	4.799	3.145	6.815	1.708	--	--	--
	Minimum	--	--	--	--	1.471	0.743	0.354	0.323	0.504	--	--	--
2019	Average	--	--	--	--	3.299	1.102	0.381	0.283	0.685	0.701	--	--
	Maximum	--	--	--	--	6.205	5.798	0.594	0.434	4.118	1.664	--	--
	Minimum	--	--	--	--	1.026	0.324	0.153	0.132	0.170	0.315	--	--
2020	Average	--	--	--	--	3.048	3.227	2.253	1.963	1.772	1.737	--	--
	Maximum	--	--	--	--	5.699	7.265	3.659	3.110	2.920	2.568	--	--
	Minimum	--	--	--	--	1.523	2.110	1.719	1.281	1.231	1.136	--	--
All Years	Average	--	--	--	--	3.077	1.535	1.081	1.044	1.051	1.064	--	--
	Maximum	--	--	--	--	17.273	7.265	6.883	6.815	4.196	4.904	--	--
	Minimum	--	--	--	--	0.819	0.264	0.153	0.132	0.124	0.081	--	--

Table 4-7:
W5 Summary statistics for daily discharge, unit yield and runoff. Months with incomplete data in italics.

Year	Variable	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
2007	# days with data	--	--	--	--	--	--	--	*18*	30	*20*	--	--
	Average Discharge (m^3/s)	--	--	--	--	--	--	--	*0.79*	0.97	*1.09*	--	--
	Average Yield ($L/s/km^2$)	--	--	--	--	--	--	--	*8.06*	9.94	*11.22*	--	--
	Runoff (mm)	--	--	--	--	--	--	--	*12.5*	25.8	*19.4*	--	--
2008	# days with data	--	--	--	--	--	*21*	31	31	30	*21*	--	--
	Average Discharge (m^3/s)	--	--	--	--	--	*0.43*	0.73	1.00	0.70	*1.20*	--	--
	Average Yield ($L/s/km^2$)	--	--	--	--	--	*4.46*	7.44	10.22	7.21	*12.33*	--	--
	Runoff (mm)	--	--	--	--	--	*8.1*	19.9	27.4	18.7	*22.4*	--	--
2009	# days with data	--	--	--	--	--	*23*	31	31	30	*22*	--	--
	Average Discharge (m^3/s)	--	--	--	--	--	*1.42*	0.59	0.47	0.77	*1.19*	--	--
	Average Yield ($L/s/km^2$)	--	--	--	--	--	*14.56*	6.04	4.86	7.88	*12.19*	--	--
	Runoff (mm)	--	--	--	--	--	*28.9*	16.2	13.0	20.4	*23.2*	--	--
2010	# days with data	--	--	--	--	28	30	31	31	30	*19*	--	--
	Average Discharge (m^3/s)	--	--	--	--	1.99	1.27	0.99	0.82	0.57	*0.42*	--	--
	Average Yield ($L/s/km^2$)	--	--	--	--	20.36	13.06	10.16	8.38	5.83	*4.32*	--	--
	Runoff (mm)	--	--	--	--	49.3	33.8	27.2	22.4	15.1	*7.1*	--	--
2011	# days with data	--	--	--	--	*15*	30	31	31	30	*21*	--	--
	Average Discharge (m^3/s)	--	--	--	--	*3.59*	0.86	1.68	1.76	1.62	*0.98*	--	--
	Average Yield ($L/s/km^2$)	--	--	--	--	*36.82*	8.81	17.24	18.01	16.67	*10.09*	--	--
	Runoff (mm)	--	--	--	--	*47.7*	22.8	46.2	48.2	43.2	*18.3*	--	--
2012	# days with data	--	--	--	--	27	30	31	31	30	*10*	--	--
	Average Discharge (m^3/s)	--	--	--	--	2.59	2.12	1.63	0.92	0.73	*0.61*	--	--
	Average Yield ($L/s/km^2$)	--	--	--	--	26.52	21.73	16.68	9.47	7.53	*6.29*	--	--
	Runoff (mm)	--	--	--	--	61.9	56.3	44.7	25.4	19.5	*5.4*	--	--
2013	# days with data	--	--	--	--	--	--	--	27	30	*20*	--	--
	Average Discharge (m^3/s)	--	--	--	--	--	--	--	0.42	0.93	*0.89*	--	--
	Average Yield ($L/s/km^2$)	--	--	--	--	--	--	--	4.26	9.57	*9.09*	--	--
	Runoff (mm)	--	--	--	--	--	--	--	9.9	24.8	*15.7*	--	--
2014	# days with data	--	--	--	--	*25*	30	31	31	30	*17*	--	--
	Average Discharge (m^3/s)	--	--	--	--	*3.03*	1.63	0.77	1.05	0.62	*0.92*	--	--
	Average Yield ($L/s/km^2$)	--	--	--	--	*31.09*	16.67	7.88	10.81	6.31	*9.41*	--	--
	Runoff (mm)	--	--	--	--	*67.2*	43.2	21.1	29.0	16.4	*13.8*	--	--
2015	# days with data	--	--	--	--	--	*15*	31	31	30	*14*	--	--
	Average Discharge (m^3/s)	--	--	--	--	--	*0.98*	1.23	1.54	1.76	*1.23*	--	--
	Average Yield ($L/s/km^2$)	--	--	--	--	--	*10.01*	12.58	15.81	18.07	*12.63*	--	--
	Runoff (mm)	--	--	--	--	--	*13.0*	33.7	42.3	46.8	*15.3*	--	--
2016	# days with data	--	--	--	--	28	*30*	31	31	30	--	--	--
	Average Discharge (m^3/s)	--	--	--	--	2.54	*1.69*	1.15	1.20	1.01	--	--	--
	Average Yield ($L/s/km^2$)	--	--	--	--	26.01	*17.28*	11.81	12.32	10.33	--	--	--
	Runoff (mm)	--	--	--	--	62.9	*44.8*	31.6	33.0	26.8	--	--	--
2017	# days with data	--	--	--	--	--	*22*	31	31	30	*5*	--	--
	Average Discharge (m^3/s)	--	--	--	--	--	*0.77*	0.72	0.58	1.56	*2.39*	--	--
	Average Yield ($L/s/km^2$)	--	--	--	--	--	*7.92*	7.42	5.99	15.97	*24.54*	--	--
	Runoff (mm)	--	--	--	--	--	*15.1*	19.9	16.1	41.4	*10.6*	--	--
2018	# days with data	--	--	--	--	*20*	30	31	31	*28*	--	--	--
	Average Discharge (m^3/s)	--	--	--	--	*4.9*	2.0	0.9	1.6	*1.0*	--	--	--
	Average Yield ($L/s/km^2$)	--	--	--	--	*49.9*	20.0	8.8	16.6	*10.3*	--	--	--
	Runoff (mm)	--	--	--	--	*86.2*	51.9	23.6	44.3	*24.9*	--	--	--
2019	# days with data	--	--	--	--	*24*	30	31	31	30	*7*	--	--
	Average Discharge (m^3/s)	--	--	--	--	*3.3*	1.1	0.4	0.3	0.7	*0.7*	--	--
	Average Yield ($L/s/km^2$)	--	--	--	--	*33.7*	11.3	3.9	2.9	7.0	*7.4*	--	--
	Runoff (mm)	--	--	--	--	*69.8*	29.3	10.5	7.8	18.2	*4.5*	--	--
2020	# days with data	--	--	--	--	27	30	31	31	30	*17*	--	--
	Average Discharge (m^3/s)	--	--	--	--	3.0	3.2	2.3	2.0	1.8	*1.7*	--	--
	Average Yield ($L/s/km^2$)	--	--	--	--	31.0	33.1	23.1	20.1	18.2	*17.8*	--	--
	Runoff (mm)	--	--	--	--	72.3	85.8	61.9	53.9	47.1	*26.1*	--	--
All Years	Average Discharge (m^3/s)	--	--	--	--	*3.112*	1.454	1.081	1.029	1.050	*1.115*	--	--
	Average Yield ($L/s/km^2$)	--	--	--	--	*31.9*	14.9	11.1	10.6	10.8	*11.4*	--	--
	Average Runoff (mm)	--	--	--	--	*64.7*	36.1	29.7	27.5	27.8	*15.1*	--	--

Table 4-8:
W6 Summary statistics for 15-minute discharge record. All values are in m^3/s.

Year	Variable	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
2007	Average	--	--	--	--	--	--	--	0.783	1.303	0.725	--	--
	Maximum	--	--	--	--	--	--	--	2.057	4.249	1.494	--	--
	Minimum	--	--	--	--	--	--	--	0.299	0.467	0.239	--	--
2008	Average	--	--	--	--	--	0.274	0.741	1.340	1.121	1.665	--	--
	Maximum	--	--	--	--	--	0.545	1.780	4.636	2.652	5.172	--	--
	Minimum	--	--	--	--	--	0.136	0.265	0.456	0.542	0.675	--	--
2009	Average	--	--	--	--	--	1.063	0.318	0.647	1.223	0.964	--	--
	Maximum	--	--	--	--	--	2.266	0.675	1.988	2.509	1.118	--	--
	Minimum	--	--	--	--	--	0.617	0.038	0.267	0.724	0.709	--	--
2010	Average	--	--	--	--	2.213	1.181	0.946	0.779	0.578	0.379	--	--
	Maximum	--	--	--	--	4.325	2.817	1.811	1.840	0.948	0.544	--	--
	Minimum	--	--	--	--	0.746	0.626	0.580	0.509	0.247	0.112	--	--
2011	Average	--	--	--	--	--	0.626	1.180	1.350	1.101	0.708	0.569	--
	Maximum	--	--	--	--	--	1.207	6.749	3.864	1.630	1.169	0.722	--
	Minimum	--	--	--	--	--	0.535	0.525	0.591	0.797	0.340	0.385	--
2012	Average	--	--	--	--	3.349	1.506	1.854	1.183	1.048	0.842	--	--
	Maximum	--	--	--	--	7.528	2.769	7.120	2.681	1.367	1.054	--	--
	Minimum	--	--	--	--	1.511	0.814	0.991	0.912	0.803	0.497	--	--
2013	Average	--	--	--	--	8.676	2.479	1.055	0.546	1.308	1.084	--	--
	Maximum	--	--	--	--	17.947	6.767	1.754	0.738	2.809	2.429	--	--
	Minimum	--	--	--	--	2.496	1.337	0.489	0.412	0.499	0.686	--	--
2014	Average	--	--	--	--	2.106	1.034	0.892	1.661	1.282	1.324	--	--
	Maximum	--	--	--	--	6.637	2.706	2.186	3.689	3.653	2.651	--	--
	Minimum	--	--	--	--	0.572	0.419	0.375	0.834	0.774	0.960	--	--
2015	Average	--	--	--	--	--	0.765	0.879	1.402	1.722	1.039	--	--
	Maximum	--	--	--	--	--	1.269	2.255	3.733	3.688	1.635	--	--
	Minimum	--	--	--	--	--	0.486	0.508	0.712	1.046	0.784	--	--
2016	Average	--	--	--	--	--	--	1.788	2.057	1.541	1.046	--	--
	Maximum	--	--	--	--	--	--	2.992	5.348	2.116	1.688	--	--
	Minimum	--	--	--	--	--	--	1.177	1.367	1.073	0.686	--	--
2017	Average	--	--	--	--	--	0.677	0.778	0.462	1.294	1.566	--	--
	Maximum	--	--	--	--	--	3.127	1.958	0.635	3.253	3.264	--	--
	Minimum	--	--	--	--	--	0.295	0.440	0.371	0.389	0.328	--	--
2018	Average	--	--	--	--	--	1.145	0.672	1.239	0.763	--	--	--
	Maximum	--	--	--	--	--	3.203	3.131	4.880	1.221	--	--	--
	Minimum	--	--	--	--	--	0.468	0.278	0.266	0.383	--	--	--
2019	Average	--	--	--	--	2.108	0.487	0.263	0.209	0.418	0.311	--	--
	Maximum	--	--	--	--	5.138	1.077	0.370	0.272	2.821	0.452	--	--
	Minimum	--	--	--	--	0.280	0.247	0.181	0.166	0.162	0.161	--	--
2020	Average	--	--	--	--	3.701	2.621	1.597	2.183	2.364	2.382	--	--
	Maximum	--	--	--	--	10.881	8.308	3.721	6.007	4.427	3.357	--	--
	Minimum	--	--	--	--	0.496	1.239	0.938	1.370	1.703	0.848	--	--
All Years	Average	--	--	--	--	3.112	1.285	0.971	1.143	1.221	1.052	0.903	--
	Maximum	--	--	--	--	17.947	8.308	7.120	6.007	4.427	5.172	1.788	--
	Minimum	--	--	--	--	0.280	0.136	0.038	0.166	0.162	0.112	0.385	--

Table 4-9:
W6 Summary statistics for daily discharge, unit yield and runoff. Months with incomplete data in italics.

Year	Variable	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
2007	# days with data	--	--	--	--	--	--	--	*18*	30	31	--	--
	Average Discharge (m^3/s)	--	--	--	--	--	--	--	*0.78*	1.30	0.73	--	--
	Average Yield ($L/s/km^2$)	--	--	--	--	--	--	--	*7.70*	12.91	7.19	--	--
	Runoff (mm)	--	--	--	--	--	--	--	*12.0*	33.5	19.2	--	--
2008	# days with data	--	--	--	--	--	*21*	31	31	30	*21*	--	--
	Average Discharge (m^3/s)	--	--	--	--	--	*0.28*	0.74	1.34	1.12	*1.66*	--	--
	Average Yield ($L/s/km^2$)	--	--	--	--	--	*2.74*	7.35	13.31	11.11	*16.41*	--	--
	Runoff (mm)	--	--	--	--	--	*5.0*	19.7	35.7	28.8	*29.8*	--	--
2009	# days with data	--	--	--	--	--	*23*	31	31	30	*7*	--	--
	Average Discharge (m^3/s)	--	--	--	--	--	*1.07*	0.32	0.65	1.22	*0.96*	--	--
	Average Yield ($L/s/km^2$)	--	--	--	--	--	*10.60*	3.15	6.41	12.12	*9.48*	--	--
	Runoff (mm)	--	--	--	--	--	*21.1*	8.4	17.2	31.4	*5.7*	--	--
2010	# days with data	--	--	--	--	28	30	31	31	30	*19*	--	--
	Average Discharge (m^3/s)	--	--	--	--	2.23	1.18	0.95	0.78	0.58	*0.38*	--	--
	Average Yield ($L/s/km^2$)	--	--	--	--	22.09	11.71	9.37	7.72	5.73	*3.75*	--	--
	Runoff (mm)	--	--	--	--	53.4	30.3	25.1	20.7	14.9	*6.1*	--	--
2011	# days with data	--	--	--	--	--	*2*	31	31	30	31	*7*	--
	Average Discharge (m^3/s)	--	--	--	--	--	*0.65*	1.18	1.35	1.10	0.71	*0.57*	--
	Average Yield ($L/s/km^2$)	--	--	--	--	--	*6.42*	11.69	13.38	10.91	7.02	*5.69*	--
	Runoff (mm)	--	--	--	--	--	*1.1*	31.3	35.8	28.3	18.8	*3.4*	--
2012	# days with data	--	--	--	--	27	30	31	31	30	*17*	--	--
	Average Discharge (m^3/s)	--	--	--	--	3.33	1.51	1.85	1.18	1.05	*0.84*	--	--
	Average Yield ($L/s/km^2$)	--	--	--	--	32.98	14.92	18.37	11.72	10.38	*8.32*	--	--
	Runoff (mm)	--	--	--	--	76.9	38.7	49.2	31.4	26.9	*12.2*	--	--
2013	# days with data	--	--	--	--	*10*	30	31	31	30	*20*	--	--
	Average Discharge (m^3/s)	--	--	--	--	*8.43*	2.48	1.06	0.55	1.31	*1.08*	--	--
	Average Yield ($L/s/km^2$)	--	--	--	--	*83.51*	24.57	10.46	5.41	12.96	*10.66*	--	--
	Runoff (mm)	--	--	--	--	*72.2*	63.7	28.0	14.5	33.6	*18.4*	--	--
2014	# days with data	--	--	--	--	*25*	30	31	31	30	*17*	--	--
	Average Discharge (m^3/s)	--	--	--	--	*2.20*	1.03	0.56	1.58	1.28	*1.32*	--	--
	Average Yield ($L/s/km^2$)	--	--	--	--	*21.84*	10.25	5.57	15.62	12.71	*13.05*	--	--
	Runoff (mm)	--	--	--	--	*47.2*	26.6	14.9	41.8	32.9	*19.2*	--	--
2015	# days with data	--	--	--	--	--	*12*	31	31	30	*14*	--	--
	Average Discharge (m^3/s)	--	--	--	--	--	*0.75*	0.88	1.40	1.72	*1.03*	--	--
	Average Yield ($L/s/km^2$)	--	--	--	--	--	*7.48*	8.71	13.89	17.06	*10.26*	--	--
	Runoff (mm)	--	--	--	--	--	*7.8*	23.3	37.2	44.2	*12.4*	--	--
2016	# days with data	--	--	--	--	--	--	*19*	31	30	*14*	--	--
	Average Discharge (m^3/s)	--	--	--	--	--	--	*1.78*	2.06	1.54	*1.05*	--	--
	Average Yield ($L/s/km^2$)	--	--	--	--	--	--	*17.6*	20.4	15.3	*10.4*	--	--
	Runoff (mm)	--	--	--	--	--	--	*28.9*	54.6	39.6	*12.5*	--	--
2017	# days with data	--	--	--	--	--	*22*	31	31	30	*14*	--	--
	Average Discharge (m^3/s)	--	--	--	--	--	*0.68*	0.78	0.46	1.29	*1.54*	--	--
	Average Yield ($L/s/km^2$)	--	--	--	--	--	*6.72*	7.71	4.58	12.82	*15.28*	--	--
	Runoff (mm)	--	--	--	--	--	*12.8*	20.6	12.3	33.2	*18.5*	--	--
2018	# days with data	--	--	--	--	--	*18*	31	31	28	--	--	--
	Average Discharge (m^3/s)	--	--	--	--	--	*1.2*	0.7	1.2	0.8	--	--	--
	Average Yield ($L/s/km^2$)	--	--	--	--	--	*11.4*	6.7	12.3	7.6	--	--	--
	Runoff (mm)	--	--	--	--	--	*17.8*	17.8	32.9	18.3	--	--	--
2019	# days with data	--	--	--	--	*26*	*30*	31	31	30	*13*	--	--
	Average Discharge (m^3/s)	--	--	--	--	*2.1*	*0.5*	0.3	0.2	0.4	*0.3*	--	--
	Average Yield ($L/s/km^2$)	--	--	--	--	*20.7*	*4.8*	2.6	2.1	4.1	*3.0*	--	--
	Runoff (mm)	--	--	--	--	*46.6*	*12.5*	7.0	5.6	10.7	*3.4*	--	--
2020	# days with data	--	--	--	--	27	30	31	31	30	*17*	--	--
	Average Discharge (m^3/s)	--	--	--	--	3.6	2.6	1.6	2.2	2.4	*2.3*	--	--
	Average Yield ($L/s/km^2$)	--	--	--	--	36.0	26.0	15.8	21.6	23.4	*23.1*	--	--
	Runoff (mm)	--	--	--	--	84.1	67.3	42.4	57.8	60.7	*33.9*	--	--
All Years	Average Discharge (m^3/s)	--	--	--	--	*3.653*	*1.158*	0.971	1.125	1.219	*1.070*	*0.574*	--
	Average Yield ($L/s/km^2$)	--	--	--	--	*36.2*	*11.5*	9.6	11.1	12.1	*10.6*	*5.7*	--
	Average Runoff (mm)	--	--	--	--	*63.4*	*25.4*	24.4	29.2	31.2	*16.2*	*3.4*	--

Table 4-10:
W21 Summary statistics for preliminary 15-minute discharge record. All values are in m^3/s.

Year	Variable	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
2018	Average	--	--	--	--	--	0.114	0.074	0.200	0.098	0.060	--	--
	Maximum	--	--	--	--	--	0.295	0.270	0.349	0.187	0.251	--	--
	Minimum	--	--	--	--	--	0.003	0.009	0.127	0.000	0.000	--	--
All Years	Average	--	--	--	--	--	0.114	0.074	0.200	0.098	0.060	--	--
	Maximum	--	--	--	--	--	0.295	0.270	0.349	0.187	0.251	--	--
	Minimum	--	--	--	--	--	0.003	0.009	0.127	0.000	0.000	--	--

Table 4-11:
W21 Summary statistics for preliminary daily discharge, unit yield and runoff. Months with incomplete data in italics.

Year	Variable	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
2018	# days with data	--	--	--	--	--	14	13	*13*	30	25	--	--
	Average Discharge (m^3/s)	--	--	--	--	--	0.12	0.07	*0.20*	0.10	0.06	--	--
	Average Yield ($L/s/km^2$)	--	--	--	--	--	14.35	9.20	*24.30*	12.04	7.37	--	--
	Runoff (mm)	--	--	--	--	--	1.2	0.8	*2.1*	1.0	0.6	--	--
All Years	Average Discharge (m^3/s)	--	--	--	--	--	*0.12*	0.07	0.20	0.10	*0.06*	--	--
	Average Yield ($L/s/km^2$)	--	--	--	--	--	*14.35*	9.20	24.30	12.04	*7.37*	--	--
	Runoff (mm)	--	--	--	--	--	*17.4*	10.3	27.3	31.2	*15.9*	--	--

Table 4-12:
W22 Summary statistics for 15-minute discharge record. All values are in m^3/s.

Year	Variable	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
2007	Average	--	--	--	--	--	--	--	0.518	0.701	0.608	0.937	--
	Maximum	--	--	--	--	--	--	--	0.927	1.951	1.028	1.342	--
	Minimum	--	--	--	--	--	--	--	0.320	0.425	0.440	0.558	--
2008	Average	--	--	--	--	--	0.462	0.727	0.943	0.788	1.233	--	--
	Maximum	--	--	--	--	--	0.685	3.198	3.928	1.335	2.773	--	--
	Minimum	--	--	--	--	--	0.297	0.324	0.469	0.495	0.473	--	--
2009	Average	--	--	--	--	2.070	0.959	0.273	0.404	0.658	0.638	--	--
	Maximum	--	--	--	--	5.340	2.355	0.474	1.312	1.222	1.010	--	--
	Minimum	--	--	--	--	0.193	0.330	0.056	0.186	0.433	0.371	--	--
2010	Average	--	--	--	--	1.164	1.024	0.749	0.642	0.451	0.338	--	--
	Maximum	--	--	--	--	2.395	2.510	1.112	1.296	0.675	0.474	--	--
	Minimum	--	--	--	--	0.503	0.693	0.578	0.520	0.106	0.112	--	--
2011	Average	--	--	--	0.257	1.596	0.696	1.121	1.244	1.103	0.668	--	--
	Maximum	--	--	--	0.485	4.473	1.354	3.075	2.889	1.728	1.061	--	--
	Minimum	--	--	--	0.125	0.405	0.428	0.499	0.698	0.819	0.491	--	--
2012	Average	--	--	--	--	--	--	0.929	0.699	0.594	0.466	--	--
	Maximum	--	--	--	--	--	--	2.003	1.259	0.757	0.600	--	--
	Minimum	--	--	--	--	--	--	0.729	0.519	0.460	0.190	--	--
2013	Average	--	--	--	--	5.565	0.654	0.062	--	--	--	--	--
	Maximum	--	--	--	--	20.630	4.736	0.362	--	--	--	--	--
	Minimum	--	--	--	--	1.179	0.105	0.002	--	--	--	--	--
2014	Average	--	--	--	--	1.365	0.927	0.548	0.785	0.649	0.649	--	--
	Maximum	--	--	--	--	3.143	2.561	2.737	2.543	1.197	0.904	--	--
	Minimum	--	--	--	--	0.467	0.457	0.310	0.245	0.385	0.523	--	--
2015	Average	--	--	--	--	2.432	0.870	0.896	1.121	1.328	0.841	--	--
	Maximum	--	--	--	--	5.322	1.503	2.104	2.911	2.408	1.206	--	--
	Minimum	--	--	--	--	1.002	0.531	0.574	0.701	0.978	0.620	--	--
2016	Average	--	--	--	0.796	0.845	0.750	0.732	0.851	0.719	0.660	--	--
	Maximum	--	--	--	1.455	1.513	1.426	1.407	2.104	1.464	0.906	--	--
	Minimum	--	--	--	0.660	0.581	0.660	0.531	0.543	0.507	0.426	--	--
2017	Average	--	--	--	--	--	0.793	0.753	0.478	1.041	1.429	--	--
	Maximum	--	--	--	--	--	5.287	1.474	0.729	2.846	3.330	--	--
	Minimum	--	--	--	--	--	0.431	0.471	0.321	0.404	0.060	--	--
2018	Average	--	--	--	--	3.335	1.543	0.717	1.024	0.598	--	--	--
	Maximum	--	--	--	--	7.264	3.547	2.252	3.745	0.925	--	--	--
	Minimum	--	--	--	--	1.951	0.668	0.346	0.337	0.315	--	--	--
2019	Average	--	--	--	--	1.473	0.687	0.368	0.319	0.560	0.433	--	--
	Maximum	--	--	--	--	2.680	3.371	0.524	0.398	2.951	1.129	--	--
	Minimum	--	--	--	--	0.015	0.289	0.275	0.254	0.248	0.169	--	--
2020	Average	--	--	--	--	2.781	2.727	1.556	1.584	1.083	1.210	--	--
	Maximum	--	--	--	--	5.840	8.811	3.101	1.899	1.986	1.752	--	--
	Minimum	--	--	--	--	1.175	1.592	1.009	1.346	0.650	0.703	--	--
All Years	Average	--	--	--	0.613	1.941	1.027	0.729	0.782	0.784	0.725	0.937	--
	Maximum	--	--	--	1.455	20.630	8.811	3.198	3.928	2.951	3.330	1.342	--
	Minimum	--	--	--	0.125	0.015	0.105	0.002	0.186	0.106	0.060	0.558	--

Table 4-13:
W22 Summary statistics for daily discharge, unit yield and runoff. Months with incomplete data in italics.

Year	Variable	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
2007	# days with data	--	--	--	--	--	--	--	*18*	30	31	*12*	--
	Average Discharge (m^3/s)	--	--	--	--	--	--	--	*0.52*	0.70	0.61	*0.94*	--
	Average Yield ($L/s/km^2$)	--	--	--	--	--	--	--	*7.71*	10.49	9.10	*14.02*	--
	Runoff (mm)	--	--	--	--	--	--	--	*12.0*	27.2	24.4	*14.5*	--
2008	# days with data	--	--	--	--	--	*22*	31	31	30	*21*	--	--
	Average Discharge (m^3/s)	--	--	--	--	--	*0.47*	0.73	0.94	0.79	*1.23*	--	--
	Average Yield ($L/s/km^2$)	--	--	--	--	--	*6.99*	10.88	14.14	11.80	*18.39*	--	--
	Runoff (mm)	--	--	--	--	--	*13.3*	29.1	37.9	30.6	*33.4*	--	--
2009	# days with data	--	--	--	--	29	30	31	31	30	*20*	--	--
	Average Discharge (m^3/s)	--	--	--	--	2.10	0.96	0.27	0.40	0.66	*0.64*	--	--
	Average Yield ($L/s/km^2$)	--	--	--	--	31.46	14.36	4.08	6.05	9.84	*9.56*	--	--
	Runoff (mm)	--	--	--	--	78.8	37.2	10.9	16.2	25.5	*16.5*	--	--
2010	# days with data	--	--	--	--	28	30	31	31	30	*19*	--	--
	Average Discharge (m^3/s)	--	--	--	--	1.16	1.02	0.75	0.64	0.45	*0.34*	--	--
	Average Yield ($L/s/km^2$)	--	--	--	--	17.36	15.34	11.22	9.61	6.75	*5.07*	--	--
	Runoff (mm)	--	--	--	--	42.0	39.8	30.0	25.7	17.5	*8.3*	--	--
2011	# days with data	--	--	--	*12*	31	30	31	31	30	31	--	--
	Average Discharge (m^3/s)	--	--	--	*0.27*	1.60	0.70	1.12	1.24	1.10	0.67	--	--
	Average Yield ($L/s/km^2$)	--	--	--	*3.98*	23.90	10.42	16.78	18.63	16.52	10.00	--	--
	Runoff (mm)	--	--	--	*4.1*	64.0	27.0	44.9	49.9	42.8	26.8	--	--
2012	# days with data	--	--	--	--	--	--	*14*	31	30	*16*	--	--
	Average Discharge (m^3/s)	--	--	--	--	--	--	*0.93*	0.70	0.59	*0.46*	--	--
	Average Yield ($L/s/km^2$)	--	--	--	--	--	--	*13.95*	10.46	8.89	*6.95*	--	--
	Runoff (mm)	--	--	--	--	--	--	*16.9*	28.0	23.0	*9.6*	--	--
2013	# days with data	--	--	--	--	*11*	30	24	--	--	--	--	--
	Average Discharge (m^3/s)	--	--	--	--	*5.22*	0.65	0.06	--	--	--	--	--
	Average Yield ($L/s/km^2$)	--	--	--	--	*78.11*	9.79	0.92	--	--	--	--	--
	Runoff (mm)	--	--	--	--	*74.2*	25.4	1.9	--	--	--	--	--
2014	# days with data	--	--	--	--	25	30	31	31	30	*17*	--	--
	Average Discharge (m^3/s)	--	--	--	--	1.41	0.93	0.55	0.79	0.65	*0.65*	--	--
	Average Yield ($L/s/km^2$)	--	--	--	--	21.06	13.88	8.20	11.75	9.72	*9.68*	--	--
	Runoff (mm)	--	--	--	--	45.5	36.0	22.0	31.5	25.2	*14.2*	--	--
2015	# days with data	--	--	--	--	*18*	29	31	31	30	*14*	--	--
	Average Discharge (m^3/s)	--	--	--	--	*2.43*	0.86	0.90	1.12	1.33	*0.84*	--	--
	Average Yield ($L/s/km^2$)	--	--	--	--	*36.38*	12.93	13.42	16.79	19.88	*12.51*	--	--
	Runoff (mm)	--	--	--	--	*56.6*	32.4	35.9	45.0	51.5	*15.1*	--	--
2016	# days with data	--	--	--	*22*	31	30	31	31	30	*13*	--	--
	Average Discharge (m^3/s)	--	--	--	*0.80*	0.84	0.75	0.73	0.85	0.72	*0.66*	--	--
	Average Yield ($L/s/km^2$)	--	--	--	*11.9*	12.6	11.2	11.0	12.7	10.8	*9.9*	--	--
	Runoff (mm)	--	--	--	*22.6*	33.6	29.1	29.3	34.1	27.9	*11.2*	--	--
2017	# days with data	--	--	--	--	--	*23*	31	31	30	*6*	--	--
	Average Discharge (m^3/s)	--	--	--	--	--	*0.79*	0.75	0.48	1.04	*1.42*	--	--
	Average Yield ($L/s/km^2$)	--	--	--	--	--	*11.88*	11.27	7.16	15.58	*21.29*	--	--
	Runoff (mm)	--	--	--	--	--	*23.6*	30.2	19.2	40.4	*11.0*	--	--
2018	# days with data	--	--	--	--	*16*	30	31	31	30	--	--	--
	Average Discharge (m^3/s)	--	--	--	--	*3.3*	1.5	0.7	1.0	0.6	--	--	--
	Average Yield ($L/s/km^2$)	--	--	--	--	*50.1*	23.1	10.7	15.3	9.0	--	--	--
	Runoff (mm)	--	--	--	--	*69.2*	59.9	28.7	41.1	23.2	--	--	--
2019	# days with data	--	--	--	--	*25*	30	31	31	30	*7*	--	--
	Average Discharge (m^3/s)	--	--	--	--	*1.4*	0.7	0.4	0.3	0.6	*0.4*	--	--
	Average Yield ($L/s/km^2$)	--	--	--	--	*21.5*	10.3	5.5	4.8	8.4	*6.6*	--	--
	Runoff (mm)	--	--	--	--	*46.4*	26.7	14.7	12.8	21.7	*4.0*	--	--
2020	# days with data	--	--	--	--	*24*	30	31	10	23	*13*	--	--
	Average Discharge (m^3/s)	--	--	--	--	*2.8*	2.7	1.6	1.6	1.1	*1.2*	--	--
	Average Yield ($L/s/km^2$)	--	--	--	--	*41.3*	40.8	23.3	23.7	16.2	*17.9*	--	--
	Runoff (mm)	--	--	--	--	*85.7*	105.8	62.4	20.5	32.3	*20.1*	--	--
All Years	Average Discharge (m^3/s)	--	--	--	*0.531*	2.229	1.008	0.726	0.816	0.790	0.762	*0.937*	--
	Average Yield ($L/s/km^2$)	--	--	--	*7.9*	33.4	15.1	10.9	12.2	11.8	11.4	*14.0*	--
	Average Runoff (mm)	--	--	--	*13.4*	59.6	38.0	27.5	28.8	29.9	16.2	*14.5*	--

Table 4-14:
W26 Summary statistics for 15-minute discharge record. All values are in m^3/s.

Year	Variable	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
2010	Average	--	--	--	--	--	0.028	0.029	0.024	0.019	--	--	--
	Maximum	--	--	--	--	--	0.079	0.044	0.041	0.063	--	--	--
	Minimum	--	--	--	--	--	0.013	0.019	0.016	0.010	--	--	--
2011	Average	--	--	--	--	--	--	--	--	--	--	--	--
	Maximum	--	--	--	--	--	--	--	--	--	--	--	--
	Minimum	--	--	--	--	--	--	--	--	--	--	--	--
2012	Average	--	--	--	--	--	0.019	0.022	0.016	0.010	0.008	--	--
	Maximum	--	--	--	--	--	0.032	0.094	0.024	0.014	0.010	--	--
	Minimum	--	--	--	--	--	0.012	0.013	0.009	0.007	0.004	--	--
2013	Average	--	--	--	--	--	--	0.001	0.001	0.005	0.006	--	--
	Maximum	--	--	--	--	--	--	0.002	0.003	0.012	0.007	--	--
	Minimum	--	--	--	--	--	--	0.001	0.000	0.000	0.004	--	--
2014	Average	--	--	--	--	--	0.022	0.006	0.015	0.012	--	--	--
	Maximum	--	--	--	--	--	0.094	0.019	0.042	0.019	--	--	--
	Minimum	--	--	--	--	--	0.006	0.003	0.005	0.008	--	--	--
2015	Average	--	--	--	--	--	0.009	0.012	0.017	0.021	0.012	--	--
	Maximum	--	--	--	--	--	0.027	0.047	0.031	0.044	0.058	--	--
	Minimum	--	--	--	--	--	0.003	0.005	0.012	0.015	0.005	--	--
2016	Average	--	--	--	--	0.018	0.015	0.020	0.026	0.017	--	--	--
	Maximum	--	--	--	--	0.060	0.071	0.143	0.050	0.022	--	--	--
	Minimum	--	--	--	--	0.010	0.010	0.011	0.017	0.012	--	--	--
2017	Average	--	--	--	--	--	0.003	0.002	0.003	0.008	--	--	--
	Maximum	--	--	--	--	--	0.080	0.029	0.005	0.033	--	--	--
	Minimum	--	--	--	--	--	0.000	0.001	0.001	0.001	--	--	--
2018	Average	--	--	--	--	--	--	0.005	0.013	0.010	--	--	--
	Maximum	--	--	--	--	--	--	0.008	0.054	0.030	--	--	--
	Minimum	--	--	--	--	--	--	0.003	0.005	0.005	--	--	--
2019	Average	--	--	--	--	--	0.003	0.002	0.001	0.001	0.002	--	--
	Maximum	--	--	--	--	--	0.005	0.003	0.003	0.005	0.003	--	--
	Minimum	--	--	--	--	--	0.002	0.001	0.000	0.000	0.001	--	--
2020	Average	--	--	--	--	0.041	0.043	0.025	0.028	0.013	0.014	--	--
	Maximum	--	--	--	--	0.182	0.176	0.052	0.065	0.059	0.039	--	--
	Minimum	--	--	--	--	0.001	0.013	0.008	0.018	0.000	0.002	--	--
All Years	Average	--	--	--	--	0.035	0.021	0.015	0.015	0.012	0.010	--	--
	Maximum	--	--	--	--	0.182	0.176	0.143	0.065	0.063	0.058	--	--
	Minimum	--	--	--	--	0.001	0.000	0.001	0.000	0.000	0.001	--	--

Table 4-15:
W26 Summary statistics for daily discharge, unit yield and runoff. Months with incomplete data in italics.

Year	Variable	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
2010	# days with data	--	--	--	--	--	29	31	31	26	--	--	--
	Average Discharge (m^3/s)	--	--	--	--	--	0.03	0.03	0.02	0.02	--	--	--
	Average Yield ($L/s/km^2$)	--	--	--	--	--	21.44	22.18	18.71	14.30	--	--	--
	Runoff (mm)	--	--	--	--	--	53.7	59.4	50.1	32.1	--	--	--
2011	# days with data	--	--	--	--	--	--	--	--	--	--	--	--
	Average Discharge (m^3/s)	--	--	--	--	--	--	--	--	--	--	--	--
	Average Yield ($L/s/km^2$)	--	--	--	--	--	--	--	--	--	--	--	--
	Runoff (mm)	--	--	--	--	--	--	--	--	--	--	--	--
2012	# days with data	--	--	--	--	--	*18*	31	31	30	*12*	--	--
	Average Discharge (m^3/s)	--	--	--	--	--	*0.02*	0.02	0.02	0.01	*0.01*	--	--
	Average Yield ($L/s/km^2$)	--	--	--	--	--	*14.56*	17.00	12.00	7.83	*5.85*	--	--
	Runoff (mm)	--	--	--	--	--	*22.6*	45.5	32.1	20.3	*6.1*	--	--
2013	# days with data	--	--	--	--	--	--	7	31	30	*8*	--	--
	Average Discharge (m^3/s)	--	--	--	--	--	--	0.00	0.00	0.00	*0.01*	--	--
	Average Yield ($L/s/km^2$)	--	--	--	--	--	--	0.98	0.97	3.61	*4.42*	--	--
	Runoff (mm)	--	--	--	--	--	--	0.6	2.6	9.4	*3.1*	--	--
2014	# days with data	--	--	--	--	--	*20*	31	31	25	--	--	--
	Average Discharge (m^3/s)	--	--	--	--	--	*0.02*	0.01	0.01	0.01	--	--	--
	Average Yield ($L/s/km^2$)	--	--	--	--	--	*17.19*	4.50	11.19	8.98	--	--	--
	Runoff (mm)	--	--	--	--	--	*29.7*	12.0	30.0	19.4	--	--	--
2015	# days with data	--	--	--	--	--	*12*	31	31	30	*14*	--	--
	Average Discharge (m^3/s)	--	--	--	--	--	*0.01*	0.01	0.02	0.02	*0.01*	--	--
	Average Yield ($L/s/km^2$)	--	--	--	--	--	*6.55*	9.00	12.87	16.26	*10.48*	--	--
	Runoff (mm)	--	--	--	--	--	*6.8*	24.1	34.5	42.2	*12.7*	--	--
2016	# days with data	--	--	--	--	*9*	30	31	31	30	--	--	--
	Average Discharge (m^3/s)	--	--	--	--	*0.02*	0.01	0.02	0.03	0.02	--	--	--
	Average Yield ($L/s/km^2$)	--	--	--	--	*13.97*	11.38	15.46	20.21	12.73	--	--	--
	Runoff (mm)	--	--	--	--	*10.9*	29.5	41.4	54.1	33.0	--	--	--
2017	# days with data	--	--	--	--	--	*22*	31	31	29	--	--	--
	Average Discharge (m^3/s)	--	--	--	--	--	*0.00*	0.00	0.00	0.01	--	--	--
	Average Yield ($L/s/km^2$)	--	--	--	--	--	*2.12*	1.74	2.12	5.99	--	--	--
	Runoff (mm)	--	--	--	--	--	*4.0*	4.7	5.7	15.0	--	--	--
2018	# days with data	--	--	--	--	--	--	*19*	31	*27*	--	--	--
	Average Discharge (m^3/s)	--	--	--	--	--	--	*0.0*	0.0	*0.0*	--	--	--
	Average Yield ($L/s/km^2$)	--	--	--	--	--	--	*3.5*	9.7	*7.5*	--	--	--
	Runoff (mm)	--	--	--	--	--	--	*5.8*	26.0	*17.6*	--	--	--
2019	# days with data	--	--	--	--	--	*24*	*31*	31	*30*	*5*	--	--
	Average Discharge (m^3/s)	--	--	--	--	--	*0.0*	0.0	0.0	0.0	*0.0*	--	--
	Average Yield ($L/s/km^2$)	--	--	--	--	--	*2.3*	1.6	0.8	1.0	*1.6*	--	--
	Runoff (mm)	--	--	--	--	--	*4.8*	4.3	2.2	2.7	*0.7*	--	--
2020	# days with data	--	--	--	--	*26*	*30*	*31*	31	*30*	*13*	--	--
	Average Discharge (m^3/s)	--	--	--	--	*0.0*	*0.0*	0.0	0.0	0.0	*0.0*	--	--
	Average Yield ($L/s/km^2$)	--	--	--	--	*30.6*	*32.9*	19.6	21.5	10.1	*10.9*	--	--
	Runoff (mm)	--	--	--	--	*68.6*	*85.3*	52.5	57.6	26.1	*12.3*	--	--
All Years	Average Discharge (m^3/s)	--	--	--	--	*0.029*	0.018	0.012	0.014	0.011	*0.009*	--	--
	Average Yield ($L/s/km^2$)	--	--	--	--	*22.3*	13.6	9.6	11.0	8.8	*6.7*	--	--
	Average Runoff (mm)	--	--	--	--	*39.7*	29.6	25.0	29.5	21.8	*7.0*	--	--

Table 4-16:
W27 Summary statistics for 15-minute discharge record. All values are in m^3/s.

Year	Variable	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
2007	Average	--	--	--	--	--	--	--	--	--	--	--	--
	Maximum	--	--	--	--	--	--	--	--	--	--	--	--
	Minimum	--	--	--	--	--	--	--	--	--	--	--	--
2008	Average	--	--	--	--	--	0.040	0.030	0.037	0.045	0.058	--	--
	Maximum	--	--	--	--	--	0.061	0.053	0.059	0.062	0.075	--	--
	Minimum	--	--	--	--	--	0.003	0.001	0.001	0.022	0.024	--	--
2009	Average	--	--	--	--	--	--	0.031	0.028	0.034	0.038	--	--
	Maximum	--	--	--	--	--	--	0.048	0.079	0.082	0.046	--	--
	Minimum	--	--	--	--	--	--	0.021	0.021	0.021	0.028	--	--
2010	Average	--	--	--	--	0.090	0.057	0.029	0.025	0.014	0.016	--	--
	Maximum	--	--	--	--	0.146	0.115	0.070	0.076	0.074	0.105	--	--
	Minimum	--	--	--	--	0.011	0.037	0.001	0.006	0.001	0.001	--	--
2011	Average	--	--	--	--	0.160	0.046	0.041	0.014	0.010	0.007	--	--
	Maximum	--	--	--	--	0.335	0.070	0.111	0.044	0.014	0.010	--	--
	Minimum	--	--	--	--	0.037	0.032	0.011	0.003	0.008	0.005	--	--
2012	Average	--	--	--	--	0.047	--	0.030	0.023	0.016	0.017	--	--
	Maximum	--	--	--	--	0.128	--	0.315	0.036	0.040	0.021	--	--
	Minimum	--	--	--	--	0.018	--	0.021	0.015	0.012	0.015	--	--
2013	Average	--	--	--	--	--	--	0.018	0.015	0.025	0.028	--	--
	Maximum	--	--	--	--	--	--	0.030	0.061	0.123	0.035	--	--
	Minimum	--	--	--	--	--	--	0.014	0.010	0.012	0.021	--	--
2014	Average	--	--	--	--	0.042	0.037	0.030	0.031	0.015	0.012	--	--
	Maximum	--	--	--	--	0.088	0.144	0.050	0.097	0.020	0.014	--	--
	Minimum	--	--	--	--	0.027	0.012	0.024	0.012	0.010	0.010	--	--
2015	Average	--	--	--	--	0.081	0.039	0.049	--	--	--	--	--
	Maximum	--	--	--	--	0.304	0.052	0.241	--	--	--	--	--
	Minimum	--	--	--	--	0.005	0.027	0.041	--	--	--	--	--
2016	Average	--	--	--	--	0.053	0.033	0.041	0.06	0.05	--	--	--
	Maximum	--	--	--	--	0.123	0.064	0.127	0.14	0.07	--	--	--
	Minimum	--	--	--	--	0.029	0.024	0.023	0.05	0.04	--	--	--
2017	Average	--	--	--	--	--	0.017	0.013	0.01	0.01	0.07	--	--
	Maximum	--	--	--	--	--	0.100	0.095	0.03	0.10	0.08	--	--
	Minimum	--	--	--	--	--	0.010	0.009	0.01	0.01	0.05	--	--
2018	Average	--	--	--	--	0.00	0.001	0.001	0.00	0.00	--	--	--
	Maximum	--	--	--	--	0.01	0.016	0.004	0.02	0.04	--	--	--
	Minimum	--	--	--	--	0.00	0.000	0.000	0.00	0.00	--	--	--
2019	Average	--	--	--	--	--	0.010	0.008	--	0.006	0.006	--	--
	Maximum	--	--	--	--	--	0.013	0.011	--	0.012	0.007	--	--
	Minimum	--	--	--	--	--	0.007	0.006	--	0.004	0.004	--	--
2020	Average	--	--	--	0.007	0.003	0.007	0.003	0.006	0.005	0.003	--	--
	Maximum	--	--	--	0.017	0.012	0.016	0.007	0.017	0.018	0.004	--	--
	Minimum	--	--	--	0.002	0.001	0.002	0.001	0.001	0.001	0.002	--	--
All Years	Average	--	--	--	0.007	0.060	0.029	0.024	0.022	0.020	0.026	--	--
	Maximum	--	--	--	0.017	0.335	0.144	0.315	0.138	0.123	0.105	--	--
	Minimum	--	--	--	0.002	0.001	0.000	0.000	0.000	0.000	0.001	--	--

Table 4-17:
W27 Summary statistics for daily discharge, unit yield and runoff. Months with incomplete data in italics.

Year	Variable	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
2007	# days with data	--	--	--	--	--	--	--	--	--	--	--	--
	Average Discharge (m^3/s)	--	--	--	--	--	--	--	--	--	--	--	--
	Average Yield ($L/s/km^2$)	--	--	--	--	--	--	--	--	--	--	--	--
	Runoff (mm)	--	--	--	--	--	--	--	--	--	--	--	--
2008	# days with data	--	--	--	--	--	*21*	31	31	30	*21*	--	--
	Average Discharge (m^3/s)	--	--	--	--	--	*0.040*	0.030	0.036	0.045	*0.058*	--	--
	Average Yield ($L/s/km^2$)	--	--	--	--	--	*14.77*	10.94	13.22	16.75	*21.50*	--	--
	Runoff (mm)	--	--	--	--	--	*26.8*	29.3	35.4	43.4	*39.0*	--	--
2009	# days with data	--	--	--	--	--	--	*13*	31	30	*7*	--	--
	Average Discharge (m^3/s)	--	--	--	--	--	--	*0.032*	0.028	0.034	*0.038*	--	--
	Average Yield ($L/s/km^2$)	--	--	--	--	--	--	*11.70*	10.42	12.44	*14.01*	--	--
	Runoff (mm)	--	--	--	--	--	--	*13.1*	27.9	32.2	*8.5*	--	--
2010	# days with data	--	--	--	--	*21*	30	31	31	30	*19*	--	--
	Average Discharge (m^3/s)	--	--	--	--	*0.090*	0.057	0.029	0.025	0.014	*0.016*	--	--
	Average Yield ($L/s/km^2$)	--	--	--	--	*33.21*	21.18	10.70	9.36	5.31	*5.94*	--	--
	Runoff (mm)	--	--	--	--	*60.3*	54.9	28.6	25.1	13.8	*9.7*	--	--
2011	# days with data	--	--	--	--	27	30	31	31	30	31	--	--
	Average Discharge (m^3/s)	--	--	--	--	0.159	0.045	0.041	0.014	0.010	0.007	--	--
	Average Yield ($L/s/km^2$)	--	--	--	--	58.90	16.85	15.25	5.29	3.71	2.64	--	--
	Runoff (mm)	--	--	--	--	137.4	43.7	40.9	14.2	9.6	7.1	--	--
2012	# days with data	--	--	--	--	*6*	--	*11*	*17*	30	*8*	--	--
	Average Discharge (m^3/s)	--	--	--	--	*0.046*	--	*0.030*	*0.023*	0.016	*0.017*	--	--
	Average Yield ($L/s/km^2$)	--	--	--	--	*16.99*	--	*11.16*	*8.59*	5.96	*6.38*	--	--
	Runoff (mm)	--	--	--	--	*8.8*	--	*10.6*	*12.6*	15.5	*4.4*	--	--
2013	# days with data	--	--	--	--	--	--	*7*	31	30	*19*	--	--
	Average Discharge (m^3/s)	--	--	--	--	--	--	*0.018*	0.015	0.025	*0.028*	--	--
	Average Yield ($L/s/km^2$)	--	--	--	--	--	--	*6.79*	5.58	9.35	*10.46*	--	--
	Runoff (mm)	--	--	--	--	--	--	*4.1*	14.9	24.2	*17.2*	--	--
2014	# days with data	--	--	--	--	*25*	30	31	31	30	*16*	--	--
	Average Discharge (m^3/s)	--	--	--	--	*0.042*	0.037	0.030	0.031	0.016	*0.012*	--	--
	Average Yield ($L/s/km^2$)	--	--	--	--	*15.56*	13.86	11.08	11.41	5.75	*4.57*	--	--
	Runoff (mm)	--	--	--	--	*33.6*	35.9	29.7	30.6	14.9	*6.3*	--	--
2015	# days with data	--	--	--	--	*18*	30	31	--	--	--	--	--
	Average Discharge (m^3/s)	--	--	--	--	*0.081*	0.039	0.049	--	--	--	--	--
	Average Yield ($L/s/km^2$)	--	--	--	--	*30.12*	14.30	18.14	--	--	--	--	--
	Runoff (mm)	--	--	--	--	*46.8*	37.1	48.6	--	--	--	--	--
2016	# days with data	--	--	--	--	*26*	30	31	31	30	--	--	--
	Average Discharge (m^3/s)	--	--	--	--	*0.054*	0.033	0.041	0.06	0.05	--	--	--
	Average Yield ($L/s/km^2$)	--	--	--	--	*20.03*	12.07	15.33	22.93	19.61	--	--	--
	Runoff (mm)	--	--	--	--	*45.0*	31.3	41.0	61.4	50.8	--	--	--
2017	# days with data	--	--	--	--	--	*22*	31	31	30	*2*	--	--
	Average Discharge (m^3/s)	--	--	--	--	--	*0.017*	0.013	0.01	0.01	*0.07*	--	--
	Average Yield ($L/s/km^2$)	--	--	--	--	--	*6.40*	4.95	3.86	4.77	*25.15*	--	--
	Runoff (mm)	--	--	--	--	--	*12.2*	13.3	10.3	12.4	*4.3*	--	--
2018	# days with data	--	--	--	--	7	*30*	31	31	14	--	--	--
	Average Discharge (m^3/s)	--	--	--	--	0.0	*0.0*	0.0	0.0	0.0	--	--	--
	Average Yield ($L/s/km^2$)	--	--	--	--	1.0	*0.4*	0.3	0.5	0.4	--	--	--
	Runoff (mm)	--	--	--	--	0.6	*1.0*	0.7	1.3	0.5	--	--	--
2019	# days with data	--	--	--	--	--	*24*	21	--	30	*6*	--	--
	Average Discharge (m^3/s)	--	--	--	--	--	*0.0*	0.0	--	0.0	*0.0*	--	--
	Average Yield ($L/s/km^2$)	--	--	--	--	--	*3.7*	2.8	--	2.3	*2.1*	--	--
	Runoff (mm)	--	--	--	--	--	*7.6*	5.1	--	6.1	*1.1*	--	--
2020	# days with data	--	--	--	*14*	31.0	*30*	31	31.0	30	*4*	--	--
	Average Discharge (m^3/s)	--	--	--	*0.0*	0.0	*0.0*	0.0	0.0	0.0	*0.0*	--	--
	Average Yield ($L/s/km^2$)	--	--	--	*2.5*	1.1	*2.7*	1.3	2.0	1.9	*1.2*	--	--
	Runoff (mm)	--	--	--	*3.0*	3.0	*7.0*	3.4	5.5	4.8	*0.4*	--	--
All Years	Average Discharge (m^3/s)	--	--	--	--	*0.060*	*0.029*	0.025	*0.023*	*0.020*	*0.025*	--	--
	Average Yield ($L/s/km^2$)	--	--	--	--	*22.1*	*10.6*	9.3	*8.5*	*7.4*	*9.4*	--	--
	Average Runoff (mm)	--	--	--	--	*41.9*	*25.7*	20.7	*21.7*	*19.0*	*9.8*	--	--

Table 4-18:
W29 Summary statistics for 15-minute discharge record. All values are in m^3/s.

Year	Variable	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
2011	Average	--	--	--	--	--	0.720	1.561	1.662	1.606	1.003	--	--
	Maximum	--	--	--	--	--	1.269	4.466	3.312	2.407	1.629	--	--
	Minimum	--	--	--	--	--	0.229	0.441	0.914	1.223	0.623	--	--
2012	Average	--	--	--	--	1.690	1.736	1.222	0.823	0.714	0.638	--	--
	Maximum	--	--	--	--	3.259	3.766	4.497	1.429	0.881	0.786	--	--
	Minimum	--	--	--	--	0.653	0.823	0.786	0.656	0.577	0.432	--	--
2013	Average	--	--	--	--	5.019	--	--	0.380	0.866	0.711	--	--
	Maximum	--	--	--	--	13.604	--	--	0.535	2.818	0.935	--	--
	Minimum	--	--	--	--	1.370	--	--	0.308	0.328	0.448	--	--
2014	Average	--	--	--	--	--	--	--	1.467	1.110	1.063	--	--
	Maximum	--	--	--	--	--	--	--	4.955	2.568	1.703	--	--
	Minimum	--	--	--	--	--	--	--	0.495	0.692	0.864	--	--
2015	Average	--	--	--	--	--	0.789	0.856	0.954	1.249	0.771	--	--
	Maximum	--	--	--	--	--	1.460	2.406	3.023	2.477	1.275	--	--
	Minimum	--	--	--	--	--	0.494	0.543	0.007	0.859	0.582	--	--
2018	Average	--	--	--	--	--	1.642	1.259	1.689	0.710	1.346	--	--
	Maximum	--	--	--	--	--	1.985	1.984	2.888	1.673	2.623	--	--
	Minimum	--	--	--	--	--	1.144	0.493	0.620	0.177	0.356	--	--
2020	Average	--	--	--	--	--	--	--	1.561	1.663	1.550	--	--
	Maximum	--	--	--	--	--	--	--	2.403	2.395	2.069	--	--
	Minimum	--	--	--	--	--	--	--	1.086	1.244	0.023	--	--
All Years	Average	--	--	--	--	2.352	1.209	1.213	1.145	1.201	0.957	--	--
	Maximum	--	--	--	--	13.604	3.766	4.497	4.955	2.818	2.069	--	--
	Minimum	--	--	--	--	0.653	0.229	0.441	0.007	0.328	0.023	--	--

Table 4-19:
W29 Summary statistics for daily discharge, unit yield and runoff. Months with incomplete data in italics.

Year	Variable	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
2011	# days with data	--	--	--	--	--	*23*	31	31	30	31	--	--
	Average Discharge (m^3/s)	--	--	--	--	--	*0.72*	1.56	1.66	1.61	1.00	--	--
	Average Yield ($L/s/km^2$)	--	--	--	--	--	*8.39*	18.12	19.31	18.66	11.65	--	--
	Runoff (mm)	--	--	--	--	--	*16.7*	48.5	51.7	48.4	31.2	--	--
2012	# days with data	--	--	--	--	*27*	30	31	31	30	*13*	--	--
	Average Discharge (m^3/s)	--	--	--	--	*1.68*	1.74	1.22	0.82	0.71	*0.62*	--	--
	Average Yield ($L/s/km^2$)	--	--	--	--	*19.52*	20.16	14.19	9.55	8.29	*7.21*	--	--
	Runoff (mm)	--	--	--	--	*45.5*	52.3	38.0	25.6	21.5	*8.1*	--	--
2013	# days with data	--	--	--	--	*8*	--	--	28	30	*19*	--	--
	Average Discharge (m^3/s)	--	--	--	--	*5.30*	--	--	0.38	0.87	*0.71*	--	--
	Average Yield ($L/s/km^2$)	--	--	--	--	*61.54*	--	--	4.40	10.06	*8.21*	--	--
	Runoff (mm)	--	--	--	--	*42.5*	--	--	10.6	26.1	*13.5*	--	--
2014	# days with data	--	--	--	--	--	--	--	27	30	*17*	--	--
	Average Discharge (m^3/s)	--	--	--	--	--	--	--	1.44	1.11	*1.06*	--	--
	Average Yield ($L/s/km^2$)	--	--	--	--	--	--	--	16.74	12.89	*12.31*	--	--
	Runoff (mm)	--	--	--	--	--	--	--	39.1	33.4	*18.1*	--	--
2015	# days with data	--	--	--	--	--	*12*	31	31	30	*14*	--	--
	Average Discharge (m^3/s)	--	--	--	--	--	*0.78*	0.86	0.95	1.25	*0.77*	--	--
	Average Yield ($L/s/km^2$)	--	--	--	--	--	*9.04*	9.94	11.09	14.51	*8.90*	--	--
	Runoff (mm)	--	--	--	--	--	*9.4*	26.6	29.7	37.6	*10.8*	--	--
2018	# days with data	--	--	--	--	--	*19*	31	31	30	29	--	--
	Average Discharge (m^3/s)	--	--	--	--	--	*1.6*	1.3	1.7	0.7	1.4	--	--
	Average Yield ($L/s/km^2$)	--	--	--	--	--	*19.0*	14.6	19.6	8.2	15.7	--	--
	Runoff (mm)	--	--	--	--	--	*31.3*	39.2	52.5	21.4	39.3	--	--
2020	# days with data	--	--	--	--	--	--	--	30	30	*13*	--	--
	Average Discharge (m^3/s)	--	--	--	--	--	--	--	1.6	1.7	*1.5*	--	--
	Average Yield ($L/s/km^2$)	--	--	--	--	--	--	--	18.2	19.3	*17.9*	--	--
	Runoff (mm)	--	--	--	--	--	--	--	47.1	50.1	*20.1*	--	--
All Years	Average Discharge (m^3/s)	--	--	--	--	*3.490*	*1.219*	1.224	1.216	*1.131*	*1.007*	--	--
	Average Yield ($L/s/km^2$)	--	--	--	--	*40.5*	*14.2*	14.2	14.1	*13.1*	*11.7*	--	--
	Average Runoff (mm)	--	--	--	--	*44.0*	*27.4*	38.1	36.6	*34.1*	*20.1*	--	--

Table 4-20:
W99 Summary statistics for 15-minute discharge record. All values are in m^3/s.

Year	Variable	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
2019	Average	--	--	--	--	--	0.571	0.321	0.270	0.470	0.401	--	--
	Maximum	--	--	--	--	--	1.084	0.421	0.332	2.164	0.888	--	--
	Minimum	--	--	--	--	--	0.314	0.230	0.208	0.201	0.070	--	--
2020	Average	--	--	--	1.499	2.657	2.558	1.695	1.580	1.486	1.889	--	--
	Maximum	--	--	--	2.753	6.503	7.986	2.726	2.537	2.765	2.357	--	--
	Minimum	--	--	--	0.728	0.641	1.594	1.290	1.098	1.050	1.386	--	--
All Years	Average	--	--	--	1.499	2.657	1.312	1.008	0.925	0.978	1.064	--	--
	Maximum	--	--	--	2.753	6.503	7.986	2.726	2.537	2.765	2.357	--	--
	Minimum	--	--	--	0.728	0.641	0.314	0.230	0.208	0.201	0.070	--	--

Table 4-21:
W99 Summary statistics for daily discharge, unit yield and runoff. Months with incomplete data in italics.

Year	Variable	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
2019	# days with data	--	--	--	--	--	*24*	31	31	30	*16*	--	--
	Average Discharge (m^3/s)	--	--	--	--	--	*0.57*	0.32	0.27	0.47	*0.40*	--	--
	Average Yield ($L/s/km^2$)	--	--	--	--	--	*6.50*	3.64	3.06	5.32	*4.56*	--	--
	Runoff (mm)	--	--	--	--	--	*13.5*	9.7	8.2	13.8	*6.3*	--	--
2020	# days with data	--	--	--	*13*	31	*30*	31	31	30	*13*	--	--
	Average Discharge (m^3/s)	--	--	--	*1.50*	2.66	*2.62*	1.69	1.58	1.49	*1.87*	--	--
	Average Yield ($L/s/km^2$)	--	--	--	*17.02*	30.09	*29.63*	19.19	17.89	16.83	*21.17*	--	--
	Runoff (mm)	--	--	--	*19.1*	80.6	*76.8*	51.4	47.9	43.6	*23.8*	--	--
All Years	Average Discharge (m^3/s)	--	--	--	*1.503*	*2.657*	*1.595*	1.008	0.925	0.978	*1.136*	--	--
	Average Yield ($L/s/km^2$)	--	--	--	*17.0*	*30.1*	*18.1*	11.4	10.5	11.1	*12.9*	--	--
	Average Runoff (mm)	--	--	--	*19.1*	*80.6*	*45.1*	30.6	28.1	28.7	*15.0*	--	--

5. Effluent Discharge

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5. Effluent Discharge

Water management infrastructure for the Project is designed to convey site contact water via Ditch C, which joins Haggart Creek above the W4 station. Flows in Ditch C are monitored continuously when discharging with a V-notch weir, staff gauge and pressure transducer. Total monthly discharge volumes are confirmed by calculating the pond volume changes from daily surveys of the pond water level during the periods of active discharge (Table 5-1). There is close correspondence in the values derived from the two methods, with relative percent differences (RPD) of 0.1% to 9.3%, averaging 6.4% over the three months with active discharges in 2020. Finally, salt dilution measurements are made periodically downstream of the weir to confirm the instantaneous discharge values as calculated from the weir equation and staff gauge reading.

Table 5-1:
Monthly Discharge Totals from Lower Dublin South Pond (2020)

Month	Survey (m^3)	Weir (m^3)	RPD %
July	7,689	7,693	0.1
August	118,368	107,903	9.3
September	73,038	71,209	2.5
Total	199,095	186,805	6.4

Note:
RPD = Relative Percent Difference

In April 2020, approximately 43,130 m^3 of water was discharged from the Lower Dublin South Pond to an exfiltration sump. The temporary impact to surface water flows from this discharge event are uncertain and assumed to be negligible.

6. Adaptive Management Reporting

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6. Adaptive Management Reporting

The Water Use License (WUL) QZ14-041-1 requires that all streamflow and discharge data collected in accordance with the Environmental Monitoring, Surveillance and Adaptive Management Plan (EMSAMP) be presented in the annual report. To capture any potential alterations to the baseline streamflow signature in Haggart Creek, a three-tiered threshold scheme has been developed for the adaptive management of surface water flow. The thresholds provided in Table 2.4-1 of the EMSAMP are different for the ice-free and ice-affected seasons, and are based on the median baseflows established for hydrometric stations W4 and W29 over the baseline period that encompassed the period August 2007 to August 2017. Note that the W29 station has been replaced by the W99 station, which has a 3% larger drainage area (Table 4-1). To account for this difference, the W29 baseline values have been adjusted upward by a factor of 1.03 to represent baseline conditions at W99.

The table describes four types of responses (*i.e.*, notification, review, evaluation and action) when each threshold is reached. The thresholds are based on an assumed level of effect to the wetted useable area in the stream channel based on the measured flow reduction from the median monthly baseflows at Haggart Creek hydrometric stations W4 and W99 (for comparison to W29 baseline). While the affect of flow reduction, measured as a decrease in river stage, will be different for each channel reach due to varying width:depth ratios (as reflected in a stage rating curve, for example), generally streams with high width:depth ratios (such as Haggart Creek) have small changes in wetted useable area (or width) per unit decrease in flow. Thus, the three-tiered thresholds of 30%, 40% and 50% in reduction in flow from the median baseflow during the ice-free season reflect the affect of channel morphology on flow and wetted useable area (VGC, 2020).

For the ice covered season, the three performance thresholds are set as a 20% reduction (from baseline) in median monthly baseflow for two consecutive monitoring events (Threshold 1), 20% for three consecutive events (Threshold 2), and 25% for two consecutive monitoring months (Threshold 3).

Flow values presented in Table 6-1 and Figure 6-1 for the months of May through September inclusive are median values, derived from continuous time-series discharge data. Flow data for October are still representative of open water conditions, however ice begins to form on local streams mid-month, and therefore the October value is the median of the first 10-14 days of the month, prior to freezing. The flow values reported for the months of November through April are based on one to two manual measurements (when possible), and therefore the deviation between baseline values and reported values for the

current year may be higher due to limited baseline records and infrequent flow measurements taken in challenging conditions (*i.e.*, under ice). Note that there is much less inter- and intra-annual variability in the winter low flows, as they are primarily driven by groundwater discharge to the stream channels.

Table 6-1:
Median monthly streamflows for the baseline (2007-2017) period and for 2020, for Haggart Creek stations W4 and W99.

Month	Baseline (2007-2017)		2020		Percent Difference[1]	
	W4	W99	W4	W99	W4	W99
Jan	0.187	N/A	0.143	0.130	-24%	N/A
Feb	0.193	0.361	0.174	0.172	-10%	-52%
Mar	0.133	0.206	0.236	0.132	77%	-36%
Apr	0.159	0.202	0.254	1.319	60%	553%
May	1.826	1.817	1.544	2.456	-15%	35%
Jun	0.922	0.995	2.933	2.425	218%	144%
Jul	0.756	1.126	1.842	1.646	144%	46%
Aug	0.739	0.938	1.771	1.611	140%	72%
Sep	0.812	1.050	1.454	1.412	79%	34%
Oct	0.729	0.866	1.328	1.835	82%	112%
Nov	0.333	0.330	N/A[2]	N/A[2]	N/A[2]	N/A[2]
Dec	0.248	0.283	0.381	0.521	54%	84%

Notes:
Shaded areas in Table indicate ice covered season, when flow measurements are limited to monthly manual data
[1]Percent difference calculated as (2020 – Baseline)/Baseline. Positive values indicate that flows were higher than baseline in 2020, and *vice versa*.
[2]Manual flow measurements were not made in November 2020.

While streamflows were lower than the median baseline condition in January and February (both stations) and March (W99 only), flows were consistently elevated above the median baseline condition in 2020 due to the much higher than average spring snowmelt and subsequent rainfall throughout the summer months. Threshold 3 was surpassed at W99 in in February and March 2020, but not at W4, indicating that the exceedance was potentially an artefact of the limited monitoring frequency and challenging flow gauging conditions, rather than from mine water management practices. If flow reductions were due to the latter, similar (and relatively higher) reductions would be expected at the W4 station. Also worth noting is that baseflows were lower than average at the end of 2019, as a result of reduced snowmelt and precipitation, and thus streamflows in 2019 (see Figure 4-12, Figure 4-25 and Table 4-4). Therefore, the noted reductions in streamflow in Haggart Creek relative to the baseline condition in early 2020 were likely the result of the regional hydro-meteorological conditions rather than mine water management. Following the first quarter of 2020, stream discharges generally began to rise well above EMSAMP thresholds, as the significant 2019 winter snow pack began to melt and record summer 2020 precipitation values began to impact drainages around the Project.

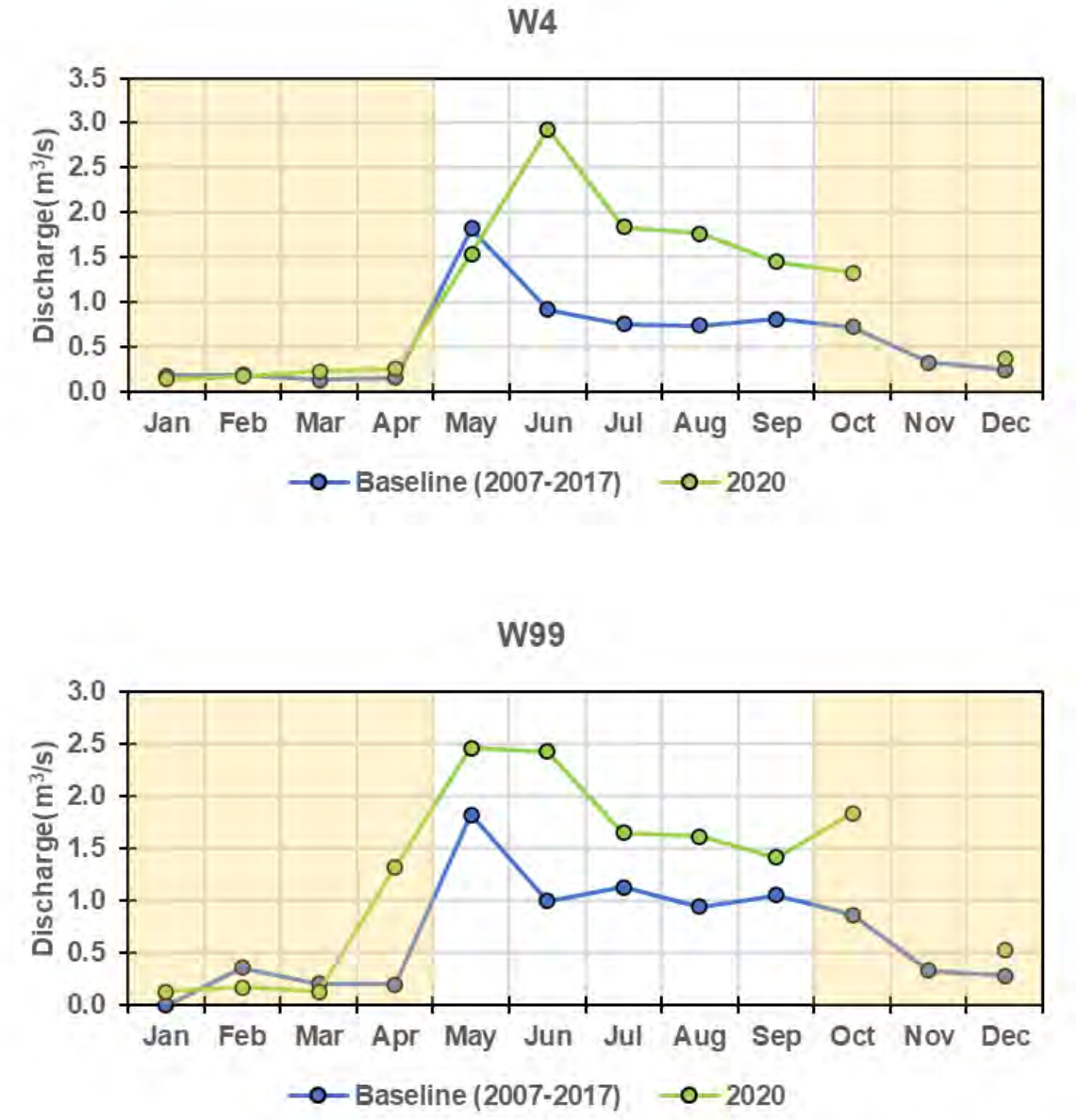

Figure 6-1: Median monthly streamflow for the baseline (2007-2017) period and for 2020, for Haggart Creek stations W4 (top) and W99 (bottom). Shaded areas indicate ice covered season, when flow measurements are limited to monthly manual data.

7. Closure



7. Closure

We trust that this report meets your expectations at this time. Please contact the undersigned with any questions or comments.

Sincerely,

LORAX ENVIRONMENTAL SERVICES LTD.

Prepared by:



Scott Jackson, M.Sc., P.Geo.
Hydrologist



Colin Fraser, M.Sc., P.Geo.
Hydrologist

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Appendix A: Topographical Characteristics of Gauged Catchments

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MEMORANDUM

To:	**Steve Wilbur, Victoria Gold Corp.**	**Date: 19 March, 2020**
From:	**Scott Jackson and Colin Fraser**	**Project #: A562-1**
Subject:	**Eagle Gold Project – Topographical Characteristics of Gauged Catchments**	

1. Introduction

This brief technical memo presents the topographical characteristics of the Dublin Gulch tributaries and Haggart Creek mainstem, as measured from the hydrometric monitoring stations. This information is presented as hypsometric curves (cumulative percent basin area plotted against elevation), with the median elevations, average slope and catchment areas summarized in Table 1.

Table 1:
Topographical Characteristics of Gauged Catchments

Station ID	Station Name	Area (km^2)	Median Elevation (m)	Average Slope (°)
W1	Dublin Gulch above Stewart Gulch	7.0	1,313	11.3
W4	Haggart Creek below Dublin Gulch	76.8	1,129	15.4
W5	Haggart Creek above Lynx Creek	97.7	1,091	15.3
W6	Lynx Creek above Haggart Creek	100.9	1,044	13.2
W10	Stuttle Gulch	0.7	1,012	15.6
W20	Bawn Bay Gulch	2.4	1,364	8.4
W21	Dublin Gulch at the Mouth	10.1	1,263	12.5
W22	Haggart Creek above Dublin Gulch	66.5	1,113	15.9
W26	Stewart Gulch	1.4	1,211	16.1
W27	Eagle Creek	2.6	1,031	16.5
W29	Haggart Creek below Eagle Creek	84.9	1,112	15.3
W31	Olive Gulch	1.8	1,328	10.7
W45	Eagle Creek above Haggart Creek	3.9	957	14.9
W99	Haggart Creek above 15 Pup	88.7	1,105	15.4

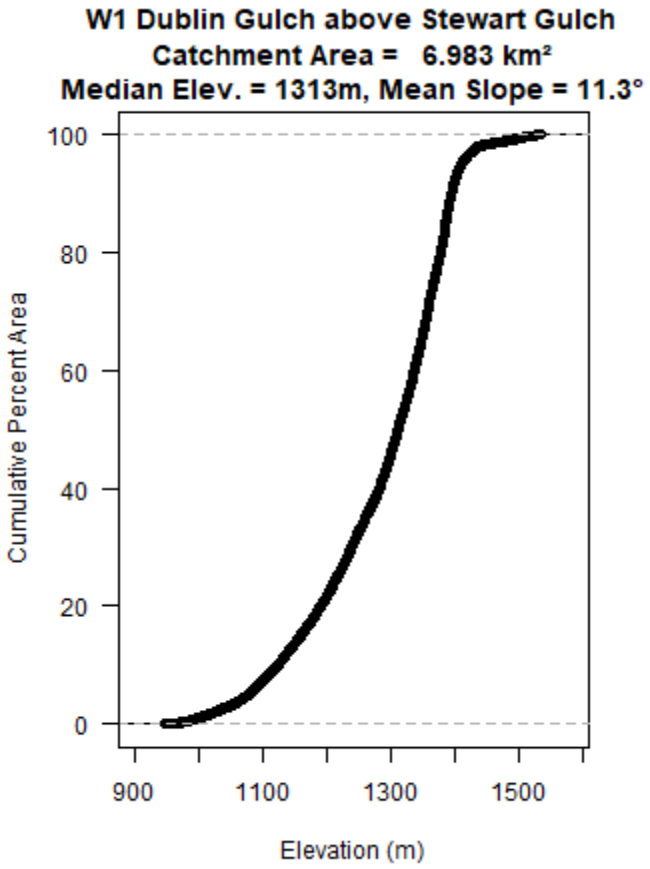


Figure 1: Hypsometric curve for station W1

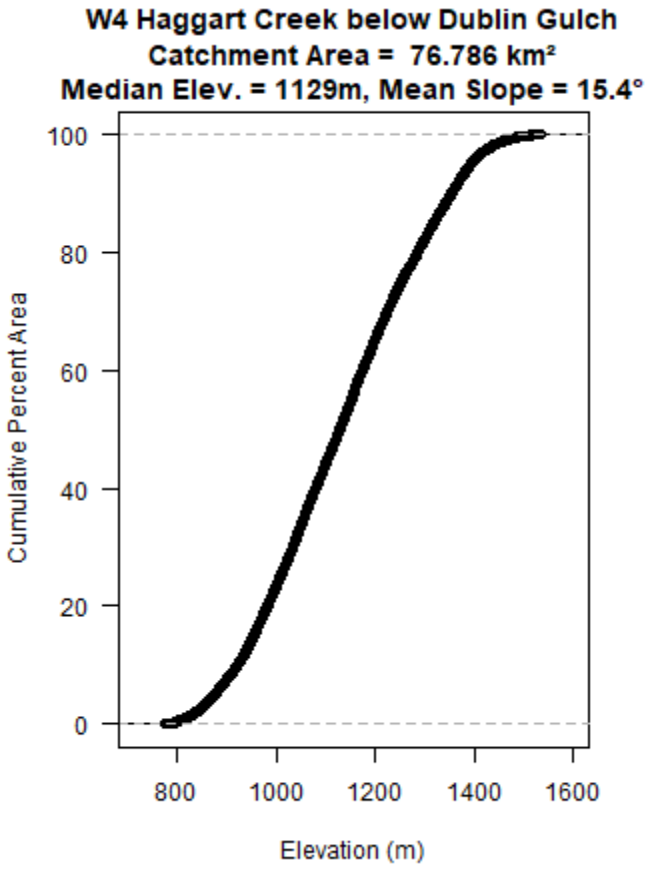


Figure 2: Hypsometric curve for station W4

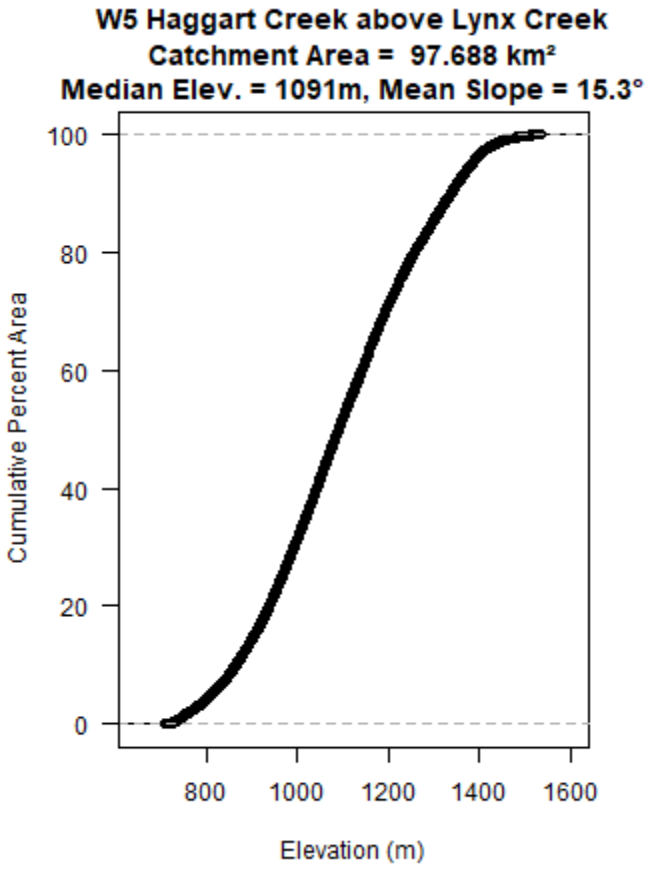


Figure 3: Hypsometric curve for station W5

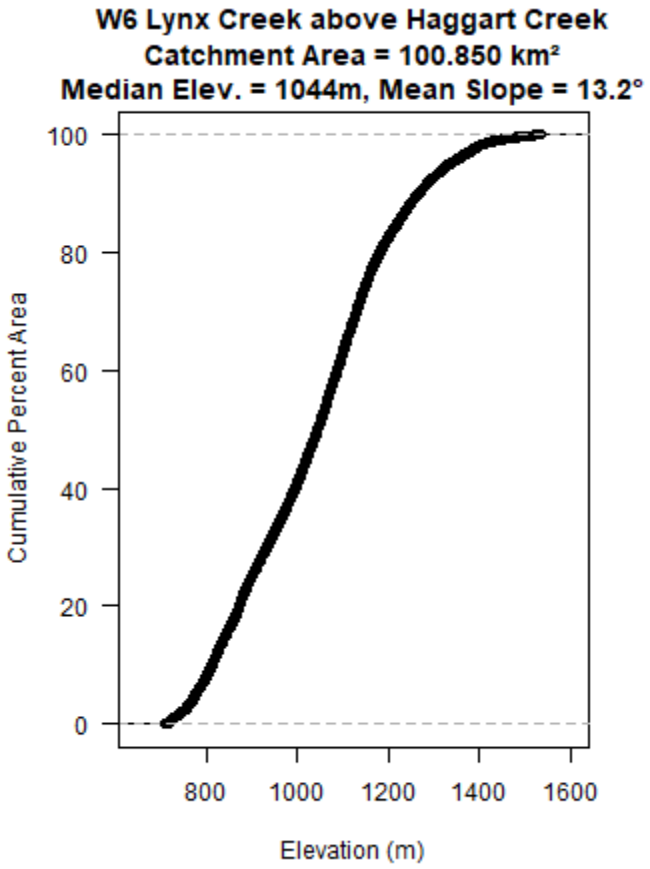


Figure 4: Hypsometric curve for station W6

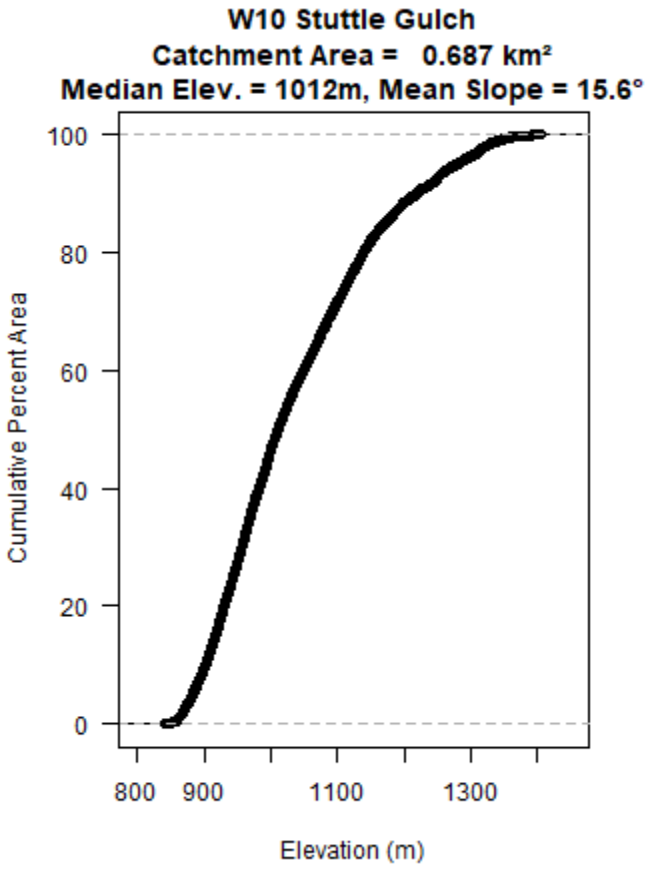


Figure 5: Hypsometric curve for station W10

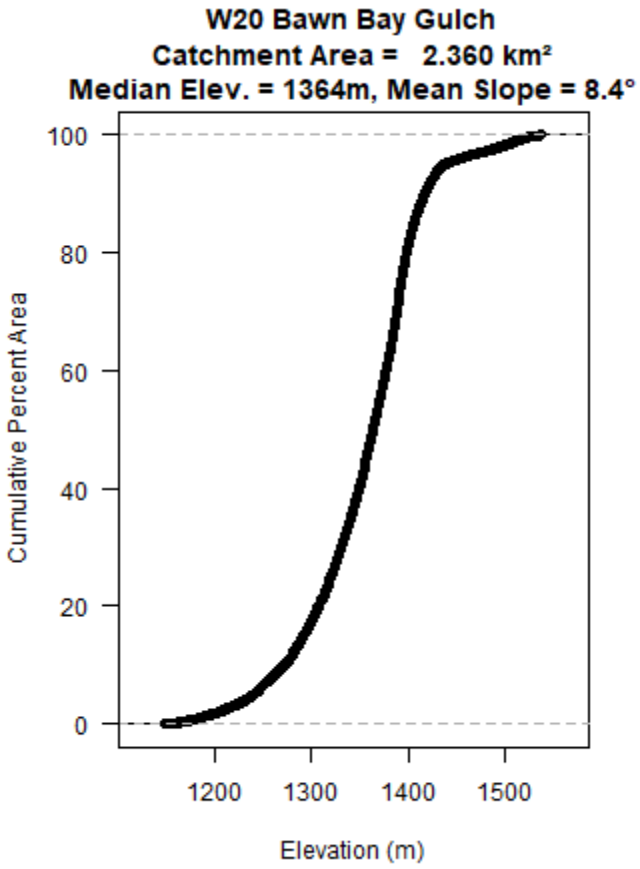


Figure 6: Hypsometric curve for station W20

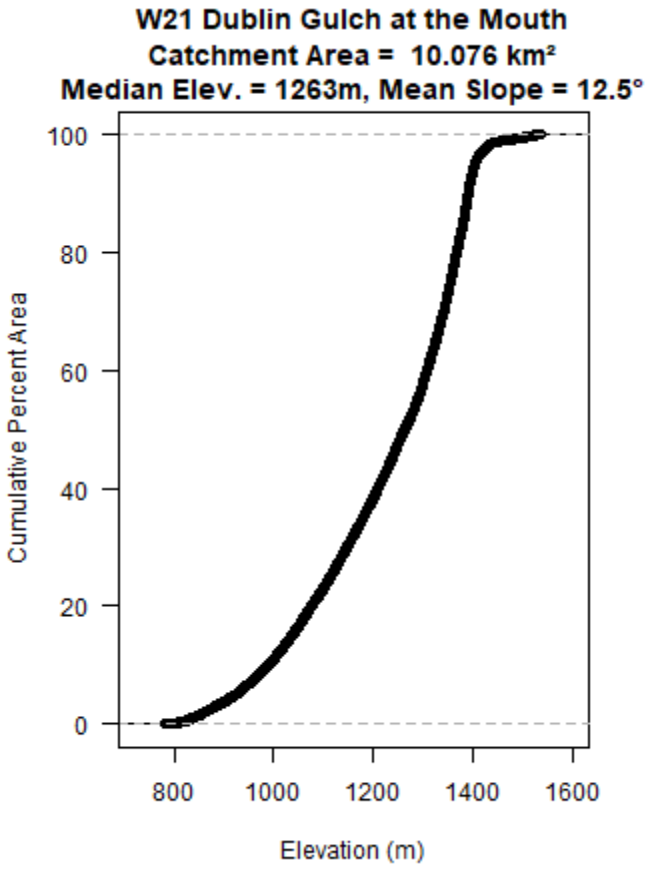


Figure 7: Hypsometric curve for station W21

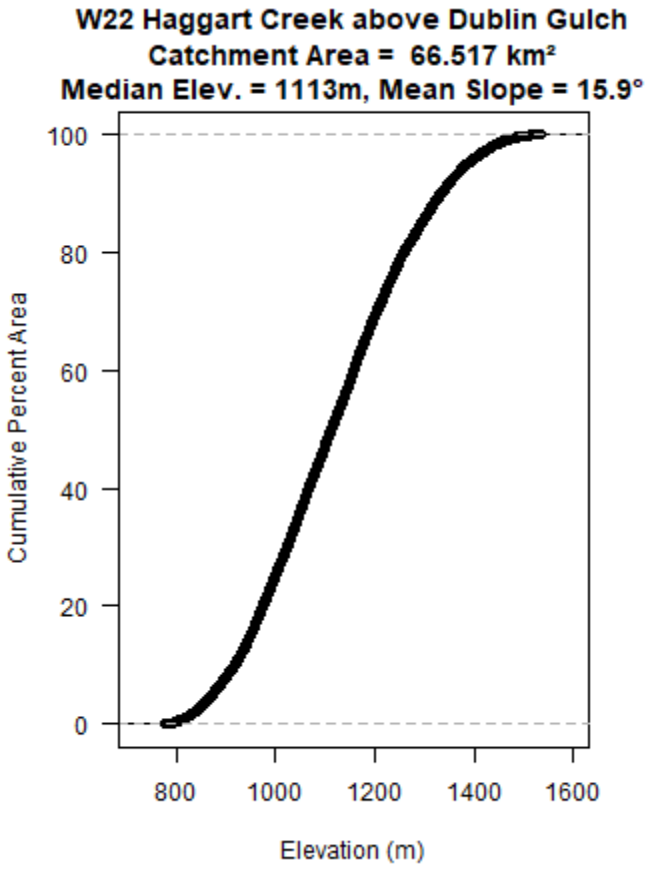


Figure 8: Hypsometric curve for station W22

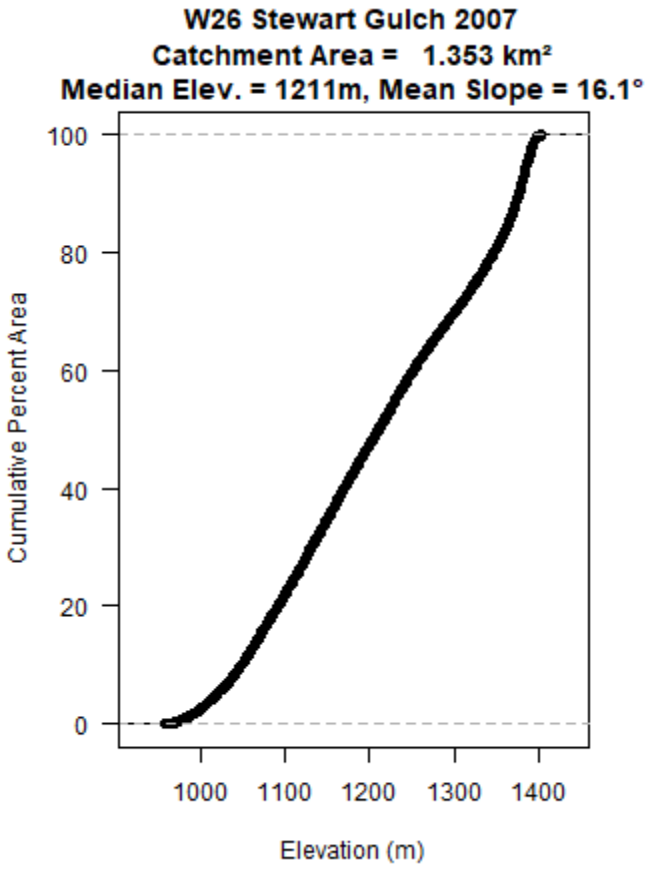


Figure 9: Hypsometric curve for station W26

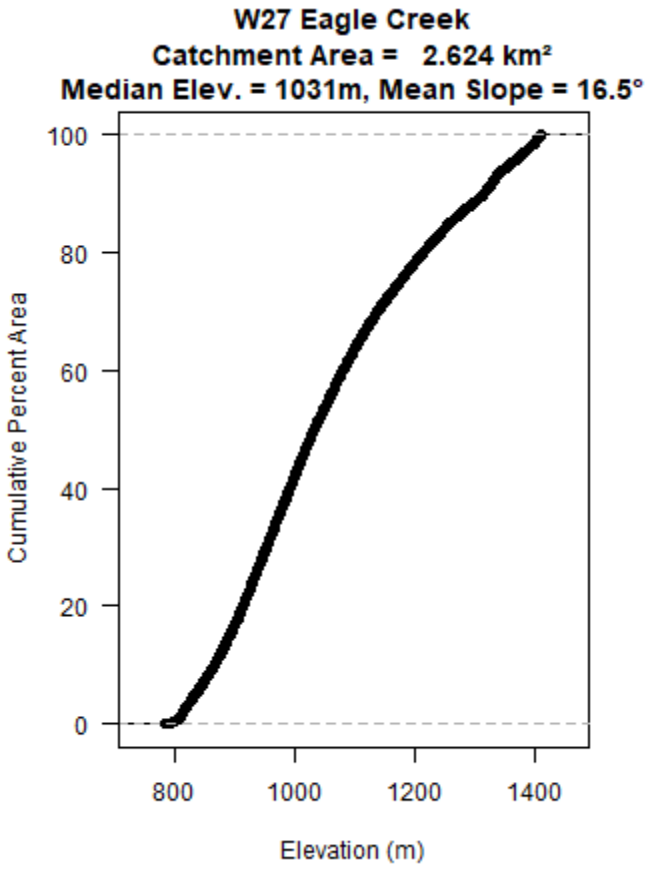


Figure 10: Hypsometric curve for station W27

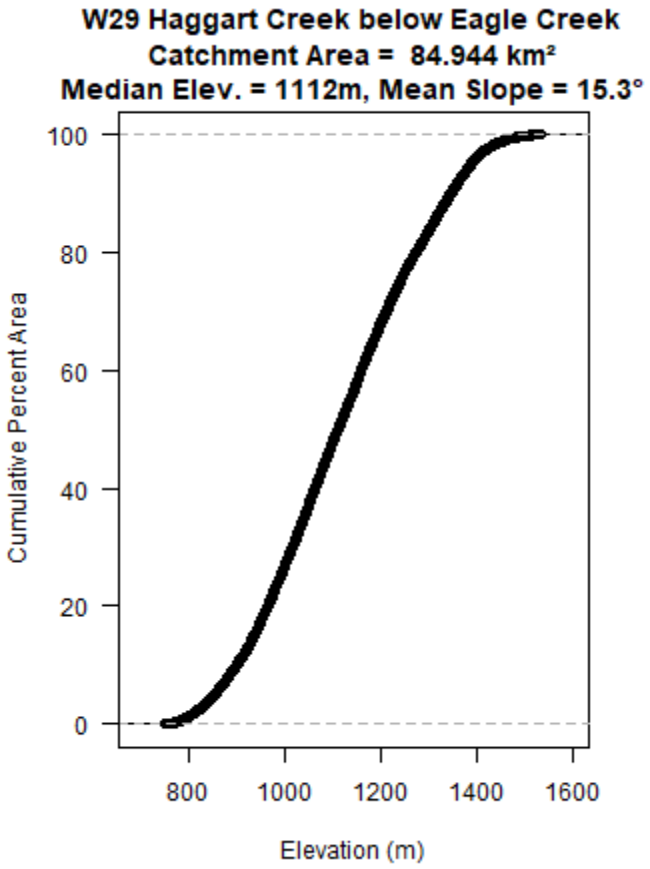


Figure 11: Hypsometric curve for station W29

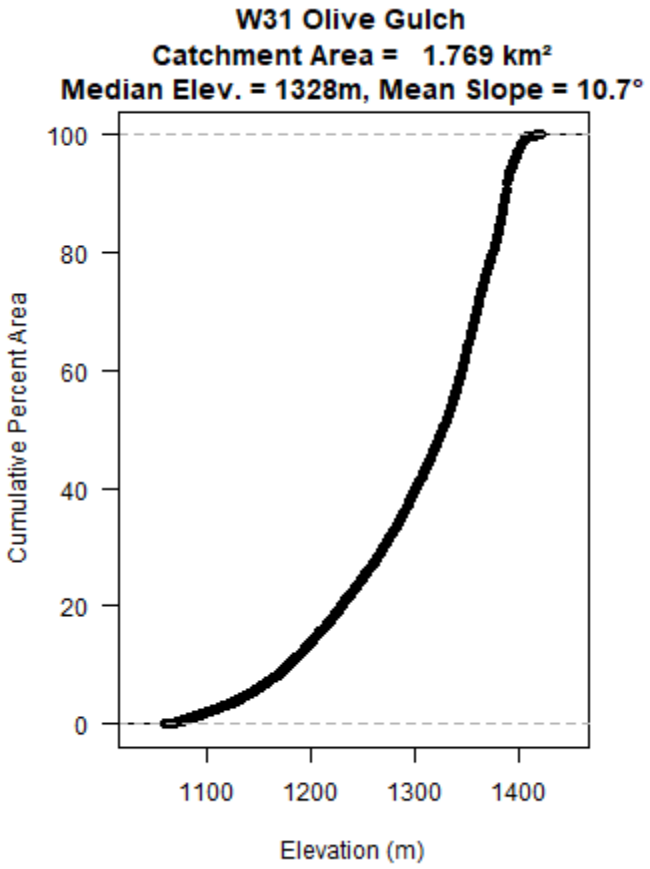


Figure 12: Hypsometric curve for station W31

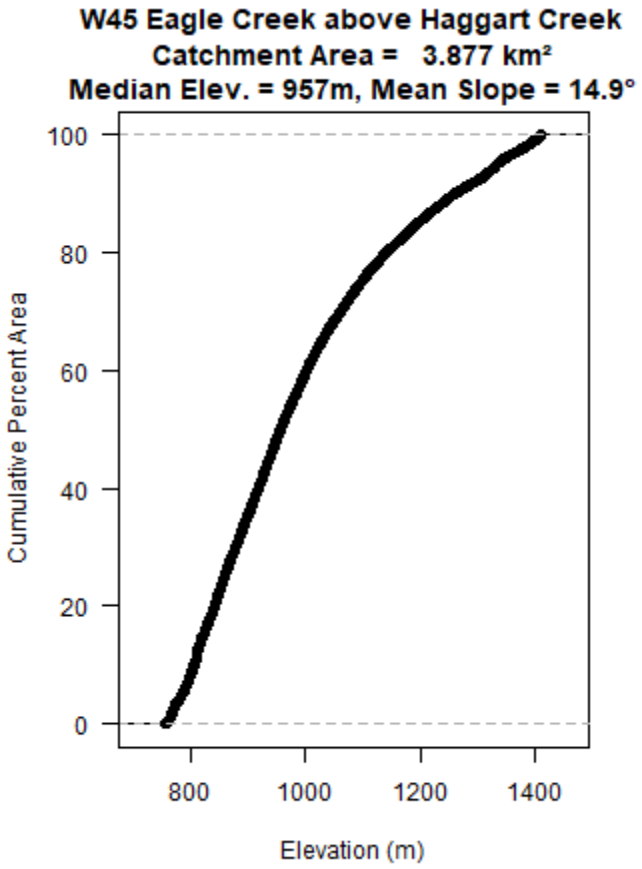


Figure 13: Hypsometric curve for station W45

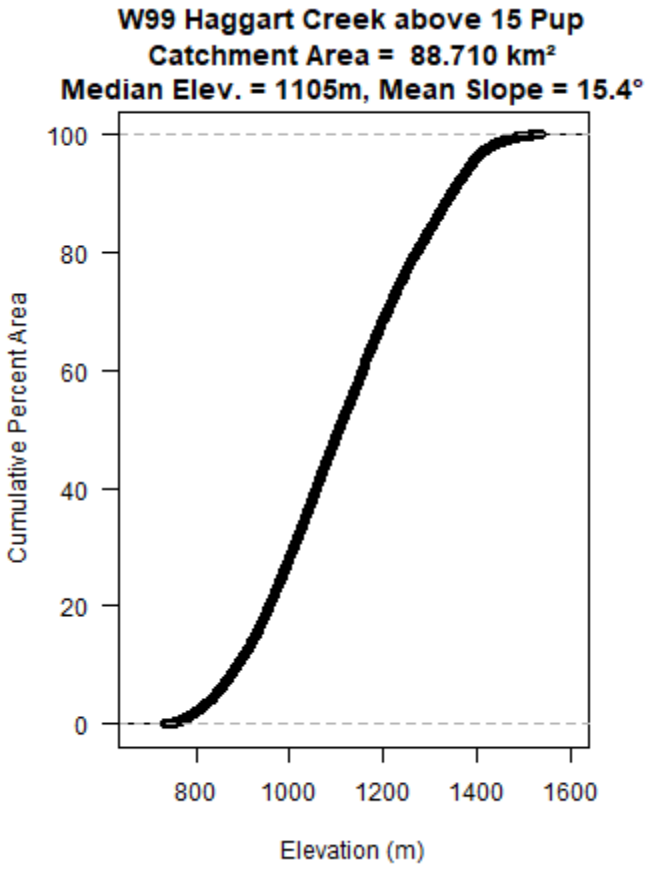
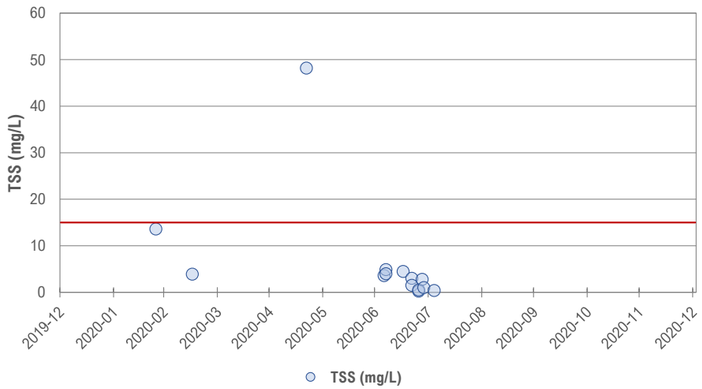


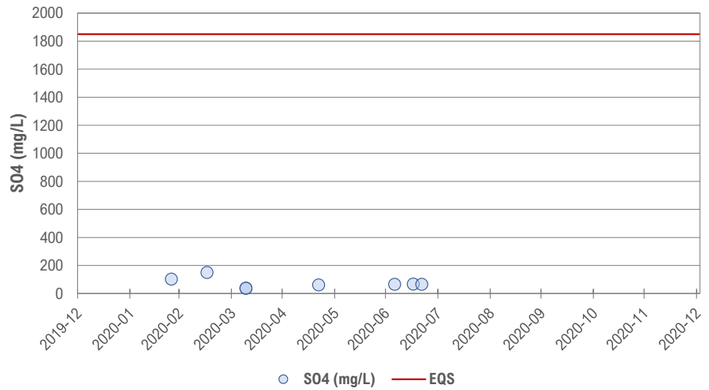
Figure 14: Hypsometric curve for station W99

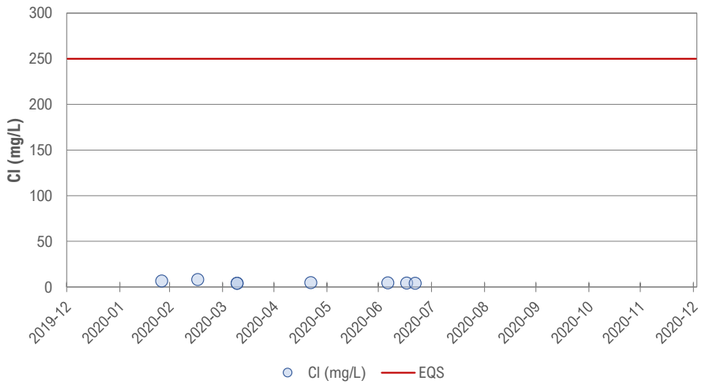
APPENDIX F2

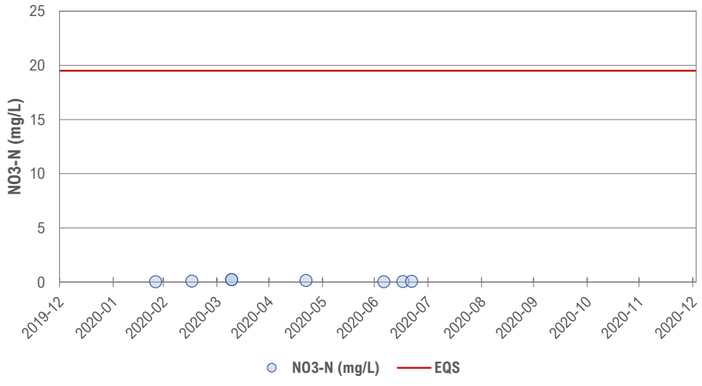
Contact Water Quality Plots

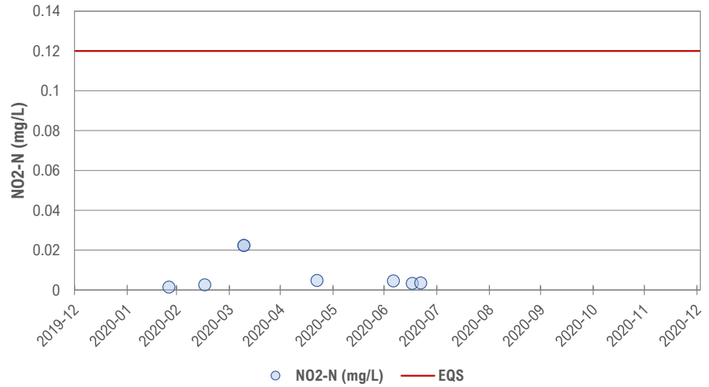
Station ID: Event Pond

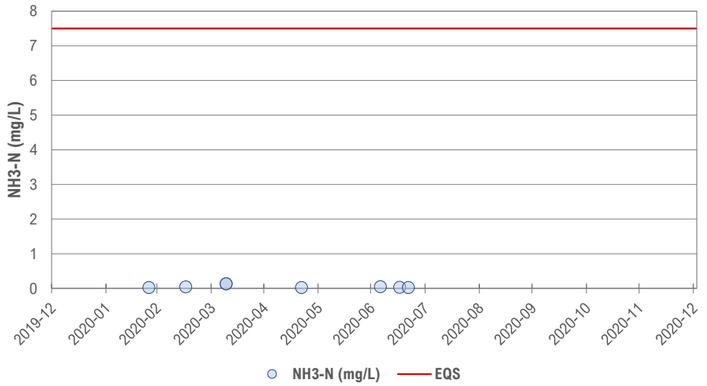












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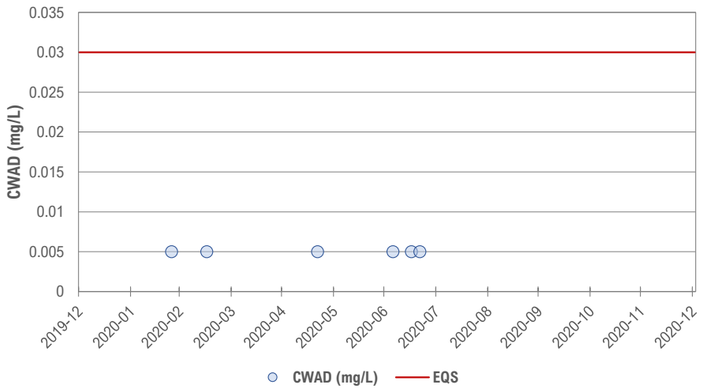

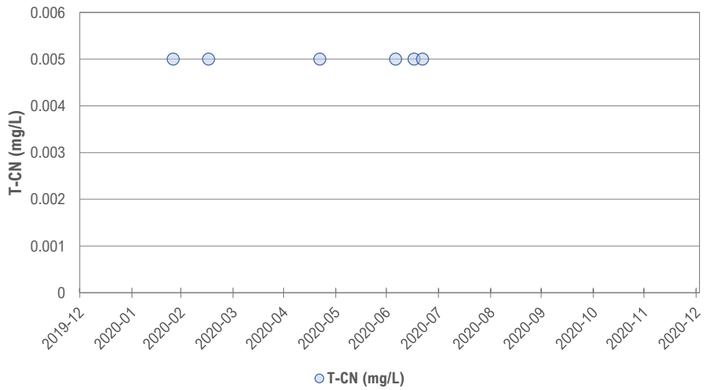

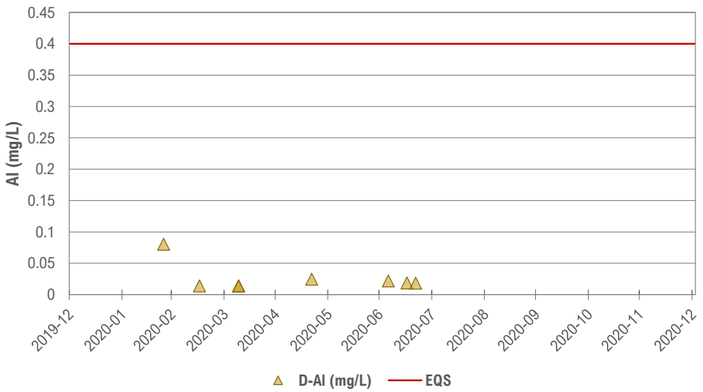

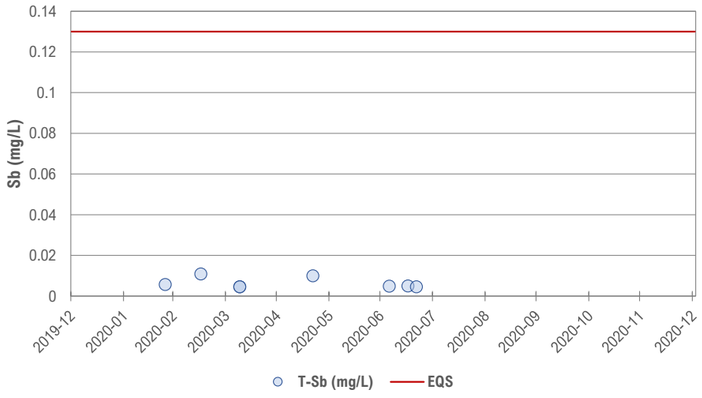

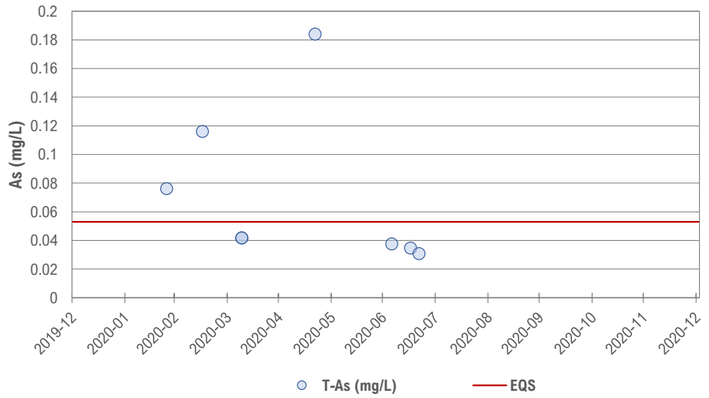

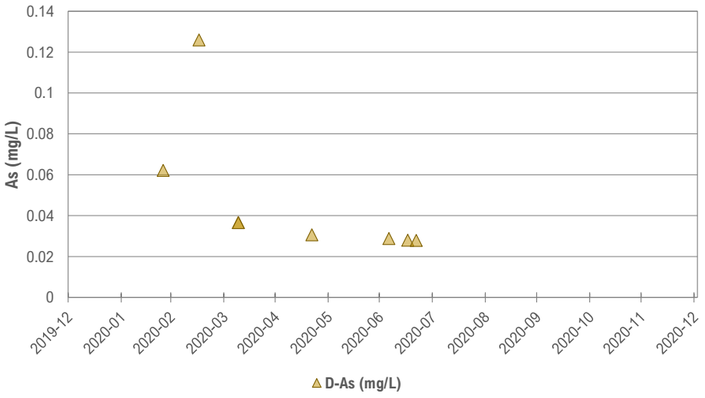

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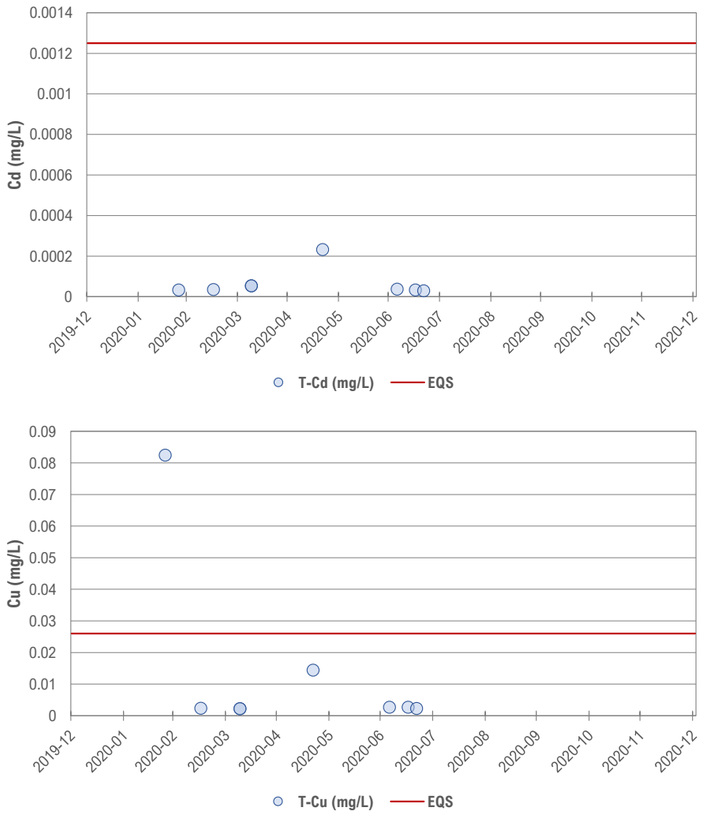

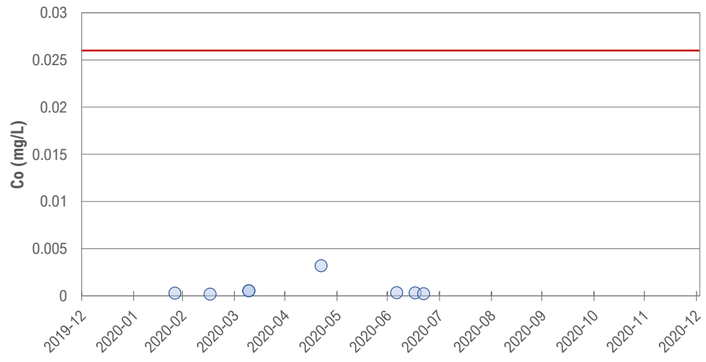

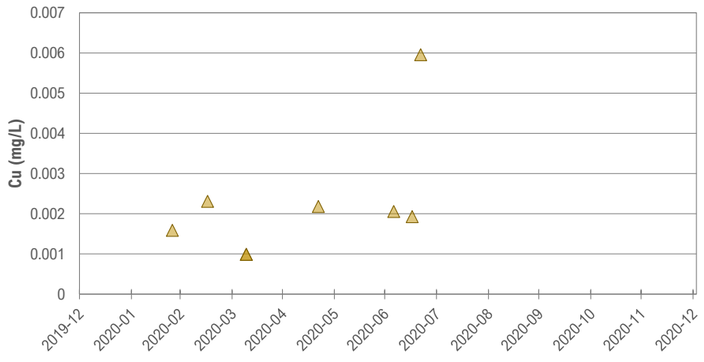

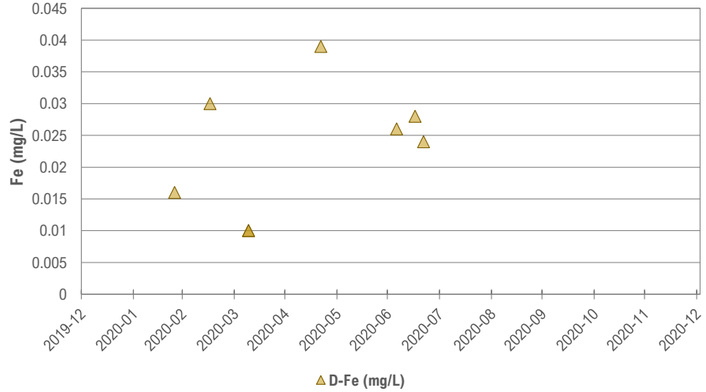

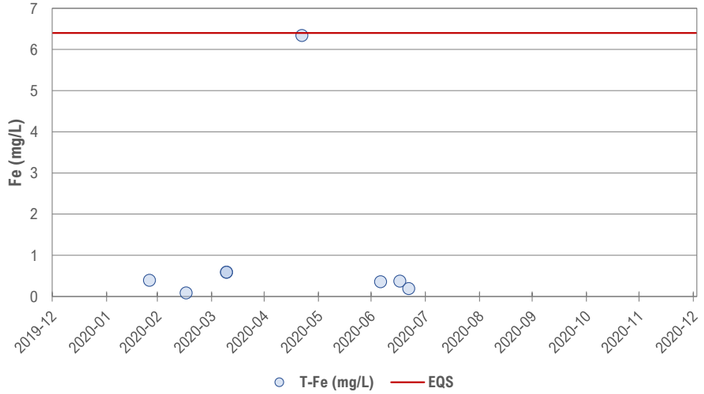

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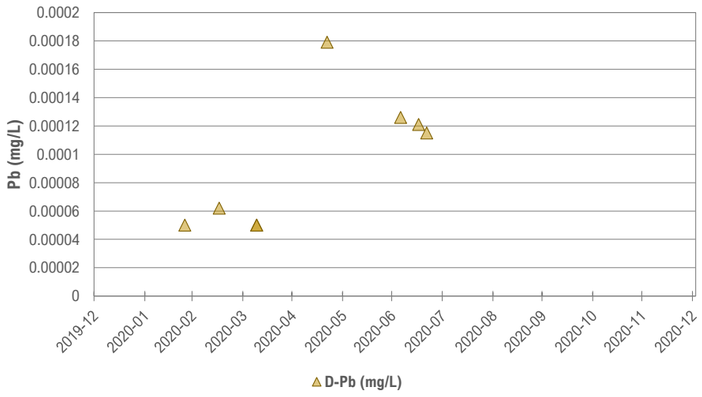

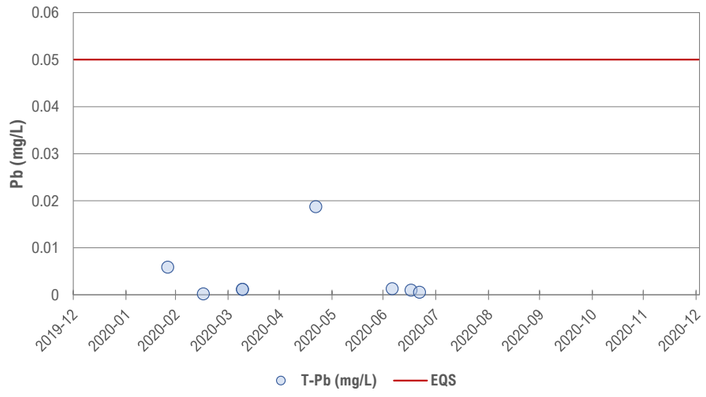

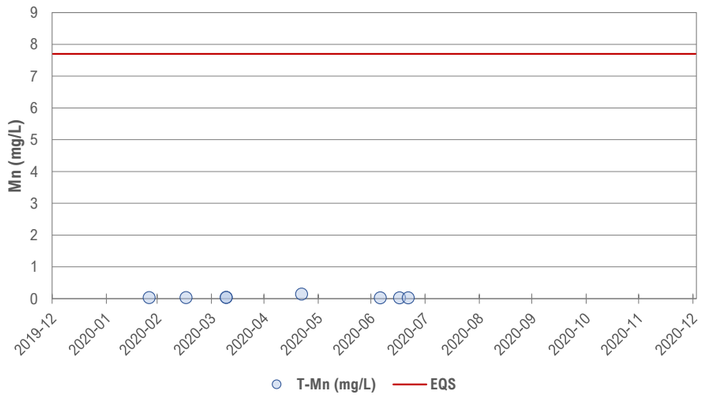

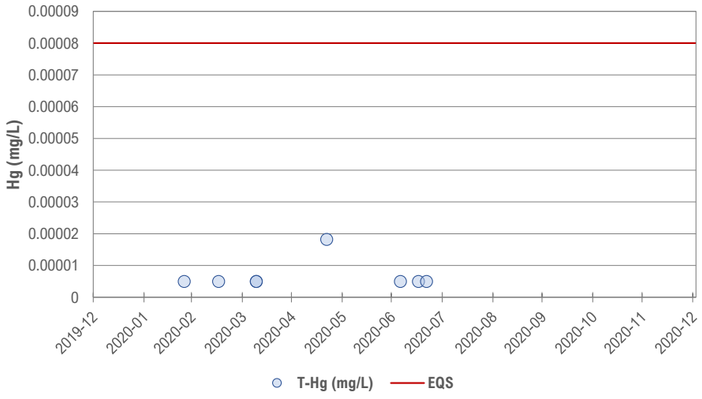

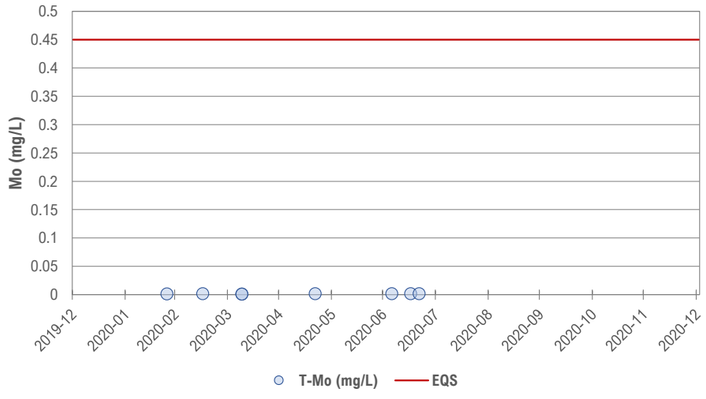

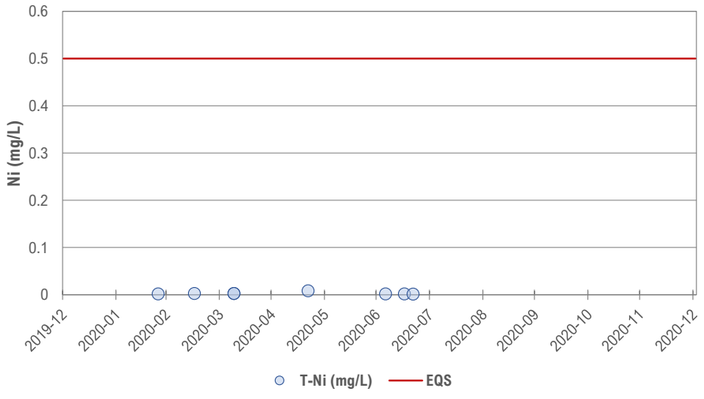

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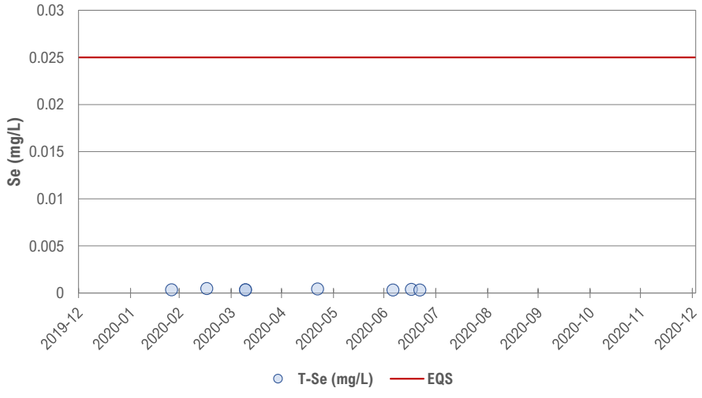

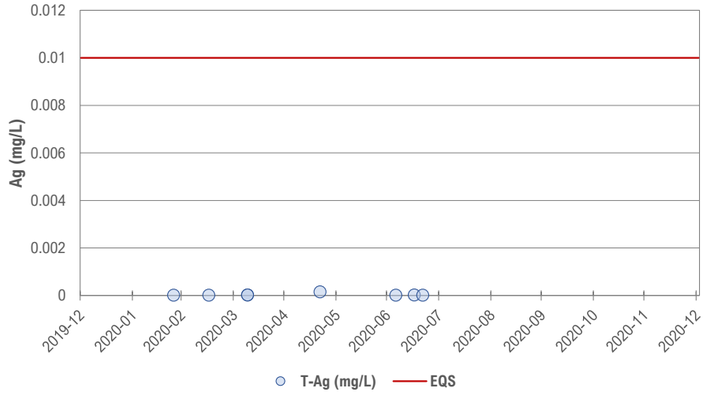

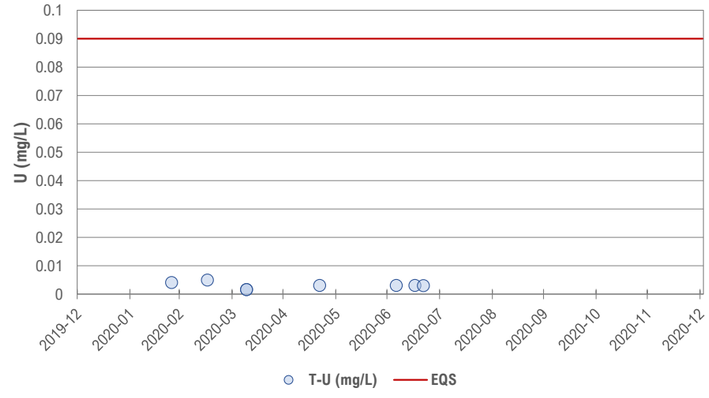

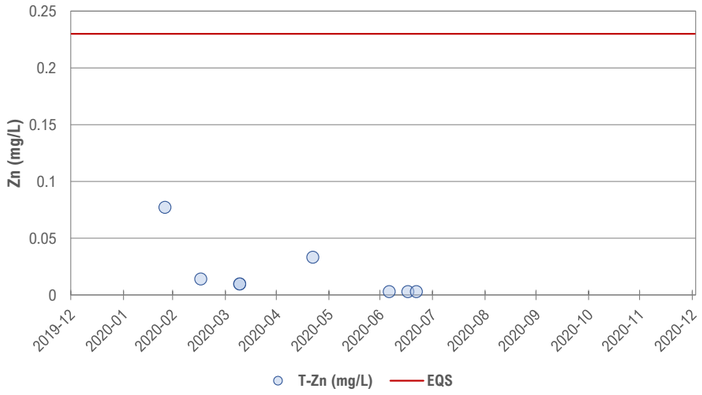

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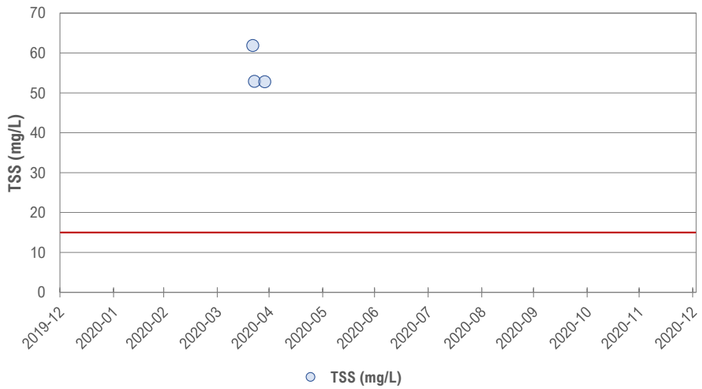

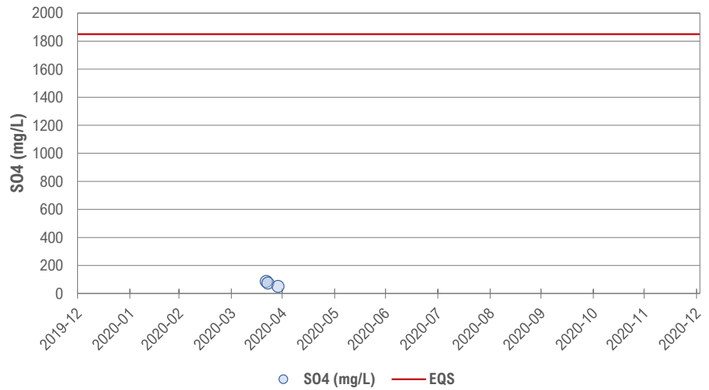

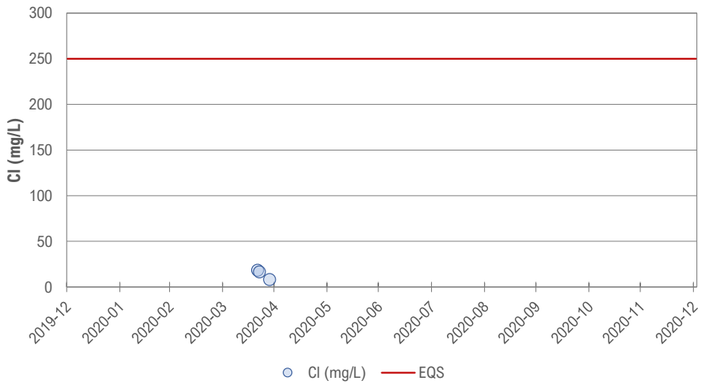

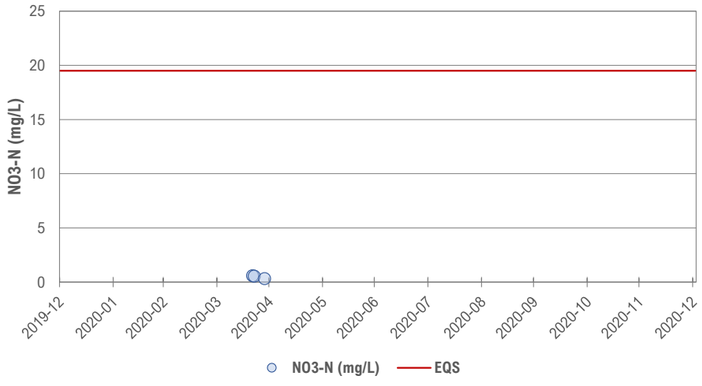

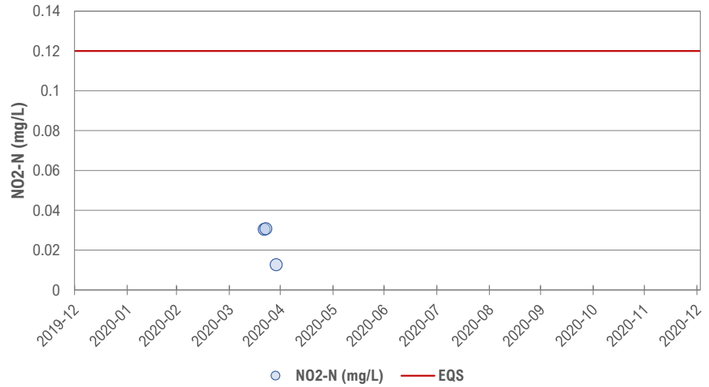

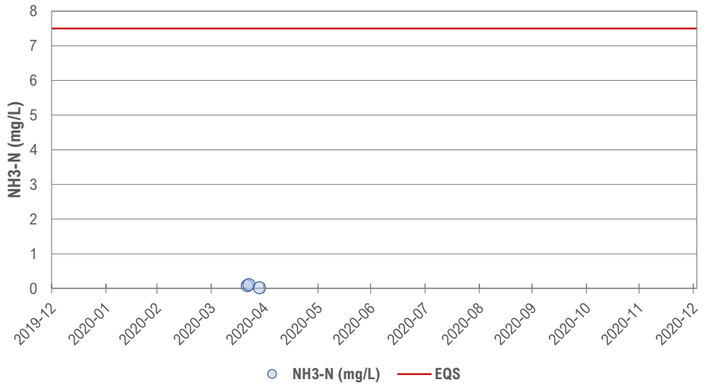

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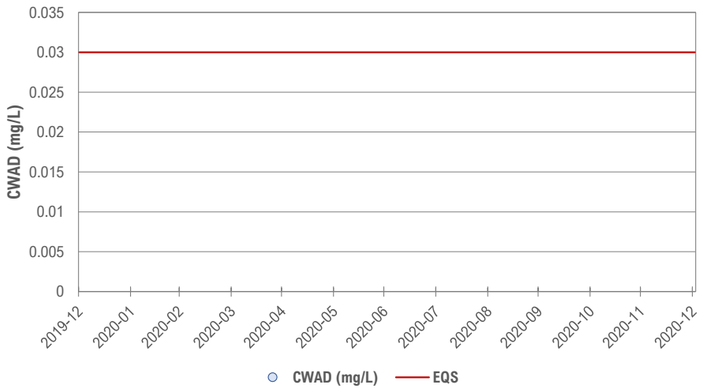

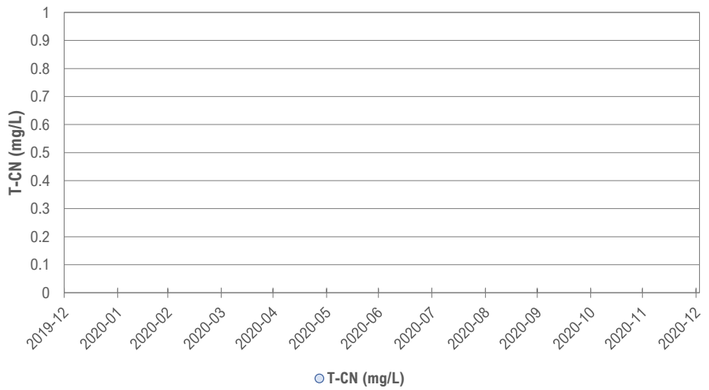

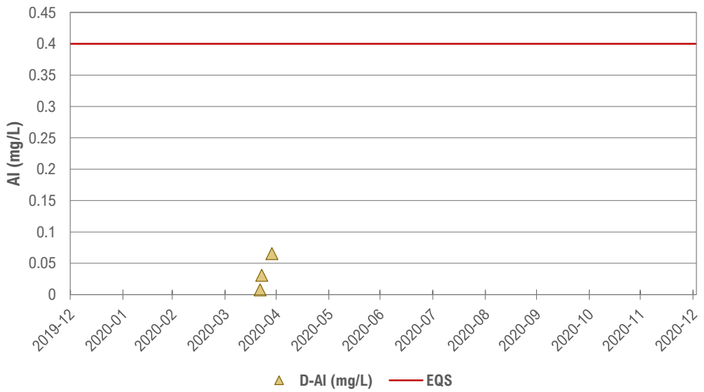

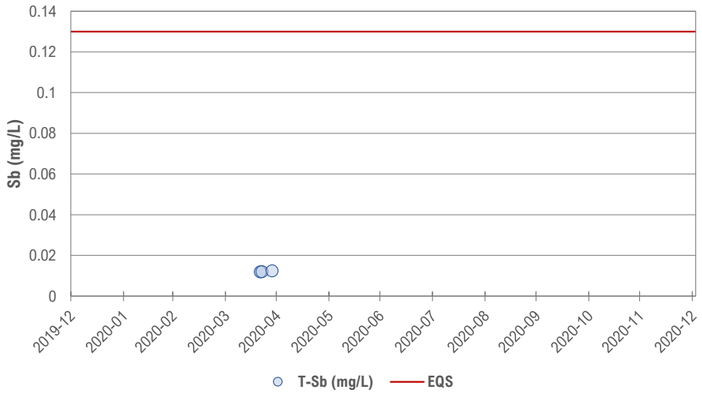

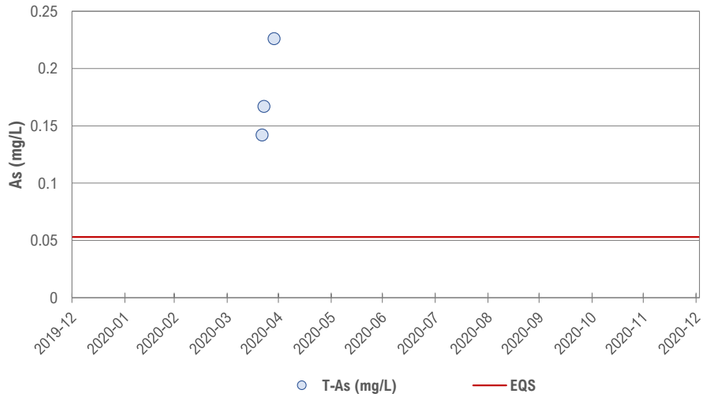

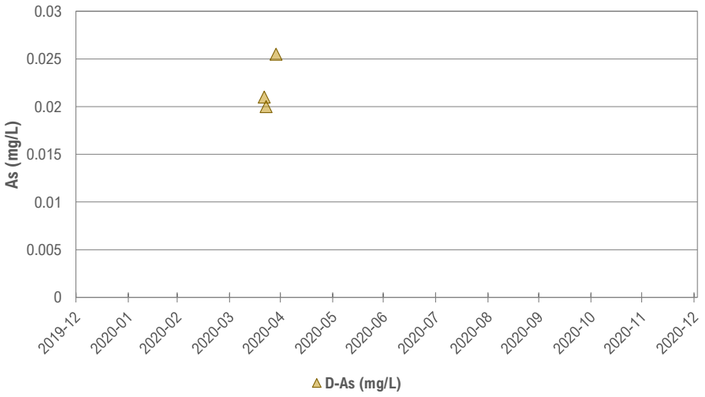

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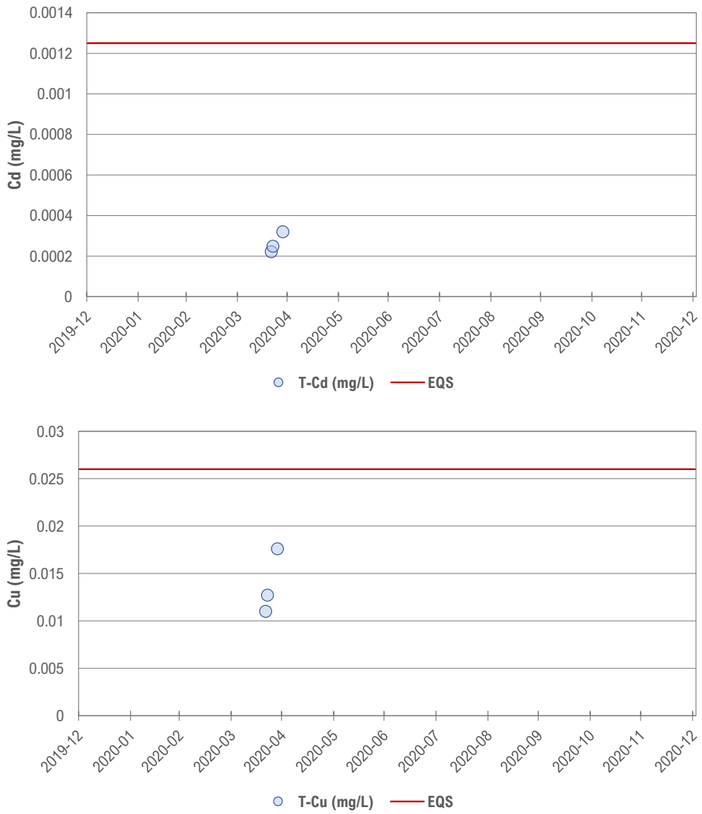

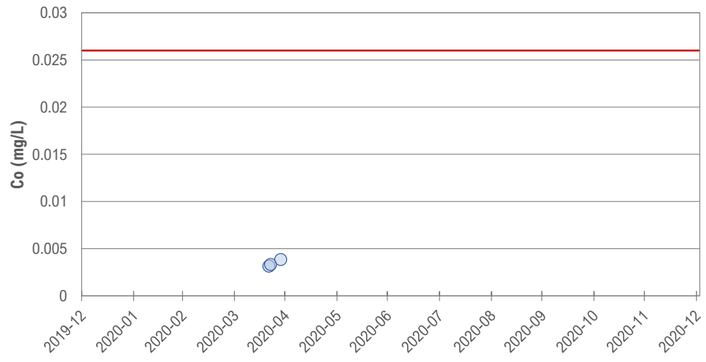

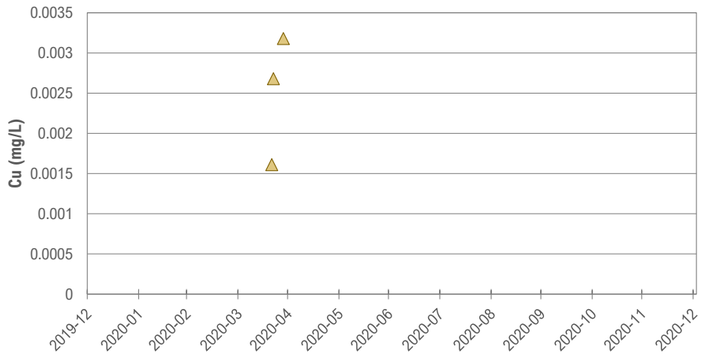

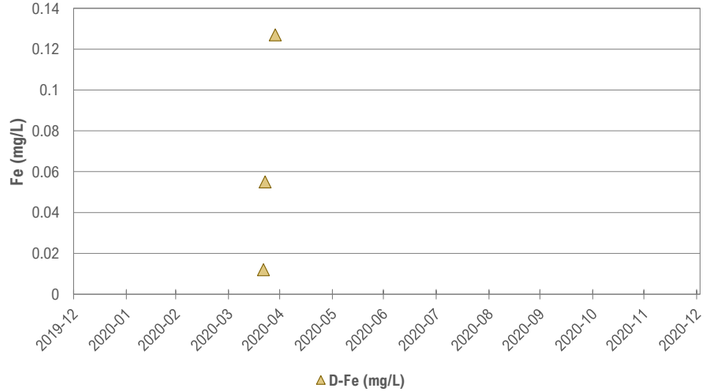

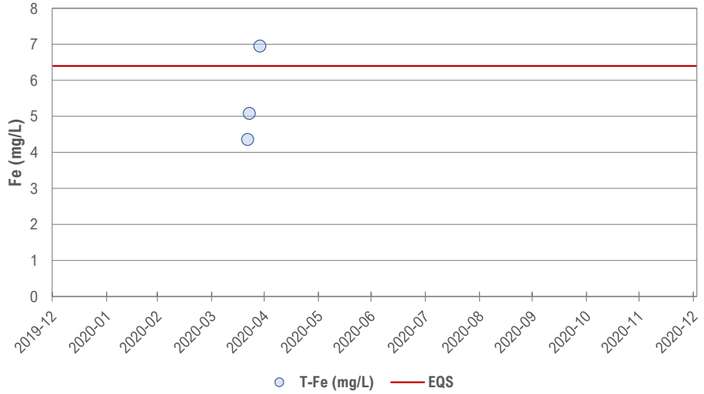

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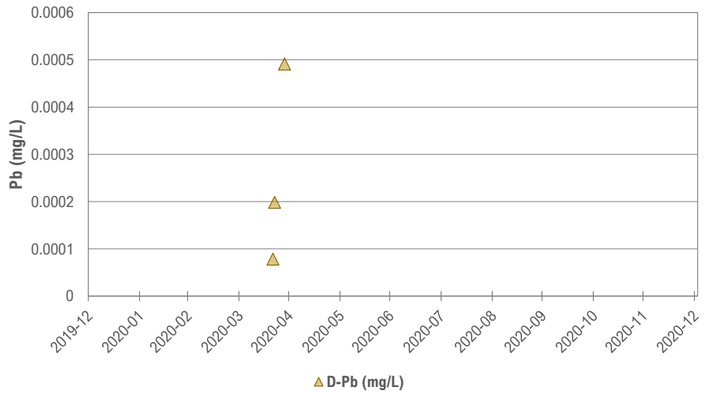

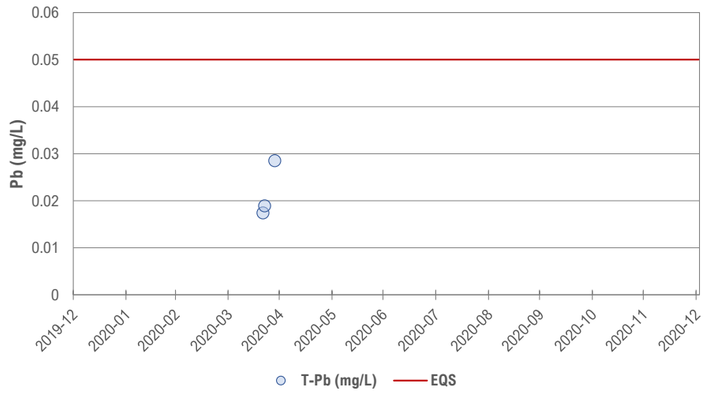

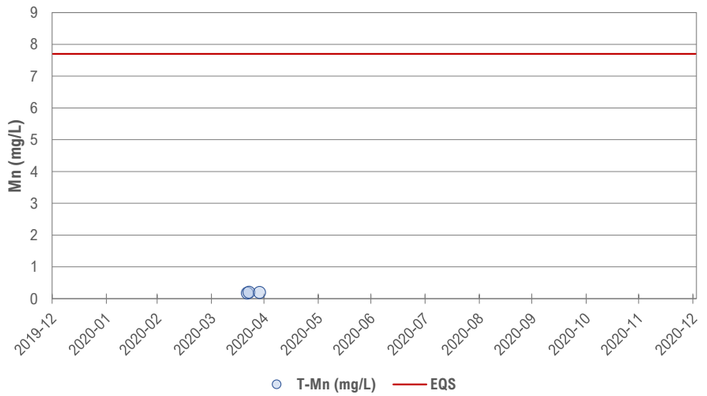

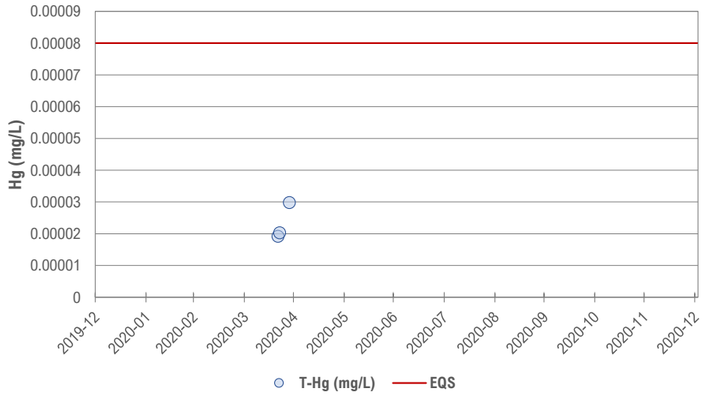

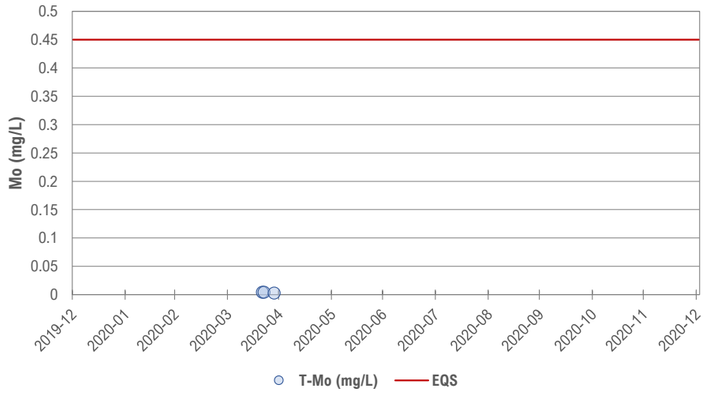

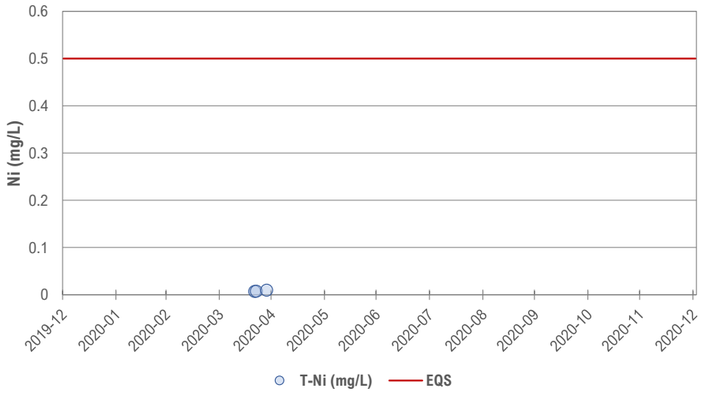

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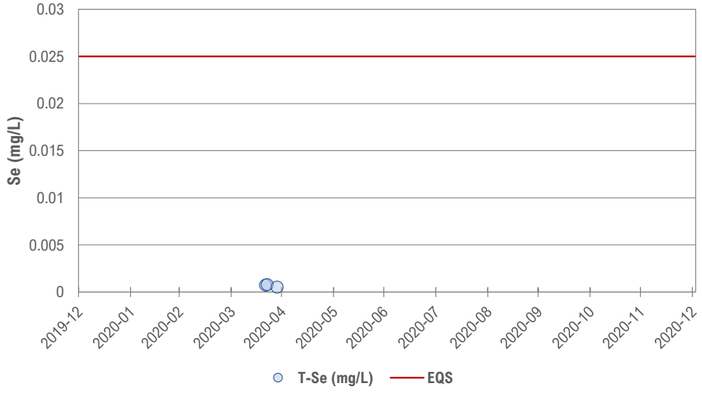

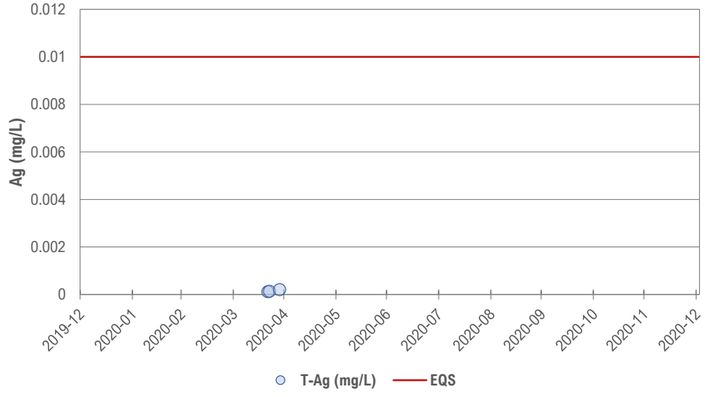

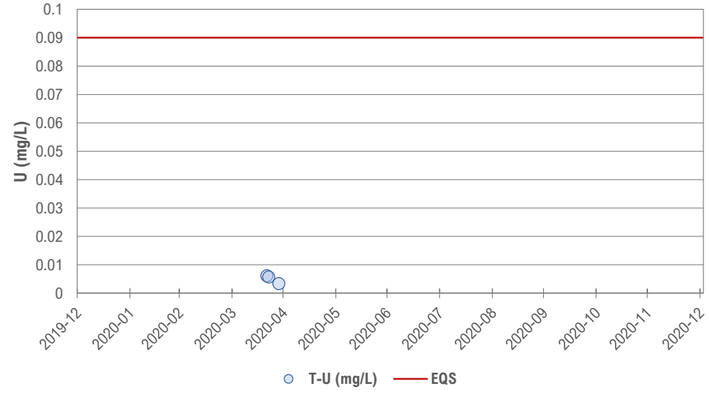

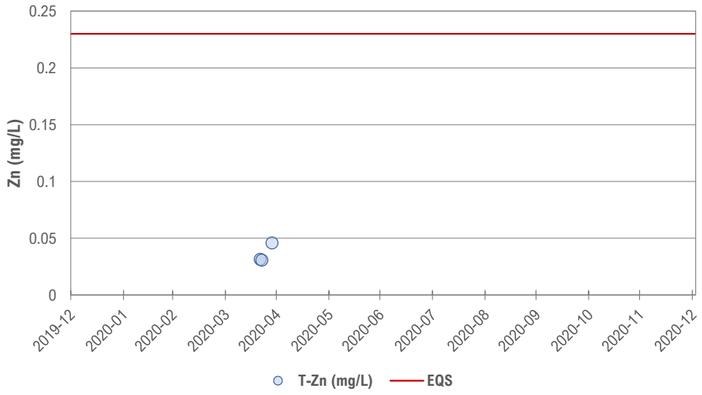

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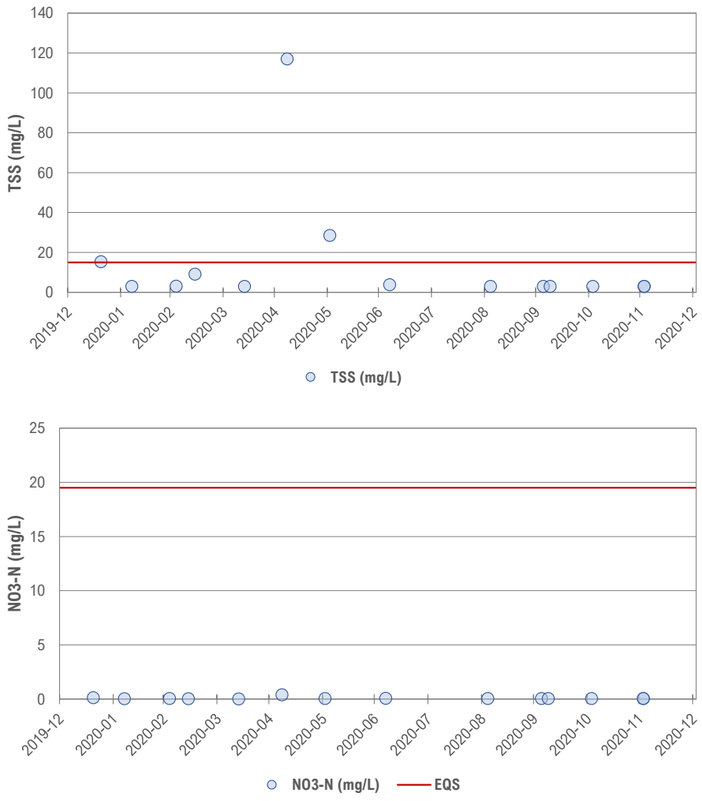

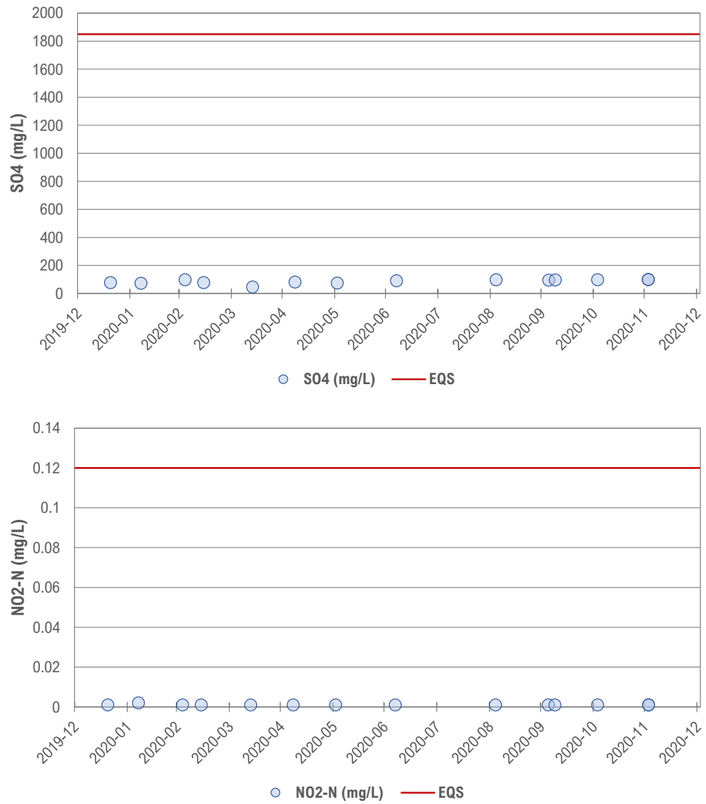

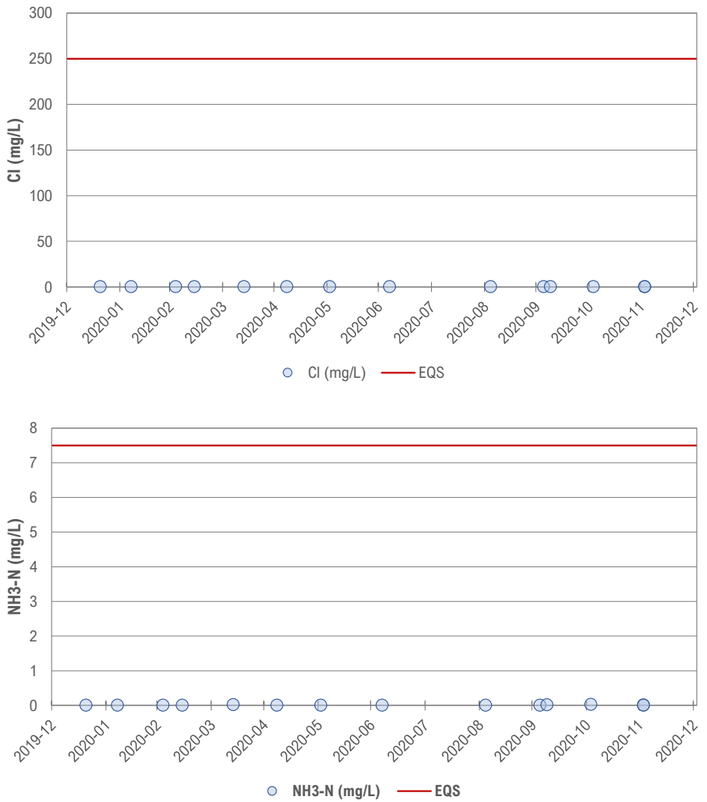

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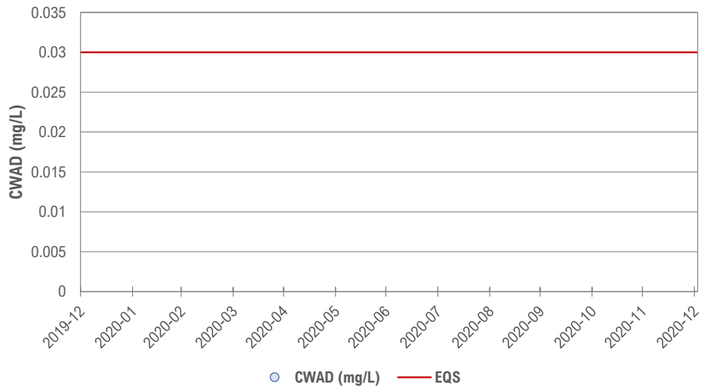

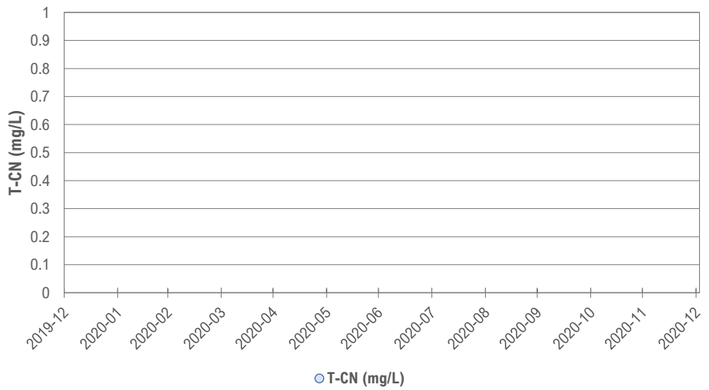

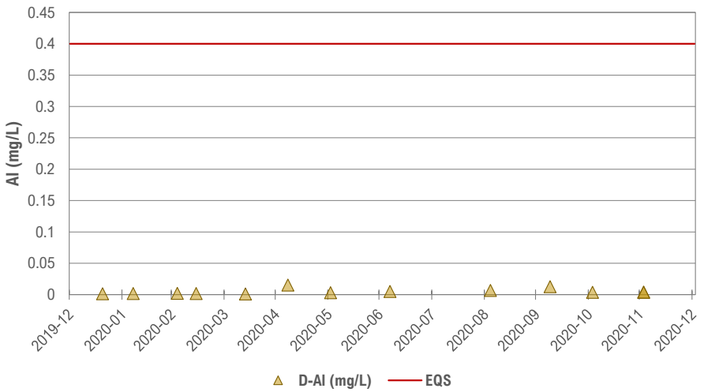

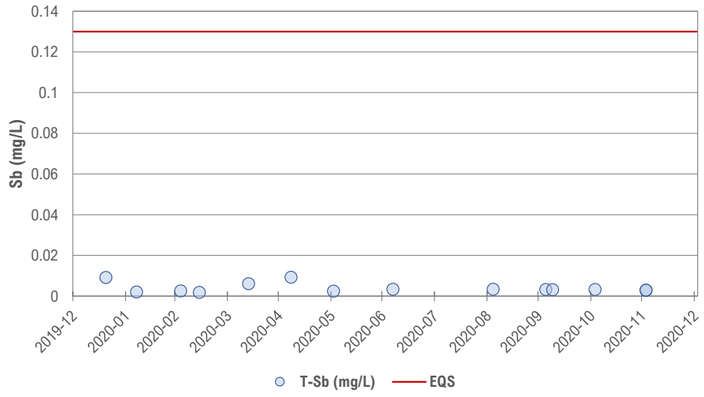

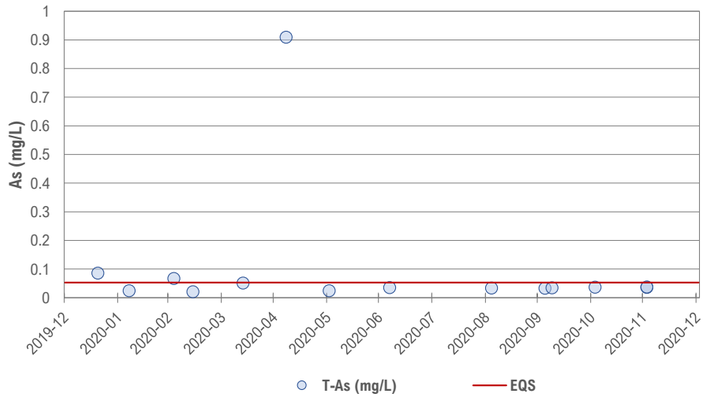

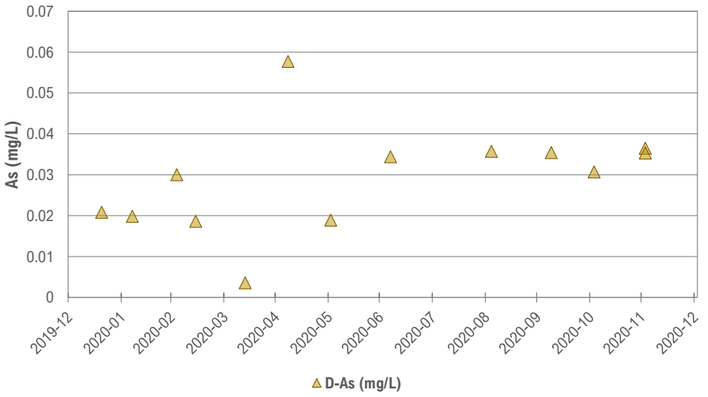

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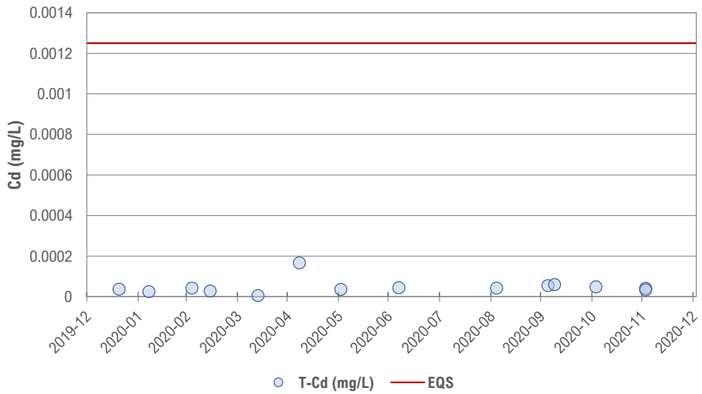

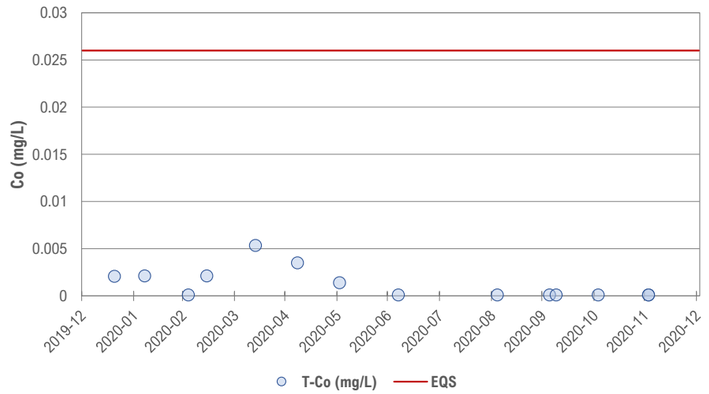

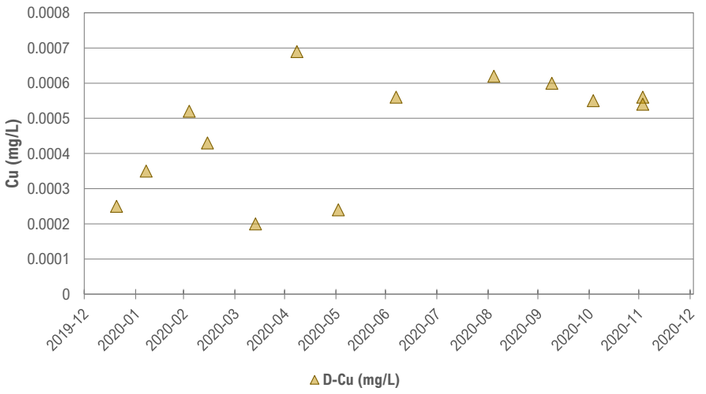

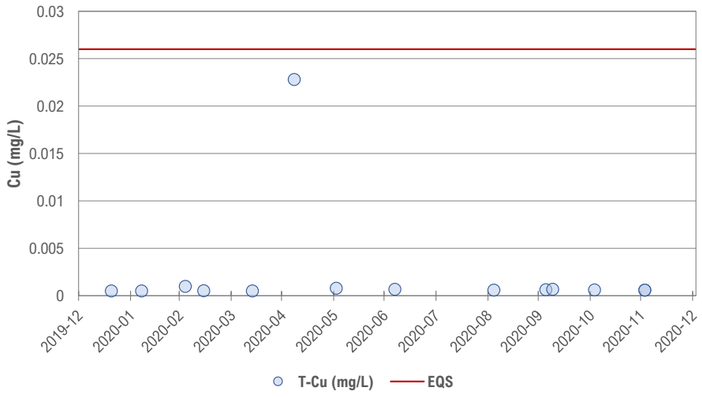

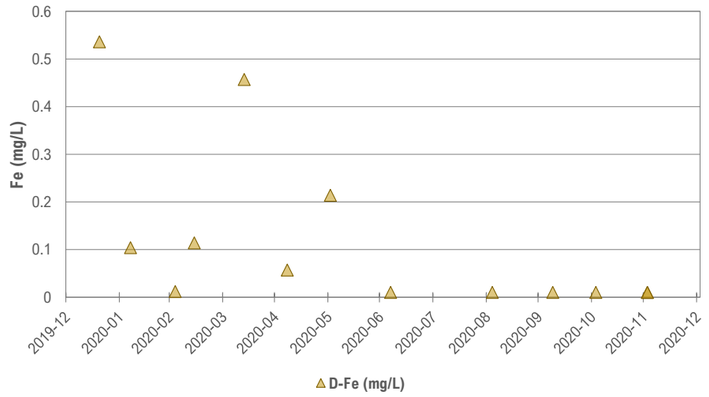

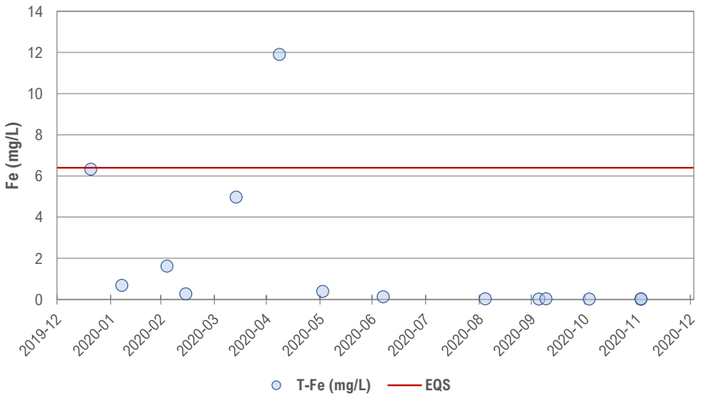

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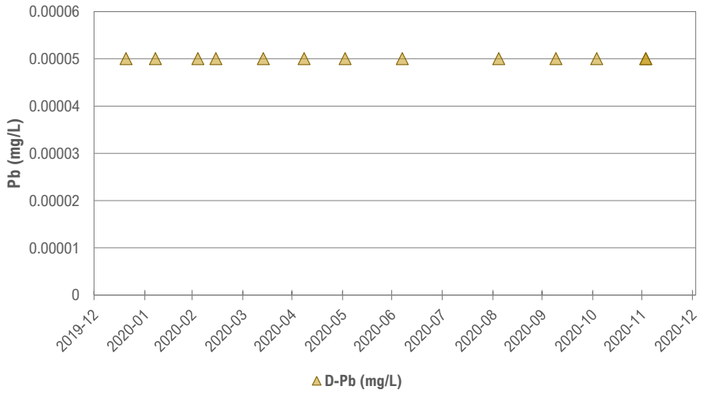

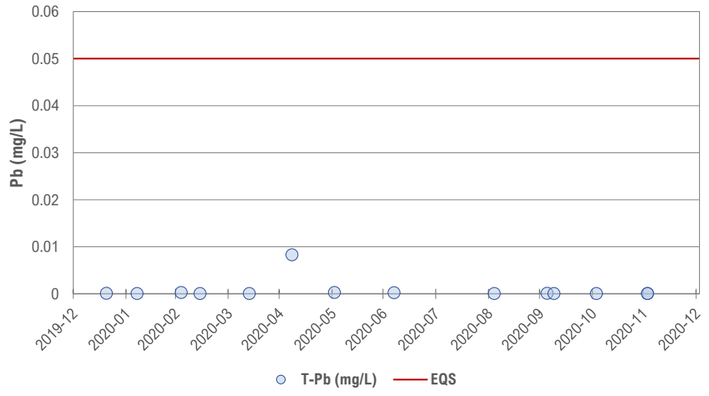

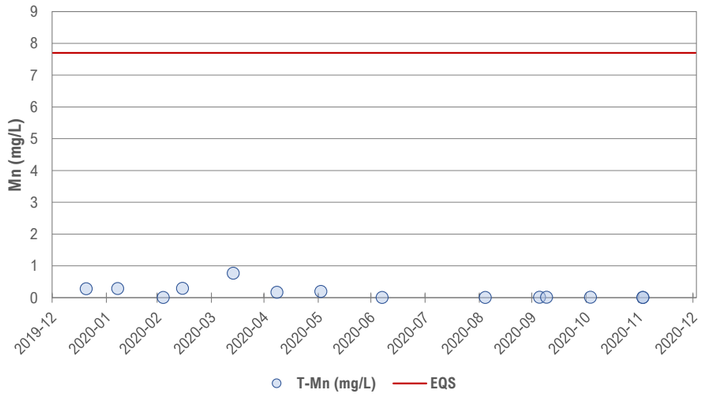

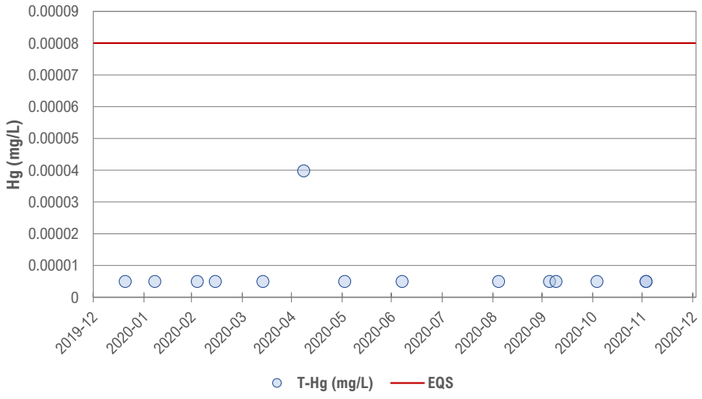

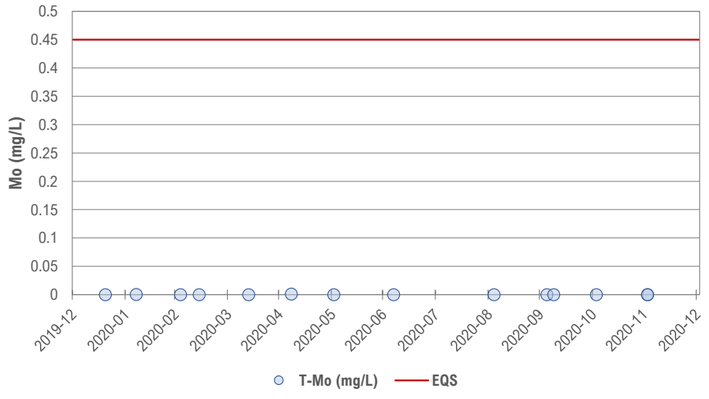

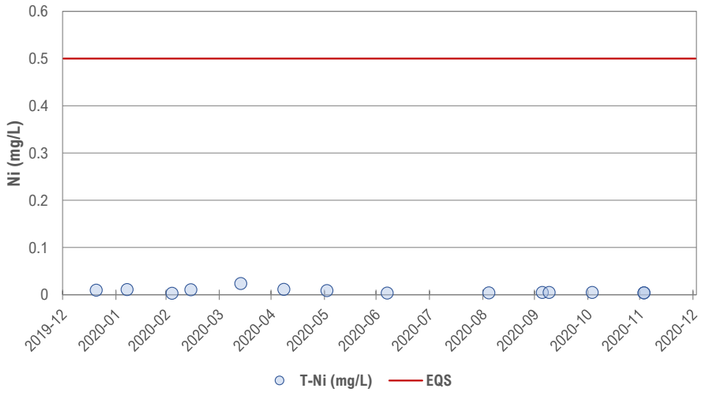

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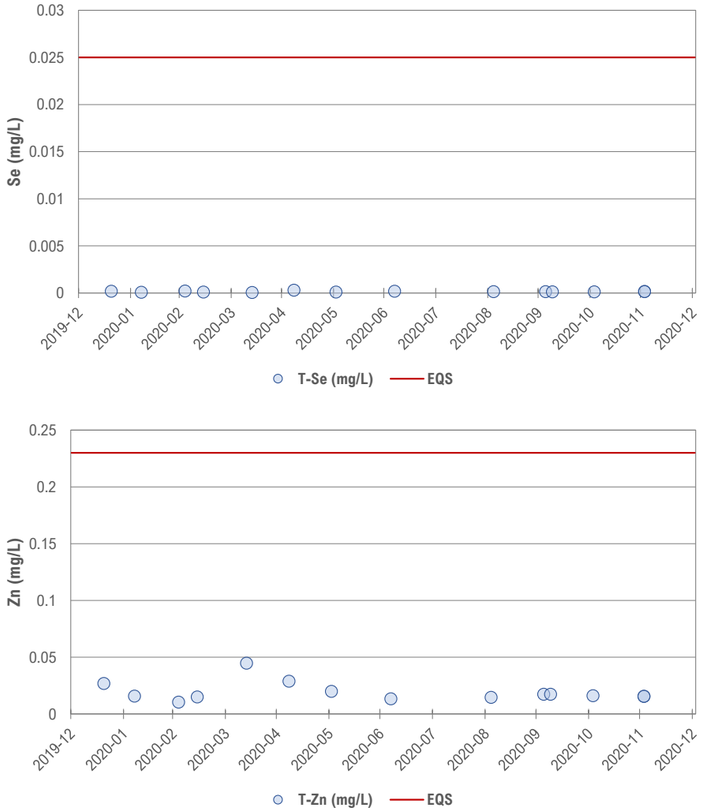

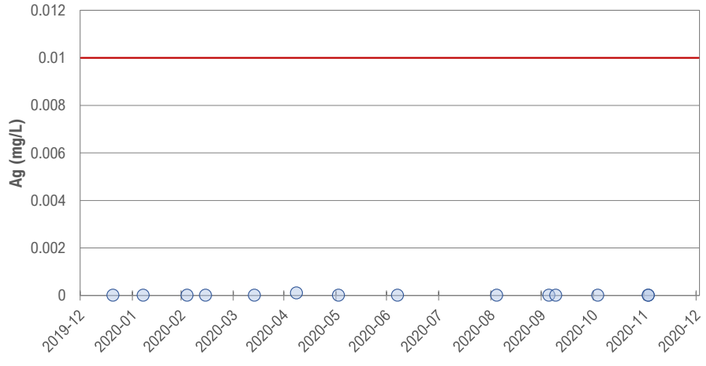

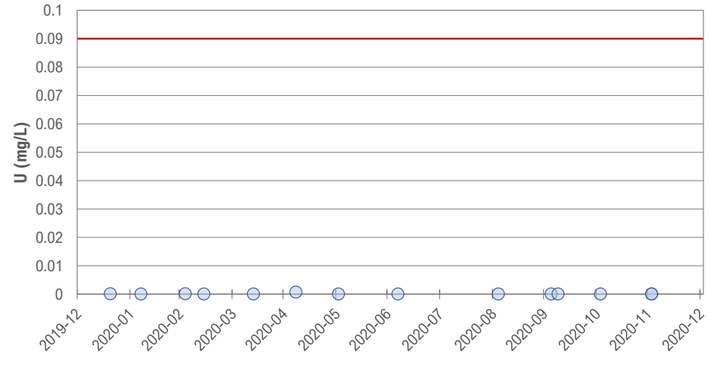

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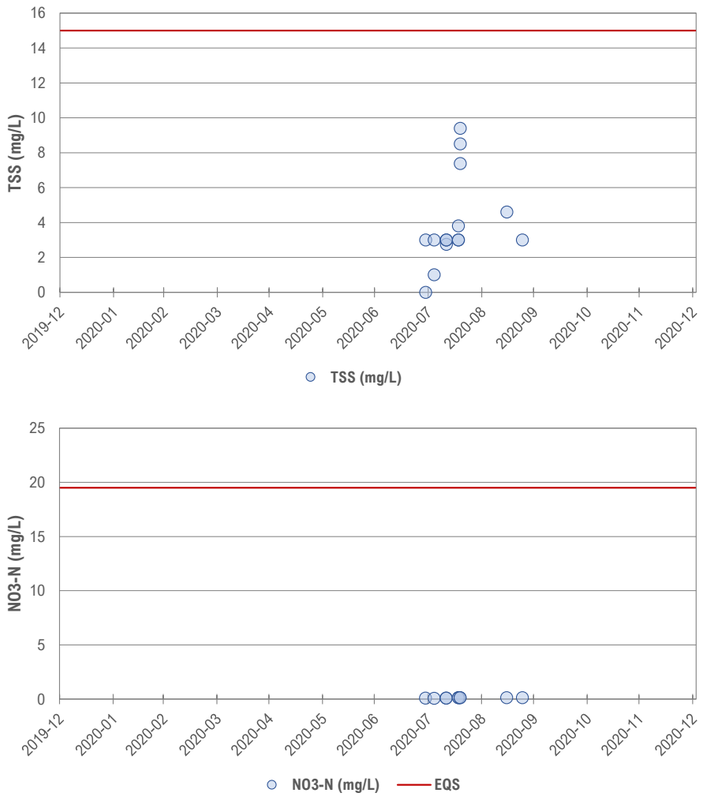

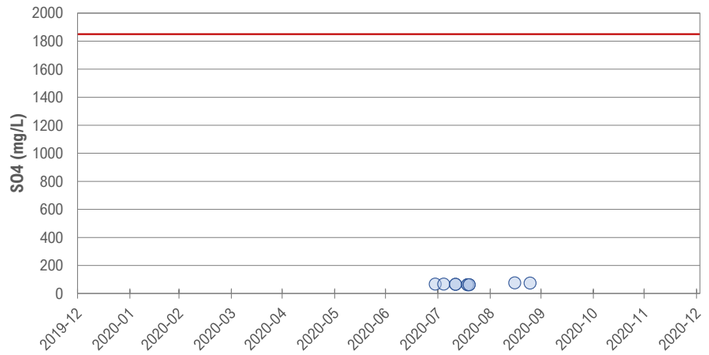

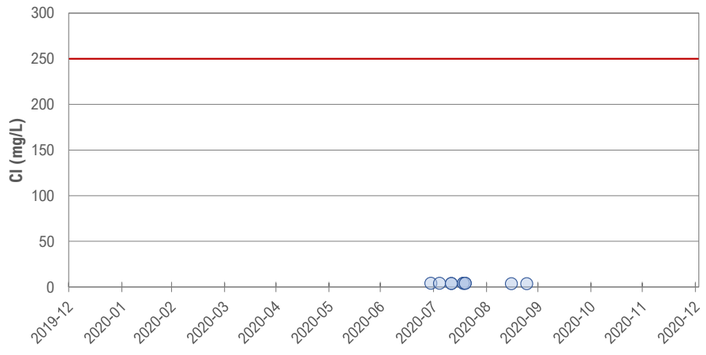

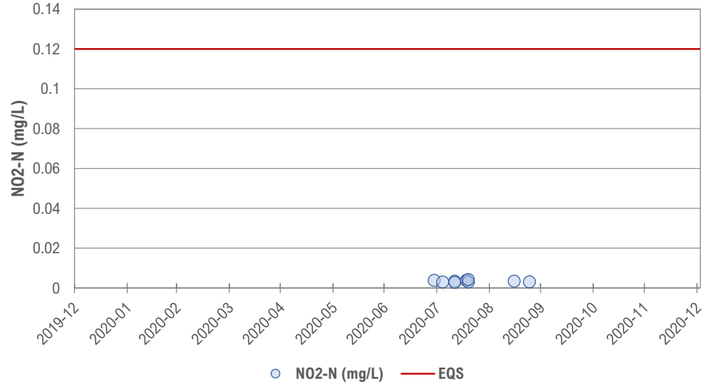

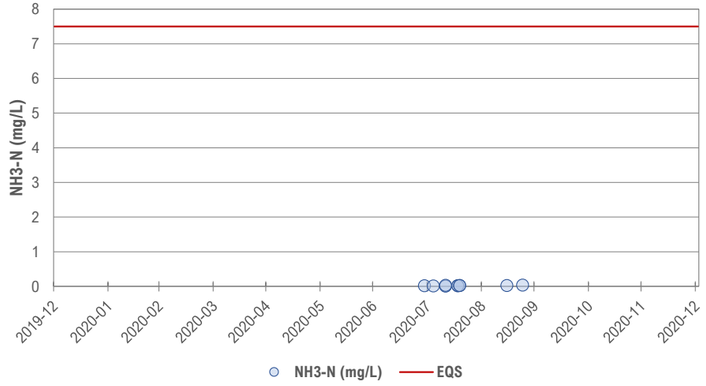

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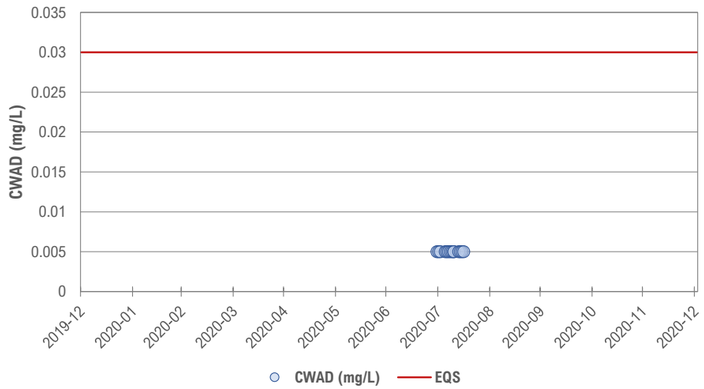

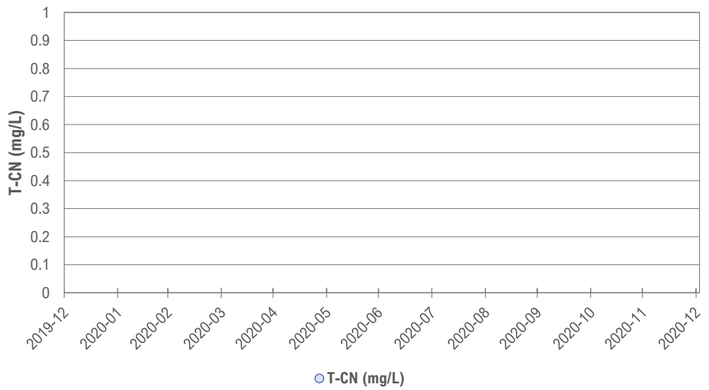

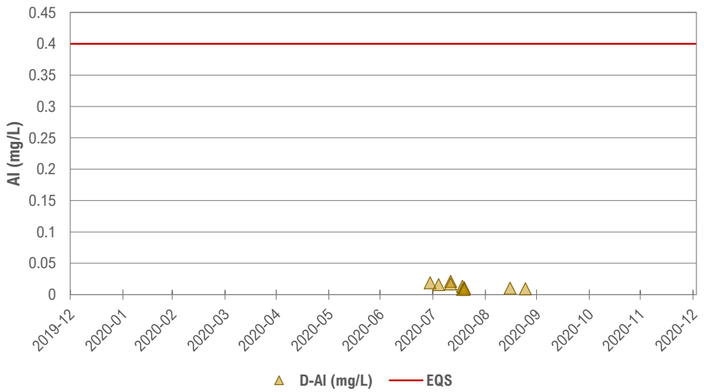

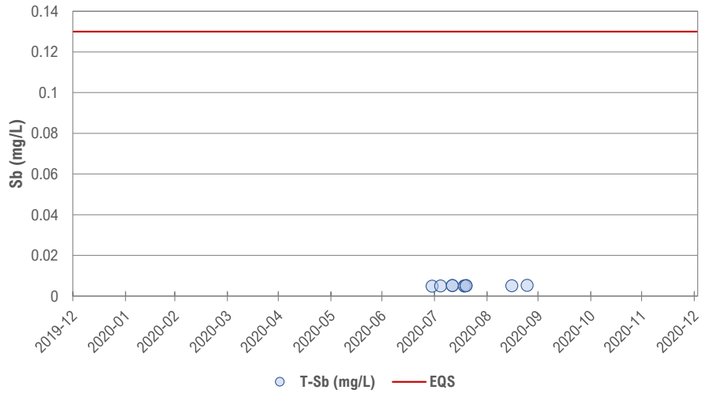

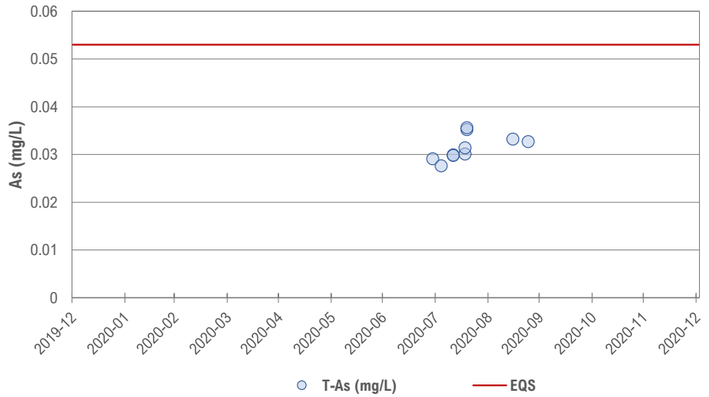

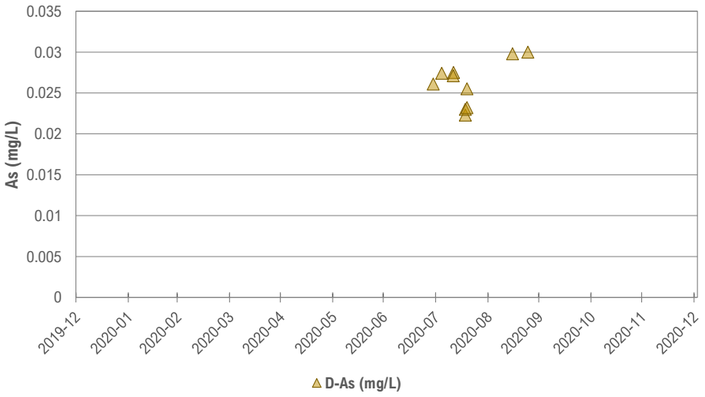

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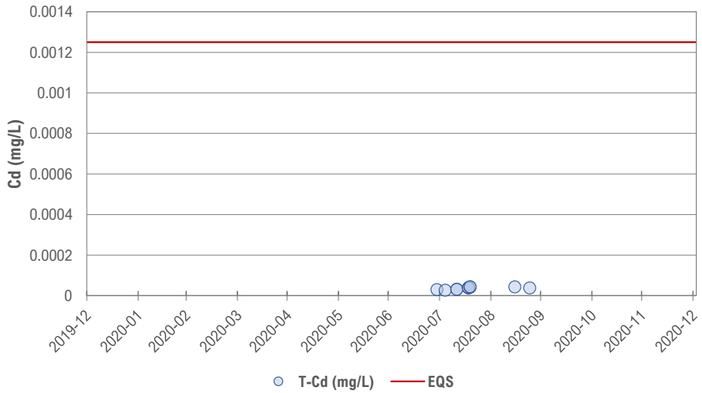

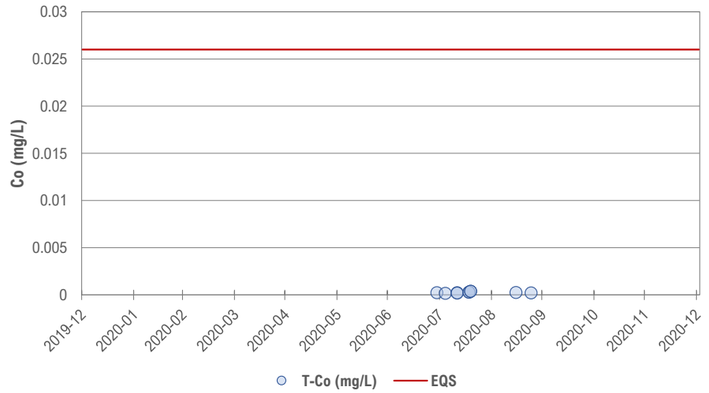

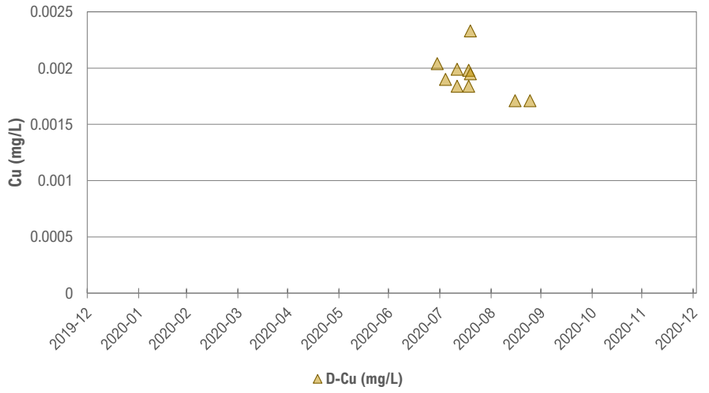

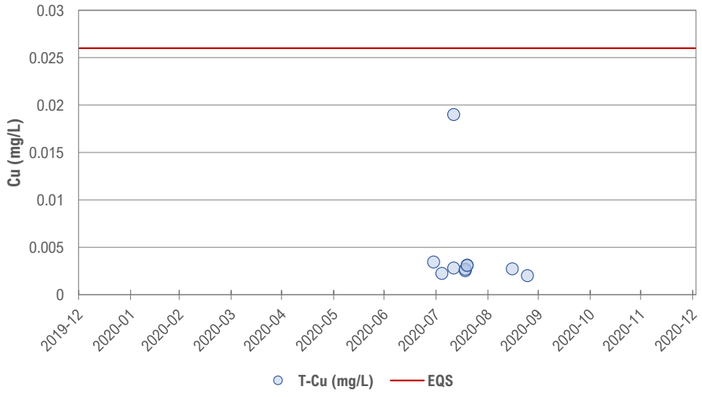

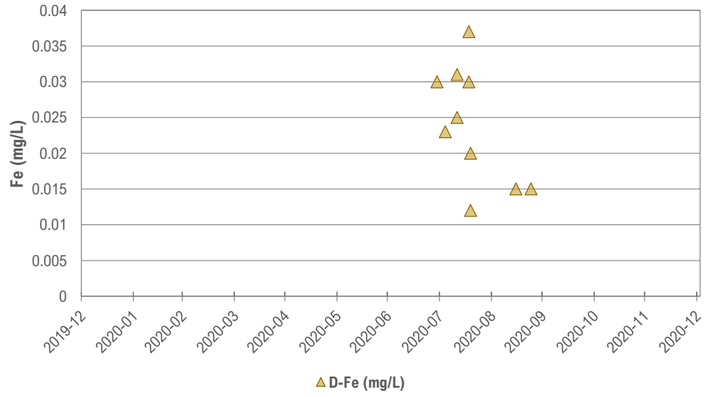

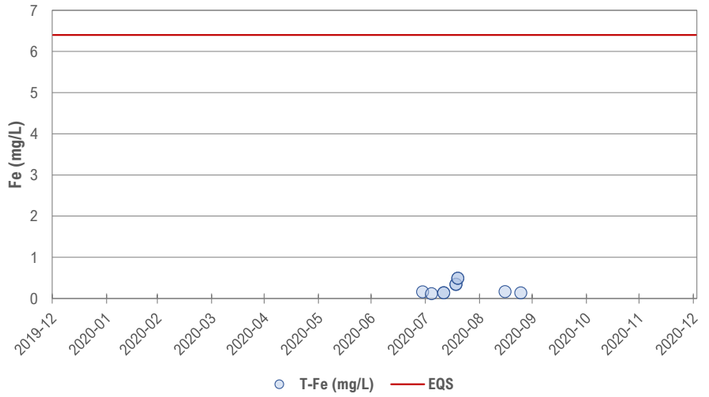

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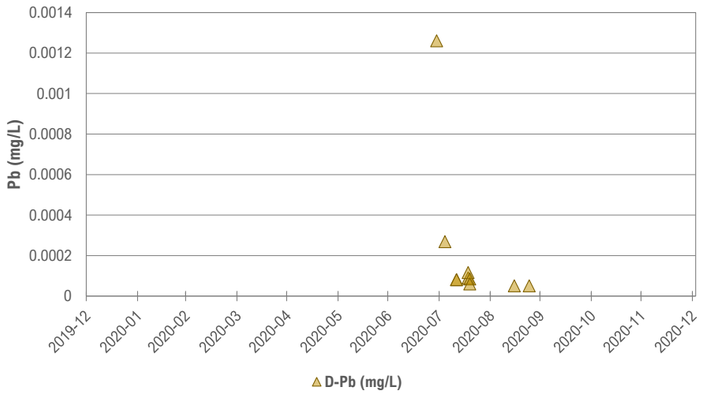

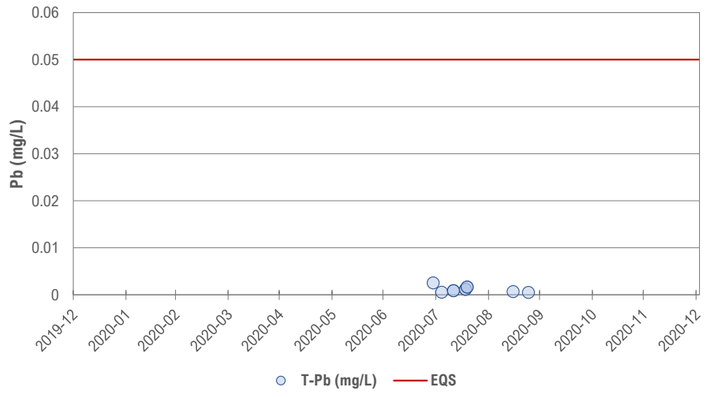

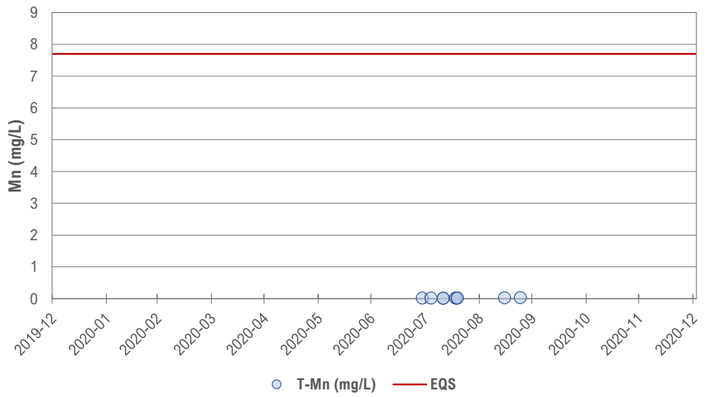

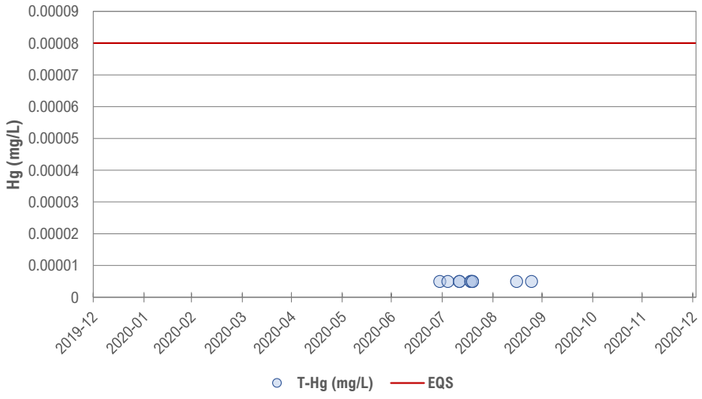

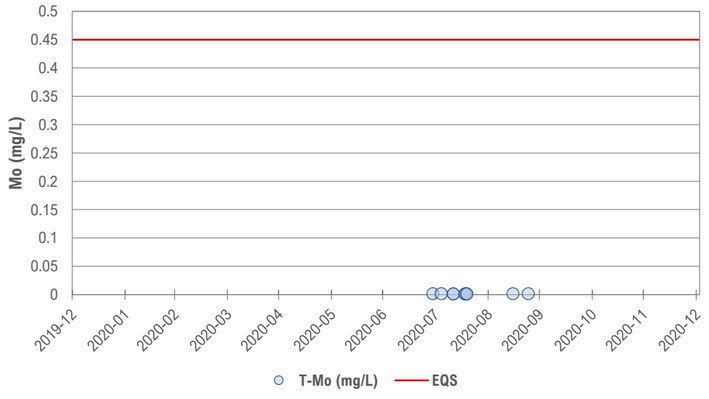

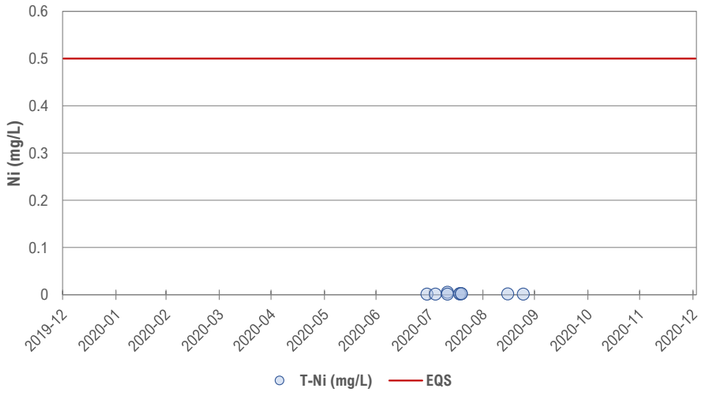

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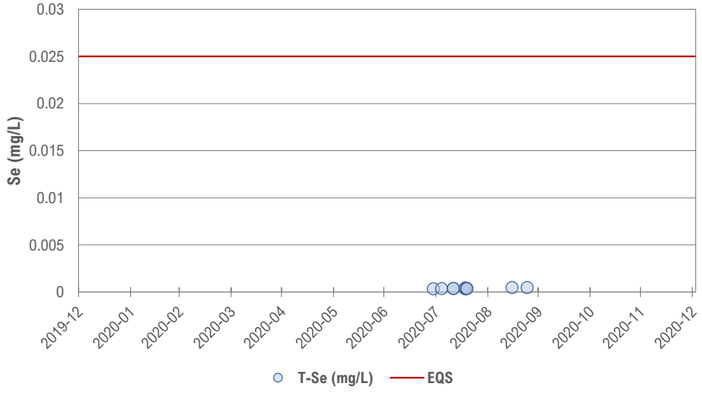

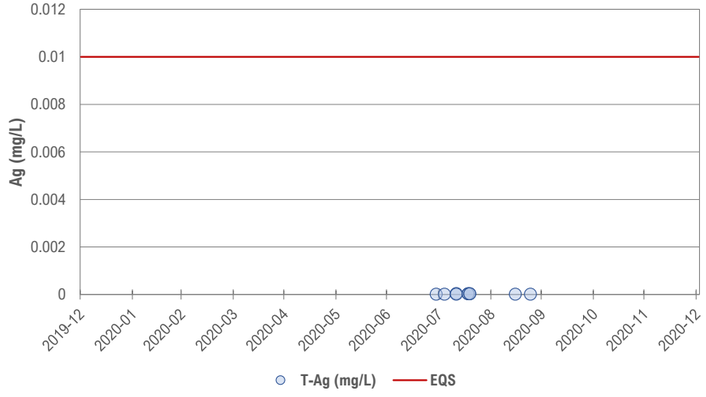

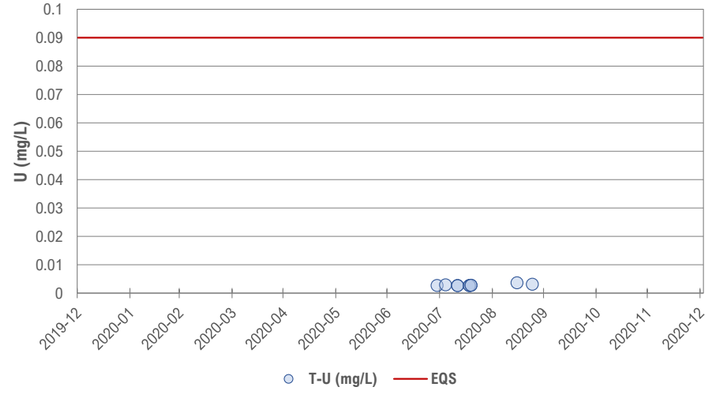

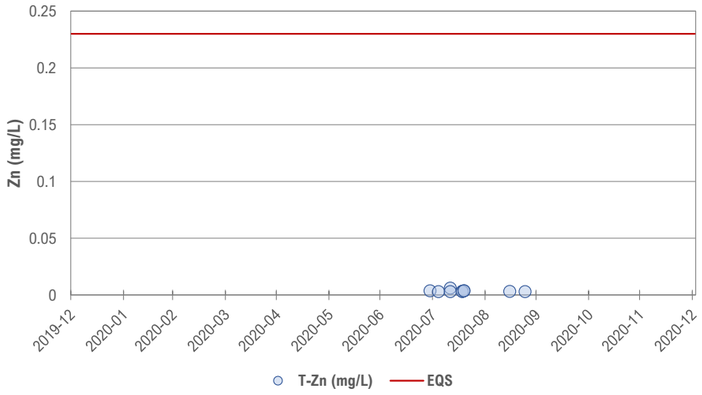

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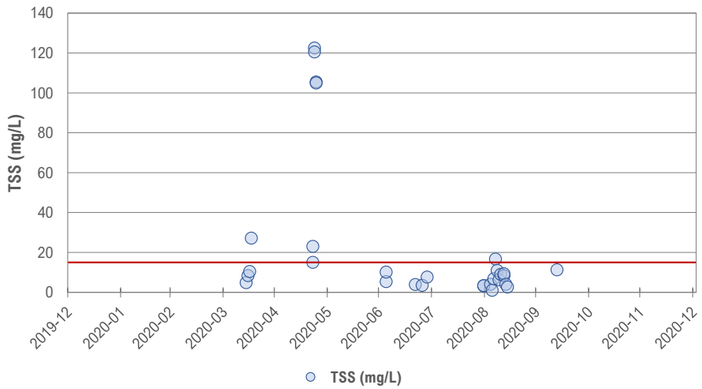

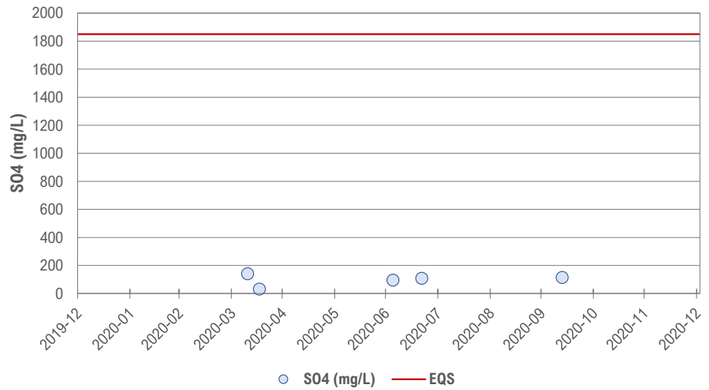

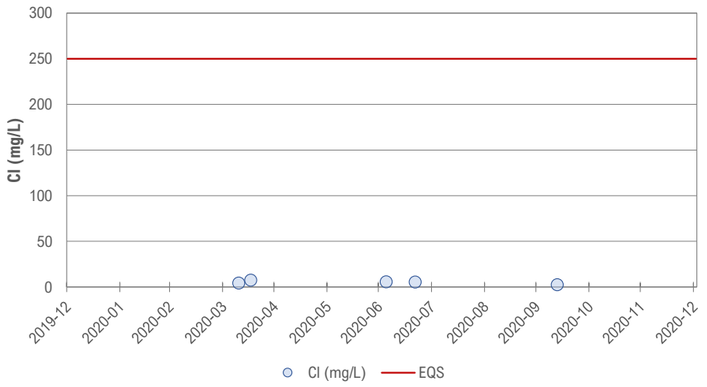

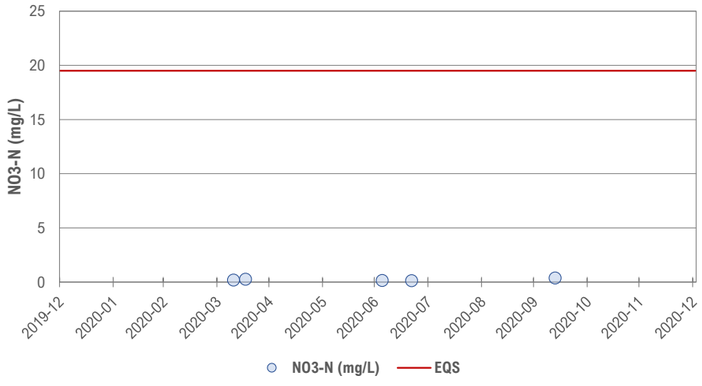

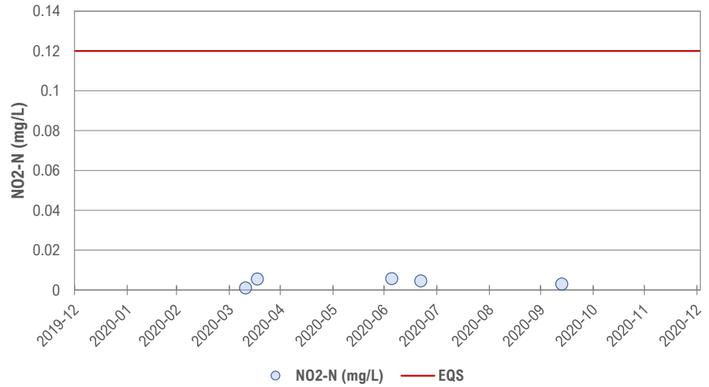

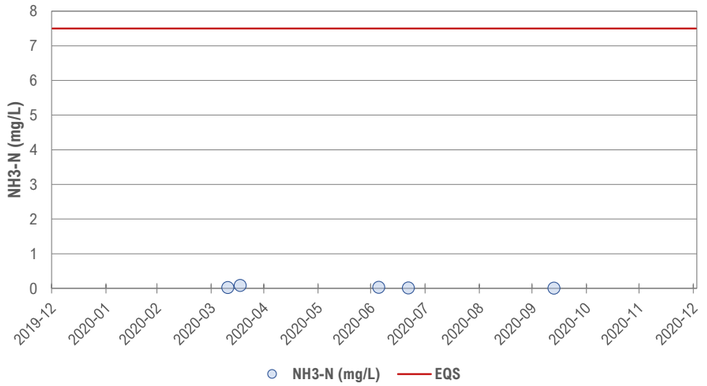

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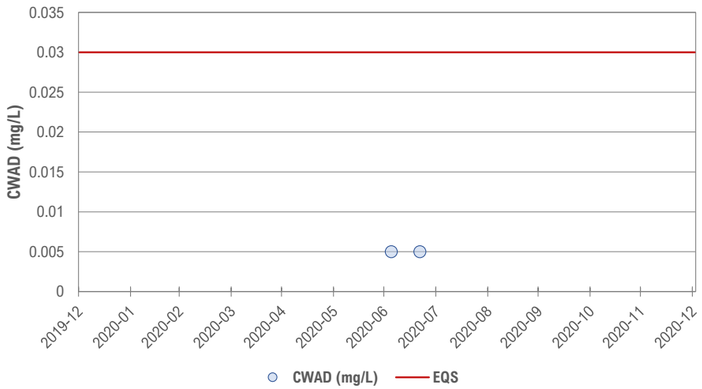

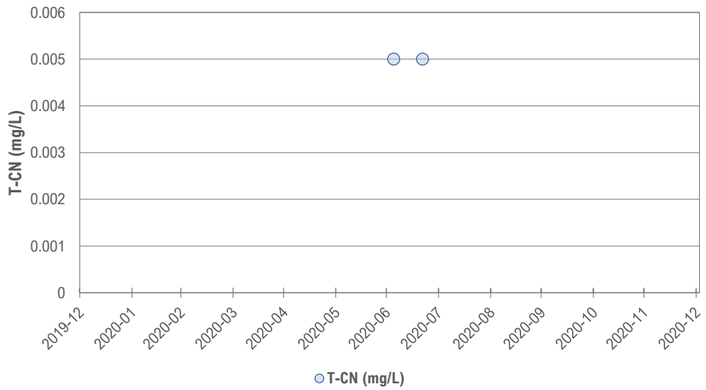

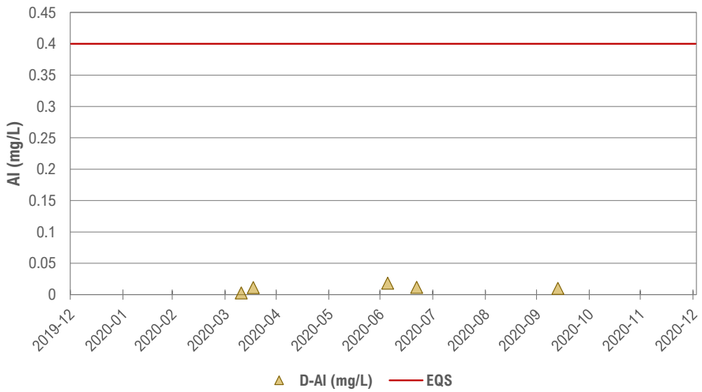

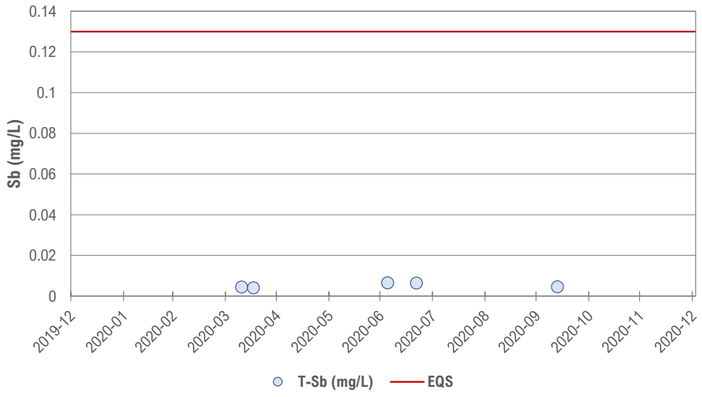

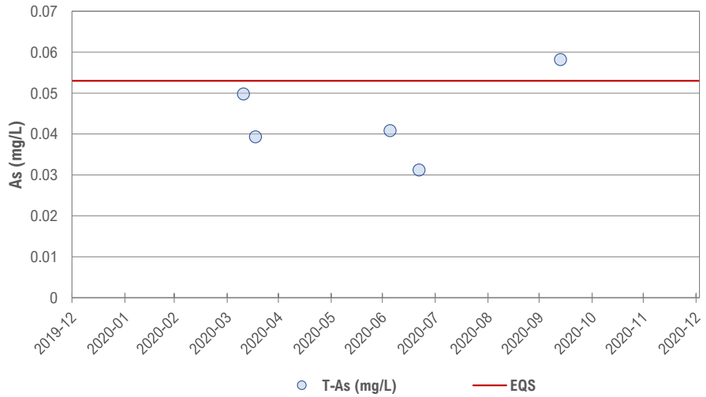

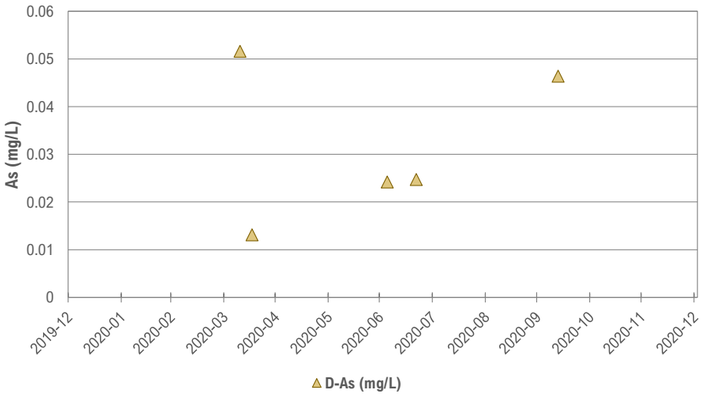

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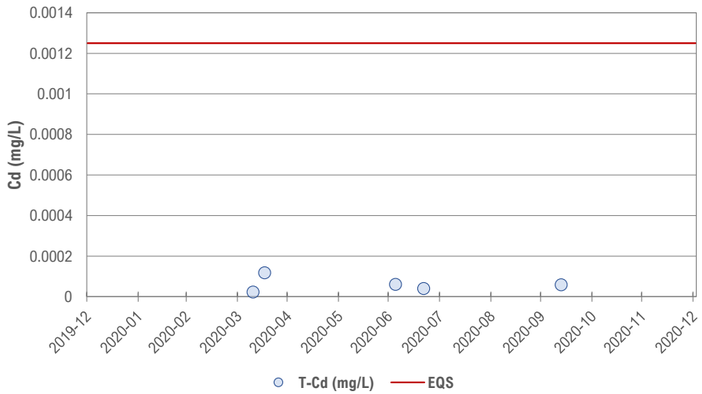

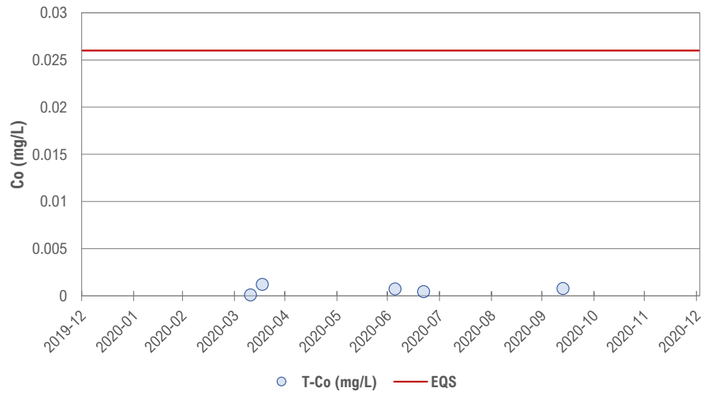

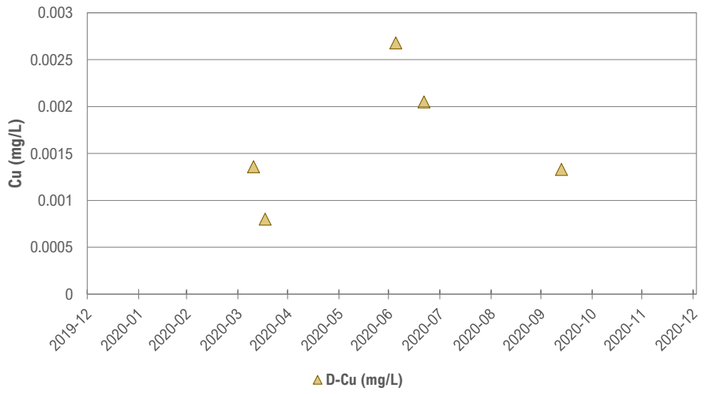

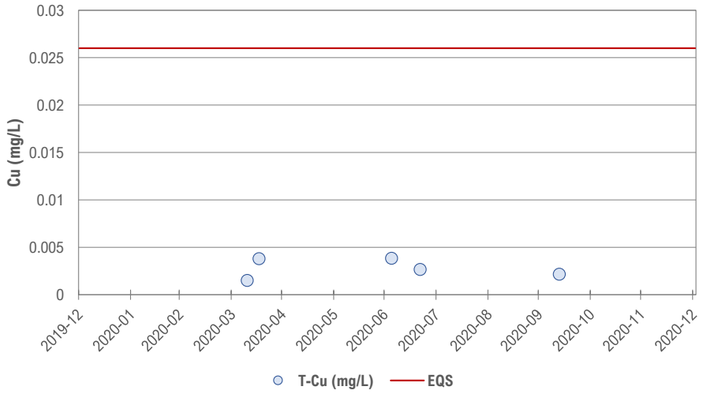

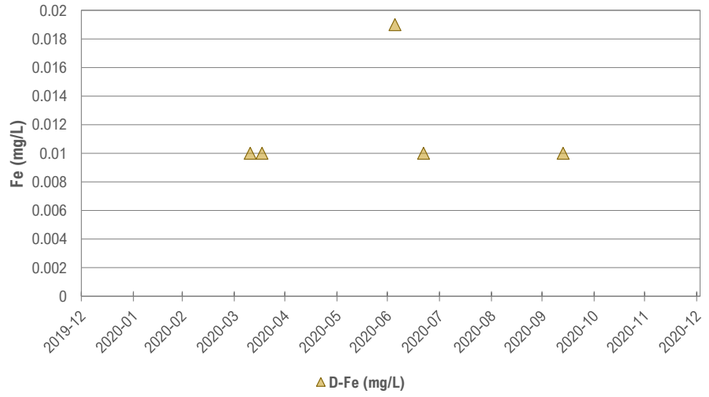

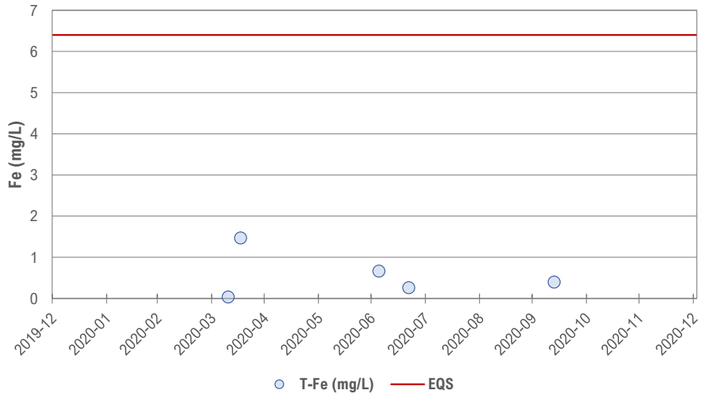

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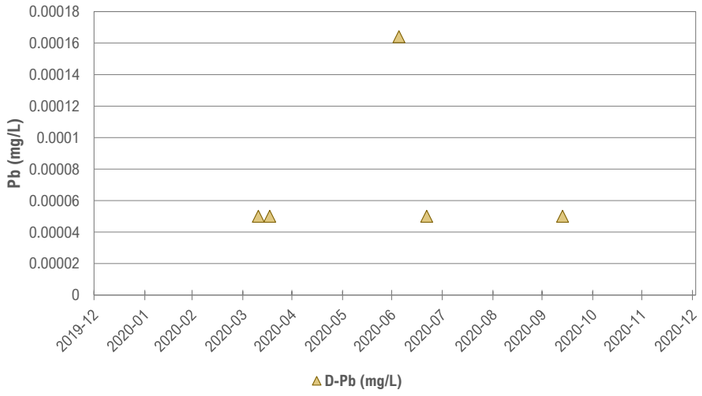

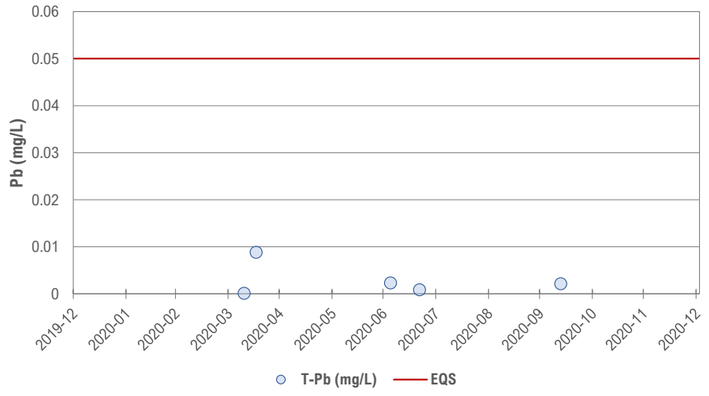

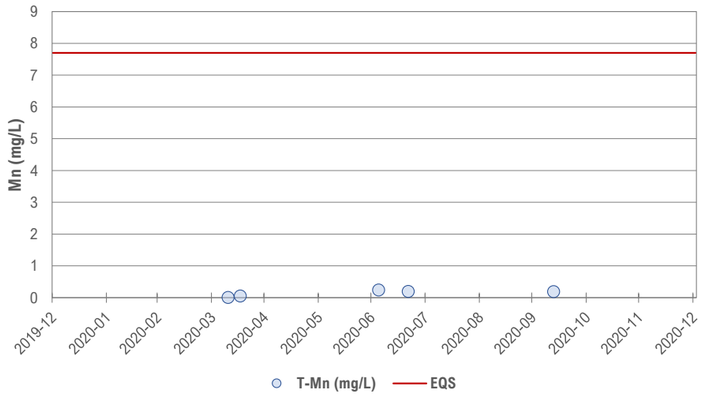

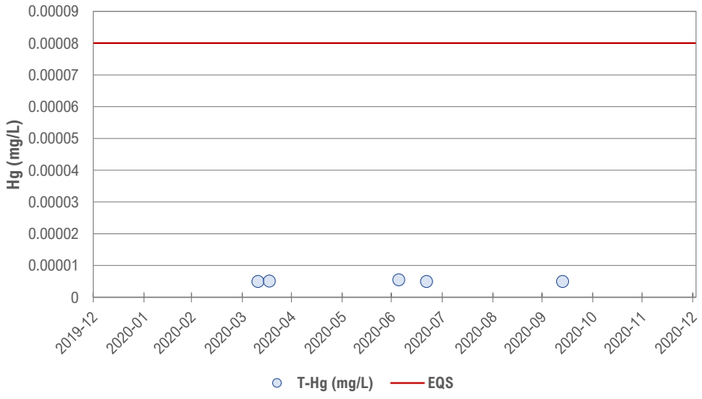

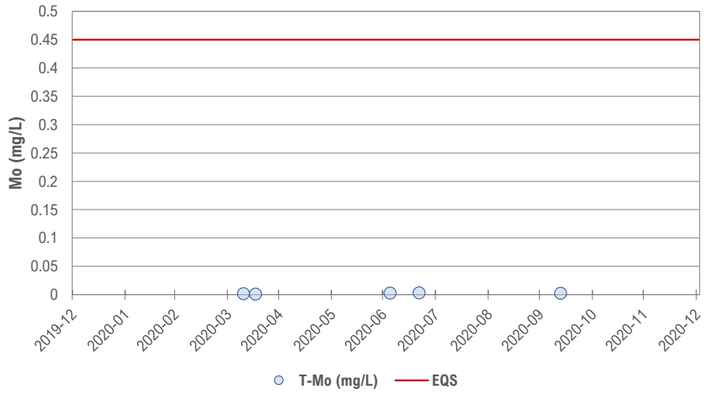

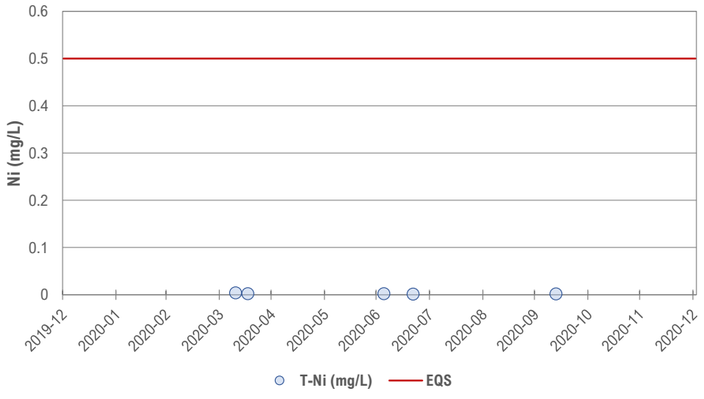

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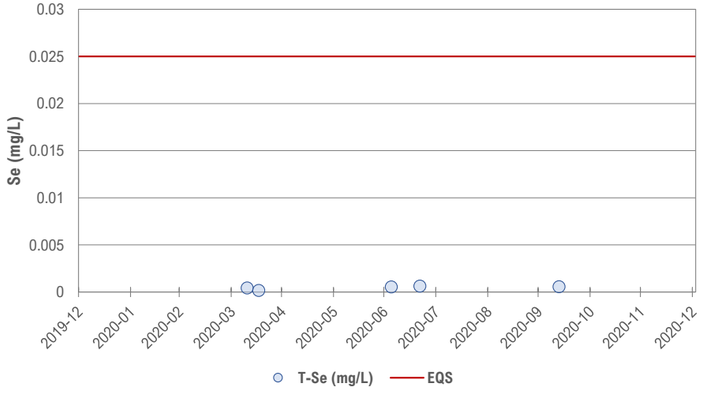

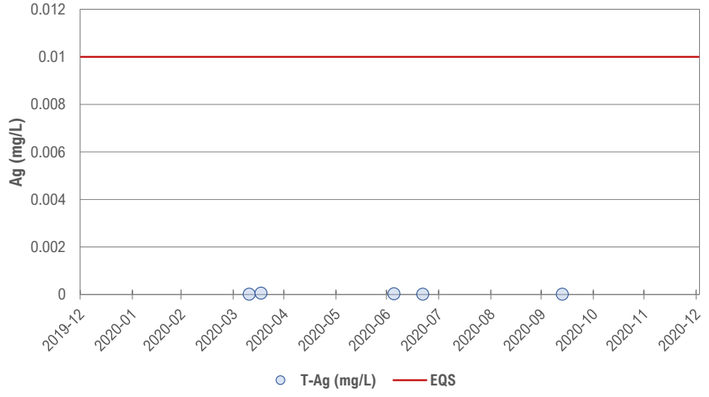

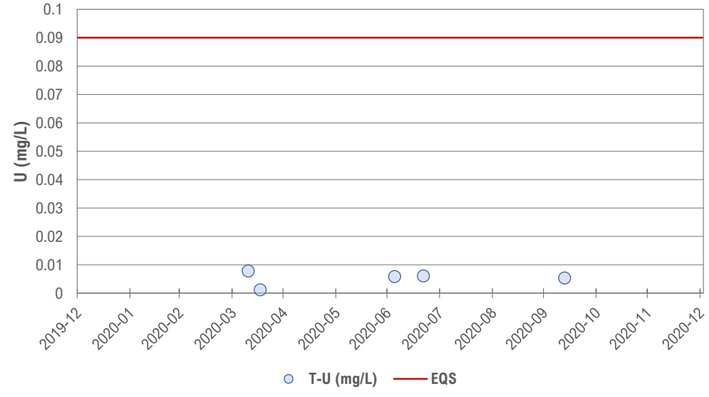

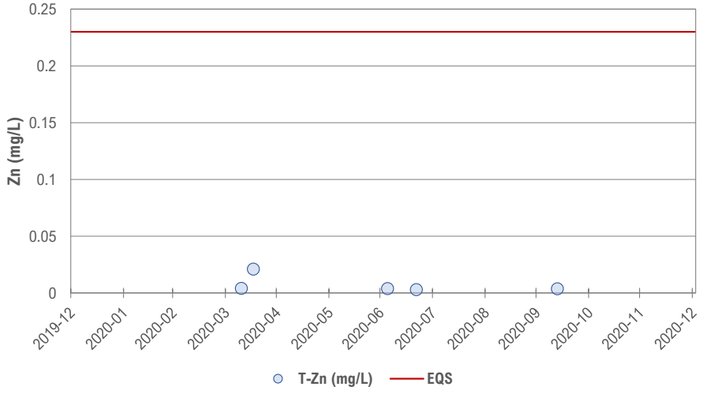

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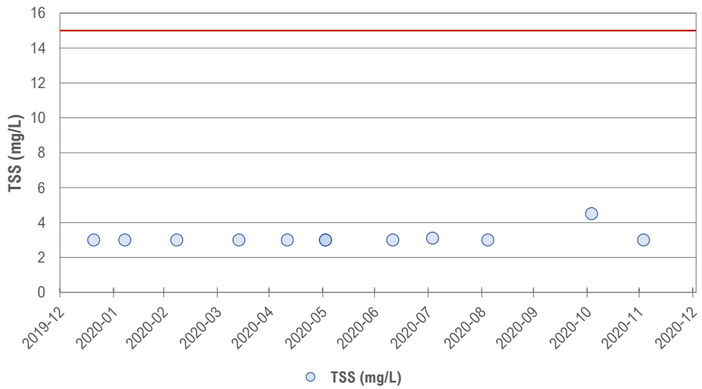

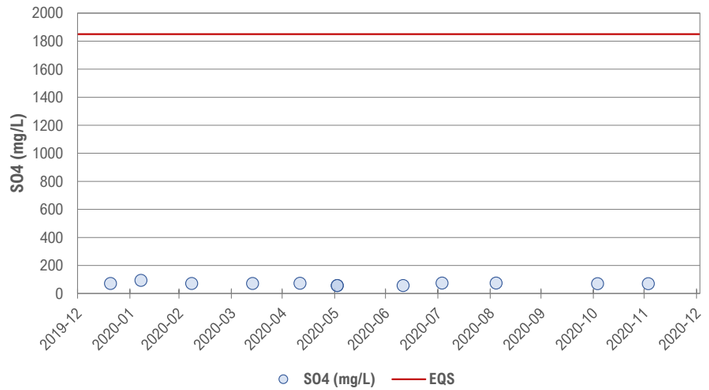

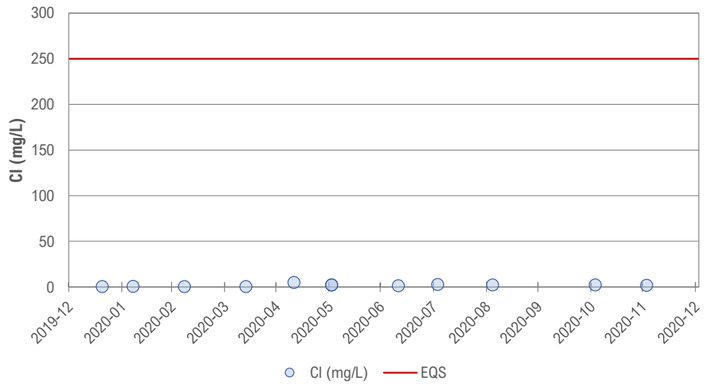

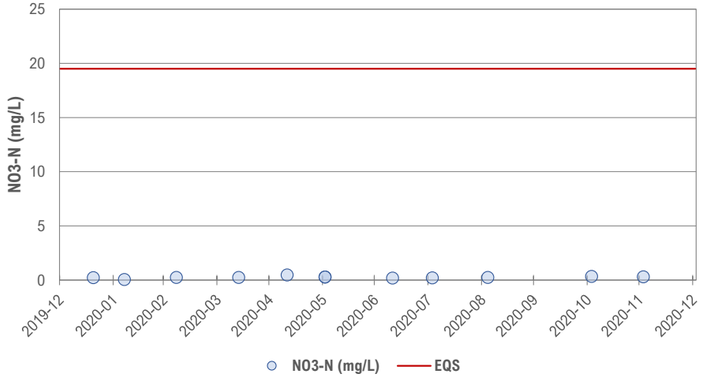

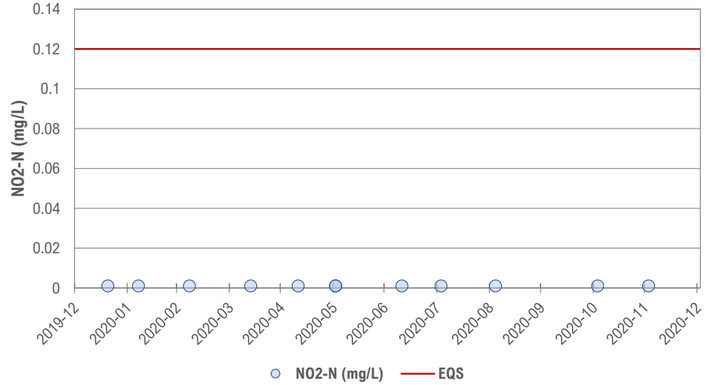

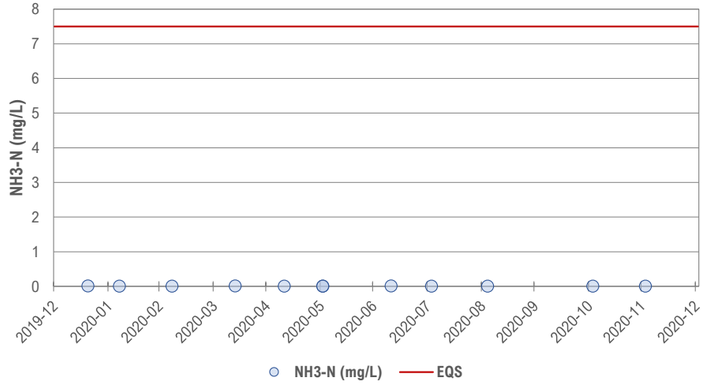

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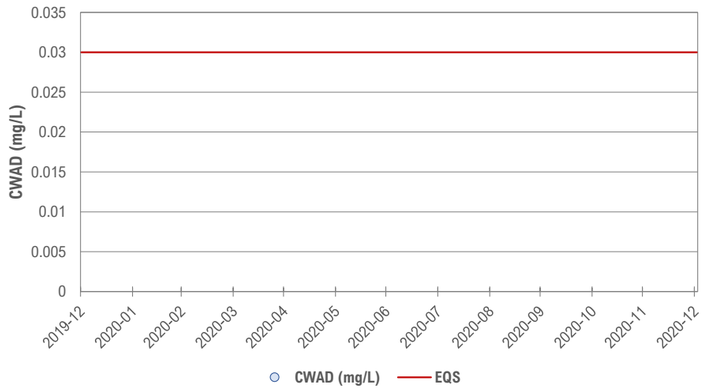

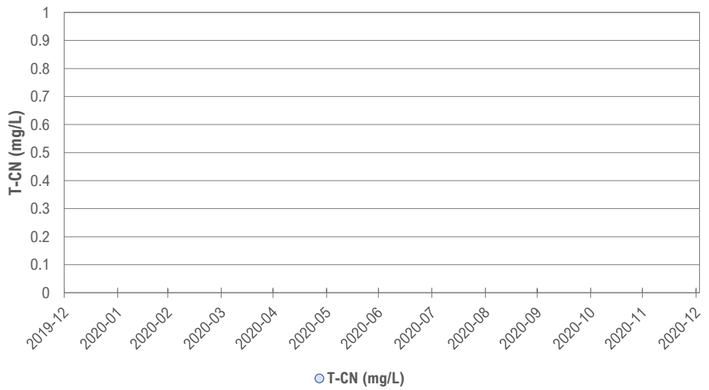

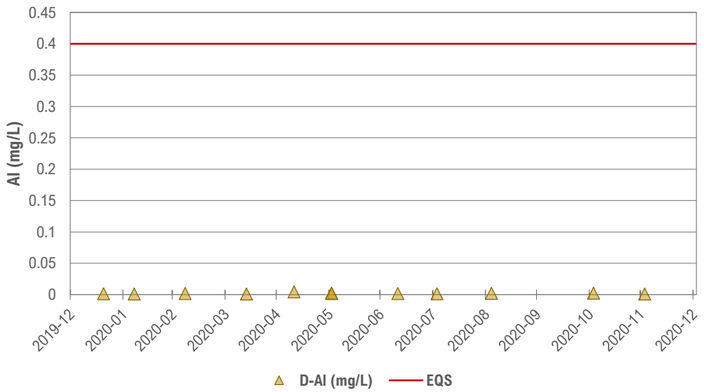

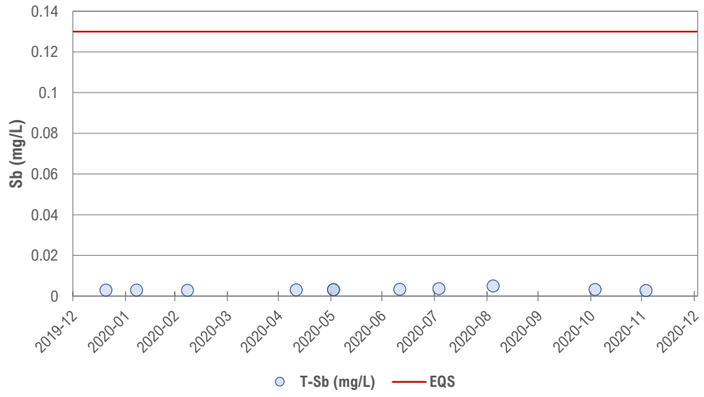

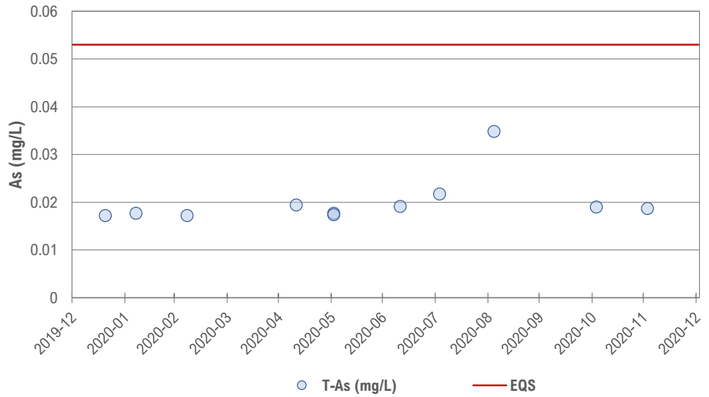

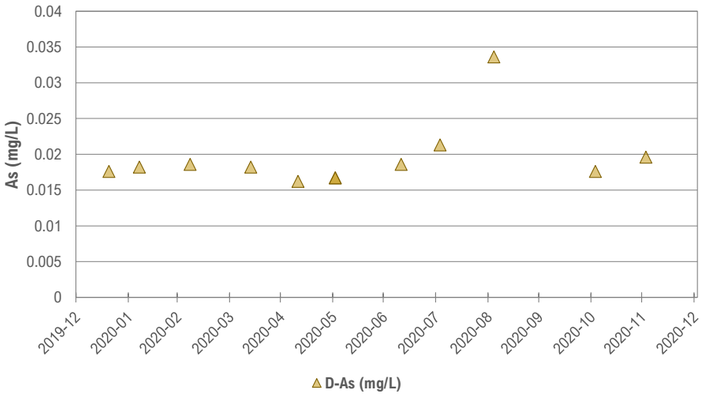

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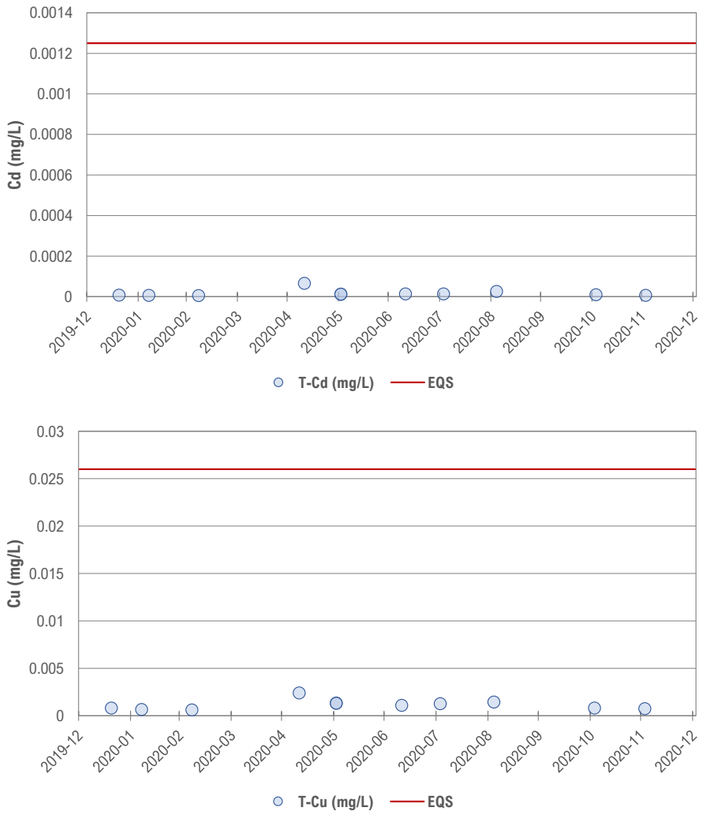

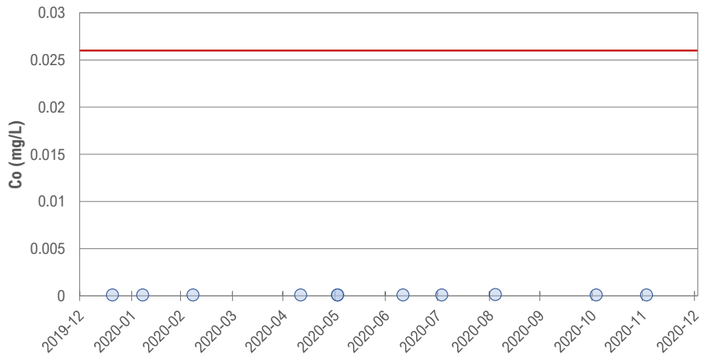

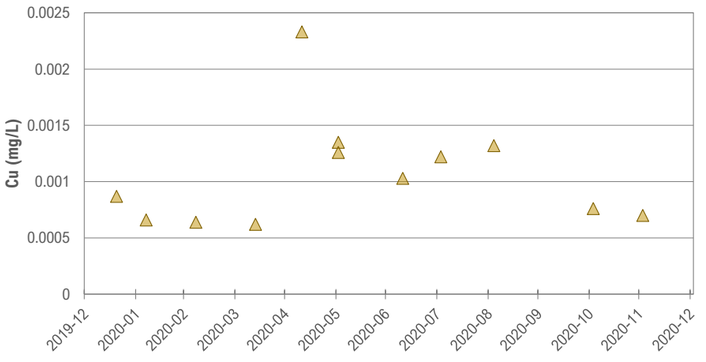

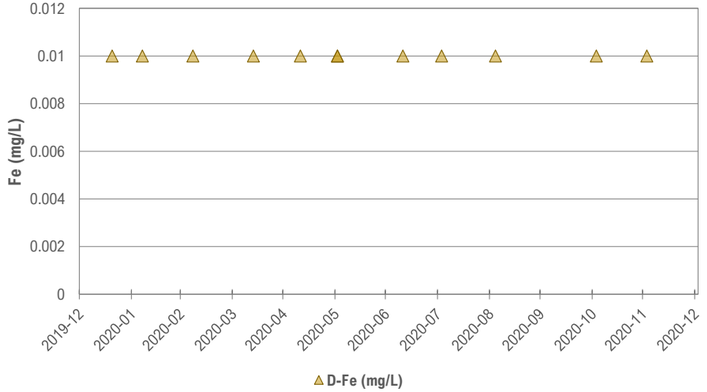

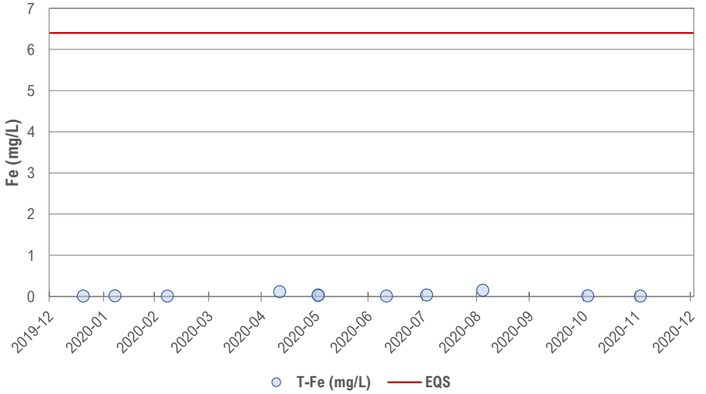

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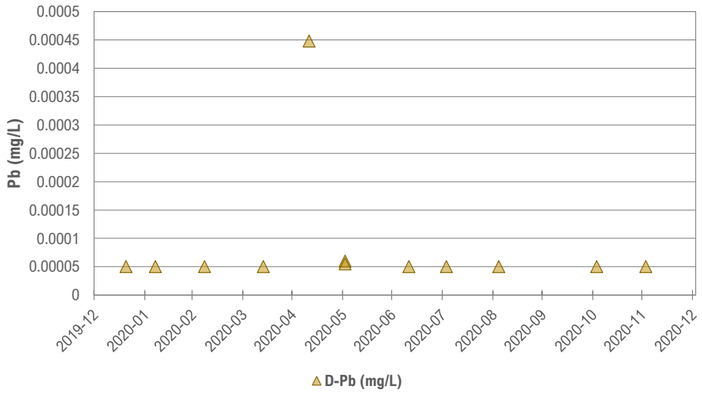

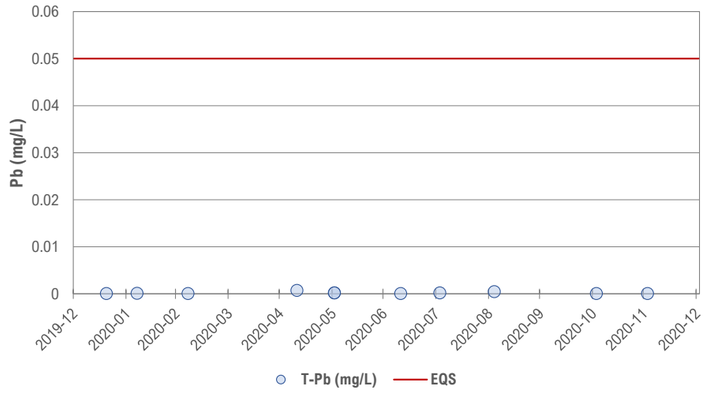

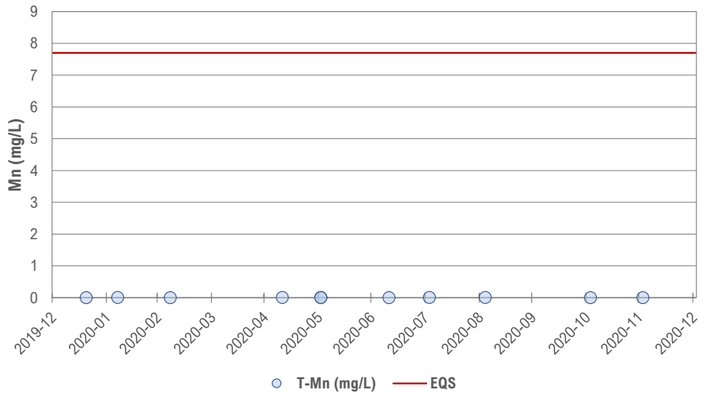

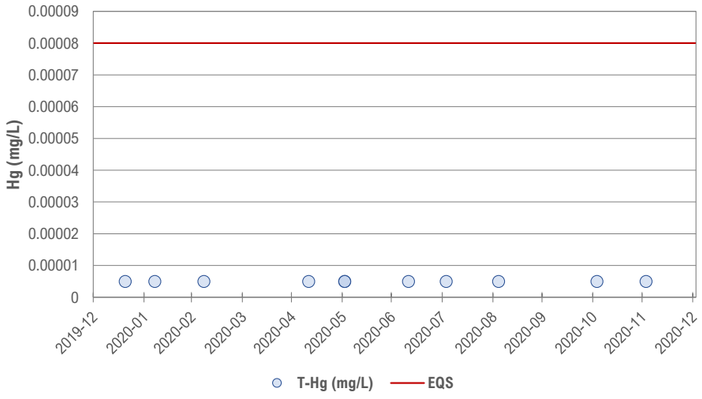

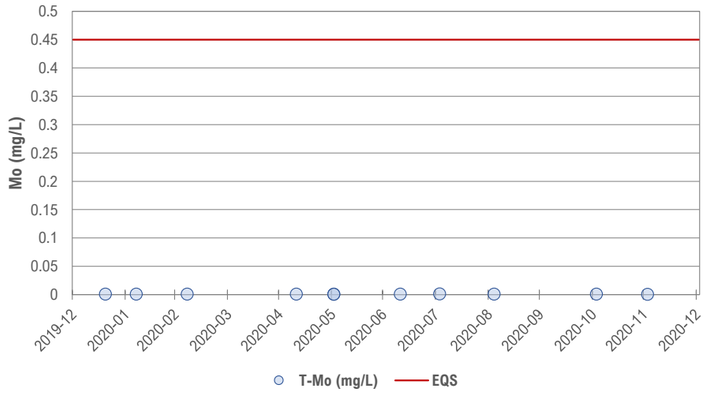

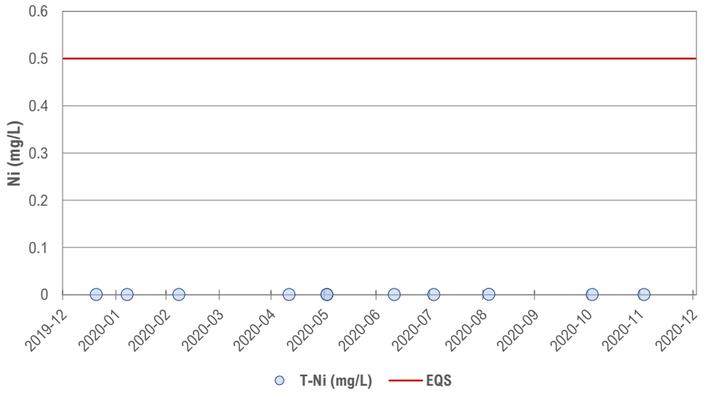

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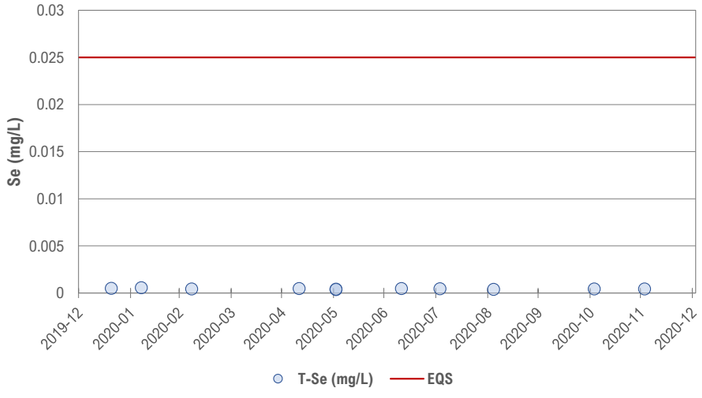

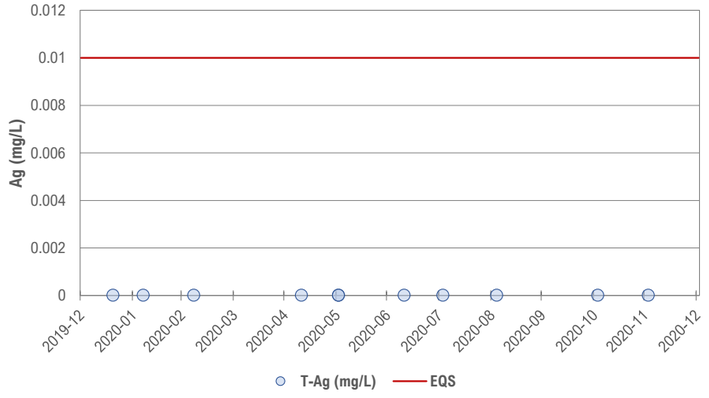

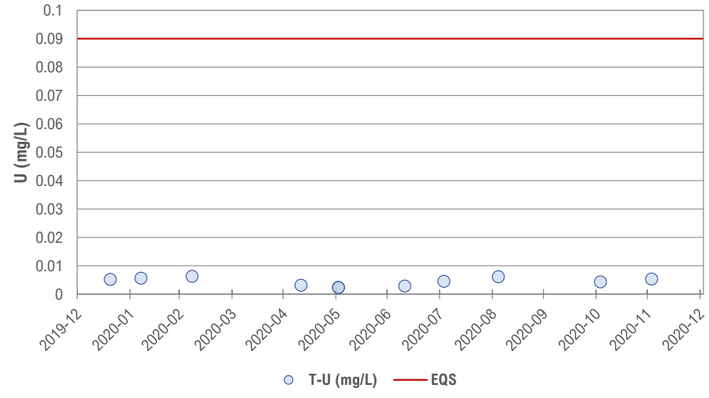

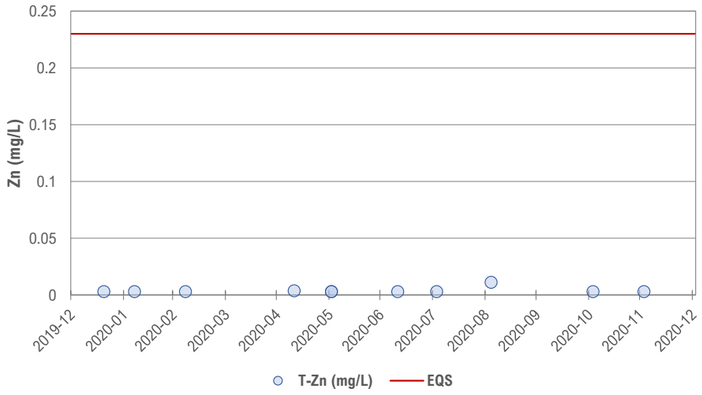

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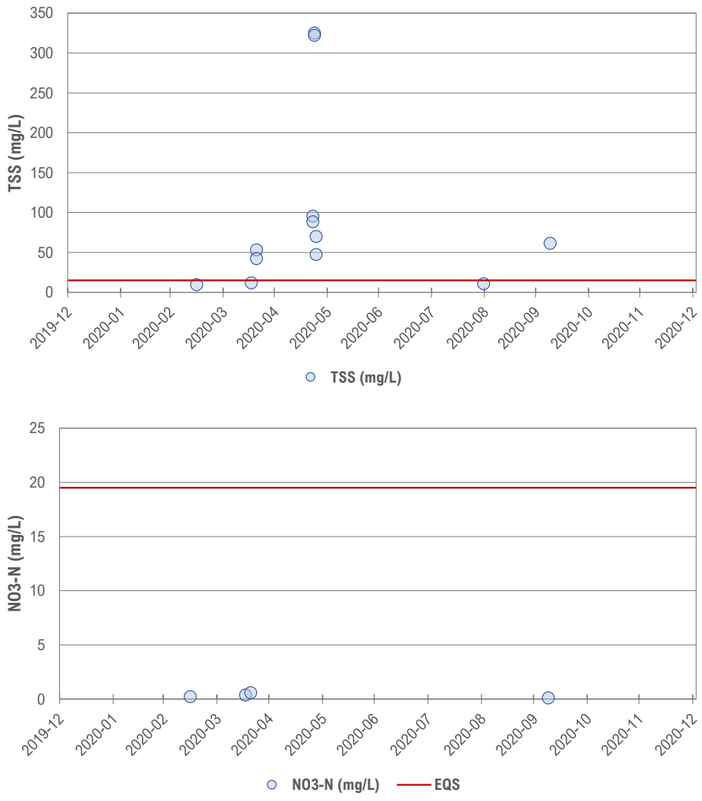

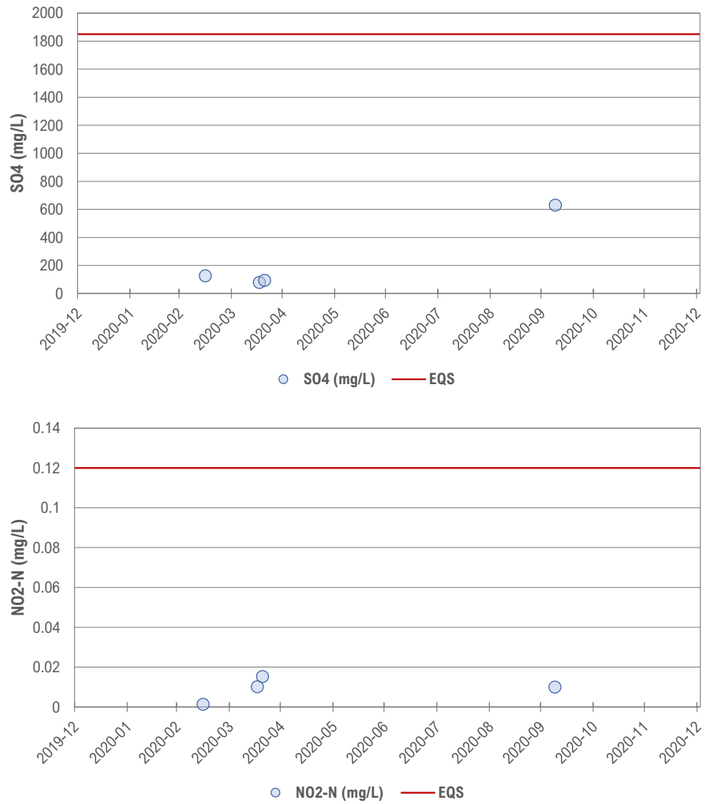

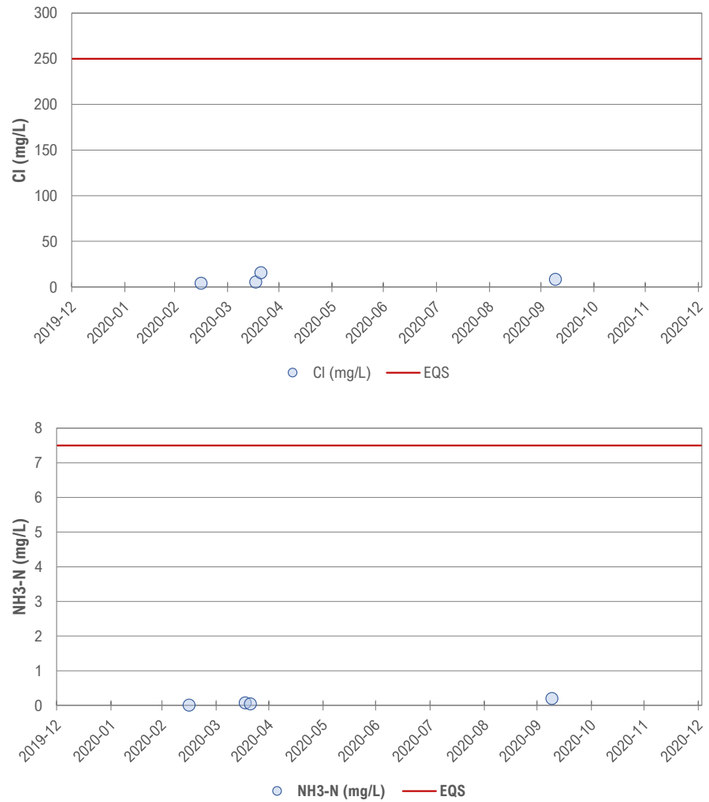

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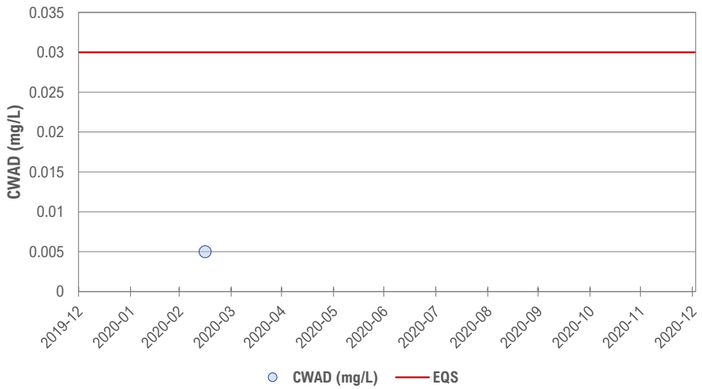

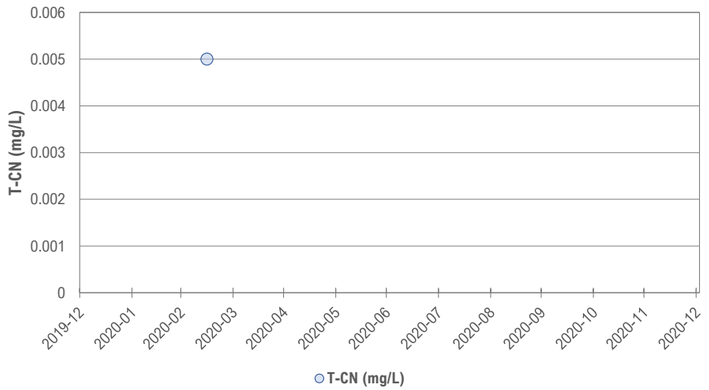

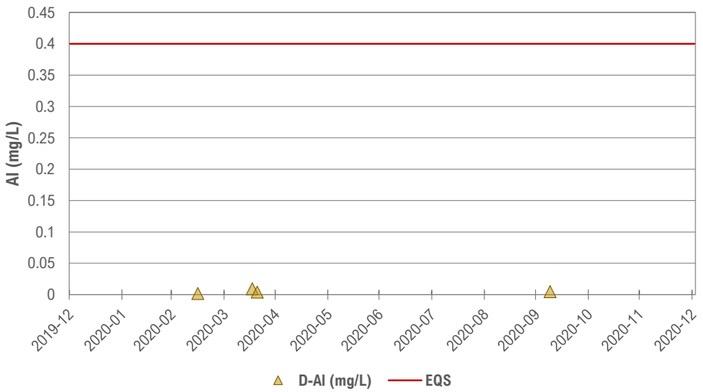

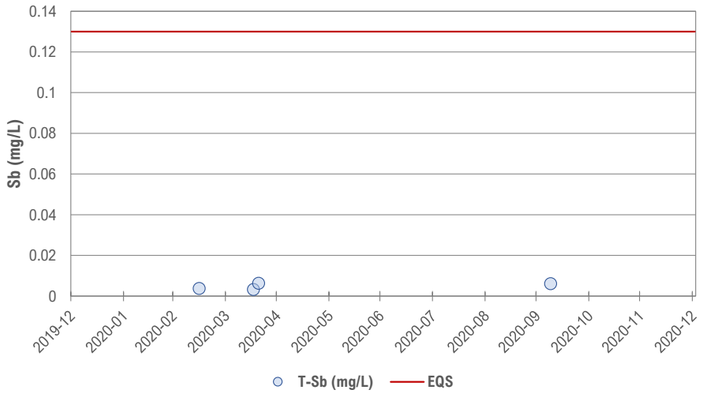

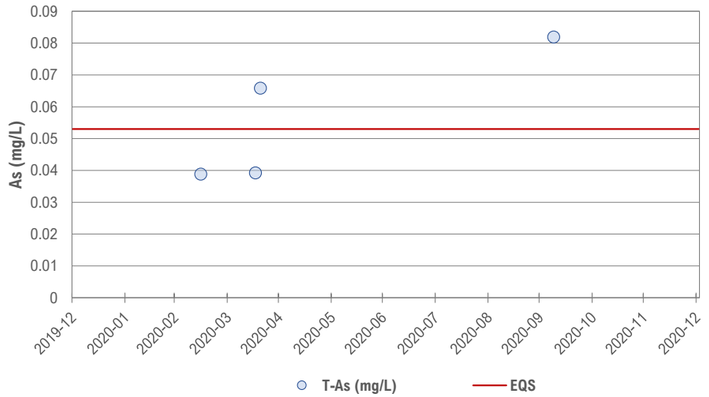

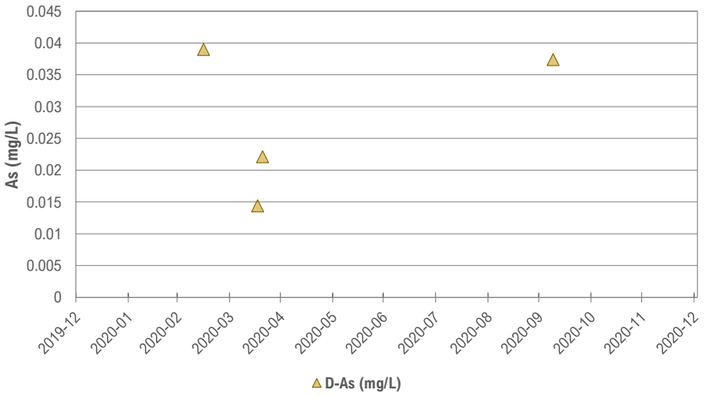

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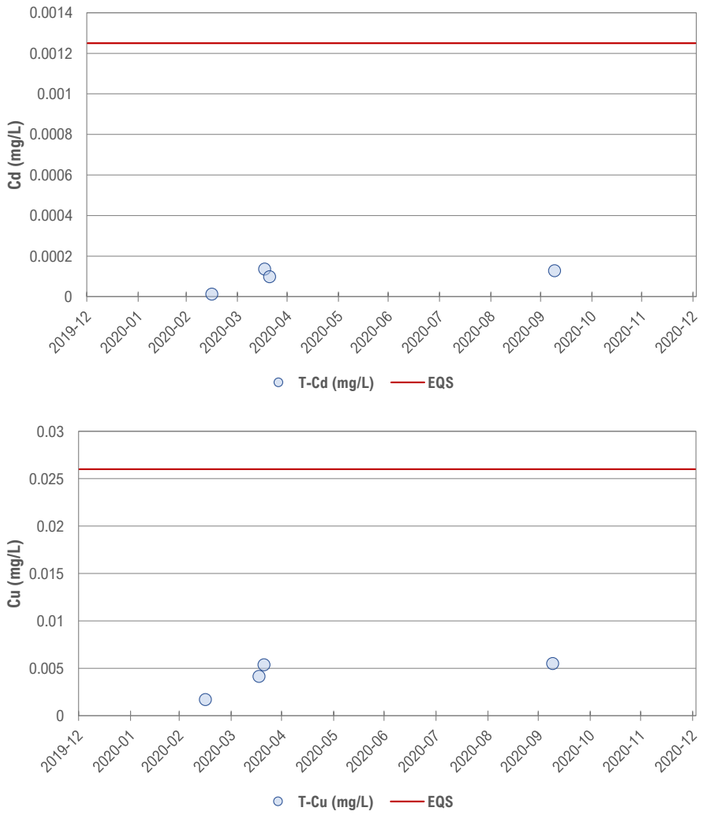

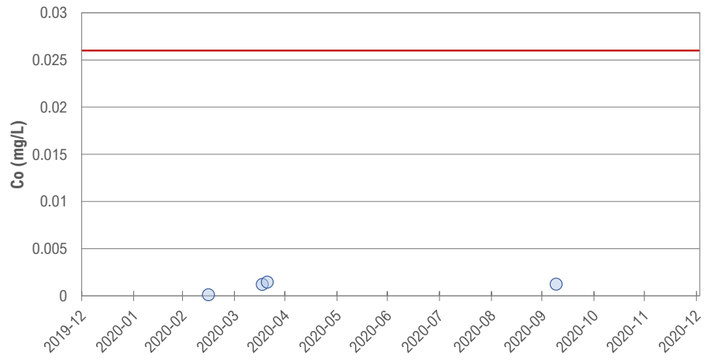

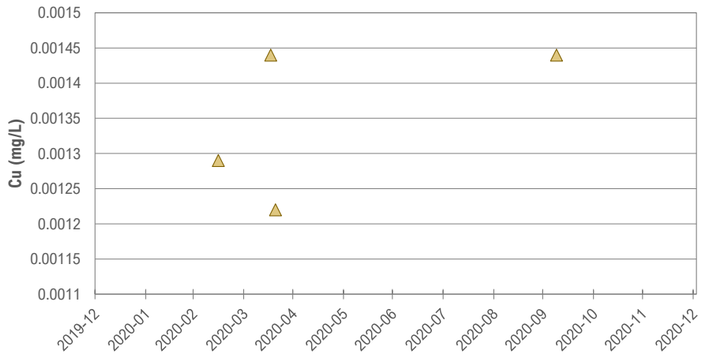

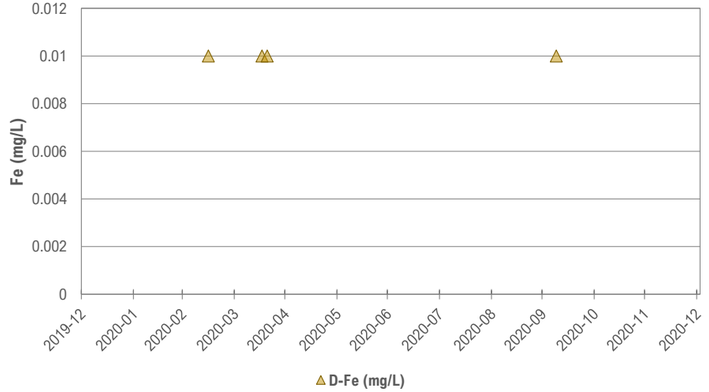

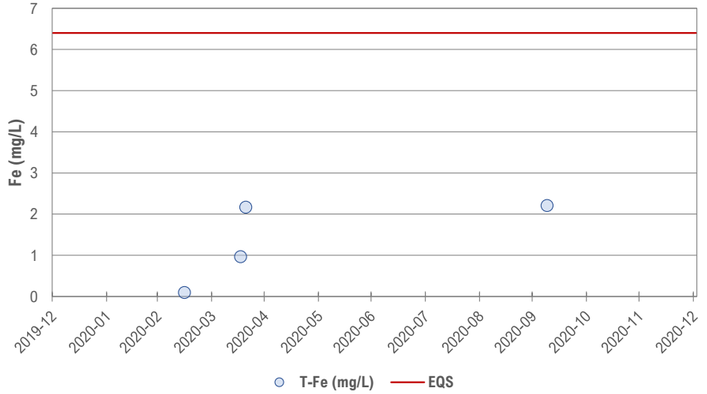

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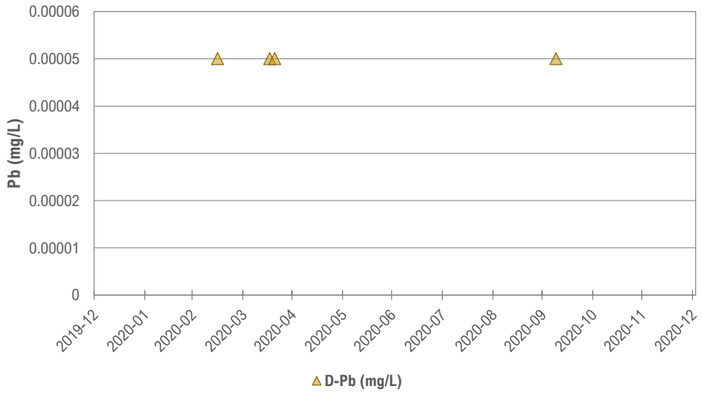

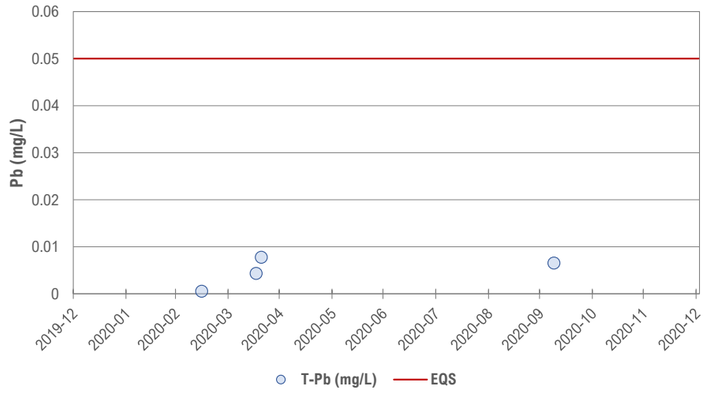

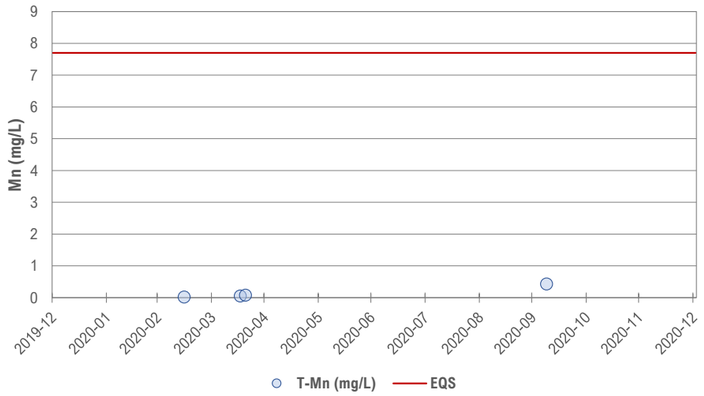

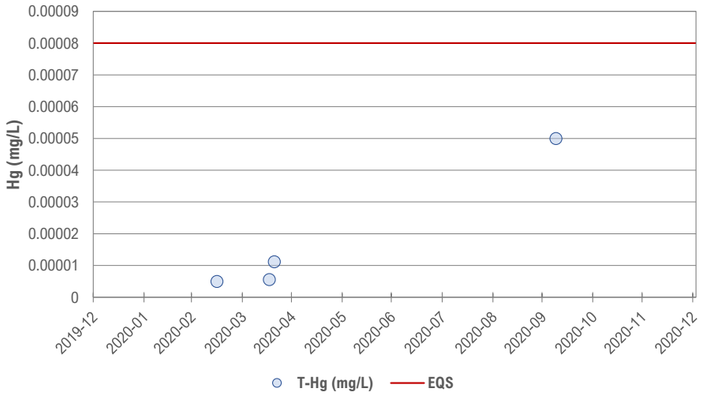

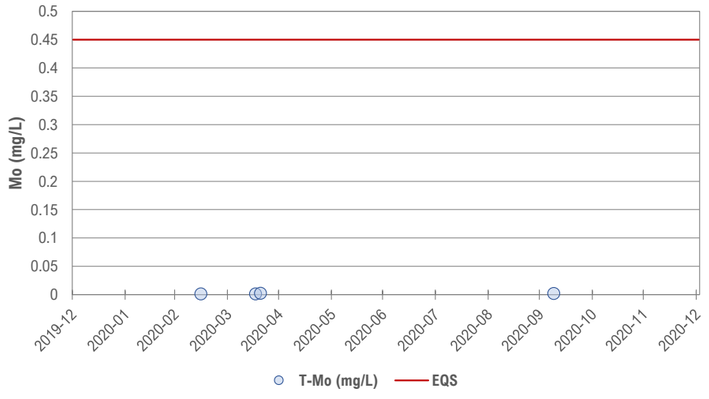

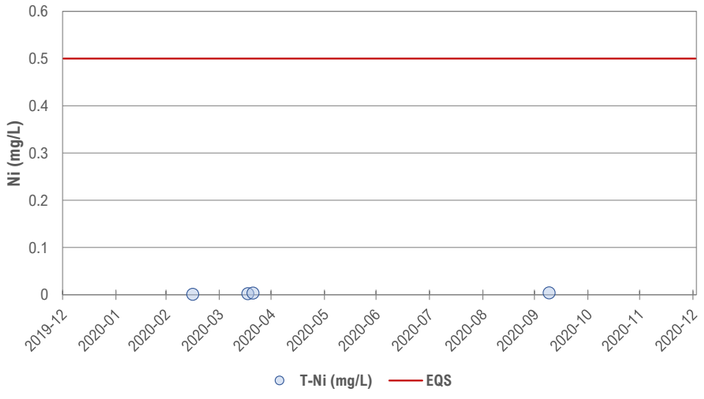

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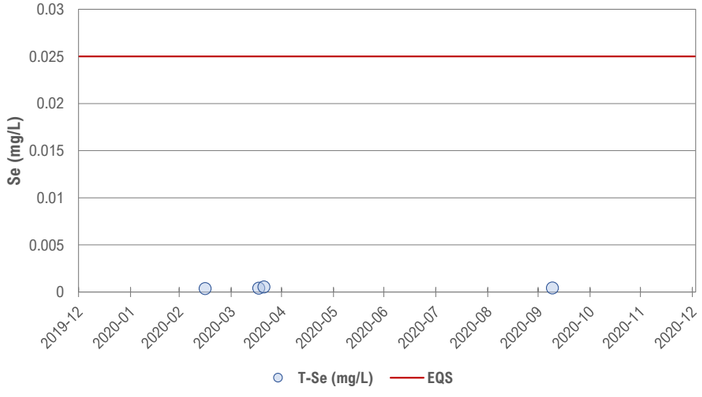

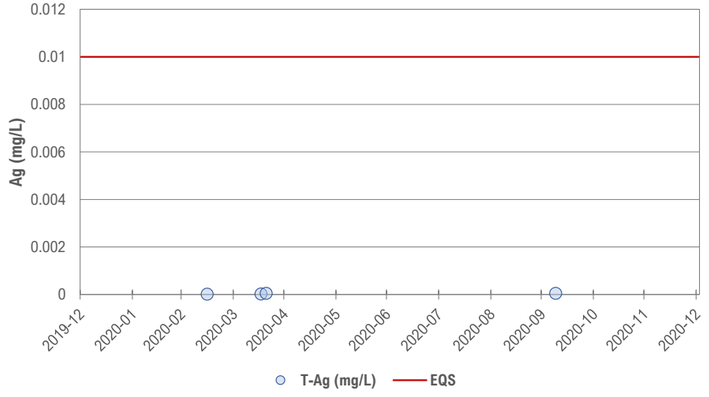

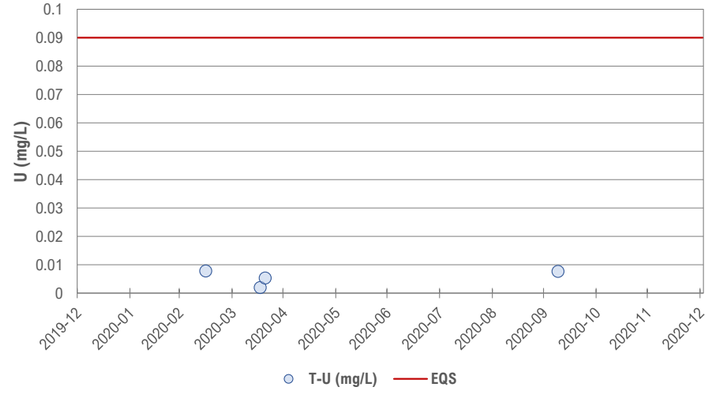

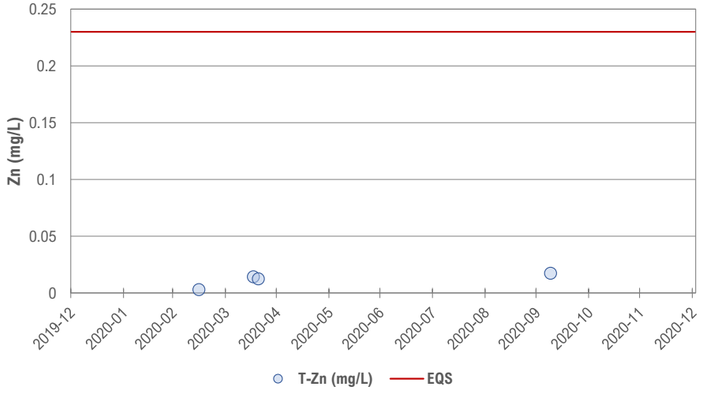

APPENDIX F3

Contact Water Quality Full Dataset

Station ID	Sample Date	Conductivity	Hardness (as	pH (s.u.)	TSS (mg/L)	TDS (mg/L)	Turbidity	Alkalinity,	NH3-N (mg/L)	Br (mg/L)	Cl (mg/L)	F (mg/L)	NO3-N (mg/L)	NO2-N (mg/L)	TKN (mg/L)	T-N (mg/L)	D-O-P (mg/L)	D-P-P (mg/L)	T-P-P (mg/L)	SO4 (mg/L)	CWAD (mg/L)	T-CN (mg/L)	TOC (mg/L)	DOC (mg/L)
Event Pond	2020-02-24	476	230	8.04	13.6		10.2	154	0.0215	0.05	6.6	0.215	0.0325	0.0014	0.261	0.262	0.0051	0.0058		103	0.005	0.005	6.92	6.98
Event Pond	2020-03-16	655	353	7.9	3.9		2.49	199	0.042	0.05	8.08	0.331	0.0842	0.0026	0.374	0.401	0.0034	0.0093		150	0.005	0.005	8.4	8.5
Event Pond	2020-03-16	411.4		8.08			1.68																	
Event Pond	2020-04-08	375.4		8.25																				
Event Pond	2020-04-08	220		7.81				82.8	0.133	0.05	3.94	0.132	0.215	0.0223		0.443	0.001	0.0032		37.9			3.48	2.92
Event Pond	2020-04-08	220		7.81				82.8	0.133	0.05	3.94	0.132	0.215	0.0223		0.443	0.001	0.0032		37.9			3.48	2.92
Event Pond	2020-05-21	299	158	7.93	48.2		176	78.3	0.0219	0.05	4.74	0.135	0.147	0.0047	0.323	0.459	0.0013	0.0053		61.2	0.005	0.005	8.32	8.31
Event Pond	2020-05-21	310		8.19			124.96																	
Event Pond	2020-07-05	311	139	8.12	3.6		9.58	82.7	0.0445	0.05	4.41	0.155	0.0274	0.0045	0.376	0.289	0.0011	0.003		66.1	0.005	0.005	8.09	6.62
Event Pond	2020-07-06	315.8		8.03	4.888889		8.88																	
Event Pond	2020-07-06	315.8		8.03	4		8.88																	
Event Pond	2020-07-15	282.5		8.03			13.57																	
Event Pond	2020-07-15	282.5		8.03			13.57																	
Event Pond	2020-07-16	317	140	8.14	4.5		7.31	82.3	0.0297	0.05	4.24	0.156	0.0558	0.0033	0.213	0.281	0.001	0.0038		66.3	0.005	0.005	5.96	6.45
Event Pond	2020-07-21	315	145	7.95	3		3.98	81.7	0.0232	0.05	4.02	0.165	0.0683	0.0035	0.204	0.267	0.001	0.0025		65.7	0.005	0.005	5.8	5.8
Event Pond	2020-07-21				1.515152																			
Event Pond	2020-07-21	619		8.16			3.99																	
Event Pond	2020-07-23	619		8.14			5.78																	
Event Pond	2020-07-24	620		7.97			4.99																	
Event Pond	2020-07-25	386		8.05	0.25		0.9																	
Event Pond	2020-07-25	622		7.56	0.5		4.85																	
Event Pond	2020-07-27	622		7.65	2.8		4.85																	
Event Pond	2020-07-27	381.3		7.3			2.16																	
Event Pond	2020-07-28	310		8.11	1		3																	
Event Pond	2020-08-03	310.1		8.23	0.4		4.57																	
Event Pond	2020-08-05	311.4		8.29			7.07																	
Event Pond	2020-08-06	302.1		8.29			3.85																	
Event Pond	2020-08-07	320.2		7.89			15.43																	
Event Pond	2020-08-09	207.1		8.08			10.65																	
Event Pond	2020-08-11	304.7		7.98			10.74																	
Event Pond	2020-08-12	305.1		7.88			7.15																	
FDP5	2020-04-20	433	209	8	61.9		147	114	0.0783	0.069	18.4	0.167	0.586	0.0304				0.007	0.0718	86.2			7.09	
FDP5	2020-04-21	400	190	7.91	52.9		160	105	0.109	0.069	16.6	0.134	0.555	0.0307				0.0062	0.0923	74.7			6.51	
FDP5	2020-04-27	280	127	7.79	52.8		168	73.7	0.0187	0.05	8.16	0.092	0.318	0.0127				0.0106	0.0873	51.1			15.4	
FDP-5	2020-04-20	438.9		7.78	100		99.17																	
FDP-5	2020-04-21	393.9		7.53	96.8																			
FDP-5	2020-04-22	352.6		7.47			204.08																	
FDP-5	2020-04-23	329.3		7.61			203.15																	
FDP-5	2020-04-24	361		7.45			148.32																	
FDP-5	2020-04-25	306.3		7.71			148.22																	
FDP-5	2020-04-26	291.3		7.7			138.59																	
FDP-5	2020-04-27	283.6		7.67	81		144.58																	
HLF-UMV	2020-01-19	244	133	7.61	15.3		26.9	49.2	0.005	0.05	0.5	0.246	0.122	0.001				0.002		77.9			0.72	
HLF-UMV	2020-02-06	258	130	7.82	3		1.2	50.2	0.005	0.05	0.5	0.225	0.0286	0.002				0.002		73.1			0.99	
HLF-UMV	2020-03-03	320	150	7.48	3.1		4.05	70.9	0.0074	0.05	0.5	0.221	0.0448	0.001				0.0048		97.4			0.83	
HLF-UMV	2020-03-14	286	112	7.31	9.1		39.5	54.3	0.0056	0.05	0.5	0.219	0.035	0.001				0.0037		76.9			0.62	
HLF-UMV	2020-04-12	174	75.5	7.15	3		10	41.2	0.0232	0.05	0.5	0.235	0.005	0.001				0.002	0.002	45.8			0.66	
HLF-UMV	2020-05-07	315	150	7.37	117		146	70.1	0.0075	0.05	0.5	0.197	0.39	0.001				0.0057	0.103	81.1			3.04	
HLF-UMV	2020-06-01	264	124	7.1	28.5		30.2	49.6	0.005	0.05	0.5	0.225	0.0455	0.001				0.002	0.0358	74.8			0.76	
HLF-UMV	2020-07-06	318	141	7.28	3.8		2.38	65	0.005	0.05	0.5	0.22	0.0692	0.001		0.086	0.004	0.0039	0.0065	90.2			0.92	
HLF-UMV	2020-09-03	329	154	7.11	3		0.48	63.5	0.005	0.05	0.5	0.225	0.0527	0.001				0.0045	0.0047	97.9			1.43	
HLF-UMV	2020-10-04	333	147	7.07	3		0.41	64.1	0.005	0.05	0.5	0.22	0.0467	0.001					0.0039	95.6				
HLF-UMV	2020-10-08	328	148	6.86	3		0.39	61.5	0.0161	0.05	0.5	0.217	0.0474	0.001				0.0049	0.005	96.2			1.19	
HLF-UMV	2020-11-02	330	146	7.23	3		0.4	62.5	0.028	0.05	0.5	0.22	0.0565	0.001				0.0046	0.0058	98.3			0.92	
HLF-UMV	2020-12-02	300	152	7.82	3		0.43	61	0.0092	0.05	0.5	0.218	0.0481	0.001				0.0039	0.0063	99.1			0.76	
HLF-UMV	2020-12-02	296	156	7.81	3		0.43	61.5	0.005	0.05	0.5	0.22	0.049	0.001				0.0047	0.0054	99.1			0.93	
LDSP	2020-04-13	670		7.63																				
LDSP	2020-07-29																							
LDSP	2020-07-29	319	147	8.12	3		3.38	84.6	0.017	0.05	4.09	0.172	0.0825	0.0038		0.264	0.001	0.0032	0.0065	67.2			5.6	
LDSP	2020-07-30	306.8		7.83			6																	
LDSP	2020-07-30																				0.005			
LDSP	2020-07-31	309.5		7.86			35.4																	
LDSP	2020-07-31																				0.005			
LDSP	2020-08-01																				0.005			
LDSP	2020-08-03	310		8.19	1		8.43																	
LDSP	2020-08-03	301	146	8.1	3		2.47	84.6	0.0081	0.05	4.02	0.156	0.074	0.003				0.0047	0.004	66.8			5.64	
LDSP	2020-08-04																				0.005			
LDSP	2020-08-05																				0.005			
LDSP	2020-08-05	306.9		8.22			8.39																	
LDSP	2020-08-06																				0.005			
LDSP	2020-08-06	300		8.3			2.9																	
LDSP	2020-08-07																				0.005			
LDSP	2020-08-07	314.6		7.82			11.74																	
LDSP	2020-08-08																				0.005			
LDSP	2020-08-09																				0.005			
LDSP	2020-08-09																				0.005			
LDSP	2020-08-09	323.8		8.09			3.61																	
LDSP	2020-08-10	328		7.78	2.75		10.98																	
LDSP	2020-08-10	309	142	8.06	3		3.32	82.7	0.0055	0.05	3.89	0.167	0.0815	0.0034				0.003	0.0049	65.2			5.99	
LDSP	2020-08-10	312	144	8.03	3		3.51	81.2	0.0258	0.05	3.86	0.167	0.081	0.0028				0.002	0.0048	65.2			5.28	
LDSP	2020-08-11	297.9		7.9																				
LDSP	2020-08-12	313.6		7.9			6.25																	

Station ID	Sample Date	T-Al (mg/L)	T-Sb (mg/L)	T-As (mg/L)	T-Ba (mg/L)	T-Be (mg/L)	T-Bi (mg/L)	T-B (mg/L)	T-Cd (mg/L)	T-Ca (mg/L)	T-Cr (mg/L)	T-Co (mg/L)	T-Cu (mg/L)	T-Fe (mg/L)	T-Pb (mg/L)	T-Li (mg/L)	T-Mg (mg/L)	T-Mn (mg/L)	T-Hg (mg/L)	T-Mo (mg/L)	T-Ni (mg/L)	T-P (mg/L)	T-K (mg/L)	T-Se (mg/L)	T-Si (mg/L)	T-Ag (mg/L)	T-Na (mg/L)	T-Sr (mg/L)	T-Tl (mg/L)	T-Sn (mg/L)	T-Ti (mg/L)	T-U (mg/L)	T-V (mg/L)	T-Zn (mg/L)
Event Pond	2020-02-24	0.409	0.00568	0.0761	0.0987	0.000027	0.000335	0.01	3.26E-05	55.8	0.00069	0.0003	0.0824	0.393	0.00587	0.0238		0.028	0.000005	0.00144	0.00199	0.05	4.22	0.000346	3.51	0.000012	6.92	0.294	0.000013	0.0007	0.0135	0.00407	0.00112	0.0771
Event Pond	2020-03-16	0.0784	0.0109	0.116	0.0659	0.00002	0.000087	0.01	0.000035	84.3	0.00027	0.0002	0.00237	0.084	0.000201	0.065		0.0296	0.000005	0.00174	0.00267	0.05	6.83	0.000483	6.8	0.00001	10.7	0.52	0.000014	0.00031	0.00184	0.00497	0.0005	0.014
Event Pond	2020-03-16																																	
Event Pond	2020-04-08																																	
Event Pond	2020-04-08	0.793	0.00456	0.0417	0.0259	0.000033	0.000355	0.01	5.39E-05	31.8	0.00096	0.00055	0.00222	0.59	0.00115	0.0224		0.0361	0.000005	0.000956	0.00297	0.05	2.63	0.000349	3.46	0.000025	3	0.166	0.000014	0.00033	0.0166	0.00161	0.00141	0.0097
Event Pond	2020-04-08	0.793	0.00456	0.0417	0.0259	0.000033	0.000355	0.01	5.39E-05	31.8	0.00096	0.00055	0.00222	0.59	0.00115	0.0224		0.0361	0.000005	0.000956	0.00297	0.05	2.63	0.000349	3.46	0.000025	3	0.166	0.000014	0.00033	0.0166	0.00161	0.00141	0.0097
Event Pond	2020-05-21	3.33	0.00998	0.184	0.087	0.000226	0.00184	0.01	0.000232	41.4	0.0051	0.00319	0.0144	6.34	0.0187	0.0159		0.143	1.82E-05	0.00176	0.0084	0.072	3.34	0.000433	7.14	0.000152	3.99	0.206	0.000066	0.00026	0.0904	0.00303	0.00672	0.0332
Event Pond	2020-05-21																																	
Event Pond	2020-07-05	0.252	0.0049	0.0375	0.0392	0.00002	0.000135	0.01	3.74E-05	36.3	0.00039	0.00034	0.00267	0.358	0.00126	0.0146		0.0228	0.000005	0.00168	0.00183	0.05	2.75	0.000328	1.95	0.000014	3.8	0.19	0.00001	0.0001	0.00754	0.00304	0.00062	0.003
Event Pond	2020-07-06																																	
Event Pond	2020-07-06																																	
Event Pond	2020-07-15																																	
Event Pond	2020-07-15																																	
Event Pond	2020-07-16	0.253	0.00494	0.0347	0.0368	0.00002	0.000112	0.01	3.29E-05	35.9	0.00039	0.00032	0.00268	0.374	0.000986	0.0152		0.0209	0.000005	0.00163	0.00184	0.05	2.9	0.000396	2.49	0.000017	3.7	0.184	0.000012	0.0001	0.00593	0.00307	0.00058	0.003
Event Pond	2020-07-21	0.203	0.00459	0.0308	0.0373	0.00002	0.000055	0.01	0.000029	37.5	0.0003	0.00024	0.0023	0.194	0.000543	0.0158		0.022	0.000005	0.00172	0.00164	0.05	2.89	0.000322	2.5	0.000012	3.58	0.182	0.00001	0.0001	0.00429	0.00298	0.0005	0.003
Event Pond	2020-07-21																																	
Event Pond	2020-07-21																																	
Event Pond	2020-07-23																																	
Event Pond	2020-07-24																																	
Event Pond	2020-07-25																																	
Event Pond	2020-07-25																																	
Event Pond	2020-07-27																																	
Event Pond	2020-07-27																																	
Event Pond	2020-07-28																																	
Event Pond	2020-08-03																																	
Event Pond	2020-08-05																																	
Event Pond	2020-08-06																																	
Event Pond	2020-08-07																																	
Event Pond	2020-08-09																																	
Event Pond	2020-08-11																																	
Event Pond	2020-08-12																																	
FDP5	2020-04-20	2.36	0.0119	0.142	0.0804	0.00017	0.00202	0.01	0.000222	56.6	0.00368	0.00315	0.011	4.36	0.0174	0.0095	16.4	0.176	1.92E-05	0.00432	0.00719	0.062	4.42	0.000739	6.48	0.000115	5.83	0.307		0.0001	0.0716	0.00614	0.00456	0.0314
FDP5	2020-04-21	2.77	0.012	0.167	0.085	0.000213	0.00203	0.01	0.000249	54.2	0.00438	0.00333	0.0127	5.08	0.0189	0.0108	13.1	0.202	2.03E-05	0.00416	0.0077	0.08	4.44	0.000782	6.7	0.000135	4.94	0.263		0.00015	0.0822	0.00567	0.00548	0.0306
FDP5	2020-04-27	3.71	0.0124	0.226	0.0891	0.000292	0.00272	0.01	0.00032	34.7	0.00523	0.00385	0.0176	6.95	0.0285	0.0088	9.86	0.194	2.98E-05	0.00271	0.01	0.081	3.53	0.000525	8.04	0.000207	3.09	0.185		0.00015	0.0988	0.00332	0.00707	0.0458
FDP-5	2020-04-20																																	
FDP-5	2020-04-21																																	
FDP-5	2020-04-22																																	
FDP-5	2020-04-23																																	
FDP-5	2020-04-24																																	
FDP-5	2020-04-25																																	
FDP-5	2020-04-26																																	
FDP-5	2020-04-27																																	
HLF-UMV	2020-01-19	0.0111	0.00916	0.0855	0.0264	0.000036	0.00005	0.01	3.68E-05	29	0.0001	0.00208	0.0005	6.33	0.000081	0.0605	14.7	0.275	0.000005	0.000084	0.00972	0.05	2.8	0.000192	10.1	0.00001	2.93	0.18		0.0001	0.00037	0.000149	0.0005	0.0268
HLF-UMV	2020-02-06	0.0048	0.00198	0.024	0.0197	0.00002	0.00005	0.01	2.47E-05	29.6	0.0001	0.00212	0.0005	0.684	0.00005	0.0549	13.7	0.286	0.000005	0.000145	0.0112	0.05	2.64	0.000085	9.27	0.00001	2.89	0.168		0.0001	0.0003	0.000084	0.0005	0.0157
HLF-UMV	2020-03-03	0.0281	0.00247	0.0668	0.0246	0.00002	0.00005	0.01	4.26E-05	33.1	0.0001	0.0001	0.00098	1.62	0.000262	0.0741	16.4	0.00702	0.000005	0.000098	0.00322	0.05	2.82	0.000209	7.72	0.00001	3.33	0.197		0.0001	0.00119	0.000134	0.0005	0.0104
HLF-UMV	2020-03-14	0.0045	0.00183	0.0206	0.0198	0.00002	0.00005	0.01	0.000028	25.5	0.0001	0.00212	0.00053	0.275	0.00005	0.047	11.8	0.289	0.000005	0.000088	0.0108	0.05	2.78	0.00011	10.3	0.00001	2.71	0.156		0.0001	0.0003	0.000082	0.0005	0.015
HLF-UMV	2020-04-12	0.035	0.00605	0.0508	0.0173	0.000028	0.00005	0.01	0.000005	16.3	0.0001	0.00535	0.0005	4.97	0.00005	0.0196	8.46	0.766	0.000005	0.00005	0.0238	0.05	2.43	0.00005	13.2	0.00001	2.25	0.11		0.0001	0.0003	0.000092	0.0005	0.0447
HLF-UMV	2020-05-07	3.83	0.00928	0.909	0.0755	0.000234	0.000855	0.01	0.000167	35.3	0.00798	0.00351	0.0228	11.9	0.00828	0.0745	14.9	0.166	3.98E-05	0.00117	0.0114	0.15	3.55	0.000302	12.4	0.000105	3.42	0.224		0.00014	0.131	0.00073	0.00956	0.0289
HLF-UMV	2020-06-01	0.0669	0.00237	0.0247	0.0254	0.00002	0.00005	0.01	3.65E-05	28.2	0.00015	0.0014	0.00079	0.396	0.000264	0.0605	13.1	0.191	0.000005	0.000065	0.00894	0.05	2.67	0.000099	9.87	0.00001	2.78	0.169		0.0001	0.00238	0.000072	0.0005	0.0199
HLF-UMV	2020-07-06	0.047	0.0033	0.0353	0.0263	0.00002	0.00005	0.01	4.39E-05	31.8	0.0001	0.0001	0.00067	0.129	0.000245	0.0712	15	0.00662	0.000005	0.00007	0.00357	0.05	2.64	0.000179	8.1	0.00001	3.31	0.188		0.0001	0.00178	0.000083	0.0005	0.0134
HLF-UMV	2020-09-03	0.019	0.00335	0.0335	0.025	0.00002	0.00005	0.01	4.18E-05	34.2	0.0001	0.0001	0.00058	0.031	0.000068	0.078	16.7	0.00684	0.000005	0.000054	0.00411	0.05	2.53	0.000145	7.75	0.00001	3.35	0.24		0.0001	0.0004	0.000076	0.0005	0.0146
HLF-UMV	2020-10-04	0.0142	0.0032	0.033	0.0241	0.00002	0.00005	0.01	5.44E-05	34.4	0.0001	0.0001	0.00064	0.025	0.000072	0.0795	14.9	0.00943	0.000005	0.000064	0.00487	0.05	2.51	0.000148	8.38	0.00001	2.88	0.194		0.0001	0.00032	0.000067	0.0005	0.0174
HLF-UMV	2020-10-08	0.009	0.00309	0.0342	0.0246	0.00002	0.00005	0.01	5.98E-05	34.2	0.0001	0.0001	0.00067	0.03	0.000059	0.0795	15.3	0.0104	0.000005	0.000122	0.00503	0.05	2.58	0.000133	8.5	0.00001	3.23	0.201		0.0001	0.0003	0.000067	0.0005	0.0174
HLF-UMV	2020-11-02	0.0151	0.00321	0.0363	0.0243	0.00002	0.00005	0.01	0.000048	33.7	0.0001	0.0001	0.00061	0.02	0.000065	0.0754	15.1	0.00796	0.000005	0.000069	0.00514	0.05	2.66	0.000118	8.35	0.00001	3.28	0.187		0.0001	0.00032	0.000077	0.0005	0.016
HLF-UMV	2020-12-02	0.0121	0.00282	0.036	0.024	0.00002	0.00005	0.01	4.12E-05	34.9	0.0001	0.0001	0.00058	0.014	0.00005	0.0805	15.8	0.00418	0.000005	0.000053	0.00411	0.05	2.52	0.000166	8.16	0.00001	3.18	0.216		0.0001	0.0003	0.000062	0.0005	0.0156
HLF-UMV	2020-12-02	0.0142	0.00288	0.037	0.0249	0.00002	0.00005	0.01	3.36E-05	36.1	0.0001	0.0001	0.00059	0.032	0.000063	0.082	16.1	0.00467	0.000005	0.000056	0.00424	0.05	2.59	0.000146	8.31	0.00001	3.23	0.217		0.0001	0.00043	0.000064	0.0005	0.0156
LDSP	2020-04-13																																	
LDSP	2020-07-29																																	
LDSP	2020-07-29	0.139	0.00488	0.0291	0.0345	0.00002	0.00005	0.01	3.03E-05	38.3	0.00017	0.00023	0.00344	0.16	0.00253	0.0167	12.5	0.0199	0.000005	0.00165	0.00164	0.05	2.72	0.000338	2.57	0.000013	3.75	0.188		0.0001	0.00275	0.00272	0.0005	0.0037
LDSP	2020-07-30																																	
LDSP	2020-07-30																																	
LDSP	2020-07-31																																	
LDSP	2020-07-31																																	
LDSP	2020-08-01																																	
LDSP	2020-08-03																																	
LDSP	2020-08-03	0.0697	0.00492	0.0276	0.034	0.00002	0.00005	0.01	2.64E-05	39	0.00018	0.00018	0.00224	0.114	0.000545	0.0155	11.7	0.0152	0.000005	0.0016	0.00155	0.05	2.4	0.000358	2.41	0.000015	3.37	0.194		0.0001	0.00151	0.00291	0.0005	0.003
LDSP	2020-08-04																																	
LDSP	2020-08-05																																	
LDSP	2020-08-05																																	
LDSP	2020-08-06																																	
LDSP	2020-08-06																																	
LDSP	2020-08-07																																	
LDSP	2020-08-07																																	
LDSP	2020-08-08																																	
LDSP	2020-08-09																																	
LDSP	2020-08-09																																	
LDSP	2020-08-09																																	
LDSP	2020-08-10																																	
LDSP	2020-08-10	0.104	0.0052	0.0299	0.0342	0.00002	0.00008	0.01	3.19E-05	36.4	0.00017	0.00023	0.019	0.139	0.0009	0.0151	12.4	0.00819	0.000005	0.00144	0.00559	0.05	2.63	0.000374	2.7	0.000039	3.64	0.199		0.00041	0.00271	0.0027	0.0005	0.0061
LDSP	2020-08-10	0.108	0.00516	0.0298	0.0349	0.00002	0.000076	0.01	3.05E-05	37.8	0.00019	0.0002	0.00281	0.136	0.000849	0.0155	12	0.00828	0.000005	0.00149	0.00171	0.05	2.62	0.000396	2.68	0.00001	3.62	0.199		0.0001	0.0027	0.00265	0.0005	0.003
LDSP	2020-08-11																																	
LDSP	2020-08-12																																	

Station ID	Sample Date	D-Al (mg/L)	D-Sb (mg/L)	D-As (mg/L)	D-Ba (mg/L)	D-Be (mg/L)	D-Bi (mg/L)	D-B (mg/L)	D-Cd (mg/L)	D-Ca (mg/L)	D-Cr (mg/L)	D-Co (mg/L)	D-Cu (mg/L)	D-Fe (mg/L)	D-Pb (mg/L)	D-Li (mg/L)	D-Mg (mg/L)	D-Mn (mg/L)	D-Hg (mg/L)	D-Mo (mg/L)	D-Ni (mg/L)	D-P (mg/L)	D-K (mg/L)	D-Se (mg/L)	D-Si (mg/L)	D-Ag (mg/L)	D-Na (mg/L)	D-Sr (mg/L)	D-Ti (mg/L)	D-Sn (mg/L)	D-Tl (mg/L)	D-U (mg/L)	D-V (mg/L)	D-Zn (mg/L)
Event Pond	2020-02-24	0.0804	0.00499	0.0621	0.0615	0.00002	0.00005	0.01	1.28E-05	54.4	0.00018	0.0001	0.00159	0.016	0.00005	0.0203	21.2	0.00148	0.000005	0.00143	0.00135	0.05	4	0.000411	2.98	0.000032	6.89	0.294	0.00001	0.00027	5.43	0.00397	0.0005	0.0053
Event Pond	2020-03-16	0.0139	0.0118	0.126	0.0712	0.00002	0.00005	0.01	3.27E-05	74.4	0.00024	0.00015	0.00231	0.03	0.000062	0.0604	32.3	0.0253	0.000005	0.00185	0.00253	0.05	6.02	0.000659	6.73	0.00001	10	0.479	0.000015	0.00029	7.35	0.00515	0.0005	0.0157
Event Pond	2020-03-16																																	
Event Pond	2020-04-08																																	
Event Pond	2020-04-08	0.014	0.00398	0.0366	0.0178	0.00002	0.00005	0.01	3.18E-05	33.3	0.00018	0.00022	0.00099	0.01	0.00005	0.0233	10.3	0.0245	0.000005	0.000925	0.00156	0.05	2.43	0.00033	2.39	0.00001	3.07	0.156	0.00001	0.00024		0.00155	0.0005	0.0047
Event Pond	2020-04-08	0.014	0.00398	0.0366	0.0178	0.00002	0.00005	0.01	3.18E-05	33.3	0.00018	0.00022	0.00099	0.01	0.00005	0.0233	10.3	0.0245	0.000005	0.000925	0.00156	0.05	2.43	0.00033	2.39	0.00001	3.07	0.156	0.00001	0.00024		0.00155	0.0005	0.0047
Event Pond	2020-05-21	0.0245	0.00397	0.0306	0.0384	0.00002	0.00005	0.01	3.68E-05	38.6	0.0001	0.00029	0.00218	0.039	0.000179	0.0127	12.7	0.0554	0.000005	0.00188	0.00134	0.05	2.58	0.000341	2.25	0.00001	3.93	0.2	0.00001	0.0001	2.99	0.00263	0.0005	0.001
Event Pond	2020-05-21																																	
Event Pond	2020-07-05	0.0218	0.00419	0.0288	0.036	0.00002	0.00005	0.01	1.66E-05	39.6	0.0001	0.00016	0.00206	0.026	0.000126	0.0137	12.5	0.00449	0.000005	0.00149	0.00117	0.05	2.7	0.000336	1.5	0.00001	3.59	0.197	0.00001	0.0001	3.16	0.00277	0.0005	0.001
Event Pond	2020-07-06																																	
Event Pond	2020-07-06																																	
Event Pond	2020-07-15																																	
Event Pond	2020-07-15																																	
Event Pond	2020-07-16	0.0185	0.0049	0.028	0.0364	0.00002	0.00005	0.01	0.000021	36.5	0.00011	0.00016	0.00193	0.028	0.000121	0.0159	11.8	0.0121	0.000005	0.00168	0.00135	0.05	2.7	0.000399	1.94	0.00001	3.37	0.19	0.00001	0.0001	3.16	0.00302	0.0005	0.001
Event Pond	2020-07-21	0.0182	0.00441	0.0279	0.0357	0.00002	0.00005	0.01	2.39E-05	39.9	0.0001	0.00016	0.00596	0.024	0.000115	0.0149	11.7	0.0168	0.000005	0.00167	0.0014	0.05	2.73	0.000426	1.97	0.00001	3.69	0.184	0.00001	0.0001	3.13	0.00282	0.0005	0.0014
Event Pond	2020-07-21																																	
Event Pond	2020-07-21																																	
Event Pond	2020-07-23																																	
Event Pond	2020-07-24																																	
Event Pond	2020-07-25																																	
Event Pond	2020-07-25																																	
Event Pond	2020-07-27																																	
Event Pond	2020-07-27																																	
Event Pond	2020-07-28																																	
Event Pond	2020-08-03																																	
Event Pond	2020-08-05																																	
Event Pond	2020-08-06																																	
Event Pond	2020-08-07																																	
Event Pond	2020-08-09																																	
Event Pond	2020-08-11																																	
Event Pond	2020-08-12																																	
FDP5	2020-04-20	0.0076	0.00651	0.021	0.0524	0.00002	0.00005	0.01	6.81E-05	56.3	0.0001	0.00081	0.00161	0.012	0.000078	0.0082	15	0.112	0.000005	0.00424	0.00208	0.05	4	0.000767	2.61	0.00001	5.32	0.295		0.0001	0.00001	0.0054	0.0005	0.0021
FDP5	2020-04-21	0.0308	0.00647	0.02	0.0546	0.00002	0.00005	0.01	6.15E-05	52.6	0.00051	0.00086	0.00268	0.055	0.000198	0.0073	13.3	0.142	0.000005	0.00444	0.00216	0.05	3.93	0.000597	2.67	0.00001	5.16	0.287		0.0001	0.00001	0.00511	0.0005	0.0027
FDP5	2020-04-27	0.0656	0.00379	0.0255	0.0369	0.000027	0.00005	0.01	9.21E-05	37.8	0.00017	0.00069	0.00318	0.127	0.000491	0.0056	9.45	0.104	5.8E-06	0.0024	0.00232	0.05	3.09	0.000472	2.34	0.00001	3.25	0.18		0.0001	0.00001	0.0028	0.0005	0.0042
FDP-5	2020-04-20																																	
FDP-5	2020-04-21																																	
FDP-5	2020-04-22																																	
FDP-5	2020-04-23																																	
FDP-5	2020-04-24																																	
FDP-5	2020-04-25																																	
FDP-5	2020-04-26																																	
FDP-5	2020-04-27																																	
HLF-UMV	2020-01-19	0.0015	0.00174	0.0208	0.0195	0.00002	0.00005	0.01	1.95E-05	27.6	0.0001	0.00211	0.00025	0.536	0.00005	0.0562	12.1	0.289	0.000005	0.000208	0.0104	0.05	2.7	0.000126	9.78	0.00001	2.86	0.156		0.0001	0.00001	0.000074	0.0005	0.0156
HLF-UMV	2020-02-06	0.0017	0.00161	0.0198	0.0185	0.00002	0.00005	0.01	1.96E-05	29	0.0001	0.00195	0.00035	0.104	0.00005	0.0509	12.8	0.281	0.000005	0.000082	0.0104	0.05	2.67	0.000102	9.13	0.00001	2.85	0.158		0.0001	0.00001	0.000077	0.0005	0.0134
HLF-UMV	2020-03-03	0.0022	0.00251	0.03	0.026	0.00002	0.00005	0.01	2.84E-05	32.1	0.0001	0.0001	0.00052	0.012	0.00005	0.0658	14.7	0.00265	0.000005	0.000115	0.00273	0.05	2.55	0.000226	7.4	0.00001	3.02	0.21		0.0001	0.000012	0.000108	0.0005	0.0089
HLF-UMV	2020-03-14	0.0016	0.00151	0.0186	0.0178	0.00002	0.00005	0.01	1.79E-05	27.8	0.0001	0.00205	0.00043	0.114	0.00005	0.0519	11.4	0.277	0.000005	0.000067	0.0104	0.05	2.65	0.000125	9.77	0.00001	2.54	0.149		0.0001	0.00001	0.000075	0.0005	0.0143
HLF-UMV	2020-04-12	0.001	0.00078	0.00354	0.0171	0.00002	0.00005	0.01	0.000005	16.6	0.0001	0.005	0.0002	0.457	0.00005	0.0203	8.55	0.744	0.000005	0.00005	0.0228	0.05	2.53	0.00005	12.6	0.00001	2.2	0.109		0.0001	0.00001	0.000034	0.0005	0.0392
HLF-UMV	2020-05-07	0.0153	0.00621	0.0577	0.0283	0.00002	0.00005	0.01	4.52E-05	34.6	0.0001	0.00039	0.00069	0.057	0.00005	0.0649	15	0.032	0.000005	0.000127	0.00274	0.05	2.74	0.000244	6.98	0.00001	3.66	0.224		0.0001	0.000014	0.0002	0.0005	0.0083
HLF-UMV	2020-06-01	0.003	0.00209	0.0189	0.0233	0.00002	0.00005	0.01	2.57E-05	25.3	0.0001	0.00171	0.00024	0.214	0.00005	0.0522	12.6	0.228	0.000005	0.0001	0.0103	0.05	2.68	0.000098	9.42	0.00001	2.66	0.153		0.0001	0.00001	0.00006	0.0005	0.0235
HLF-UMV	2020-07-06	0.0049	0.00308	0.0344	0.0262	0.00002	0.00005	0.01	3.82E-05	34.5	0.0001	0.0001	0.00056	0.01	0.00005	0.0743	16.7	0.00449	0.000005	0.000082	0.00336	0.05	2.7	0.000172	7.93	0.00001	3.24	0.201		0.0001	0.00001	0.000078	0.0005	0.0129
HLF-UMV	2020-09-03	0.0066	0.00314	0.0357	0.0263	0.00002	0.00005	0.01	5.06E-05	35	0.0001	0.0001	0.00062	0.01	0.00005	0.0718	16.1	0.0069	0.000005	0.000072	0.00432	0.05	2.76	0.000125	7.72	0.00001	3.52	0.194		0.0001	0.00001	0.000073	0.0005	0.0163
HLF-UMV	2020-10-04																																	
HLF-UMV	2020-10-08	0.0128	0.00308	0.0354	0.0281	0.00002	0.00005	0.01	0.000063	39.8	0.0001	0.0001	0.0006	0.01	0.00005	0.0877	17.2	0.0115	0.000005	0.000098	0.00549	0.05	2.89	0.000095	8.04	0.00001	3.48	0.225		0.0001	0.000011	0.000066	0.0005	0.0229
HLF-UMV	2020-11-02	0.0036	0.00257	0.0307	0.0224	0.00002	0.00005	0.01	4.32E-05	34.7	0.0001	0.0001	0.00055	0.01	0.00005	0.0612	13.4	0.00667	0.000005	0.000478	0.00414	0.05	2.1	0.000082	2.9	0.00001	2.61	0.186		0.0001	0.00001	0.00006	0.0005	0.0152
HLF-UMV	2020-12-02	0.004	0.00286	0.0365	0.0256	0.00002	0.00005	0.01	4.21E-05	35.2	0.0001	0.0001	0.00056	0.01	0.00005	0.079	15.9	0.0041	0.000005	0.00005	0.00417	0.05	2.6	0.000125	7.92	0.00001	3.29	0.195		0.0001	0.00001	0.000073	0.0005	0.0157
HLF-UMV	2020-12-02	0.0037	0.00286	0.0353	0.0255	0.00002	0.00005	0.01	4.74E-05	35.4	0.0001	0.0001	0.00054	0.01	0.00005	0.0807	16.1	0.00601	0.000005	0.000061	0.00411	0.05	2.57	0.000122	7.9	0.00001	3.3	0.194		0.0001	0.00001	0.000064	0.0005	0.0155
LDSP	2020-04-13																																	
LDSP	2020-07-29																																	
LDSP	2020-07-29	0.019	0.00445	0.0261	0.0338	0.00002	0.00005	0.01	2.34E-05	37.9	0.0001	0.00015	0.00204	0.03	0.00126	0.0154	11.6	0.0133	0.000005	0.00167	0.00107	0.05	2.65	0.000414	2.31	0.00001	3.5	0.186		0.0001	0.00001	0.00293	0.0005	0.0021
LDSP	2020-07-30																																	
LDSP	2020-07-30																																	
LDSP	2020-07-31																																	
LDSP	2020-07-31																																	
LDSP	2020-08-01																																	
LDSP	2020-08-03																																	
LDSP	2020-08-03	0.0161	0.00432	0.0274	0.0335	0.00002	0.00005	0.01	2.18E-05	36.6	0.0001	0.00014	0.0019	0.023	0.000268	0.0146	11.4	0.00826	0.000005	0.00145	0.00148	0.05	2.62	0.000412	2.24	0.00001	3.44	0.18		0.0001	0.00001	0.00271	0.0005	0.0014
LDSP	2020-08-04																																	
LDSP	2020-08-05																																	
LDSP	2020-08-05																																	
LDSP	2020-08-06																																	
LDSP	2020-08-06																																	
LDSP	2020-08-07																																	
LDSP	2020-08-07																																	
LDSP	2020-08-08																																	
LDSP	2020-08-09																																	
LDSP	2020-08-09																																	
LDSP	2020-08-09																																	
LDSP	2020-08-10																																	
LDSP	2020-08-10	0.0211	0.00433	0.0271	0.036	0.00002	0.00005	0.01	2.42E-05	40.2	0.0001	0.00013	0.00184	0.031	0.00008	0.0167	11.9	0.0031	0.000005	0.00156	0.00158	0.05	2.68	0.000453	2.54	0.00001	3.55	0.2		0.0001	0.00001	0.00259	0.0005	0.0015
LDSP	2020-08-10	0.0169	0.00451	0.0275	0.0366	0.00002	0.00005	0.01	2.59E-05	40.2	0.0001	0.00013	0.00199	0.025	0.000081	0.0169	11.9	0.00286	0.000005	0.00159	0.00156	0.05	2.72	0.000386	2.51	0.00001	3.52	0.206		0.0001	0.00001	0.00271	0.0005	0.001
LDSP	2020-08-11																																	
LDSP	2020-08-12																																	

Station ID	Sample Date	Conductivity	Hardness (as	pH (s.u.)	TSS (mg/L)	TDS (mg/L)	Turbidity	Alkalinity,	NH3-N (mg/L)	Br (mg/L)	Cl (mg/L)	F (mg/L)	NO3-N (mg/L)	NO2-N (mg/L)	TKN (mg/L)	T-N (mg/L)	D-O-P (mg/L)	D-P-P (mg/L)	T-P-P (mg/L)	SO4 (mg/L)	CWAD (mg/L)	T-CN (mg/L)	TOC (mg/L)	DOC (mg/L)
LDSP	2020-08-12																				0.005			
LDSP	2020-08-13	316.1		7.42			6.39																	
LDSP	2020-08-13																				0.005			
LDSP	2020-08-14	314.8		7.84			7.65																	
LDSP	2020-08-14																				0.005			
LDSP	2020-08-15	315.9		7.64			10.96																	
LDSP	2020-08-15																				0.005			
LDSP	2020-08-17	308.9		7.78	3.8		8.46																	
LDSP	2020-08-17	307	143	8.11	3		7.22	83.6	0.0187	0.05	3.97	0.164	0.126	0.0038				0.0028	0.0048	62.5			5.79	
LDSP	2020-08-17	306	146	8.12	3		7.96	83.7	0.0186	0.05	3.99	0.161	0.125	0.0037				0.0034	0.0058	62.4			5.59	
LDSP	2020-08-18	300.5		7.58	7.375		15.41																	
LDSP	2020-08-18	304	149	8.09	8.5		10.3	81.1	0.0234	0.05	3.98	0.162	0.129	0.003				0.0046	0.0078	62.5			5.78	
LDSP	2020-08-18	308	149	8.12	9.4		11.5	87.3	0.0235	0.05	3.98	0.164	0.129	0.0042				0.0036	0.0085	62.2			5.88	
LDSP	2020-09-14	356	165	8.09	4.6		4.41	95.4	0.0251	0.05	3.63	0.162	0.13	0.0034				0.0039	0.005	76			5.08	
LDSP	2020-09-23	349	177	8.1	3		1.88	95.1	0.0363	0.05	3.49	0.16	0.134	0.0031				0.0033	0.0039	74.2			4.78	
LDSPs	2020-04-09	660		7.69																				
LDSPS	2020-04-09	601		7.67				222	0.0253	0.05	4.26	0.182	0.182	0.001		0.316	0.0036	0.0049		141			3.57	3.52
LDSPS	2020-04-13			8.23	4.8		1.28																	
LDSPS	2020-04-14			8.22	8.4		5.07																	
LDSPS	2020-04-15			8.21	10.4		10																	
LDSPS	2020-04-16	172	71.2	7.73	27.2		29	36.6	0.0847	0.05	7.37	0.059	0.264	0.0055	0.381	0.568	0.0054	0.0099		31.9			1.64	1.78
LDSPs	2020-05-22	257.1		8.79	23		191.11																	
LDSPs	2020-05-22	257.1		8.79	15		191.1																	
LDSPs	2020-05-23	261		8.34	122.5		197																	
LDSPs	2020-05-23	261		8.34	120.5		197																	
LDSPs	2020-05-24	270		8.51	105.5		195.3																	
LDSPs	2020-05-24	270		8.51	105		195.3																	
LDSPs	2020-07-04	414	200	8.18	5.4		16.1	109	0.0304	0.05	5.67	0.196	0.141	0.0057	0.31	0.44	0.001	0.0043		95.5	0.005	0.005	8.45	8.23
LDSPs	2020-07-04				10.125																			
LDSPS	2020-07-21	454	220	8.12	3.9		5.92	118	0.0083	0.05	5.33	0.209	0.134	0.0045	0.236	0.368	0.0012	0.0023		108	0.005	0.005	6.34	6.4
LDSPs	2020-07-21	895		7.85			6.85																	
LDSPs	2020-07-23	891		8.11			24.12																	
LDSPs	2020-07-24	890		8.01			13.75																	
LDSPs	2020-07-25	896		7.9	3.5		7.72																	
LDSPs	2020-07-27	550		7.9			8.5																	
LDSPs	2020-07-28	437.9		7.93	7.666667		17.55																	
LDSPs	2020-08-30	528		8.29	3.2		10.7																	
LDSPs	2020-08-30	528		8.29	3.4		10.7																	
LDSPs	2020-09-03	493.3		7.85	4		13.36																	
LDSPs	2020-09-04	488.5		8.04	1		12.88																	
LDSPs	2020-09-05	407.2		7.66	6.8		10.92																	
LDSPs	2020-09-06	401.8		7.91	16.66667		31.25																	
LDSPs	2020-09-07	439.2		8.17	11		17.93																	
LDSPs	2020-09-08	443.3		8.14	6.333333		14.25																	
LDSPs	2020-09-09	400.9		7.98	9		16.17																	
LDSPs	2020-09-11	456.2		7.8	8.333333		14.62																	
LDSPs	2020-09-11	431.6		8.01	9.333333		25.02																	
LDSPs	2020-09-12	457.9		7.72	4		11.63																	
LDSPs	2020-09-13	452.2		7.96	2.666667		12.14																	
LDSPS	2020-10-12	481	247	8.3	11.3		12.5	151	0.005	0.05	2.48	0.159	0.367	0.003				0.002	0.0179	114			4.47	
LDSP-UND	2020-01-19	419	214	8.05	3		0.37	172	0.0136	0.05	0.5	0.141	0.219	0.001				0.003		71.2			1.79	
LDSP-UND	2020-02-06	422	242	8.29	3		0.3	176	0.005	0.05	0.73	0.127	0.0517	0.001				0.0031		93.5			1.56	
LDSP-UND	2020-03-07	439	224	7.79	3		0.17	174	0.005	0.05	0.5	0.141	0.233	0.001	0.063	0.264	0.0026	0.002		71			1.33	1.29
LDSP-UND	2020-04-12	443		8.04	3		0.54	182	0.0105	0.05	0.5	0.147	0.245	0.001				0.002	0.002	71.9			1.42	
LDSP-UND	2020-05-10	397	192	7.76	3		4.22	132	0.005	0.05	4.98	0.127	0.47	0.001				0.0024	0.0061	72.2			3.15	
LDSP-UND	2020-06-01	346	180	7.44	3		0.97	122	0.005	0.05	2.3	0.134	0.277	0.001				0.002	0.0038	57.2			2.15	
LDSP-UND	2020-06-01	350	176	7.45	3		1.02	123	0.005	0.05	2.29	0.132	0.277	0.001				0.002	0.0039	56.9			2.11	
LDSP-UND	2020-07-10	378	198	8.05	3		0.79	152	0.0084	0.05	1.36	0.143	0.192	0.001		0.278	0.0029	0.0036	0.004	56.2			2.49	
LDSP-UND	2020-08-02	418	210	7.55	3.1		1.18	145	0.0054	0.05	2.7	0.148	0.209	0.001	0.098	0.291	0.0028	0.0035		74.7			3.15	2.98
LDSP-UND	2020-09-03	442	235	7.69	3		0.45	160	0.005	0.05	2.26	0.155	0.242	0.001				0.004	0.0067	73.6			2.65	
LDSP-UND	2020-11-02	433	213	7.78	4.5		0.76	157	0.005	0.05	2.21	0.134	0.337	0.001				0.0043	0.0033	70			1.96	
LDSP-UND	2020-12-02	408	227	8.25	3		0.25	165	0.005	0.05	1.75	0.141	0.299	0.001				0.0022	0.0022	69.2			1.96	
LLO	2020-03-15	612	340	7.73	9.5		4.02	214	0.005	0.05	4.09	0.16	0.229	0.0013	0.13	0.326	0.0045	0.0076		126	0.005	0.005	3.36	3.77
LLO	2020-04-16	15400	106	7.46	11.8		18.8	95	0.0687	0.05	5.49	0.133	0.382	0.0102	0.343	0.64	0.0047	0.0032		78.4			2.11	2.13
LLO	2020-04-19	464		7.53	53		58.06																	
LLO	2020-04-19	439	218	8.13	42.3		83.1	115	0.041	0.058	15.5	0.152	0.587	0.0153				0.0049	0.048	92.8			4.43	
LLO	2020-05-22	257.2		8.37	95.5		149.34																	
LLO	2020-05-22	257.2		8.37	88.5		149.34																	
LLO	2020-05-23	89.7		7.98	325		26.4																	
LLO	2020-05-23	89.7		7.98	322		26.4																	
LLO	2020-05-24	890		7.61	70		15.8																	
LLO	2020-05-24	890		7.61	47.5		15.8																	
LLO	2020-08-30	539		7.96	10.75		26.96																	
LLO	2020-09-03	569		7.25			6.68																	
LLO	2020-09-08	1387		6.63			13.52																	
LLO	2020-09-14	539		7.36			14.74																	
LLO	2020-10-08	1500	318	7.39	61.5		69.7	272	0.196	0.5	8.44	0.2	0.114	0.01				0.0055	0.178	630			4.05	
W1	2020-01-19	178		7.53			2.42																	
W1	2020-01-19	144	64.7	7.79	3		0.2	51.4	0.0052	0.05	0.5	0.103	0.13	0.001				0.005		20.9			1.89	
W1	2020-02-09	143	67.5	7.85	3		0.13	51	0.005	0.05	0.5	0.095	0.143	0.001				0.0052		20.8			1.04	
W1	2020-02-10	135.1		7.6			0.03																	
W1	2020-03-14	152	66.6	7.63	3		0.74	50.2	0.014	0.05	0.56	0.106	0.151	0.001				0.0074		20.2			1.57	

Station ID	Sample Date	T-Al (mg/L)	T-Sb (mg/L)	T-As (mg/L)	T-Ba (mg/L)	T-Be (mg/L)	T-Bi (mg/L)	T-B (mg/L)	T-Cd (mg/L)	T-Ca (mg/L)	T-Cr (mg/L)	T-Co (mg/L)	T-Cu (mg/L)	T-Fe (mg/L)	T-Pb (mg/L)	T-Li (mg/L)	T-Mg (mg/L)	T-Mn (mg/L)	T-Hg (mg/L)	T-Mo (mg/L)	T-Ni (mg/L)	T-P (mg/L)	T-K (mg/L)	T-Se (mg/L)	T-Si (mg/L)	T-Ag (mg/L)	T-Na (mg/L)	T-Sr (mg/L)	T-Tl (mg/L)	T-Sn (mg/L)	T-Ti (mg/L)	T-U (mg/L)	T-V (mg/L)	T-Zn (mg/L)
LDSP	2020-08-12																																	
LDSP	2020-08-13																																	
LDSP	2020-08-13																																	
LDSP	2020-08-14																																	
LDSP	2020-08-14																																	
LDSP	2020-08-15																																	
LDSP	2020-08-15																																	
LDSP	2020-08-17																																	
LDSP	2020-08-17	0.254	0.00498	0.0301	0.0364	0.00002	0.000166	0.01	3.78E-05	38.9	0.00033	0.00028	0.00252	0.337	0.00114	0.0179	11.1	0.0146	0.000005	0.00154	0.00205	0.05	2.59	0.000348	3.18	0.000028	3.4	0.196		0.0001	0.0062	0.00272	0.00064	0.0032
LDSP	2020-08-17	0.28	0.00501	0.0314	0.0378	0.00002	0.000164	0.01	3.91E-05	39.7	0.00036	0.0003	0.00268	0.35	0.00115	0.0182	11.3	0.0153	0.000005	0.00155	0.00218	0.05	2.7	0.000432	3.21	0.000028	3.56	0.196		0.0001	0.0066	0.00265	0.00076	0.003
LDSP	2020-08-18																																	
LDSP	2020-08-18	0.383	0.00515	0.0352	0.0398	0.00002	0.000264	0.01	4.14E-05	40.4	0.00056	0.00038	0.00312	0.486	0.00164	0.0185	11.8	0.0195	0.000005	0.00154	0.00236	0.05	2.74	0.000381	3.48	0.000031	3.54	0.196		0.0001	0.0113	0.00276	0.0009	0.0036
LDSP	2020-08-18	0.383	0.0051	0.0356	0.0398	0.00002	0.000244	0.01	4.39E-05	40.5	0.00054	0.0004	0.00307	0.495	0.00165	0.0183	11.6	0.0196	0.000005	0.00153	0.0024	0.05	2.74	0.000355	3.46	0.000031	3.63	0.193		0.00011	0.0108	0.00276	0.00085	0.0036
LDSP	2020-09-14	0.117	0.00503	0.0332	0.0378	0.00002	0.000068	0.01	4.27E-05	44.5	0.00021	0.00025	0.00272	0.164	0.000676	0.0161	13.2	0.0244	0.000005	0.00183	0.00187	0.05	2.89	0.000484	3.98	0.000012	3.47	0.224		0.0001	0.00277	0.00367	0.0005	0.0031
LDSP	2020-09-23	0.0913	0.00523	0.0327	0.0383	0.00002	0.00006	0.01	0.000038	48.1	0.00022	0.00022	0.002	0.138	0.000469	0.0162	13.7	0.0309	0.000005	0.00185	0.00164	0.05	2.97	0.000484	3.81	0.000011	3.65	0.224		0.0001	0.00268	0.00311	0.00054	0.003
LDSPs	2020-04-09																																	
LDSPS	2020-04-09	0.0298	0.00446	0.0498	0.0923	0.00002	0.000053	0.01	2.24E-05	75.3	0.0002	0.0001	0.0015	0.038	0.00007	0.0136		0.00594	0.000005	0.00179	0.0041	0.05	4.23	0.000424	4.61	0.00001	5.98	0.47	0.00001	0.0001	0.00112	0.00783	0.00056	0.0041
LDSPS	2020-04-13																																	
LDSPS	2020-04-14																																	
LDSPS	2020-04-15																																	
LDSPS	2020-04-16	0.997	0.00407	0.0393	0.0252	0.000072	0.00242	0.01	0.000118	22.4	0.00136	0.00123	0.00379	1.47	0.00882	0.0035		0.0494	5.1E-06	0.00102	0.00221	0.05	1.5	0.000168	1.82	0.000053	1.21	0.086	0.000022	0.00016	0.0417	0.00118	0.00151	0.021
LDSPs	2020-05-22																																	
LDSPs	2020-05-22																																	
LDSPs	2020-05-23																																	
LDSPs	2020-05-23																																	
LDSPs	2020-05-24																																	
LDSPs	2020-05-24																																	
LDSPs	2020-07-04	0.67	0.00651	0.0408	0.0542	0.000036	0.000225	0.01	6.01E-05	54.6	0.00094	0.00074	0.00384	0.662	0.00229	0.0068		0.24	5.5E-06	0.00292	0.00222	0.05	3.41	0.000534	4.6	0.000027	4.13	0.253	0.000014	0.0001	0.0213	0.00586	0.00152	0.0039
LDSPs	2020-07-04																																	
LDSPS	2020-07-21	0.346	0.00643	0.0312	0.05	0.00002	0.000085	0.01	4.03E-05	58.3	0.00037	0.00045	0.00267	0.261	0.000821	0.0069		0.196	0.000005	0.00321	0.00152	0.05	3.91	0.000633	4.28	0.000014	4.3	0.278	0.00001	0.0001	0.00806	0.00603	0.00086	0.003
LDSPs	2020-07-21																																	
LDSPs	2020-07-23																																	
LDSPs	2020-07-24																																	
LDSPs	2020-07-25																																	
LDSPs	2020-07-27																																	
LDSPs	2020-07-28																																	
LDSPs	2020-08-30																																	
LDSPs	2020-08-30																																	
LDSPs	2020-09-03																																	
LDSPs	2020-09-04																																	
LDSPs	2020-09-05																																	
LDSPs	2020-09-06																																	
LDSPs	2020-09-07																																	
LDSPs	2020-09-08																																	
LDSPs	2020-09-09																																	
LDSPs	2020-09-11																																	
LDSPs	2020-09-11																																	
LDSPs	2020-09-12																																	
LDSPs	2020-09-13																																	
LDSPS	2020-10-12	0.273	0.00454	0.0582	0.0487	0.000021	0.000145	0.01	5.86E-05	67.7	0.00064	0.00078	0.00216	0.396	0.00213	0.0088	19.1	0.186	0.000005	0.00261	0.00192	0.05	3.46	0.000567	4.28	0.00001	4	0.312		0.0001	0.0105	0.00535	0.00076	0.0037
LDSP-UND	2020-01-19	0.0096	0.00295	0.0172	0.0724	0.00002	0.00005	0.01	0.000007	44.9	0.0001	0.0001	0.0008	0.01	0.000062	0.0114	24.9	0.00091	0.000005	0.000918	0.0005	0.05	2.07	0.000502	5.6	0.00001	3.26	0.312		0.0001	0.0003	0.00517	0.0005	0.003
LDSP-UND	2020-02-06	0.0084	0.00291	0.0177	0.073	0.00002	0.00005	0.01	6.9E-06	51.7	0.00036	0.0001	0.00065	0.015	0.000073	0.0128	27.5	0.00168	0.000005	0.000927	0.00055	0.05	2.1	0.000569	5.27	0.00001	3.36	0.336		0.0001	0.0003	0.00564	0.0005	0.003
LDSP-UND	2020-03-07	0.0039	0.00282	0.0172	0.0676	0.00002	0.00005	0.01	0.000005	46.5	0.0001	0.0001	0.00061	0.01	0.00005	0.0126		0.00078	0.000005	0.000886	0.0005	0.05	2.16	0.00044	5.44	0.00001	3.39	0.307	0.00001	0.0001	0.0003	0.00626	0.0005	0.003
LDSP-UND	2020-04-12																																	
LDSP-UND	2020-05-10	0.114	0.00307	0.0194	0.0659	0.00002	0.00005	0.01	0.000066	41.4	0.00015	0.00011	0.00239	0.118	0.000708	0.0111	21.5	0.00325	0.000005	0.000946	0.00063	0.05	2.16	0.000475	4.66	0.00001	3.33	0.278		0.0001	0.0031	0.00317	0.0005	0.0036
LDSP-UND	2020-06-01	0.0297	0.00308	0.0177	0.0618	0.00002	0.00005	0.01	1.17E-05	38.8	0.0001	0.0001	0.00133	0.038	0.000176	0.012	20.2	0.00139	0.000005	0.000866	0.0005	0.05	2.03	0.000357	5.3	0.00001	3.06	0.254		0.0001	0.0007	0.00232	0.0005	0.003
LDSP-UND	2020-06-01	0.0289	0.0031	0.0174	0.0614	0.00002	0.00005	0.01	1.22E-05	37.8	0.0001	0.0001	0.00131	0.028	0.000163	0.0121	19.9	0.00095	0.000005	0.000852	0.0005	0.05	2.03	0.000414	5.21	0.00001	2.96	0.258		0.0001	0.0005	0.00234	0.0005	0.003
LDSP-UND	2020-07-10	0.003	0.00329	0.0191	0.0619	0.00002	0.00005	0.01	1.39E-05	42.6	0.0001	0.0001	0.00109	0.01	0.00005	0.0102	22.2	0.00098	0.000005	0.000954	0.0005	0.05	2.22	0.000468	5.27	0.00001	3.22	0.278		0.0001	0.0003	0.00287	0.0005	0.003
LDSP-UND	2020-08-02	0.0322	0.00365	0.0217	0.0714	0.00002	0.00005	0.01	0.000014	48.1	0.0001	0.0001	0.00127	0.036	0.000182	0.0119		0.00437	0.000005	0.00123	0.0006	0.05	2.62	0.000458	5.4	0.00001	3.54	0.302	0.000018	0.0001	0.00073	0.0045	0.0005	0.003
LDSP-UND	2020-09-03	0.0946	0.00492	0.0348	0.081	0.00002	0.00005	0.01	2.62E-05	51.4	0.00021	0.00015	0.00143	0.15	0.000429	0.0127	25.9	0.00631	0.000005	0.00106	0.00107	0.05	2.32	0.000392	5.34	0.00001	3.56	0.394		0.0001	0.00417	0.00615	0.0005	0.0112
LDSP-UND	2020-11-02	0.0116	0.00325	0.019	0.072	0.00002	0.00005	0.01	9.7E-06	46	0.0001	0.0001	0.00081	0.014	0.000062	0.0121	23.8	0.00095	0.000005	0.000942	0.0005	0.05	2.22	0.000434	5.44	0.00001	3.27	0.31		0.0001	0.0003	0.00429	0.0005	0.003
LDSP-UND	2020-12-02	0.01	0.00277	0.0187	0.0824	0.00002	0.00005	0.01	6.2E-06	49.6	0.0001	0.0001	0.00073	0.01	0.00005	0.0128	25.1	0.0008	0.000005	0.000813	0.0005	0.05	2.23	0.000441	5.41	0.00001	3.44	0.324		0.0001	0.0003	0.00529	0.0005	0.003
LLO	2020-03-15	0.0693	0.00372	0.0388	0.0897	0.00002	0.00005	0.01	1.27E-05	81.5	0.0002	0.00012	0.00171	0.097	0.00052	0.0129		0.02	0.000005	0.00135	0.00087	0.05	3.54	0.000356	4.13	0.00001	5.94	0.451	0.00001	0.0001	0.00328	0.00784	0.0005	0.003
LLO	2020-04-16	0.481	0.0032	0.0392	0.0346	0.000038	0.000526	0.01	0.000136	28.4	0.00085	0.00122	0.00414	0.966	0.0043	0.0056		0.0485	5.6E-06	0.00129	0.00252	0.05	2.09	0.000401	1.8	0.000024	2.11	0.132	0.000014	0.00018	0.0175	0.00196	0.00096	0.0142
LLO	2020-04-19																																	
LLO	2020-04-19	1.02	0.0063	0.0658	0.0802	0.00008	0.000367	0.01	9.84E-05	56.2	0.00188	0.00147	0.00537	2.17	0.00773	0.01	19	0.0762	1.12E-05	0.00244	0.00376	0.056	3.58	0.000539	3.99	0.000045	5.21	0.293		0.0001	0.0574	0.00536	0.00248	0.0125
LLO	2020-05-22																																	
LLO	2020-05-22																																	
LLO	2020-05-23																																	
LLO	2020-05-23																																	
LLO	2020-05-24																																	
LLO	2020-05-24																																	
LLO	2020-08-30																																	
LLO	2020-09-03																																	
LLO	2020-09-08																																	
LLO	2020-09-14																																	
LLO	2020-10-08	0.98	0.00608	0.0819	0.068	0.000063	0.000431	0.01	0.000128	86.6	0.00174	0.00125	0.00551	2.21	0.00651	0.0108	24.8	0.428	0.00005	0.00222	0.00403	0.05	4.05	0.000439	5.76	0.000047	4.13	0.409		0.00043	0.0348	0.00766	0.0022	0.0173
W1	2020-01-19																																	
W1	2020-01-19	0.0254	0.00098	0.0297	0.0547	0.00002	0.00005	0.01	1.68E-05	17.7	0.00016	0.0001	0.0005	0.035	0.000076	0.0025	4.98	0.00145	0.000005	0.00203	0.0005	0.05	0.949	0.000182	6.4	0.00001	1.84	0.0971		0.0001	0.00121	0.000655	0.0005	0.003
W1	2020-02-09	0.0209	0.00094	0.0293	0.0531	0.00002	0.00005	0.01	6.2E-06	18.7	0.0001	0.0001	0.00085	0.027	0.000092	0.0025	5.07	0.00114	0.000005	0.00231	0.00091	0.05	0.889	0.000264	6.17	0.00001	1.79	0.098		0.0001	0.00092	0.000737	0.0005	0.003
W1	2020-02-10																																	
W1	2020-03-14	0.0469	0.00108	0.0311	0.0558	0.00002	0.000057	0.01	1.83E-05	18.5	0.00027	0.0001	0.00052	0.054	0.000134	0.0027	4.96	0.00238	0.000005	0.0023	0.0005	0.05	1.02	0.000229	6.7	0.000013	1.97	0.107		0.0001	0.00218	0.000834	0.0005	0.0041

Station ID	Sample Date	D-Al (mg/L)	D-Sb (mg/L)	D-As (mg/L)	D-Ba (mg/L)	D-Be (mg/L)	D-Bi (mg/L)	D-B (mg/L)	D-Cd (mg/L)	D-Ca (mg/L)	D-Cr (mg/L)	D-Co (mg/L)	D-Cu (mg/L)	D-Fe (mg/L)	D-Pb (mg/L)	D-Li (mg/L)	D-Mg (mg/L)	D-Mn (mg/L)	D-Hg (mg/L)	D-Mo (mg/L)	D-Ni (mg/L)	D-P (mg/L)	D-K (mg/L)	D-Se (mg/L)	D-Si (mg/L)	D-Ag (mg/L)	D-Na (mg/L)	D-Sr (mg/L)	D-Ti (mg/L)	D-Sn (mg/L)	D-Tl (mg/L)	D-U (mg/L)	D-V (mg/L)	D-Zn (mg/L)
LDSP	2020-08-12																																	
LDSP	2020-08-13																																	
LDSP	2020-08-13																																	
LDSP	2020-08-14																																	
LDSP	2020-08-14																																	
LDSP	2020-08-15																																	
LDSP	2020-08-15																																	
LDSP	2020-08-17																																	
LDSP	2020-08-17	0.0083	0.00437	0.0223	0.032	0.00002	0.00005	0.01	2.21E-05	39.1	0.0001	0.00014	0.00184	0.03	0.000089	0.017	11.5	0.00819	0.000005	0.00152	0.00167	0.05	2.51	0.000366	2.69	0.000017	3.37	0.191		0.0001	0.00001	0.00241	0.0005	0.0016
LDSP	2020-08-17	0.0132	0.00437	0.023	0.0329	0.00002	0.00005	0.01	2.44E-05	38.3	0.0001	0.00016	0.00198	0.037	0.000116	0.0172	11.7	0.00875	0.000005	0.00146	0.0017	0.05	2.58	0.000343	2.72	0.000016	3.48	0.194		0.0001	0.00001	0.00251	0.0005	0.001
LDSP	2020-08-18																																	
LDSP	2020-08-18	0.0109	0.0045	0.0255	0.0362	0.00002	0.00005	0.01	2.93E-05	41.9	0.0001	0.00018	0.00233	0.02	0.000084	0.0179	12.8	0.0104	0.000005	0.00143	0.00176	0.05	2.74	0.000436	2.91	0.000022	3.96	0.207		0.00014	0.00001	0.00252	0.0005	0.0012
LDSP	2020-08-18	0.0083	0.00434	0.0232	0.032	0.00002	0.00005	0.01	0.000027	37.2	0.0001	0.00016	0.00195	0.012	0.00006	0.0172	11.4	0.00854	0.000005	0.00146	0.00155	0.05	2.48	0.000467	2.7	0.000021	3.41	0.194		0.0001	0.00001	0.00242	0.0005	0.001
LDSP	2020-09-14	0.0102	0.00474	0.0298	0.038	0.00002	0.00005	0.01	2.98E-05	46.2	0.0001	0.00013	0.00171	0.015	0.00005	0.0159	13.4	0.00946	0.000005	0.00184	0.00144	0.05	3.17	0.000462	3.46	0.00001	3.66	0.23		0.0001	0.00001	0.00334	0.0005	0.001
LDSP	2020-09-23	0.0093	0.00495	0.03	0.0384	0.00002	0.00005	0.01	2.59E-05	43.3	0.0001	0.00013	0.00171	0.015	0.00005	0.017	12.6	0.0181	0.000005	0.00182	0.00163	0.05	3.17	0.000467	3.8	0.00001	3.65	0.222		0.0001	0.00001	0.00328	0.0005	0.0011
LDSPs	2020-04-09																																	
LDSPS	2020-04-09	0.0026	0.00431	0.0516	0.0907	0.00002	0.00005	0.01	1.32E-05	73.2	0.00013	0.0001	0.00136	0.01	0.00005	0.0138	35	0.00164	0.000005	0.00169	0.00543	0.05	4.26	0.000488	4.51	0.00001	5.97	0.455	0.00001	0.0001		0.0075	0.0005	0.0022
LDSPS	2020-04-13																																	
LDSPS	2020-04-14																																	
LDSPS	2020-04-15																																	
LDSPS	2020-04-16	0.0112	0.00152	0.0131	0.0143	0.00002	0.00005	0.01	7.25E-05	25.5	0.0001	0.00051	0.0008	0.01	0.00005	0.0032	4.18	0.0296	0.000005	0.000897	0.00072	0.05	1.37	0.000187	0.563	0.00001	1.44	0.0955	0.00001	0.00012	1.63	0.000966	0.0005	0.008
LDSPs	2020-05-22																																	
LDSPs	2020-05-22																																	
LDSPs	2020-05-23																																	
LDSPs	2020-05-23																																	
LDSPs	2020-05-24																																	
LDSPs	2020-05-24																																	
LDSPs	2020-07-04	0.0182	0.00564	0.0242	0.0426	0.00002	0.00005	0.01	4.14E-05	56.1	0.0001	0.00038	0.00268	0.019	0.000164	0.0059	15.9	0.212	0.000005	0.00285	0.00123	0.05	3.31	0.000607	3.33	0.00001	3.97	0.256	0.00001	0.0001	4.34	0.00526	0.0005	0.001
LDSPs	2020-07-04																																	
LDSPS	2020-07-21	0.0116	0.0058	0.0247	0.0444	0.00002	0.00005	0.01	2.58E-05	60.1	0.0001	0.0003	0.00205	0.01	0.00005	0.0067	16.1	0.176	0.000005	0.00302	0.0011	0.05	3.64	0.000674	3.15	0.00001	4.35	0.258	0.00001	0.0001	4.77	0.00576	0.0005	0.001
LDSPs	2020-07-21																																	
LDSPs	2020-07-23																																	
LDSPs	2020-07-24																																	
LDSPs	2020-07-25																																	
LDSPs	2020-07-27																																	
LDSPs	2020-07-28																																	
LDSPs	2020-08-30																																	
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LDSPs	2020-09-03																																	
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LDSPs	2020-09-08																																	
LDSPs	2020-09-09																																	
LDSPs	2020-09-11																																	
LDSPs	2020-09-11																																	
LDSPs	2020-09-12																																	
LDSPs	2020-09-13																																	
LDSPS	2020-10-12	0.0101	0.00458	0.0464	0.0477	0.00002	0.00005	0.01	3.94E-05	71.1	0.0001	0.00054	0.00133	0.01	0.00005	0.0087	19.3	0.19	0.000005	0.00243	0.00146	0.05	3.6	0.000572	3.86	0.00001	3.84	0.339		0.0001	0.00001	0.00525	0.0005	0.001
LDSP-UND	2020-01-19	0.0013	0.00277	0.0176	0.0673	0.00002	0.00005	0.01	5.7E-06	49.3	0.0001	0.0001	0.00087	0.01	0.00005	0.013	25.2	0.00067	0.000005	0.000903	0.0005	0.05	2.2	0.000447	5.46	0.00001	3.54	0.301		0.0001	0.00001	0.00521	0.0005	0.0012
LDSP-UND	2020-02-06	0.001	0.00282	0.0182	0.0689	0.00002	0.00005	0.01	6.4E-06	51.1	0.0001	0.0001	0.00066	0.01	0.00005	0.0127	26.6	0.00064	0.000005	0.000924	0.0005	0.05	2.15	0.000522	5.09	0.00001	3.34	0.314		0.0001	0.00001	0.0055	0.0005	0.0017
LDSP-UND	2020-03-07	0.0017	0.00305	0.0186	0.0727	0.00002	0.00005	0.01	0.000005	47.6	0.0001	0.0001	0.00064	0.01	0.00005	0.0118	27.1	0.00086	0.000005	0.000907	0.0005	0.05	2.34	0.000517	5.27	0.00001	3.64	0.316	0.00001	0.0001	4.99	0.006	0.0005	0.0017
LDSP-UND	2020-04-12	0.001	0.003	0.0182	0.0678	0.00002	0.00005	0.01	5.7E-06	48.3	0.0001	0.0001	0.00062	0.01	0.00005	0.0116	28.9	0.00061	0.000005	0.000898	0.0005	0.05	2.12	0.000648	5.16	0.00001	3.66	0.323		0.0001	0.00001	0.00616	0.0005	0.0018
LDSP-UND	2020-05-10	0.0043	0.00288	0.0162	0.0634	0.00002	0.00005	0.01	6.97E-05	43.8	0.0001	0.0001	0.00233	0.01	0.000448	0.0106	21.8	0.00162	0.000005	0.000887	0.00052	0.05	2.12	0.00052	4.32	0.00001	3.32	0.287		0.0001	0.00001	0.0032	0.0005	0.0038
LDSP-UND	2020-06-01	0.0016	0.00319	0.0167	0.0589	0.00002	0.00005	0.01	1.32E-05	39.2	0.0001	0.0001	0.00135	0.01	0.00006	0.0107	20.8	0.00059	0.000005	0.00091	0.0005	0.05	2.17	0.000374	4.82	0.00001	3.15	0.27		0.0001	0.00001	0.0026	0.0005	0.0016
LDSP-UND	2020-06-01	0.0024	0.00313	0.0167	0.0584	0.00002	0.00005	0.01	9.8E-06	39.7	0.0001	0.0001	0.00126	0.01	0.000055	0.011	21.5	0.00069	0.000005	0.000873	0.0005	0.05	2.22	0.000441	4.8	0.00001	3.14	0.271		0.0001	0.00001	0.00259	0.0005	0.0016
LDSP-UND	2020-07-10	0.0018	0.00323	0.0186	0.0611	0.00002	0.00005	0.01	9.1E-06	38.5	0.0001	0.0001	0.00103	0.01	0.00005	0.01	21.4	0.00081	0.000005	0.000894	0.0005	0.05	2.2	0.000427	5.12	0.00001	3.02	0.271		0.0001	0.00001	0.00299	0.0005	0.0016
LDSP-UND	2020-08-02	0.0015	0.00365	0.0213	0.0678	0.00002	0.00005	0.01	1.04E-05	47.2	0.0001	0.0001	0.00122	0.01	0.00005	0.0119	20.5	0.0022	0.000005	0.0013	0.00058	0.05	2.62	0.000458	5.19	0.00001	3.39	0.296	0.000015	0.0001	4.55	0.00421	0.0005	0.001
LDSP-UND	2020-09-03	0.0021	0.00468	0.0336	0.0802	0.00002	0.00005	0.01	1.89E-05	49.2	0.0001	0.0001	0.00132	0.01	0.00005	0.0112	25.1	0.0029	0.000005	0.001	0.00088	0.05	2.46	0.000511	5.3	0.00001	3.59	0.319		0.0001	0.00001	0.00603	0.0005	0.0112
LDSP-UND	2020-11-02	0.0024	0.0026	0.0176	0.0657	0.00002	0.00005	0.01	1.11E-05	44	0.0001	0.0001	0.00076	0.01	0.00005	0.0101	21.2	0.00064	0.000005	0.000753	0.0005	0.05	1.89	0.000354	4.52	0.00001	2.87	0.282		0.0001	0.00001	0.00378	0.0005	0.0013
LDSP-UND	2020-12-02	0.0012	0.00284	0.0196	0.0768	0.00002	0.00005	0.01	8.1E-06	52.6	0.0001	0.0001	0.0007	0.01	0.00005	0.0122	25.4	0.00082	0.000005	0.000825	0.0005	0.05	2.27	0.000428	5.12	0.00001	3.53	0.321		0.00014	0.00001	0.00581	0.0005	0.0011
LLO	2020-03-15	0.0016	0.00393	0.039	0.0942	0.00002	0.00005	0.01	8.2E-06	73.6	0.00014	0.0001	0.00129	0.01	0.00005	0.013	31.2	0.00075	0.000005	0.00156	0.00063	0.05	3.83	0.000477	4.24	0.00001	5.77	0.407	0.00001	0.0001	7.03	0.00842	0.0005	0.001
LLO	2020-04-16	0.0094	0.0021	0.0144	0.0325	0.00002	0.00005	0.01	6.71E-05	32	0.00012	0.00055	0.00144	0.01	0.00005	0.0058	10.6	0.022	0.000005	0.00121	0.00135	0.05	2.18	0.000346	1.5	0.00001	2.34	0.151	0.00001	0.00015	3.72	0.00245	0.0005	0.0057
LLO	2020-04-19																																	
LLO	2020-04-19	0.004	0.0048	0.0221	0.0586	0.00002	0.00005	0.01	4.18E-05	56.3	0.00012	0.00027	0.00122	0.01	0.00005	0.0085	18.9	0.0312	0.000005	0.00319	0.00139	0.05	3.7	0.000587	2.67	0.00001	5.43	0.288		0.0001	0.00001	0.00516	0.0005	0.0013
LLO	2020-05-22																																	
LLO	2020-05-22																																	
LLO	2020-05-23																																	
LLO	2020-05-23																																	
LLO	2020-05-24																																	
LLO	2020-05-24																																	
LLO	2020-08-30																																	
LLO	2020-09-03																																	
LLO	2020-09-08																																	
LLO	2020-09-14																																	
LLO	2020-10-08	0.0046	0.00389	0.0374	0.0703	0.00002	0.00005	0.01	4.34E-05	99.4	0.0001	0.00032	0.00144	0.01	0.00005	0.0105	29.2	0.384	0.000005	0.00195	0.00194	0.05	4.49	0.000458	4.2	0.00001	4.78	0.433		0.0001	0.00001	0.00712	0.0005	0.0015
W1	2020-01-19																																	
W1	2020-01-19	0.004	0.00092	0.0275	0.0485	0.00002	0.00005	0.01	1.48E-05	19.4	0.00012	0.0001	0.00026	0.01	0.00005	0.0028	5.34	0.00031	0.000005	0.00206	0.0005	0.05	0.918	0.000204	6.23	0.00001	1.98	0.096		0.0001	0.00001	0.00064	0.0005	0.0016
W1	2020-02-09	0.0046	0.00092	0.0283	0.0542	0.00002	0.00005	0.01	0.00001	18.5	0.0001	0.0001	0.00023	0.01	0.00005	0.0024	4.91	0.00024	0.000005	0.00205	0.0005	0.05	0.922	0.00018	6.04	0.00001	1.92	0.0993		0.0001	0.00001	0.000724	0.0005	0.001
W1	2020-02-10																																	
W1	2020-03-14	0.0043	0.00085	0.0292	0.0484	0.00002	0.00005	0.01	1.49E-05	18.8	0.00017	0.0001	0.00036	0.01	0.00005	0.0026	5.14	0.00056	0.000005	0.00208	0.0005	0.05	0.949	0.000251	6.07	0.00001	1.87	0.0956		0.0001	0.00001	0.000739	0.0005	0.0035

Station ID	Sample Date	Conductivity	Hardness (as	pH (s.u.)	TSS (mg/L)	TDS (mg/L)	Turbidity	Alkalinity,	NH3-N (mg/L)	Br (mg/L)	Cl (mg/L)	F (mg/L)	NO3-N (mg/L)	NO2-N (mg/L)	TKN (mg/L)	T-N (mg/L)	D-O-P (mg/L)	D-P-P (mg/L)	T-P-P (mg/L)	SO4 (mg/L)	CWAD (mg/L)	T-CN (mg/L)	TOC (mg/L)	DOC (mg/L)
W1	2020-03-14	151	67.2	7.64	4.7		1.02	50.3	0.0131	0.05	0.53	0.106	0.155	0.001				0.0067		20.3			1.38	
W1	2020-04-12	142	70.3	7.61	143		21.5	55.2	0.01	0.05	0.5	0.094	0.155	0.002				0.0048	0.0055	20.2			1.01	
W1	2020-04-13	148.2		7.9																				
W1	2020-04-21	106.4		7.31	7.2		9.84																	
W1	2020-04-21	110	53.1	7.75	12.8		3.74	38.2	0.021	0.05	0.5	0.09	0.118	0.001				0.0061	0.0226	14.1			8.87	
W1	2020-05-08	58		7.94	182		27.71																	
W1	2020-05-08	53.3	28.5	7.17	30.7		10.5	16.6	0.005	0.05	0.5	0.059	0.0299	0.001				0.0166	0.0505	5.35			23.1	
W1	2020-05-08	50.8	31.3	7.11	107		93.6	16.8	0.0088	0.05	0.5	0.059	0.0406	0.001				0.0205	0.132	5.2			23.5	
W1	2020-05-16	68.2		7.7			7.44																	
W1	2020-05-16	66.1	31.8	7.42	3		1.39	28.4	0.005	0.05	0.5	0.068	0.0597	0.001				0.0093	0.014	7.44			10.9	
W1	2020-06-04	53.3		7.6			10.6																	
W1	2020-06-04	58.1	26.7	7.53	32.2		12.3	21.5	0.005	0.05	0.5	0.055	0.0497	0.001				0.0072	0.0324	5.95			5.46	
W1	2020-06-22	65.5	29.4	7.36	24		2.48	25.5	0.005	0.05	0.5	0.056	0.0566	0.001	0.184	0.231	0.0031	0.0041		6.39			6.86	6.54
W1	2020-06-22	65.5	29.4	7.36	24		2.48	25.5	0.005	0.05	0.5	0.056	0.0566	0.001	0.184	0.231	0.0031	0.0041		6.39			6.86	6.54
W1	2020-06-22	61.2		7.61	24.4		9.06																	
W1	2020-06-22	65.5	29.4	7.36	24		2.48	25.5	0.005	0.05	0.5	0.056	0.0566	0.001				0.0041	0.0166	6.39			6.54	
W1	2020-07-04	82.2		7.73	8.375		7.85																	
W1	2020-07-04	81	35.7	7.57	5.4		0.82	29.7	0.005	0.05	0.5	0.074	0.0335	0.001		0.123	0.0025	0.0035	0.009	9			2.88	
W1	2020-07-11	82	37.3	7.65	21		1.87	30.2	0.005	0.05	0.5	0.08	0.0204	0.001	0.094	0.107	0.0015	0.0027		9.26	0.005	0.005	3.36	2.9
W1	2020-07-11	72.8		7.97			13.3																	
W1	2020-07-21	178.8		7.9			2.1																	
W1	2020-07-21	94.5	42.1	7.65	7.4		1.26	36.5	0.005	0.05	0.5	0.081	0.0171	0.001		0.097	0.0021	0.0036	0.0068	10.2			2.54	
W1	2020-07-29	93	40.9	7.74	3		0.93	34.6	0.005	0.05	0.5	0.08	0.0258	0.001		0.108	0.0019	0.0029	0.0075	9.77			3.26	
W1	2020-08-03	91.1	41.5	7.65	4.9		0.56	34.8	0.005	0.05	0.5	0.072	0.0184	0.001	0.106	0.089	0.0022	0.002		10.4			2.65	2.61
W1	2020-08-03	92.8		7.8	1		1.3																	
W1	2020-08-10	99.2		7.53	3.75		1.9																	
W1	2020-08-10	96.1	41.4	7.79	3.2		0.71	35.9	0.005	0.05	0.5	0.079	0.005	0.001				0.0024	0.0037	10.9			2.67	
W1	2020-08-17	102.6		7.75	2.5		1.18																	
W1	2020-08-17	105	46.7	7.81	3		0.44	37.9	0.0117	0.05	0.5	0.082	0.005	0.001				0.0031	0.0038	11.6			1.88	
W1	2020-09-01	113.2		7.42																				
W1	2020-09-01	99.9	46.1	7.69	7.2		4.86	39.5	0.005	0.05	0.5	0.082	0.0284	0.001				0.0035	0.0166	11.2			2.72	
W1	2020-09-09	102		7.74			0.18																	
W1	2020-09-14	105	47.2	7.77	3.6		0.44	38.7	0.005	0.05	0.5	0.075	0.0373	0.001				0.0029	0.0062	12			2.43	
W1	2020-09-23	106	48.9	7.8	3		0.44	40.3	0.005	0.05	0.5	0.074	0.0451	0.001				0.0037	0.0045	12.4			1.76	
W1	2020-10-06	109	49.3	7.82	3		14	40.9	0.005	0.05	0.5	0.081	0.0528	0.001				0.0022	0.0246	12.7			2.48	
W1	2020-11-03	122	54.9	7.61	3		0.33	42.4	0.005	0.05	0.5	0.085	0.0974	0.001				0.0053	0.007	16.3			1.54	
W1	2020-12-07	125	56.2	7.72	6.7		1.76	44.3	0.005	0.05	0.5	0.088	0.115	0.001				0.0048	0.0091	17.7			1.2	
W21	2020-01-19	259	126	7.95	3		0.78	82.5	0.0209	0.05	0.5	0.117	0.159	0.001				0.0039		53.6			1.66	
W21	2020-01-20	313.6		7.7			0.72																	
W21	2020-02-09	229.6		7.8			1.24																	
W21	2020-02-09	242	116	7.98	13.5		0.79	74.5	0.0071	0.05	1.04	0.106	0.164	0.001				0.0049		48.3			1.58	
W21	2020-03-14	261	120	7.83	3		0.55	71.4	0.0112	0.05	0.5	0.111	0.176	0.0014				0.0048		54			1.5	
W21	2020-04-12	248	126	7.74	13.6		42.2	77.9	0.0179	0.05	7.47	0.118	0.269	0.0043				0.0063	0.0228	40.6			3.9	
W21	2020-04-13	144.4		7.88																				
W21	2020-04-21	159.8		7.77	936		487.56																	
W21	2020-04-21	179	108	7.69	940		726	49.5	0.0336	0.05	4.13	0.091	0.298	0.0032				0.0076	0.514	29.2			15.7	
W21	2020-05-08	100.8		7.79	160		42.83																	
W21	2020-05-08	89.4	50.1	7.44	173		142	28.1	0.01	0.05	0.73	0.07	0.06	0.0013				0.0175	0.0971	11.2			24.4	
W21	2020-05-16	111.9		7.66			2.58																	
W21	2020-05-16	110	52.8	7.62	4.1		1.7	43.8	0.0058	0.05	0.5	0.076	0.0587	0.001				0.0097	0.0144	14.4			11.2	
W21	2020-06-04	82.4		7.77			6.01																	
W21	2020-06-04	90.3	41.9	7.72	17.4		7.01	32	0.005	0.05	0.5	0.061	0.05	0.001				0.0062	0.0227	11			5.55	
W21	2020-06-22	99.1		7.73	35.6		13.07																	
W21	2020-06-22	99.1		7.73	33.2		13.07																	
W21	2020-06-22	102	50	7.62	33		13.1	39.1	0.005	0.05	0.5	0.071	0.0654	0.001				0.0045	0.0278	11.9			7.81	
W21	2020-07-04	147.1		8.26	2.444444		3.14																	
W21	2020-07-04	147.1		8.26	4.222222		3.14																	
W21	2020-07-04	144	67.9	7.86	5		1.52	52.7	0.0072	0.05	0.5	0.088	0.059	0.001		0.222	0.0019	0.0028	0.0092	18.2			3.34	
W21	2020-07-11	142	72.1	7.74	181		196	51	0.007	0.05	0.55	0.096	0.0522	0.001	0.347	0.292	0.0038	0.0065		17.5	0.005	0.005	6.44	3.68
W21	2020-07-11	126.2		7.97			173																	
W21	2020-07-21	161	75.1	7.92	20.2		2.32	59.9	0.005	0.05	0.5	0.096	0.0318	0.001		0.116	0.0017	0.0025	0.0084	19.2			2.69	
W21	2020-07-23	301		8.16																				
W21	2020-07-29	147.4		8.04	4		6.74																	
W21	2020-07-29				4																			
W21	2020-07-29	155	72.8	7.97	26.8		3.75	56.8	0.0091	0.05	0.5	0.096	0.0381	0.001		0.134	0.0013	0.0024	0.0159	18.3			3.46	
W21	2020-08-03	159	76.3	7.94	10.1		1.64	59	0.0117	0.05	0.5	0.089	0.0436	0.001	0.086	0.13	0.0015	0.0022		19.6			3.08	2.57
W21	2020-08-10	174.1		7.85	13		6.85																	
W21	2020-08-10	164	76.5	8.03	14.6		1.36	60.5	0.005	0.05	0.5	0.095	0.0212	0.001				0.0024	0.0038	20.7			2.39	
W21	2020-08-17	179.4		8.02	5.375		2.75																	
W21	2020-08-17	184	89.8	8.06	6.4		0.54	67.5	0.0178	0.05	0.5	0.1	0.0322	0.001				0.007	0.0058	22.5			2.19	
W21	2020-09-01	191		7.94			17.42																	
W21	2020-09-01	168	80.3	7.98	64.2		9.47	64.7	0.005	0.05	0.5	0.096	0.0582	0.001				0.0034	0.0307	21.2			3.21	
W21	2020-09-08	167.9		7.99			3.64																	
W21	2020-09-14	178	86	7.99	9.6		0.73	65.8	0.005	0.05	0.5	0.09	0.0654	0.001				0.0036	0.0125	22.6			2.78	
W21	2020-09-23	181	91	8.02	3.7		0.78	67.9	0.005	0.05	0.5	0.085	0.0766	0.001				0.0061	0.0054	24.1			2.04	
W21	2020-10-05	191	88.5	8.01	17.8		23.1	68.7	0.005	0.05	0.5	0.092	0.0852	0.001					0.0375	24.4				
W21	2020-11-03	220	104	7.96	3.7		0.62	75.9	0.0108	0.05	0.5	0.105	0.147	0.001				0.006	0.0078	34			1.79	
W21	2020-12-07	217	103	7.97	3		1.13	72.4	0.005	0.05	0.5	0.104	0.147	0.001				0.0057	0.0059	37.7			1.21	
W22	2020-01-07	401.9		7.68			0.12																	
W22	2020-01-07	306	104	7.99	8.7		1.85	80	0.0055	0.05	0.5	0.082	0.113	0.001				0.002		58			1.47	
W22	2020-01-07	384	212	8.12	3		0.2	113	0.0071	0.05	0.5	0.086	0.111	0.001				0.002		57.4			1.22	
W22	2020-01-07	384	212					113	0.0071	0.05	0.5	0.086	0.111	0.001						57.4	0.005	0.005		

Station ID	Sample Date	T-Al (mg/L)	T-Sb (mg/L)	T-As (mg/L)	T-Ba (mg/L)	T-Be (mg/L)	T-Bi (mg/L)	T-B (mg/L)	T-Cd (mg/L)	T-Ca (mg/L)	T-Cr (mg/L)	T-Co (mg/L)	T-Cu (mg/L)	T-Fe (mg/L)	T-Pb (mg/L)	T-Li (mg/L)	T-Mg (mg/L)	T-Mn (mg/L)	T-Hg (mg/L)	T-Mo (mg/L)	T-Ni (mg/L)	T-P (mg/L)	T-K (mg/L)	T-Se (mg/L)	T-Si (mg/L)	T-Ag (mg/L)	T-Na (mg/L)	T-Sr (mg/L)	T-Tl (mg/L)	T-Sn (mg/L)	T-Ti (mg/L)	T-U (mg/L)	T-V (mg/L)	T-Zn (mg/L)
W1	2020-03-14	0.122	0.0011	0.032	0.0563	0.00002	0.000114	0.01	2.35E-05	18.4	0.00044	0.00011	0.00067	0.167	0.000348	0.0028	5.18	0.00658	0.000005	0.00229	0.00052	0.05	1.02	0.000256	6.79	0.000033	2.03	0.101		0.0001	0.00696	0.000818	0.0005	0.0033
W1	2020-04-12	0.0227	0.00103	0.0291	0.0535	0.00002	0.00005	0.01	0.00001	18.7	0.0001	0.0001	0.0005	0.03	0.000064	0.0027	5.74	0.00146	0.000005	0.00227	0.0005	0.05	0.833	0.000268	6.23	0.00001	2.12	0.113		0.0001	0.00105	0.000801	0.0005	0.003
W1	2020-04-13																																	
W1	2020-04-21																																	
W1	2020-04-21	0.216	0.00115	0.0322	0.0499	0.000024	0.000097	0.01	2.46E-05	15.3	0.00046	0.0002	0.00105	0.33	0.000546	0.0029	3.61	0.0149	5.6E-06	0.0017	0.00124	0.05	1.06	0.000196	5.3	0.00001	1.43	0.0792		0.0001	0.00896	0.00061	0.00059	0.0041
W1	2020-05-08																																	
W1	2020-05-08	0.588	0.00109	0.0348	0.0421	0.000065	0.000116	0.01	5.64E-05	8.09	0.00118	0.00058	0.00228	0.74	0.00138	0.0024	2.02	0.0418	1.22E-05	0.000873	0.00292	0.05	1.2	0.00007	3.64	0.000014	0.85	0.0452		0.0001	0.0212	0.00081	0.00126	0.007
W1	2020-05-08	2.84	0.00165	0.0645	0.0949	0.00017	0.000229	0.01	0.000101	8.23	0.00579	0.00215	0.00641	4.41	0.00434	0.0053	2.62	0.105	1.84E-05	0.00121	0.00665	0.445	1.59	0.000208	6.91	0.000037	0.89	0.0458		0.0001	0.141	0.000939	0.0077	0.0176
W1	2020-05-16																																	
W1	2020-05-16	0.168	0.00105	0.0278	0.0316	0.00002	0.00005	0.01	1.84E-05	9.26	0.00029	0.0001	0.00126	0.157	0.000246	0.0018	2.11	0.00457	6.4E-06	0.0013	0.00085	0.05	0.864	0.000084	4.42	0.00001	1.12	0.0528		0.0001	0.00346	0.0005	0.0005	0.003
W1	2020-06-04																																	
W1	2020-06-04	0.565	0.00188	0.0509	0.0381	0.000048	0.00005	0.01	0.000026	7.96	0.00114	0.00035	0.001	0.744	0.00268	0.0019	1.65	0.0202	0.000005	0.00132	0.00109	0.05	0.642	0.000109	5.17	0.000018	1.2	0.0468		0.0001	0.0266	0.000917	0.00162	0.0046
W1	2020-06-22	0.322	0.0014	0.0412	0.0342	0.000025	0.00005	0.01	2.01E-05	8.85	0.0005	0.00023	0.00088	0.416	0.00155	0.0016		0.0148	0.000005	0.00153	0.00069	0.05	0.556	0.000122	5.56	0.000013	1.3	0.0521	0.00001	0.0001	0.0139	0.000646	0.00085	0.003
W1	2020-06-22	0.322	0.0014	0.0412	0.0342	0.000025	0.00005	0.01	2.01E-05	8.85	0.0005	0.00023	0.00088	0.416	0.00155	0.0016		0.0148	0.000005	0.00153	0.00069	0.05	0.556	0.000122	5.56	0.000013	1.3	0.0521	0.00001	0.0001	0.0139	0.000646	0.00085	0.003
W1	2020-06-22																																	
W1	2020-06-22	0.322	0.0014	0.0412	0.0342	0.000025	0.00005	0.01	2.01E-05	8.85	0.0005	0.00023	0.00088	0.416	0.00155	0.0016	1.78	0.0148	0.000005	0.00153	0.00069	0.05	0.556	0.000122	5.56	0.000013	1.3	0.0521		0.0001	0.0139	0.000646	0.00085	0.003
W1	2020-07-04																																	
W1	2020-07-04	0.0939	0.00118	0.0431	0.0341	0.00002	0.00005	0.01	8.4E-06	10.5	0.00018	0.0001	0.0235	0.115	0.000523	0.0017	2.31	0.00348	0.000005	0.00179	0.0005	0.05	0.667	0.000149	5.64	0.00001	1.65	0.0602		0.00017	0.00368	0.000374	0.0005	0.0135
W1	2020-07-11	0.472	0.00132	0.0456	0.0444	0.000034	0.00005	0.01	0.000017	11.3	0.00078	0.00029	0.00087	0.598	0.000864	0.0021		0.0182	0.000005	0.002	0.00091	0.05	0.685	0.000117	6.38	0.00001	1.58	0.0719	0.000011	0.0001	0.024	0.000556	0.00117	0.0035
W1	2020-07-11																																	
W1	2020-07-21																																	
W1	2020-07-21	0.101	0.00107	0.0442	0.0389	0.00002	0.00005	0.01	7.4E-06	12.5	0.00024	0.0001	0.0005	0.104	0.000154	0.0018	2.64	0.00336	0.000005	0.00182	0.0005	0.05	0.701	0.000126	5.66	0.00001	1.78	0.0696		0.0001	0.00409	0.000434	0.0005	0.003
W1	2020-07-29	0.0974	0.00121	0.0403	0.0376	0.00002	0.00005	0.01	5.5E-06	12.2	0.00016	0.0001	0.0005	0.105	0.000201	0.002	2.55	0.00372	0.000005	0.00192	0.0005	0.05	0.668	0.000113	6.01	0.00001	1.71	0.0702		0.0001	0.00365	0.000465	0.0005	0.003
W1	2020-08-03	0.0557	0.00106	0.0402	0.038	0.00002	0.00005	0.01	7.1E-06	12.4	0.0001	0.0001	0.0005	0.057	0.000109	0.0018		0.00181	0.000005	0.00188	0.0005	0.05	0.626	0.000129	6.11	0.00001	1.66	0.0704	0.00001	0.0001	0.002	0.000479	0.0005	0.003
W1	2020-08-03																																	
W1	2020-08-10																																	
W1	2020-08-10	0.0582	0.00118	0.0412	0.0374	0.00002	0.00005	0.01	0.00001	12.3	0.00013	0.0001	0.0005	0.053	0.000095	0.0016	2.62	0.0022	0.000005	0.00217	0.0005	0.05	0.649	0.000116	5.71	0.00001	1.71	0.0757		0.0001	0.00185	0.000494	0.0005	0.003
W1	2020-08-17																																	
W1	2020-08-17	0.0474	0.00115	0.0413	0.0418	0.00002	0.00005	0.01	6.8E-06	13.9	0.00013	0.0001	0.0005	0.05	0.000095	0.002	2.89	0.00215	0.000005	0.00218	0.0005	0.05	0.709	0.000083	6.21	0.00001	1.74	0.0827		0.0001	0.0019	0.00061	0.0005	0.003
W1	2020-09-01																																	
W1	2020-09-01	0.324	0.00126	0.0446	0.0462	0.000021	0.00005	0.01	1.31E-05	13.8	0.00056	0.00021	0.00073	0.415	0.000582	0.0022	2.85	0.0106	0.000005	0.00203	0.00074	0.05	0.82	0.000126	6.13	0.00001	1.75	0.0758		0.0001	0.016	0.000646	0.0009	0.003
W1	2020-09-09																																	
W1	2020-09-14	0.0404	0.00108	0.0394	0.0434	0.00002	0.00005	0.01	8.1E-06	14	0.00012	0.0001	0.0005	0.042	0.000071	0.0021	2.98	0.00218	0.000005	0.00206	0.0005	0.05	0.738	0.000125	6.28	0.00001	1.75	0.0796		0.0001	0.00159	0.000566	0.0005	0.003
W1	2020-09-23	0.0252	0.00108	0.0397	0.0435	0.00002	0.00005	0.01	5.6E-06	14.6	0.0004	0.0001	0.0005	0.029	0.00005	0.0025	3.03	0.00102	0.000005	0.00209	0.0005	0.05	0.723	0.000151	6.2	0.00001	1.75	0.0776		0.0001	0.0009	0.000585	0.0005	0.0114
W1	2020-10-06	1.65	0.00186	0.0508	0.0546	0.000045	0.00005	0.01	0.000023	14.3	0.00541	0.00051	0.00138	1.18	0.00134	0.0028	3.28	0.0219	0.000005	0.00241	0.0022	0.05	0.917	0.00014	8.24	0.00001	1.76	0.0824		0.0001	0.0562	0.00073	0.00392	0.0044
W1	2020-11-03	0.044	0.00101	0.0351	0.045	0.00002	0.00005	0.01	0.000005	16.1	0.00016	0.0001	0.0005	0.062	0.000081	0.0024	3.58	0.00194	0.000005	0.00208	0.0005	0.05	0.737	0.000186	6.56	0.00001	1.8	0.0886		0.0001	0.00202	0.000535	0.0005	0.003
W1	2020-12-07	0.068	0.00111	0.0362	0.0487	0.00002	0.00005	0.01	6.8E-06	15.8	0.00018	0.0001	0.0005	0.115	0.000217	0.0025	4.07	0.00311	0.000005	0.00215	0.0005	0.05	0.801	0.000198	6.33	0.00001	1.8	0.0904		0.0001	0.00415	0.000609	0.0005	0.003
W21	2020-01-19	0.0412	0.00184	0.0303	0.0634	0.00002	0.00005	0.01	1.19E-05	30.7	0.0002	0.0001	0.0006	0.071	0.000134	0.0102	11.9	0.00854	0.000005	0.00144	0.00085	0.05	1.39	0.000213	6.53	0.00001	2.22	0.187		0.0001	0.00167	0.00161	0.0005	0.0148
W21	2020-01-20																																	
W21	2020-02-09																																	
W21	2020-02-09	0.134	0.00174	0.0351	0.0566	0.00002	0.00005	0.01	1.42E-05	28	0.00108	0.00013	0.00073	0.265	0.000361	0.0095	11.1	0.0119	0.000005	0.00147	0.00098	0.05	1.4	0.000255	6.4	0.00001	2.41	0.166		0.0001	0.00762	0.00156	0.0005	0.0111
W21	2020-03-14	0.0204	0.00158	0.0293	0.0585	0.00002	0.00005	0.01	0.000017	29.9	0.0001	0.0001	0.0005	0.04	0.000071	0.0105	11	0.00556	0.000005	0.00178	0.0007	0.05	1.43	0.000254	6.72	0.00001	2.29	0.179		0.0001	0.00123	0.00146	0.0005	0.0121
W21	2020-04-12	0.658	0.00369	0.0468	0.0576	0.000054	0.000553	0.01	4.71E-05	32.5	0.001	0.0008	0.003	1.32	0.00339	0.0087	10.9	0.0386	7.4E-06	0.0014	0.00236	0.05	2.08	0.000355	5.34	0.00004	2.82	0.18		0.0001	0.0188	0.00196	0.00137	0.0087
W21	2020-04-13																																	
W21	2020-04-21																																	
W21	2020-04-21	10	0.0085	0.311	0.203	0.000791	0.00309	0.01	0.00043	24.5	0.017	0.0114	0.0336	21.2	0.0513	0.0228	11.4	0.493	6.17E-05	0.000795	0.0239	0.314	5.1	0.000455	17.6	0.000382	2.33	0.147		0.0002	0.307	0.00286	0.0202	0.074
W21	2020-05-08																																	
W21	2020-05-08	1.86	0.00207	0.0636	0.06	0.000131	0.000474	0.01	7.52E-05	12.6	0.00284	0.00146	0.00516	2.3	0.00462	0.0055	4.53	0.0712	1.46E-05	0.000777	0.0046	0.064	1.93	0.000153	5.73	0.00004	1.07	0.0731		0.0001	0.0794	0.00118	0.00359	0.0172
W21	2020-05-16																																	
W21	2020-05-16	0.187	0.00118	0.0293	0.0364	0.00002	0.00005	0.01	1.75E-05	13.2	0.00037	0.00015	0.00174	0.244	0.000421	0.0034	4.8	0.0072	0.000006	0.00134	0.00115	0.05	1.05	0.00014	4.08	0.000033	1.28	0.0917		0.0001	0.0057	0.00123	0.0005	0.0056
W21	2020-06-04																																	
W21	2020-06-04	0.481	0.00196	0.0491	0.0394	0.000036	0.00005	0.01	1.79E-05	10.8	0.0008	0.00028	0.00108	0.69	0.00229	0.0029	3.64	0.0164	0.000005	0.00138	0.00114	0.05	0.776	0.000147	4.95	0.000018	1.34	0.0699		0.0001	0.022	0.00124	0.00147	0.0086
W21	2020-06-22																																	
W21	2020-06-22																																	
W21	2020-06-22	0.693	0.00169	0.0434	0.0454	0.00004	0.000059	0.01	2.86E-05	12.9	0.00113	0.00047	0.00175	1.01	0.00212	0.0032	4.32	0.026	6.6E-06	0.00162	0.00142	0.05	0.775	0.000174	5.96	0.000048	1.41	0.0851		0.0001	0.029	0.00136	0.00163	0.0061
W21	2020-07-04																																	
W21	2020-07-04																																	
W21	2020-07-04	0.126	0.0013	0.0419	0.0471	0.00002	0.00005	0.01	1.12E-05	16.3	0.00027	0.0001	0.00079	0.176	0.000394	0.0036	6.61	0.00626	0.000005	0.00171	0.00062	0.05	1.05	0.000192	5.66	0.00001	1.88	0.11		0.0001	0.00556	0.00183	0.0005	0.005
W21	2020-07-11	5.32	0.00398	0.117	0.136	0.000347	0.000895	0.01	8.68E-05	16.8	0.00895	0.00377	0.013	9.89	0.00961	0.0093		0.138	1.68E-05	0.00174	0.00945	0.165	2.04	0.000298	12.2	0.000117	2.59	0.116	0.000154	0.00015	0.226	0.00212	0.0124	0.0291
W21	2020-07-11																																	
W21	2020-07-21	0.141	0.00125	0.0416	0.0492	0.00002	0.00005	0.01	1.42E-05	19	0.00042	0.00014	0.00062	0.193	0.00033	0.0039	6.75	0.00766	0.000005	0.00176	0.00066	0.05	0.892	0.000208	5.44	0.00001	1.81	0.121		0.0001	0.00773	0.00173	0.0005	0.0043
W21	2020-07-23																																	
W21	2020-07-29																																	
W21	2020-07-29																																	
W21	2020-07-29	0.268	0.00137	0.0406	0.0492	0.00002	0.00005	0.01	1.05E-05	18.3	0.00033	0.00017	0.00085	0.323	0.000383	0.004	6.6	0.00876	0.000005	0.00193	0.00078	0.05	0.885	0.00022	6.01	0.00001	1.87	0.122		0.0001	0.0102	0.00178	0.00071	0.0048
W21	2020-08-03	0.114	0.00124	0.0393	0.0493	0.00002	0.00005	0.01	9.7E-06	18.8	0.00023	0.00012	0.00058	0.183	0.000224	0.004		0.00688	0.000005	0.00182	0.00056	0.05	0.842	0.000179	6.08	0.00001	1.88	0.128	0.00001	0.0001	0.00598	0.00209	0.00053	0.0032
W21	2020-08-10																																	
W21	2020-08-10	0.11	0.00144	0.0422	0.0496	0.00002	0.00005	0.01	1.33E-05	18.3	0.00019	0.00012	0.00057	0.152	0.000302	0.0036	7.5	0.00697	0.000005	0.00191	0.00053	0.05	0.891	0.00021	5.67	0.00001	1.95	0.136		0.0001	0.00429	0.00198	0.0005	0.0033
W21	2020-08-17																																	
W21	2020-08-17	0.0654	0.00138	0.0396	0.0566	0.00002	0.00005	0.01	0.000005	22.4	0.00017	0.0001	0.0005	0.097	0.000171	0.0049	8.24	0.00571	0.000005	0.00207	0.0006	0.05	0.937	0.000192	6.16	0.00001	1.97	0.154		0.0001	0.00341	0.00243	0.0005	0.003
W21	2020-09-01																																	
W21	2020-09-01	0.907	0.00241	0.0661	0.0632	0.000064	0.000154	0.01	5.75E-05	19.7	0.00173	0.00096	0.0022	1.55	0.00265	0.0054	7.53	0.0427	0.000005	0.0019	0.00219	0.05	1.36	0.000178	6.88	0.000015	1.92	0.134		0.0001	0.057	0.00218	0.00226	0.0092
W21	2020-09-08																																	
W21	2020-09-14	0.072	0.00124	0.0385	0.0549	0.00002	0.00005	0.01	1.05E-05	21.4	0.00021	0.0001	0.0005	0.105	0.000237	0.0047	7.92	0.00706	0.000005	0.00197	0.00052	0.05	0.967	0.000231	6.12	0.00001	1.96	0.141		0.0001	0.00359	0.00248	0.0005	0.003
W21	2020-09-23	0.0672	0.00127	0.0419	0.0537	0.00002	0.00005	0.01	1.51E-05	22.6	0.00017	0.0001	0.0005	0.116	0.000161	0.0053	8.42	0.00595	0.000005	0.00186	0.00051	0.05	0.973	0.000211	6.18	0.00001	2	0.142		0.0001	0.0032	0.00237	0.0005	0.003
W21	2020-10-05	0.762	0.00231	0.0585	0.0607	0.000053	0.000114	0.01	3.42E-05	22.8	0.00215	0.00083	0.00231	1.77	0.00329	0.006	7.69	0.0388	6.7E-06	0.00211	0.00306	0.05	1.13	0.000263	6.99	0.000024	1.78	0.147		0.0001	0.041	0.00251	0.00255	0.0083
W21	2020-11-03	0.0714	0.00143	0.038	0.0567	0.00002	0.00005	0.01	1.08E-05	25.5	0.00018	0.0001	0.0005	0.137	0.000184	0.0065	9.82	0.00792	0.000005	0.00166	0.00077	0.05	1.07	0.000286	6.5	0.00001	2.11	0.161		0.0001	0.00379	0.00214	0.0005	0.003
W21	2020-12-07	0.0404	0.00152	0.0359	0.0558	0.00002	0.00005	0.01	9.1E-06	24.9	0.0001	0.0001	0.0005	0.081	0.00011	0.0074	9.87	0.0086	0.000005	0.0016	0.00066	0.05	1.15	0.000273	6.22	0.00001	2.08	0.154		0.0001	0.00195	0.00176	0.0005	0.003
W22	2020-01-07																																	
W22	2020-01-07	0.0066	0.0001	0.00034	0.02	0.00002	0.00005	0.01	5.3E-06	25.1	0.00045	0.0001	0.0005	0.025	0.00005	0.0036	10.1	0.0179	0.000005	0.000064	0.00071	0.05	0.565	0.000082	2	0.00001	1.16	0.119		0.0001	0.0003	0.000729	0.0005	0.003
W22	2020-01-07	0.0085	0.00021	0.00077	0.0401	0.00002	0.00005	0.01	0.000016	52.1	0.00038	0.0001	0.00074	0.033	0.00006	0.0075	20	0.0346	0.000005	0.000536	0.00116	0.05	1.25	0.000166	4.35	0.00001	2.63	0.25		0.0001	0.00034	0.00151	0.0005	0.0059
W22	2020-01-07	0.0085	0.00021	0.00077	0.0401	0.00002	0.00005	0.01	0.000016	52.1	0.00038	0.0001	0.00074	0.033	0.00006	0.0075	20	0.0346	0.000005	0.000536	0.00116	0.05	1.25	0.000166	4.35	0.00001	2.63	0.25	0.00001	0.0001	0.00034	0.00151	0.0005	0.0059

Station ID	Sample Date	D-Al (mg/L)	D-Sb (mg/L)	D-As (mg/L)	D-Ba (mg/L)	D-Be (mg/L)	D-Bi (mg/L)	D-B (mg/L)	D-Cd (mg/L)	D-Ca (mg/L)	D-Cr (mg/L)	D-Co (mg/L)	D-Cu (mg/L)	D-Fe (mg/L)	D-Pb (mg/L)	D-Li (mg/L)	D-Mg (mg/L)	D-Mn (mg/L)	D-Hg (mg/L)	D-Mo (mg/L)	D-Ni (mg/L)	D-P (mg/L)	D-K (mg/L)	D-Se (mg/L)	D-Si (mg/L)	D-Ag (mg/L)	D-Na (mg/L)	D-Sr (mg/L)	D-Ti (mg/L)	D-Sn (mg/L)	D-Ti (mg/L)	D-U (mg/L)	D-V (mg/L)	D-Zn (mg/L)
W1	2020-03-14	0.0047	0.00089	0.0295	0.0496	0.00002	0.00005	0.01	9.5E-06	20	0.0001	0.0001	0.00038	0.01	0.00005	0.0027	5.37	0.00057	0.000005	0.00215	0.0005	0.05	0.932	0.000222	6	0.00001	1.76	0.0966		0.0001	0.00001	0.000734	0.0005	0.0024
W1	2020-04-12	0.0026	0.00094	0.0287	0.0519	0.00002	0.00005	0.01	0.00001	18.4	0.0001	0.0001	0.0002	0.01	0.00005	0.0027	5.8	0.00026	0.000005	0.00207	0.0005	0.05	0.89	0.000229	5.92	0.00001	2.07	0.107		0.0001	0.00001	0.000824	0.0005	0.002
W1	2020-04-13																																	
W1	2020-04-21																																	
W1	2020-04-21	0.111	0.00104	0.0296	0.0508	0.00002	0.00005	0.01	0.000018	15.3	0.0003	0.00012	0.00083	0.107	0.000097	0.0025	4.08	0.0083	0.000005	0.00161	0.00095	0.05	1.22	0.000178	5.19	0.00001	1.69	0.084		0.0001	0.00001	0.000548	0.0005	0.0016
W1	2020-05-08																																	
W1	2020-05-08	0.242	0.00068	0.0221	0.0329	0.000035	0.00005	0.01	2.54E-05	8.08	0.00032	0.00016	0.00149	0.17	0.000111	0.0018	1.95	0.0107	1.21E-05	0.000852	0.00179	0.05	1.23	0.000112	3.18	0.00001	0.839	0.0456		0.0001	0.00001	0.000487	0.0005	0.004
W1	2020-05-08	0.304	0.00064	0.022	0.0436	0.000037	0.00005	0.01	3.63E-05	7.67	0.0004	0.0003	0.00178	0.28	0.000147	0.0018	1.89	0.0264	1.04E-05	0.000876	0.00202	0.05	1.18	0.000083	3.24	0.00001	0.861	0.0446		0.0001	0.00001	0.000484	0.0005	0.0056
W1	2020-05-16																																	
W1	2020-05-16	0.0966	0.00092	0.0264	0.0308	0.00002	0.00005	0.01	1.17E-05	9.08	0.0002	0.0001	0.00099	0.073	0.000064	0.0015	2.06	0.00232	5.7E-06	0.00128	0.00097	0.05	0.832	0.000119	4.23	0.00001	1.08	0.0506		0.0001	0.00001	0.000474	0.0005	0.0022
W1	2020-06-04																																	
W1	2020-06-04	0.0559	0.00089	0.0312	0.0256	0.00002	0.00005	0.01	8.4E-06	8.02	0.00012	0.0001	0.00053	0.038	0.000078	0.0011	1.62	0.00178	0.000005	0.00134	0.0005	0.05	0.542	0.000105	4.47	0.00001	1.16	0.0507		0.0001	0.00001	0.00044	0.0005	0.001
W1	2020-06-22	0.0555	0.00097	0.0321	0.0284	0.00002	0.00005	0.01	9.5E-06	8.02	0.00016	0.0001	0.00058	0.044	0.000057	0.0011	1.65	0.00113	0.000005	0.0015	0.0005	0.05	0.532	0.000126	4.91	0.00001	1.23	0.0475	0.00001	0.0001	0.65	0.000408	0.0005	0.001
W1	2020-06-22	0.0555	0.00097	0.0321	0.0284	0.00002	0.00005	0.01	9.5E-06	8.02	0.00016	0.0001	0.00058	0.044	0.000057	0.0011	1.65	0.00113	0.000005	0.0015	0.0005	0.05	0.532	0.000126	4.91	0.00001	1.23	0.0475	0.00001	0.0001	0.65	0.000408	0.0005	0.001
W1	2020-06-22																																	
W1	2020-06-22	0.0555	0.00097	0.0321	0.0284	0.00002	0.00005	0.01	9.5E-06	8.02	0.00016	0.0001	0.00058	0.044	0.000057	0.0011	1.65	0.00113	0.000005	0.0015	0.0005	0.05	0.532	0.000126	4.91	0.00001	1.23	0.0475		0.0001	0.00001	0.000408	0.0005	0.001
W1	2020-07-04																																	
W1	2020-07-04	0.0185	0.00101	0.0396	0.0318	0.00002	0.00005	0.01	0.000005	10.3	0.0001	0.0001	0.00035	0.01	0.00005	0.0015	2.18	0.00045	0.000005	0.00172	0.0005	0.05	0.626	0.00011	5.3	0.00001	1.58	0.0566		0.0001	0.00001	0.00032	0.0005	0.001
W1	2020-07-11	0.0287	0.00102	0.0366	0.0338	0.00002	0.00005	0.01	6.4E-06	10.8	0.0001	0.0001	0.00044	0.014	0.00005	0.0016	2.08	0.00075	0.000005	0.00205	0.0005	0.05	0.587	0.000249	5.52	0.00001	1.54	0.0723	0.00001	0.0001	0.8	0.000383	0.0005	0.001
W1	2020-07-11																																	
W1	2020-07-21																																	
W1	2020-07-21	0.0189	0.00114	0.0395	0.04	0.00002	0.00005	0.01	5.6E-06	13.1	0.0001	0.0001	0.00032	0.01	0.00005	0.002	2.64	0.00052	0.000005	0.00201	0.0005	0.05	0.691	0.000098	5.54	0.00001	1.66	0.075		0.0001	0.00001	0.000439	0.0005	0.001
W1	2020-07-29	0.0217	0.00107	0.0378	0.0365	0.00002	0.00005	0.01	5.6E-06	11.8	0.0001	0.0001	0.00037	0.014	0.00005	0.0016	2.26	0.00058	0.000005	0.00195	0.0005	0.05	0.627	0.000154	5.83	0.00001	1.54	0.0654		0.0001	0.00001	0.00045	0.0005	0.0018
W1	2020-08-03	0.0137	0.00104	0.0376	0.0357	0.00002	0.00005	0.01	0.000006	12	0.0001	0.0001	0.00031	0.01	0.00005	0.0018	2.36	0.00045	0.000005	0.0019	0.0005	0.05	0.612	0.000126	5.74	0.00001	1.55	0.0667	0.00001	0.0001	0.92	0.000449	0.0005	0.001
W1	2020-08-03																																	
W1	2020-08-10																																	
W1	2020-08-10	0.02	0.00103	0.0423	0.0411	0.00002	0.00005	0.01	7.7E-06	12.9	0.0001	0.0001	0.00039	0.012	0.00005	0.0019	2.7	0.00072	0.000005	0.00205	0.0005	0.05	0.69	0.000146	5.71	0.00001	1.66	0.079		0.0001	0.00001	0.000461	0.0005	0.0039
W1	2020-08-17																																	
W1	2020-08-17	0.0128	0.00102	0.0398	0.0404	0.00002	0.00005	0.01	5.5E-06	13.5	0.0001	0.0001	0.00025	0.01	0.00005	0.0021	2.79	0.00053	0.000005	0.00206	0.0005	0.05	0.704	0.000107	5.89	0.00001	1.73	0.077		0.0001	0.00001	0.000519	0.0005	0.001
W1	2020-09-01																																	
W1	2020-09-01	0.0372	0.00111	0.0366	0.0413	0.00002	0.00005	0.01	5.7E-06	13.6	0.0001	0.0001	0.00029	0.034	0.00005	0.0018	2.36	0.00166	0.000005	0.00212	0.0005	0.05	0.696	0.000141	5.35	0.00001	1.72	0.078		0.0001	0.00001	0.000537	0.0005	0.001
W1	2020-09-09																																	
W1	2020-09-14	0.0098	0.00106	0.0391	0.0374	0.00002	0.00005	0.01	5.6E-06	14.3	0.0001	0.0001	0.00026	0.01	0.00005	0.0018	2.9	0.00069	0.000005	0.00204	0.0005	0.05	0.715	0.0001	5.98	0.00001	1.73	0.0784		0.0001	0.00001	0.000567	0.0005	0.001
W1	2020-09-23	0.0079	0.00112	0.0406	0.0432	0.00002	0.00005	0.01	0.000005	14.8	0.0001	0.0001	0.00024	0.01	0.00005	0.0021	3.03	0.00054	0.000005	0.00224	0.0005	0.05	0.763	0.000143	6.2	0.00001	1.76	0.0809		0.0001	0.00001	0.000601	0.0005	0.001
W1	2020-10-06	0.0184	0.0011	0.0405	0.0425	0.00002	0.00005	0.01	7.7E-06	15	0.0001	0.0001	0.00029	0.033	0.000061	0.002	3.18	0.00144	0.000005	0.00204	0.0005	0.05	0.746	0.000135	6	0.00001	1.84	0.0779		0.0001	0.00001	0.000609	0.0005	0.001
W1	2020-11-03	0.0043	0.00096	0.0363	0.046	0.00002	0.00005	0.01	6.1E-06	15.5	0.0001	0.0001	0.00022	0.01	0.00005	0.0022	3.51	0.00017	0.000005	0.00199	0.0005	0.05	0.776	0.000224	6.01	0.00001	1.73	0.0905		0.0001	0.00001	0.000507	0.0005	0.001
W1	2020-12-07	0.004	0.00108	0.0328	0.0455	0.00002	0.00005	0.01	0.000005	17.4	0.0001	0.0001	0.00021	0.01	0.00005	0.0025	3.86	0.00012	0.000005	0.002	0.0005	0.05	0.78	0.000201	5.85	0.00001	1.69	0.0908		0.0001	0.00001	0.000563	0.0005	0.001
W21	2020-01-19	0.0026	0.00177	0.0282	0.0553	0.00002	0.00005	0.01	1.24E-05	32.3	0.00011	0.0001	0.00039	0.01	0.00005	0.0116	12.6	0.00702	0.000005	0.00142	0.0008	0.05	1.42	0.00024	6.31	0.00001	2.32	0.179		0.0001	0.00001	0.00162	0.0005	0.0127
W21	2020-01-20																																	
W21	2020-02-09																																	
W21	2020-02-09	0.0028	0.00166	0.0299	0.0579	0.00002	0.00005	0.01	1.12E-05	29.4	0.00161	0.0001	0.0006	0.01	0.00005	0.0091	11.2	0.0072	0.000005	0.00151	0.00073	0.05	1.45	0.000206	6.08	0.00001	2.95	0.172		0.0001	0.00001	0.0015	0.0005	0.0101
W21	2020-03-14	0.0036	0.00144	0.0276	0.0551	0.00002	0.00005	0.01	7.3E-06	33	0.0001	0.0001	0.00025	0.01	0.00005	0.0107	10.9	0.00474	0.000005	0.00169	0.00057	0.05	1.36	0.000247	6.23	0.00001	2.13	0.174		0.0001	0.00001	0.0014	0.0005	0.0106
W21	2020-04-12	0.0116	0.00224	0.0256	0.0448	0.00002	0.00005	0.01	2.15E-05	31.8	0.00012	0.0002	0.00078	0.025	0.000053	0.0084	11	0.0168	0.000005	0.00147	0.00111	0.05	2.04	0.000347	4.25	0.00001	2.84	0.166		0.0001	0.00001	0.00182	0.0005	0.0033
W21	2020-04-13																																	
W21	2020-04-21																																	
W21	2020-04-21	0.104	0.00164	0.0291	0.0281	0.00002	0.00005	0.01	3.01E-05	21.5	0.00028	0.0004	0.00237	0.212	0.000356	0.0052	7.78	0.0378	0.000005	0.000902	0.00221	0.05	2.22	0.000377	3.22	0.00001	2.22	0.12		0.0001	0.00001	0.00132	0.0005	0.0039
W21	2020-05-08																																	
W21	2020-05-08	0.184	0.00089	0.026	0.035	0.000026	0.00005	0.01	2.35E-05	12.4	0.0003	0.00023	0.00241	0.208	0.000266	0.0033	4.49	0.0148	0.000009	0.000857	0.00211	0.05	1.51	0.000166	3.11	0.00001	1.04	0.0783		0.0001	0.00001	0.000859	0.0005	0.0066
W21	2020-05-16																																	
W21	2020-05-16	0.0713	0.00104	0.0266	0.0341	0.00002	0.00005	0.01	0.000006	13.4	0.0002	0.0001	0.00132	0.07	0.000079	0.0029	5.17	0.00314	5.3E-06	0.00124	0.00118	0.05	1.03	0.000171	3.87	0.00001	1.33	0.0931		0.0001	0.00001	0.00114	0.0005	0.0055
W21	2020-06-04																																	
W21	2020-06-04	0.0459	0.00098	0.0311	0.0321	0.00002	0.00005	0.01	1.02E-05	10.7	0.00014	0.0001	0.00066	0.036	0.000063	0.002	3.81	0.00234	0.000005	0.00134	0.00056	0.05	0.674	0.000149	4.3	0.00001	1.24	0.0764		0.0001	0.00001	0.000908	0.0005	0.0033
W21	2020-06-22																																	
W21	2020-06-22																																	
W21	2020-06-22	0.0596	0.001	0.0301	0.0339	0.00002	0.00005	0.01	7.9E-06	11.8	0.00017	0.0001	0.00104	0.064	0.000069	0.0022	4.22	0.00357	0.000005	0.00154	0.00066	0.05	0.655	0.000146	4.66	0.00001	1.58	0.08		0.0001	0.00001	0.0011	0.0005	0.0027
W21	2020-07-04																																	
W21	2020-07-04																																	
W21	2020-07-04	0.0166	0.00114	0.0384	0.0416	0.00002	0.00005	0.01	6.4E-06	15.8	0.0001	0.0001	0.00058	0.013	0.00005	0.0034	6.38	0.00207	0.000005	0.00164	0.0005	0.05	0.865	0.000189	5.26	0.00001	1.83	0.105		0.0001	0.00001	0.00173	0.0005	0.0044
W21	2020-07-11	0.0589	0.00122	0.0294	0.0408	0.00002	0.00005	0.01	6.6E-06	16.2	0.00011	0.00016	0.00084	0.104	0.000102	0.003	5.6	0.0176	0.000005	0.00184	0.00062	0.05	0.832	0.00024	4.92	0.00001	1.79	0.108	0.00001	0.0001	1.41	0.00136	0.0005	0.001
W21	2020-07-11																																	
W21	2020-07-21	0.0185	0.00134	0.0396	0.0502	0.00002	0.00005	0.01	5.7E-06	18.2	0.00013	0.0001	0.00042	0.015	0.00005	0.004	6.92	0.0023	0.000005	0.00191	0.0005	0.05	0.897	0.000209	5.6	0.00001	1.83	0.127		0.0001	0.00001	0.00178	0.0005	0.003
W21	2020-07-23																																	
W21	2020-07-29																																	
W21	2020-07-29																																	
W21	2020-07-29	0.0203	0.0012	0.0368	0.0456	0.00002	0.00005	0.01	0.000005	17.8	0.0001	0.0001	0.00046	0.018	0.00005	0.0035	6.27	0.00357	0.000005	0.002	0.0005	0.05	0.815	0.000243	5.8	0.00001	1.85	0.117		0.0001	0.00001	0.00183	0.0005	0.0026
W21	2020-08-03	0.01	0.00114	0.0367	0.0476	0.00002	0.00005	0.01	7.8E-06	18.1	0.0001	0.0001	0.0004	0.01	0.00005	0.0039	6.27	0.00253	0.000005	0.0019	0.0005	0.05	0.823	0.000186	5.54	0.00001	1.78	0.121	0.00001	0.0001	1.6	0.00198	0.0005	0.0025
W21	2020-08-10																																	
W21	2020-08-10	0.0147	0.00117	0.04	0.0511	0.00002	0.00005	0.01	6.2E-06	20.4	0.0001	0.0001	0.00037	0.012	0.00005	0.004	7.39	0.00292	0.000005	0.00198	0.0005	0.05	0.883	0.000231	5.43	0.00001	1.83	0.137		0.0001	0.00001	0.00195	0.0005	0.0022
W21	2020-08-17																																	
W21	2020-08-17	0.0114	0.00119	0.0378	0.0515	0.00002	0.00005	0.01	7.6E-06	20.9	0.0001	0.0001	0.00035	0.014	0.00005	0.0048	7.82	0.00326	0.000005	0.00191	0.0005	0.05	0.929	0.000214	5.7	0.00001	1.98	0.137		0.0001	0.00001	0.00209	0.0005	0.0024
W21	2020-09-01																																	
W21	2020-09-01	0.0181	0.00125	0.0361	0.0476	0.00002	0.00005	0.01	1.01E-05	20.4	0.0001	0.0001	0.00044	0.025	0.00005	0.0039	6.28	0.00597	0.000005	0.00216	0.0005	0.05	0.963	0.000197	5.31	0.00001	1.9	0.141		0.0001	0.00001	0.00205	0.0005	0.0017
W21	2020-09-08																																	
W21	2020-09-14	0.0078	0.00118	0.0376	0.0493	0.00002	0.00005	0.01	0.000007	20.8	0.0001	0.0001	0.00034	0.01	0.00005	0.004	7.72	0.00332	0.000005	0.00194	0.0005	0.05	0.927	0.000205	5.87	0.00001	1.92	0.145		0.0001	0.00001	0.00252	0.0005	0.0021
W21	2020-09-23	0.0066	0.00129	0.038	0.0544	0.00002	0.00005	0.01	6.7E-06	22.6	0.0001	0.0001	0.00032	0.011	0.00005	0.005	7.94	0.00386	0.000005	0.002	0.0005	0.05	1	0.000219	6.02	0.00001	1.93	0.145		0.0001	0.00001	0.00253	0.0005	0.0019
W21	2020-10-05																																	
W21	2020-11-03	0.0037	0.00138	0.0379	0.0559	0.00002	0.00005	0.01	8.7E-06	26.9	0.0001	0.0001	0.00031	0.011	0.00005	0.0066	10.6	0.00571	0.000005	0.00169	0.0005	0.05	1.1	0.000252	6.06	0.00001	2.16	0.172		0.0001	0.00001	0.00221	0.0005	0.0016
W21	2020-12-07	0.0028	0.00155	0.0341	0.0535	0.00002	0.00005	0.01	5.3E-06	27.2	0.0001	0.0001	0.00029	0.014	0.00005	0.0076	9.83	0.00741	0.000005	0.00154	0.00057	0.05	1.11	0.00039	5.98	0.00001	2	0.157		0.0001	0.00001	0.00184	0.0005	0.0016
W22	2020-01-07																																	
W22	2020-01-07	0.0012	0.0001	0.00026	0.0173	0.00002	0.00005	0.01	0.000005	21.7	0.0001	0.0001	0.00024	0.01	0.00005	0.003	8.54	0.0144	0.000005	0.000056	0.0005	0.05	0.499	0.000066	1.68	0.00001	0.995	0.1		0.0001	0.00001	0.000597	0.0005	0.0022
W22	2020-01-07	0.0016	0.00017	0.00068	0.0412	0.00002	0.00005	0.01	9.3E-06	51.4	0.00017	0.0001	0.00035	0.01	0.00005	0.0071	19.6	0.0348	0.000005	0.000518	0.00106	0.05	1.29	0.000166	4.28	0.00001	2.58	0.234		0.0001	0.00001	0.00139	0.0005	0.004
W22	2020-01-07	0.0016	0.00017	0.00068	0.0412	0.00002	0.00005	0.01	9.3E-06	51.4	0.00017	0.0001	0.00035	0.01	0.00005	0.0071	19.6	0.0348	0.000005	0.000518	0.00106	0.05	1.29	0.000166	4.28	0.00001	2.58	0.234	0.00001	0.0001	0.0003	0.00139	0.0005	0.004

Station ID	Sample Date	Conductivity	Hardness (as	pH (s.u.)	TSS (mg/L)	TDS (mg/L)	Turbidity	Alkalinity,	NH3-N (mg/L)	Br (mg/L)	Cl (mg/L)	F (mg/L)	NO3-N (mg/L)	NO2-N (mg/L)	TKN (mg/L)	T-N (mg/L)	D-O-P (mg/L)	D-P-P (mg/L)	T-P-P (mg/L)	SO4 (mg/L)	CWAD (mg/L)	T-CN (mg/L)	TOC (mg/L)	DOC (mg/L)
W22	2020-02-09	383.3		7.41			-0.24																	
W22	2020-02-09	387	202	8.08	3		0.16	116	0.005	0.05	0.5	0.114	0.174	0.001				0.002		93.7			1.24	
W22	2020-03-09	412	209	7.87	3		0.24	120	0.0087	0.05	0.5	0.119	0.176	0.001	0.05	0.204	0.001	0.002		97.9	0.005	0.005	0.81	0.91
W22	2020-04-12	279.6		7.46																				
W22	2020-04-12	404	220	7.71	3		0.41	124	0.005	0.05	0.5	0.119	0.18	0.001				0.002	0.002	99.4			1.03	
W22	2020-04-20	334.6		7.43	1.4		1.5																	
W22	2020-04-20	332	174	7.91	3.7		2.2	86.5	0.012	0.05	2.44	0.116	0.126	0.001				0.0054	0.0095	80.8			5.19	
W22	2020-04-21	297.6		7.26			2.39																	
W22	2020-04-21	304	147	7.86	3		1.8	74.3	0.005	0.05	2.45	0.116	0.102	0.001				0.0082	0.016	71.5			10.8	
W22	2020-04-22	268.3		7.23			1.42																	
W22	2020-04-22	262	119	7.48	3		0.92	62.9	0.005	0.05	1.16	0.092	0.0664	0.001				0.0117	0.0204	57.4			17.4	
W22	2020-04-23	270.9		7.28																				
W22	2020-04-23	279	131	7.6	3		0.1	69.7	0.005	0.05	1	0.09	0.0759	0.001				0.0102	0.0174	60			17.3	
W22	2020-04-24	313	157	8.09	3		0.13	85.8	0.005	0.05	0.87	0.099	0.103	0.001				0.0081	0.0115	67			14.2	
W22	2020-04-25	346.9		7.58																				
W22	2020-04-25	343	176	8.15	3		0.12	97.4	0.005	0.05	0.64	0.107	0.114	0.001				0.0057	0.0074	76.2			10.3	
W22	2020-04-26	382.4		7.6	3.2		0.09																	
W22	2020-04-26	364	183	8.22	3		0.9	106	0.005	0.05	0.58	0.11	0.125	0.001				0.0032	0.0048	80.6			7.02	
W22	2020-04-26	369	184	8.21	3		0.95	106	0.005	0.05	0.58	0.112	0.124	0.001				0.0027	0.0039	80.4			6.73	
W22	2020-04-27	390.5		7.58	3.2																			
W22	2020-04-27	392	181	8.15	3		0.4	115	0.005	0.05	0.7	0.116	0.136	0.001				0.002	0.0036	85.6			5.81	
W22	2020-05-06	130.9		7.31	26		14.6																	
W22	2020-05-06	123	65.9	7.52	20.7		10.9	35.9	0.0069	0.05	0.5	0.064	0.0165	0.001				0.0158	0.0355	24.2			32.8	
W22	2020-05-16	150.1		7.56			1.9																	
W22	2020-05-16	146	74.9	7.5	9.9		1.5	48.9	0.005	0.05	0.5	0.059	0.056	0.001				0.0062	0.0122	27.4			15.4	
W22	2020-06-04	163.8		7.8			-1.54																	
W22	2020-06-04	177	83.4	7.84	3		1.67	50.3	0.005	0.05	0.5	0.052	0.0803	0.001				0.0049	0.0097	34.3			7.01	
W22	2020-06-22	139.3		7.48	12.8		6.58																	
W22	2020-06-22	144	70.1	7.56	14.4		4.49	42.7	0.0088	0.05	0.5	0.06	0.043	0.001				0.004	0.0155	27.7			13.1	
W22	2020-07-04	258.6		7.72	2.333333		0.54																	
W22	2020-07-04	252	120	7.89	4		0.89	72.1	0.0063	0.05	0.5	0.082	0.0911	0.001		0.182	0.001	0.002	0.0027	54.6			2.98	
W22	2020-07-11	195	95.3	7.77	50.4		27	53.2	0.0122	0.05	0.5	0.088	0.052	0.001	0.36	0.306	0.001	0.0035		41.1	0.005	0.005	9.6	9.16
W22	2020-07-11	174.7		7.78			27.13																	
W22	2020-07-21	475.3		7.82			3.5																	
W22	2020-07-21	251	121	7.95	8.8		5.99	73.2	0.005	0.05	0.5	0.09	0.0592	0.001		0.182	0.001	0.002	0.0086	51.9			4.94	
W22	2020-07-29				1.75																			
W22	2020-07-29	225	105	7.95	24		6.11	63.4	0.0088	0.05	0.5	0.086	0.055	0.001		0.201	0.001	0.002	0.008	44.3			6.48	
W22	2020-08-03	251	122	7.92	9.9		4.5	74	0.0201	0.05	0.5	0.081	0.0654	0.001	0.114	0.17	0.001	0.002		53.6	0.005		3.8	3.46
W22	2020-08-03	254		7.85	24.6		5.42																	
W22	2020-08-10	276.2		7.47	4.625		3.05																	
W22	2020-08-10	261	124	7.96	4.6		1.2	73.3	0.005	0.05	0.5	0.089	0.0668	0.001				0.002	0.002	55			3.78	
W22	2020-08-17	276.7		7.66	1.25		1.67																	
W22	2020-08-17	280	140	7.95	3		0.63	79.9	0.0142	0.05	0.5	0.097	0.0725	0.001				0.002	0.002	58.2			3.51	
W22	2020-08-30	212.6		7.78			8.23																	
W22	2020-09-01	272		7.59			3.94																	
W22	2020-09-01	237	116	7.92	3.6		1.43	71.7	0.0098	0.05	0.5	0.083	0.0711	0.001				0.0024	0.0051	48.7			5.5	
W22	2020-09-08	257.2		7.73			0.72																	
W22	2020-09-14	281	138	7.96	3		0.5	83	0.005	0.05	0.5	0.084	0.0955	0.001				0.002	0.002	56.9			2.93	
W22	2020-09-23	309	148	8.07	3		0.52	91.1	0.005	0.05	1.94	0.137	0.12	0.0053				0.002	0.002	66.3			1.7	
W22	2020-10-05	279	141	8.02	3		1.88	85	0.005	0.05	0.5	0.1	0.102	0.001				0.0035	0.0056	61			3.57	
W22	2020-11-03	329	159	7.89	4.1		0.26	93.3	0.005	0.05	0.5	0.104	0.143	0.001				0.002	0.004	73.9			1.5	
W22	2020-12-07	348	171	7.91	3		0.73	98.8	0.005	0.05	0.5	0.112	0.163	0.001				0.002	0.002	82.1			0.95	
W22D	2020-01-07	306	104					80	0.0055	0.05	0.5	0.082	0.113	0.001						58	0.005	0.005		
W23	2020-01-03	433.8		7.86			0.12																	
W23	2020-01-03	433.8		7.86			0.12																	
W23	2020-01-03	308	239	8.15	28.6		5.14	85.7	0.0077	0.05	0.5	0.084	0.164	0.001				0.0024	0.0026	83.3			1.93	
W23	2020-02-07	420.9		7.41			-0.28																	
W23	2020-02-07	442	255	7.99	3		0.16	132	0.005	0.05	0.5	0.098	0.228	0.001				0.0033		99.8			1.8	
W23	2020-03-08	451	229	8.01	3		0.14	134	0.0096	0.05	0.5	0.108	0.246	0.001	0.07	0.296	0.0017	0.002		104	0.005	0.005	1.35	1.31
W23	2020-04-17	425	212	8.11	6.1		20	126	0.0134	0.05	3.37	0.112	0.248	0.0012	0.105	0.33	0.001	0.0024		97.5	0.005	0.005	2.09	2.48
W23	2020-04-17	433.8		7.58			18.34																	
W23	2020-04-17	425	212	8.11	6.1		20	126	0.0134	0.05	3.37	0.112	0.248	0.0012				0.0024	0.0127	97.5			2.48	
W23	2020-05-05	169.7		7.6	61.2		35.56																	
W23	2020-05-05	158	85	7.73	52.7		33.8	50.2	0.0094	0.05	0.8	0.073	0.0322	0.001				0.015	0.057	33.5			26.7	
W23	2020-06-02	177	84.5	7.78	5.3		1.61	58.2	0.005	0.05	0.5	0.059	0.0765	0.001				0.005	0.0098	32.3			8.12	
W23	2020-06-03	163.9		7.81			0.72																	
W23	2020-06-08	218	103	7.97	3		0.92	65.3	0.005	0.05	0.5	0.06	0.0838	0.001	0.188	0.247	0.001	0.0047		40.1			6.6	6.74
W23	2020-07-03	274.2		7.83	1.75		0.44																	
W23	2020-07-03	278	130	7.83	4.2		0.56	82.3	0.0272	0.05	0.5	0.093	0.095	0.001		0.229	0.001	0.002	0.0048	55.4			4.45	
W23	2020-08-06	289.2		7.9	1		1.48																	
W23	2020-08-06	303	153	8.07	4.3		0.6	90.1	0.005	0.05	0.5	0.089	0.0662	0.001				0.0024	0.0028	60.2			4.21	
W23	2020-09-02	295.6		7.65			5.34																	
W23	2020-09-02	261	134	7.98	5.1		2.12	86	0.0148	0.05	0.5	0.087	0.0719	0.001				0.0031	0.0074	49.3			7.51	
W23	2020-10-02	307	157	7.96	3		0.38	97.6	0.005	0.05	0.5	0.09	0.102	0.001				0.002	0.0046	60.2			4.91	
W23	2020-11-05	380	193	7.89	3		0.33	114	0.0159	0.05	0.5	0.108	0.173	0.001				0.003	0.005	85.8			2.54	
W23	2020-12-05	390	196	8.06	3		0.23	118	0.006	0.05	0.5	0.105	0.194	0.001				0.003	0.004	90			1.76	
W29	2020-12-07	367	180	7.98	3		0.87	111	0.005	0.05	0.5	0.117	0.171	0.0013				0.002	0.0037	82.9			1.44	
W29	2020-11-03	342	168	7.91	3.9		0.26	105	0.005	0.05	0.5	0.106	0.138	0.001				0.0021	0.0052	73			1.8	
W29	2020-10-05	282	141	8.02	3		10.3	88.3	0.005	0.05	0.5	0.102	0.0989	0.001				0.002	0.0084	59.1			3.57	
W29	2020-09-23	296	157	8.06	4.1		1.43	90.9	0.005	0.05	0.5	0.101	0.103	0.001				0.002	0.0044	60.7			2.49	
W29	2020-09-14	283	140	8	4		0.51	85.1	0.005	0.05	0.5	0.085	0.0932	0.001				0.002	0.003	54.9			2.8	
W29	2020-09-01	276.7		7.66			7.34																	

Station ID	Sample Date	T-Al (mg/L)	T-Sb (mg/L)	T-As (mg/L)	T-Ba (mg/L)	T-Be (mg/L)	T-Bi (mg/L)	T-B (mg/L)	T-Cd (mg/L)	T-Ca (mg/L)	T-Cr (mg/L)	T-Co (mg/L)	T-Cu (mg/L)	T-Fe (mg/L)	T-Pb (mg/L)	T-Li (mg/L)	T-Mg (mg/L)	T-Mn (mg/L)	T-Hg (mg/L)	T-Mo (mg/L)	T-Ni (mg/L)	T-P (mg/L)	T-K (mg/L)	T-Se (mg/L)	T-Si (mg/L)	T-Ag (mg/L)	T-Na (mg/L)	T-Sr (mg/L)	T-Tl (mg/L)	T-Sn (mg/L)	T-Ti (mg/L)	T-U (mg/L)	T-V (mg/L)	T-Zn (mg/L)
W22	2020-02-09																																	
W22	2020-02-09	0.0042	0.00019	0.00062	0.0403	0.00002	0.00005	0.01	1.09E-05	47.6	0.0001	0.00013	0.0005	0.044	0.00005	0.0073	20.2	0.0424	0.000005	0.00033	0.00127	0.05	1.21	0.000221	4.38	0.00001	2.15	0.238		0.0001	0.0003	0.00142	0.0005	0.003
W22	2020-03-09	0.0036	0.0002	0.00062	0.0416	0.00002	0.00005	0.01	0.000005	47.6	0.0001	0.00013	0.0005	0.058	0.00005	0.0083		0.0444	0.000005	0.000058	0.00146	0.05	1.24	0.000171	4.54	0.00001	2.34	0.246	0.00001	0.0001	0.0003	0.00162	0.0005	0.003
W22	2020-04-12																																	
W22	2020-04-12	0.0038	0.0002	0.00074	0.0409	0.00002	0.00005	0.01	1.12E-05	50.3	0.0001	0.00014	0.0005	0.067	0.00005	0.0076	23.1	0.0458	0.000005	0.000062	0.00148	0.05	1.2	0.000188	4.45	0.00001	2.46	0.257		0.0001	0.0003	0.00152	0.0005	0.003
W22	2020-04-20																																	
W22	2020-04-20	0.0472	0.00026	0.00109	0.0354	0.00002	0.00005	0.01	2.08E-05	42.1	0.0002	0.0002	0.00069	0.215	0.00014	0.0067	16.9	0.0546	0.000005	0.000061	0.00163	0.05	1.5	0.00014	3.66	0.000011	2.27	0.212		0.0001	0.0009	0.001	0.0005	0.0039
W22	2020-04-21																																	
W22	2020-04-21	0.0789	0.00024	0.00123	0.036	0.00002	0.00005	0.01	2.35E-05	35.2	0.00015	0.00021	0.00106	0.278	0.000124	0.0064	14.4	0.0527	0.000005	0.000052	0.00196	0.05	1.69	0.000153	3.54	0.00001	1.9	0.165		0.0001	0.00169	0.000824	0.0005	0.0048
W22	2020-04-22																																	
W22	2020-04-22	0.0981	0.0002	0.00106	0.0308	0.00002	0.00005	0.01	3.34E-05	28.2	0.00012	0.00021	0.00152	0.264	0.000158	0.0054	11.8	0.0452	6.2E-06	0.00005	0.00205	0.05	1.47	0.000116	3.28	0.00001	1.38	0.143		0.0001	0.00146	0.000558	0.0005	0.0052
W22	2020-04-23																																	
W22	2020-04-23	0.0771	0.00021	0.00095	0.0367	0.00002	0.00005	0.01	3.16E-05	31.3	0.00015	0.00018	0.00159	0.217	0.000054	0.0054	12.8	0.0414	5.8E-06	0.000054	0.00204	0.05	1.44	0.00016	3.29	0.00001	1.59	0.16		0.0001	0.00062	0.000759	0.0005	0.0051
W22	2020-04-24	0.0658	0.0002	0.00108	0.0369	0.00002	0.00005	0.01	1.85E-05	36.6	0.00012	0.00022	0.00137	0.234	0.00005	0.0062	16	0.0558	6.7E-06	0.00005	0.00225	0.05	1.36	0.000138	3.7	0.00001	2.13	0.194		0.0001	0.00065	0.00101	0.0005	0.0044
W22	2020-04-25																																	
W22	2020-04-25	0.0487	0.00021	0.00097	0.0383	0.00002	0.00005	0.01	1.53E-05	40.5	0.0001	0.00022	0.00112	0.221	0.00005	0.007	18.1	0.0595	7.1E-06	0.000052	0.00209	0.05	1.37	0.000139	3.99	0.00001	2.24	0.209		0.0001	0.00059	0.00116	0.0005	0.0041
W22	2020-04-26																																	
W22	2020-04-26	0.0293	0.00021	0.00093	0.0385	0.00002	0.00005	0.01	1.34E-05	41.5	0.0001	0.00019	0.00075	0.199	0.00005	0.0072	19.2	0.0597	5.3E-06	0.000078	0.00185	0.05	1.34	0.000153	4.06	0.00001	2.32	0.228		0.0001	0.00039	0.00126	0.0005	0.003
W22	2020-04-26	0.0312	0.00021	0.00093	0.0373	0.00002	0.00005	0.01	1.71E-05	42	0.0001	0.00021	0.00078	0.2	0.00005	0.0073	19.2	0.0602	5.2E-06	0.000088	0.00202	0.05	1.33	0.000183	4.07	0.00001	2.36	0.223		0.0001	0.00039	0.00126	0.0005	0.0034
W22	2020-04-27																																	
W22	2020-04-27	0.0216	0.00023	0.00089	0.0411	0.00002	0.00005	0.01	1.71E-05	43	0.0001	0.00018	0.00065	0.126	0.00005	0.0071	18	0.0545	0.000005	0.00017	0.00184	0.05	1.36	0.000195	4.27	0.00001	2.23	0.227		0.0001	0.0003	0.00121	0.0005	0.0054
W22	2020-05-06																																	
W22	2020-05-06	0.59	0.00036	0.00352	0.0338	0.000047	0.00005	0.01	8.17E-05	16.1	0.00079	0.00083	0.00311	1.49	0.000827	0.0035	6.24	0.133	1.11E-05	0.000055	0.00386	0.05	1.39	0.0001	2.78	0.000015	0.878	0.077		0.0001	0.0132	0.000344	0.00107	0.0172
W22	2020-05-16																																	
W22	2020-05-16	0.137	0.00018	0.0009	0.0262	0.00002	0.00005	0.01	3.36E-05	19.3	0.0002	0.0003	0.00188	0.346	0.00013	0.0032	6.46	0.0422	5.8E-06	0.000058	0.00201	0.05	0.802	0.000131	2.32	0.00001	0.895	0.0983		0.0001	0.00151	0.000364	0.0005	0.0038
W22	2020-06-04																																	
W22	2020-06-04	0.0685	0.00021	0.00075	0.0237	0.00002	0.00005	0.01	1.29E-05	22.3	0.00012	0.00017	0.00099	0.248	0.000086	0.0028	6.71	0.0261	0.000005	0.00005	0.00126	0.05	0.642	0.000127	2.7	0.00001	0.986	0.112		0.0001	0.00103	0.00038	0.0005	0.003
W22	2020-06-22																																	
W22	2020-06-22	0.25	0.0003	0.0019	0.0262	0.00002	0.00005	0.01	2.51E-05	18.6	0.00037	0.00033	0.00214	0.466	0.000489	0.003	5.72	0.0293	6.8E-06	0.000062	0.00192	0.05	0.497	0.000137	3.23	0.000011	0.918	0.0938		0.0001	0.00553	0.000283	0.00053	0.003
W22	2020-07-04																																	
W22	2020-07-04	0.0763	0.00026	0.00153	0.032	0.00002	0.00005	0.01	1.34E-05	30.8	0.00017	0.00014	0.00105	0.181	0.000206	0.0046	10.6	0.0233	0.000005	0.000063	0.00114	0.05	0.786	0.000229	3.76	0.00001	2.06	0.16		0.0001	0.00189	0.000622	0.0005	0.003
W22	2020-07-11	0.818	0.00052	0.00638	0.0451	0.000047	0.00005	0.01	4.58E-05	24.4	0.00135	0.00085	0.00325	1.65	0.00187	0.005		0.0573	8.6E-06	0.00009	0.00332	0.05	0.765	0.000168	4.16	0.000024	1.17	0.125	0.00002	0.0001	0.022	0.000519	0.00184	0.0072
W22	2020-07-11																																	
W22	2020-07-21																																	
W22	2020-07-21	0.127	0.00029	0.00113	0.0339	0.00002	0.00005	0.01	1.76E-05	31.6	0.00023	0.00026	0.00112	0.265	0.000398	0.0049	10.3	0.0356	0.000005	0.000071	0.00179	0.05	0.78	0.000207	3.73	0.00001	1.44	0.165		0.0001	0.00252	0.000579	0.0005	0.003
W22	2020-07-29																																	
W22	2020-07-29	0.196	0.00033	0.00152	0.0324	0.00002	0.00005	0.01	1.98E-05	26.8	0.00025	0.00032	0.0016	0.388	0.000429	0.0045	9.22	0.0341	5.6E-06	0.000095	0.00192	0.05	0.71	0.000132	3.98	0.00001	1.32	0.138		0.0001	0.00451	0.000484	0.00054	0.003
W22	2020-08-03	0.229	0.0003	0.00225	0.0365	0.00002	0.00005	0.01	1.64E-05	31.9	0.00036	0.00041	0.00101	0.636	0.000437	0.0049		0.0487	0.000005	0.000078	0.00176	0.05	0.779	0.000159	4.04	0.00001	1.43	0.167	0.00001	0.0001	0.0066	0.000669	0.00063	0.0038
W22	2020-08-03																																	
W22	2020-08-10																																	
W22	2020-08-10	0.0586	0.00028	0.00106	0.0347	0.00002	0.00005	0.01	1.59E-05	31.7	0.00014	0.00022	0.00093	0.202	0.000185	0.0044	10.9	0.0405	0.000005	0.000071	0.00145	0.05	0.736	0.000167	3.72	0.00001	1.65	0.177		0.0001	0.00152	0.000646	0.0005	0.003
W22	2020-08-17																																	
W22	2020-08-17	0.032	0.00026	0.00081	0.0365	0.00002	0.00005	0.01	8.2E-06	36.5	0.00021	0.0002	0.00056	0.147	0.00008	0.0056	11.9	0.047	0.000005	0.000075	0.0014	0.05	0.81	0.000195	4.05	0.00001	1.55	0.194		0.0001	0.00062	0.00075	0.0005	0.003
W22	2020-08-30																																	
W22	2020-09-01																																	
W22	2020-09-01	0.0944	0.0003	0.00114	0.034	0.00002	0.00005	0.01	1.55E-05	30.6	0.00021	0.00025	0.00121	0.266	0.000169	0.0046	9.72	0.045	0.000005	0.000074	0.00158	0.05	0.806	0.000156	3.8	0.00001	1.42	0.148		0.0001	0.00226	0.0006	0.0005	0.0051
W22	2020-09-08																																	
W22	2020-09-14	0.0249	0.00025	0.00077	0.034	0.00002	0.00005	0.01	9.7E-06	36.7	0.0001	0.00017	0.00062	0.123	0.00005	0.0052	11.3	0.0446	0.000005	0.000217	0.00119	0.05	0.824	0.000189	3.9	0.00001	1.63	0.197		0.0001	0.00047	0.000808	0.0005	0.003
W22	2020-09-23	0.106	0.00029	0.00145	0.0335	0.00002	0.00005	0.01	2.15E-05	39.4	0.00024	0.0003	0.00062	0.381	0.000229	0.0059	12.1	0.056	0.000005	0.000079	0.00144	0.05	0.856	0.000179	4.05	0.00001	1.64	0.189		0.0001	0.00323	0.000909	0.0005	0.003
W22	2020-10-05	0.152	0.00039	0.00328	0.0381	0.00002	0.000055	0.01	1.83E-05	36.1	0.00029	0.0003	0.00083	0.37	0.000476	0.0059	12.4	0.065	0.000005	0.000087	0.0017	0.05	0.909	0.000217	4.23	0.00001	1.62	0.181		0.0001	0.00616	0.000847	0.0005	0.003
W22	2020-11-03	0.0679	0.00024	0.00084	0.0388	0.00002	0.00005	0.01	1.28E-05	39.4	0.00015	0.00025	0.0005	0.198	0.000128	0.0059	14.8	0.0544	0.000005	0.000064	0.00143	0.05	0.907	0.000237	4.4	0.00001	1.8	0.206		0.0001	0.00215	0.00103	0.0005	0.003
W22	2020-12-07	0.0129	0.00023	0.0006	0.0411	0.00002	0.00005	0.01	1.57E-05	41.1	0.0001	0.00025	0.0005	0.11	0.00005	0.0069	16.6	0.0625	0.000005	0.000066	0.00148	0.05	1.01	0.000269	4.35	0.00001	1.98	0.21		0.0001	0.00049	0.00118	0.0005	0.003
W22D	2020-01-07	0.0066	0.0001	0.00034	0.02	0.00002	0.00005	0.01	5.3E-06	25.1	0.00045	0.0001	0.0005	0.025	0.00005	0.0036	10.1	0.0179	0.000005	0.000064	0.00071	0.05	0.565	0.000082	2	0.00001	1.16	0.119	0.00001	0.0001	0.0003	0.000729	0.0005	0.003
W23	2020-01-03																																	
W23	2020-01-03																																	
W23	2020-01-03	0.007	0.00051	0.00362	0.0478	0.00002	0.00005	0.01	1.28E-05	66.7	0.00045	0.0001	0.00076	0.02	0.00005	0.0052	17.6	0.0198	0.000005	0.000614	0.00058	0.05	1.37	0.000339	4.62	0.00001	2.64	0.322		0.0001	0.0003	0.0018	0.0005	0.003
W23	2020-02-07																																	
W23	2020-02-07	0.0049	0.00044	0.00378	0.0558	0.00002	0.00005	0.01	1.21E-05	69.6	0.0001	0.0001	0.0005	0.015	0.00005	0.0052	19.8	0.0238	0.000005	0.000567	0.00058	0.05	1.4	0.000363	4.35	0.00001	2.77	0.306		0.0001	0.0003	0.00202	0.0005	0.003
W23	2020-03-08	0.0038	0.00045	0.00363	0.0553	0.00002	0.00005	0.01	0.000005	59.9	0.0001	0.0001	0.0005	0.018	0.00005	0.0053		0.0221	0.000005	0.000499	0.00059	0.05	1.44	0.000382	4.59	0.00001	2.69	0.29	0.00001	0.0001	0.0003	0.0022	0.0005	0.003
W23	2020-04-17	0.478	0.00107	0.015	0.0572	0.000027	0.000096	0.01	1.88E-05	57.7	0.00065	0.00037	0.00135	0.625	0.00146	0.0057		0.0407	0.000005	0.000523	0.00124	0.05	1.89	0.000374	4.6	0.000011	3.2	0.272	0.00001	0.0001	0.0147	0.00195	0.00086	0.0032
W23	2020-04-17																																	
W23	2020-04-17	0.478	0.00107	0.015	0.0572	0.000027	0.000096	0.01	1.88E-05	57.7	0.00065	0.00037	0.00135	0.625	0.00146	0.0057	16.4	0.0407	0.000005	0.000523	0.00124	0.05	1.89	0.000374	4.6	0.000011	3.2	0.272		0.0001	0.0147	0.00195	0.00086	0.0032
W23	2020-05-05																																	
W23	2020-05-05	1.35	0.00152	0.0321	0.049	0.000108	0.000234	0.01	8.32E-05	23.5	0.00235	0.00142	0.0056	2.47	0.00424	0.0043	6.39	0.157	1.35E-05	0.00034	0.00436	0.05	1.77	0.000216	3.87	0.000041	1.07	0.106		0.0001	0.0387	0.000564	0.00251	0.0142
W23	2020-06-02	0.149	0.00051	0.00565	0.0292	0.00002	0.00005	0.01	1.64E-05	24.8	0.00038	0.00017	0.00169	0.312	0.00032	0.0021	5.48	0.0178	0.000005	0.000466	0.00132	0.05	0.776	0.000246	3.12	0.00001	1.08	0.11		0.0001	0.00405	0.000464	0.0005	0.0035
W23	2020-06-03																																	
W23	2020-06-08	0.0711	0.00049	0.0053	0.033	0.00002	0.00005	0.01	1.24E-05	29.5	0.00025	0.0001	0.00127	0.146	0.000142	0.0026		0.0158	0.000005	0.000453	0.001	0.05	0.91	0.000271	3.38	0.00001	1.44	0.133	0.00001	0.0001	0.00179	0.000554	0.00053	0.003
W23	2020-07-03																																	
W23	2020-07-03	0.051	0.00053	0.00632	0.0389	0.00002	0.00005	0.01	1.14E-05	36.8	0.00012	0.0001	0.001	0.11	0.000125	0.0031	9.12	0.0172	0.000005	0.000546	0.00116	0.05	1.05	0.000318	4.11	0.00001	1.7	0.177		0.0001	0.00101	0.000806	0.0005	0.003
W23	2020-08-06																																	
W23	2020-08-06	0.0432	0.00058	0.00654	0.0435	0.00002	0.00005	0.01	1.73E-05	44.6	0.0001	0.00011	0.00085	0.101	0.000101	0.004	10.2	0.0275	0.000005	0.000565	0.00089	0.05	1.07	0.000302	4.09	0.00001	1.85	0.194		0.0001	0.00098	0.000924	0.0005	0.003
W23	2020-09-02																																	
W23	2020-09-02	0.116	0.00055	0.00606	0.0389	0.00002	0.00005	0.01	2.04E-05	39	0.0003	0.0002	0.0014	0.211	0.000229	0.0032	8.79	0.0319	0.000005	0.000517	0.00153	0.05	0.884	0.000331	4.16	0.00001	1.56	0.202		0.0001	0.00335	0.000743	0.0005	0.003
W23	2020-10-02	0.0444	0.00054	0.00708	0.0473	0.00002	0.00005	0.01	2.16E-05	44	0.00011	0.00015	0.00095	0.136	0.000086	0.0036	11.5	0.0397	0.000005	0.000702	0.00135	0.05	1.16	0.000336	4.67	0.00001	2.1	0.213		0.0001	0.00125	0.00112	0.0005	0.003
W23	2020-11-05	0.0166	0.00046	0.00476	0.0526	0.00002	0.00005	0.01	0.000019	54.7	0.0001	0.0001	0.00059	0.047	0.00005	0.0044	13.6	0.036	0.000005	0.000568	0.00088	0.05	1.24	0.000393	4.76	0.00001	2.33	0.239		0.0001	0.00056	0.00125	0.0005	0.003
W23	2020-12-05	0.0207	0.00046	0.00536	0.0538	0.00002	0.00005	0.01	1.42E-05	55	0.0001	0.0001	0.00058	0.067	0.000059	0.0043	14.3	0.0352	0.000005	0.000633	0.00084	0.05	1.29	0.000408	4.56	0.00001	2.37	0.264		0.0001	0.00095	0.0015	0.0005	0.003
W29	2020-12-07	0.0271	0.00051	0.00415	0.0448	0.00002	0.00005	0.01	1.62E-05	43.2	0.0001	0.0002	0.00136	0.114	0.000115	0.0073	17.4	0.0712	0.000005	0.000227	0.00137	0.05	1.16	0.000237	4.48	0.00001	2.19	0.223		0.0001	0.00122	0.00164	0.0005	0.0043
W29	2020-11-03	0.0782	0.0005	0.00556	0.0429	0.00002	0.00005	0.01	1.77E-05	41.6	0.00017	0.00023	0.00056	0.228	0.000232	0.0063	15.6	0.057	0.000005	0.000258	0.0014	0.05	1.04	0.000209	4.69	0.00001	2.11	0.21		0.0001	0.00382	0.00147	0.0005	0.003
W29	2020-10-05	0.355	0.0009	0.0145	0.0436	0.000021	0.000055	0.01	2.29E-05	36.1	0.00063	0.00042	0.00132	0.634	0.00117	0.0063	12.5	0.059	0.000005	0.000403	0.00188	0.05	1.06	0.000249	4.68	0.000011	1.85	0.186		0.0001	0.0216	0.00128	0.00081	0.0045
W29	2020-09-23	0.109	0.00077	0.00985	0.0437	0.00002	0.00005	0.01	0.000023	40.4	0.00021	0.00026	0.00085	0.223	0.000437	0.0072	13.7	0.0532	0.000005	0.000414	0.00146	0.05	1.13	0.000234	4.44	0.00001	1.96	0.2		0.0001	0.00492	0.00137	0.0005	0.003
W29	2020-09-14	0.0324	0.00049	0.00637	0.0376	0.00002	0.00005	0.01	1.36E-05	36.6	0.0001	0.00017	0.00058	0.113	0.000088	0.0054	11.7	0.0447	0.000005	0.000385	0.00123	0.05	0.894	0.000222	4.28	0.00001	1.72	0.204		0.0001	0.00092	0.00117	0.0005	0.003
W29	2020-09-01																																	

Station ID	Sample Date	D-Al (mg/L)	D-Sb (mg/L)	D-As (mg/L)	D-Ba (mg/L)	D-Be (mg/L)	D-Bi (mg/L)	D-B (mg/L)	D-Cd (mg/L)	D-Ca (mg/L)	D-Cr (mg/L)	D-Co (mg/L)	D-Cu (mg/L)	D-Fe (mg/L)	D-Pb (mg/L)	D-Li (mg/L)	D-Mg (mg/L)	D-Mn (mg/L)	D-Hg (mg/L)	D-Mo (mg/L)	D-Ni (mg/L)	D-P (mg/L)	D-K (mg/L)	D-Se (mg/L)	D-Si (mg/L)	D-Ag (mg/L)	D-Na (mg/L)	D-Sr (mg/L)	D-Ti (mg/L)	D-Sn (mg/L)	D-Ti (mg/L)	D-U (mg/L)	D-V (mg/L)	D-Zn (mg/L)
W22	2020-02-09																																	
W22	2020-02-09	0.0017	0.0002	0.00062	0.0418	0.00002	0.00005	0.01	1.17E-05	48.4	0.0001	0.00012	0.00045	0.01	0.00005	0.0072	20.5	0.0435	0.000005	0.000162	0.00131	0.05	1.27	0.000148	4.28	0.00001	2.36	0.239		0.0001	0.00001	0.00141	0.0005	0.0023
W22	2020-03-09	0.002	0.0002	0.00052	0.0405	0.00002	0.00005	0.01	9.8E-06	46.5	0.0001	0.00013	0.0002	0.01	0.00005	0.0073	20.2	0.04	0.000005	0.000059	0.00137	0.05	1.17	0.000206	4.1	0.00001	2.14	0.231	0.00001	0.0001	4.45	0.00142	0.0005	0.0021
W22	2020-04-12																																	
W22	2020-04-12	0.0018	0.00021	0.00058	0.0394	0.00002	0.00005	0.01	1.25E-05	50.9	0.0001	0.00012	0.00024	0.015	0.00005	0.008	23.8	0.0452	0.000005	0.000052	0.00146	0.05	1.29	0.000233	4.24	0.00001	2.56	0.258		0.0001	0.00001	0.00148	0.0005	0.0031
W22	2020-04-20																																	
W22	2020-04-20	0.0122	0.0002	0.00066	0.0347	0.00002	0.00005	0.01	1.81E-05	38	0.0001	0.00015	0.00056	0.048	0.00005	0.0063	16	0.048	0.000005	0.00005	0.0016	0.05	1.54	0.000157	3.52	0.00001	2.13	0.188		0.0001	0.00001	0.00094	0.0005	0.0031
W22	2020-04-21																																	
W22	2020-04-21	0.0322	0.0002	0.00075	0.0362	0.00002	0.00005	0.01	2.18E-05	32.5	0.0001	0.0001	0.00096	0.077	0.00005	0.0059	16.5	0.0291	0.000005	0.00005	0.0018	0.05	1.79	0.000167	3.61	0.00001	2.14	0.172		0.0001	0.00001	0.000735	0.0005	0.0036
W22	2020-04-22																																	
W22	2020-04-22	0.0586	0.00018	0.00079	0.031	0.00002	0.00005	0.01	2.94E-05	29.7	0.00011	0.00015	0.00153	0.133	0.00005	0.0053	12.3	0.0366	5.3E-06	0.00005	0.00203	0.05	1.52	0.000106	3.24	0.00001	1.58	0.135		0.0001	0.00001	0.000536	0.0005	0.0045
W22	2020-04-23																																	
W22	2020-04-23	0.0612	0.00018	0.00086	0.0339	0.00002	0.00005	0.01	0.000029	31.5	0.00011	0.00016	0.0015	0.136	0.00005	0.0055	12.8	0.0358	6.9E-06	0.00005	0.00207	0.05	1.39	0.000154	3.33	0.00001	1.73	0.158		0.0001	0.00001	0.000653	0.0005	0.0044
W22	2020-04-24	0.0562	0.00021	0.00105	0.0388	0.00002	0.00005	0.01	2.64E-05	41.2	0.0001	0.0002	0.00137	0.136	0.000069	0.0067	16	0.0483	6.9E-06	0.00006	0.00199	0.05	1.33	0.000164	3.68	0.00001	1.84	0.208		0.0001	0.00001	0.000944	0.0005	0.0043
W22	2020-04-25																																	
W22	2020-04-25	0.0371	0.0002	0.00086	0.0398	0.00002	0.00005	0.01	2.32E-05	43.2	0.0001	0.0002	0.00098	0.109	0.00005	0.0074	18.2	0.0524	5.7E-06	0.00005	0.00198	0.05	1.38	0.00013	3.91	0.00001	2.02	0.216		0.00047	0.00001	0.00107	0.0005	0.004
W22	2020-04-26																																	
W22	2020-04-26	0.0256	0.00022	0.00193	0.0384	0.00002	0.00005	0.01	1.29E-05	44.9	0.0001	0.00018	0.00072	0.091	0.00005	0.0076	18.3	0.0498	0.000005	0.00005	0.00174	0.05	1.31	0.000142	4.09	0.00001	2.09	0.229		0.0001	0.00001	0.00112	0.0005	0.0034
W22	2020-04-26	0.0294	0.00021	0.00094	0.0407	0.00002	0.00005	0.01	1.22E-05	45.5	0.0001	0.00019	0.0008	0.087	0.00005	0.0077	19	0.0517	5.4E-06	0.000054	0.00183	0.05	1.34	0.000172	4.07	0.00001	2.1	0.23		0.0001	0.00001	0.00118	0.0005	0.0048
W22	2020-04-27																																	
W22	2020-04-27	0.0182	0.00021	0.00075	0.037	0.00002	0.00005	0.01	1.31E-05	43.8	0.0001	0.00016	0.00075	0.07	0.00005	0.0066	18.7	0.0509	0.000005	0.000131	0.00178	0.05	1.29	0.000137	4.16	0.00001	2.18	0.224		0.0001	0.00001	0.00117	0.0005	0.0036
W22	2020-05-06																																	
W22	2020-05-06	0.166	0.00015	0.00092	0.0281	0.000025	0.00005	0.01	0.00006	16	0.00023	0.00024	0.00242	0.251	0.000063	0.0028	6.23	0.045	1.23E-05	0.00005	0.00284	0.05	1.32	0.000095	2.1	0.00001	0.818	0.0791		0.0001	0.00001	0.000266	0.0005	0.0073
W22	2020-05-16																																	
W22	2020-05-16	0.0902	0.00015	0.00073	0.0249	0.00002	0.00005	0.01	2.29E-05	20	0.00017	0.00026	0.00179	0.191	0.000056	0.0026	6.79	0.0357	5.1E-06	0.00005	0.00207	0.05	0.77	0.000088	2.15	0.00001	0.863	0.0986		0.0001	0.00001	0.000332	0.0005	0.0034
W22	2020-06-04																																	
W22	2020-06-04	0.0432	0.00018	0.00058	0.022	0.00002	0.00005	0.01	9.1E-06	25.5	0.0001	0.00014	0.00097	0.103	0.00005	0.0026	7.23	0.0217	0.000005	0.000054	0.00122	0.05	0.613	0.000117	2.55	0.00001	0.938	0.124		0.0001	0.00001	0.000389	0.0005	0.0013
W22	2020-06-22																																	
W22	2020-06-22	0.094	0.00023	0.00089	0.0238	0.00002	0.00005	0.01	1.51E-05	17.7	0.0002	0.00016	0.00171	0.176	0.00006	0.0025	5.76	0.0149	0.000005	0.000052	0.00177	0.05	0.51	0.000171	2.82	0.00001	0.893	0.0899		0.0001	0.00001	0.000255	0.0005	0.0015
W22	2020-07-04																																	
W22	2020-07-04	0.0166	0.00021	0.00066	0.0302	0.00002	0.00005	0.01	6.3E-06	30.2	0.0001	0.0001	0.00062	0.05	0.00005	0.0044	10.4	0.0174	0.000005	0.000065	0.00097	0.05	0.774	0.000164	3.39	0.00001	2.01	0.153		0.0001	0.00001	0.000579	0.0005	0.0014
W22	2020-07-11	0.0596	0.00027	0.00098	0.0326	0.00002	0.00005	0.01	1.81E-05	23.7	0.00019	0.00019	0.00139	0.136	0.000109	0.0041	7.72	0.0254	0.000005	0.000055	0.00168	0.05	0.577	0.00019	3.26	0.00001	1.11	0.127	0.00001	0.0001	1.93	0.000429	0.0005	0.001
W22	2020-07-11																																	
W22	2020-07-21																																	
W22	2020-07-21	0.0324	0.00027	0.00078	0.0352	0.00002	0.00005	0.01	1.48E-05	31.2	0.0001	0.00019	0.00085	0.11	0.00005	0.0054	10.4	0.0304	0.000005	0.000077	0.00158	0.05	0.799	0.00019	3.66	0.00001	1.43	0.164		0.0001	0.00001	0.000595	0.0005	0.0015
W22	2020-07-29																																	
W22	2020-07-29	0.041	0.00026	0.00077	0.0297	0.00002	0.00005	0.01	1.32E-05	26.9	0.0001	0.0002	0.00105	0.106	0.00005	0.0039	8.33	0.028	0.000005	0.000093	0.00119	0.05	0.644	0.000178	3.63	0.00001	1.19	0.133		0.0001	0.00001	0.000488	0.0005	0.0017
W22	2020-08-03	0.0179	0.00024	0.00059	0.0314	0.00002	0.00005	0.01	7.2E-06	32.3	0.0001	0.00014	0.0007	0.062	0.00005	0.0048	9.19	0.0274	0.000005	0.00008	0.00116	0.05	0.738	0.00017	3.65	0.00001	1.67	0.158	0.00001	0.0001	2.6	0.000617	0.0005	0.0024
W22	2020-08-03																																	
W22	2020-08-10																																	
W22	2020-08-10	0.022	0.00024	0.00073	0.038	0.00002	0.00005	0.01	1.06E-05	35.1	0.0001	0.0002	0.00068	0.091	0.00005	0.005	11.3	0.0383	0.000005	0.000076	0.00136	0.05	0.8	0.00021	3.74	0.00001	1.47	0.183		0.0001	0.00001	0.000626	0.0005	0.0017
W22	2020-08-17																																	
W22	2020-08-17	0.015	0.00023	0.00081	0.0358	0.00002	0.00005	0.01	1.27E-05	37.4	0.0001	0.00019	0.00052	0.126	0.00005	0.0056	12.1	0.0606	0.000005	0.000077	0.00127	0.05	0.838	0.000168	3.98	0.00001	1.59	0.198		0.0001	0.00001	0.000711	0.0005	0.0014
W22	2020-08-30																																	
W22	2020-09-01																																	
W22	2020-09-01	0.0331	0.00026	0.00078	0.0318	0.00002	0.00005	0.01	1.09E-05	29.3	0.0001	0.0002	0.00091	0.108	0.00005	0.0041	8.17	0.0406	0.000005	0.000082	0.00136	0.05	0.75	0.000137	3.52	0.00001	1.4	0.157		0.0001	0.00001	0.000561	0.0005	0.0049
W22	2020-09-08																																	
W22	2020-09-14	0.0125	0.00024	0.0007	0.0304	0.00002	0.00005	0.01	1.04E-05	35.2	0.0001	0.00016	0.00045	0.076	0.00005	0.0045	11.2	0.0399	0.000005	0.00008	0.00114	0.05	0.808	0.000189	3.65	0.00001	1.51	0.186		0.0001	0.00001	0.000823	0.0005	0.0018
W22	2020-09-23	0.0122	0.00026	0.00067	0.0358	0.00002	0.00005	0.01	1.21E-05	41.6	0.0001	0.00019	0.0004	0.064	0.00005	0.0058	13.8	0.049	0.000005	0.000078	0.00116	0.05	0.956	0.000214	4.22	0.00001	1.82	0.222		0.0001	0.00001	0.000918	0.0005	0.0015
W22	2020-10-05	0.0163	0.00024	0.00071	0.037	0.00002	0.00005	0.01	0.000011	37.5	0.00011	0.0002	0.00058	0.083	0.00005	0.0055	12.6	0.051	0.000005	0.000083	0.00147	0.05	0.905	0.000145	4.01	0.00001	1.66	0.175		0.0001	0.00001	0.000809	0.0005	0.0012
W22	2020-11-03	0.0048	0.00022	0.00054	0.0375	0.00002	0.00005	0.01	1.08E-05	43.2	0.0001	0.0002	0.00026	0.022	0.00005	0.0059	15.2	0.0483	0.000005	0.00006	0.00126	0.05	0.923	0.000235	4.01	0.00001	1.73	0.205		0.0001	0.00001	0.00102	0.0005	0.0023
W22	2020-12-07	0.0038	0.0002	0.00055	0.0389	0.00002	0.00005	0.01	1.44E-05	40	0.0001	0.00023	0.00023	0.017	0.00005	0.0066	17	0.0604	0.000005	0.00005	0.00154	0.05	1.02	0.00028	4.14	0.00001	1.86	0.205		0.0001	0.00001	0.00112	0.0005	0.003
W22D	2020-01-07	0.0012	0.0001	0.00026	0.0173	0.00002	0.00005	0.01	0.000005	21.7	0.0001	0.0001	0.00024	0.01	0.00005	0.003	8.54	0.0144	0.000005	0.000056	0.0005	0.05	0.499	0.000066	1.68	0.00001	0.995	0.1	0.00001	0.0001	0.0003	0.000597	0.0005	0.0022
W23	2020-01-03																																	
W23	2020-01-03																																	
W23	2020-01-03	0.0051	0.00045	0.00376	0.0505	0.00002	0.00005	0.01	0.000016	60	0.00016	0.0001	0.00089	0.013	0.00005	0.0048	16	0.0202	0.000005	0.000488	0.0006	0.05	1.37	0.000332	4.28	0.00001	2.72	0.26		0.00023	0.00001	0.00172	0.0005	0.003
W23	2020-02-07																																	
W23	2020-02-07	0.0028	0.00042	0.00351	0.0549	0.00002	0.00005	0.01	7.8E-06	65.9	0.0001	0.0001	0.00035	0.01	0.00005	0.0051	17.8	0.0219	0.000005	0.000483	0.00056	0.05	1.38	0.000406	4.2	0.00001	2.46	0.292		0.0001	0.00001	0.00199	0.0005	0.0014
W23	2020-03-08	0.0024	0.00047	0.00355	0.0581	0.00002	0.00005	0.01	7.1E-06	64.8	0.0001	0.0001	0.00035	0.01	0.00005	0.0052	18.7	0.022	0.000005	0.000471	0.00055	0.05	1.54	0.00033	4.31	0.00001	2.75	0.297	0.00001	0.0001	4.88	0.00209	0.0005	0.001
W23	2020-04-17	0.0033	0.00056	0.00445	0.0568	0.00002	0.00005	0.01	0.000013	59.8	0.0001	0.0001	0.00045	0.01	0.00005	0.0053	18.2	0.0282	0.000005	0.000534	0.00061	0.05	1.81	0.000334	4.22	0.00001	3.22	0.297	0.00001	0.0001	4.68	0.00182	0.0005	0.0014
W23	2020-04-17																																	
W23	2020-04-17	0.0033	0.00056	0.00445	0.0568	0.00002	0.00005	0.01	0.000013	59.8	0.0001	0.0001	0.00045	0.01	0.00005	0.0053	18.2	0.0282	0.000005	0.000534	0.00061	0.05	1.81	0.000334	4.22	0.00001	3.22	0.297		0.0001	0.00001	0.00182	0.0005	0.0014
W23	2020-05-05																																	
W23	2020-05-05	0.099	0.00038	0.005	0.0292	0.00002	0.00005	0.01	4.06E-05	23.4	0.00018	0.0002	0.00219	0.152	0.00019	0.0021	5.59	0.0478	8.2E-06	0.000291	0.00179	0.05	1.47	0.000206	2.37	0.00001	1.22	0.1		0.0001	0.00001	0.000471	0.0005	0.0046
W23	2020-06-02	0.0381	0.00038	0.00422	0.0274	0.00002	0.00005	0.01	1.13E-05	24.3	0.00011	0.0001	0.00124	0.086	0.00005	0.0019	5.77	0.00962	0.000005	0.000368	0.00096	0.05	0.732	0.000341	3.09	0.00001	1.09	0.108		0.0001	0.00001	0.000395	0.0005	0.0014
W23	2020-06-03																																	
W23	2020-06-08	0.0284	0.00046	0.00458	0.031	0.00002	0.00005	0.01	1.28E-05	31.2	0.0001	0.0001	0.00125	0.059	0.00005	0.0024	6.88	0.0106	0.000005	0.000468	0.00086	0.05	0.819	0.00026	3.24	0.00001	1.38	0.148	0.00001	0.0001	2.15	0.000588	0.0005	0.0022
W23	2020-07-03																																	
W23	2020-07-03	0.0159	0.00049	0.00578	0.0368	0.00002	0.00005	0.01	1.26E-05	35.9	0.00011	0.0001	0.00087	0.049	0.00005	0.003	9.08	0.0142	0.000005	0.000477	0.00098	0.05	0.983	0.000332	3.69	0.00001	1.68	0.173		0.00015	0.00001	0.00079	0.0005	0.0012
W23	2020-08-06																																	
W23	2020-08-06	0.0142	0.00053	0.00616	0.0436	0.00002	0.00005	0.01	1.67E-05	40.8	0.0001	0.0001	0.00078	0.045	0.00005	0.0039	10.4	0.0247	0.000005	0.000531	0.00103	0.05	1.05	0.000304	3.96	0.00001	1.97	0.2		0.0001	0.00001	0.000901	0.0005	0.0014
W23	2020-09-02																																	
W23	2020-09-02	0.0323	0.00048	0.00542	0.0416	0.00002	0.00005	0.01	2.49E-05	36.3	0.00013	0.00011	0.00124	0.091	0.000074	0.0025	8.57	0.0288	0.000005	0.000504	0.00132	0.05	0.915	0.000312	3.9	0.00001	1.6	0.166		0.0001	0.00001	0.000737	0.0005	0.0018
W23	2020-10-02	0.0145	0.00048	0.00605	0.0476	0.00002	0.00005	0.01	0.000021	51	0.0001	0.00011	0.00083	0.061	0.00005	0.0035	11.8	0.0363	0.000005	0.000614	0.00125	0.05	1.19	0.000353	4.12	0.00001	1.9	0.226		0.0001	0.00001	0.00102	0.0005	0.0019
W23	2020-11-05	0.004	0.00044	0.00442	0.0486	0.00002	0.00005	0.01	1.55E-05	54.9	0.0001	0.0001	0.00048	0.015	0.00005	0.0043	12.9	0.034	0.000005	0.000541	0.0008	0.05	1.2	0.00034	4.66	0.00001	2.3	0.239		0.0001	0.00001	0.00124	0.0005	0.0014
W23	2020-12-05	0.0031	0.00045	0.0049	0.0495	0.00002	0.00005	0.01	1.32E-05	55.1	0.0001	0.0001	0.00041	0.014	0.00005	0.0043	14.6	0.0327	0.000005	0.000583	0.00078	0.05	1.29	0.000568	4.51	0.00001	2.29	0.246		0.0001	0.00001	0.00141	0.0005	0.001
W29	2020-12-07	0.0033	0.00048	0.00376	0.0418	0.00002	0.00005	0.01	1.35E-05	43.8	0.0001	0.00016	0.00029	0.012	0.00005	0.007	17.7	0.0667	0.000005	0.000199	0.00131	0.05	1.12	0.000355	4.38	0.00001	2.23	0.217		0.0001	0.00001	0.00153	0.0005	0.0024
W29	2020-11-03	0.0037	0.00044	0.00462	0.0427	0.00002	0.00005	0.01	1.22E-05	42.3	0.0001	0.00016	0.00038	0.015	0.00005	0.0061	16.8	0.0511	0.000005	0.000235	0.00119	0.05	1.07	0.000276	4.42	0.00001	2.13	0.218		0.0001	0.00001	0.00141	0.0005	0.002
W29	2020-10-05	0.0169	0.00048	0.00649	0.0407	0.00002	0.00005	0.01	1.38E-05	38.9	0.0001	0.00016	0.00065	0.057	0.00005	0.0056	13.5	0.0526	0.000005	0.000384	0.00132	0.05	1.03	0.00019	4.27	0.00001	1.88	0.185		0.0001	0.00001	0.00123	0.0005	0.0017
W29	2020-09-23	0.009	0.00077	0.00769	0.0385	0.00002	0.00005	0.01	1.65E-05	42.2	0.0001	0.00016	0.00055	0.041	0.00005	0.0067	14.7	0.0493	0.000005	0.000475	0.00111	0.05	1.21	0.000256	4.36	0.00001	2.28	0.229		0.0001	0.00001	0.00149	0.0005	0.0019
W29	2020-09-14	0.0118	0.00043	0.00612	0.0351	0.00002	0.00005	0.01	1.29E-05	36.4	0.0001	0.00015	0.00051	0.05	0.00005	0.0048	11.9	0.0396	0.000005	0.000343	0.00101	0.05	0.892	0.000166	4.14	0.00001	1.76	0.189		0.0001	0.00001	0.00123	0.0005	0.0017
W29	2020-09-01																																	

Station ID	Sample Date	Conductivity	Hardness (as	pH (s.u.)	TSS (mg/L)	TDS (mg/L)	Turbidity	Alkalinity,	NH3-N (mg/L)	Br (mg/L)	Cl (mg/L)	F (mg/L)	NO3-N (mg/L)	NO2-N (mg/L)	TKN (mg/L)	T-N (mg/L)	D-O-P (mg/L)	D-P-P (mg/L)	T-P-P (mg/L)	SO4 (mg/L)	CWAD (mg/L)	T-CN (mg/L)	TOC (mg/L)	DOC (mg/L)
W29	2020-09-01	238	115	7.95	28.2		7.29	73.7	0.0261	0.05	0.5	0.089	0.0762	0.001				0.0024	0.015	47.6			5.66	
W29	2020-08-18	271.6		7.71			2.66																	
W29	2020-08-18																				0.005			
W29	2020-08-17	284.9		7.63	1.75		3.28																	
W29	2020-08-17	284	142	8.07	3		1.44	84.9	0.005	0.05	0.55	0.104	0.0785	0.001				0.002	0.0033	57.2			2.97	
W29	2020-08-15	275.7		7.66			2.05																	
W29	2020-08-15																				0.005			
W29	2020-08-14	281.5		7.61			2.48																	
W29	2020-08-14																				0.005			
W29	2020-08-13	271.3		7.76			3.33																	
W29	2020-08-13	287.5		7.76	6.6		4.82																	
W29	2020-08-13																				0.005			
W29	2020-08-12	269.3		7.6			44.44																	
W29	2020-08-12																				0.005			
W29	2020-08-11	259.5		7.61			5.15																	
W29	2020-08-10	259	129	8.01	7.3		1.1	76.9	0.013	0.05	0.5	0.094	0.0758	0.001				0.002	0.0034	53.6			3.62	
W29	2020-08-09																				0.005			
W29	2020-08-09	281.2		7.84			2.34																	
W29	2020-08-08																				0.005			
W29	2020-08-07																				0.005			
W29	2020-08-07	276.7		7.45																				
W29	2020-08-06																				0.005			
W29	2020-08-06	259.5		7.86			2.16																	
W29	2020-08-05																				0.005			
W29	2020-08-05	265.1		7.79			2.09																	
W29	2020-08-03	259.2		7.96	5.6		6																	
W29	2020-08-03	254	134	7.96	9.1		2.81	75.3	0.005	0.05	0.5	0.092	0.0602	0.001				0.002	0.0066	52.7			4.19	
W29	2020-08-02																				0.005			
W29	2020-08-01																				0.005			
W29	2020-07-31	243.1		7.84			3.15																	
W29	2020-07-31																				0.005			
W29	2020-07-30																				0.005			
W29	2020-07-30	299.9		7.79			4.25																	
W29	2020-07-29	214.6		7.78			12.58																	
W29	2020-07-29																				0.005			
W29	2020-07-29				16																			
W29	2020-07-29																				0.005			
W29	2020-07-21	479.9		7.91			3.48																	
W29	2020-07-21	251	121	7.95	6.8		2.82	73.8	0.005	0.05	0.5	0.094	0.0555	0.001		0.167	0.001	0.002	0.0046	50.1			4.63	
W29	2020-07-11	204	97.6	7.84	53.4		26.8	57.1	0.0811	0.05	0.5	0.093	0.049	0.001	0.314	0.353	0.001	0.0033		41.9	0.005	0.005	9.06	8.27
W29	2020-07-11	181.6		7.83			21.41																	
W29	2020-07-04	255.1		7.83	1.375		-0.13																	
W29	2020-07-04	249	117	7.87	3		0.47	73.5	0.014	0.05	0.5	0.083	0.0912	0.001		0.183	0.001	0.002	0.0025	51.5			2.62	
W29	2020-06-22																							
W29	2020-06-22																							
W29	2020-06-22	135		7.42	37.2		18.83																	
W29	2020-06-22	138	68.4	7.53	43.6		16.5	42.1	0.0061	0.05	0.5	0.059	0.0397	0.001				0.0046	0.0243	25.5			13.5	
W29	2020-06-04	159.3		7.87			2																	
W29	2020-06-04	175		7.86	3.8		1.91	50		0.05	0.5	0.053	0.0718	0.001			0.001			32.7	0.005	0.005		
W29	2020-06-04	175		7.86	3.8		1.91	50		0.05	0.5	0.053	0.0718	0.001						32.7				
W29	2020-05-16	156.1		7.37			1.77																	
W29	2020-05-16	151	74.6	7.58	3		1.83	50.4	0.0082	0.05	0.5	0.062	0.0564	0.001				0.0064	0.0136	28.1			15.5	
W29	2020-05-06	160.6		7.57	185.6		41.8																	
W29	2020-05-06	150	82.6	7.68	111		78.6	45.3	0.0096	0.05	0.67	0.074	0.024	0.001				0.0152	0.0854	29.4			34	
W29	2020-04-27	402.5		7.77	7.2		13.77																	
W29	2020-04-27	383	184	8.24	6.8		13.6	115	0.005	0.05	3.25	0.125	0.199	0.0012				0.0035	0.0102	82.8			7.02	
W29	2020-04-26																				0.005	0.005		
W29	2020-04-26	386.8		7.78			40.92																	
W29	2020-04-25	372.2		7.69			9.64																	
W29	2020-04-24	352.8		7.62			53.23																	
W29	2020-04-23	303.8		7.51			159.86																	
W29	2020-04-22	286.3		7.6			190.43																	
W29	2020-04-21	268.2		7.81	168		163.32																	
W29	2020-04-21	272	137	7.83	164		235	70	0.0113	0.05	6.11	0.124	0.19	0.0053				0.0051	0.0974	55.9			6.86	
W29	2020-04-20	285.2		7.71	592		398.26																	
W29	2020-04-20	285.2		7.71	592		398.26																	
W29	2020-04-20	282	158	7.84	490		602	71.1	0.025	0.05	8.15	0.119	0.141	0.0029				0.012	0.243	57			11.1	
W29	2020-04-12	428.8		7.6																				
W29	2020-04-12	413	232	7.84	3		2.77	131	0.0108	0.05	1.85	0.121	0.176	0.0011				0.002	0.002	97.2			1.37	
W29	2020-04-12	410	231	7.87	3		3.7	129	0.0108	0.05	1.88	0.121	0.176	0.001				0.002	0.002	96.7			1.61	
W29	2020-03-09	444	224	8.01	3		0.1	135	0.0097	0.05	0.5	0.128	0.147	0.0038	0.062	0.194	0.001	0.002		104	0.005	0.005	1.06	0.9
W29	2020-02-09	399.5		8.11			-0.3																	
W29	2020-02-09	415	220	8.11	9.3		0.26	132	0.005	0.05	0.5	0.118	0.154	0.001				0.002		96.6			1.22	
W29	2020-01-07	428.1		7.91																				
W29	2020-01-07	428.1		7.91																				
W29	2020-01-07	418	227	8.16	5.5		0.8	131	0.0051	0.05	1.09	0.118	0.156	0.001				0.002		95.6			1.39	
W29	2020-01-07	418	227					131	0.0051	0.05	1.09	0.118	0.156	0.001						95.6	0.005	0.005		
W29D	2020-08-13																				0.005			
W4	2020-01-07	396.2		7.86			-0.5																	
W4	2020-01-07	396.2		7.86			-0.5																	
W4	2020-01-07	381	207	8.16	3		0.76	114	0.005	0.05	0.5	0.104	0.139	0.001				0.002		75.2			1.2	
W4	2020-01-07	381	207					114	0.005	0.05	0.5	0.104	0.139	0.001						75.2	0.005	0.005		

Station ID	Sample Date	T-Al (mg/L)	T-Sb (mg/L)	T-As (mg/L)	T-Ba (mg/L)	T-Be (mg/L)	T-Bi (mg/L)	T-B (mg/L)	T-Cd (mg/L)	T-Ca (mg/L)	T-Cr (mg/L)	T-Co (mg/L)	T-Cu (mg/L)	T-Fe (mg/L)	T-Pb (mg/L)	T-Li (mg/L)	T-Mg (mg/L)	T-Mn (mg/L)	T-Hg (mg/L)	T-Mo (mg/L)	T-Ni (mg/L)	T-P (mg/L)	T-K (mg/L)	T-Se (mg/L)	T-Si (mg/L)	T-Ag (mg/L)	T-Na (mg/L)	T-Sr (mg/L)	T-Tl (mg/L)	T-Sn (mg/L)	T-Ti (mg/L)	T-U (mg/L)	T-V (mg/L)	T-Zn (mg/L)
W29	2020-09-01	0.338	0.00074	0.00999	0.0398	0.000022	0.00005	0.01	3.18E-05	30.1	0.00066	0.00045	0.00169	0.711	0.00103	0.005	9.76	0.0514	0.000005	0.000349	0.00198	0.05	0.95	0.000187	4.27	0.00001	1.58	0.155		0.0001	0.0136	0.00094	0.00075	0.0062
W29	2020-08-18																																	
W29	2020-08-18																																	
W29	2020-08-17																																	
W29	2020-08-17	0.051	0.00076	0.0074	0.0392	0.00002	0.00005	0.01	1.31E-05	37.3	0.00012	0.00016	0.00074	0.118	0.000175	0.0065	11.9	0.0401	0.000005	0.000428	0.00138	0.05	0.976	0.000251	4.26	0.00001	1.81	0.199		0.0001	0.00123	0.0012	0.0005	0.003
W29	2020-08-15																																	
W29	2020-08-15																																	
W29	2020-08-14																																	
W29	2020-08-14																																	
W29	2020-08-13																																	
W29	2020-08-13																																	
W29	2020-08-13																																	
W29	2020-08-12																																	
W29	2020-08-12																																	
W29	2020-08-11																																	
W29	2020-08-10	0.085	0.00058	0.00731	0.0379	0.00002	0.00005	0.01	1.67E-05	33	0.00056	0.00023	0.00086	0.236	0.000278	0.0046	11.3	0.0406	0.000005	0.000439	0.00154	0.05	0.822	0.000172	3.93	0.00001	1.68	0.182		0.0001	0.00257	0.000995	0.0005	0.0031
W29	2020-08-09																																	
W29	2020-08-09																																	
W29	2020-08-08																																	
W29	2020-08-07																																	
W29	2020-08-07																																	
W29	2020-08-06																																	
W29	2020-08-06																																	
W29	2020-08-05																																	
W29	2020-08-05																																	
W29	2020-08-03																																	
W29	2020-08-03	0.132	0.00078	0.00882	0.0376	0.00002	0.00005	0.01	2.31E-05	35	0.0003	0.00027	0.00116	0.262	0.000408	0.0057	11.2	0.035	0.000005	0.000406	0.00152	0.05	0.98	0.000234	3.96	0.00001	1.87	0.187		0.0001	0.00401	0.00109	0.0005	0.003
W29	2020-08-02																																	
W29	2020-08-01																																	
W29	2020-07-31																																	
W29	2020-07-31																																	
W29	2020-07-30																																	
W29	2020-07-30																																	
W29	2020-07-29																																	
W29	2020-07-29																																	
W29	2020-07-29																																	
W29	2020-07-29																																	
W29	2020-07-21																																	
W29	2020-07-21	0.0799	0.00048	0.00655	0.0334	0.00002	0.00005	0.01	1.56E-05	31.8	0.00027	0.00018	0.00099	0.16	0.000219	0.005	10	0.0301	0.000005	0.000337	0.00142	0.05	0.814	0.0002	3.82	0.00001	1.57	0.161		0.0001	0.0021	0.000882	0.0005	0.003
W29	2020-07-11	0.805	0.00077	0.0114	0.0459	0.000048	0.000059	0.01	4.37E-05	24.9	0.00137	0.00083	0.00319	1.62	0.00214	0.005		0.0557	7.9E-06	0.000302	0.00305	0.05	0.831	0.000158	4.4	0.000027	1.3	0.13	0.000022	0.0001	0.024	0.00074	0.0018	0.0082
W29	2020-07-11																																	
W29	2020-07-04																																	
W29	2020-07-04	0.0295	0.00045	0.00672	0.0328	0.00002	0.00005	0.01	1.03E-05	29.8	0.00011	0.0001	0.00063	0.071	0.000086	0.0043	10.4	0.0181	0.000005	0.00034	0.00098	0.05	0.826	0.000188	3.98	0.00001	1.61	0.162		0.0001	0.00083	0.000895	0.0005	0.003
W29	2020-06-22																																	
W29	2020-06-22																																	
W29	2020-06-22																																	
W29	2020-06-22	0.651	0.00079	0.0111	0.0355	0.000045	0.00005	0.01	5.52E-05	18	0.0011	0.00079	0.00314	1.31	0.00236	0.0035	5.71	0.0664	1.08E-05	0.000242	0.00291	0.05	0.629	0.000134	3.97	0.00002	1.01	0.0935		0.0001	0.0202	0.000519	0.0014	0.0082
W29	2020-06-04																																	
W29	2020-06-04																																	
W29	2020-06-04																																	
W29	2020-05-16																																	
W29	2020-05-16	0.14	0.00037	0.00374	0.0271	0.00002	0.00005	0.01	3.24E-05	19.4	0.00023	0.00025	0.00184	0.312	0.000266	0.0033	6.38	0.0372	5.5E-06	0.000166	0.00201	0.05	0.826	0.000105	2.48	0.00001	0.944	0.102		0.0001	0.00191	0.00052	0.0005	0.0034
W29	2020-05-06																																	
W29	2020-05-06	1.57	0.002	0.0363	0.0582	0.000143	0.000298	0.01	0.000144	20.3	0.00265	0.00192	0.00735	3.22	0.00574	0.0059	7.72	0.174	1.85E-05	0.000226	0.00625	0.096	1.81	0.000178	4.19	0.000049	1.09	0.102		0.0001	0.0563	0.000617	0.0037	0.0198
W29	2020-04-27																																	
W29	2020-04-27	0.582	0.00189	0.0202	0.0504	0.000033	0.000122	0.01	4.58E-05	44.2	0.00081	0.00045	0.00212	0.738	0.00163	0.0081	17.9	0.0623	5.9E-06	0.000554	0.00228	0.05	1.97	0.000257	5.01	0.000016	2.75	0.234		0.0001	0.02	0.00185	0.00136	0.0059
W29	2020-04-26																																	
W29	2020-04-26																																	
W29	2020-04-25																																	
W29	2020-04-24																																	
W29	2020-04-23																																	
W29	2020-04-22																																	
W29	2020-04-21																																	
W29	2020-04-21	3.66	0.00758	0.157	0.079	0.000276	0.00289	0.01	0.00027	33.4	0.00557	0.00434	0.0156	6.9	0.0219	0.0092	13	0.189	2.68E-05	0.000843	0.01	0.114	3.2	0.000333	8.85	0.000128	2.91	0.162		0.00011	0.0962	0.00186	0.00654	0.0433
W29	2020-04-20																																	
W29	2020-04-20																																	
W29	2020-04-20	6.41	0.00879	0.233	0.147	0.000526	0.0021	0.01	0.00038	37.7	0.011	0.00827	0.0253	13.8	0.0377	0.0147	15.4	0.411	4.32E-05	0.000581	0.0167	0.169	4.2	0.000321	11.7	0.000271	3.39	0.204		0.00018	0.161	0.00218	0.0129	0.0589
W29	2020-04-12																																	
W29	2020-04-12	0.0509	0.0007	0.0046	0.0418	0.00002	0.00005	0.01	1.55E-05	53.1	0.0001	0.00012	0.0005	0.084	0.000192	0.008	24	0.0556	0.000005	0.000255	0.00125	0.05	1.42	0.000205	4.56	0.00001	2.8	0.265		0.0001	0.00136	0.00183	0.0005	0.003
W29	2020-04-12	0.0508	0.00069	0.00463	0.0425	0.00002	0.00005	0.01	1.25E-05	53.1	0.0001	0.00013	0.0005	0.089	0.000217	0.0079	23.9	0.056	0.000005	0.000257	0.00126	0.05	1.41	0.000255	4.48	0.00001	2.73	0.275		0.0001	0.00148	0.00186	0.0005	0.003
W29	2020-03-09	0.0034	0.00053	0.00209	0.0432	0.00002	0.00005	0.01	9.9E-06	51.6	0.0001	0.0001	0.0005	0.028	0.00005	0.0085		0.0565	0.000005	0.00039	0.00118	0.05	1.39	0.000178	4.48	0.00001	2.53	0.266	0.00001	0.0001	0.0003	0.00215	0.0005	0.003
W29	2020-02-09																																	
W29	2020-02-09	0.0049	0.00048	0.00229	0.0426	0.00002	0.00005	0.01	1.01E-05	51.9	0.0001	0.0001	0.0005	0.025	0.00005	0.0078	22	0.0536	0.000005	0.000188	0.00112	0.05	1.38	0.000235	4.52	0.00001	2.4	0.256		0.0001	0.00043	0.00191	0.0005	0.003
W29	2020-01-07																																	
W29	2020-01-07																																	
W29	2020-01-07	0.0318	0.00053	0.00231	0.0436	0.00002	0.00005	0.01	1.47E-05	56.3	0.0001	0.00013	0.00057	0.099	0.000158	0.0081	20.9	0.059	0.000005	0.000183	0.00108	0.05	1.39	0.00019	4.5	0.00001	2.68	0.27		0.0001	0.00117	0.00195	0.0005	0.0039
W29	2020-01-07	0.0318	0.00053	0.00231	0.0436	0.00002	0.00005	0.01	1.47E-05	56.3	0.0001	0.00013	0.00057	0.099	0.000158	0.0081	20.9	0.059	0.000005	0.000183	0.00108	0.05	1.39	0.00019	4.5	0.00001	2.68	0.27	0.00001	0.0001	0.00117	0.00195	0.0005	0.0039
W29D	2020-08-13																																	
W4	2020-01-07																																	
W4	2020-01-07																																	
W4	2020-01-07	0.0126	0.00023	0.00122	0.0411	0.00002	0.00005	0.01	1.11E-05	50.3	0.0001	0.0001	0.0005	0.039	0.00005	0.0077	19.7	0.0319	0.000005	0.000415	0.00099	0.05	1.23	0.000149	4.28	0.00001	2.2	0.24		0.0001	0.00032	0.00154	0.0005	0.003
W4	2020-01-07	0.0126	0.00023	0.00122	0.0411	0.00002	0.00005	0.01	1.11E-05	50.3	0.0001	0.0001	0.0005	0.039	0.00005	0.0077	19.7	0.0319	0.000005	0.000415	0.00099	0.05	1.23	0.000149	4.28	0.00001	2.2	0.24	0.00001	0.0001	0.00032	0.00154	0.0005	0.003

Station ID	Sample Date	D-Al (mg/L)	D-Sb (mg/L)	D-As (mg/L)	D-Ba (mg/L)	D-Be (mg/L)	D-Bi (mg/L)	D-B (mg/L)	D-Cd (mg/L)	D-Ca (mg/L)	D-Cr (mg/L)	D-Co (mg/L)	D-Cu (mg/L)	D-Fe (mg/L)	D-Pb (mg/L)	D-Li (mg/L)	D-Mg (mg/L)	D-Mn (mg/L)	D-Hg (mg/L)	D-Mo (mg/L)	D-Ni (mg/L)	D-P (mg/L)	D-K (mg/L)	D-Se (mg/L)	D-Si (mg/L)	D-Ag (mg/L)	D-Na (mg/L)	D-Sr (mg/L)	D-Ti (mg/L)	D-Sn (mg/L)	D-Ti (mg/L)	D-U (mg/L)	D-V (mg/L)	D-Zn (mg/L)
W29	2020-09-01	0.0318	0.00048	0.00542	0.035	0.00002	0.00005	0.01	1.91E-05	31.4	0.0001	0.00017	0.00095	0.09	0.00005	0.0043	8.7	0.0405	0.000005	0.000346	0.00132	0.05	0.836	0.000172	3.81	0.00001	1.62	0.162		0.0001	0.00001	0.000872	0.0005	0.0032
W29	2020-08-18																																	
W29	2020-08-18																																	
W29	2020-08-17																																	
W29	2020-08-17	0.0122	0.00065	0.0066	0.0378	0.00002	0.00005	0.01	0.000014	33.3	0.0001	0.00014	0.00066	0.051	0.00005	0.0063	11.5	0.0369	0.000005	0.000379	0.00112	0.05	0.988	0.000201	4.04	0.00001	2.4	0.18		0.0001	0.00001	0.00111	0.0005	0.002
W29	2020-08-15																																	
W29	2020-08-15																																	
W29	2020-08-14																																	
W29	2020-08-14																																	
W29	2020-08-13																																	
W29	2020-08-13																																	
W29	2020-08-13																																	
W29	2020-08-12																																	
W29	2020-08-12																																	
W29	2020-08-11																																	
W29	2020-08-10	0.0187	0.00046	0.00613	0.0425	0.00002	0.00005	0.01	1.33E-05	33.9	0.0001	0.00016	0.00069	0.058	0.00005	0.005	11.7	0.0349	0.000005	0.000349	0.00118	0.05	0.826	0.000243	3.97	0.00001	1.62	0.177		0.0001	0.00001	0.000926	0.0005	0.0029
W29	2020-08-09																																	
W29	2020-08-09																																	
W29	2020-08-08																																	
W29	2020-08-07																																	
W29	2020-08-07																																	
W29	2020-08-06																																	
W29	2020-08-06																																	
W29	2020-08-05																																	
W29	2020-08-05																																	
W29	2020-08-03																																	
W29	2020-08-03	0.0168	0.00071	0.007	0.0352	0.00002	0.00005	0.01	1.23E-05	32.1	0.0001	0.00013	0.00074	0.048	0.00005	0.0052	10.2	0.0265	0.000005	0.000538	0.00107	0.05	0.923	0.000272	3.93	0.00001	1.98	0.171		0.0001	0.00001	0.001	0.0005	0.0016
W29	2020-08-02																																	
W29	2020-08-01																																	
W29	2020-07-31																																	
W29	2020-07-31																																	
W29	2020-07-30																																	
W29	2020-07-30																																	
W29	2020-07-29																																	
W29	2020-07-29																																	
W29	2020-07-29																																	
W29	2020-07-29																																	
W29	2020-07-21																																	
W29	2020-07-21	0.0297	0.0005	0.00622	0.0372	0.00002	0.00005	0.01	1.09E-05	32	0.00016	0.00014	0.00088	0.083	0.000057	0.0054	10.8	0.0287	0.000005	0.000355	0.00147	0.05	0.871	0.000188	4	0.00001	1.6	0.168		0.0001	0.00001	0.000895	0.0005	0.0019
W29	2020-07-11	0.0553	0.00046	0.00464	0.0354	0.00002	0.00005	0.01	0.000016	24.1	0.00015	0.00018	0.00137	0.114	0.000112	0.004	8.39	0.0255	0.000005	0.000258	0.00156	0.05	0.67	0.000177	3.51	0.00001	1.28	0.128	0.00001	0.0001	2.03	0.000638	0.0005	0.001
W29	2020-07-11																																	
W29	2020-07-04																																	
W29	2020-07-04	0.014	0.00041	0.00641	0.0325	0.00002	0.00005	0.01	0.00001	29.6	0.0001	0.0001	0.00052	0.029	0.00005	0.0042	10.4	0.0161	0.000005	0.000318	0.00091	0.05	0.788	0.000208	3.64	0.00001	1.6	0.153		0.0001	0.00001	0.000857	0.0005	0.0022
W29	2020-06-22																																	
W29	2020-06-22																																	
W29	2020-06-22																																	
W29	2020-06-22	0.102	0.00042	0.00467	0.0255	0.00002	0.00005	0.01	1.67E-05	16.9	0.00022	0.00018	0.00177	0.183	0.000127	0.0026	5.61	0.015	0.000005	0.000251	0.0017	0.05	0.54	0.000149	2.98	0.00001	0.96	0.0881		0.0001	0.00001	0.000406	0.0005	0.002
W29	2020-06-04																																	
W29	2020-06-04																																	
W29	2020-06-04																																	
W29	2020-05-16																																	
W29	2020-05-16	0.0877	0.00032	0.00311	0.0258	0.00002	0.00005	0.01	0.000023	20.8	0.00012	0.0002	0.00173	0.174	0.00009	0.0028	6.98	0.0308	0.000005	0.000163	0.00203	0.05	0.832	0.000099	2.25	0.00001	0.927	0.0995		0.0001	0.00001	0.000475	0.0005	0.0034
W29	2020-05-06																																	
W29	2020-05-06	0.159	0.00039	0.00366	0.0299	0.000032	0.00005	0.01	5.47E-05	19.1	0.00022	0.00025	0.00268	0.232	0.000186	0.0034	6.63	0.0394	1.23E-05	0.000128	0.00286	0.05	1.38	0.00009	2.44	0.00001	1.03	0.0913		0.0001	0.00001	0.000474	0.0005	0.0075
W29	2020-04-27																																	
W29	2020-04-27	0.0189	0.00132	0.0087	0.0395	0.00002	0.00005	0.01	0.000031	42.3	0.0001	0.0002	0.0012	0.06	0.000106	0.007	19	0.0516	0.000005	0.000607	0.00169	0.05	1.7	0.000231	3.93	0.00001	2.89	0.238		0.0001	0.00001	0.00181	0.0005	0.0058
W29	2020-04-26																																	
W29	2020-04-26																																	
W29	2020-04-25																																	
W29	2020-04-24																																	
W29	2020-04-23																																	
W29	2020-04-22																																	
W29	2020-04-21																																	
W29	2020-04-21	0.052	0.00136	0.0148	0.0344	0.00002	0.00005	0.01	4.85E-05	32.8	0.00015	0.00044	0.00208	0.129	0.000376	0.0056	12.5	0.0635	0.000005	0.00088	0.00223	0.05	2.31	0.000224	3.38	0.00001	2.79	0.166		0.0001	0.00001	0.00126	0.0005	0.0038
W29	2020-04-20																																	
W29	2020-04-20																																	
W29	2020-04-20	0.033	0.00139	0.0144	0.0335	0.00002	0.00005	0.01	0.000057	33.3	0.00012	0.00046	0.00197	0.112	0.00029	0.0052	12	0.0755	0.000005	0.000563	0.00178	0.05	2.37	0.000209	2.86	0.00001	3.21	0.164		0.0001	0.00001	0.00113	0.0005	0.0037
W29	2020-04-12																																	
W29	2020-04-12	0.0022	0.00063	0.0033	0.0416	0.00002	0.00005	0.01	0.000013	52.1	0.0001	0.0001	0.00032	0.01	0.00005	0.008	23.7	0.053	0.000005	0.000287	0.00117	0.05	1.47	0.0002	4.22	0.00001	2.91	0.274		0.0001	0.00001	0.00185	0.0005	0.002
W29	2020-04-12	0.0022	0.00062	0.00321	0.0424	0.00002	0.00005	0.01	9.7E-06	51.3	0.0001	0.0001	0.00032	0.01	0.00005	0.008	23.1	0.0521	0.000005	0.000276	0.00116	0.05	1.48	0.000255	4.23	0.00001	2.78	0.266		0.0001	0.00001	0.0019	0.0005	0.0017
W29	2020-03-09	0.0016	0.00057	0.00209	0.0479	0.00002	0.00005	0.01	1.32E-05	55	0.0001	0.0001	0.00029	0.01	0.00005	0.0085	24.6	0.0609	0.000005	0.000148	0.00127	0.05	1.57	0.000201	4.36	0.00001	2.78	0.279	0.00001	0.0001	4.88	0.00201	0.0005	0.0019
W29	2020-02-09																																	
W29	2020-02-09	0.0018	0.00048	0.0022	0.0473	0.00002	0.00005	0.01	1.17E-05	53.8	0.0001	0.0001	0.00065	0.01	0.00005	0.0075	22	0.0551	0.000005	0.000182	0.00108	0.05	1.44	0.000197	4.39	0.00001	2.64	0.257		0.0001	0.00001	0.00188	0.0005	0.0024
W29	2020-01-07																																	
W29	2020-01-07																																	
W29	2020-01-07	0.0015	0.00043	0.00164	0.041	0.00002	0.00005	0.01	7.5E-06	48.9	0.0001	0.0001	0.00044	0.01	0.00005	0.007	19.4	0.0423	0.000005	0.000163	0.00088	0.05	1.3	0.000189	3.9	0.00001	2.39	0.232		0.0001	0.00001	0.00163	0.0005	0.0028
W29	2020-01-07	0.0015	0.00043	0.00164	0.041	0.00002	0.00005	0.01	7.5E-06	48.9	0.0001	0.0001	0.00044	0.01	0.00005	0.007	19.4	0.0423	0.000005	0.000163	0.00088	0.05	1.3	0.000189	3.9	0.00001	2.39	0.232	0.00001	0.0001	0.0003	0.00163	0.0005	0.0028
W29D	2020-08-13																																	
W4	2020-01-07																																	
W4	2020-01-07																																	
W4	2020-01-07	0.0024	0.00022	0.00119	0.0421	0.00002	0.00005	0.01	0.000005	51.7	0.0001	0.0001	0.00033	0.01	0.00005	0.0078	19.9	0.0318	0.000005	0.000114	0.00103	0.05	1.33	0.000142	4.37	0.00001	2.26	0.244		0.0001	0.00001	0.00151	0.0005	0.0016
W4	2020-01-07	0.0024	0.00022	0.00119	0.0421	0.00002	0.00005	0.01	0.000005	51.7	0.0001	0.0001	0.00033	0.01	0.00005	0.0078	19.9	0.0318	0.000005	0.000114	0.00103	0.05	1.33	0.000142	4.37	0.00001	2.26	0.244	0.00001	0.0001	0.0003	0.00151	0.0005	0.0016

Station ID	Sample Date	Conductivity	Hardness (as	pH (s.u.)	TSS (mg/L)	TDS (mg/L)	Turbidity	Alkalinity,	NH3-N (mg/L)	Br (mg/L)	Cl (mg/L)	F (mg/L)	NO3-N (mg/L)	NO2-N (mg/L)	TKN (mg/L)	T-N (mg/L)	D-O-P (mg/L)	D-P-P (mg/L)	T-P-P (mg/L)	SO4 (mg/L)	CWAD (mg/L)	T-CN (mg/L)	TOC (mg/L)	DOC (mg/L)
W4	2020-02-09	377.6		7.89			-0.19																	
W4	2020-02-09	386	203	8.06	3		0.16	115	0.005	0.05	0.5	0.113	0.164	0.001				0.002		90.2			1.55	
W4	2020-03-09	411	206	7.98	3		0.23	121	0.0088	0.05	0.5	0.12	0.17	0.001	0.05	0.195	0.001	0.002		96	0.005	0.005	0.83	0.81
W4	2020-04-12	402.6		7.49																				
W4	2020-04-12	389	209	7.76	3		1.99	120	0.0222	0.05	1.36	0.117	0.181	0.001				0.002	0.002	92			1	
W4	2020-04-19	245	154	7.69	2020		2940	65.3	0.0391	0.05	5.65	0.126	0.172	0.0035				0.0111	0.573	48.4			10.4	
W4	2020-04-20	243.8		7.55	2030		905.77																	
W4	2020-04-20	243.8		7.55	2030		905.77																	
W4	2020-04-21	253.2		7.39	509		137																	
W4	2020-04-21	258	134	7.8	308		167	62.9	0.017	0.05	4.61	0.122	0.177	0.002				0.0107	0.13	56.8			13.2	
W4	2020-04-22	278		7.41	248		141.2																	
W4	2020-04-22	273	123	7.6	280		28	63.6	0.0156	0.05	3.48	0.098	0.209	0.0011				0.0089	0.147	58.1			14.5	
W4	2020-04-23	272.5		7.45	50.5		30.21																	
W4	2020-04-23	279	132	7.74	49.8		28.3	69.6	0.005	0.05	2.43	0.092	0.187	0.001				0.0089	0.0379	59			16.4	
W4	2020-04-24	310	157	8.11	9.2		7.82	84.3	0.005	0.05	1.68	0.099	0.173	0.001				0.0097	0.0152	64.4			13.5	
W4	2020-04-25	342.9		7.55	10.8		6.09																	
W4	2020-04-25	340	178	8.19	13		7.77	97.4	0.005	0.05	1.44	0.11	0.175	0.001				0.0062	0.0139	73.2			10.2	
W4	2020-04-26	359.1		7.67	56.8		25.35																	
W4	2020-04-26	346	176	8.2	67.8		18.7	104	0.005	0.05	1.52	0.111	0.192	0.001				0.0044	0.0272	73.8			6.69	
W4	2020-04-27	379.2		7.67	6.8		4.7																	
W4	2020-04-27	363	174	8.21	4.8		5.8	107	0.005	0.05	1.44	0.119	0.183	0.001				0.003	0.0073	79.5			5.64	
W4	2020-05-06	147		7.41	27.6		22.98																	
W4	2020-05-06	138	75.5	7.56	58.1		29.4	41	0.0107	0.05	0.5	0.071	0.0231	0.001				0.0147	0.0551	27.4			34.4	
W4	2020-05-16	145.4		7.64			2.32																	
W4	2020-05-16	142	69.4	7.56	3.3		1.81	47.3	0.005	0.05	0.5	0.059	0.0598	0.001				0.0064	0.0114	25.6			14.9	
W4	2020-06-04	151.2		7.84			3.25																	
W4	2020-06-04	166	78.5	7.85	4.6		2.37	47	0.005	0.05	0.5	0.048	0.0734	0.001				0.0048	0.0096	31.2			7.05	
W4	2020-06-22																							
W4	2020-06-22																							
W4	2020-06-22	126.9		7.44	24.4		12.15																	
W4	2020-06-22	132	63.7	7.51	24.6		8.19	41	0.005	0.05	0.5	0.058	0.0436	0.001				0.0042	0.0215	23.9			12.4	
W4	2020-07-04	237.3		7.79	2		0.24																	
W4	2020-07-04	231	111	7.91	3		0.68	67.9	0.005	0.05	0.5	0.08	0.0833	0.001		0.163	0.001	0.002	0.0026	47.6			2.97	
W4	2020-07-04	232	110	7.89	3		0.68	68.4	0.0304	0.05	0.5	0.08	0.0821	0.001		0.181	0.001	0.002	0.002	47.4			2.92	
W4	2020-07-11	191	89.8	7.68	95.6		81.9	50.2	0.0051	0.05	1.21	0.087	0.0573	0.001	0.315	0.35	0.001	0.0042		37.9	0.005	0.005	10	8.21
W4	2020-07-11	162.9		7.84			67																	
W4	2020-07-21	444.1		7.93			4.93																	
W4	2020-07-21	235	112	7.95	7.8		4.98	69.6	0.005	0.05	0.5	0.093	0.0552	0.001		0.159	0.001	0.002	0.0059	45.7			4.44	
W4	2020-07-29	212.2		7.82			22.5																	
W4	2020-07-29				17																			
W4	2020-07-29	221	105	7.98	44.8		29.4	65.6	0.013	0.05	0.54	0.1	0.0557	0.001		0.204	0.001	0.0035	0.0226	42.5			6.3	
W4	2020-07-30	230.5		7.88			7.5																	
W4	2020-07-30	239	108	8.06	18.2		7.25	68.4	0.0175	0.05	0.92	0.104	0.0694	0.001		0.208	0.0012	0.002	0.0108	47.5			5.36	
W4	2020-07-31	226.8		7.79			4.31																	
W4	2020-07-31	232	114	7.8	12.9		1.38	66.9	0.0106	0.05	0.5	0.084	0.0655	0.001		0.17	0.0012	0.0021	0.0068	45.2			4.54	
W4	2020-08-01	262	128	7.9	12.5		3.01	73.9	0.0087	0.05	1.45	0.107	0.0729	0.001		0.189	0.0011	0.002	0.008	52.5			4.57	
W4	2020-08-03	272.6		8.09	4.6		3.95																	
W4	2020-08-03	262	134	8	6.3		3.31	75.1	0.0053	0.05	1.62	0.119	0.0636	0.0015				0.0022	0.0061	55			4.1	
W4	2020-08-04	268	145	8.02	7.7		2.15	77.3	0.005	0.05	1.92	0.114	0.069	0.0019				0.0033	0.0058	57			4.49	
W4	2020-08-05	278.6		7.93			3.78																	
W4	2020-08-05	265		8.02	5.3		1.01	76.2	0.0052	0.05	1.04	0.1	0.0667	0.001				0.0024	0.0031	51.3			3.4	
W4	2020-08-06	263.8		8.03			2.55																	
W4	2020-08-06	275	140	8.09	4.8		1.32	76	0.0076	0.05	1.68	0.109	0.0679	0.001				0.0029	0.0037	56.5			4.18	
W4	2020-08-07	277.7		7.63			2.3																	
W4	2020-08-07	275	133	8.07	4.2		1.43	76.3	0.005	0.05	1.47	0.11	0.07	0.001				0.003	0.0071	55.5			3.83	
W4	2020-08-08																				0.005			
W4	2020-08-08	256	120	8.04	7.4		2.17	73.7	0.005	0.05	0.6	0.089	0.0636	0.001				0.0022	0.0084	51.2			3.25	
W4	2020-08-09	266.6		7.83																				
W4	2020-08-09	259	122	7.93	3		1.04	76	0.0126	0.05	0.54	0.103	0.0604	0.001				0.002	0.0023	51.1			3.35	
W4	2020-08-10	267.4		7.63	6.125		3.56																	
W4	2020-08-10	249	122	8.03	7.9		1.67	72.8	0.005	0.05	0.57	0.1	0.065	0.001				0.002	0.002	50.9			3.83	
W4	2020-08-11	254.3		7.71																				
W4	2020-08-11	265	126	7.96	9.1		1.67	73.9	0.005	0.05	1.11	0.11	0.0684	0.001				0.0037	0.0043	52.7			4.11	
W4	2020-08-12	267.2		7.69			32.22																	
W4	2020-08-12	263	137	8	26.9		32.5	72.4	0.005	0.05	2.24	0.12	0.0697	0.001				0.002	0.0196	52.3			4.47	
W4	2020-08-13	280.7		7.9			5.41																	
W4	2020-08-13	267	123	8.01	9		3.63	75.6	0.0055	0.05	1.89	0.135	0.0754	0.001				0.0053	0.0054	56.8			4.59	
W4	2020-08-14	286.4		7.8			5.61																	
W4	2020-08-14	278	134	8.11	3		4.15	77.1	0.0087	0.05	2.04	0.137	0.0796	0.002				0.0032	0.0069	57			4.72	
W4	2020-08-15	255.6		7.66			54.76																	
W4	2020-08-15	260	133	8.06	3.3		2.22	75.3	0.0056	0.05	0.5	0.104	0.0676	0.001				0.0022	0.0054	52.9			3.82	
W4	2020-08-15	260	127	8.08	3		1.79	75.3	0.005	0.05	0.5	0.107	0.0673	0.001				0.002	0.005	52.9			4.08	
W4	2020-08-17	281.7		7.83	12.125		6.72																	
W4	2020-08-17	285	138	7.91	12.8		6.53	80.3	0.0178	0.05	2.05	0.13	0.104	0.0021				0.002	0.0059	57.4			4.55	
W4	2020-08-18	276		7.5			7.6																	
W4	2020-08-18	288	136	8.13	5		6.03	80.3	0.0181	0.05	2.12	0.131	0.1	0.0022	0.138	0.235	0.001	0.003		57.8	0.005		3.93	4.38
W4	2020-08-18	288	136	8.13	5		6.03	80.3	0.0181	0.05	2.12	0.131	0.1	0.0022				0.003	0.0044	57.8			4.38	
W4	2020-09-01	259.8		7.64			5.81																	
W4	2020-09-01	225	109	7.92	17.4		3.45	69.1	0.005	0.05	0.5	0.089	0.0775	0.001				0.0039	0.0173	44.5			5.62	
W4	2020-09-08	241.4		7.79			1.53																	
W4	2020-09-14	274	134	7.99	45		18.1	80.8	0.0057	0.05	0.89	0.102	0.0922	0.001				0.002	0.021	53.7			3.63	
W4	2020-09-15	314	151	8.04	5.2		5.06	90.2	0.0088	0.05	2.1	0.135	0.121	0.0028				0.0026	0.0056	64.7			4.2	

Station ID	Sample Date	T-Al (mg/L)	T-Sb (mg/L)	T-As (mg/L)	T-Ba (mg/L)	T-Be (mg/L)	T-Bi (mg/L)	T-B (mg/L)	T-Cd (mg/L)	T-Ca (mg/L)	T-Cr (mg/L)	T-Co (mg/L)	T-Cu (mg/L)	T-Fe (mg/L)	T-Pb (mg/L)	T-Li (mg/L)	T-Mg (mg/L)	T-Mn (mg/L)	T-Hg (mg/L)	T-Mo (mg/L)	T-Ni (mg/L)	T-P (mg/L)	T-K (mg/L)	T-Se (mg/L)	T-Si (mg/L)	T-Ag (mg/L)	T-Na (mg/L)	T-Sr (mg/L)	T-Tl (mg/L)	T-Sn (mg/L)	T-Ti (mg/L)	T-U (mg/L)	T-V (mg/L)	T-Zn (mg/L)
W4	2020-02-09																																	
W4	2020-02-09	0.0046	0.00025	0.00152	0.0416	0.00002	0.00005	0.01	1.08E-05	47.7	0.0001	0.0001	0.0005	0.036	0.00005	0.0077	20.2	0.0354	0.000005	0.000125	0.00119	0.05	1.3	0.000189	4.44	0.00001	2.21	0.237		0.0001	0.0003	0.0015	0.0005	0.003
W4	2020-03-09	0.0031	0.00023	0.0011	0.0408	0.00002	0.00005	0.01	7.7E-06	47.1	0.0001	0.0001	0.0005	0.045	0.00005	0.0084		0.0367	0.000005	0.000112	0.00127	0.05	1.3	0.000168	4.58	0.00001	2.4	0.242	0.00001	0.0001	0.0003	0.00172	0.0005	0.003
W4	2020-04-12																																	
W4	2020-04-12	0.0464	0.00042	0.00343	0.0414	0.00002	0.00005	0.01	1.13E-05	47.4	0.0001	0.00012	0.0005	0.088	0.000146	0.0079	22.1	0.0362	0.000005	0.000224	0.0013	0.05	1.31	0.000224	4.55	0.00001	2.69	0.258		0.0001	0.00124	0.00161	0.0005	0.003
W4	2020-04-19	5.77	0.00506	0.158	0.301	0.000825	0.00096	0.01	0.000778	38.8	0.0105	0.0159	0.0283	10.8	0.0463	0.0154	13.9	1.05	0.000152	0.000429	0.0206	0.268	4.18	0.000243	9.5	0.000132	2.82	0.203		0.00012	0.107	0.00268	0.0122	0.0706
W4	2020-04-20																																	
W4	2020-04-20																																	
W4	2020-04-21																																	
W4	2020-04-21	3.58	0.00482	0.128	0.0922	0.00027	0.00101	0.01	0.000156	32.4	0.00634	0.00389	0.0125	8.03	0.0154	0.0115	12.8	0.184	2.49E-05	0.000575	0.0105	0.116	3.14	0.000276	8.26	0.000119	2.33	0.155		0.00014	0.141	0.00143	0.00752	0.0297
W4	2020-04-22																																	
W4	2020-04-22	3.94	0.00454	0.116	0.0901	0.000243	0.000893	0.01	0.00015	28.2	0.00652	0.00424	0.0129	7.86	0.0146	0.0114	12.9	0.185	2.46E-05	0.000466	0.00998	0.119	2.89	0.000249	8.17	0.000128	1.93	0.15		0.00018	0.14	0.00133	0.008	0.0332
W4	2020-04-23																																	
W4	2020-04-23	1.02	0.00174	0.0326	0.0489	0.000065	0.000255	0.01	5.71E-05	31.4	0.00151	0.00096	0.00418	1.85	0.00328	0.0072	12.9	0.0657	9.9E-06	0.000383	0.00392	0.05	1.95	0.000212	4.63	0.000075	1.91	0.168		0.0001	0.0376	0.00112	0.00203	0.0111
W4	2020-04-24	0.266	0.00074	0.0121	0.0412	0.00002	0.00006	0.01	0.00002	37.1	0.00039	0.00038	0.00194	0.51	0.000748	0.0071	15.5	0.0528	7.4E-06	0.00028	0.0024	0.05	1.58	0.000244	4.07	0.00001	2.32	0.2		0.0001	0.00805	0.00131	0.00054	0.006
W4	2020-04-25																																	
W4	2020-04-25	0.293	0.00078	0.0125	0.0449	0.00002	0.000058	0.01	2.44E-05	40.8	0.00046	0.00042	0.00186	0.586	0.000838	0.0079	18.4	0.0603	6.9E-06	0.000277	0.00252	0.05	1.68	0.000206	4.4	0.00001	2.61	0.212		0.0001	0.00934	0.00144	0.00057	0.0056
W4	2020-04-26																																	
W4	2020-04-26	0.803	0.00158	0.0315	0.05	0.000051	0.000198	0.01	4.16E-05	40.7	0.00144	0.00094	0.00318	1.77	0.00284	0.0091	18	0.0799	0.000006	0.000422	0.00337	0.05	1.78	0.000211	5.3	0.000021	2.53	0.22		0.0001	0.0323	0.0017	0.00169	0.0095
W4	2020-04-27																																	
W4	2020-04-27	0.205	0.0009	0.0124	0.0446	0.000021	0.00005	0.01	0.000022	41.6	0.00036	0.00032	0.00118	0.4	0.00068	0.0079	17.1	0.0463	0.000005	0.000362	0.00203	0.05	1.58	0.000231	4.62	0.00001	2.23	0.221		0.0001	0.00765	0.00146	0.00069	0.0046
W4	2020-05-06																																	
W4	2020-05-06	1.31	0.0011	0.0229	0.0508	0.000112	0.000174	0.01	0.000122	18.6	0.00213	0.00164	0.00541	3	0.00349	0.0054	7.05	0.175	9.6E-06	0.000184	0.00564	0.05	1.63	0.000105	3.88	0.000031	0.942	0.0903		0.0001	0.0413	0.000465	0.00228	0.0171
W4	2020-05-16																																	
W4	2020-05-16	0.154	0.00031	0.0047	0.0266	0.00002	0.00005	0.01	2.65E-05	18.1	0.0003	0.00027	0.00176	0.35	0.000205	0.0032	5.88	0.0352	5.6E-06	0.000186	0.00195	0.05	0.802	0.000122	2.56	0.00001	0.913	0.0962		0.0001	0.00276	0.000464	0.0005	0.0035
W4	2020-06-04																																	
W4	2020-06-04	0.134	0.00045	0.0069	0.0265	0.00002	0.00005	0.01	1.35E-05	21	0.00022	0.00019	0.0012	0.316	0.000312	0.0029	6.32	0.0234	0.000005	0.00024	0.00129	0.05	0.659	0.000115	3.09	0.00001	1.05	0.109		0.0001	0.00368	0.000507	0.00059	0.003
W4	2020-06-22																																	
W4	2020-06-22																																	
W4	2020-06-22																																	
W4	2020-06-22	0.516	0.00069	0.00966	0.0308	0.00003	0.00005	0.01	2.43E-05	16.8	0.0008	0.0005	0.00259	0.952	0.00109	0.0032	5.28	0.0337	8.3E-06	0.00031	0.00224	0.05	0.561	0.000142	3.88	0.000011	0.953	0.0891		0.0001	0.0141	0.000417	0.0011	0.0044
W4	2020-07-04																																	
W4	2020-07-04	0.049	0.00046	0.0086	0.0338	0.00002	0.00005	0.01	9.5E-06	28.2	0.0001	0.0001	0.00056	0.102	0.000133	0.0043	9.88	0.0131	0.000005	0.000425	0.00095	0.05	0.774	0.000197	4.07	0.00001	1.54	0.159		0.0001	0.0014	0.000842	0.0005	0.003
W4	2020-07-04	0.0458	0.00043	0.00839	0.0333	0.00002	0.00005	0.01	5.8E-06	27.8	0.00011	0.0001	0.0006	0.094	0.000093	0.0042	9.76	0.0129	0.000005	0.000406	0.00094	0.05	0.887	0.000178	4.07	0.00001	1.54	0.152		0.0001	0.00143	0.000836	0.0005	0.003
W4	2020-07-11	2.06	0.00245	0.0448	0.0642	0.00013	0.000421	0.01	8.84E-05	23	0.00362	0.00199	0.00677	4.36	0.00789	0.0065		0.0969	1.39E-05	0.000563	0.00561	0.055	1.35	0.000242	5.96	0.000075	1.51	0.12	0.000059	0.0001	0.0766	0.000802	0.0045	0.0163
W4	2020-07-11																																	
W4	2020-07-21																																	
W4	2020-07-21	0.117	0.0005	0.00926	0.0352	0.00002	0.00005	0.01	0.000017	29.4	0.00022	0.0002	0.00097	0.235	0.000351	0.0047	9.23	0.025	0.000005	0.000433	0.00145	0.05	0.776	0.000187	4.05	0.00001	1.45	0.151		0.0001	0.0036	0.000804	0.0005	0.003
W4	2020-07-29																																	
W4	2020-07-29																																	
W4	2020-07-29	0.614	0.00148	0.0176	0.0425	0.000041	0.000094	0.01	0.000033	27	0.00115	0.00074	0.00248	1.21	0.00241	0.0059	9.21	0.047	7.5E-06	0.000504	0.00262	0.05	1.14	0.000175	4.71	0.000017	1.63	0.168		0.0001	0.0224	0.00093	0.00132	0.005
W4	2020-07-30																																	
W4	2020-07-30	0.304	0.00092	0.0106	0.0363	0.00002	0.00005	0.01	1.48E-05	28.5	0.00053	0.00038	0.00144	0.555	0.000592	0.0052	9.06	0.0305	0.000005	0.000506	0.00186	0.05	0.94	0.000165	4.09	0.00001	1.52	0.15		0.0001	0.00956	0.000929	0.00058	0.0041
W4	2020-07-31																																	
W4	2020-07-31	0.153	0.00058	0.00968	0.0368	0.00002	0.00005	0.01	1.66E-05	29.8	0.00031	0.00025	0.00107	0.302	0.000296	0.0048	9.64	0.0267	0.000005	0.00044	0.00145	0.05	0.826	0.000153	3.94	0.00001	1.57	0.158		0.0001	0.00567	0.000875	0.00062	0.003
W4	2020-08-01	0.202	0.00184	0.0164	0.037	0.00002	0.00005	0.01	1.96E-05	33.5	0.00035	0.00033	0.00142	0.368	0.000609	0.0084	10.6	0.0335	0.000005	0.000835	0.00161	0.05	1.41	0.00022	3.43	0.00001	2.25	0.177		0.0001	0.00724	0.00154	0.00067	0.003
W4	2020-08-03																																	
W4	2020-08-03	0.102	0.00194	0.0156	0.0341	0.00002	0.00005	0.01	2.18E-05	35.3	0.00022	0.00023	0.00141	0.187	0.00033	0.0087	11.2	0.0249	0.000005	0.000807	0.00145	0.05	1.49	0.000251	3.52	0.00001	2.51	0.184		0.0001	0.00322	0.00154	0.0005	0.003
W4	2020-08-04	0.0925	0.00243	0.018	0.0343	0.00002	0.00005	0.01	1.92E-05	38.7	0.00021	0.00021	0.00156	0.174	0.000312	0.0099	11.8	0.0233	0.000005	0.000937	0.00142	0.05	1.73	0.000263	3.29	0.00001	3.06	0.188		0.0001	0.00288	0.00174	0.0005	0.003
W4	2020-08-05																																	
W4	2020-08-05																																	
W4	2020-08-06																																	
W4	2020-08-06	0.067	0.00216	0.0157	0.037	0.00002	0.00005	0.01	1.85E-05	37.8	0.00013	0.00017	0.00117	0.13	0.000228	0.009	11.1	0.0232	0.000005	0.000881	0.0025	0.05	1.56	0.000287	3.55	0.00001	2.48	0.172		0.0001	0.00202	0.00171	0.0005	0.003
W4	2020-08-07																																	
W4	2020-08-07	0.0641	0.00189	0.0147	0.0375	0.00002	0.00005	0.01	1.21E-05	35.3	0.00016	0.00017	0.001	0.129	0.000215	0.0095	10.9	0.0218	0.000005	0.000779	0.00107	0.05	1.49	0.000236	3.49	0.00001	2.33	0.173		0.0001	0.00154	0.00149	0.0005	0.003
W4	2020-08-08																																	
W4	2020-08-08	0.149	0.00095	0.0116	0.0379	0.00002	0.00005	0.01	1.86E-05	31.3	0.00029	0.00028	0.00087	0.329	0.000393	0.0063	10.1	0.0324	0.000005	0.000552	0.00116	0.05	1.04	0.000141	3.98	0.00001	1.77	0.165		0.0001	0.00554	0.00106	0.00061	0.003
W4	2020-08-09																																	
W4	2020-08-09	0.0485	0.001	0.0102	0.0362	0.00002	0.00005	0.01	1.03E-05	30.7	0.0001	0.00016	0.00075	0.132	0.000145	0.0054	11	0.0284	0.000005	0.000545	0.0012	0.05	1.01	0.000182	3.86	0.00001	1.91	0.176		0.0001	0.00133	0.00111	0.0005	0.003
W4	2020-08-10																																	
W4	2020-08-10	0.103	0.00102	0.0106	0.0382	0.00002	0.00005	0.01	1.64E-05	30.6	0.00021	0.00023	0.00091	0.232	0.000285	0.0054	11	0.0353	0.000005	0.000541	0.00138	0.05	0.977	0.000216	3.99	0.00001	1.85	0.181		0.0001	0.00362	0.00111	0.0005	0.003
W4	2020-08-11																																	
W4	2020-08-11	0.146	0.00158	0.0145	0.0366	0.00002	0.00005	0.01	1.76E-05	32.8	0.00027	0.00026	0.00126	0.27	0.000405	0.008	10.8	0.0323	0.000005	0.000732	0.00154	0.05	1.32	0.000245	3.91	0.00001	2.34	0.177		0.0001	0.00585	0.00142	0.0005	0.0031
W4	2020-08-12																																	
W4	2020-08-12	0.754	0.00246	0.0359	0.0485	0.000048	0.000224	0.01	4.07E-05	36.1	0.00146	0.00088	0.00308	1.71	0.00379	0.008	11.4	0.059	6.1E-06	0.000763	0.00296	0.05	1.66	0.000216	4.77	0.000036	2.64	0.192		0.0001	0.0346	0.00146	0.00176	0.0079
W4	2020-08-13																																	
W4	2020-08-13	0.152	0.00249	0.0181	0.034	0.00002	0.000054	0.01	1.91E-05	31.4	0.00029	0.00024	0.00146	0.267	0.000531	0.0104	10.9	0.0239	0.000005	0.000928	0.00158	0.05	1.68	0.000276	3.52	0.00001	2.5	0.179		0.0001	0.00513	0.00166	0.0005	0.003
W4	2020-08-14																																	
W4	2020-08-14	0.146	0.00271	0.0193	0.0365	0.00002	0.000084	0.01	1.65E-05	35.6	0.0003	0.00024	0.00158	0.254	0.000567	0.0124	11.1	0.0244	0.000005	0.000951	0.00165	0.05	1.64	0.000311	3.68	0.00001	2.54	0.18		0.0001	0.00468	0.00184	0.0005	0.003
W4	2020-08-15																																	
W4	2020-08-15	0.217	0.00116	0.0127	0.0385	0.000039	0.000086	0.01	1.95E-05	34.9	0.00043	0.00031	0.00125	0.448	0.00075	0.0076	11.1	0.0378	0.000005	0.000525	0.00154	0.05	1.03	0.000227	4.32	0.00001	1.91	0.18		0.0001	0.00818	0.00113	0.00052	0.003
W4	2020-08-15	0.195	0.00102	0.0123	0.0405	0.00002	0.000069	0.01	2.04E-05	33.1	0.00039	0.00028	0.0012	0.396	0.00074	0.0071	10.9	0.0372	0.000005	0.000439	0.00155	0.05	1.16	0.000196	4.26	0.00001	1.91	0.173		0.0001	0.00712	0.00108	0.0005	0.003
W4	2020-08-17																																	
W4	2020-08-17	0.215	0.00274	0.0202	0.0378	0.00002	0.000119	0.01	0.000024	36.8	0.00033	0.0003	0.00175	0.331	0.000997	0.0117	11.3	0.029	0.000005	0.000982	0.0017	0.05	1.76	0.000319	3.9	0.000018	2.53	0.191		0.0001	0.00643	0.00194	0.00066	0.003
W4	2020-08-18																																	
W4	2020-08-18	0.183	0.00281	0.0198	0.0367	0.00002	0.000106	0.01	2.27E-05	36.5	0.00032	0.00026	0.00166	0.267	0.000805	0.0118		0.0265	0.000005	0.000988	0.00165	0.05	1.74	0.000278	3.84	0.000018	2.52	0.195	0.00001	0.0001	0.0054	0.00189	0.0005	0.003
W4	2020-08-18	0.183	0.00281	0.0198	0.0367	0.00002	0.000106	0.01	2.27E-05	36.5	0.00032	0.00026	0.00166	0.267	0.000805	0.0118	11	0.0265	0.000005	0.000988	0.00165	0.05	1.74	0.000278	3.84	0.000018	2.52	0.195		0.0001	0.0054	0.00189	0.0005	0.003
W4	2020-09-01																																	
W4	2020-09-01	0.235	0.00056	0.00976	0.0385	0.00002	0.000054	0.01	0.000018	28.5	0.00045	0.00039	0.00134	0.486	0.000597	0.0047	9.12	0.0411	0.000005	0.000368	0.00169	0.05	0.88	0.000138	4.28	0.00001	1.5	0.145		0.0001	0.0116	0.00085	0.00057	0.0031
W4	2020-09-08																																	
W4	2020-09-14	0.688	0.00202	0.0246	0.0461	0.000038	0.000159	0.01	3.28E-05	35.5	0.00142	0.00076	0.00239	1.36	0.00282	0.0077	11.1	0.0535	0.000005	0.000817	0.0026	0.05	1.59	0.000297	4.95	0.00002	1.91	0.192		0.0001	0.0303	0.00163	0.00151	0.0059
W4	2020-09-15	0.198	0.00307	0.024	0.0355	0.00002	0.000064	0.01	2.62E-05	40.4	0.0004	0.00028	0.00165	0.327	0.000818	0.01	12.2	0.0286	0.000005	0.00125	0.00153	0.05	2.13	0.000329	4.18	0.00001	2.86	0.216		0.0001	0.00736	0.00261	0.00054	0.003

Station ID	Sample Date	D-Al (mg/L)	D-Sb (mg/L)	D-As (mg/L)	D-Ba (mg/L)	D-Be (mg/L)	D-Bi (mg/L)	D-B (mg/L)	D-Cd (mg/L)	D-Ca (mg/L)	D-Cr (mg/L)	D-Co (mg/L)	D-Cu (mg/L)	D-Fe (mg/L)	D-Pb (mg/L)	D-Li (mg/L)	D-Mg (mg/L)	D-Mn (mg/L)	D-Hg (mg/L)	D-Mo (mg/L)	D-Ni (mg/L)	D-P (mg/L)	D-K (mg/L)	D-Se (mg/L)	D-Si (mg/L)	D-Ag (mg/L)	D-Na (mg/L)	D-Sr (mg/L)	D-Ti (mg/L)	D-Sn (mg/L)	D-Ti (mg/L)	D-U (mg/L)	D-V (mg/L)	D-Zn (mg/L)
W4	2020-02-09																																	
W4	2020-02-09	0.0044	0.00025	0.0014	0.0433	0.00002	0.00005	0.01	0.000018	46.6	0.0001	0.0001	0.00045	0.013	0.00005	0.0074	20.2	0.0362	0.000005	0.000136	0.00121	0.05	1.37	0.000196	4.36	0.00001	2.58	0.242		0.0001	0.00001	0.00148	0.0005	0.0038
W4	2020-03-09	0.0018	0.00025	0.00115	0.0437	0.00002	0.00005	0.01	7.2E-06	52.1	0.0001	0.0001	0.0002	0.01	0.00005	0.0085	22.2	0.0395	0.000005	0.00012	0.00128	0.05	1.48	0.000171	4.3	0.00001	2.56	0.244	0.00001	0.0001	4.44	0.00161	0.0005	0.0022
W4	2020-04-12																																	
W4	2020-04-12	0.0026	0.00037	0.00262	0.04	0.00002	0.00005	0.01	1.13E-05	49.6	0.0001	0.0001	0.00024	0.012	0.00005	0.008	22.3	0.034	0.000005	0.000214	0.00127	0.05	1.39	0.00023	4.4	0.00001	2.62	0.246		0.0001	0.00001	0.0016	0.0005	0.0022
W4	2020-04-19	0.0429	0.00097	0.012	0.0277	0.00002	0.00005	0.01	2.61E-05	28.2	0.00016	0.00032	0.00175	0.169	0.000377	0.005	10.2	0.0526	0.000005	0.000594	0.00159	0.05	2.04	0.000191	3.02	0.00001	2.8	0.137		0.0001	0.00001	0.000969	0.0005	0.0015
W4	2020-04-20																																	
W4	2020-04-20																																	
W4	2020-04-21																																	
W4	2020-04-21	0.0503	0.00068	0.0102	0.0368	0.00002	0.00005	0.01	2.45E-05	29	0.00013	0.00023	0.00145	0.124	0.000145	0.0058	12.2	0.039	5.7E-06	0.000379	0.00192	0.05	1.9	0.000238	3.59	0.00001	2.15	0.15		0.0001	0.00001	0.000928	0.0005	0.0031
W4	2020-04-22																																	
W4	2020-04-22	0.054	0.00071	0.00851	0.0342	0.00002	0.00005	0.01	2.45E-05	30	0.00018	0.00022	0.00164	0.138	0.000144	0.006	12.3	0.0388	5.1E-06	0.000371	0.00191	0.05	1.83	0.000242	3.3	0.00001	2.05	0.152		0.0001	0.00001	0.000975	0.0005	0.0036
W4	2020-04-23																																	
W4	2020-04-23	0.0584	0.0006	0.00718	0.035	0.00002	0.00005	0.01	2.71E-05	32.4	0.00012	0.00018	0.00173	0.13	0.00009	0.0062	12.5	0.0331	0.000006	0.000298	0.00201	0.05	1.57	0.000195	3.42	0.00001	1.95	0.157		0.0001	0.00001	0.000899	0.0005	0.0048
W4	2020-04-24	0.052	0.00056	0.00592	0.0416	0.00002	0.00005	0.01	3.79E-05	38.5	0.0001	0.0002	0.00146	0.128	0.000074	0.0073	15.5	0.043	0.000007	0.000302	0.00207	0.05	1.53	0.000166	3.7	0.00001	2.07	0.202		0.0001	0.00001	0.00115	0.0005	0.0042
W4	2020-04-25																																	
W4	2020-04-25	0.0337	0.00053	0.0052	0.0414	0.00002	0.00005	0.01	2.09E-05	42.1	0.0001	0.00019	0.00114	0.096	0.00005	0.0078	17.3	0.0438	5.6E-06	0.000271	0.00192	0.05	1.47	0.000205	4.1	0.00001	2.16	0.216		0.0001	0.00001	0.0013	0.0005	0.0035
W4	2020-04-26																																	
W4	2020-04-26	0.0221	0.00079	0.00824	0.0418	0.00002	0.00005	0.01	1.83E-05	42.2	0.00023	0.00018	0.00097	0.069	0.000066	0.0083	17.3	0.0402	0.000005	0.000394	0.0016	0.05	1.49	0.000274	4.14	0.00001	2.26	0.222		0.0001	0.00001	0.00152	0.0005	0.0034
W4	2020-04-27																																	
W4	2020-04-27	0.0168	0.0006	0.00694	0.0388	0.00002	0.00005	0.01	1.99E-05	38.5	0.0001	0.00016	0.00089	0.064	0.00005	0.0071	17.7	0.0388	0.000005	0.00039	0.00163	0.05	1.42	0.000204	4.19	0.00001	2.27	0.22		0.0001	0.00001	0.00147	0.0005	0.0033
W4	2020-05-06																																	
W4	2020-05-06	0.161	0.00022	0.00267	0.029	0.000029	0.00005	0.01	4.92E-05	17.3	0.00021	0.00024	0.00248	0.226	0.000123	0.0033	6.39	0.0386	1.22E-05	0.00009	0.00266	0.05	1.3	0.000136	2.36	0.00001	0.913	0.0853		0.0001	0.00001	0.000374	0.0005	0.009
W4	2020-05-16																																	
W4	2020-05-16	0.0908	0.00026	0.00364	0.0264	0.00002	0.00005	0.01	1.97E-05	18	0.00016	0.00023	0.00168	0.177	0.000055	0.0027	6.57	0.0289	5.1E-06	0.000197	0.00201	0.05	0.801	0.000125	2.31	0.00001	0.901	0.0962		0.0001	0.00001	0.000444	0.0005	0.0039
W4	2020-06-04																																	
W4	2020-06-04	0.0449	0.00031	0.0047	0.0232	0.00002	0.00005	0.01	1.26E-05	22.9	0.00012	0.00013	0.00104	0.09	0.00005	0.0025	7.05	0.0176	0.000005	0.000228	0.00119	0.05	0.614	0.000152	2.81	0.00001	0.985	0.116		0.0001	0.00001	0.000464	0.0005	0.0019
W4	2020-06-22																																	
W4	2020-06-22																																	
W4	2020-06-22																																	
W4	2020-06-22	0.0955	0.00034	0.00512	0.0254	0.00002	0.00005	0.01	1.83E-05	15.9	0.0002	0.00015	0.00166	0.17	0.00007	0.0024	5.18	0.0124	0.000005	0.000272	0.00156	0.05	0.5	0.000126	3.01	0.00001	0.91	0.0827		0.0001	0.00001	0.000365	0.0005	0.0018
W4	2020-07-04																																	
W4	2020-07-04	0.0159	0.0004	0.00782	0.032	0.00002	0.00005	0.01	0.000005	28	0.0001	0.0001	0.00051	0.032	0.00005	0.0041	9.29	0.0108	0.000005	0.000381	0.00079	0.05	0.755	0.000183	3.76	0.00001	1.5	0.147		0.0001	0.00001	0.000826	0.0005	0.0013
W4	2020-07-04	0.0157	0.0004	0.0079	0.033	0.00002	0.00005	0.01	8.6E-06	26.9	0.0001	0.0001	0.00047	0.031	0.00005	0.0042	9.42	0.011	0.000005	0.000362	0.00084	0.05	0.765	0.000217	3.68	0.00001	1.52	0.144		0.0001	0.00001	0.000799	0.0005	0.0012
W4	2020-07-11	0.0513	0.0005	0.00537	0.0334	0.00002	0.00005	0.01	1.61E-05	22.9	0.00016	0.00025	0.00149	0.111	0.000148	0.0038	7.46	0.0272	0.000005	0.00042	0.00166	0.05	0.711	0.000142	3.41	0.00001	1.47	0.122	0.00001	0.0001	1.84	0.000562	0.0005	0.001
W4	2020-07-11																																	
W4	2020-07-21																																	
W4	2020-07-21	0.0301	0.00048	0.00842	0.0367	0.00002	0.00005	0.01	1.36E-05	27.9	0.0001	0.00014	0.00078	0.082	0.00005	0.005	9.49	0.0219	0.000005	0.000444	0.00137	0.05	0.792	0.000149	4.11	0.00001	1.48	0.155		0.0001	0.00001	0.000833	0.0005	0.0016
W4	2020-07-29																																	
W4	2020-07-29																																	
W4	2020-07-29	0.0378	0.00078	0.00816	0.0346	0.00002	0.00005	0.01	0.000014	27.4	0.00013	0.0002	0.00105	0.082	0.000051	0.0051	8.79	0.0231	0.000005	0.000559	0.00134	0.05	0.966	0.000141	3.74	0.00001	1.64	0.147		0.0001	0.00001	0.000902	0.0005	0.0012
W4	2020-07-30																																	
W4	2020-07-30	0.0284	0.00082	0.00799	0.0329	0.00002	0.00005	0.01	1.18E-05	26.9	0.0001	0.00015	0.00086	0.064	0.00005	0.0047	8.48	0.0222	0.000005	0.000623	0.00125	0.05	0.791	0.000194	3.69	0.00001	1.54	0.148		0.0001	0.00001	0.000965	0.0005	0.0016
W4	2020-07-31																																	
W4	2020-07-31	0.0229	0.00049	0.00724	0.0342	0.00002	0.00005	0.01	9.5E-06	28.4	0.0001	0.00014	0.00069	0.058	0.00005	0.0045	8.77	0.0212	0.000005	0.000405	0.00118	0.05	0.752	0.000182	3.88	0.00001	1.54	0.15		0.0001	0.00001	0.000808	0.0005	0.0021
W4	2020-08-01	0.0194	0.00174	0.0128	0.0341	0.00002	0.00005	0.01	1.32E-05	31.9	0.0001	0.00014	0.00101	0.044	0.00005	0.0079	10.1	0.0195	0.000005	0.000746	0.00123	0.05	1.36	0.000242	3.43	0.00001	2.24	0.165		0.0001	0.00001	0.00149	0.0005	0.001
W4	2020-08-03																																	
W4	2020-08-03	0.0177	0.00161	0.0121	0.0341	0.00002	0.00005	0.01	1.22E-05	32	0.0001	0.00013	0.00111	0.046	0.000051	0.0075	9.8	0.0192	0.000005	0.000809	0.00113	0.05	1.35	0.000292	3.57	0.00001	2.64	0.166		0.0001	0.00001	0.00142	0.0005	0.0016
W4	2020-08-04	0.0158	0.00232	0.0157	0.0345	0.00002	0.00005	0.01	1.75E-05	33.6	0.00012	0.00015	0.00118	0.039	0.00005	0.0094	10.5	0.0174	0.000005	0.00101	0.00126	0.05	1.68	0.00032	3.36	0.00001	2.49	0.179		0.0001	0.00001	0.00178	0.0005	0.0015
W4	2020-08-05																																	
W4	2020-08-05	0.016	0.00108	0.00994	0.0381	0.00002	0.00005	0.01	9.8E-06	33	0.0001	0.00013	0.00068	0.04	0.00005	0.0066	10.4	0.0208	0.000005	0.000577	0.00109	0.05	1.12	0.000236	3.7	0.00001	2	0.169		0.0001	0.00001	0.00115	0.0005	0.0021
W4	2020-08-06																																	
W4	2020-08-06	0.0143	0.00194	0.014	0.0355	0.00002	0.00005	0.01	1.33E-05	34	0.0001	0.00013	0.00092	0.034	0.00005	0.0089	10.5	0.0175	0.000005	0.000876	0.00111	0.05	1.54	0.000287	3.31	0.00001	2.34	0.168		0.0001	0.00001	0.00152	0.0005	0.002
W4	2020-08-07																																	
W4	2020-08-07	0.0152	0.00202	0.0152	0.0498	0.00002	0.00005	0.01	1.84E-05	38.6	0.0001	0.00014	0.001	0.036	0.00005	0.0098	12.6	0.0212	0.000005	0.000897	0.00127	0.05	1.65	0.000295	3.6	0.00001	2.6	0.208		0.0001	0.00001	0.00177	0.0005	0.0013
W4	2020-08-08																																	
W4	2020-08-08	0.0173	0.00096	0.0107	0.0515	0.00002	0.00005	0.01	1.26E-05	37.4	0.0001	0.00015	0.00069	0.051	0.00005	0.0067	11.8	0.0276	0.000005	0.000619	0.00115	0.05	1.13	0.000214	4.1	0.00001	1.95	0.202		0.0001	0.00001	0.00124	0.0005	0.0018
W4	2020-08-09																																	
W4	2020-08-09	0.0161	0.00086	0.00946	0.0406	0.00002	0.00005	0.01	1.23E-05	34.2	0.0001	0.00013	0.00066	0.056	0.00005	0.0062	11.2	0.0255	0.000005	0.000523	0.00111	0.05	1.04	0.000242	3.87	0.00001	1.82	0.178		0.0001	0.00001	0.00112	0.0005	0.0014
W4	2020-08-10																																	
W4	2020-08-10	0.0187	0.00084	0.00923	0.0391	0.00002	0.00005	0.01	1.09E-05	32.9	0.0001	0.00015	0.00072	0.059	0.00005	0.0061	10.8	0.0272	0.000005	0.00055	0.00117	0.05	0.982	0.000229	3.82	0.00001	1.72	0.177		0.0001	0.00001	0.00107	0.0005	0.0014
W4	2020-08-11																																	
W4	2020-08-11	0.0168	0.00152	0.0131	0.0387	0.00002	0.00005	0.01	1.66E-05	35.2	0.0001	0.00016	0.00098	0.055	0.00005	0.0079	13	0.0275	0.000005	0.00065	0.0013	0.05	1.46	0.000284	3.95	0.00001	6.54	0.184		0.0001	0.00001	0.00136	0.0005	0.0015
W4	2020-08-12																																	
W4	2020-08-12	0.0201	0.00144	0.011	0.0364	0.00002	0.00005	0.01	1.48E-05	32.3	0.0001	0.00016	0.0009	0.054	0.000067	0.0079	10.7	0.0285	0.000005	0.000747	0.00118	0.05	1.3	0.000208	3.82	0.00001	2.96	0.169		0.0001	0.00001	0.00126	0.0005	0.0034
W4	2020-08-13																																	
W4	2020-08-13	0.0173	0.00234	0.0158	0.0343	0.00002	0.00005	0.01	1.42E-05	33.8	0.0001	0.00014	0.00123	0.044	0.00005	0.0111	11.2	0.0189	0.000005	0.000842	0.00132	0.05	1.72	0.000215	3.25	0.00001	2.59	0.173		0.0001	0.00001	0.00171	0.0005	0.0011
W4	2020-08-14																																	
W4	2020-08-14	0.0162	0.00238	0.0162	0.0346	0.00002	0.00005	0.01	1.74E-05	36.4	0.0001	0.00014	0.00126	0.041	0.000058	0.0116	11.7	0.018	0.000005	0.000909	0.00122	0.05	1.73	0.000312	3.42	0.00001	2.66	0.192		0.0001	0.00001	0.00173	0.0005	0.0012
W4	2020-08-15																																	
W4	2020-08-15	0.0158	0.00063	0.00705	0.0361	0.00002	0.00005	0.01	1.31E-05	34.4	0.0001	0.00014	0.00064	0.056	0.00005	0.0058	11.3	0.0304	0.000005	0.00039	0.00109	0.05	0.903	0.000188	4	0.00001	1.62	0.186		0.0001	0.00001	0.000973	0.0005	0.0015
W4	2020-08-15	0.0168	0.00061	0.00688	0.0368	0.00002	0.00005	0.01	9.8E-06	33.6	0.0001	0.00014	0.00064	0.056	0.00005	0.0059	11.5	0.03	0.000005	0.000393	0.00114	0.05	0.908	0.000196	3.98	0.00001	1.61	0.188		0.0001	0.00001	0.000963	0.0005	0.0016
W4	2020-08-17																																	
W4	2020-08-17	0.0119	0.00234	0.0153	0.0351	0.00002	0.00005	0.01	1.53E-05	33.1	0.0001	0.00015	0.00122	0.039	0.000055	0.0115	11.3	0.0217	0.000005	0.000893	0.00128	0.05	1.74	0.000253	3.51	0.000011	2.57	0.176		0.0001	0.00001	0.00171	0.0005	0.0015
W4	2020-08-18																																	
W4	2020-08-18	0.0123	0.00237	0.016	0.036	0.00002	0.00005	0.01	1.77E-05	34.2	0.0001	0.00016	0.00127	0.043	0.000069	0.0117	11.5	0.0222	0.000005	0.000902	0.00134	0.05	1.8	0.000283	3.52	0.00001	2.63	0.18	0.00001	0.0001	2.88	0.00172	0.0005	0.0011
W4	2020-08-18	0.0123	0.00237	0.016	0.036	0.00002	0.00005	0.01	1.77E-05	34.2	0.0001	0.00016	0.00127	0.043	0.000069	0.0117	11.5	0.0222	0.000005	0.000902	0.00134	0.05	1.8	0.000283	3.52	0.00001	2.63	0.18		0.0001	0.00001	0.00172	0.0005	0.0011
W4	2020-09-01																																	
W4	2020-09-01	0.029	0.00041	0.00605	0.0341	0.00002	0.00005	0.01	1.12E-05	29.2	0.0001	0.00016	0.00081	0.086	0.00005	0.0042	7.91	0.033	0.000005	0.000392	0.0012	0.05	0.759	0.000148	3.78	0.00001	1.41	0.156		0.0001	0.00001	0.000772	0.0005	0.0031
W4	2020-09-08																																	
W4	2020-09-14	0.011	0.00114	0.01	0.0337	0.00002	0.00005	0.01	7.8E-06	33.2	0.0001	0.00017	0.00072	0.039	0.00005	0.0061	11.2	0.0252	0.000005	0.000627	0.00119	0.05	1.28	0.000202	3.73	0.00001	2.07	0.182		0.0001	0.00001	0.00159	0.0005	0.0012
W4	2020-09-15	0.0115	0.00277	0.0191	0.0348	0.00002	0.00005	0.01	1.79E-05	36.8	0.0001	0.00014	0.00126	0.028	0.00005	0.0101	11.3	0.0166	0.000005	0.00166	0.00122	0.05	2.06	0.000394	3.49	0.00001	2.53	0.195		0.0001	0.00001	0.00226	0.0005	0.001

Station ID	Sample Date	Conductivity	Hardness (as	pH (s.u.)	TSS (mg/L)	TDS (mg/L)	Turbidity	Alkalinity,	NH3-N (mg/L)	Br (mg/L)	Cl (mg/L)	F (mg/L)	NO3-N (mg/L)	NO2-N (mg/L)	TKN (mg/L)	T-N (mg/L)	D-O-P (mg/L)	D-P-P (mg/L)	T-P-P (mg/L)	SO4 (mg/L)	CWAD (mg/L)	T-CN (mg/L)	TOC (mg/L)	DOC (mg/L)
W4	2020-09-16	313	149	7.98	6.5		2.32	88.9	0.0121	0.05	1.75	0.129	0.115	0.0016				0.002	0.0111	60.7			4.62	
W4	2020-09-17	313	149	8	3.9		2.37	90.1	0.0198	0.05	1.76	0.129	0.112	0.0018				0.002	0.0072	60.5			4.05	
W4	2020-09-18	299	163	7.99	5.2		2.03	92.3	0.0132	0.05	1.71	0.118	0.121	0.001				0.0037	0.0064	62.4			4.23	
W4	2020-09-19	292	157	7.99	4		1.42	92.3	0.0114	0.05	1.39	0.111	0.117	0.001				0.002	0.0044	60.5			3.34	
W4	2020-09-20	308	160	8.02	3		2.07	94.4	0.0139	0.05	1.99	0.127	0.12	0.0024				0.002	0.0054	63.6			3.85	
W4	2020-09-23	287	159	8	4.9		2.66	86.2	0.016	0.05	0.5	0.09	0.1	0.001				0.0021	0.0052	60.4			3.4	
W4	2020-09-24	312	153	8.1	3		1.65	89.2	0.015	0.05	1.83	0.129	0.114	0.001				0.0029	0.0043	65.2			3.28	
W4	2020-09-25	303	152	8.02	3		1.43	88.3	0.019	0.05	1.43	0.126	0.116	0.0032				0.002	0.0036	64.2			3.68	
W4	2020-09-26	294	150	8.11	3.9		2.18	91.7	0.0134	0.05	1.4	0.132	0.112	0.0029				0.002	0.0072	64			3.35	
W4	2020-09-27	298	159	8	3		2.16	86.7	0.0102	0.05	1.33	0.122	0.112	0.0026				0.0021	0.0041	62.8			3.97	
W4	2020-10-05	263	129	8.01	3		12.2	83.3	0.0055	0.05	0.5	0.098	0.0974	0.001				0.002	0.0295	55.2			4	
W4	2020-11-03	318	155	7.9	3		0.36	91.2	0.012	0.05	0.5	0.103	0.141	0.001				0.0025	0.0027	68.7			1.58	
W4	2020-12-07	341	170	7.91	4.1		1.72	98.2	0.0064	0.05	0.5	0.112	0.2	0.001				0.0022	0.0076	77.4			1.09	
W6	2020-02-07	419	236	7.93	3		0.2	125	0.0195	0.05	0.74	0.091	0.383	0.001	0.328	0.605	0.001	0.0046		92.5	0.005	0.005	2.26	2.09
W6	2020-02-07	389.8		7.66			0.26																	
W6	2020-02-07	419	236	7.93	3		0.2	125	0.0195	0.05	0.74	0.091	0.383	0.001				0.0046		92.5			2.09	
W6	2020-03-08	434	211	7.94	3		0.52	128	0.018	0.05	1.27	0.099	0.396	0.0018	0.298	0.621	0.001	0.0049		99	0.005	0.005	2.39	2.75
W6	2020-04-17	428	168	8	3.3		0.66	104	0.0282	0.05	28.3	0.084	0.275	0.001	0.342	0.513	0.0065	0.0174		76.4	0.005	0.005	3.71	3.98
W6	2020-04-17	420.6		7.41	2																			
W6	2020-04-17	428	168	8	3.3		0.66	104	0.0282	0.05	28.3	0.084	0.275	0.001				0.0174	0.0232	76.4			3.98	
W6	2020-05-05	147.8		7.56	14.4		8.08																	
W6	2020-05-05	136	71.9	7.68	17.9		4.47	44.2	0.0087	0.05	0.5	0.054	0.045	0.001				0.0168	0.0346	25.1			26.1	
W6	2020-06-02	175	84.9	7.73	8.5		1.31	59.7	0.0059	0.05	0.5	0.068	0.0794	0.001				0.0062	0.013	29.9			9.31	
W6	2020-06-03	162		7.71			-1.7																	
W6	2020-07-03	291.9		7.85	0.75		0.54																	
W6	2020-07-03	294	137	7.87	4		0.93	89.1	0.007	0.05	0.5	0.096	0.0969	0.001		0.241	0.0015	0.0036	0.0051	56.9			5.56	
W6	2020-08-06	306.6		7.87	0.4		1.03																	
W6	2020-08-06	317	159	8.12	4.1		0.31	100	0.005	0.05	0.5	0.1	0.0648	0.001				0.0041	0.0044	62.1			4.97	
W6	2020-09-02	291.7		7.64			2.28																	
W6	2020-09-02	255	138	7.97	3.3		1.1	81	0.0057	0.05	0.5	0.088	0.0729	0.0011				0.0039	0.0075	47			8.66	
W6	2020-10-02	308	155	7.99	3		0.28	99.5	0.0067	0.05	0.5	0.093	0.107	0.001				0.0037	0.0052	58			5.46	
W6	2020-11-05	384	192	7.95	3		0.12	120	0.0277	0.05	0.5	0.104	0.198	0.001				0.0054	0.0051	84.3			3.38	
W6	2020-12-05	383	187	8.04	3		0.22	117	0.0064	0.05	0.5	0.101	0.219	0.001				0.0048	0.0042	86.4			2.14	
W99	2020-01-06	443.3		7.81																				
W99	2020-01-06	413	240	8.13	16.5		1.94	119	0.005	0.05	1.33	0.1	0.138	0.001				0.002		90.6			1.59	
W99	2020-02-09	425.6		8.51			-0.7																	
W99	2020-02-09	439	224	8.12	3		0.45	136	0.0054	0.05	0.59	0.118	0.157	0.001				0.002		102			1.58	
W99	2020-03-09	461	237	8.05	3		0.2	142	0.011	0.05	0.5	0.124	0.161	0.001	0.091	0.201	0.001	0.002		108	0.005	0.005	0.97	1.02
W99	2020-04-12	460.8		7.57																				
W99	2020-04-12	439	242	7.85	3		1.68	139	0.0121	0.05	0.69	0.12	0.168	0.001				0.002	0.002	108			1.13	
W99	2020-05-06	165.1		7.48	51.6		49.07																	
W99	2020-05-06	154	84.2	7.67	43.3		58.7	45.8	0.0072	0.05	0.7	0.075	0.025	0.001				0.0152	0.0496	31.1			32.3	
W99	2020-06-04	158.2		7.86			0.46																	
W99	2020-06-04	173	80	7.85	3.2		2.69	49.1	0.0068	0.05	0.5	0.048	0.0761	0.001				0.0044	0.0097	32.9			7.36	
W99	2020-06-22	130.7		7.28	46.8		20.19																	
W99	2020-06-22	133	68.9	7.52	56.6		25.3	41.6	0.0061	0.05	0.5	0.058	0.0363	0.001				0.005	0.0329	25.1			14	
W99	2020-07-04	260		7.61	3.125		-0.16																	
W99	2020-07-04	251	121	7.81	3		0.57	73.6	0.005	0.05	0.5	0.082	0.0917	0.001		0.17	0.001	0.002	0.002	53.3			3.31	
W99	2020-07-21	489.4		7.87			4.38																	
W99	2020-07-21	260	120	7.91	8.2		3.81	73.1	0.005	0.05	0.5	0.095	0.061	0.001		0.175	0.001	0.002	0.0044	51.9			4.92	
W99	2020-08-03	258	129	7.94	6.9		1.58	77.1	0.012	0.05	0.5	0.083	0.0668	0.001	0.101	0.162	0.001	0.002		54.3	0.005		3.99	3.69
W99	2020-08-03	263.2		7.86	2.4		2.93																	
W99	2020-09-01	271.8		7.55			22.84																	
W99	2020-09-01	237	117	7.87	48		26.7	72.6	0.0053	0.05	0.5	0.087	0.0766	0.001				0.0024	0.0305	48.4			6.19	
W99	2020-10-06	284	140	8.02	3		3.35	89.7	0.005	0.05	0.5	0.1	0.106	0.001				0.002	0.0058	61			4.14	
W99	2020-11-03	352	174	7.88	3		0.28	106	0.0096	0.05	0.5	0.103	0.139	0.001				0.0028	0.0035	76.5			1.96	
W99	2020-12-07	386	194	7.92	3		0.63	113	0.0059	0.05	0.5	0.113	0.159	0.001				0.002	0.002	89.3			1.3	
W99	2020-12-07	384	188	7.92	3		0.63	113	0.006	0.05	0.5	0.114	0.158	0.001				0.002	0.0023	89.2			1.88	

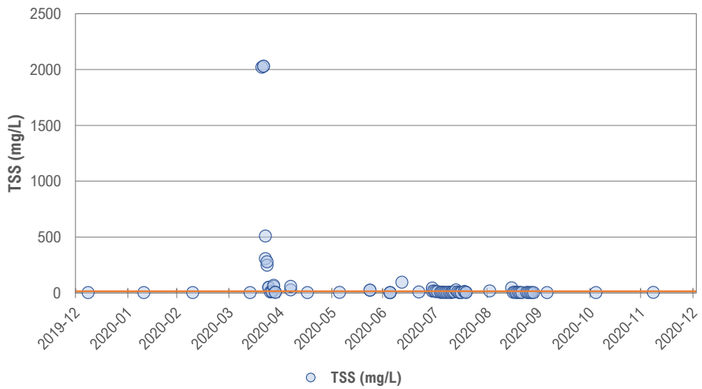
Station ID	Sample Date	T-Al (mg/L)	T-Sb (mg/L)	T-As (mg/L)	T-Ba (mg/L)	T-Be (mg/L)	T-Bi (mg/L)	T-B (mg/L)	T-Cd (mg/L)	T-Ca (mg/L)	T-Cr (mg/L)	T-Co (mg/L)	T-Cu (mg/L)	T-Fe (mg/L)	T-Pb (mg/L)	T-Li (mg/L)	T-Mg (mg/L)	T-Mn (mg/L)	T-Hg (mg/L)	T-Mo (mg/L)	T-Ni (mg/L)	T-P (mg/L)	T-K (mg/L)	T-Se (mg/L)	T-Si (mg/L)	T-Ag (mg/L)	T-Na (mg/L)	T-Sr (mg/L)	T-Tl (mg/L)	T-Sn (mg/L)	T-Ti (mg/L)	T-U (mg/L)	T-V (mg/L)	T-Zn (mg/L)
W4	2020-09-16	0.168	0.00272	0.0221	0.042	0.00002	0.00005	0.01	2.42E-05	39.4	0.00032	0.00028	0.00147	0.292	0.000549	0.0102	12.2	0.0324	0.000005	0.00106	0.00164	0.05	1.94	0.000255	4.06	0.000021	2.62	0.212		0.0001	0.00725	0.00234	0.00078	0.003
W4	2020-09-17	0.0958	0.00266	0.0194	0.0362	0.00002	0.00005	0.01	1.83E-05	40.1	0.00018	0.0002	0.00121	0.159	0.000364	0.0102	11.8	0.0262	0.000005	0.00108	0.00131	0.05	1.82	0.000349	4	0.000015	2.51	0.208		0.0001	0.00303	0.00229	0.00064	0.003
W4	2020-09-18	0.0894	0.00259	0.02	0.038	0.00002	0.00005	0.01	2.68E-05	44	0.0002	0.00022	0.00127	0.178	0.000344	0.01	12.9	0.0303	0.000005	0.00105	0.00134	0.05	1.84	0.000324	3.87	0.00001	2.75	0.215		0.0001	0.00319	0.00209	0.0005	0.003
W4	2020-09-19	0.0654	0.00225	0.0178	0.0385	0.00002	0.00005	0.01	0.000022	41.5	0.00016	0.00019	0.00113	0.139	0.000246	0.0093	13	0.0294	0.000005	0.000947	0.00131	0.05	1.66	0.000265	3.97	0.00001	2.55	0.213		0.0001	0.00221	0.00193	0.0005	0.003
W4	2020-09-20	0.0776	0.00292	0.021	0.0382	0.00002	0.00005	0.01	1.96E-05	42.2	0.00018	0.0002	0.00132	0.153	0.00032	0.0109	13.2	0.0287	0.000005	0.00116	0.00134	0.05	1.96	0.000361	3.89	0.00001	2.79	0.222		0.0001	0.0027	0.00225	0.0005	0.003
W4	2020-09-23	0.089	0.00272	0.0214	0.0414	0.00002	0.00005	0.01	2.55E-05	42	0.00021	0.00024	0.00136	0.179	0.000425	0.0113	13.3	0.0329	0.000005	0.00105	0.00153	0.05	2.12	0.000296	4.24	0.00001	2.88	0.198		0.0001	0.00381	0.00224	0.0005	0.003
W4	2020-09-24	0.0711	0.00284	0.0209	0.0384	0.00002	0.00005	0.01	2.38E-05	40	0.00014	0.0002	0.00128	0.134	0.000292	0.0117	12.9	0.0306	0.000005	0.00117	0.0014	0.05	2	0.000346	4.06	0.00001	2.68	0.206		0.0001	0.00222	0.0024	0.0005	0.003
W4	2020-09-25	0.0545	0.00223	0.0181	0.0411	0.00002	0.00005	0.01	2.44E-05	40.2	0.00012	0.00018	0.00104	0.126	0.000199	0.0103	12.4	0.0342	0.000005	0.000924	0.00136	0.05	1.76	0.000293	4.25	0.00001	2.5	0.198		0.0001	0.00191	0.00208	0.0005	0.003
W4	2020-09-26	0.132	0.00302	0.0234	0.041	0.00002	0.00005	0.01	2.93E-05	38.4	0.00028	0.00028	0.0015	0.289	0.000621	0.0124	13	0.0358	0.000005	0.0011	0.00162	0.05	2.1	0.000327	4.26	0.00001	2.81	0.203		0.0001	0.00545	0.00248	0.0005	0.003
W4	2020-09-27	0.0893	0.00269	0.0216	0.0392	0.00002	0.00005	0.01	1.81E-05	40.8	0.00025	0.00022	0.0013	0.165	0.000341	0.0109	13.8	0.0332	0.000005	0.00108	0.00156	0.05	1.99	0.000315	4.32	0.00001	2.82	0.216		0.0001	0.00362	0.00199	0.0005	0.003
W4	2020-10-05	1.17	0.00133	0.0265	0.0526	0.000062	0.00012	0.01	3.13E-05	32.9	0.0023	0.00084	0.00243	1.72	0.00275	0.0067	11.3	0.0704	0.000005	0.000491	0.00321	0.05	1.21	0.000172	6.48	0.000019	1.66	0.173		0.0001	0.0585	0.00119	0.00268	0.0085
W4	2020-11-03	0.0365	0.00038	0.00521	0.0406	0.00002	0.00005	0.01	1.15E-05	38.7	0.0001	0.0002	0.0005	0.135	0.000077	0.0061	14.2	0.0448	0.000005	0.000292	0.00123	0.05	0.943	0.000242	4.66	0.00001	1.9	0.202		0.0001	0.00126	0.00122	0.0005	0.003
W4	2020-12-07	0.13	0.00043	0.00616	0.0442	0.00002	0.000055	0.01	1.87E-05	41.1	0.00028	0.00031	0.00061	0.41	0.000328	0.0074	16.5	0.0622	0.000005	0.000253	0.00166	0.05	1.12	0.00023	4.75	0.00001	2.09	0.21		0.0001	0.00722	0.00132	0.0005	0.0045
W6	2020-02-07	0.0122	0.00037	0.0054	0.0656	0.00002	0.00005	0.01	2.38E-05	74.6	0.00048	0.0001	0.00096	0.019	0.000058	0.0018		0.00863	0.000005	0.000958	0.0005	0.05	1.52	0.000622	4.68	0.00001	2.93	0.323	0.00001	0.0001	0.00038	0.0014	0.0005	0.004
W6	2020-02-07																																	
W6	2020-02-07	0.0122	0.00037	0.0054	0.0656	0.00002	0.00005	0.01	2.38E-05	74.6	0.00048	0.0001	0.00096	0.019	0.000058	0.0018	12.1	0.00863	0.000005	0.000958	0.0005	0.05	1.52	0.000622	4.68	0.00001	2.93	0.323		0.0001	0.00038	0.0014	0.0005	0.004
W6	2020-03-08	0.0539	0.00046	0.00596	0.066	0.00002	0.000083	0.01	0.000035	65.8	0.00049	0.0001	0.00153	0.078	0.000174	0.0018		0.00981	0.000005	0.00266	0.00054	0.05	1.59	0.000664	4.86	0.00001	3.34	0.29	0.00001	0.0001	0.00304	0.00149	0.0005	0.0281
W6	2020-04-17	0.0305	0.00031	0.00591	0.051	0.00002	0.00005	0.01	2.87E-05	52.5	0.00011	0.0001	0.00127	0.052	0.000127	0.0016		0.0148	0.000005	0.000713	0.0005	0.05	1.86	0.0005	3.68	0.000023	24.2	0.218	0.00001	0.0001	0.00079	0.00109	0.0005	0.0136
W6	2020-04-17																																	
W6	2020-04-17	0.0305	0.00031	0.00591	0.051	0.00002	0.00005	0.01	2.87E-05	52.5	0.00011	0.0001	0.00127	0.052	0.000127	0.0016	9.08	0.0148	0.000005	0.000713	0.0005	0.05	1.86	0.0005	3.68	0.000023	24.2	0.218		0.0001	0.00079	0.00109	0.0005	0.0136
W6	2020-05-05																																	
W6	2020-05-05	0.321	0.00028	0.00795	0.0344	0.000045	0.00005	0.01	5.36E-05	22.9	0.00062	0.00035	0.00259	0.534	0.000398	0.0015	3.58	0.0652	8.8E-06	0.000398	0.00159	0.05	1.49	0.000252	2.56	0.000011	1.08	0.0925		0.0001	0.00854	0.000276	0.00097	0.0071
W6	2020-06-02	0.146	0.00042	0.00455	0.034	0.00002	0.00005	0.01	2.09E-05	26.8	0.0003	0.00016	0.00382	0.268	0.000348	0.0012	4.36	0.0149	0.000005	0.000569	0.00121	0.05	0.833	0.000383	3.26	0.00001	1.17	0.108		0.0001	0.0033	0.000353	0.0005	0.007
W6	2020-06-03																																	
W6	2020-07-03																																	
W6	2020-07-03	0.0402	0.00045	0.00623	0.0448	0.00002	0.00005	0.01	1.84E-05	43.2	0.00011	0.0001	0.00108	0.114	0.000073	0.0017	6.99	0.00999	0.000005	0.00073	0.0012	0.05	1.11	0.000545	4.22	0.00001	1.76	0.179		0.0001	0.00088	0.000699	0.0005	0.003
W6	2020-08-06																																	
W6	2020-08-06	0.0264	0.00048	0.00657	0.0508	0.00002	0.00005	0.01	2.54E-05	51.6	0.0001	0.0001	0.00116	0.082	0.00005	0.0019	7.36	0.015	0.000005	0.000775	0.00098	0.05	1.17	0.000437	4.37	0.00001	1.94	0.196		0.0001	0.00033	0.000788	0.0005	0.0043
W6	2020-09-02																																	
W6	2020-09-02	0.101	0.00048	0.00628	0.0431	0.00002	0.00005	0.01	2.86E-05	44.1	0.00028	0.00013	0.00142	0.177	0.000116	0.0017	6.72	0.02	0.000005	0.000696	0.00148	0.05	0.916	0.000428	4.14	0.00001	1.62	0.193		0.0001	0.00265	0.0006	0.00053	0.003
W6	2020-10-02	0.0435	0.00047	0.00733	0.0497	0.00002	0.00005	0.01	3.22E-05	48.5	0.00013	0.0001	0.00104	0.122	0.00005	0.0017	8.31	0.0204	0.000005	0.000886	0.00125	0.05	1.2	0.000429	4.86	0.00001	2.13	0.209		0.0001	0.00104	0.000902	0.0005	0.003
W6	2020-11-05	0.0126	0.00038	0.00592	0.0598	0.00002	0.00005	0.01	0.000025	60.6	0.0001	0.0001	0.00077	0.04	0.00005	0.0019	9.87	0.0189	0.000005	0.000951	0.00075	0.05	1.32	0.000532	4.96	0.00001	2.57	0.242		0.0001	0.00045	0.00104	0.0005	0.003
W6	2020-12-05	0.0104	0.00036	0.00662	0.0601	0.00002	0.00005	0.01	1.59E-05	59.4	0.0001	0.0001	0.0005	0.037	0.00005	0.0018	9.45	0.0126	0.000005	0.000951	0.0005	0.05	1.35	0.000552	4.77	0.00001	2.44	0.255		0.0001	0.00046	0.00118	0.0005	0.003
W99	2020-01-06																																	
W99	2020-01-06	0.0051	0.00053	0.0024	0.0454	0.00002	0.00005	0.01	2.84E-05	59.9	0.00015	0.00013	0.00093	0.029	0.00005	0.0085	22.1	0.0676	0.000005	0.000176	0.00101	0.05	1.42	0.000237	4.56	0.00001	2.84	0.284		0.00014	0.0003	0.00213	0.0005	0.0062
W99	2020-02-09																																	
W99	2020-02-09	0.0073	0.00051	0.00256	0.0451	0.00002	0.00005	0.01	1.36E-05	52.6	0.0001	0.00012	0.0005	0.042	0.000058	0.0078	22.5	0.0732	0.000005	0.000215	0.00103	0.05	1.4	0.000216	4.38	0.00001	2.48	0.268		0.0001	0.00041	0.00208	0.0005	0.003
W99	2020-03-09	0.0046	0.00054	0.0025	0.0458	0.00002	0.00005	0.01	9.9E-06	54.8	0.0001	0.00013	0.0005	0.038	0.00005	0.0086		0.0713	0.000005	0.000151	0.00108	0.05	1.44	0.000187	4.49	0.00001	2.65	0.283	0.00001	0.0001	0.0003	0.00233	0.0005	0.003
W99	2020-04-12																																	
W99	2020-04-12	0.0309	0.00061	0.00345	0.0435	0.00002	0.00005	0.01	0.000011	55.8	0.0001	0.00015	0.0005	0.067	0.000107	0.0081	24.9	0.0733	0.000005	0.000167	0.00112	0.05	1.39	0.000226	4.52	0.00001	3	0.293		0.0001	0.0009	0.00213	0.0005	0.003
W99	2020-05-06																																	
W99	2020-05-06	1.51	0.00167	0.0327	0.0493	0.000119	0.000223	0.01	9.84E-05	20.7	0.00233	0.00136	0.00711	2.66	0.00403	0.0056	7.92	0.0974	1.89E-05	0.000226	0.00583	0.065	1.84	0.000128	4.04	0.000047	1.09	0.103		0.0001	0.0413	0.000628	0.00241	0.0173
W99	2020-06-04																																	
W99	2020-06-04	0.124	0.0005	0.00628	0.0265	0.00002	0.00005	0.01	0.000014	21.1	0.00023	0.00018	0.0013	0.352	0.000326	0.0029	6.61	0.026	0.000005	0.000225	0.00134	0.05	0.684	0.000125	2.97	0.00001	1.06	0.109		0.0001	0.00334	0.000529	0.00054	0.0038
W99	2020-06-22																																	
W99	2020-06-22	0.665	0.00086	0.0106	0.0346	0.000047	0.00005	0.01	4.42E-05	18.2	0.00109	0.00073	0.0033	1.32	0.00199	0.0034	5.66	0.0644	0.00001	0.000266	0.00286	0.05	0.635	0.000133	4.09	0.00002	0.967	0.0913		0.0001	0.0172	0.00044	0.00131	0.0094
W99	2020-07-04																																	
W99	2020-07-04	0.0318	0.00046	0.00649	0.0323	0.00002	0.00005	0.01	7.8E-06	30.2	0.0001	0.00011	0.00068	0.078	0.000109	0.0042	11	0.027	0.000005	0.00031	0.00098	0.05	0.821	0.00019	3.98	0.00001	1.61	0.16		0.0001	0.00078	0.000908	0.0005	0.003
W99	2020-07-21																																	
W99	2020-07-21	0.13	0.00054	0.00685	0.0347	0.00002	0.00005	0.01	0.000019	31.1	0.00026	0.00021	0.00109	0.248	0.000363	0.0049	10.4	0.0356	0.000005	0.000368	0.00155	0.05	0.816	0.000168	4.01	0.00001	1.54	0.164		0.0001	0.0039	0.000875	0.0005	0.003
W99	2020-08-03	0.12	0.00067	0.00742	0.0374	0.00002	0.00005	0.01	1.53E-05	33.3	0.0002	0.00019	0.00087	0.191	0.000222	0.0053		0.0345	0.000005	0.000441	0.00126	0.05	0.905	0.000206	4.2	0.00001	1.71	0.178	0.00001	0.0001	0.003	0.00108	0.0005	0.003
W99	2020-08-03																																	
W99	2020-09-01																																	
W99	2020-09-01	0.827	0.00146	0.0235	0.0468	0.000061	0.000228	0.01	5.47E-05	30.1	0.00153	0.00096	0.00307	1.64	0.00338	0.0054	10.2	0.0703	0.000006	0.000348	0.00297	0.05	1.16	0.000175	5.14	0.00003	1.57	0.155		0.0001	0.0321	0.00101	0.00176	0.0098
W99	2020-10-06	0.12	0.00061	0.00818	0.04	0.00002	0.00005	0.01	1.37E-05	35.8	0.00026	0.00025	0.00092	0.279	0.000364	0.0057	12.4	0.0562	0.000005	0.000378	0.00157	0.05	0.925	0.000222	4.34	0.00001	1.72	0.187		0.0001	0.00501	0.00124	0.0005	0.003
W99	2020-11-03	0.0187	0.00051	0.00481	0.0424	0.00002	0.00005	0.01	1.66E-05	43.3	0.0001	0.00016	0.0005	0.074	0.000079	0.0064	16.1	0.0559	0.000005	0.000273	0.00111	0.05	1.06	0.000238	4.64	0.00001	2.07	0.224		0.0001	0.0007	0.00149	0.0005	0.003
W99	2020-12-07	0.0171	0.00054	0.00429	0.0451	0.00002	0.00005	0.01	1.46E-05	46.5	0.0001	0.00017	0.0005	0.074	0.00006	0.0076	18.9	0.0704	0.000005	0.000231	0.00126	0.05	1.24	0.00025	4.54	0.00001	2.31	0.249		0.0001	0.00065	0.00177	0.0005	0.003
W99	2020-12-07	0.0167	0.00051	0.00422	0.044	0.00002	0.00005	0.01	1.61E-05	45	0.0001	0.00018	0.0005	0.075	0.000057	0.0072	18.4	0.0687	0.000005	0.000225	0.00121	0.05	1.19	0.000239	4.44	0.00001	2.33	0.24		0.0001	0.00083	0.00173	0.0005	0.003

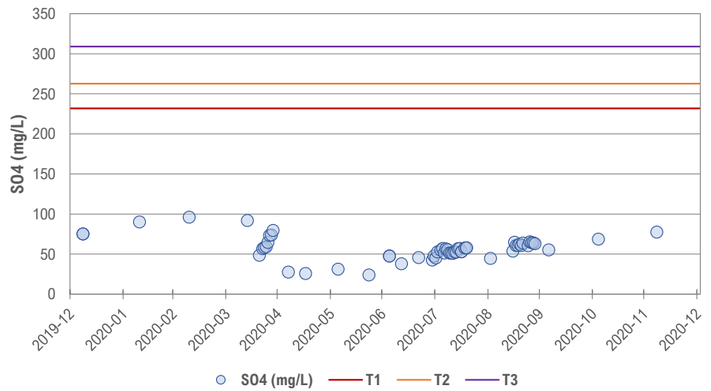
Station ID	Sample Date	D-Al (mg/L)	D-Sb (mg/L)	D-As (mg/L)	D-Ba (mg/L)	D-Be (mg/L)	D-Bi (mg/L)	D-B (mg/L)	D-Cd (mg/L)	D-Ca (mg/L)	D-Cr (mg/L)	D-Co (mg/L)	D-Cu (mg/L)	D-Fe (mg/L)	D-Pb (mg/L)	D-Li (mg/L)	D-Mg (mg/L)	D-Mn (mg/L)	D-Hg (mg/L)	D-Mo (mg/L)	D-Ni (mg/L)	D-P (mg/L)	D-K (mg/L)	D-Se (mg/L)	D-Si (mg/L)	D-Ag (mg/L)	D-Na (mg/L)	D-Sr (mg/L)	D-Tl (mg/L)	D-Sn (mg/L)	D-Ti (mg/L)	D-U (mg/L)	D-V (mg/L)	D-Zn (mg/L)
W4	2020-09-16	0.0125	0.00242	0.019	0.0397	0.00002	0.00005	0.01	1.94E-05	41	0.0001	0.00014	0.00112	0.03	0.00005	0.0104	13.4	0.022	0.000005	0.00104	0.00128	0.05	2.12	0.000354	4.12	0.00001	2.73	0.191		0.0001	0.00001	0.00214	0.0005	0.0012
W4	2020-09-17	0.0101	0.00244	0.0174	0.0374	0.00002	0.00005	0.01	0.000017	39.7	0.0001	0.00013	0.00104	0.028	0.00005	0.0099	12	0.0192	0.000005	0.00106	0.0012	0.05	1.92	0.000379	3.71	0.00001	2.46	0.194		0.0001	0.00001	0.00209	0.0005	0.001
W4	2020-09-18	0.0096	0.00245	0.0186	0.0391	0.00002	0.00005	0.01	1.82E-05	39.2	0.0001	0.00014	0.00108	0.028	0.00005	0.0101	13.6	0.0221	0.000005	0.00107	0.00128	0.05	2.05	0.000322	4.03	0.00001	2.68	0.198		0.0001	0.00001	0.00208	0.0005	0.001
W4	2020-09-19	0.0106	0.00207	0.0177	0.0415	0.00002	0.00005	0.01	1.55E-05	41.2	0.0001	0.00015	0.00087	0.033	0.00005	0.0098	13.7	0.0246	0.000005	0.000943	0.00126	0.05	1.92	0.000359	4.32	0.00001	2.81	0.185		0.0001	0.00001	0.00195	0.0005	0.0019
W4	2020-09-20	0.0088	0.00248	0.0182	0.0362	0.00002	0.00005	0.01	1.54E-05	40.2	0.0001	0.00014	0.00102	0.027	0.00005	0.0106	12.5	0.021	0.000005	0.00105	0.00117	0.05	1.97	0.000335	4.11	0.00001	2.74	0.19		0.0001	0.00001	0.00223	0.0005	0.001
W4	2020-09-23	0.0097	0.00281	0.0186	0.0378	0.00002	0.00005	0.01	1.91E-05	46	0.0001	0.00016	0.00118	0.031	0.00005	0.0115	14.3	0.0258	0.000005	0.00121	0.00122	0.05	2.27	0.000348	4.15	0.00001	3.13	0.24		0.0001	0.00001	0.00235	0.0005	0.0011
W4	2020-09-24	0.0095	0.00253	0.0187	0.0369	0.00002	0.00005	0.01	2.05E-05	41.9	0.0001	0.00013	0.0011	0.027	0.00005	0.0117	12.8	0.0243	0.000005	0.00107	0.00111	0.05	2.07	0.000337	3.85	0.00001	2.82	0.19		0.0001	0.00001	0.00226	0.0005	0.0012
W4	2020-09-25	0.0087	0.00285	0.0198	0.0405	0.00002	0.00005	0.01	1.93E-05	40.2	0.0001	0.00013	0.0011	0.029	0.00005	0.0122	12.4	0.0248	0.000005	0.0012	0.00127	0.05	2.19	0.000366	3.99	0.00001	2.72	0.198		0.0001	0.00001	0.00234	0.0005	0.0012
W4	2020-09-26	0.0097	0.00286	0.0191	0.0404	0.00002	0.00005	0.01	1.64E-05	38.5	0.0001	0.00014	0.0011	0.031	0.00005	0.0122	12.1	0.0217	0.000005	0.0012	0.00129	0.05	2.14	0.000337	4.01	0.00001	2.74	0.204		0.0001	0.00001	0.00242	0.0005	0.0012
W4	2020-09-27	0.012	0.00272	0.0185	0.0366	0.00002	0.00005	0.01	0.000014	40.4	0.0001	0.00013	0.00104	0.031	0.00005	0.0113	12.5	0.0256	0.000005	0.00111	0.00112	0.05	2.13	0.000329	3.88	0.00001	2.7	0.207		0.0001	0.00001	0.00236	0.0005	0.0011
W4	2020-10-05	0.0168	0.00042	0.00718	0.0396	0.00002	0.00005	0.01	9.9E-06	35.8	0.0001	0.00017	0.00057	0.064	0.00005	0.0055	12.3	0.0416	0.000005	0.000403	0.00127	0.05	0.929	0.000182	4.36	0.00001	1.75	0.173		0.0001	0.00001	0.00106	0.0005	0.0013
W4	2020-11-03	0.004	0.00036	0.00499	0.0404	0.00002	0.00005	0.01	9.4E-06	44.3	0.0001	0.00015	0.00028	0.02	0.00005	0.0062	14.6	0.0416	0.000005	0.000264	0.00108	0.05	0.985	0.000234	4.2	0.00001	1.79	0.21		0.0001	0.00001	0.00118	0.0005	0.0021
W4	2020-12-07	0.0043	0.00035	0.00366	0.0404	0.00002	0.00005	0.01	0.000014	41.1	0.0001	0.00019	0.00028	0.016	0.00005	0.0071	16.1	0.0512	0.000005	0.000232	0.00137	0.05	1.07	0.000313	4.3	0.00001	1.94	0.206		0.0001	0.00001	0.0013	0.0005	0.003
W6	2020-02-07	0.0024	0.00032	0.00518	0.0599	0.00002	0.00005	0.01	1.34E-05	68	0.0002	0.0001	0.00042	0.01	0.00005	0.0017	11.4	0.00762	0.000005	0.000867	0.0005	0.05	1.43	0.000623	4.41	0.00001	2.78	0.284	0.00001	0.0001	4.48	0.00133	0.0005	0.0014
W6	2020-02-07																																	
W6	2020-02-07	0.0024	0.00032	0.00518	0.0599	0.00002	0.00005	0.01	1.34E-05	68	0.0002	0.0001	0.00042	0.01	0.00005	0.0017	11.4	0.00762	0.000005	0.000867	0.0005	0.05	1.43	0.000623	4.41	0.00001	2.78	0.284		0.0001	0.00001	0.00133	0.0005	0.0014
W6	2020-03-08	0.004	0.00039	0.00564	0.0728	0.00002	0.00005	0.01	5.31E-05	72	0.00025	0.0001	0.00151	0.01	0.00005	0.0019	11.9	0.00918	0.000005	0.00208	0.0005	0.05	1.75	0.000606	4.71	0.00001	3.79	0.304	0.00001	0.0001	4.68	0.00152	0.0005	0.0284
W6	2020-04-17	0.0053	0.00028	0.00528	0.0506	0.00002	0.000062	0.01	2.27E-05	48.1	0.0001	0.0001	0.00173	0.014	0.00005	0.0014	8.74	0.0164	0.000005	0.000616	0.00051	0.05	2.1	0.00046	3.42	0.00001	30.5	0.218	0.00001	0.0001	4.5	0.000952	0.0005	0.0066
W6	2020-04-17																																	
W6	2020-04-17	0.0053	0.00028	0.00528	0.0506	0.00002	0.000062	0.01	2.27E-05	48.1	0.0001	0.0001	0.00173	0.014	0.00005	0.0014	8.74	0.0164	0.000005	0.000616	0.00051	0.05	2.1	0.00046	3.42	0.00001	30.5	0.218		0.0001	0.00001	0.000952	0.0005	0.0066
W6	2020-05-05																																	
W6	2020-05-05	0.0829	0.00021	0.00419	0.0283	0.00002	0.00005	0.01	3.24E-05	23.2	0.00019	0.00012	0.00166	0.107	0.00005	0.001	3.15	0.0231	7.9E-06	0.00035	0.0011	0.05	1.47	0.000267	2.35	0.00001	1.1	0.0891		0.0001	0.00001	0.000278	0.0005	0.0045
W6	2020-06-02	0.0445	0.00037	0.0041	0.0296	0.00002	0.00005	0.01	0.000014	27.1	0.00012	0.0001	0.00145	0.1	0.00005	0.001	4.42	0.00633	0.000005	0.000566	0.00097	0.05	0.782	0.000426	3.22	0.00001	1.19	0.104		0.0001	0.00001	0.000324	0.0005	0.0042
W6	2020-06-03																																	
W6	2020-07-03																																	
W6	2020-07-03	0.0176	0.00044	0.00608	0.0427	0.00002	0.00005	0.01	1.53E-05	42.4	0.0001	0.0001	0.00099	0.06	0.00005	0.0015	6.96	0.00738	0.000005	0.000695	0.00106	0.05	1.12	0.000551	3.83	0.00001	1.74	0.18		0.0001	0.00001	0.000682	0.0005	0.001
W6	2020-08-06																																	
W6	2020-08-06	0.0162	0.00049	0.00685	0.0687	0.00002	0.00005	0.01	1.98E-05	56.1	0.0001	0.0001	0.00091	0.04	0.00005	0.0019	8.71	0.0131	0.000005	0.000874	0.00108	0.05	1.25	0.000514	4.32	0.00001	2.04	0.234		0.0001	0.00001	0.000862	0.0005	0.0011
W6	2020-09-02																																	
W6	2020-09-02	0.0348	0.00044	0.00566	0.0423	0.00002	0.00005	0.01	2.49E-05	41.5	0.00018	0.0001	0.00131	0.092	0.00005	0.0013	6.48	0.0156	0.000005	0.000655	0.00137	0.05	0.907	0.000339	3.95	0.00001	1.59	0.155		0.0001	0.00001	0.000557	0.0005	0.0019
W6	2020-10-02	0.0241	0.00042	0.00609	0.0488	0.00002	0.00005	0.01	1.94E-05	53.2	0.0001	0.0001	0.00091	0.059	0.00005	0.0016	8.02	0.0164	0.000005	0.000845	0.00114	0.05	1.17	0.000553	4.4	0.00001	1.85	0.212		0.0001	0.00001	0.000789	0.0005	0.0017
W6	2020-11-05	0.0037	0.00039	0.00564	0.0572	0.00002	0.00005	0.01	2.15E-05	67.3	0.0001	0.0001	0.00045	0.01	0.00005	0.0019	9.33	0.0145	0.000005	0.000995	0.00067	0.05	1.34	0.000635	5	0.00001	2.53	0.271		0.0001	0.00001	0.00112	0.0005	0.0014
W6	2020-12-05	0.0044	0.00036	0.00665	0.0584	0.00002	0.00005	0.01	1.26E-05	62.5	0.0001	0.0001	0.00048	0.013	0.00005	0.0019	10.2	0.0108	0.000005	0.000898	0.0005	0.05	1.37	0.000578	4.85	0.00001	2.4	0.25		0.0001	0.00001	0.00117	0.0005	0.001
W99	2020-01-06																																	
W99	2020-01-06	0.0012	0.00048	0.0021	0.0443	0.00002	0.00005	0.01	1.85E-05	56.5	0.0001	0.00011	0.00084	0.012	0.00005	0.0078	21.6	0.0658	0.000005	0.000178	0.00096	0.05	1.45	0.000192	4.35	0.00001	2.7	0.274		0.0001	0.00001	0.0019	0.0005	0.0063
W99	2020-02-09																																	
W99	2020-02-09	0.0019	0.00052	0.00234	0.0477	0.00002	0.00005	0.01	1.07E-05	55.2	0.0001	0.00013	0.00046	0.012	0.00005	0.0075	22.8	0.0764	0.000005	0.000161	0.00105	0.05	1.51	0.000172	4.37	0.00001	2.83	0.282		0.0001	0.00001	0.00206	0.0005	0.0019
W99	2020-03-09	0.0018	0.00057	0.00226	0.0475	0.00002	0.00005	0.01	1.13E-05	57.2	0.0001	0.00013	0.00028	0.011	0.00005	0.0084	23.4	0.0732	0.000005	0.00015	0.00114	0.05	1.52	0.00018	4.24	0.00001	2.67	0.288	0.00001	0.0001	5.1	0.00216	0.0005	0.0015
W99	2020-04-12																																	
W99	2020-04-12	0.0015	0.00057	0.00252	0.043	0.00002	0.00005	0.01	1.21E-05	54.9	0.0001	0.00012	0.00035	0.01	0.00005	0.0081	25	0.0701	0.000005	0.00018	0.00122	0.05	1.45	0.000182	4.3	0.00001	2.75	0.288		0.0001	0.00001	0.0021	0.0005	0.0017
W99	2020-05-06																																	
W99	2020-05-06	0.16	0.00047	0.00574	0.0285	0.000022	0.00005	0.01	0.000104	19.8	0.00027	0.00029	0.00307	0.246	0.000277	0.0033	7.16	0.0469	1.11E-05	0.000158	0.00291	0.05	1.45	0.000094	2.39	0.00001	1.1	0.0945		0.0001	0.00001	0.000523	0.0005	0.008
W99	2020-06-04																																	
W99	2020-06-04	0.0424	0.00033	0.00423	0.0238	0.00002	0.00005	0.01	1.11E-05	22.7	0.0001	0.00011	0.00116	0.095	0.000068	0.0024	7.06	0.0194	0.000005	0.000273	0.00121	0.05	0.64	0.000132	2.88	0.00001	1	0.114		0.0001	0.00001	0.000468	0.0005	0.002
W99	2020-06-22																																	
W99	2020-06-22	0.105	0.00043	0.00449	0.025	0.00002	0.00005	0.01	1.93E-05	16.7	0.00022	0.00018	0.00196	0.202	0.000146	0.0024	5.42	0.017	5.9E-06	0.000217	0.00184	0.05	0.544	0.00014	3.04	0.00001	0.922	0.0847		0.0001	0.00001	0.000368	0.0005	0.0019
W99	2020-07-04																																	
W99	2020-07-04	0.0134	0.00042	0.00616	0.0322	0.00002	0.00005	0.01	8.2E-06	28.8	0.0001	0.0001	0.0006	0.032	0.00005	0.0042	10.5	0.0242	0.000005	0.000292	0.00088	0.05	0.805	0.000162	3.64	0.00001	1.57	0.152		0.0001	0.00001	0.000835	0.0005	0.0013
W99	2020-07-21																																	
W99	2020-07-21	0.0281	0.00053	0.00603	0.0364	0.00002	0.00005	0.01	1.59E-05	32.4	0.0001	0.00016	0.0009	0.081	0.000053	0.0053	10.7	0.0339	0.000005	0.000375	0.00142	0.05	0.865	0.000153	4.08	0.00001	1.61	0.174		0.0001	0.00001	0.000896	0.0005	0.0015
W99	2020-08-03	0.0153	0.00064	0.00637	0.0348	0.00002	0.00005	0.01	1.28E-05	33.9	0.0001	0.00013	0.00069	0.048	0.00005	0.0054	10	0.031	0.000005	0.000392	0.00107	0.05	0.915	0.000208	3.9	0.00001	1.81	0.174	0.00001	0.0001	2.69	0.00102	0.0005	0.0012
W99	2020-08-03																																	
W99	2020-09-01																																	
W99	2020-09-01	0.0317	0.00052	0.0053	0.0354	0.00002	0.00005	0.01	1.99E-05	30.2	0.0001	0.00021	0.00105	0.086	0.000087	0.0042	8.65	0.0419	0.000005	0.000345	0.00131	0.05	0.829	0.000146	3.76	0.00001	1.56	0.163		0.0001	0.00001	0.00085	0.0005	0.0029
W99	2020-10-06	0.018	0.00049	0.00631	0.0418	0.00002	0.00005	0.01	1.28E-05	38.5	0.0001	0.00018	0.00074	0.064	0.00005	0.0055	13.6	0.0542	0.000005	0.00035	0.00135	0.05	0.995	0.00021	4.42	0.00001	1.91	0.184		0.0001	0.00001	0.0012	0.0005	0.0023
W99	2020-11-03	0.0032	0.00048	0.00481	0.0414	0.00002	0.00005	0.01	1.39E-05	47.5	0.0001	0.00014	0.00041	0.022	0.00005	0.0066	17.3	0.056	0.000005	0.000239	0.00103	0.05	1.11	0.000219	4.33	0.00001	2.18	0.237		0.0001	0.00001	0.00148	0.0005	0.002
W99	2020-12-07	0.0033	0.00051	0.00388	0.0435	0.00002	0.00005	0.01	1.43E-05	46	0.0001	0.00015	0.00035	0.019	0.00005	0.007	19.6	0.0672	0.000005	0.000236	0.00123	0.05	1.22	0.000329	4.28	0.00001	2.25	0.24		0.0001	0.00001	0.00168	0.0005	0.0024
W99	2020-12-07	0.0032	0.00053	0.00394	0.0435	0.00002	0.00005	0.01	1.34E-05	48.6	0.0001	0.00017	0.00033	0.019	0.00005	0.0075	19.3	0.0676	0.000005	0.00021	0.0012	0.05	1.2	0.000256	4.26	0.00001	2.26	0.241		0.0001	0.00001	0.00179	0.0005	0.002

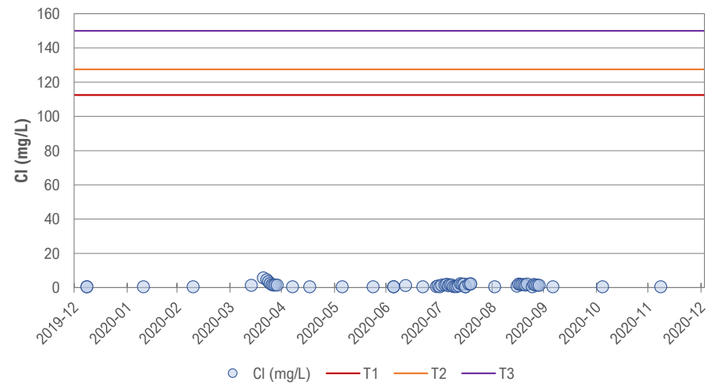
APPENDIX F4

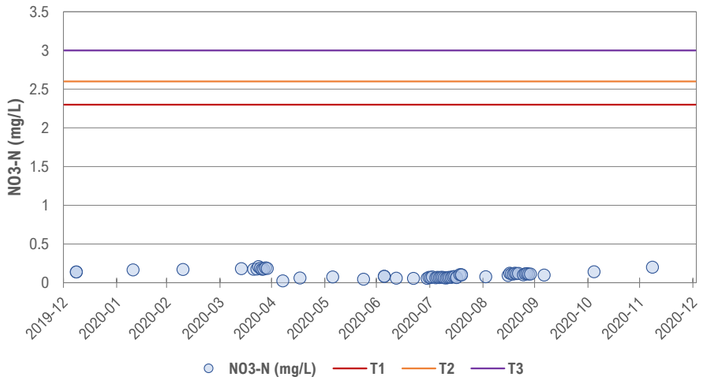
Haggart Creek Water Quality Plots

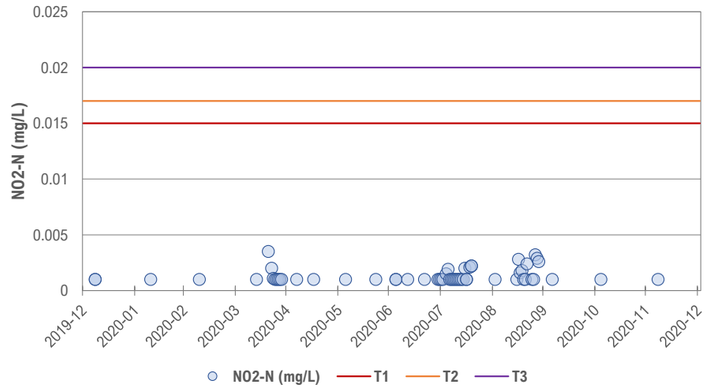
Station ID: W4

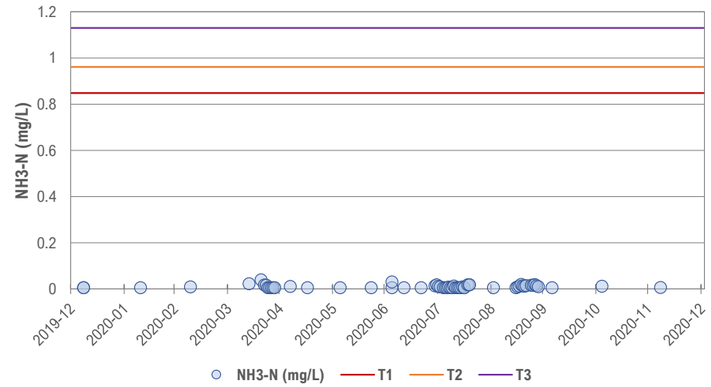












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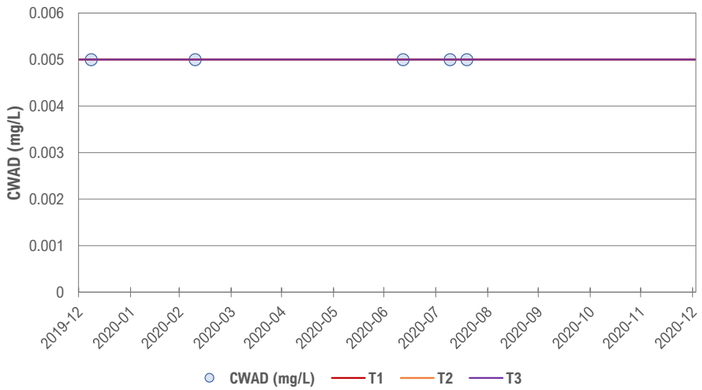

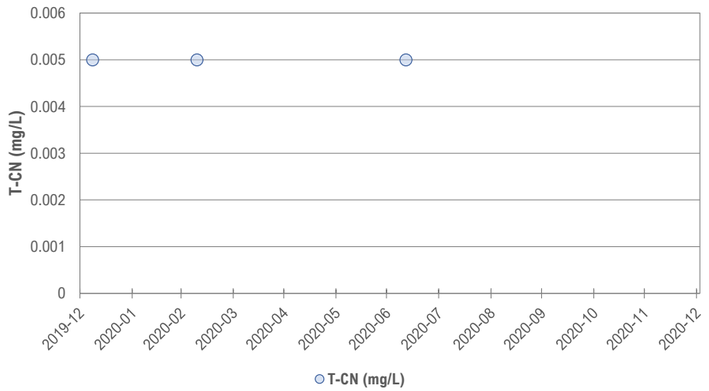

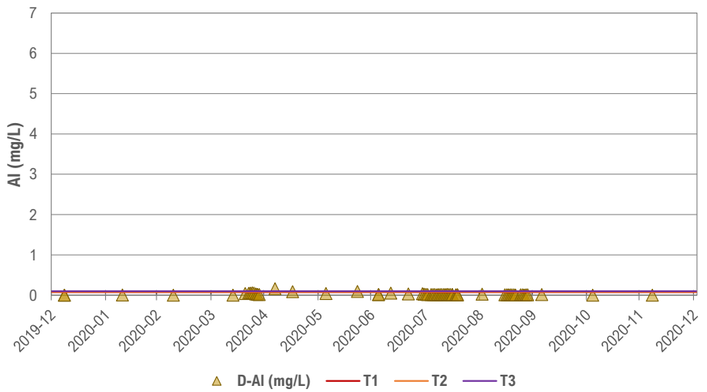

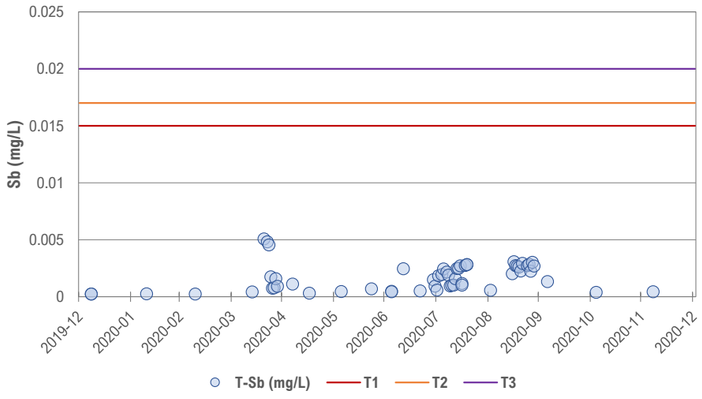

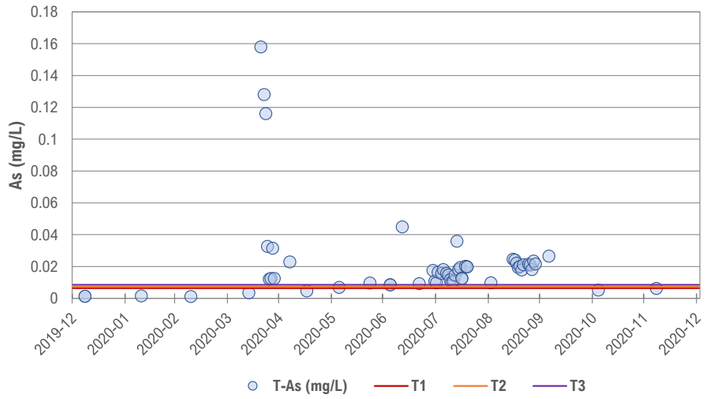

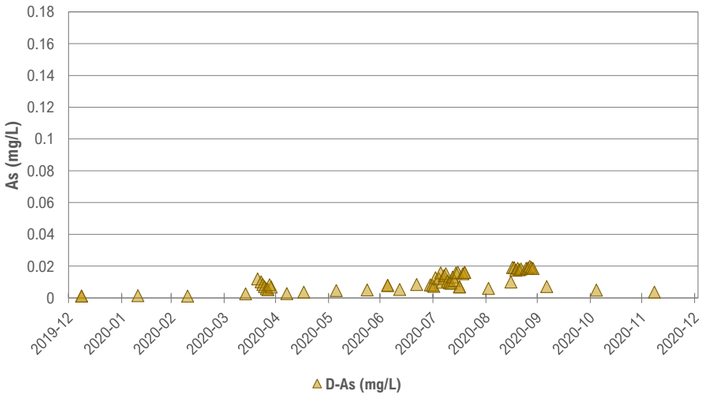

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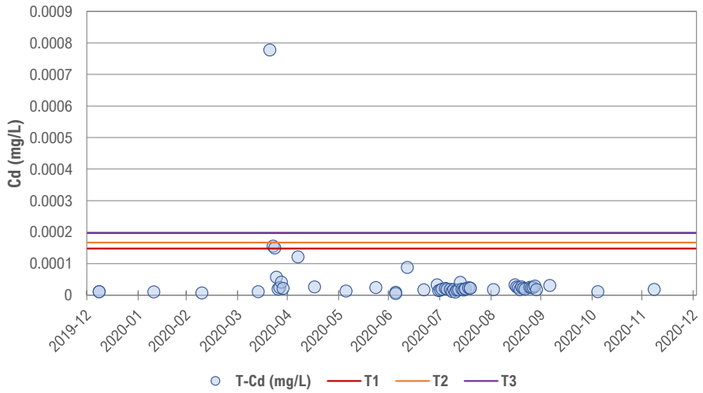

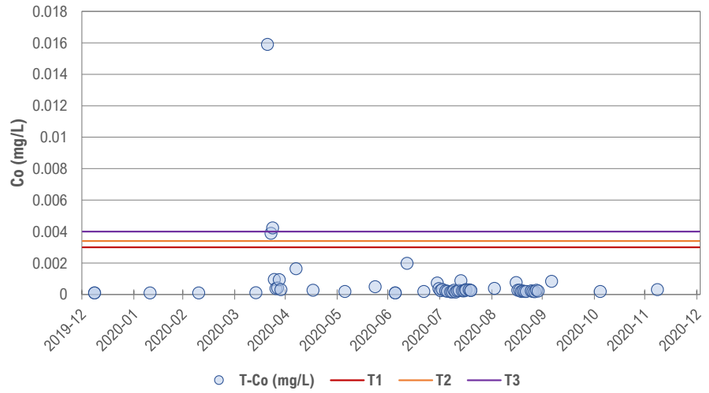

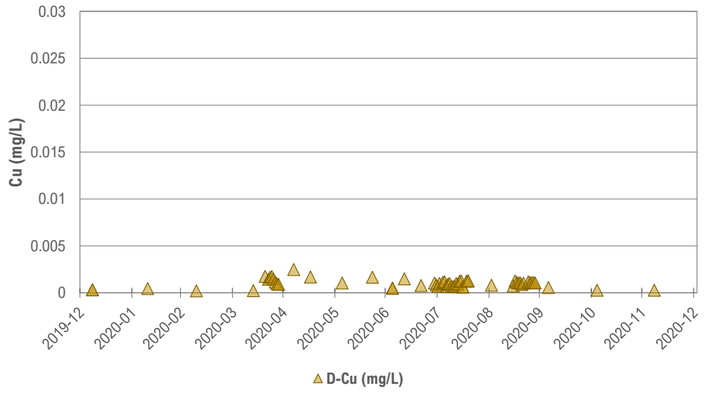

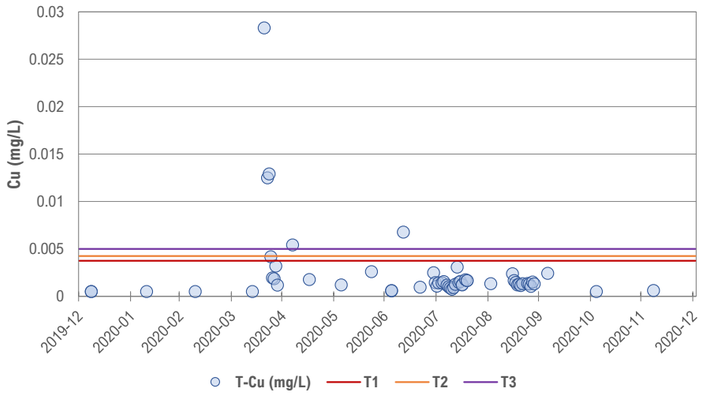

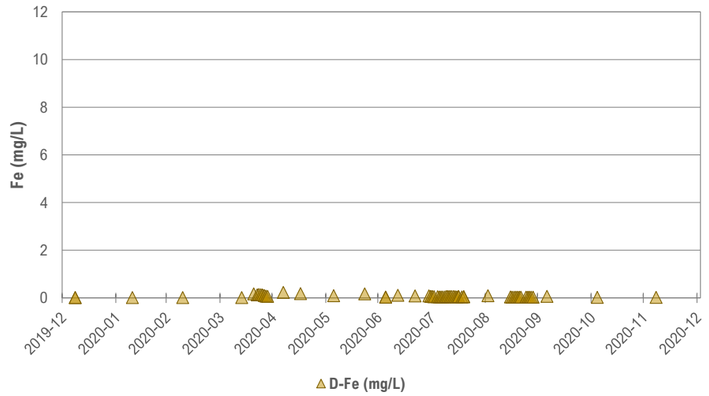

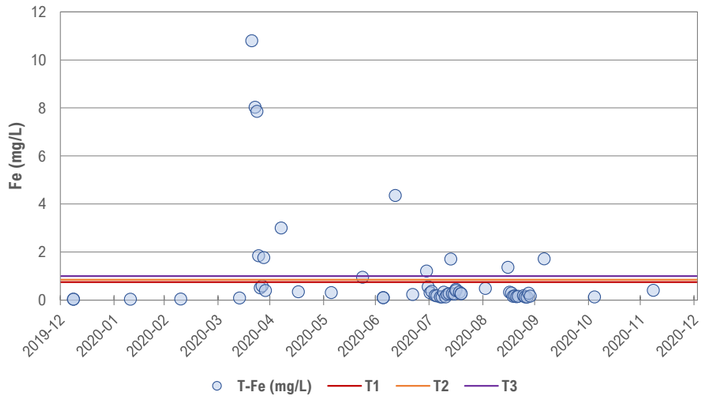

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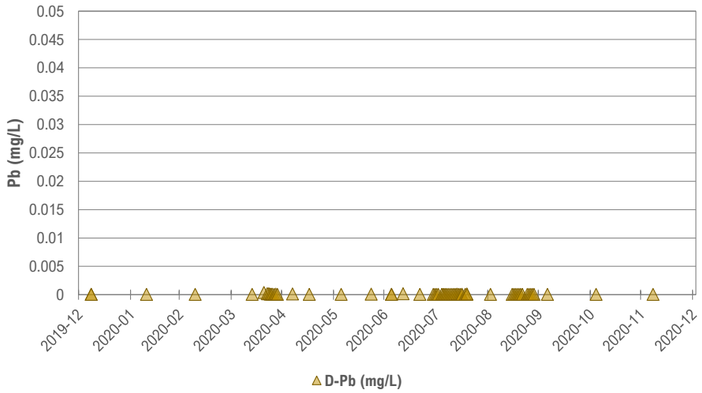

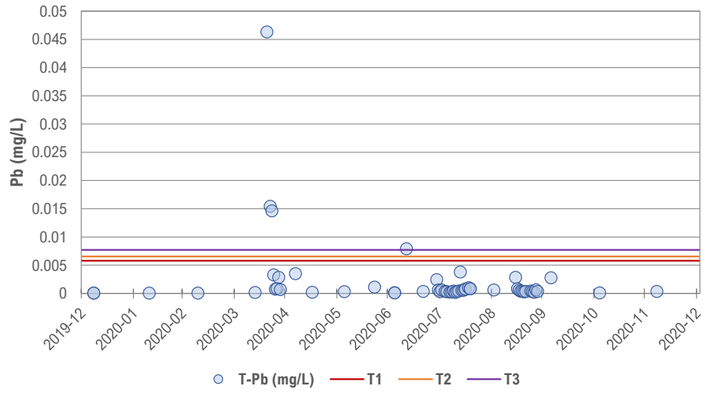

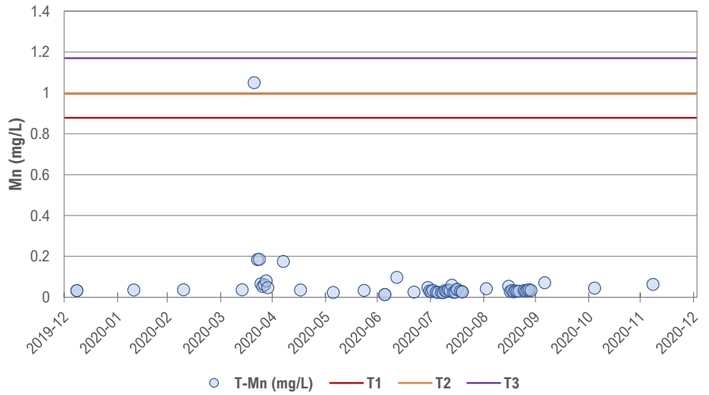

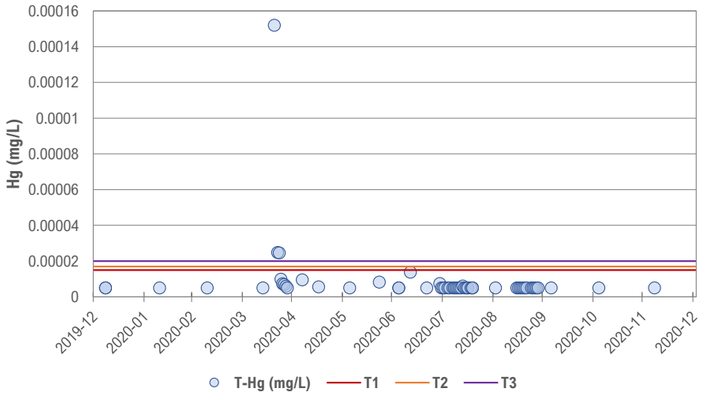

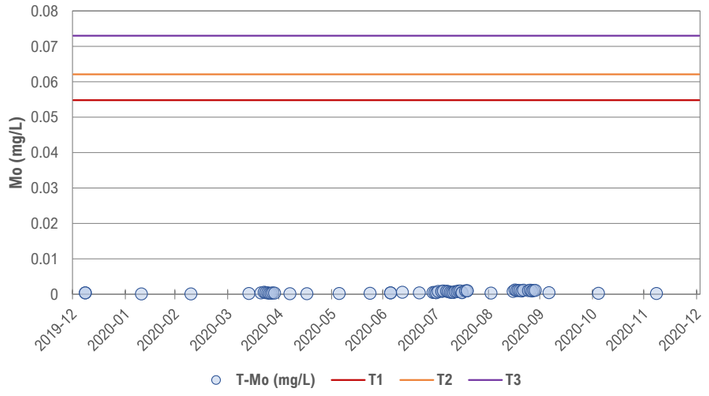

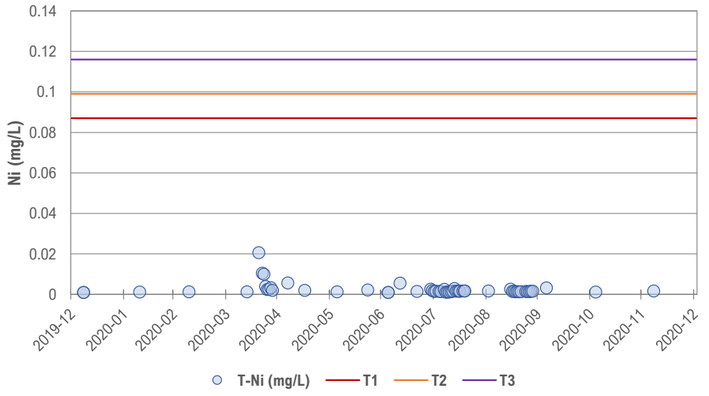

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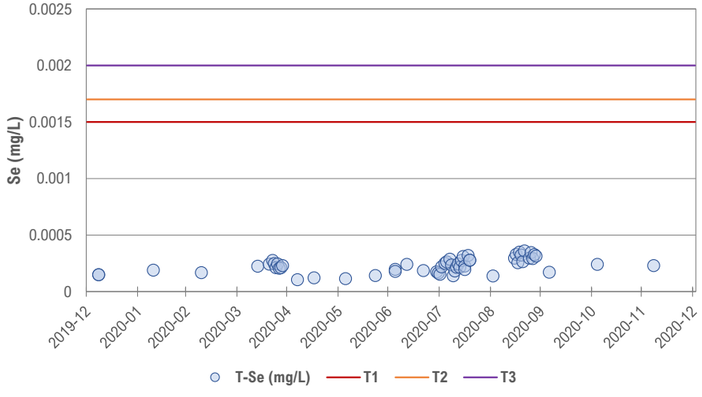

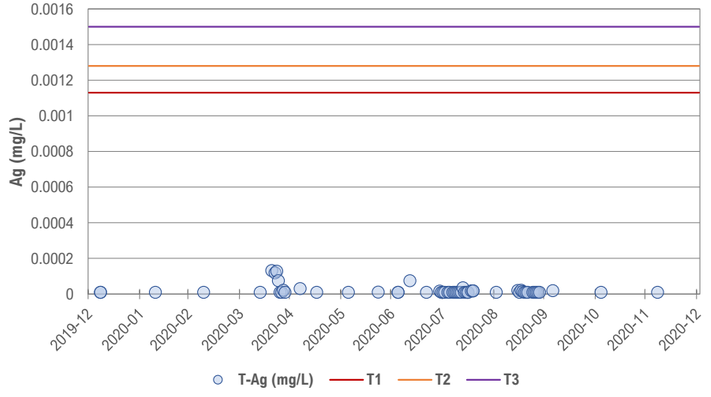

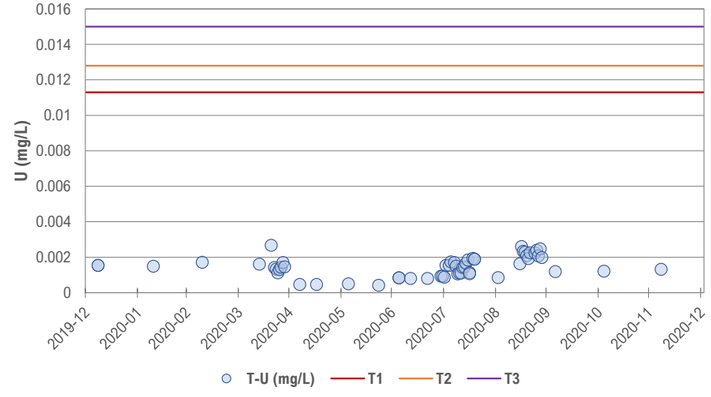

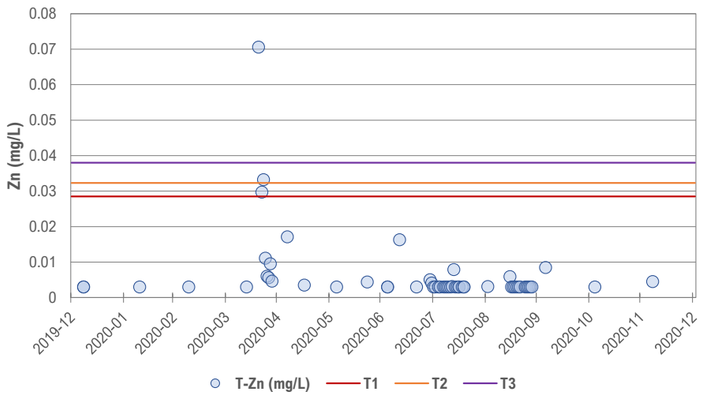

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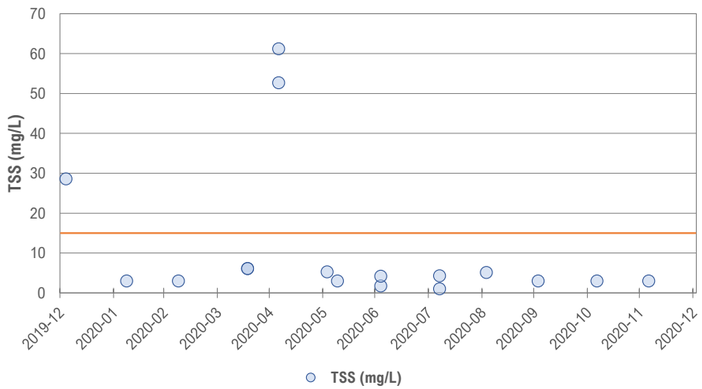

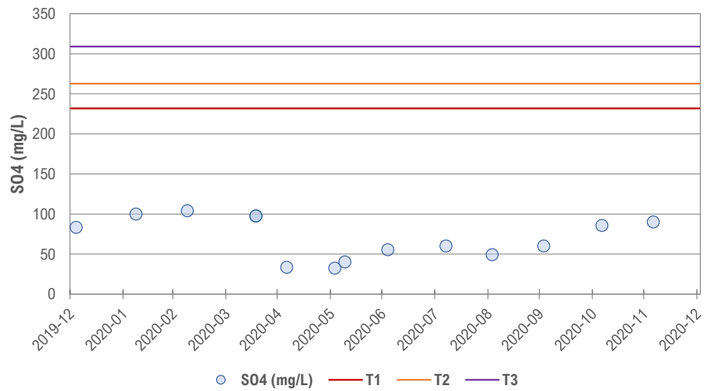

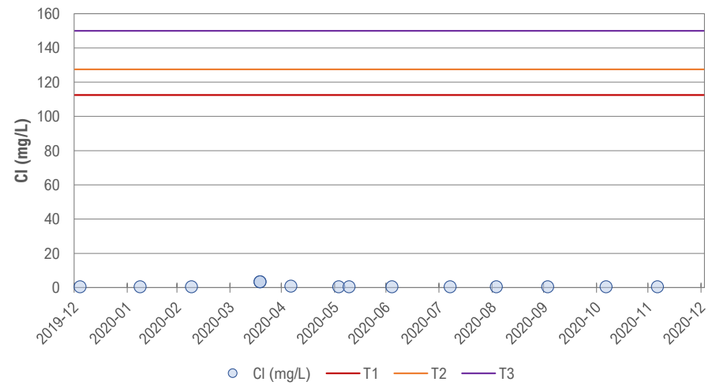

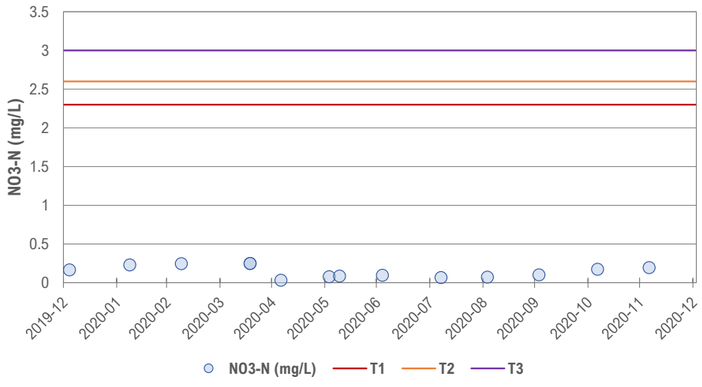

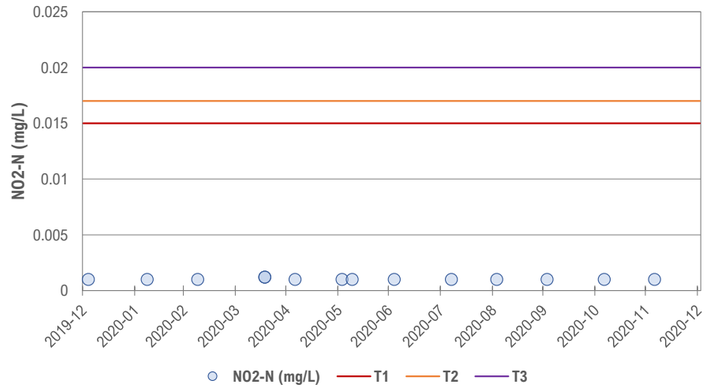

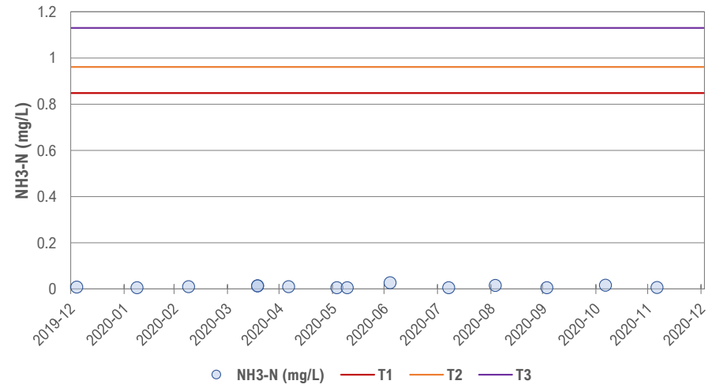

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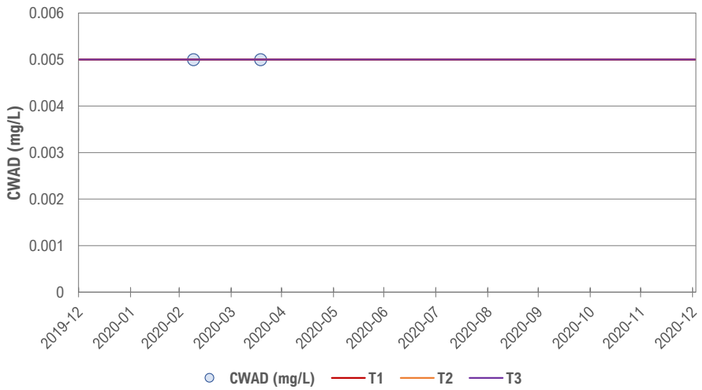

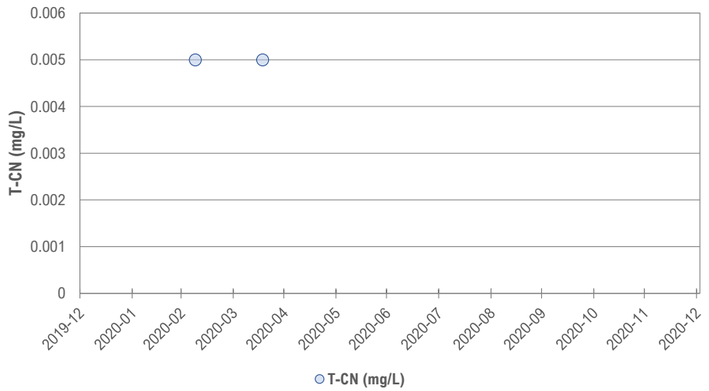

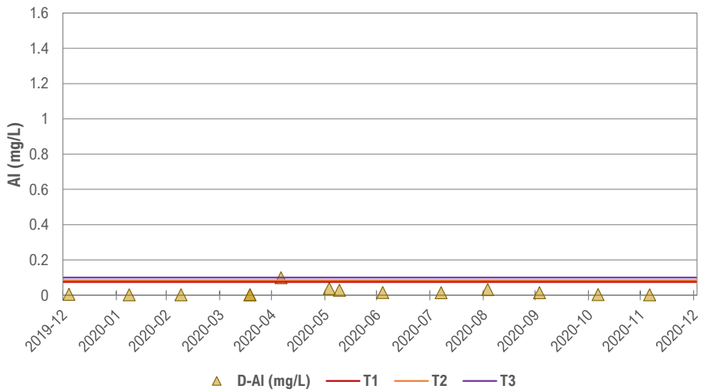

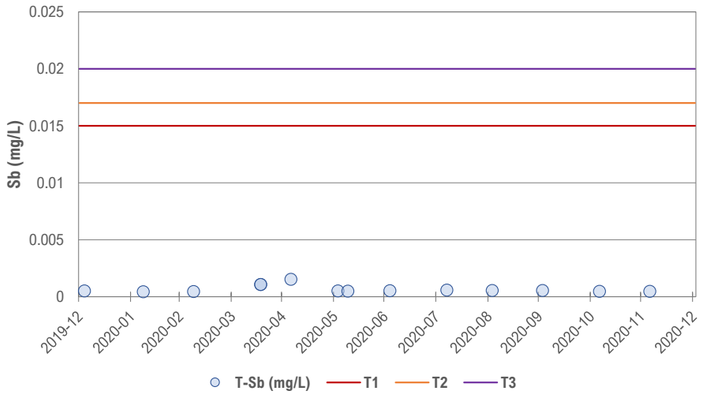

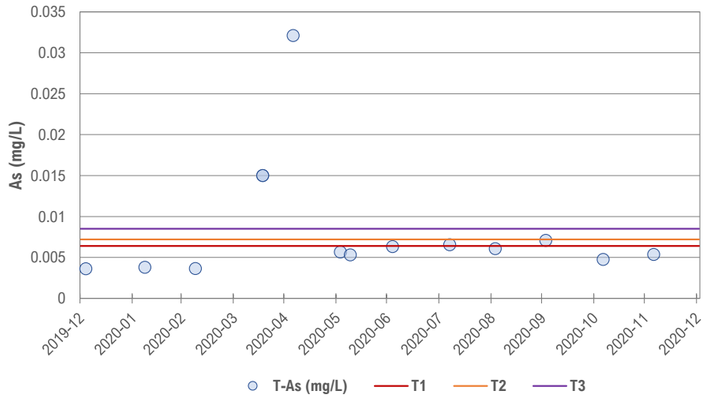

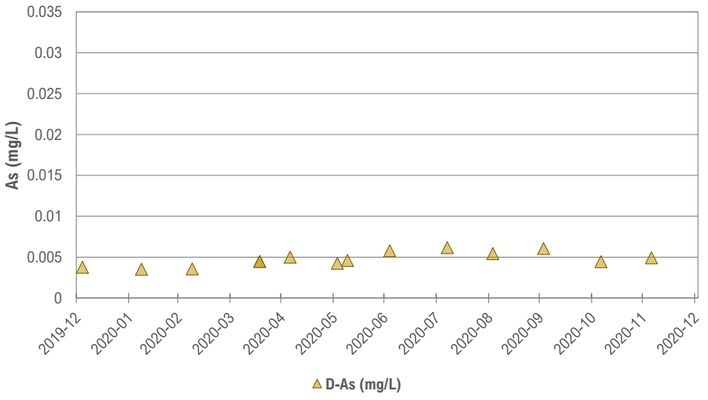

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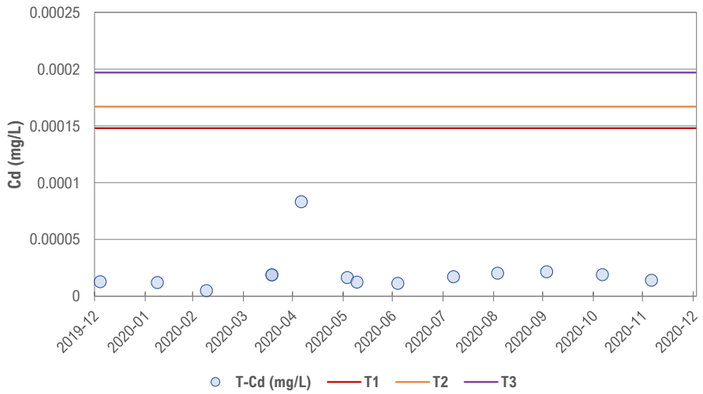

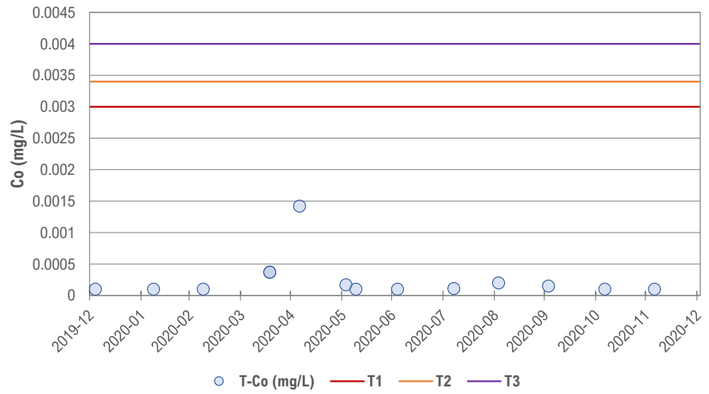

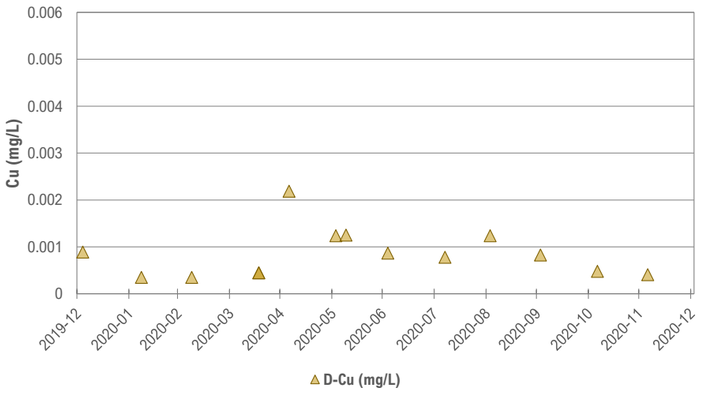

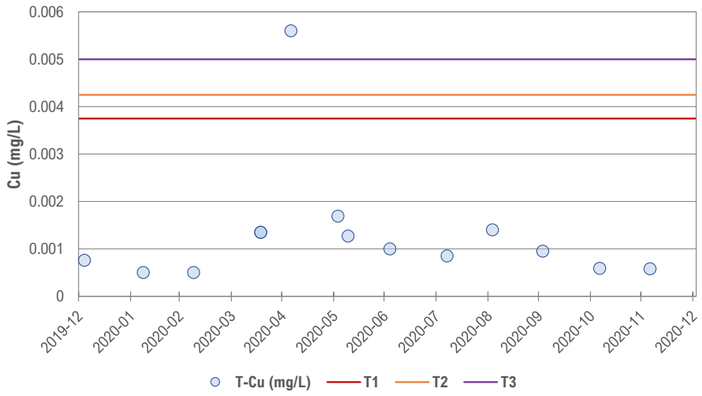

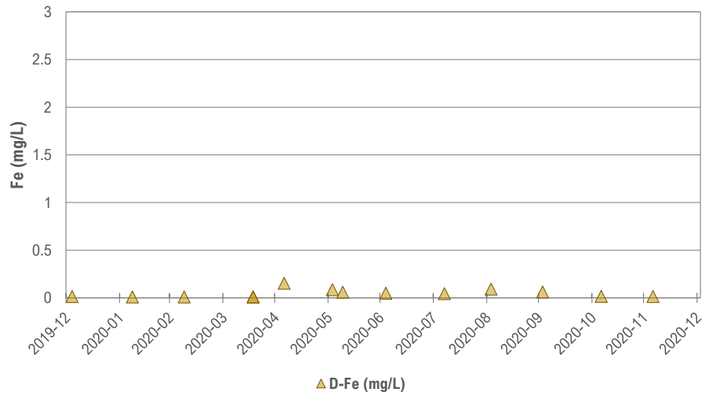

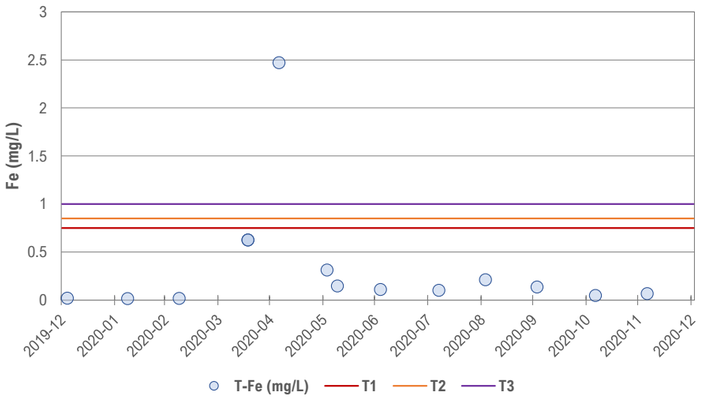

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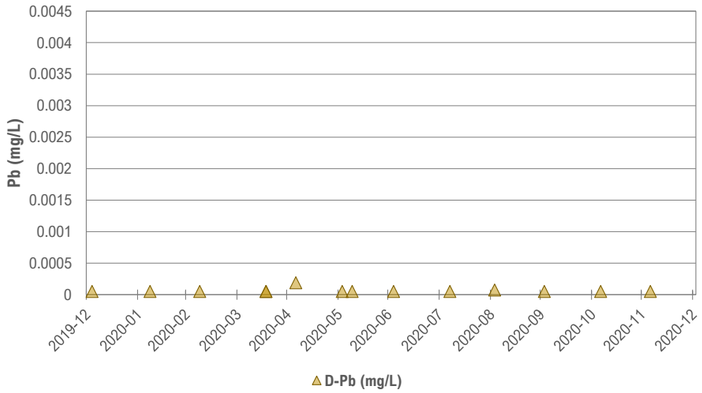

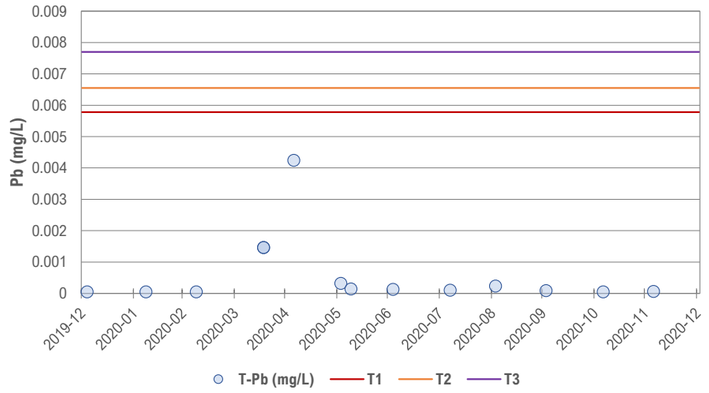

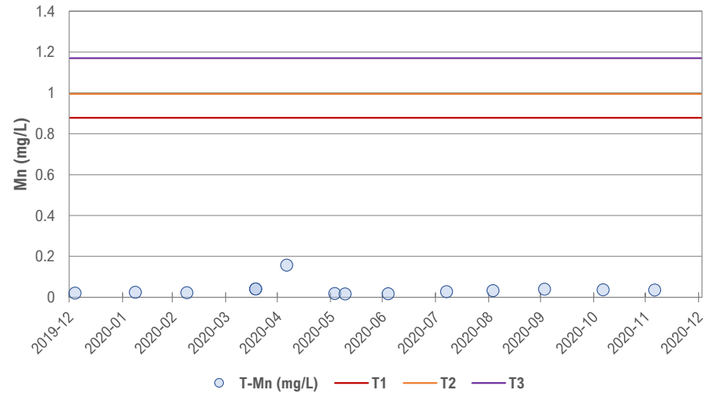

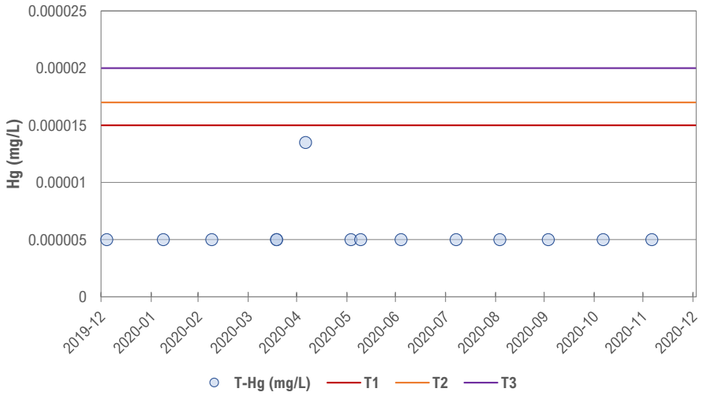

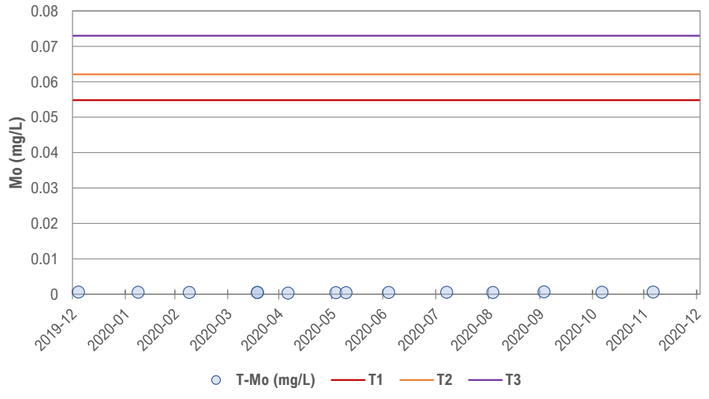

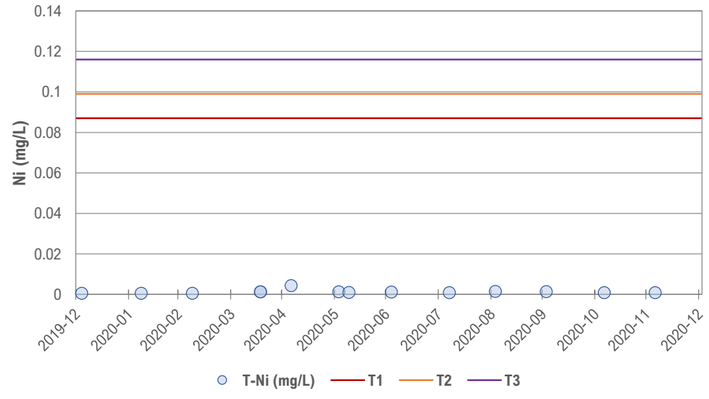

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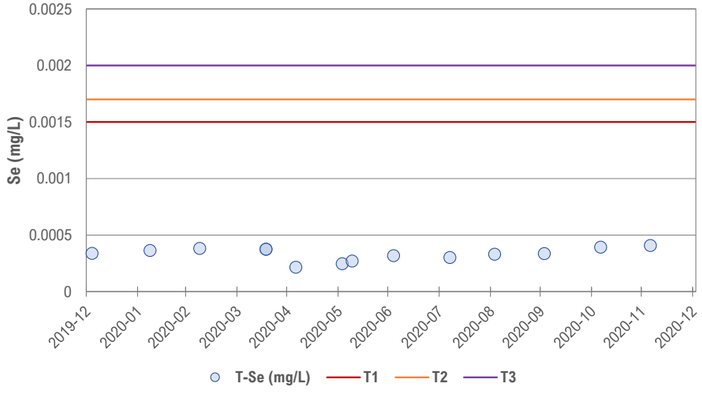

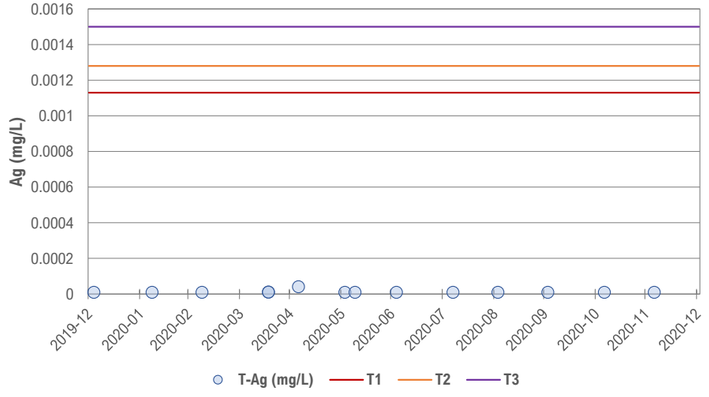

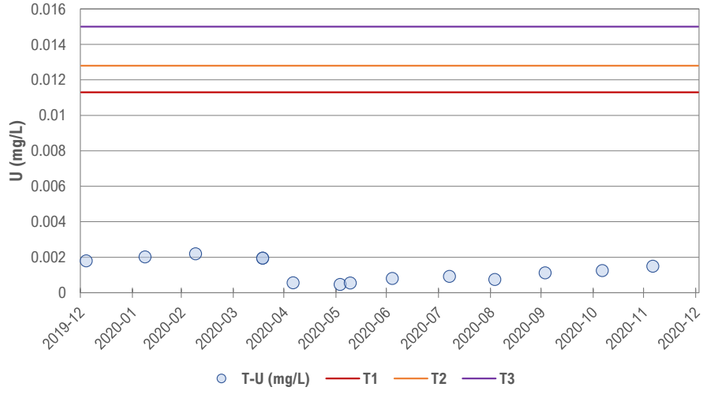

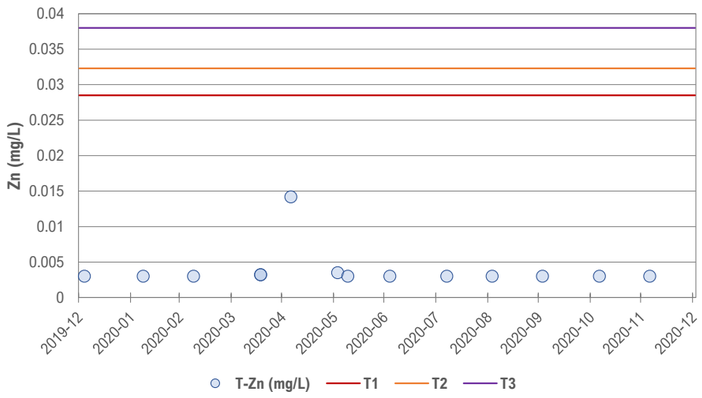

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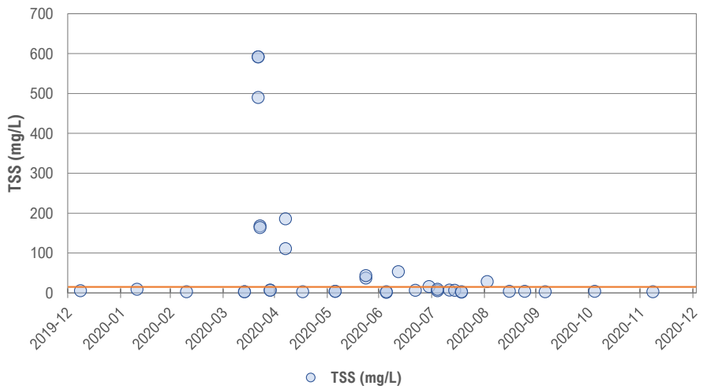

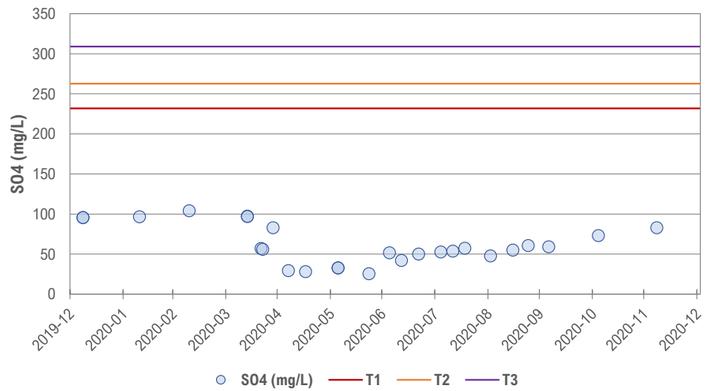

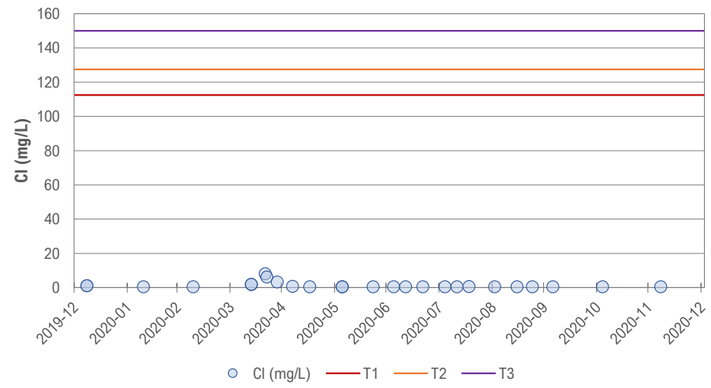

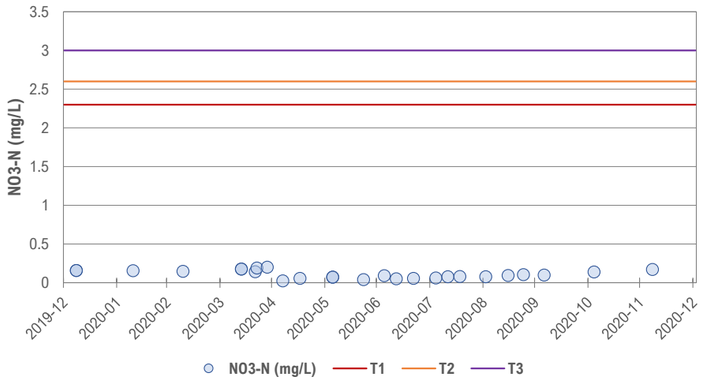

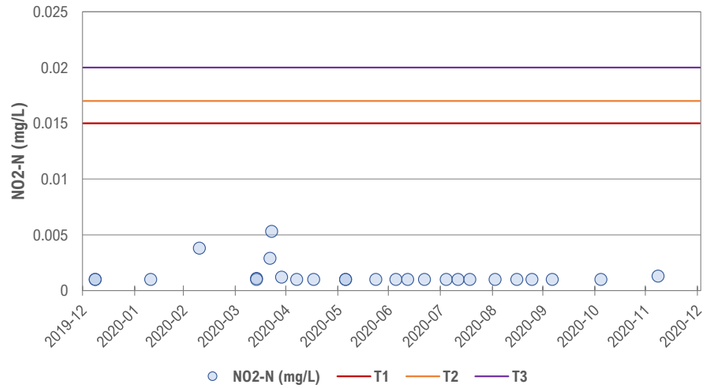

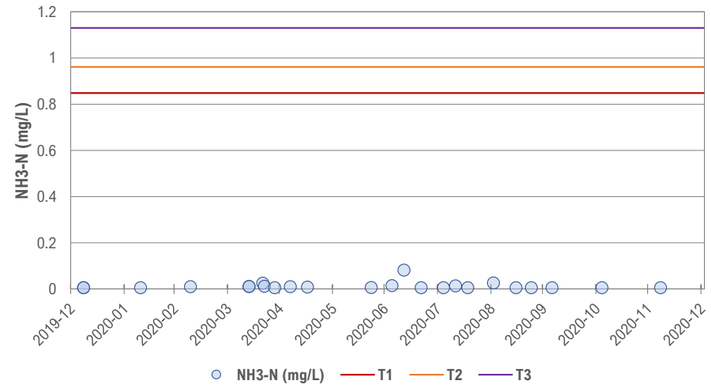

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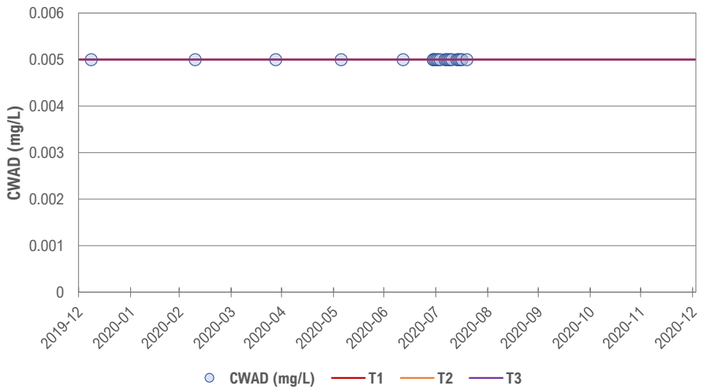

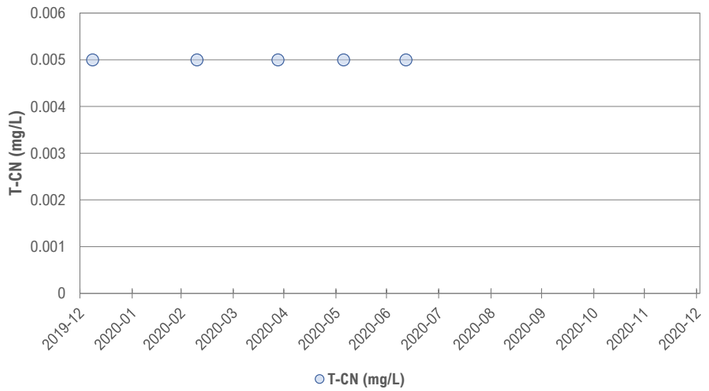

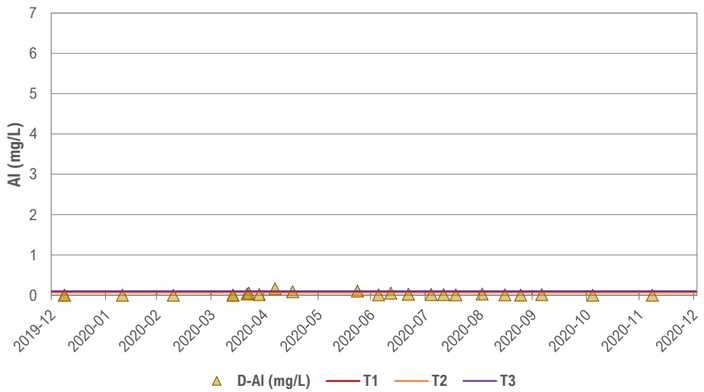

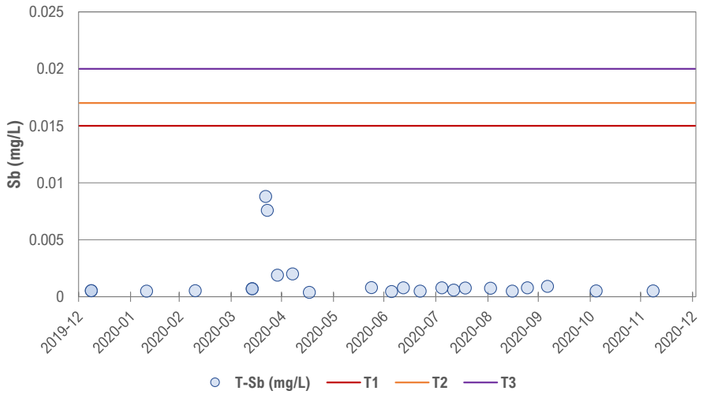

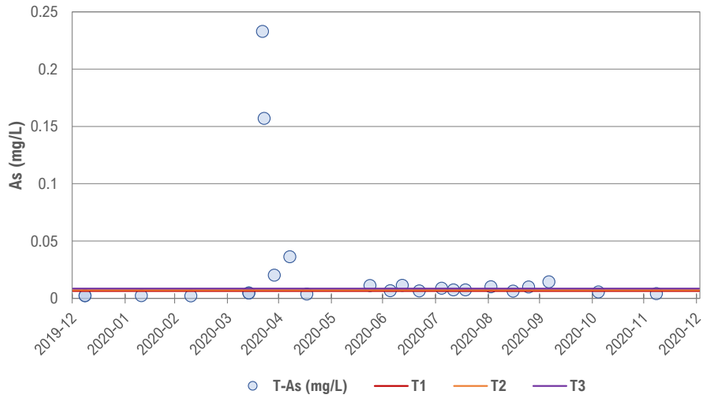

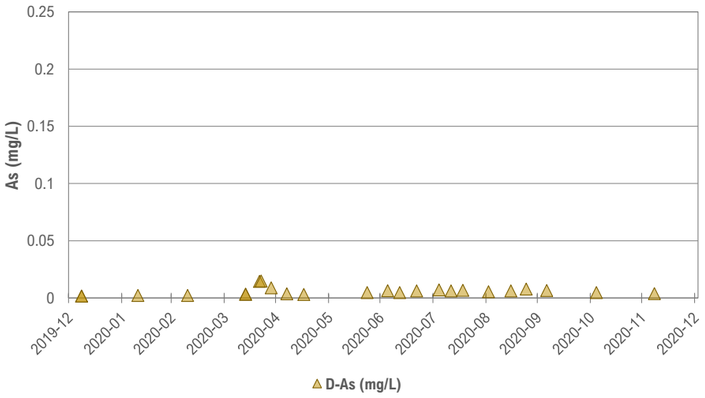

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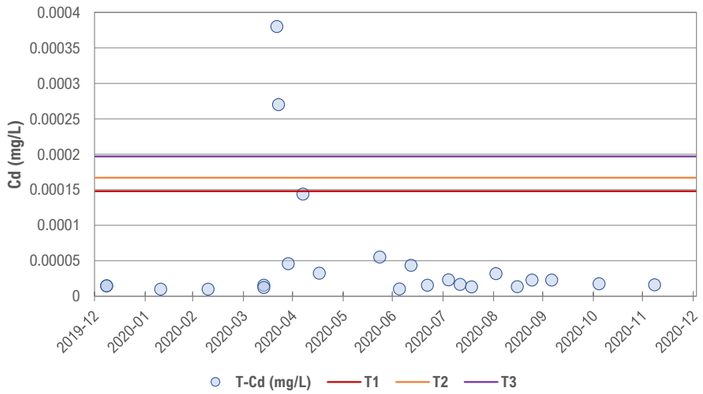

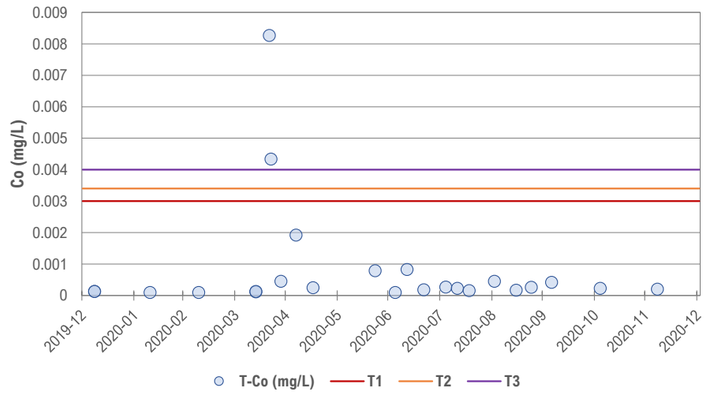

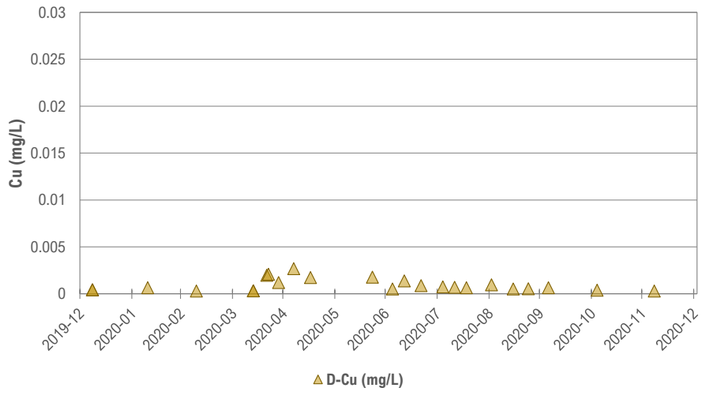

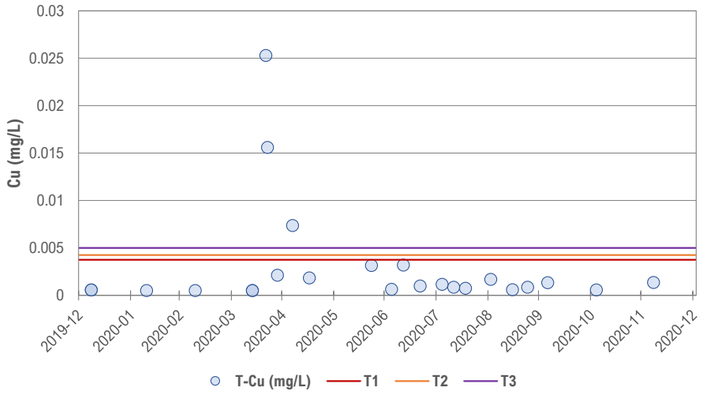

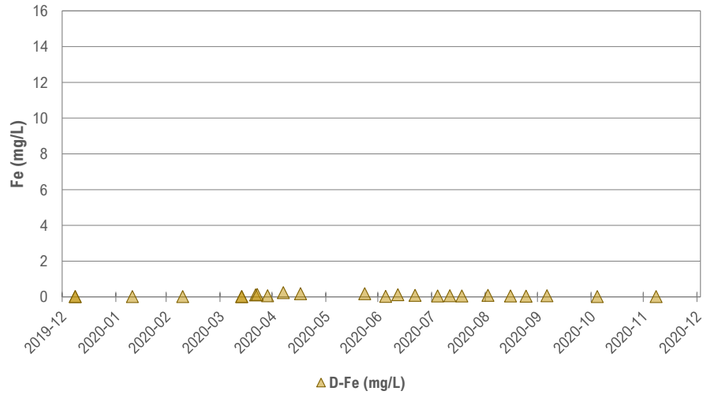

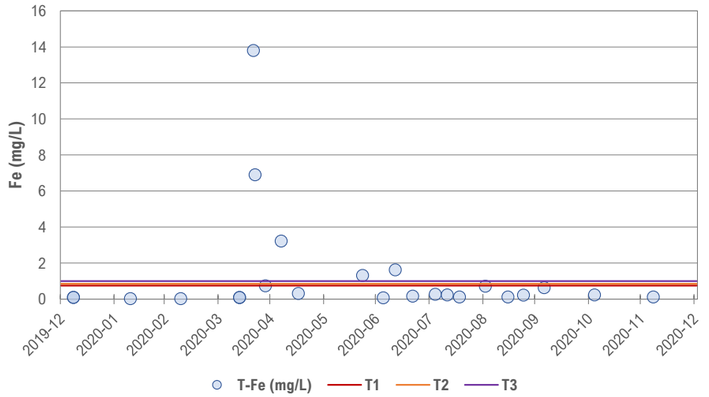

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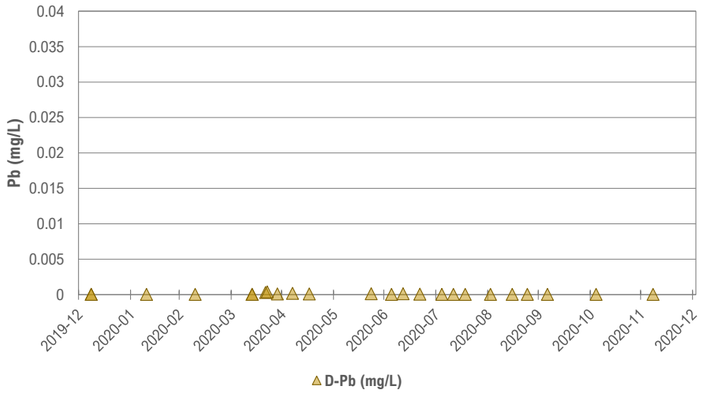

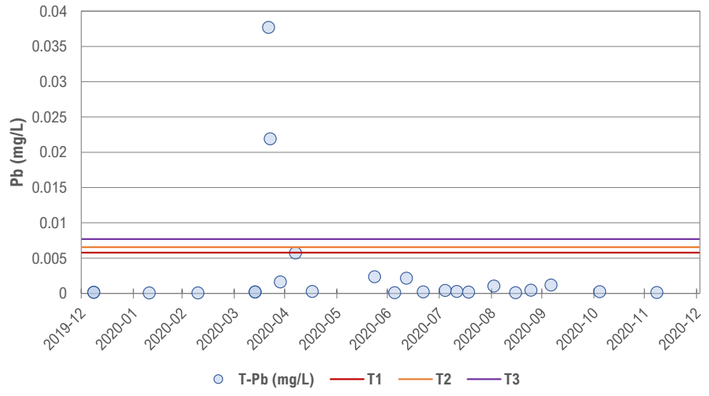

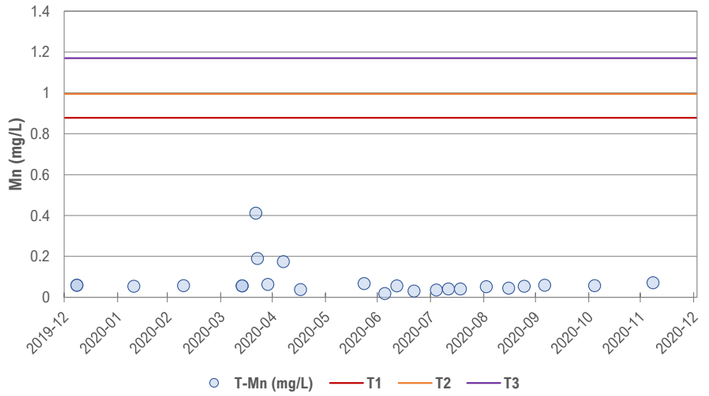

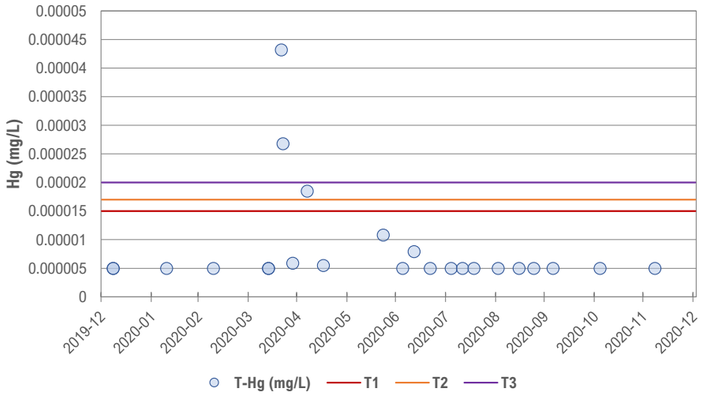

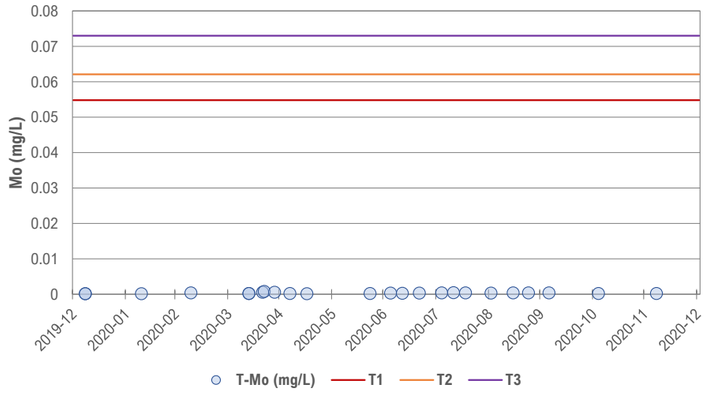

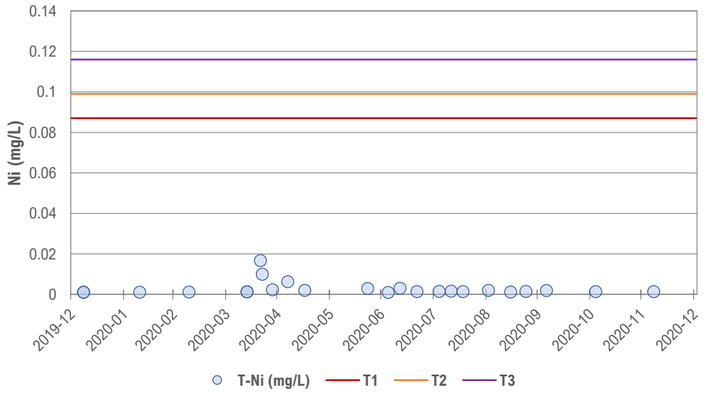

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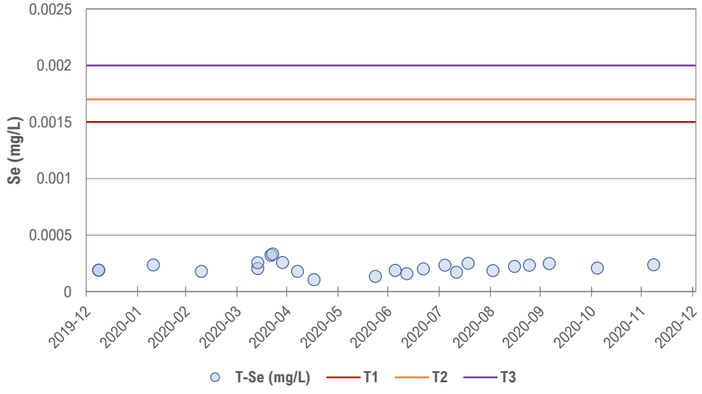

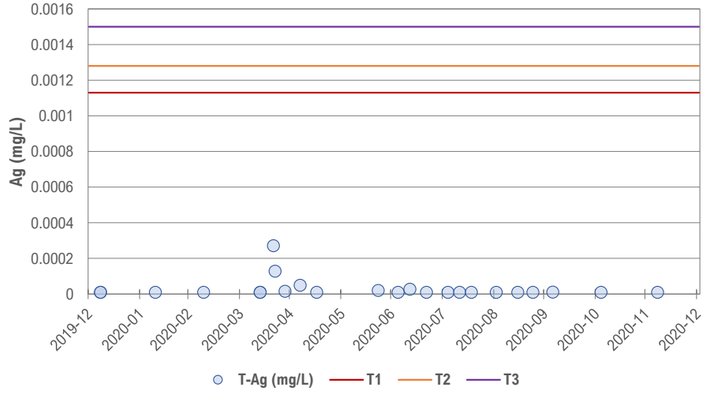

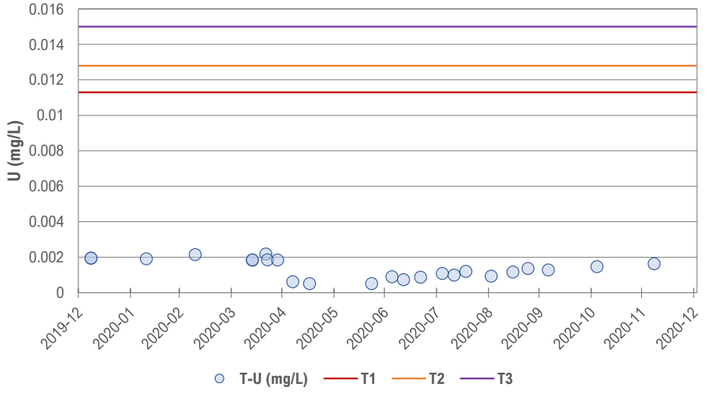

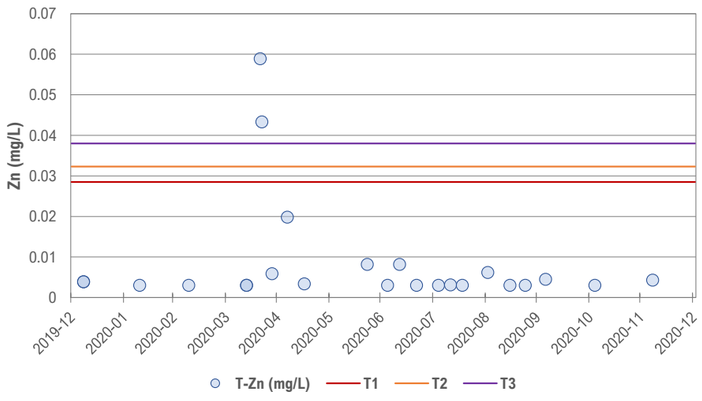

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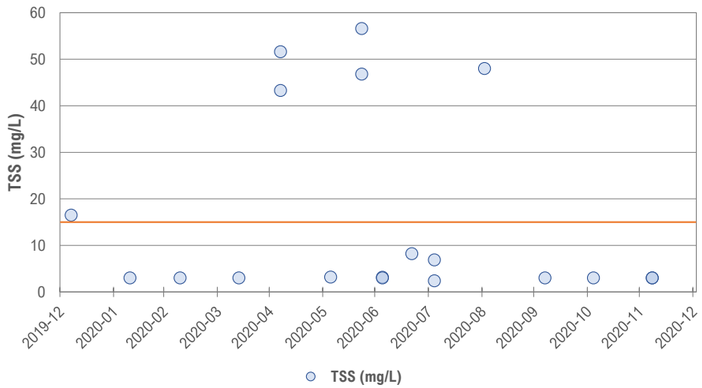

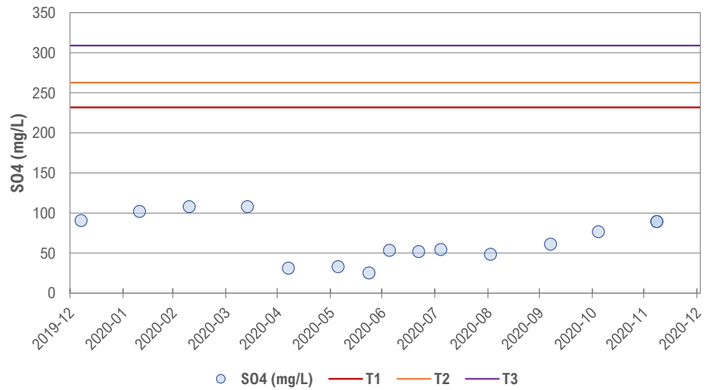

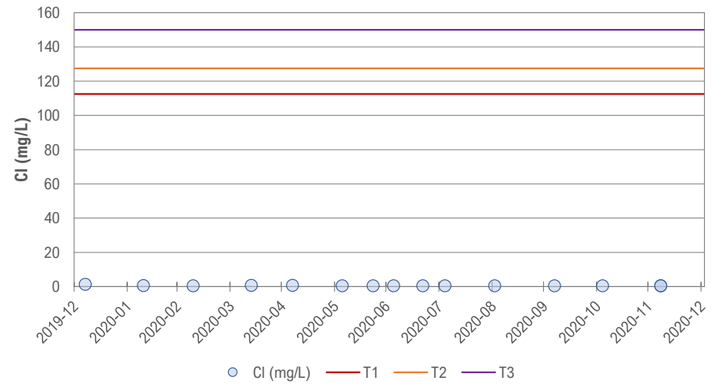

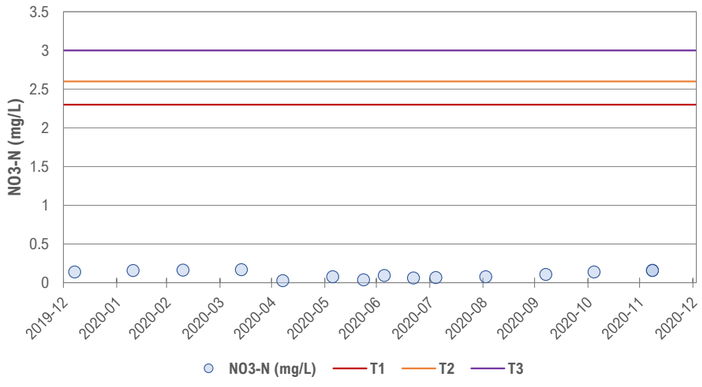

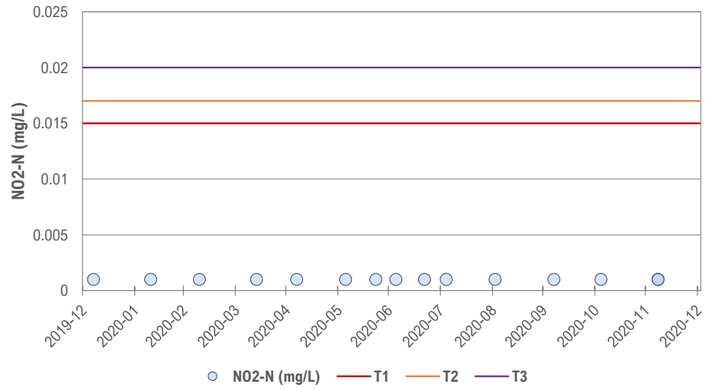

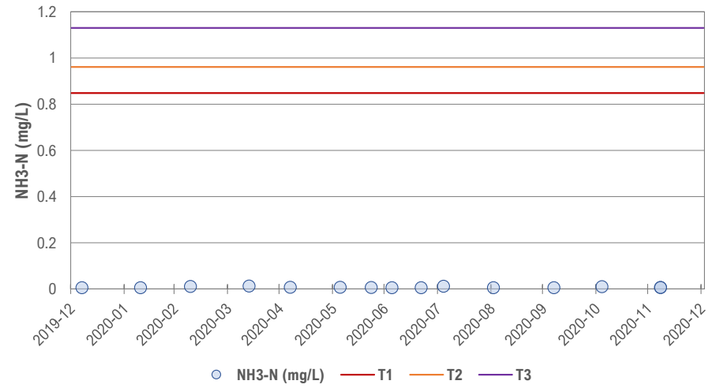

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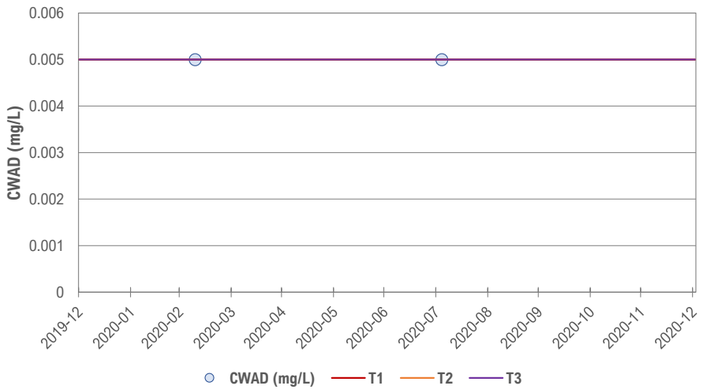

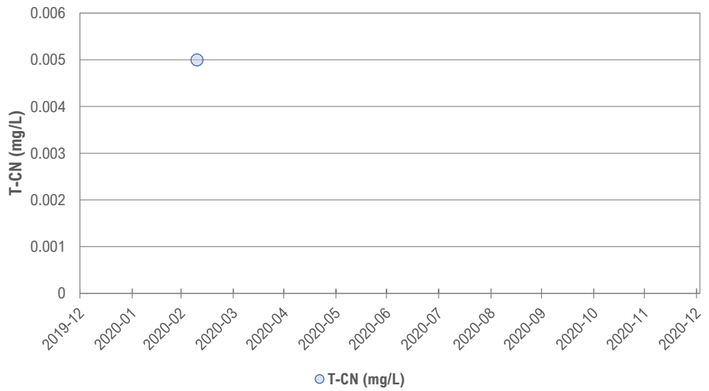

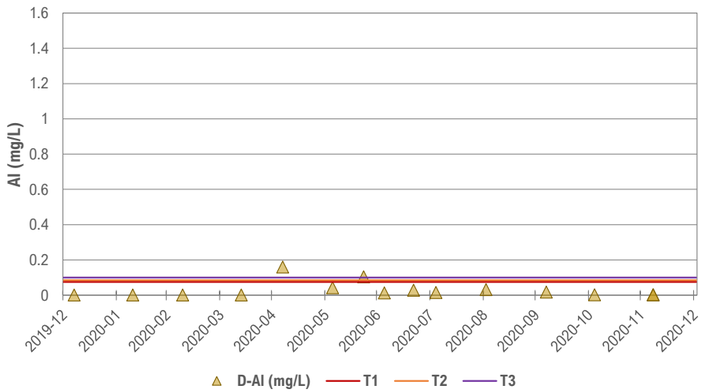

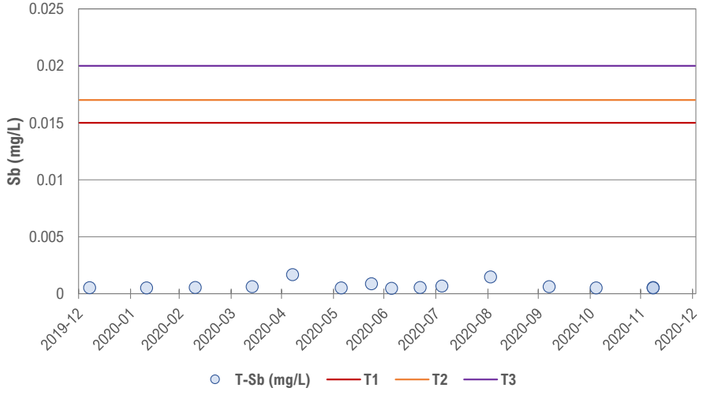

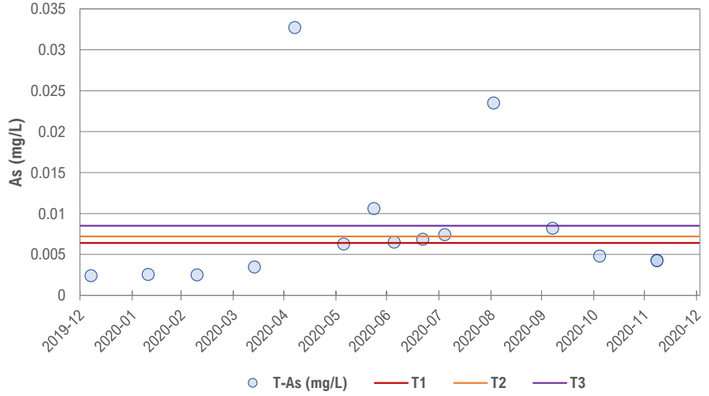

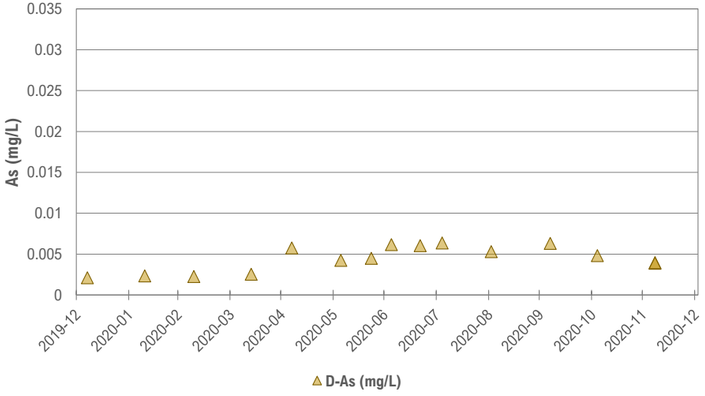

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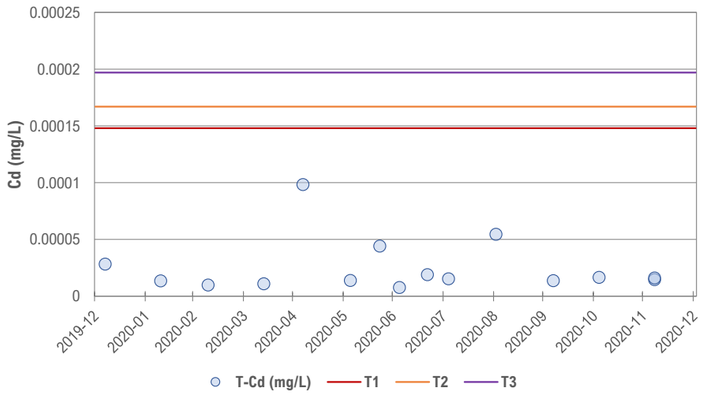

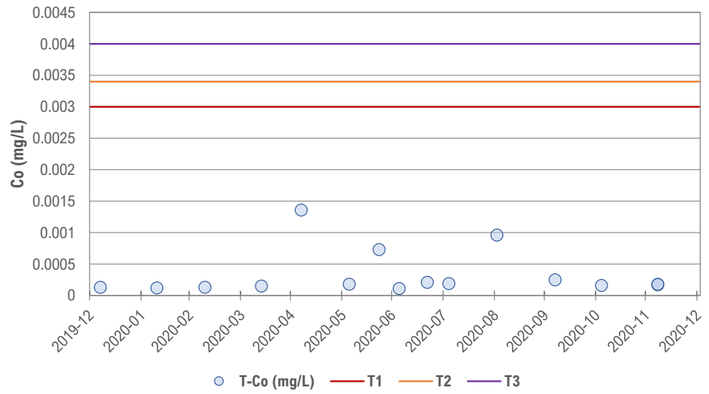

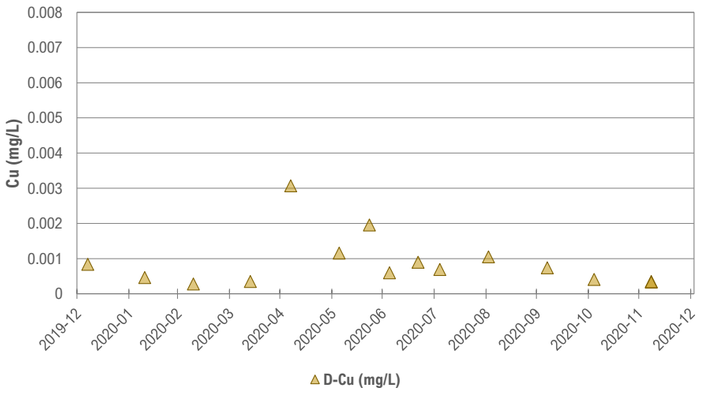

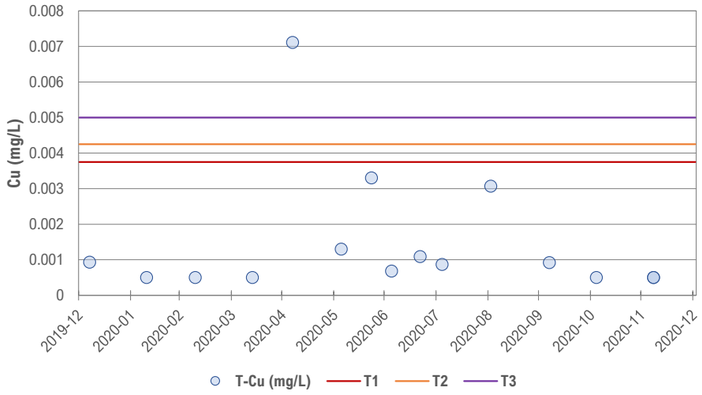

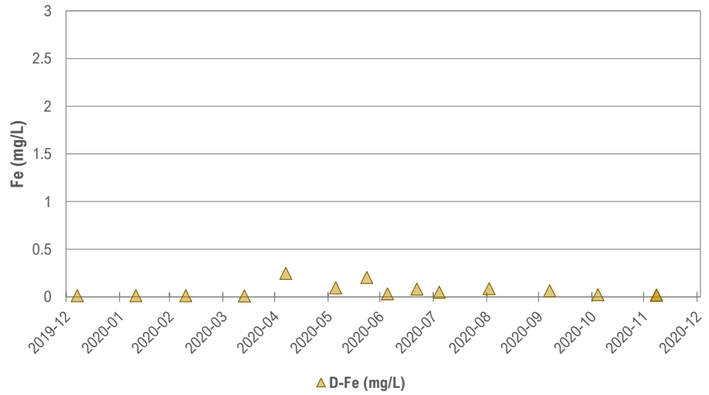

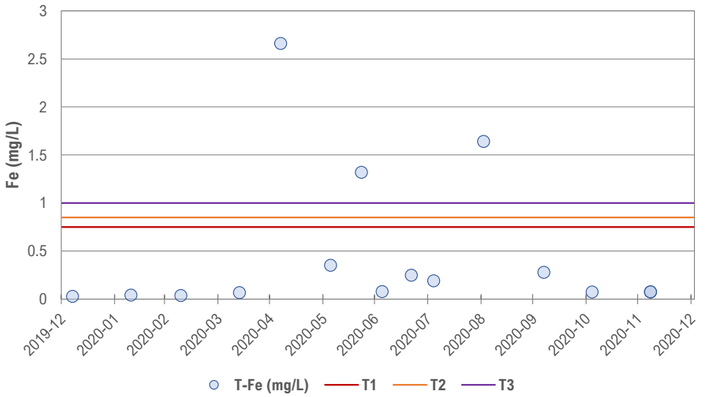

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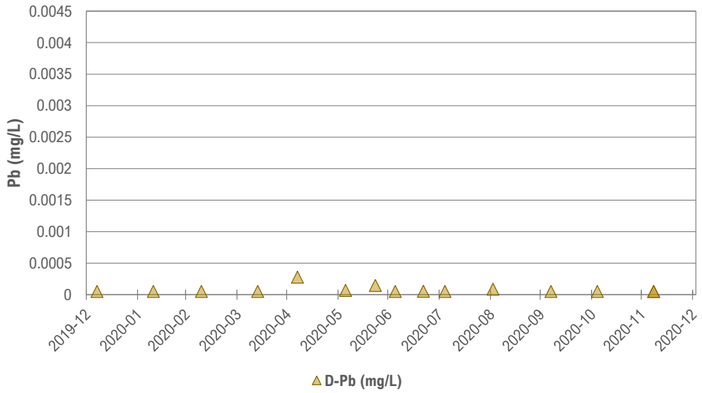

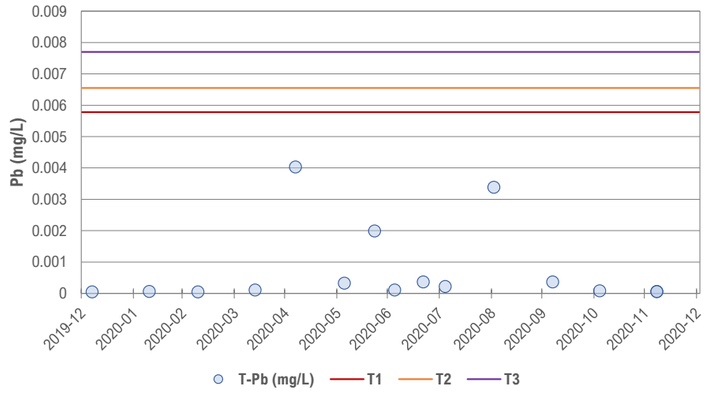

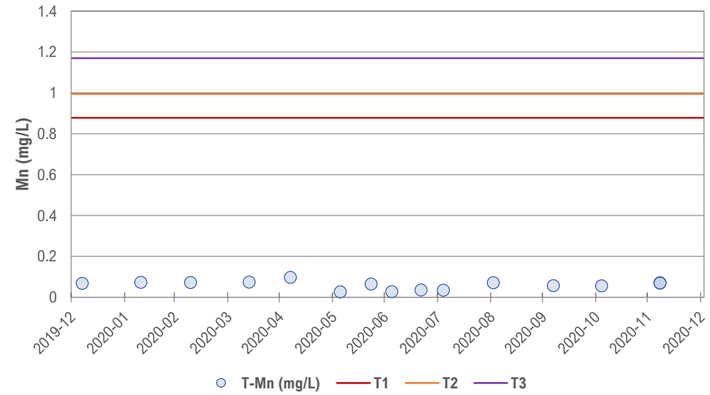

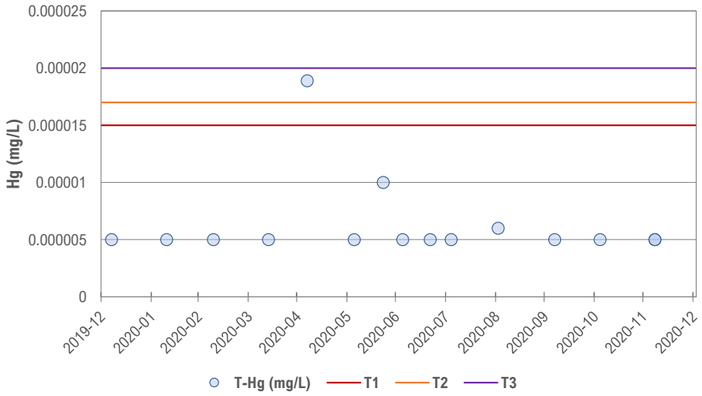

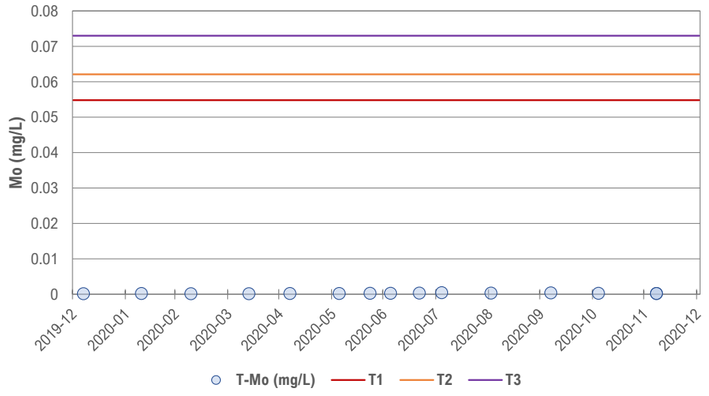

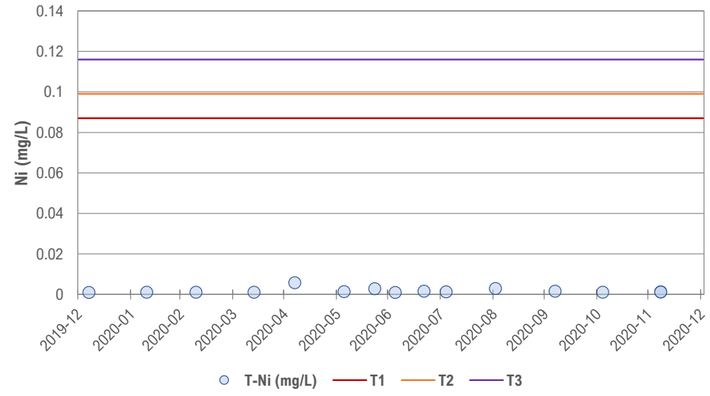

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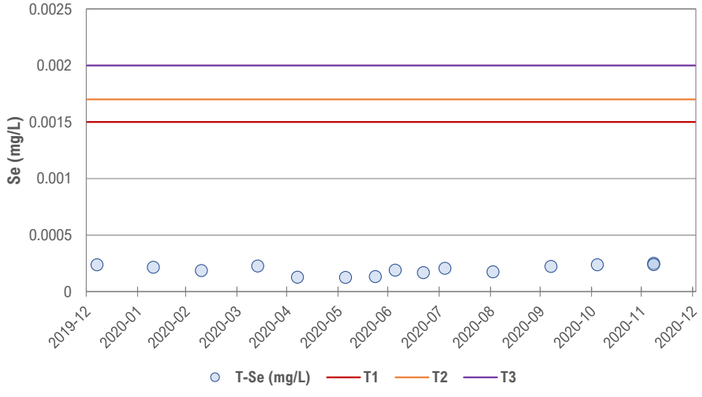

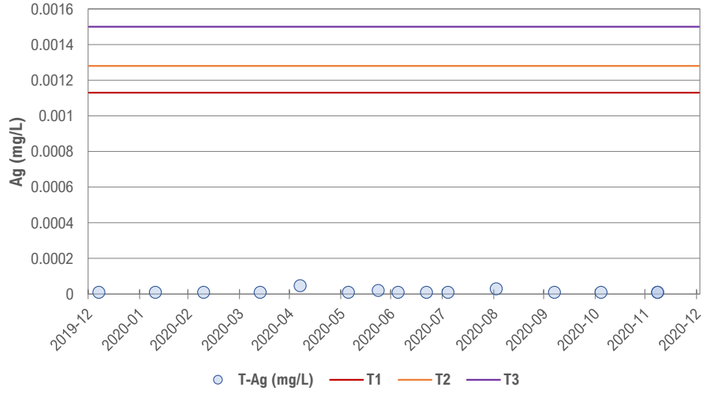

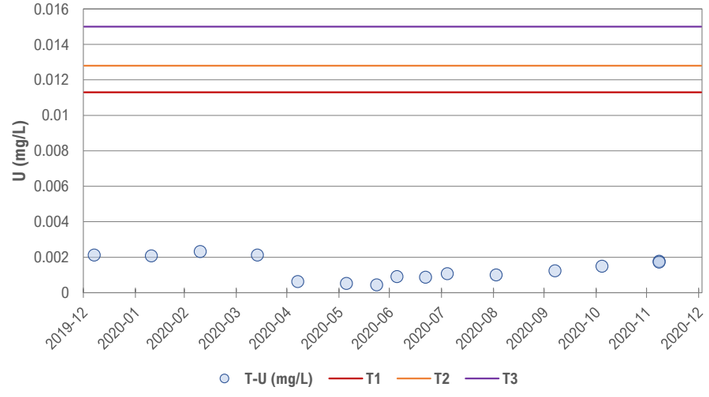

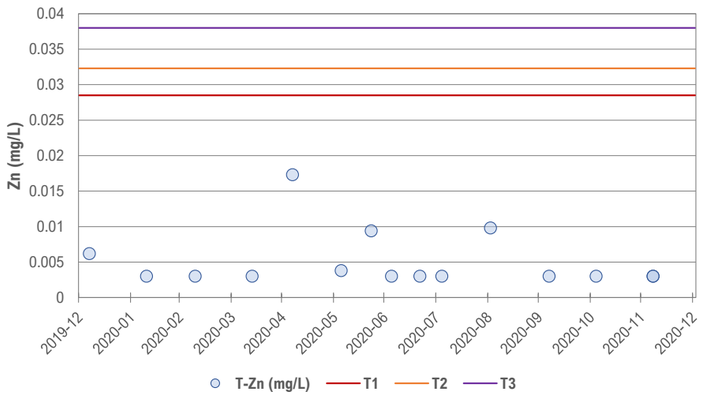

APPENDIX G

2020 Water Balance and Water Quality Model Update Report

VICTORIA GOLD CORP



Eagle Gold Project

2020 Water Balance and Water Quality Model Update Report

WBM v.6.1.2

Project No. A610-1
24 March 2021

Prepared by:
Lorax Environmental Services Ltd.
Vancouver, BC

LORAX ENVIRONMENTAL

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VICTORIA
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1. Introduction

VICTORIA
GOLD CORP

1. Introduction

1.1 Project Description

Victoria Gold Corp's (VGCX) Eagle Gold Mine is located in the Central Yukon Territory, approximately 350 km north of Whitehorse and approximately 45 km north of Mayo. Much of the mine site lies within the Dublin Gulch watershed, a tributary that reports to Haggart Creek, and which then flows to the South McQuesten River. Ultimately, the South McQuesten River joins the Stewart River, which flows west to its eventual confluence with the Yukon River.

A Type A Water Use License (QZ14-041) was issued for the Eagle Gold Project on December 3rd, 2015 to allow the construction, operation and closure of the open pit heap leach gold mine in central Yukon. Following several updates to key water management features, heap leach facility construction and waste rock storage facility design an amended Water Use License (QZ14-041-1) was issued to VGC on August 22, 2019.

The Eagle Gold Mine water balance and water quality model (WBWQM) has been updated to reflect the most recent baseline information, heap leach water balance modeling and updated geochemical source term modeling.

1.2 Scope of Report

The Eagle Gold WBWQM is a GoldSim-based integrated water balance and quality model. This report presents the most recent update of the Eagle Gold water balance model and water quality model (WBWQM) that fully integrates the following:

- Description of the water management plan as described in: *Eagle Gold Project Water Management Plan*. Version 2020-01. January 2020;
- Revisions to the heap leach facility water balance modeling as prepared by Forte Dynamics;
- Baseline climate and hydrology data collected since 2007 and inclusive of data collected in 2020;
- Updated baseline surface water quality monitoring data collected from 2007 to 2017 prior to initiation of construction in August 2017;
- Surface water quality monitoring data collected in 2018 through 2020 reflective of construction and early Operations phases; and,
- Updated geochemical source term data collected from re-designed and revised field bins of waste rock and unsaturated laboratory-based kinetic leach columns. Data

from the updated kinetic testing have been used to update geochemical source terms employed in the WBWQM.

Following this introduction, Section 2 presents the updated input parameters and assumptions used to update the water balance and water quality models. Section 3 presents a summary of the water quality model results and Section 4 provides a summary of the results for water quantity.

2. Model Inputs and Assumptions

VICTORIA
GOLD CORP

2. Model Inputs and Assumptions

2.1 Water Balance Model Inputs and Assumptions

2.1.1 Hydro-meteorological Updates

Following the issuance of WUL QZ14-041 in 2015, the collection of climate and streamflow data has continued at the Project site. This additional data has been incorporated into the site monitoring records, and the results are presented in the climate and hydrology data summary reports (Lorax 2021a and 2021b), along with additional analysis in the updated hydrometeorology report (Lorax 2021c). In previous iterations of the WBM, the annual runoff at the W4 hydrometric station was assumed to represent the effective precipitation at the Project site and formed the primary driver of the WBM. The model inputs were updated in 2018 to reflect slight changes in estimated runoff values that resulted from additional streamflow and climate data collected since the initial WBM (Knight Piésold, 2014) was submitted in support of a Water Use Licence application in 2014.

The changes from the initial estimates made by Knight Piesold in 2014 relevant to the WBM parameterization are as follows:

- Mean annual precipitation (MAP) at the 1,125 m elevation decreased by 4%, from 500 mm to 480 mm;
- Mean annual runoff (MAR) for the W4 hydrometric station increased by 9% from 230 mm to 253 mm; and
- The monthly distribution of annual runoff used to distribute the MAR value for W4 changed slightly, as outlined in Table 2.1-2.

For the 2020 WBM update, all assumptions and methods related to the derivation of the synthetic climate dataset were consistent with those described in Lorax (2017a), with two exceptions:

- The synthetic record was updated to include 2020 based on the Mayo A climate record; and
- The precipitation gradients were updated to reflect the additional climate and snow survey data collected at the Project site. The daily time-series of climate parameters is scaled by elevation for temperature on a monthly basis (Table 2.1-1), and for precipitation on a seasonal basis, as follows:
    - Winter – 11%/100 m

- October to March < 1,000 m
- October to April > 1,000 m

- Summer – 4%/100 m
  - April to September < 1,000 m
  - May to October > 1,000 m

Since the 2018 WBM updates, given that monitoring data is now available with which to characterize the Projects' water management regime, and potential changes to streamflows in Haggart Creek, the WBM shifted from a runoff-based WBM to a watershed model architecture, driven by a climate time-series input. The WBM is configured to include all relevant Project infrastructure, including the HLF, open pit, WRSAs, 90-day ore stockpiles, and water management infrastructure (*e.g.*, sediment ponds, collection ditches, event pond, *etc*.). Within the Base Case module of the WBM, each mine component is spatially defined by year of the Project life, which allows the footprints (sub-catchments) and /or volumes of each component to expand as the mine development progresses. Each sub-catchment represents a single land cover type (*e.g.*, WRSA, open pit, natural ground, *etc*.)

The climate inputs are comprised of daily temperature and precipitation data which are used to drive the WBM, with meteoric water being converted to runoff using assumptions and coefficients specific to the land surface type represented in each sub-catchment. All sub-catchments are assembled in hierarchical order, with runoff tracked and aggregated across the Project site and downstream into the receiving environment. The climate input series is based on the Mayo A record, adjusted according to relationships developed between the Mayo A and site climate records as measured at the Camp and Potato Hills stations (Lorax 2017).

The previous average runoff inputs were replaced with the daily climate series from a representative average year (2016) to drive the WBM. Mean annual precipitation (MAP) at the Camp station elevation (782 m) is 360 mm, and total annual precipitation in 2016 was 364 mm (Figure 2.1-1). There are a total of 10 years within the 72 year synthetic climate record that fall within 2% of the MAP value, however 2016 was chosen as it falls within the site baseline monitoring period, and extensive climate, snowpack and streamflow data are available with which to benchmark the model performance.

Monthly summaries of the synthetic climate series parameters are presented for the three representative elevations that bound the Project site in Table 2.1-2.

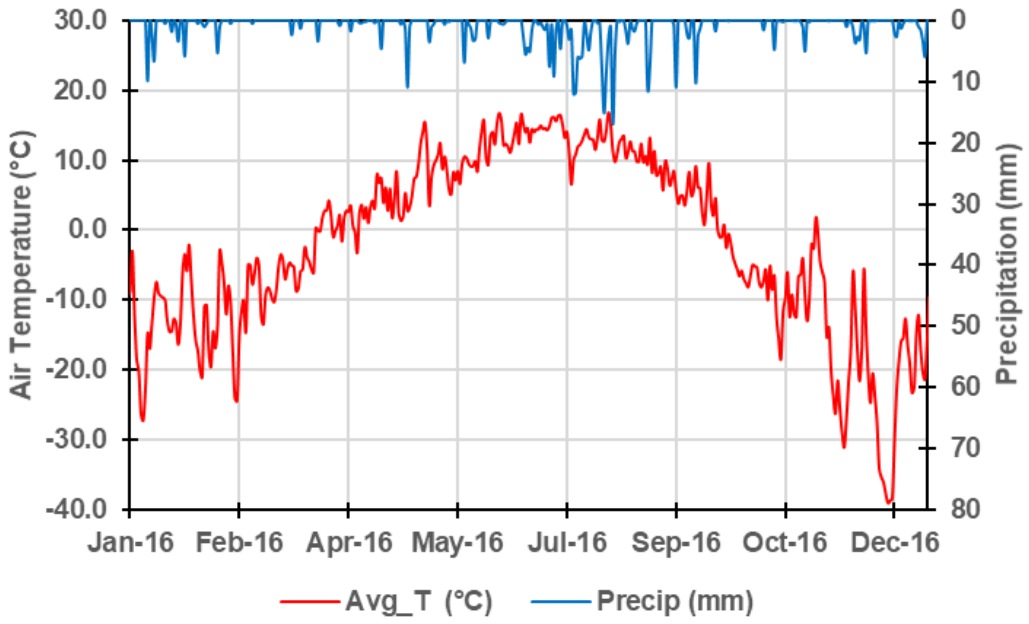

Figure 2.1-1: Daily temperature and precipitation from the Camp Station elevation (782 m) for the representative average year (2016) used as WBM input.

Table 2.1-1:
Air temperature lapse rates by month estimated from Camp and Potato Hills station records

Lapse Rate (°C/100 m)			
Month	**Max_T**	**Min_T**	**Mean_T**
Jan	0.5	1.2	0.9
Feb	-0.2	0.9	0.4
Mar	-0.7	0.6	-0.1
Apr	-0.7	0	-0.5
May	-0.8	0.5	-0.2
Jun	-0.1	0.2	-0.2
Jul	-0.3	0.2	-0.2
Aug	-0.3	0.1	0
Sep	0.7	-0.4	-0.2
Oct	-0.6	0	-0.3
Nov	0.2	0.8	0.5
Dec	0.5	0.9	0.6

Table 2.1-2:
Monthly climate parameters input to the WBM by representative elevation

Parameter	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
	Camp Station (782 m)												
Max_T (°C)	-19.4	-13.9	-6.0	4.1	12.2	17.9	18.7	16.1	9.3	-0.8	-12.6	-17.0	18.7
Min_T (°C)	-27.2	-22.9	-18.0	-8.6	-2.1	4.5	7.4	4.1	-1.1	-7.7	-20.0	-25.2	-27.2
Avg_T (°C)	-23.3	-18.4	-12.0	-2.2	5.1	11.2	13.0	10.1	4.1	-4.2	-16.3	-21.1	-4.5
Precipitation (mm)	25.4	18.7	12.6	8.9	23.5	45.7	59.5	50.7	39.8	35.1	31.3	28.0	379.2
PE (mm)	0.1	0.1	7.8	42.3	104.5	113.4	105.2	79.6	37.9	10.1	0.4	0.1	501.4
	HLF Elevation (1,125 m)												
Max_T (°C)	-17.7	-14.4	-8.4	1.5	9.4	17.7	17.7	15.1	11.6	-2.8	-12.0	-15.5	17.7
Min_T (°C)	-23.0	-19.6	-15.9	-8.7	-0.6	5.1	8.0	4.2	-2.5	-7.5	-17.1	-22.2	-23.0
Avg_T (°C)	-20.3	-16.8	-12.3	-3.9	4.3	10.3	12.3	10.0	3.4	-5.3	-14.6	-19.0	-4.3
Precipitation (mm)	36.3	26.7	18.0	12.8	26.9	52.2	68.0	58.0	45.5	50.2	44.8	40.1	479.6
PE (mm)	0.0	0.8	8.3	36.8	84.8	108.8	102.3	78.9	44.9	9.4	0.7	0.0	475.6
	Potato Hills (1,420 m)												
Max_T (°C)	-15.6	-14.2	-9.6	-0.6	7.2	17.6	17.0	14.2	13.6	-4.2	-11.1	-13.8	17.6
Min_T (°C)	-19.8	-18.5	-15.8	-8.8	0.6	5.7	8.3	4.4	-3.7	-8.2	-15.4	-19.7	-19.8
Avg_T (°C)	-17.7	-16.3	-12.7	-4.7	3.9	11.6	12.6	9.3	5.0	-6.2	-13.2	-16.8	-3.8
Precipitation (mm)	49.4	36.4	24.5	17.4	30.2	58.6	76.4	65.1	51.1	68.3	60.9	54.5	592.9
PE (mm)	0.4	1.3	7.4	29.6	70.2	102.9	98.2	69.1	63.9	7.1	0.8	0.1	451.1

2.1.1.1 2020 Climate and Streamflow Conditions

2020 was an unusually wet year, which influenced both the mine water management practices as well as the model validation exercise described in Sections 2.1.5 and 2.2.5. This section summarizes the climate and streamflow conditions measured at the Project site for the 2020 water year. Data from the Camp climate station (782 m), and the Potato Hills climate station (1,420 m) are presented alongside data from a nearby climate station in Mayo (504 m) for reference, and site snow course data are compared to nearby regional snow course data. All comparisons to regional climate records are made to the 1991-2019 average, to better represent the dominant climatic conditions of the past 30-years. The full historical climate and streamflow records for the Project site are presented in Lorax (2021a and 2021b). Streamflow data from Project site hydrometric stations are presented and compared to the baseline reference period (2007-2017). Overall, the 2020 water year (October 2019 to September 2020) was characterized by slightly lower air temperatures than normal, and substantially higher snowpacks and summer rainfall, leading to elevated streamflows across the Project site.

At the regional scale, annual average air temperature at the Mayo A climate station (-3.7 °C) was slightly cooler than the 1991-2019 annual average (-2.2 °C; Table 2.1-3).

Table 2.1-3:
Monthly air temperature comparison for Mayo A station – normal vs. 2019-2020 water year. Warmer and colder values relative to normal are highlighted in orange and blue, respectively.

Year	Month	Mayo A (2019-2020)			Mayo A - Averages		
		MinT (°C)	AvgT (°C)	MaxT (°C)	MinT (°C)	AvgT (°C)	MaxT (°C)
2019	Oct	-5.7	-2.3	1.1	-6.2	-2.2	1.7
2019	Nov	-18.0	-13.6	-9.1	-19.5	-15.2	-10.9
2019	Dec	-25.4	-20.3	-15.1	-24.9	-19.7	-14.5
2020	Jan	-35.2	-30.3	-25.2	-27.8	-22.8	-17.8
2020	Feb	-28.6	-21.6	-14.6	-23.7	-17.5	-11.4
2020	Mar	-22.3	-14.8	-7.2	-16.9	-10.0	-3.0
2020	Apr	-7.9	-1.3	5.3	-5.0	1.1	7.5
2020	May	3.7	10.0	16.3	2.4	9.2	15.9
2020	Jun	8.6	13.7	18.8	7.9	14.8	21.6
2020	Jul	9.6	14.8	19.9	9.6	16.1	22.6
2020	Aug	8.9	13.7	18.5	7.1	13.3	19.4
2020	Sep	3.2	8.0	12.7	1.3	6.9	12.5
	Annual	**-9.1**	**-3.7**	**1.8**	**-8.0**	**-2.2**	**3.6**

The 2020 water year was characterized by higher than the 1991-2019 average maximum snow water equivalents (SWE) at snow courses located near the Project site:

- Mayo A - 2020 was the 2nd highest at 173 mm, with a maximum of 176 mm in 2004, and 66% higher than the 1991-2019 average.
- Calumet – 2020 represents the maximum on record (305 mm), 2nd highest was 300 mm in 1993, and 50% higher than the 1991-2019 average.

A similar pattern was evident at the Project site snow courses, with the maximum annual measured SWE equal to the highest values on record at the Camp and Potato Hills snow courses (Table 2.1-4). The synthetic precipitation data for these stations that was scaled from the Mayo A winter precipitation data also displayed historical maximums. These comparisons confirm that the scalars used to estimate winter precipitation at the Project site are able to accurately represent unusually high precipitation years and do not require updating.

Table 2.1-4:
Comparison of annual maximum snow water equivalent values for the Camp and Potato Hills stations.

Year	Camp (782 m)			Potato Hills (1,420 m)		
	Measured	Measured + 20% Sublimation	Synthetic	Measured	Measured + 20% Sublimation	Synthetic
	Annual Maximum SWE (mm)					
2010	99	119	122	405	486	325
2011	93	112	166	251	301	238
2012	161	193	217	262	314	217
2013	108	130	179	190	228	383
2014	100	120	158	275	330	325
2015	110	132	145	N/A	N/A	161
2016	140	168	180	257	308	361
2017	117	140	110	244	293	280
2018	109	131	127	219	263	385
2019	72	86	68	200	240	446
2020	199	239	222	431	517	451
Average	**119**	**143**	**154**	**286**	**343**	**323**

The unusually large snowpacks were followed by a wet summer in 2020, with the sixth highest May-September total precipitation on record at the Mayo climate station, placing it in the 90th percentile. Overall, the 2020 water year received 40% more precipitation than the 1991-2019 average, with double the normal precipitation in November 2019, June and July 2020 (Table 2.1-5).

The maximum 24-hour rainfall totals recorded at the Project site in 2020 were 44 mm on July 11, 2020 at the Camp station and 19 mm at the Potato Hills station. While Potato Hills is located at a much higher elevation (1,420 m) than the Camp climate station (782 m), and typically, rainfall is enhanced due to orographic gradients, the relatively low value at the higher elevation suggests that the rainfall event was highly localized and that some of the high-magnitude rainfall events result in the distribution of rainfall depths that don't correspond to the long-term pattern. For example, the July 2020 event resulted in a 24-hour rainfall depth less than half of that recorded at the Camp station. With over ten years of site data collection and a longer term regional data set to develop 24-hour recurrence data, these totals approximately represent the estimated 50-year (42 mm), and approximately half the 2-year (37 mm) 24-hour storms for the Camp and the Potato Hills stations, respectively.

Table 2.1-5:
Monthly precipitation comparison for
Mayo A station – normal vs. 2019-2020 water year.

Year	Month	Mayo A (2019-2020)	Mayo A - Average	Mayo A - Percent of Average
		Precipitation (mm)		
2019	Oct	22.9	24.9	-8%
2019	Nov	47.2	22.6	109%
2019	Dec	31.5	20.1	57%
2020	Jan	26.2	18.2	44%
2020	Feb	23	11.9	94%
2020	Mar	13	10.5	23%
2020	Apr	12.3	8.7	42%
2020	May	12.6	21.9	-42%
2020	Jun	83.3	42.2	97%
2020	Jul	109.7	54.7	100%
2020	Aug	54.9	52.6	4%
2020	Sep	23.7	39.3	-40%
Annual		**460.3**	**327.6**	**40%**

The precipitation received by the Project site over the course of the 2020 water year resulted in much higher than average streamflows at all monitored stations, characterized by a large freshet followed and by frequent high-flow events driven by episodic rainfall throughout the summer (Figure 2.1-2). Modelled annual runoff was 122% to 239% higher than that modelled for 2019 (Table 2.1-6).

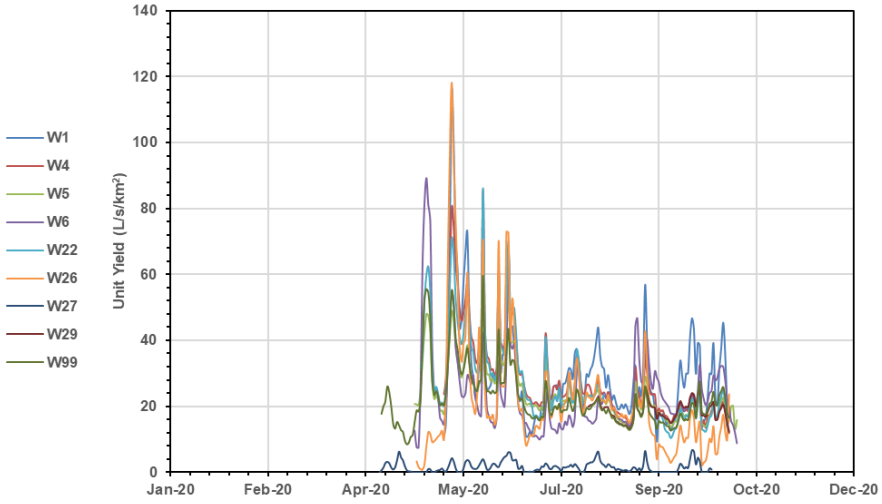

Figure 2.1-2: Daily average unit yields for the Eagle Gold hydrometric stations (2020).

Table 2.1-6:
Comparison of 2019 and 2020 modelled runoff for Project site catchments.

Basin	Median Basin Elevation (m)	Area (km^2)	2019 Annual Runoff (mm)	2020 Annual Runoff (mm)	% Change MAR From 2019 WBM
Upper Dublin Gulch (W1)	1,303	6.8	187	415	122%
Stewart Gulch (W26)[1]	1,183	1.4	172	395	130%
Haggart Ck u/s Dublin Gulch (W22)	1,113	66.8	148	409	176%
Haggart Ck d/s Dublin Gulch (W4)	1,125	76.9	149	405	172%
Lynx Ck u/s Haggart Ck (W6)	1,049	100.9	113	383	239%

2.1.2 Site-wide WBM Approach and Assumptions

This section presents the inputs and assumptions employed in the assembly, calibration and running of the site-wide WBM. At a high-level, the WBM produces outputs of daily discharge values for Project site stations based on the currently licensed mine plan and water management activities associated with the Project. To capture the highly dynamic nature of streamflows and water management activities at the Project site, the WBM is run on a daily time-step and flow outputs from the WBM are output at a monthly time-step.

The watershed model architecture is driven by a daily climate time-series input. The WBM is configured to include all relevant Project infrastructure, including the HLF, open pit, WRSAs, 90-day ore stockpiles, and water management infrastructure (*e.g.*, sediment ponds, collection ditches, events pond, *etc*.). Within the Base Case module of the WBM, each mine component is spatially defined by year of the Project life, which allows the footprints (sub-catchments) and /or volumes of each component to expand as the mine development progresses. Each sub-catchment represents a single land cover type (*e.g.*, WRSA, open pit, natural ground, *etc*.)

The natural catchment runoff module of the WBM generates estimates of streamflow from climate data using a watershed modeling approach. The architecture of the watershed model is predicated on the concept that streamflow is comprised of three components: quickflow, interflow and baseflow (Maidment, 1993). The natural catchment WBM was assembled using three reservoirs to represent these components (Section 2.1.4), and the factors governing the rates at which these reservoirs fill via precipitation and snowmelt were varied by basin and/or mine component type (*e.g.,* natural ground, WRSAs, open pit). This foundational WBM architecture is used consistently within each natural watershed of mine sub-watershed to convert meteoric water into runoff based on sub-watersheds

characteristics (*e.g.*, elevation, surface type, water management infrastructure). The delineation of mine area sub-catchments is covered in detail in Section 2.1.4.

Modelled flows for each sub-catchment are routed to the next downstream node depending on water management practices or natural catchment topography, as applicable. This allows the predicted flows to be derived for any sub-watershed in the WBM, or aggregated and reported for a collection point of interest (*e.g.*, sediment collection pond discharge, or receiving environment node). This approach also allows concentrations and loads of water quality parameter to be tracked for each sub-catchment and mine component, and balanced at each successive downstream node.

All mine facilities are assumed to be developed according to the development schedules and timelines set out in Sections 2.1.3 and 2.1.8.

The HLF water balance model described in Forte (2020) forms a sub-component of the site-wide water balance model, and the climate data inputs and assumptions are notably consistent between the two models to ensure discrepancies are not introduced by differing architecture or inputs. Integration of the HLF WBM outputs is described in further detail in Section 2.1.6.

2.1.3 Mine Area Catchment Delineation

In order to generate predictions of water volume from a climate driven watershed model, effective precipitation and evapotranspiration depths must be multiplied by drainage area at each time-step. This required the delineation of all mine affected and adjacent natural catchment areas, for each year of mine life. The resultant delineated sub-catchments are presented for each year of mine life in Figure 2.1-7 through Figure 2.1-15.

Annual areas for all sub-catchments are presented for natural areas (Table 2.1-7), open pits (Table 2.1-8), WRSAs (Table 2.1-9), other mine infrastructure (Table 2.1-10), and the HLF (Table 2.1-11). Hypsometric curves were calculated for each catchment and used to determine the median elevation within each basin/sub-catchment, which formed the elevation target for orographic scaling of the climate inputs.

460000

7100000

N

N10

N1

HLF

N13

Dublin Gulch

Eagle Pup

LDSP

Camp

N6

N4

N11

Truckshop

ROM

Crusher

N2

N3

N5

Platinum Gulch

N8

Pit

N9

Haggart Creek

Platinum
WRSA

N12

N7

460000

7100000

LEGEND

- Waste Rock Storage Area
- Pit
- Heap Leach Facility
- Site Facility
- Model Catchment
- Water Course
- Contour (100m)
- Contour (50m)

NOTES

Base data source:

STATUS

FOR INTERNAL USE ONLY

EAGLE GOLD PROJECT
YUKON TERRITORY

2019 (Year 1) Site Layout

PROJECTION	DATUM	CLIENT
Transverse Mercator UTM Zone 8	NAD83	Victoria GOLD CORP

Scale: 1:25,000

200 100 0 200

Metres

LORAX ENVIRONMENTAL

FILE NO.

PROJECT	DWN	CKD	APVD	REV
Eagle Gold	AL	SJ	DHF	1

OFFICE

DATE: April 08, 2020

Figure 2.1-2

Path: P:\@Drafting\Eagle Gold\Drafting Figures\MXD\20202_WQBM_Progression\2020_Year1.mxd

460000

7100000

N

N10
N11
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N4
N5
N6
N7
N8
N9
N13

HLF
LDSP
Camp
Truckshop
ROM
Crusher
Pit
Platinum WRSA

Dublin Gulch
Eagle Pup
Platinum Gulch
Haggart Creek

460000

LEGEND

- Waste Rock Storage Area
- Pit
- Heap Leach Facility
- Site Facility
- Model Catchment
- Water Course
- Contour (100m)
- Contour (50m)

NOTES
Base data source:

STATUS
FOR INTERNAL USE ONLY

EAGLE GOLD PROJECT
YUKON TERRITORY

2020 (Year 2) Site Layout

PROJECTION Transverse Mercator UTM Zone 8	**DATUM** NAD83			**CLIENT** Victoria Gold Corp
Scale: 1:25,000 — 200 100 0 200 — Metres				LORAX ENVIRONMENTAL
FILE NO.				
PROJECT Eagle Gold	**DWN** AL	**CKD** SJ	**APVD** DHF	**REV** 1
OFFICE	**DATE** April 08, 2020			**Figure 2.1-3**

Path: P:\@Drafting\Eagle Gold\Drafting Figures\MXD\20202_WQBM_Progression\2020_Year1.mxd

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N

N10
N11
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N2
N3
N4
N5
N6
N7
N8
N9
N13

HLF
LDSP
Camp
Truckshop
ROM
Crusher
Pit
Platinum WRSA

Dublin Gulch
Eagle Pup
Platinum Gulch
Haggart Creek

460000

LEGEND

- Waste Rock Storage Area
- Pit
- Heap Leach Facility
- Site Facility
- Model Catchment
- Water Course
- Contour (100m)
- Contour (50m)

NOTES
Base data source:

STATUS
FOR INTERNAL USE ONLY

EAGLE GOLD PROJECT
YUKON TERRITORY

2021 (Year 3) Site Layout

PROJECTION Transverse Mercator UTM Zone 8		**DATUM** NAD83		**CLIENT** Victoria Gold Corp
Scale: 1:25,000 200 100 0 200 Metres				Lorax Environmental
FILE NO.				
PROJECT Eagle Gold	**DWN** AL	**CKD** SJ	**APVD** DHF	**REV** 1
OFFICE	**DATE** April 08, 2020			**Figure 2.1-4**

Path: P:\@Drafting\Eagle Gold\Drafting Figures\MXD\20202_WQBM_Progression\2020_Year1.mxd

460000

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N

N10
N1
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N3
N8
N9
N12
N7

HLF

LDSP
Camp

Truckshop
ROM
Crusher

Eagle
WRSA

Pit

Platinum
WRSA

Dublin Gulch
Eagle Pup
Platinum Gulch
Haggart Creek

460000

7100000

LEGEND

- Waste Rock Storage Area
- Pit
- Heap Leach Facility
- Site Facility
- Model Catchment
- Water Course
- Contour (100m)
- Contour (50m)

NOTES
Base data source:

STATUS
FOR INTERNAL USE ONLY

EAGLE GOLD PROJECT
YUKON TERRITORY

2022 (Year 4) Site Layout

PROJECTION Transverse Mercator UTM Zone 8		**DATUM** NAD83	**CLIENT** Victoria Gold Corp
Scale: 1:25,000 200 100 0 200 Metres			Lorax Environmental
FILE NO.			
PROJECT Eagle Gold	**DWN** AL / **CKD** SJ / **APVD** DHF / **REV** 1		**Figure 2.1-5**
OFFICE	**DATE** April 08, 2020		

Path: P:\@Drafting\Eagle Gold\Drafting Figures\MXD\20202_WQBM_Progression\2020_Year1.mxd

460000

7100000

N

N10

N1

HLF

N13

Dublin Gulch

Eagle Pup

N6

N5

LDSP

Camp

N4

Eagle
WRSA

N11

N2

Truckshop

ROM

Crusher

N3

Platinum Gulch

N8

Pit

N9

Haggart Creek

Platinum
WRSA

N12

N7

460000

7100000

LEGEND

- Waste Rock Storage Area
- Pit
- Heap Leach Facility
- Site Facility
- Model Catchment
- Water Course
- Contour (100m)
- Contour (50m)

NOTES

Base data source:

STATUS

FOR INTERNAL USE ONLY

EAGLE GOLD PROJECT
YUKON TERRITORY

2023 (Year 5) Site Layout

PROJECTION	DATUM	CLIENT
Transverse Mercator UTM Zone 8	NAD83	Victoria Gold Corp

Scale: 1:25,000

200 100 0 200

Metres

FILE NO.

PROJECT	DWN	CKD	APVD	REV
Eagle Gold	AL	SJ	DHF	1

OFFICE

DATE: April 08, 2020

LORAX ENVIRONMENTAL

Figure 2.1-6

Path: P:\@Drafting\Eagle Gold\Drafting Figures\MXD\20202_WQBM_Progression\2020_Year1.mxd

460000

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N

N10
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N13
N6
N5
N4
N11
N2
N3
N8
N9
N12
N7

HLF

LDSP
Camp

Truckshop
ROM
Crusher

Eagle
WRSA

Pit

Platinum
WRSA

Dublin Gulch
Eagle Pup
Platinum Gulch
Haggart Creek

460000

LEGEND

- Waste Rock Storage Area
- Pit
- Heap Leach Facility
- Site Facility
- Model Catchment
- Water Course
- Contour (100m)
- Contour (50m)

NOTES
Base data source:

STATUS
FOR INTERNAL USE ONLY

EAGLE GOLD PROJECT
YUKON TERRITORY

2024 (Year 6) Site Layout

PROJECTION	DATUM	CLIENT
Transverse Mercator UTM Zone 8	NAD83	Victoria Gold Corp

Scale: 1:25,000
200 100 0 200
Metres

FILE NO.

PROJECT	DWN	CKD	APVD	REV
Eagle Gold	AL	SJ	DHF	1

OFFICE	DATE
	April 08, 2020

Lorax Environmental

Figure 2.1-7

Path: P:\@Drafting\Eagle Gold\Drafting Figures\MXD\2020\2_WQBM_Progression\2020_Year1.mxd

460000

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N

N10
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N13
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N4
N11
N2
N3
N8
N9
N12
N7

HLF

LDSP
Camp

Truckshop
ROM
Crusher

Eagle
WRSA

Pit

Platinum
WRSA

Dublin Gulch
Eagle Pup
Platinum Gulch
Haggart Creek

460000

LEGEND

- Waste Rock Storage Area
- Pit
- Heap Leach Facility
- Site Facility
- Model Catchment
- Water Course
- Contour (100m)
- Contour (50m)

NOTES
Base data source:

STATUS
FOR INTERNAL USE ONLY

EAGLE GOLD PROJECT
YUKON TERRITORY

2025 (Year 7) Site Layout

PROJECTION	DATUM	CLIENT
Transverse Mercator UTM Zone 8	NAD83	Victoria Gold Corp

Scale: 1:25,000
200 100 0 200
Metres

FILE NO.

PROJECT	DWN	CKD	APVD	REV
Eagle Gold	AL	SJ	DHF	1

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DATE
April 08, 2020

LORAX ENVIRONMENTAL

Figure 2.1-8

Path: P:\@Drafting\Eagle Gold\Drafting Figures\MXD\2020\2_WQBM_Progression\2020_Year1.mxd

460000

N

N10

N1

HLF

N13

Dublin Gulch

Eagle Pup

LDSP

Camp

N5

N6

N4

Eagle
WRSA

N11

N2

Truckshop

ROM

Crusher

N3

Platinum Gulch

N8

Pit

N9

Haggart Creek

Platinum
WRSA

N12

N7

7100000

7100000

460000

LEGEND

- Waste Rock Storage Area
- Pit
- Heap Leach Facility
- Site Facility
- Model Catchment
- Water Course
- Contour (100m)
- Contour (50m)

NOTES

Base data source:

STATUS

FOR INTERNAL USE ONLY

EAGLE GOLD PROJECT
YUKON TERRITORY

2026 (Year 8) Site Layout

PROJECTION	DATUM	CLIENT
Transverse Mercator UTM Zone 8	NAD83	Victoria Gold Corp

Scale: 1:25,000

200 100 0 200

Metres

FILE NO.

PROJECT	DWN	CKD	APVD	REV
Eagle Gold	AL	SJ	DHF	1

OFFICE

DATE: April 08, 2020

LORAX ENVIRONMENTAL

Figure 2.1-9

Path: P:\@Drafting\Eagle Gold\Drafting Figures\MXD\20202_WQBM_Progression\2020_Year1.mxd

460000

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N

N10
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N5
N4
N11
N2
N3
N8
N9
N12
N7

HLF

LDSP
Camp

Truckshop
ROM
Crusher

Eagle
WRSA

Pit

Platinum
WRSA

Dublin Gulch
Eagle Pup
Platinum Gulch
Haggart Creek

460000

7100000

LEGEND

- Waste Rock Storage Area
- Pit
- Heap Leach Facility
- Site Facility
- Model Catchment
- Water Course
- Contour (100m)
- Contour (50m)

NOTES
Base data source:

STATUS
FOR INTERNAL USE ONLY

EAGLE GOLD PROJECT
YUKON TERRITORY

2027 (Year 9) Site Layout

PROJECTION	DATUM	CLIENT
Transverse Mercator UTM Zone 8	NAD83	Victoria Gold Corp

Scale: 1:25,000
200 100 0 200
Metres

FILE NO.

PROJECT	DWN	CKD	APVD	REV
Eagle Gold	AL	SJ	DHF	1

OFFICE

DATE
April 08, 2020

LORAX ENVIRONMENTAL

Figure 2.1-10

Path: P:\@Drafting\Eagle Gold\Drafting Figures\MXD\20202_WQBM_Progression\2020_Year1.mxd

Table 2.1-7:
Non-contact catchment areas by year (all areas in hectares)

Catchment	N1 Ann Gulch	N2 Camp	N3 Above Camp	N4 Suttles Gulch	N5 Eagle Pup	N6 Stewart Gulch	N7 Lynx Creek	N8 Platinum Gulch	N9 Eagle Ck above Road	N10 (W22)	N11 Gil Gulch +	N12 W5 Incremental	N13 Upper Dublin W1
Baseline	130.3	53.4	70.2	71.3	154.4	141.6	10,156.2	102.0	63.4	6,625.8	423.5	1,087.5	684.7
2019	126.1	53.4	70.2	58.2	154.4	141.6	10,156.2	88.8	63.4	6,625.8	423.5	1,087.5	684.7
2020	113.1	53.4	70.2	50.3	147.4	141.6	10,156.2	60.4	63.4	6,622.5	423.5	1,087.5	684.7
2021	113.1	53.4	70.2	47.3	144.6	141.6	10,156.2	48.3	63.4	6,622.5	423.5	1,087.5	684.7
2022	113.1	53.4	69.9	44.0	124.1	141.6	10,156.2	45.3	63.4	6,622.5	423.5	1,087.5	684.7
2023	113.1	53.4	68.5	40.5	103.0	141.6	10,156.2	39.5	63.4	6,622.5	423.5	1,087.5	684.7
2024	92.6	53.4	68.5	39.4	92.8	141.6	10,156.2	36.8	63.4	6,613.1	423.5	1,087.5	683.4
2025	92.6	53.4	68.5	38.0	81.3	141.6	10,156.2	36.8	63.4	6,613.1	423.5	1,087.5	683.4
2026	92.6	53.4	67.7	37.1	74.1	140.0	10,156.2	36.7	63.4	6,613.1	423.5	1,087.5	683.4
2027	92.6	53.4	67.7	37.1	74.1	140.0	10,156.2	36.7	63.4	6,613.1	423.5	1,087.5	683.4

Table 2.1-8:
Open pit catchment areas by year (all areas in hectares)

Catchment	N3 Pit	N4 Pit	N5 Pit	N8 Pit	Pit Total
Baseline	0.0	0.0	0.0	0.0	0.0
2019	0.0	8.0	0.0	5.2	13.2
2020	0.0	16.0	7.0	11.1	34.1
2021	0.0	19.0	9.9	15.6	44.4
2022	0.3	21.7	11.5	18.6	52.1
2023	1.7	22.1	13.3	24.4	61.5
2024	1.7	22.1	13.3	27.1	64.2
2025	1.7	22.1	13.3	27.1	64.2
2026	2.5	22.1	13.3	27.2	65.2
2027	2.5	22.1	13.3	27.2	65.2

Table 2.1-9:
WRSA catchment areas by year (all areas in hectares)

Catchment	N1 Eagle WR	N4 Eagle WR	N5 Eagle WR	N6 Eagle WR	EP Total	N8 Platinum WR
Baseline	0.0	0.0	0.0	0.0	0.0	0.0
2019	0.0	0.0	0.0	0.0	0.0	8.0
2020	0.0	0.0	.0	0.0	0.0	30.5
2021	0.0	0.0	8.4	0.0	8.4	38.1
2022	0.0	0.6	18.9	0.0	19.5	38.1
2023	0.0	3.7	38.2	0.0	41.8	38.1
2024	0.0	4.7	48.4	0.0	53.1	38.1
2025	0.0	6.1	59.8	0.0	65.9	38.1
2026	1.6	7.0	67.1	1.5	77.3	38.1
2027	1.6	7.0	67.1	1.5	77.3	38.1

Table 2.1-10:
Mine infrastructure catchment areas by year (all areas in hectares)

Catchment	N1 HLF Infrastructure	N1 ROM	N4 Crusher	N4 ROM	Camp (In N3)	LDSP (In N3)	Truckshop (In N3)
Baseline	16.9	0.0	13.9	0.0	9.8	3.7	4.3
2019	16.9	4.2	13.9	5.1	9.8	3.7	4.3
2020	16.9	0.0	13.9	5.1	9.8	3.7	4.3
2021	16.9	0.0	13.9	5.1	9.8	3.7	4.3
2022	16.9	0.0	13.9	5.1	9.8	3.7	4.3
2023	16.9	0.0	13.9	5.1	9.8	3.7	4.3
2024	16.9	0.0	13.9	5.1	9.8	3.7	4.3
2025	16.9	0.0	13.9	5.1	9.8	3.7	4.3
2026	16.9	0.0	13.9	5.1	9.8	3.7	4.3
2027	16.9	0.0	13.9	5.1	9.8	3.7	4.3

Table 2.1-11:
HLF catchment areas by year (all areas in hectares)

Catchment	N1 HLF	N10 HLF	N13 HLF	HLF Total
Baseline	0.0	0.0	0.0	0.0
2019	0.0	0.0	0.0	0.0
2020	17.2	3.3	0.0	20.5
2021	17.2	3.3	0.0	20.5
2022	17.2	3.3	0.0	20.5
2023	17.2	3.3	0.0	20.5
2024	37.7	12.7	1.2	51.6
2025	37.7	12.7	1.2	51.6
2026	37.7	12.7	1.2	51.6
2027	37.7	12.7	1.2	51.6

2.1.4 Natural Catchment Watershed Model

The streamflow regime at the Project site is highly variable, with multiple peak flow events common place throughout the year, driven by an initial freshet and following convective rainfall events in the summer. Significant volumes of water can report to local tributaries in the span of 2 days yet may subsequently be followed by prolonged dry periods where

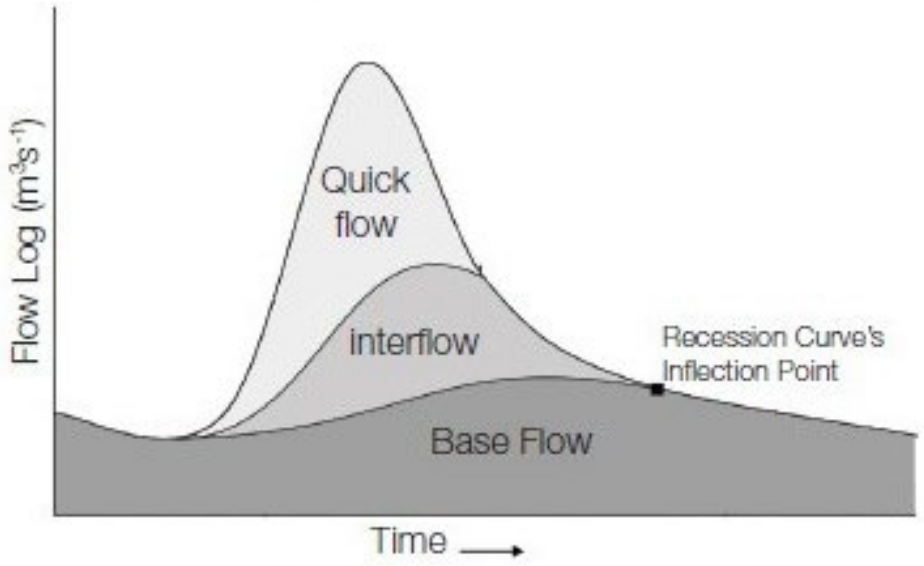
surface flows diminish to the point where groundwater discharge is the main driver of streamflow.

As the open water season progresses, active layer melt contributes increasing amounts of discharge to local creeks, which is expressed as an increasing low flow signature throughout the summer. Finally, average winter temperatures are well below zero, and surface flow in all local watersheds is reduced to zero as the stream channels freeze-up during winter. In winter, the only moving water at the site is generated by discharging groundwater, which will freeze in laminae (aufeis) as cold conditions progress. This icing phenomenon continues throughout the winter, and results in ice sheets that greatly exceed the existing channel width. A customized site-wide water balance model was constructed in the GoldSim modeling environment to allow the Project site streamflow regime to be accurately replicated.

Figure 2.1-16 shows the commonly accepted components of streamflow with surface volumes of water reporting from with one of three signatures:

- Quick flow – generated by storm or snowmelt events and often resulting in peak flow events. For the Project site tributaries, water contributed via this mechanism may report to creeks in less than 2 days time;
- Interflow – this refers to the lateral movement of infiltrated meteoric water through the shallow overburden to the stream channel. Flow reporting to creeks along this pathway is often referred to as vadose or unsaturated zone flow, and comprises a significant component of the total flow within some of the tributaries reporting to Dublin Gulch; and,
- Baseflow – the portion of surface flow derived from groundwater discharge. At the Project site, this composes the majority of streamflow during summer low flow periods and through the winter season.

The watershed model assembled to replicate the streamflow regime at the Project site incorporates this understanding of streamflow composition and response directly into the model architecture. Accordingly, surface runoff, baseflow, snowfall/melt processes and aufeis production from winter baseflow are all represented in the site-wide WBM, which is a modified version of the Birkenes model. This model was developed as part of a research program to understand linkages between stream chemistry and flow in a small (< 1 km^2) catchment in southern Norway (*e.g.,* Christophersen and Seip, 1982; Seip *et al*., 1985; Stone and Seip, 1989). The modelling approach is depicted as a conceptual diagram in Figure 2.1-17.



Source: http://turmalina.igc.usp.br/img/revistas/guspsc/v13n1/a01fig07.jpg

Figure 2.1-12: Conceptual hydrograph showing runoff partitioning.

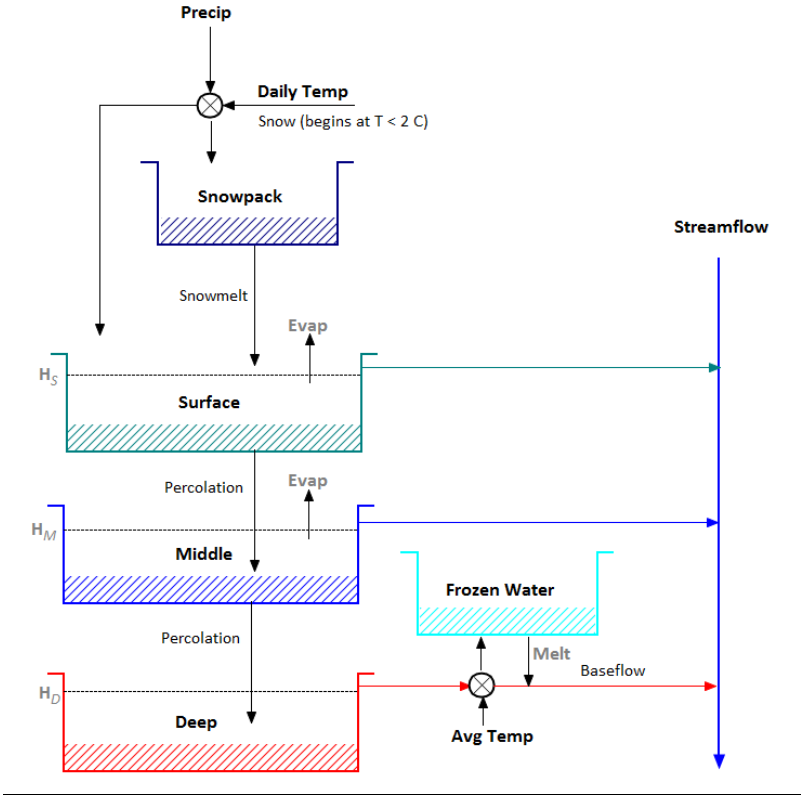


Figure 2.1-13: Schematic presenting an overview of the three-reservoir water balance model in conceptual format

Conceptually, incoming precipitation is partitioned in the WBM to rain or a snow reservoir based on air temperature thresholds. As shown in Figure 2.1-17, all precipitation falls as snow at -2°C and rain at +2°C, with the proportions of each changing linearly between these thresholds. Rainfall and snowmelt are directed into the Surface reservoir, which represents a layer of fast runoff response, which lies above a slower-draining Middle soil layer. Fast and slow surface recession flow from these two surface storage reservoirs can go directly to surface discharge, or to the Deep reservoir, depending on the fraction of remaining available storage in the latter. Figure 2.1-17 shows that when the Deep reservoir fills, slow recession flow from the reservoir reports to baseflow (and fractionally to aufeis in winter). Where aufeis has been modelled (based on air temperature) to freeze completely during the winter months, streamflow is zero. In the model, evaporation is withdrawn from both surface reservoirs (Fast and Slow), and from the Deep reservoir but at a lower rate. The deepest water in the Deep reservoir is protected from evaporation and provides a source for winter baseflow. Only when both the Fast and Slow surface reservoirs are empty may evaporation occur from the Deep reservoir, and at a much-reduced rate, which is calibrated uniquely by watershed. Finally, snowmelt and melting of aufeis are indexed to the rolling 7-day average air temperature. Aufeis is assumed to melt at 10% of the snowmelt rate, due to its higher density and location in the shaded valley bottoms.

2.1.5 Validation of Watershed Model With Monitoring Data

Following the update of the measured streamflow time-series to include data collected in 2020, a verification exercise was conducted to ensure that the water balance model inputs were still adequately representing site conditions. As outlined in Section 2.1.1, the model was updated to a watershed model that has been calibrated to measured flow data collected at site monitoring locations that span a wide variety of catchment types and sizes. These catchments include those that are reflective of the receiving environment in Haggart Creek and are therefore largely unimpacted by mining activities (*e.g.*, W4), and catchments that are located within the mine site (*e.g.*, Ann Gulch).

In most cases, the measured streamflow records cover the open water season from May to October, with May generally showing incomplete data due to extensive channel icing conditions. Therefore, depending on the availability of data for May at each station, it is expected that the measured runoff will be less than the model input. The winter flow data for November to April, where available, are based on monthly averages of manual measurements that are made concurrent with the water quality sampling trips.

Figure 2.1-18 to Figure 2.1-22 present the results of the verification exercise and compare measured and model runoff from key locations within the Haggart Creek, Dublin Gulch and Lynx Creek catchments. Overall, the model outputs replicate the monthly distribution

of runoff well, however it is notable that modelled runoff is lower than measured runoff in May, October and November, and higher in June at W1 and W4, and lower in May only at W5 and W22. Given that the measured record spans from 9 to 15 years, and that many of the monthly averages calculated from this record are based on incomplete records (*e.g.*, May, when average monthly measured runoff underestimates actual runoff), the updated watershed model is thought to best represent the long-term average runoff conditions at site. For several of the smaller watersheds (*e.g.*, Stewart Gulch, Eagle Pup and Suttles Gulch), the modelled runoff is notably higher than measured values (Table 2.1-11). The higher modelled runoff values are supported by the stream chemistry, and it is likely that the measured runoff is underestimated relative to actual values due to gauge bypass through alluvial sediments at the confluence with Dublin Gulch. Model calibration continues to improve over time as additional monitoring data become available and understanding of the relevant processes evolves.

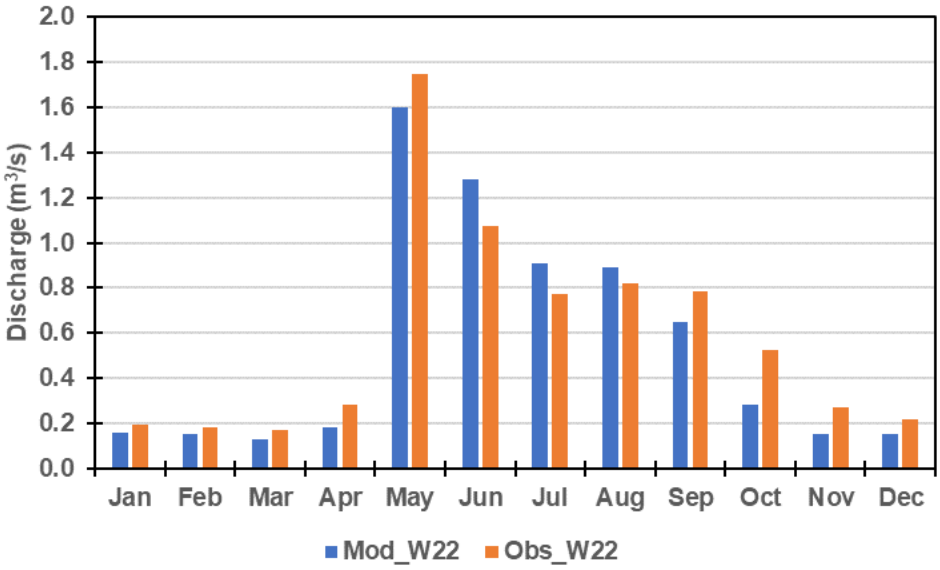


Figure 2.1-14: Measured and modelled runoff for the W22 station (Haggart Creek upstream of Dublin Gulch).

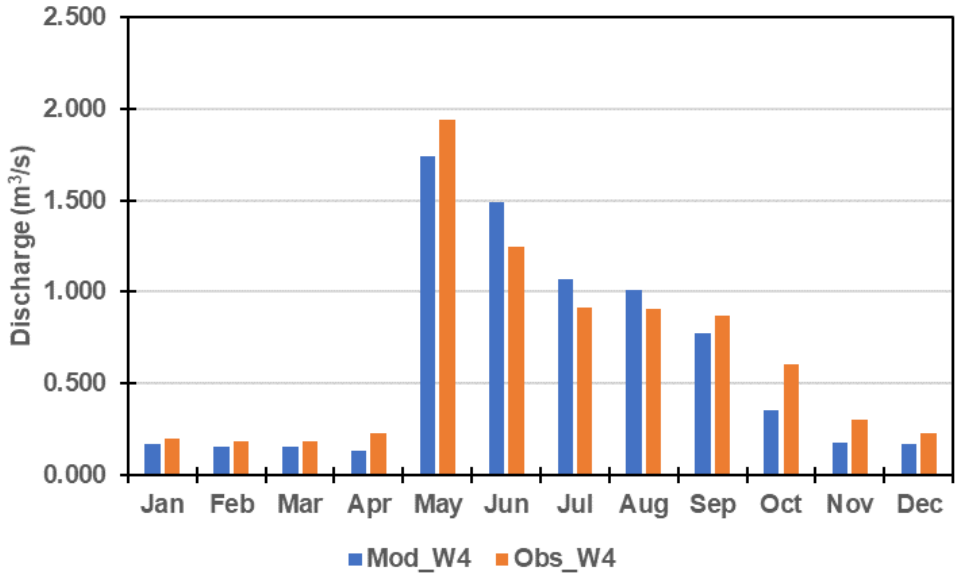


Figure 2.1-15: Measured and modelled runoff for the W4 station (Haggart Creek downstream of Dublin Gulch).

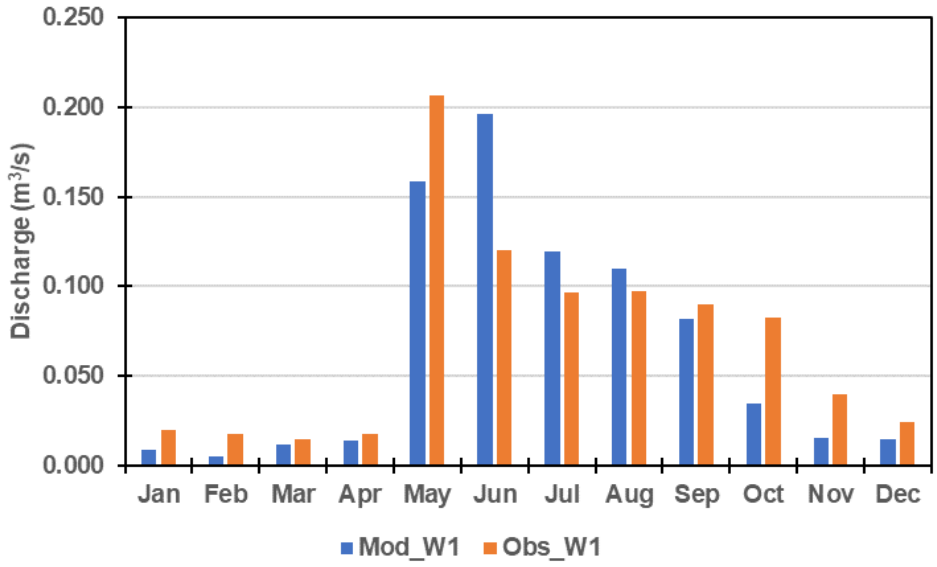


Figure 2.1-16: Measured and modelled runoff for the W1 station (Upper Dublin Gulch).

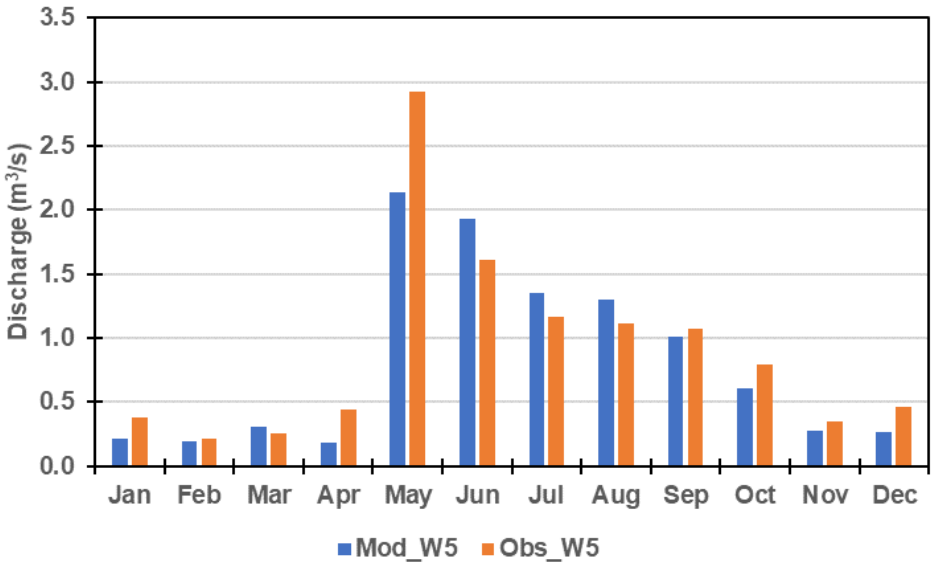


Figure 2.1-17: Measured and modelled runoff for the W5 station (Haggart Creek (immediately upstream of confluence with Lynx Creek).

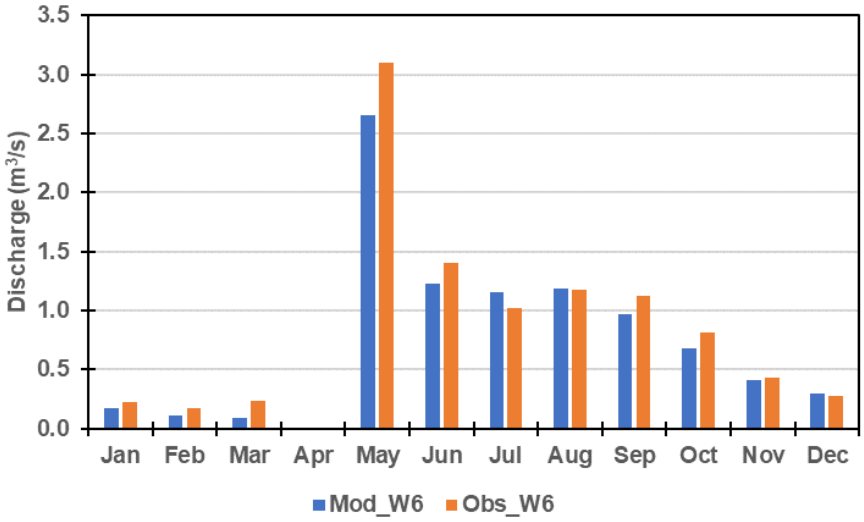


Figure 2.1-18: Measured and modelled runoff for the W6 station (Lynx Creek upstream of Haggart Creek).

2.1.6 Heap Leach Facility Water Balance Model Updates

The GoldSim HLF model was completed by Forte Dynamics and is compatible with the current daily WBM created by Lorax. The Forte Dynamics HLF model uses the same climate inputs as described in Section 2.1.1 to match the Lorax site-wide GoldSim model. The make up water and drain down discharge water were incorporated similar to the 2019 model. Make up water is drawn from the Event Pond from 2019-2027 (2019-2020 make up is based on actual reported pumping from site). Barren solution is drawn from the HLF

starting soon after stacking is completed in 2027 and continues to treatment until draindown is complete. Using the EQS discharge limits to represent treated discharge to Haggart Creek results in a draindown period spanning 2031-2051 (Yr-13 to Yr-33) inclusive.

2.1.7 Groundwater Model Updates

The site-wide groundwater model has been updated to include the following flows:

- Pit wall depressurization (updated values from 2019)
- Platinum Gulch WRSA underdrain (new)
- Eagle Pup WRSA underdrain (new)
- Vault flow under the HLF (new)

Pit wall depressurization was adjusted to match observed 2020 flows and the new underdrain and vault flows were added. The HLF vault flow is documented; 2020 flow rates were supplemented by the groundwater model predictions for the life of mine.

2.1.8 Mine Infrastructure

In addition to the specific mine infrastructure described below, the WB/WQM includes assumptions for camp potable water requirements and dust control water requirements that remain consistent with updates described in the 2018 WB/WQM update (Lorax 2018).

2.1.8.1 Waste Rock Storage Area Progression and Assumptions

Waste rock storage facility placement phasing for Eagle Pup and Platinum Gulch are presented by year in Table 2.1-12. The WB/WQM assumes that the Platinum Gulch WRSA is covered at the end of 2023. Prior to cover placement, basal seepage from this facility is predicted to range from 47% to 54% of MAP, dropping to 34% after the cover is in place. Similarly, the Eagle Pup WRSA is scheduled to be covered at the end of 2029 (Yr-11), with a comparable decrease in the proportion of MAP reporting as basal seepage.

The proportion of runoff versus infiltration for the WRSAs during operations was carried over from the 2014 WUL application model, with notable changes indicated below. This proportion is characterized as the percent of net precipitation minus AET losses:

- Operations (until closure covers are assumed to be effective):
    - WRSAs – small runoff fraction during freshet; otherwise 100% of net precipitation (*e.g.*, total precipitation minus evaporation)

- HLF – 100% of net precipitation assumed to infiltrate (consistent with the 2014 model).

- Closure (once closure covers are assumed to be effective):
  - WRSAs – A 40% reduction wastargeted for infiltration to the WRSAs, with approximately 10% modelled as surface runoff from the cover.
    - Platinum Gulch WRSA – closure cover effective as of in the end of Year 5;
    - Eagle Pup WRSA – closure cover effective as of in the end of Yr-11, and;
    - HLF –fully reclaimed (960,000 m^2) as of in the end of Yr-13; the cover is assumed to reduce net infiltration by 60%

Water that infiltrates the WRSAs experiences a slower recession flow which results in a 1-month lag time (on average) before that water reports to the collection pond (LDSP). This attenuated hydrograph mimics the influence of water retention within the pore spaces of the WRSA, and the slower release of water than would be seen in a natural catchment with thinner overburden cover.

Table 2.1-12:
Waste Rock Storage Areas Tonnages and Surface Area by Year

Facility	Waste Type	2019 Yr-1	2020 Yr-2	2021 Yr-3	2022 Yr-4	2023 Yr-5	2024 Yr-6	2025 Yr-7	2026 Yr-8	2027 Yr-9
Eagle Pup WRSA	Mass incremental (Mt)	0	0	8.8	18	20	11	7.7	9.6	13
	Mass cumulative (Mt)	0	0	8.8	26	46	58	65	75	88
	Area (ha)	0.0	0.0	8.4	19.5	41.8	53.1	65.9	77.3	77.3
Platinum Gulch WRSA	Mass incremental (Mt)	2.3	13	7.4						
	Mass cumulative (Mt)	2.3	15	22	22	22	22	22	22	22
	Area (ha)	8	30.5	38.1	38.1	38.1	38.1	38.1	38.1	38.1

2.1.8.2 Sediment Control Ponds

The LDSP serves as the primary contact water management pond for the Project throughout Operations, and all contact water from the Eagle Pup WRSA, 90-day ore stockpile, Open Pit and Platinum Gulch WRSA will be directed to this pond. The Platinum Gulch PTS will be constructed during the operations phase (2023) of the Project to serve as a trial passive treatment system (PTS). This PTS will continue in operation during the closure and post closure phases.

Using 2020 records from site the inflows from Ditch A and Ditch B to the LDSP were adjusted to match LDSP and Event Pond daily volumes. The model predicted flows in

Ditches A and B overestimate the net inflow to the LDSP when all outflows (pump to the Event Pond, pump to the HLF inheap pond, dust suppression and evaporation, *etc*.) are taken into consideration.

2.1.8.3 Event Pond

Event Pond volumes were calibrated in 2020 using reported water management and observed pond inflows where available. For 2021 there will be no available treatment for the removal of water from the LDSP or Event Pond; however, based on the 2020 calibration and expected flows for this year there is no anticipated unmanaged overflow from either pond expected. There may be periods (freshet in particular) when storage in the Event Pond encroaches on the desired available storage for short periods of time, but this should be manageable through the use of Event Pond water as make up water to the HLF.

2.1.8.4 Contact Water Ditches

A detailed description of contact water ditches and design parameter are presented in Victoria Gold (2020), but the summary of ditch locations, and the specific water sources reporting to the contact water ditches is presented below.

Ditch A

Ditch A collects contact water from the Platinum Gulch WRSA, 90-day stockpile and open pit, as well as non-contact water from Platinum Gulch, and routes it northwards to the LDSP.

Ditch B/Eagle Creek

Ditch B/Eagle Creek collects contact water from the Eagle Pup WRSA, as well as non-contact water from the Eagle Pup and Suttles Gulch drainage. This ditch is generally aligned with the natural Eagle Creek drainage and flows west from the northern end of the Eagle Pup WRSA to the LDSP.

Ditch C

Ditch C routes the LDSP outflow westward to Haggart Creek where it discharges just downstream of the confluence of Dublin Gulch. At closure, the mine plan routes HLF draindown water to the MWTP and is then discharged directly to Ditch C. At post-closure, HLF seepage water is directed to a PTS, which discharges directly to Haggart Creek immediately upstream of the confluence with Dublin Gulch.

2.2 Water Quality Model Inputs and Assumptions

The Eagle Gold Project water quality model (WQM) is a mass-conserving mixing model that predicts water quality for 38 parameters at key monitoring and compliance points in the receiving waters affected by mine activity. The model was designed on the GoldSim® platform and utilizes a GoldSim® water balance model (WBM). Both the WBM and the WQM use a daily time-step for 50 years, spanning operations, closure and several years into post-closure. Below is a brief description of water quality model inputs including seepage contact water source terms, Mine Water Treatment Plant (MWTP) and Passive Treatment Systems (PTS) effluent discharge requirements and background water quality for non-contact flows.

2.2.1 Seepage Contact Water – Geochemical Source Terms

The drainage chemistry from the various Eagle Gold mine facilities discussed herein is influenced by a variety of geochemical and physical aspects. Overarching controls that will govern the water quality associated with any facility that contains exposed waste rock and ore, include:

- Mineralogy and geochemistry of the exposed material;
- Grain size distribution;
- Water/rock ratio;
- Depositional environment (*e.g.*, saturated versus unsaturated conditions); and
- Temperature.

The rate at which minerals weather chemically in laboratory kinetic tests is typically observed to be many times faster than rates inferred from field observations of drainage from the toe of waste rock piles (Malmström, 2000). This discrepancy is in part due to the formation of distinct flow channels within the waste rock pile that results in the incomplete flushing of weathering products from the waste rock dump (Nichol *et al.*, 2005). An overview of the source term approach and results is presented in the following sections while a more detailed discussion of the source term model as well as the 2020 field kinetic (field barrel) test program is given in the Appendix A.

2.2.1.1 Waste Rock

The prediction of both the major and trace elemental geochemistry of waters in contact with the WRSAs was conducted by upscaling of loading rates derived from kinetic tests (humidity cells). A flow chart of the work stages involved in this exercise is given in Figure

2.2-1. Assumptions around the temporary (90 day) ore stockpile were not changed since the previous source term model iteration and as a result, this facility was not re-modelled within the scope of this work. Refer to Lorax (2020) for an overview of the operational source term predictions relating to stockpiled ore.

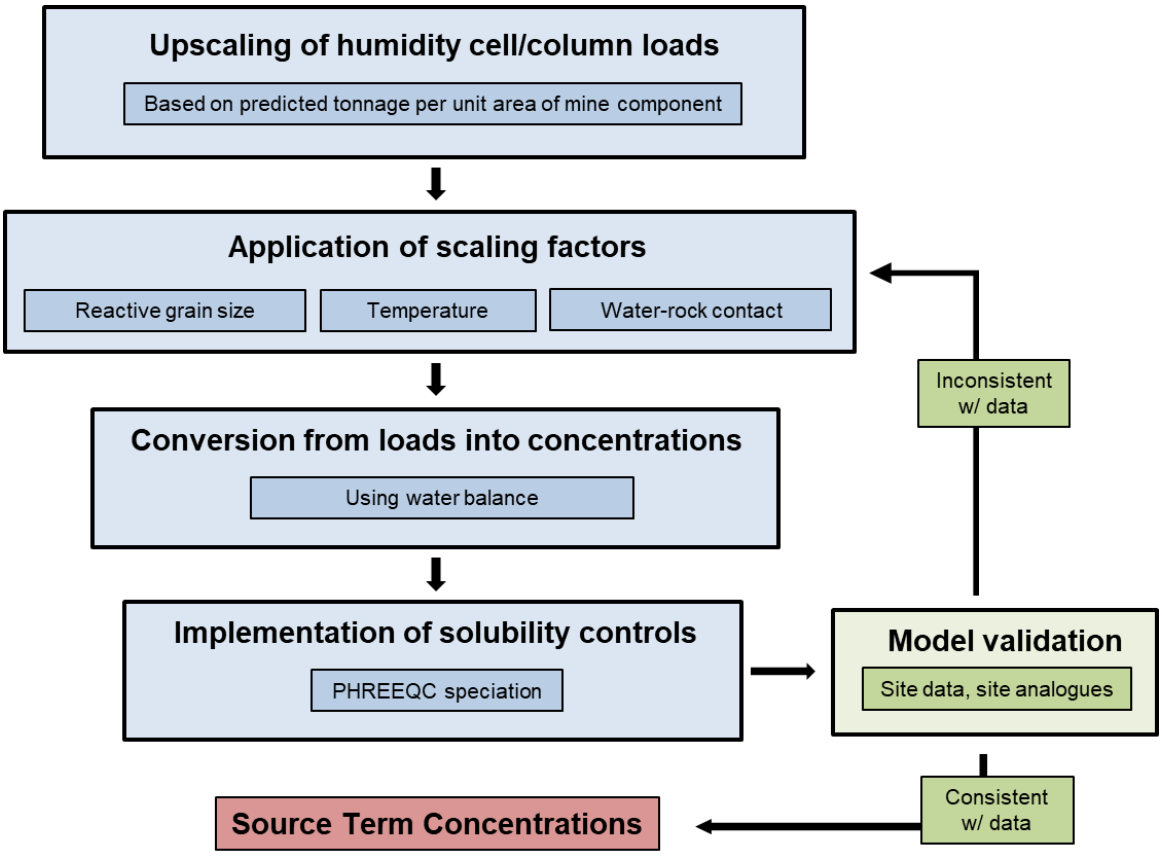


Figure 2.2-1: Work stages involved in the scaling of geochemical source terms

As a first step in the development of geochemical source terms, input solution chemistry needed to be defined. For this purpose, Eagle humidity cell leaching rates were derived from the data presented in SRK (2014) and were grouped to represent the various waste rock types expected to be disturbed during mining. Humidity cells used to produce these contact water model input solutions are listed in Table 2.2-1.

Table 2.2-1:
Summary of kinetic test cells used for the individual rock units modelled

Lithology/Material	Eagle Pit HC
Oxide GND	HC 5, HC 10
Fresh GND	HC 3, HC 9
Altered GND	HC 4, HC 6, HC 11
Oxide MSED	HC 8
Fresh MSED	HC 1, HC 2, HC 8, HC 13
Overburden (OB)	HC 10

Two different scenarios are presented for the WRSA and pit wall source terms; an operational and a post-closure scenario. More specifically, for the operational scenario, the 75th percentile of all available humidity cell leachates for a given species were used as the model input solution. In contrast, to model longer term ("stable") geochemical loading rates, the 75th percentile loading rates of the last three humidity cell cycles (weeks) with metal analysis were utilized to produce a solution input, assuming geochemical reaction rates reach a steady-steady state after soluble minerals have been flushed. Note that for the derivation of the model pH, the respective median value was used for operational and post-closure scenarios. Table 2.2-2 provides an overview of the input solution chemistries used for all Eagle Gold waste rock facilities.

Once the input solution chemistry is defined, the geochemical loads are upscaled to match the tonnage of the mine facility in question. Current estimates of mine tonnage stored in WRSAs, ore stockpile and HLF were provided by VGC. The waste production schedule and pit wall exposures used for this assessment are given in Table 2.2-3 and Table 2.2-4.

While the rock mass of the described mine components can be easily translated from the waste production schedule, the derivation of reactive rock mass within the exposed pit walls is less straightforward. The final pit walls are expected to be fractured as a result of blasting operations. Controlled blasting of rock does not completely eliminate fracturing of underlying rock but results in a blast-damaged transition zone extending into the pit walls. This blast-damaged transition zone comprises a blast-fractured zone and a blast-influenced zone that would be subject to oxidative weathering. The penetration depth of the blast-damaged zones into the wall rock is dependent on a variety of parameters. Hustrulid (1999) estimated ranges of 0.85 to 1.05 m and 2.65 to 3.15 m for the blast-fractured and the blast-influenced zones, respectively. For modelling purposes thicknesses of 1.0 and 3.0 m were chosen for the blast-fractured and the blast-influenced zones, respectively. Using a bulk density of 2.5 t/m^3 along with the annual surface areas broken out into waste rock type, these thicknesses were subsequently used to calculate a rock mass that will come in contact with the pit walls.

Table 2.2-2:
Composite input loads (mg/kg/wk) used for the different model scenarios in Eagle Gold waste rock facilities

Scenario	Operational (75th percentile)						Post-Closure (75th percentile)					
Lithology	OGD	AGD	FGD	OMS	FMS	OB	OGD	FGD	AGD	OMS	FMS	OB
pH	7.6	7.7	7.6	7.3	7.4	7.3	7.5	7.6	7.4	7.1	7.3	7.1
Alkalinity	15	16	14	5.1	15	5.1	13	15	12	4.7	9.2	4.7
Sulfate	12	9.1	12	1.7	24	1.7	8.2	6.7	6.6	1.5	15	1.5
Chloride	0.19	0.26	0.18	0.12	0.26	0.12	0.18	0.16	0.12	0.12	0.16	0.12
Fluoride	0.081	0.10	0.15	0.030	0.088	0.030	0.028	0.027	0.11	0.019	0.052	0.019
Al	0.025	0.032	0.049	0.021	0.033	0.021	0.019	0.026	0.038	0.016	0.025	0.016
As	0.0040	0.031	0.0012	0.016	0.012	0.016	0.0028	0.020	0.00048	0.014	0.0091	0.014
Ba	0.0049	0.0028	0.0036	0.00022	0.0028	0.00022	0.0044	0.0019	0.0022	0.00029	0.0015	0.00029
Ca	7.7	7.7	7.9	1.6	12	1.6	5.6	5.9	5.8	1.4	6.9	1.4
Cd	0.0000041	0.0000084	0.0000049	0.0000012	0.0000046	0.0000012	0.0000025	0.0000043	0.0000025	0.0000012	0.0000028	0.0000012
Co	0.000026	0.000040	0.000025	0.000018	0.000065	0.000018	0.000014	0.000024	0.000014	0.000014	0.000039	0.000014
Cr	0.000024	0.000024	0.000059	0.000042	0.000029	0.000042	0.000060	0.000035	0.000057	0.000076	0.000037	0.000076
Cu	0.00036	0.00051	0.00040	0.00023	0.00042	0.00023	0.00032	0.00023	0.00032	0.00021	0.00023	0.00021
Fe	0.0045	0.0033	0.0022	0.0038	0.0035	0.0038	0.0026	0.0036	0.0017	0.0031	0.0029	0.0031
Hg	0.0000024	0.0000024	0.0000025	0.0000024	0.0000024	0.0000024	0.0000024	0.0000024	0.0000024	0.0000024	0.0000024	0.0000024
K	2.2	1.2	1.2	0.41	2.1	0.41	1.6	0.48	0.54	0.35	0.96	0.35
Mg	0.90	1.1	0.86	0.099	1.1	0.099	0.74	1.0	0.61	0.082	0.66	0.082
Mn	0.0048	0.0038	0.0040	0.00097	0.0094	0.00097	0.0030	0.0019	0.0032	0.00053	0.0065	0.00053
Mo	0.0060	0.0037	0.0013	0.00048	0.00034	0.00048	0.0024	0.0014	0.00043	0.00029	0.00013	0.00029
Na	0.71	0.53	1.6	0.18	0.34	0.18	0.14	0.10	0.16	0.081	0.10	0.081
Ni	0.00013	0.00015	0.00014	0.00013	0.00030	0.00013	0.000088	0.000074	0.00010	0.00018	0.00016	0.00018
P	0.00062	0.0026	0.0010	0.00048	0.00049	0.00048	0.00048	0.0015	0.00048	0.00048	0.00048	0.00048
Pb	0.000028	0.000068	0.000027	0.000019	0.000036	0.000019	0.000015	0.000042	0.000022	0.0000047	0.00015	0.0000047
Sb	0.000099	0.021	0.017	0.00037	0.0027	0.00037	0.000073	0.012	0.0089	0.00023	0.0010	0.00023
Se	0.00028	0.0020	0.00056	0.00012	0.00077	0.00012	0.00018	0.0011	0.00035	0.000093	0.00028	0.000093
Si	0.68	0.70	0.65	0.45	0.97	0.45	0.56	0.38	0.53	0.40	0.63	0.40
Sn	0.000012	0.000015	0.000019	0.000015	0.00010	0.000015	0.0000089	0.000071	0.0000097	0.0000024	0.000097	0.0000024
U	0.0017	0.012	0.023	0.00091	0.00053	0.00091	0.0013	0.0051	0.0096	0.00067	0.00034	0.00067
Zn	0.00027	0.00044	0.00036	0.00019	0.00044	0.00019	0.00016	0.00032	0.00030	0.00013	0.00035	0.00013

Notes: All chemical species given in mg/kg/wk;
OGD = Oxidized granodiorite; FGD = fresh granodiorite; AGD = altered granodiorite; OMS = oxidized metasediment; FMS= fresh metasediment; OB = overburden

Table 2.2-3:
Waste rock production schedule (in Mt) by mine-year for the modelled Eagle Gold mine components

WRSA	Waste Type	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	Total
Platinum Gulch	Oxide GND	0.042	1.3	0.67								2.0
	Altered GND	0.10	0.014	0.031								0.15
	Fresh GND	0.13	0.13	0.13								0.39
	Oxide MSED	1.5	7.5	2.2								11
	Fresh MSED	0.40	1.3	3.3								5.0
	Overburden	0.12	2.4	1.1								3.6
Eagle Pup	Oxide GND			0.79	2.3	4.6	1.3	0.13	0.54	2.9	0.3	13
	Altered GND			0.036	0.011	0.15	0.41	0.14	0.23	0.36	0.23	1.6
	Fresh GND			0.16	0.49	2.4	3	2.2	2.6	4	1.4	16
	Oxide MSED			2.6	6.1	4.3	3.6	2.8	3.5	3.8	0.58	27
	Fresh MSED			3.9	6.9	7.6	2.5	1.7	1.4	1.2	0.38	26
	Overburden			1.3	1.7	0.9	0.46	0.76	1.3	1.2	0.06	7.6

Notes: OGD = Oxidized granodiorite;
FGD = fresh granodiorite;
AGD = altered granodiorite;
OMS = oxidized metasediment;
FMS= fresh metasediment;
OB = overburden.

Table 2.2-4:
Waste rock exposures (in m^2) by mine year for the Eagle Gold open pit

Open Pit	Waste Type	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029
Eagle Pit: Pit Wall Exposures (m^2)	Oxide GND	131,593	146,210	183,533	149,955	128,841	108,666	101,567	95,936	72,934	70,832
	Altered GND	6,607	14,700	113,841	32,717	35,656	33,036	32,362	41,088	42,160	43,598
	Fresh GND	32,772	73,835	116,830	205,015	268,895	304,662	368,753	459,262	551,413	609,492
	Oxide MSED	148,178	144,455	149,383	134,749	119,837	157,153	177,772	177,846	166,605	165,705
	Fresh MSED	33,246	113,841	197,400	236,989	258,773	271,685	282,577	294,745	304,504	302,836
	Overburden	68,181	75,540	65,686	62,834	61,856	73,397	86,915	72,787	76,908	76,913

Notes: OGD = Oxidized granodiorite;
FGD = fresh granodiorite;
AGD = altered granodiorite;
OMS = oxidized metasediment;
FMS= fresh metasediment;
OB = overburden.

Owing to several lab-to-field comparison studies it has been recognized that drainage chemistry predictions based on direct mass upscaling often strongly overestimate the quantities of dissolved solids that are in fact leached from the mine rock (Malmström et al., 2000; Sapsford *et al*., 2009; Plante *et al.,* 2014; Kirchner & Mattson, 2015). This is due to a variety of differences between lab and field conditions such as climate, water/rock ratios, hydrogeological pathways, grain size distribution and secondary mineral controls, all of which act to reduce geochemical loads per mass contacted in the field. As a result, it is the industry standard to implement scaling factors when upscaling humidity cell leachate results to account for these discrepancies. For the Eagle Gold project source term model, scaling factors were specifically applied to correct for the following parameters:

- Temperature
- Grain size
- Water/rock ratio.

The background theory and rationale leading to the definition of these scaling factors is described in detail in Appendix A.

Water/rock ratios in humidity cell testing are generally high enough to prevent the saturation of leachates with respect to secondary mineral phases. Upscaling of geochemical loads as described above is generally carried out with no consideration given to mineral phases that may limit the dissolved concentrations of relatively insoluble elements such as Fe and Al, particularly at circum-neutral pH. In order to avoid the prediction of unrealistically high concentrations for species that are known to form secondary phases in mine drainage, PHREEQC - a thermodynamic mineral solubility model (Parkhurst and Appelo, 1999) - was employed on the upscaled model output concentrations to account for mineral solubility controls. As part of this modelling step, minerals commonly seen in mine drainage were allowed to precipitate from the predicted drainage solutions. An overview of the modelled phases is given in Table 2.2-5. Phases that were identified to be supersaturated in at least one output solution draining from the individual mine components are indicated by a check mark. Unmarked phases merely served as a theoretical concentration cap but do not affect the corresponding species.

Table 2.2-5:
Mineral phase allowed to precipitate in the Eagle Gold speciation model (PHREEQC)

Mineral	Ideal Formula	Eagle Pup WRSA	Platinum Gulch WRSA	Stewart Gulch WRSA	Pit walls
Barite	$BaSO_4$	✓	✓	✓	✓
Calcite	$CaCO_3$	✓	✓	✓	✓
Dolomite	$(Ca, Mg)(CO_3)_2$			✓	
Ferrihydrite	$Fe(OH)_3(a)$	✓	✓	✓	✓
Gibbsite	$Al(OH)_3$	✓	✓	✓	✓
Gypsum	$CaSO_4*2H_2O$				
Malachite	$CuCO_3$				
Quartz	SiO_2	✓	✓	✓	✓
Rhodochrosite	$MnCO_3$				
Smithsonite	$ZnCO_3$				

Notes: Phases with a check mark did in fact precipitate in the source term model output solutions.

In contrast to solutes that were capped via PHREEQC modelling, the comparison of the model output with the field barrel database revealed that some source term predictions may also be unrealistically low. This is interpreted to be an artifact of uncertainties relating to the scaling exercise and/or flow predictions. To maintain conservatism, a concentration minimum was implemented for each based on long-term field barrel data preceding the re-construction of the field barrel experiments in 2020 (Appendix A). The resulting predicted minimum concentrations are summarized in Table 2.2-6. Note that these values were imposed equally for every model year and into post-closure.

Another adjustment made to the upscaled loads is the derivation of selenium concentrations. Kinetic test data suggest that Se is strongly correlated with dissolved sulphate and is interpreted to be mineralogically associated with sulphur in both sulphate and sulphide minerals. For predictions made based on humidity cell upscaling, Se concentrations were modelled as a function of the sulphate concentration using Se/SO_4 ratios observed in the individual field barrels and proportioned according to rock type expected in a given mine year.

Table 2.2-6:
Minimum source term concentrations imposed based on field barrel database

	Eagle Pup WRSA	Platinum Gulch WRSA	Eagle Pit
SO_4	163	57	239
Cl	0.92	0.52	0.94
F	0.72	0.52	0.77
Ag	0.000011	0.000010	0.000010
Al	0.0032	0.0033	0.0028
As	0.071	0.16	0.067
B	0.015	0.010	0.010
Ba	0.018	0.0099	0.022
Be	0.00010	0.00010	0.00010
Ca	66	37	88
Cd	0.000062	0.000018	0.000062
Co	0.00040	0.00012	0.00027
Cr	0.00019	0.00024	0.00015
Cu	0.0049	0.0036	0.0034
Fe	0.010	0.010	0.010
K	4.0	3.0	4.0
Li	0.013	0.0072	0.016
Mg	12	6.3	17
Mn	0.013	0.00070	0.0021
Mo	0.047	0.021	0.017
Na	18	2.8	4.9
Ni	0.0028	0.00094	0.0026
P	0.30	0.30	0.30
Pb	0.00031	0.000062	0.00019
Sb	0.021	0.015	0.017
Se	0.0058	0.0023	0.0019
Si	3.8	3.8	3.3
Sn	0.00010	0.00010	0.00010
Sr	1.1	0.38	2.1
Tl	0.000038	0.000014	0.000086
U	0.045	0.014	0.076
V	0.0010	0.0010	0.0010
Zn	0.0073	0.0025	0.0082

2.2.1.2 Nitrogen Source Term Derivation

Nitrogen based blasting reagents have been identified by Pommen (1983) as a source of nitrogen compounds from surface mining operations. The nitrogen compounds ammonia (NH_3) and nitrate (NO_3) are constituents of the explosives, while nitrite (NO_2) is typically an intermediate oxidation product of ammonia. The release of nitrogen compounds from blasting reagents can occur within the pit during mining operations and from residual

reagents stored within blasted rock. The release of nitrogen from explosives loaded in boreholes and from explosive residue on blasted rock surfaces occurs by dissolution of nitrogen compounds into water and subsequent aqueous transport to the downstream receiving environment.

A detailed discussion of the Eagle Gold nitrogen-specific source term assumptions and results was presented in Lorax (2014a). For this iteration, no changes to this approach were made and the nitrogen source terms are unchanged; the reader is referred to Lorax (2014a) for an overview of these results.

2.2.1.3 Heap Leach Facility

Prediction of the HLF drainage chemistry during operations and in post-closure (draindown phase and in the long-term) relied heavily on metallurgical column experiments as well as existing full-scale site-specific and site analogue data from the Brewery Creek Mine. It is anticipated that the operational and early post-closure HLF drainage chemistry will be governed by the effects of residual cyanide and its degradation products.

A barren solution source term was generated in support of the water quality model and treatment considerations during operations. Early-stage, full-scale barren solution data for the operating Eagle Gold mine was provided by VGC (Wilbur, 2020) and was reviewed by Lorax. Barren solution data from February 07, 2020 was used as the basis for the calculation of the geochemical source term however, due to these data representing an early-stage barren solution chemistry that will likely evolve over time as this water is being re-circulated, the following adjustments were made:

- A re-circulation factor was incorporated to account for the accumulation and attenuation of geochemical loads as the barren solution is recycled. This factor was derived based on observations from the metallurgical column testing over time. It was calculated as follows:

$$\text{Recirculation Factor} = \frac{\text{Median column concentration (cycles 2–4)}}{\text{Median column concentration (last 3 cycles)}}$$

- Several species that are required for the site-wide water quality model were not determined as part of the operational barren solution analysis. Predictions for these species were quantified either based on site analogue data (Brewery Creek), from the leach phase of the Eagle Gold metallurgical columns or based on expected operational concentrations provided by VGC.

Two periods were modelled for the post-closure HLF drainage chemistry, namely an early draindown and a long-term period. For each of these temporal predictions, a base and an upper case were modelled, such that a total of four source terms were generated. The HLF

source term model relied predominantly on data from metallurgical columns as well as Brewery Creek water quality monitoring (Viceroy Minerals, 2003; Alexco, 2012; SRK, 2014, Harrington, pers. comm., 2014). Specifically, for most species back-calculated scaling factors derived from the Brewery Creek HLF water quality monitoring with Brewery Creek metallurgical columns were applied to the metallurgical column data (post Au-leach and detox phase) available for Eagle Pit ore.

For the two temporal scenarios, base case scaling factors were calculated using Brewery Creek data as follows:

- Early draindown: $\text{Scaling Factor} = \frac{\text{Median HLF concentration (draindown)}}{\text{Median column concentration}}$
- Long-term: $\text{Scaling Factor} = \frac{\text{Median HLF concentration (long-term)}}{\text{Median column concentration}}$

For the upper case, the same general approach was employed, however instead of the median HLF monitoring data, the maximum observed concentrations were considered. The Brewery Creek HLF drainage databases used for this exercise include the following:

- Early draindown: Monitoring data from station BC-28a in in year 2002 (draindown)
- Long-Term: Monitoring data from station BC-28a in in years 2006-2012.

Note that no geochemical data was available for a number of solutes in the Brewery Creek metallurgical column dataset. Therefore, a subset of element-specific scaling factors were adopted from solutes where data was available based on the type of solute (major ions, minor/trace element, oxyanions). These scaling factors were then multiplied with the median concentrations produced by the Eagle Pit metallurgical columns after detoxification.

For CN and other N species (NH_3, NO_2, NO_3), scaling factors were not extrapolated, but rather median and maximum concentrations of these species from the Brewery Creek HLF monitoring database were used directly for the base and upper cases, respectively.

Lastly, in order to not produce unrealistically high source term predictions through uncertainties in scaling of metallurgical columns, concentrations caps were imposed. To maintain conservatism, these caps were calculated as 3 x the maximum water quality monitoring result from the Brewery Creek site (BC-28a) for a given species.

2.2.1.4 Results

One of the key underlying assumptions with respect to WRSA and pit wall drainage chemistry is that PAG material is sufficiently sparse, evenly distributed and/or adequately managed to prevent the onset of acidic conditions. Therefore, all geochemical source terms

generated as part of this document are assumed to remain circum-neutral in the long-term with pH values expected to fall around 8.0 based on observations from the field barrel program.

Model results are shown as time-series plots for the parameters of concern (As, Sb, Se, and SO_4) in Figure 2.2-2 and Figure 2.2-3. Full source term predictions for waste rock, pit walls and HLF is provided in Appendix A. The relatively large range in the values within a scenario and mine component presented can be explained by the proportion of surfaces rinsed in response to seasonally variable flow rates and the consideration of temperature effects. Where seasonal variability is minor (*e.g.,* As in Eagle open pit), predictions are dominated by calibration with field barrel results. The last year of the plotted drainage quality predictions represent post-closure conditions and are imported in the water quality model repeatedly on an annual basis.

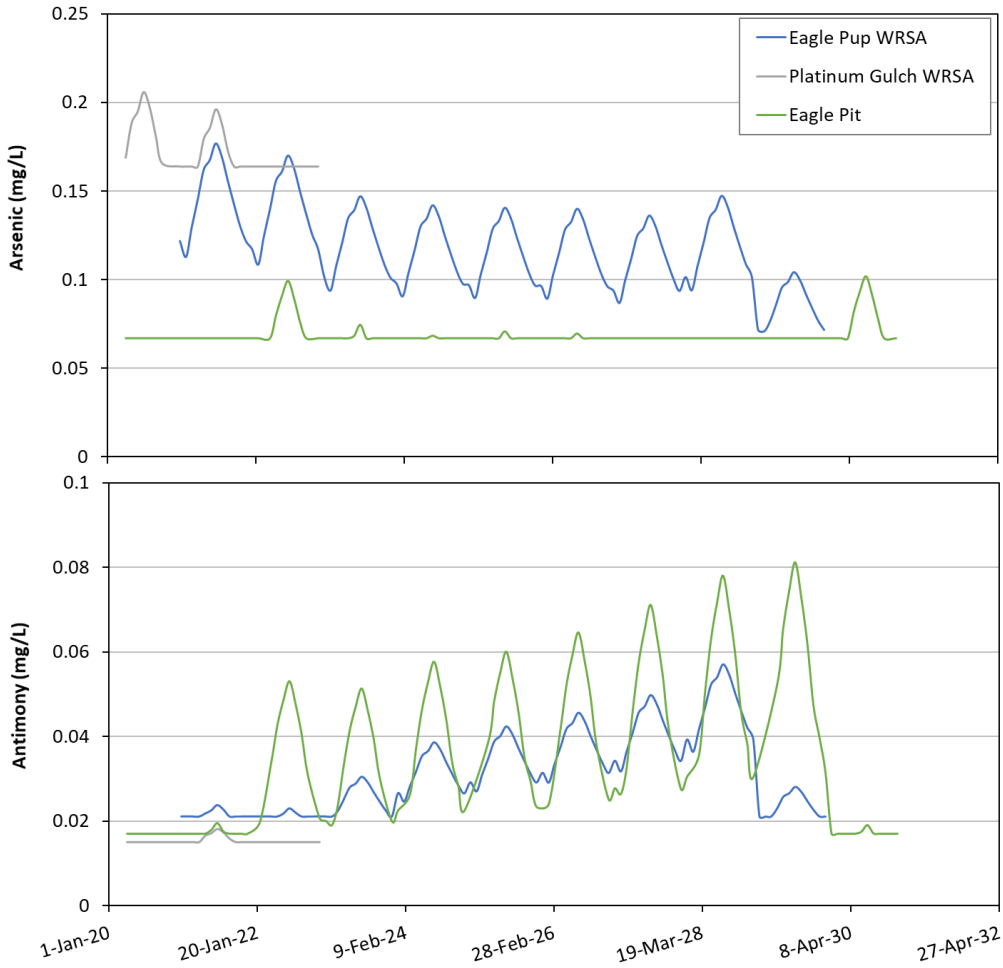


Figure 2.2-2: Source term predictions for the different Eagle Gold mine components for As and Sb

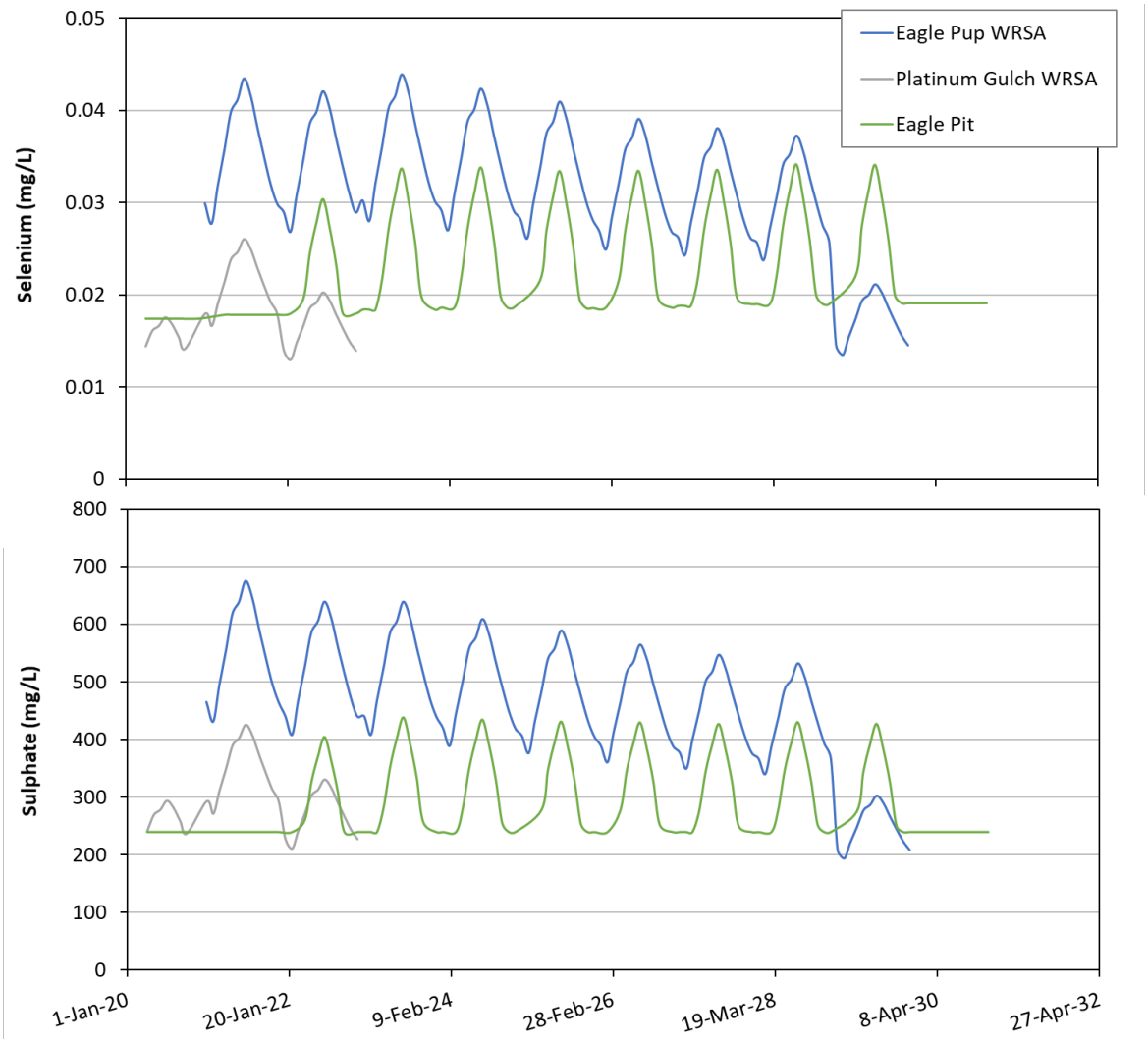


Figure 2.2-3: Source term predictions for the different Eagle Gold mine components for Se and sulphate

Source term concentrations predicted for the HLF are summarized in Table 2.2-7.

Table 2.2-7:
Source term concentrations (in mg/L) predicted for Eagle Gold HLF drainage

Parameter	Barren Solution	Post-Closure			
		Base Case		Upper Case	
		Early Draindown	Long-term	Early Draindown	Long-term
pH	11	9.1	8.4	9.4	8.7
SO4	540	1183	1232	1450	2287
Cl	28	41	30	43	37
F	3.9	0.51	0.51	0.51	0.51
NH3 (as N)	18	7.6	0.022	14	0.13
NO3 (as N)	250	317	325	465	402
NO2 (as N)	13	5.8	6.0	7.2	7.4
Cyanate	57	0.75	0.59	1.6	1.1
Total CN	250	0.90	0.84	1.9	1.6
WAD CN	246	0.31	0.088	1.4	0.61
Ag	0.042	0.030	0.00017	0.030	0.00031
Al	0.15	0.14	0.017	1.0	0.36
As	3.4	0.56	0.34	0.77	0.39
Ca	99	183	288	269	355
Cd	1.1	0.025	0.00018	0.025	0.00031
Co	0.90	1.2	0.73	1.2	0.97
Cr	0.0012	0.030	0.0010	0.030	0.0025
Cu	7.5	0.060	0.0021	0.14	0.0042
Fe	4.4	3.0	1.7	4.3	2.2
Hg	0.016	0.0089	0.00017	0.037	0.0021
K	4.5	58	20	71	20
Li	0.010	0.030	0.030	0.030	0.030
Mg	1.0	9.5	57	21	79
Mn	3.6	0.076	0.028	0.47	0.044
Mo	0.24	0.050	0.027	0.070	0.035
Na	820	1347	1689	1347	1689
Ni	9.7	0.13	0.0080	0.16	0.011
P	0.50	1.3	0.90	1.3	0.90
Pb	0.0029	0.081	0.031	0.16	0.055
Sb	0.040	1.0	2.4	1.3	3.2
Se	0.36	0.18	0.16	0.20	0.19
Si	4.9	4.2	3.6	7.2	4.5
Sn	0.0010	0.0030	0.0011	0.030	0.0021
Sr	0.22	0.98	1.3	1.5	1.6
Tl	0.0020	0.0010	0.00031	0.025	0.00050
U	0.00025	0.0030	0.074	0.0030	0.074
V	0.0085	0.030	0.030	0.030	0.030
Zn	51	0.020	0.0080	0.039	0.014

2.2.2 MWTP and PTS Effluent Quality Standards

Effluent quality standards (EQS) were set during the Water Use License process for the MWTP during operations and PTS for the closure phase (Table 2.2-8). The EQS values are specified in QZ14-041-1 (Part F; clause 108). The effluent quality standards for each component are utilized in the model representing treatment flows and chemistry.

During the Water Use License application process, it was agreed upon by all parties that the Project would be required to go through additional evaluation to support establishment of final effluent quality standards for the closure phase. As a conservative approach to closure and post closure water quality modeling, it has been assumed that the higher discharge criteria initially proposed by VGC would represent the effluent quality discharge. It is understood that continued modeling and eventual field trials of passive treatment systems for the Project will be undertaken by VGC to support the planned final reclamation and licencing for the closure plan of the Project.

Table 2.2-8:
MWTP and PTS Effluent Water Quality Used in Model

Parameter	*Effluent Quality Standards (mg/L)*
pH	6.5 to 8
TSS	15
Cl	250
SO_4	1850
Nitrate-N	19.5
Nitrite-N	0.12
NH_3-N	7.5
CN_{WAD}	0.03
Al (diss)	0.4
Sb	0.13
As	0.053
Cd	0.00125
Cu	0.026
Co	0.026
Fe	6.4
Pb	0.05
Hg	0.00008
Mn	7.7
Mo	0.45
Ni	0.5
Se	0.025
Ag	0.01
U	0.09
Zn	0.23

The MWTP is assumed to discharge at or below the effluent quality standard (EQS) that defines dischargeable water in the WUL. The expectation is that actual treatment performance will exceed (be better than) the EQS. Maximum treatment flow rates are assumed to be:

- 2022-2027: 8,500 m^3/day
- 2027-draindown completion: 13,900 m^3/day

Daily discharge rates may be at or below the prescribed maximum rates depending on flow conditions in the receiver (assimilative capacity considerations) or the need to remove water from the system to maintain desired storage in the LDSP and the Event Pond.

2.2.3 Background Water Quality Inputs

Background flows and water quality from runoff (*e.g.*, non-contact water) and background receiving environment water chemistry were fully characterized and included in the model. Water quality data collected from project area streams from 2007 to August 2017, prior to construction, were incorporated into the water quality baseline dataset.

2.2.4 Modeling Approach

Flows from background sources and mine facilities were taken directly from the daily flows generated by the WBM. Watershed model parameters that control runoff and infiltration rates were adjusted depending on catchment type; for flow through waste rock facilities the infiltration rates were adjusted to attenuate the flow within the waste rock pile in a manner consistent with observed waste rock seepage hydrographs from other sites.

Water quality parameters tracked by the model are listed in Table 2.2-9. Each parameter is treated as a conservative tracer which is mixed at model nodes (confluences) by the following equation:

$$C_r = \frac{\sum_i Q_i C_i}{\sum_i Q_i}$$

where C_r is the resultant concentration, $Q_i$are the source flows into the mixing point and $C_i$are the concentrations associated with the source flows. The only exceptions to this flow-weighted instantaneous mixing scheme are for the Lower Dublin South Pond (LDSP) and for the HLF event pond which are represented by constituent transport flow cells in GoldSim.

Table 2.2-9:
Eagle Gold Project Water Quality Model Parameters

	Parameters	
NH_4	Al	Mn
Cl	Sb	Hg
F	As	Mo
NO_3	Ba	Ni
NO_2	B	K
N	Cd	Se
P	Ca	Si
SO_4	Cr	Ag
WADCN	Co	Na
	Cu	Tl
	Fe	U
	Pb	V
	Mg	Zn

As previously indicated, the WQM simulates 50 years of mine life, beginning in operations and ending several years into post-closure. The model time step is daily, with concentrations reported as monthly averages. The three principal mine periods for reporting are:

1. Operations (Corresponds to mine–years 1 to 10) with LDSP treated in the MWTP; in Phase 5 the heap is rinsed during cyanide destruction;
2. Early Closure (Corresponds to mine–years 13 to 33): LDSP is decommissioned and the heap drain-down is controlled with the MTWP operating to treat heap seepage. Eagle Pup WRSA and Platinum Gulch WRSA seepage waters are passively treated (or actively, if required) before discharge to receiving waters;
3. Late Closure (Years 33+): Waste rock, pit overflow contact water and heap seepages are passively treated before discharge to receiving waters.

Source terms were developed for the median and 75th percentile case. To remain conservative, the discussion is based on the results of the 75th percentile source terms coupled with the median WBM flow scenario.

Water quality from mine discharge during operations is driven by the contact water reporting to the Lower Dublin South Pond. Contact water from the Eagle Pup and Platinum Gulch WRSAs, the temporary ore stockpile, and the sump water from the open pit all report to the LDSP at some point during operations. Excess water from the LDSP is treated through the MWTP to meet the effluent quality standards in Table 2.2-8 and discharged to Haggart Creek upstream of W4. Figure 2.2-10 and Figure 2.2-11 are schematic illustrations of the water balance and water quality model for mine year 3 and 10, respectively.

Beginning in years 9 and 33 respectively, the Platinum Gulch and Eagle Pup waste rock seeps are treated by the Platinum Gulch and LDSP passive treatment systems to meet the EQS Table 2.2-8. . During this time period (Phase 6), HLF drain-down water reports to the MWTP and is treated to meet discharge criteria as indicated in Table 2.2-8. Figure 2.2-12 illustrates the water balance conditions for mine year 15.

The late closure period begins with the decommissioning of the MWTP and the full application of passive treatment for all contact mine waters including pit overflow waters (year 33+). At this time, the HLF has little excess water to drain, and post-closure monthly discharge is driven largely by infiltration. After year 33, the HLF seep is treated solely through a PTS to values indicated in Table 2.2-8 (Figure 2.2-13).

The WQM provides monthly predictions of water quality at key locations in Haggart Creek, namely:

- W4 in Haggart Creek just downstream of the chief compliance point (*i.e.*, MWTP discharge);
- W29 in Haggart Creek downstream of all project influences;
- W99 in Haggart Creek downstream of all project influences; and
- W23 in Haggart Creek, immediately downstream of the confluence with Lynx Creek.

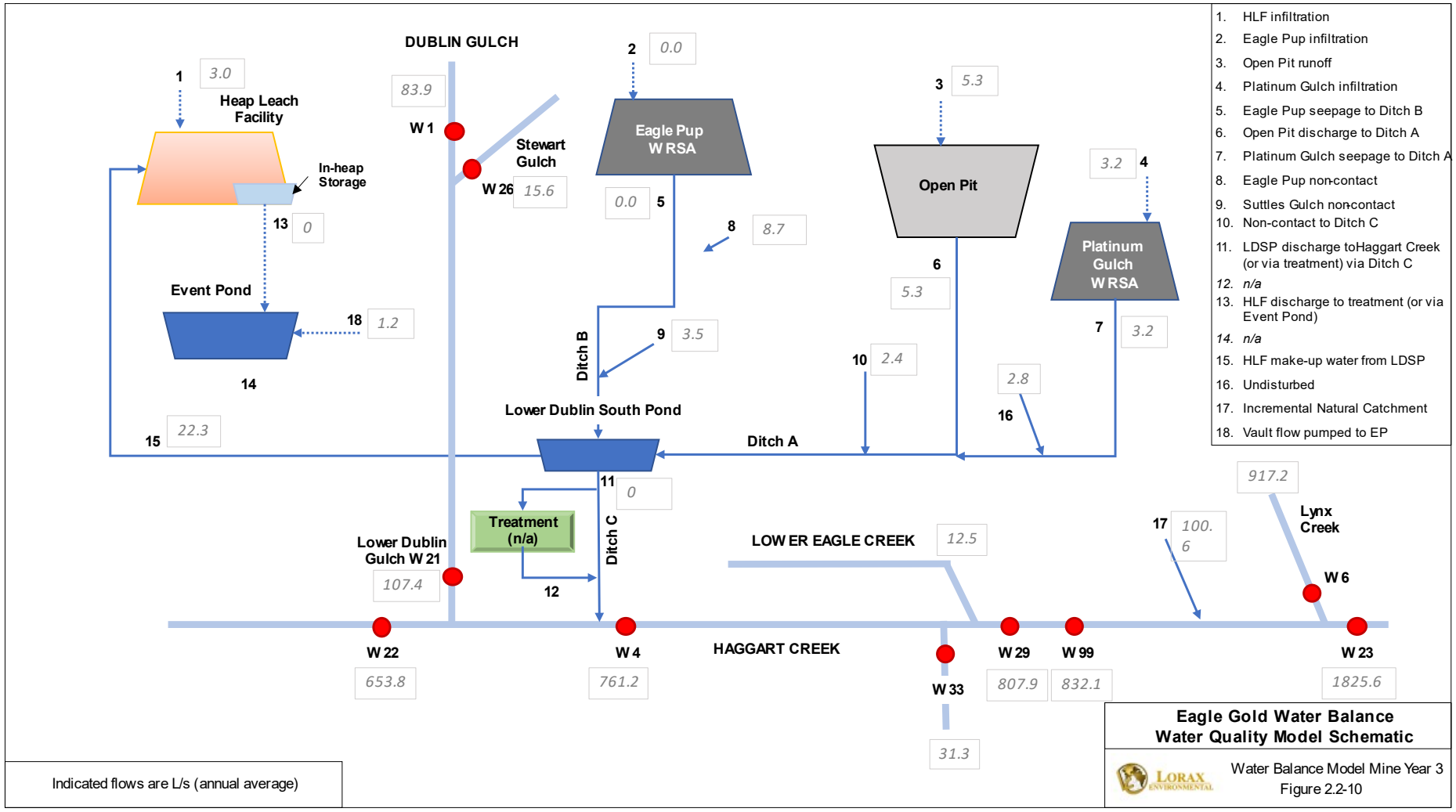


Figure 2.2-4: Eagle Gold Water Balance and Water Quality Model Schematic for Year 3 of Operations.

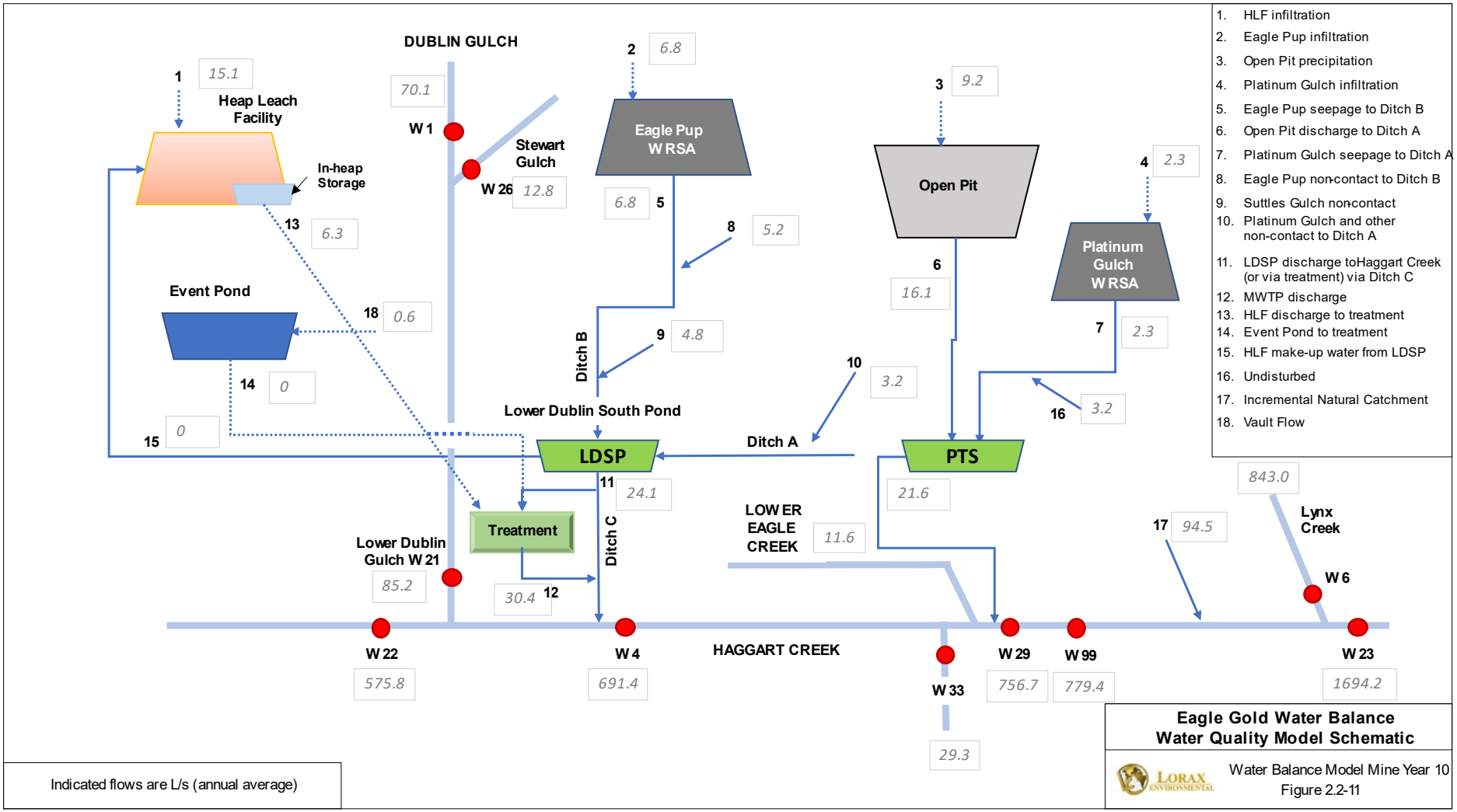


Figure 2.2-5: Eagle Gold Water Balance and Water Quality Model Schematic for Year 10

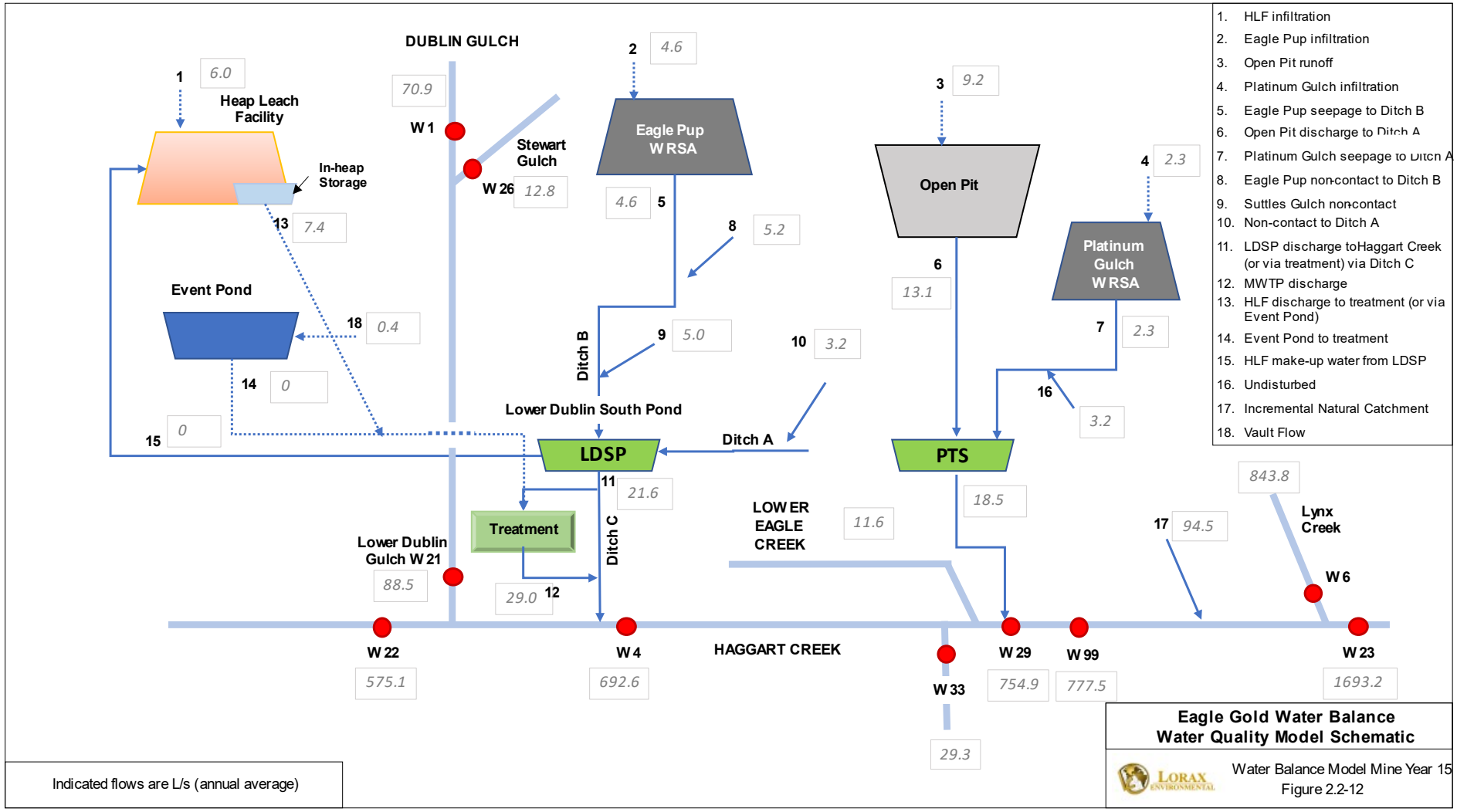


Figure 2.2-6: Eagle Gold Water Balance and Water Quality Model Schematic for Year 15

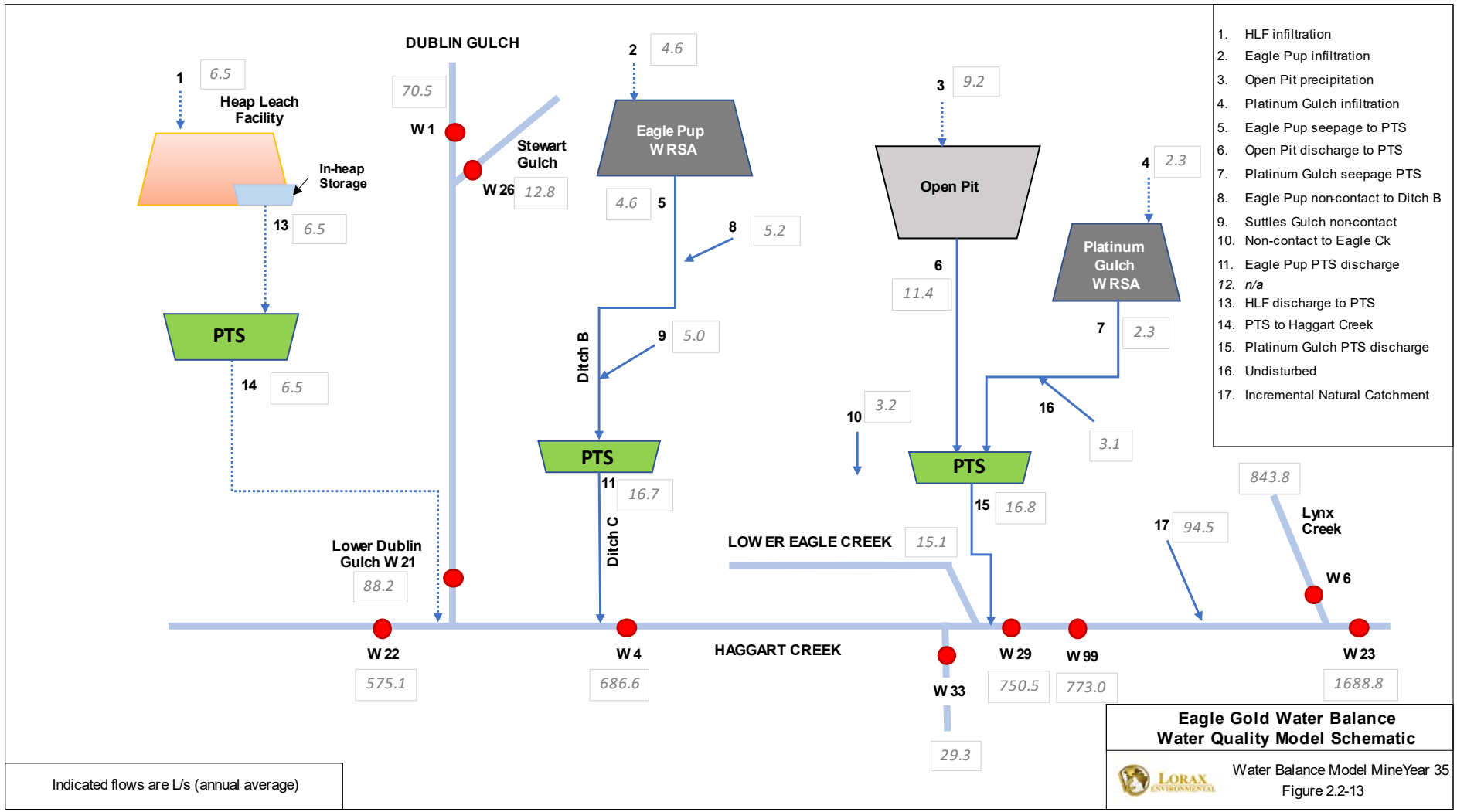


Figure 2.2-7: Eagle Gold Water Balance and Water Quality Model Schematic for Year 35 (end of active closure).

3. Water Quality Predictions

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3. Water Quality Predictions

The results of the updated Water Balance Water Quality Model (WBM v6.1.2) are presented in this section. Results are presented in downstream order for four Haggart Creek EMSAMP monitoring stations W4, W29, W99 and W23 (Figure 3.1-1), for the main parameters of interest, namely As and Se. Time-series of all predicted parameters are provided in Appendix B of this report and all raw output data is provided in Appendix C (electronically).

3.1 Station W4 – Haggart Creek

Station W4 in Haggart Creek (Figure 3.1-1) is located just downstream of the primary effluent discharge location for the Eagle Gold Mine (*i.e.*, Ditch C discharge originating from LDSP Weir or MWTP). Water quality objectives for W4 were developed during the licensing process (Table 3.1-1) and were developed using the effluent quality standards specified in QZ14-041-1.

Table 3.1-1:
Water Quality Objectives for Haggart Creek at W4

Parameter List		WQ Objectives at W4
Dissolved Parameters	SO_4	309
	Cl	150
	Nitrate-N	3
	Nitrite-N	0.02
	NH_3-N	1.13
	CN_{WAD}	0.005
	Al (diss)	0.1
Total Metalloids and Metals	Sb	0.02
	As	0.0085
	Cd	0.000197
	Cu	0.005
	Co	0.004
	Fe	1.0
	Pb	0.0077
	Hg	0.00002
	Mn	1.17
	Mo	0.073
	Ni	0.116
	Se	0.002
	Ag	0.0015
	U	0.015
	Zn	0.038

All values as mg/L

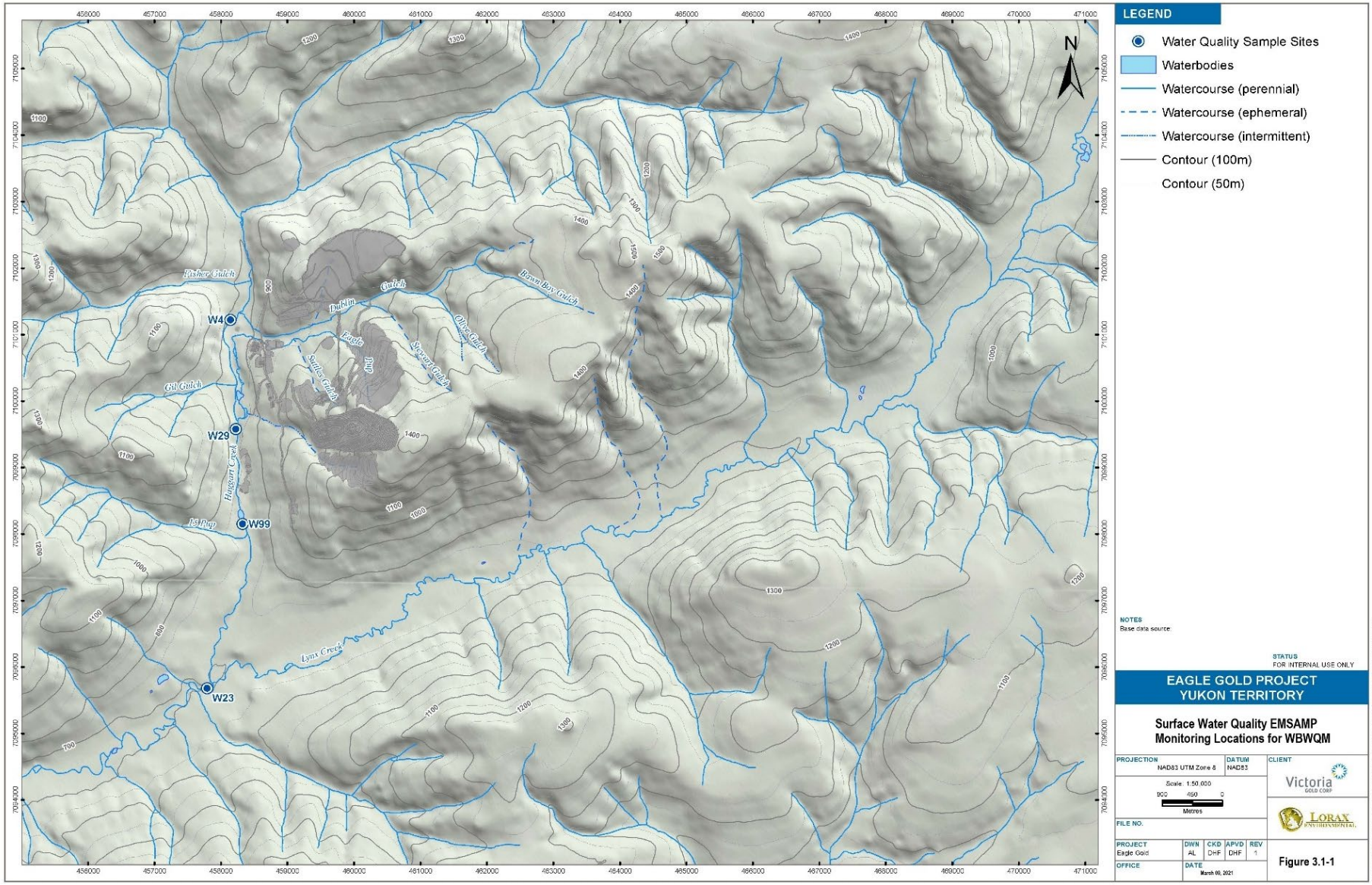

Figure 3.1-1: Key Surface Water Quality EMSAMP Stations for WBWQM

Figure 3.1-2 summarizes the updated water quality model predictions for As at W4 in Haggart Creek. The updated model predicts seasonal monthly mean As concentrations at W4 during operations (Yr-1 to Yr-9) ranging between approximately 0.001 mg/L to 0.0084 mg/L, with a monthly median total As of approximately 0.006 mg/L over that period. Peak monthly mean As concentrations are predicted to occur in the lower flow month of October. During HLF draindown (Yr 13 to Yr 33), monthly mean As concentrations ranging between approximately 0.0058 mg/L to 0.0084 mg/L are predicted (see Appendix C).

During the post closure period (Yr 34 onwards), when all contact water is being treated through a PTS, monthly mean peak As concentrations are predicted to be on the order of 0.0077 mg/L. Peak concentrations are predicted to appear during higher flow periods (e.g., June) with lower monthly mean concentrations predicted for the lower flow months of October to March (Appendix C and Figure 3.1-2).

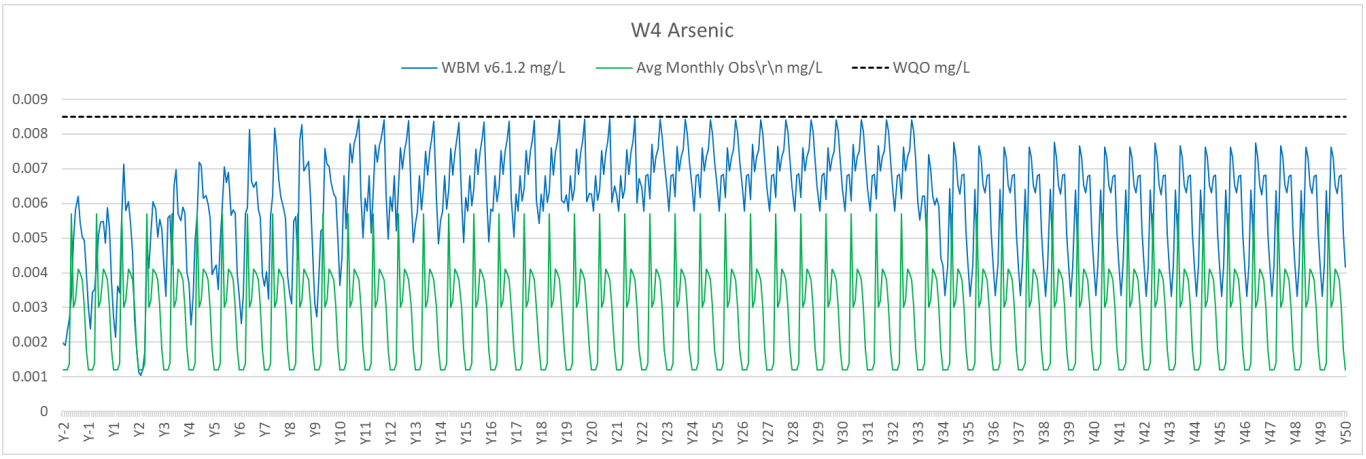

Figure 3.1-2: Predictions for Monthly Mean Total As at W4 in Haggart Creek for WBWQM v6.1.2. Baseline mean monthly concentration denoted by green line; Water Quality Objective denoted by dashed line.

Predicted monthly mean concentrations for total Se at W4 in Haggart Creek are presented in Figure 3.1-3. The primary source of Se in contact water is associated with the HLF. As such, monthly mean total Se concentrations predicted during operations (*e.g.*, Yr-1 to Yr-9) are predicted to be low with total Se concentrations ranging between 0.00015 mg/L to 0.0011 mg/L. Updated predictions indicate that Se concentrations are highest during the late draindown closure period (*e.g.*, Yr-29 to Yr-33). Peak concentrations during this period are predicted to be roughly 0.002 mg/L and occur during the lower flow months of late winter (*e.g.*, January to March; Appendix C). Conversely, during most of the open water period (May to September), monthly mean Se concentrations are predicted to range between less than 0.0005 mg/L to roughly 0.0013 mg/L.

Table 3.1-2 summarizes the maximum WQM v6.1.2 predicted concentrations for all parameters at W4 in Haggart Creek. As illustrated, all parameters are predicted to be below their respective water quality objective. WQM v6.1.2 output for all parameters for station W4 can be found in Appendix B and Appendix C.

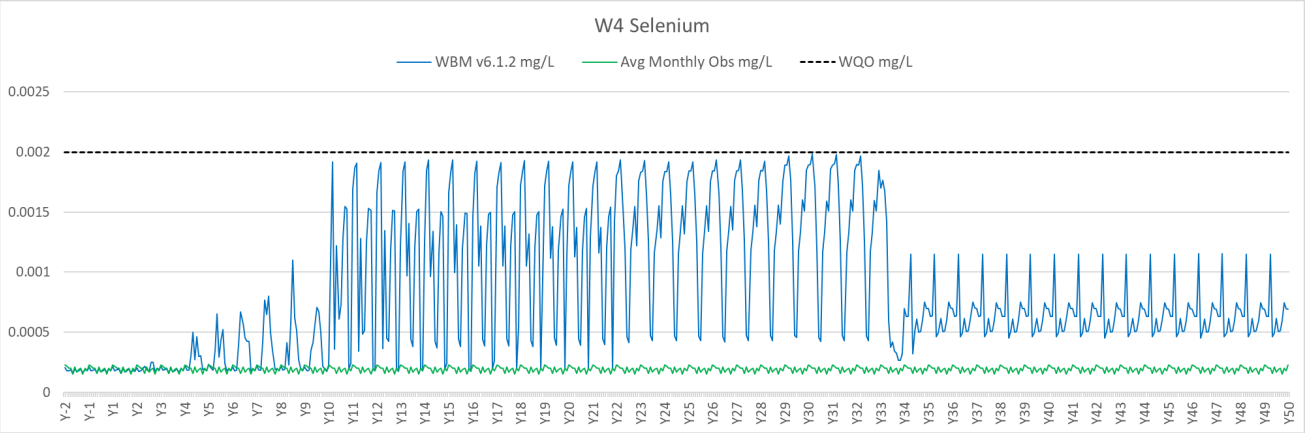

Figure 3.1-3: Predictions for Monthly Mean Total Se at W4 in Haggart Creek for WBM 4.0. Baseline mean monthly concentration denoted by green line; Water Quality Objective denoted by dashed line.

Table 3.1-2:
Maximum WBM v6.1.2 Predicted Concentrations Compared to Water Quality Objectives at W4 for Haggart Creek

Parameter List		Maximum Mean Predicted Concentration at W4	WQ Objectives at W4
Dissolved Parameters	SO_4	158	309
	Cl	2.4	150
	Nitrate-N	1.5	3
	Nitrite-N	0.013	0.02
	NH_3-N	0.42	1.13
	CN_{WAD}	0.0026	0.005
	Al (diss)	0.14	0.1
Total Metalloids and Metals	Sb	0.009	0.02
	As	0.0084	0.0085
	Cd	0.00012	0.000197
	Cu	0.0038	0.005
	Co	0.0021	0.004
	Fe	0.39	1.0
	Pb	0.0027	0.0077
	Hg	0.000015	0.00002
	Mn	0.144	1.17
	Mo	0.006	0.073
	Ni	0.036	0.116
	Se	0.0019	0.002
	Ag	0.0007	0.0015
	U	0.006	0.015
	Zn	0.02	0.038

All values as mg/L

3.2 Station W29 – Haggart Creek

WBWQM v6.1.2 output is graphically presented in Figure 3.2-1 for As at station W29 in Haggart Creek. Peak monthly mean As concentrations at W29 are predicted to be slightly lower as compared to station W4 during the draindown period (*e.g.*, Yr 13 to Yr 33) and generally approximately 0.008 mg/L with few exceptions (Figure 3.2-1). During post closure, As loadings occur to Haggart Creek upstream of W29 from Platinum Gulch PTS, which treats water from waste rock seepage and pit overflow water. Post closure predicted As concentrations are highly flow dependent during this period of passive discharge with values ranging from approximately 0.0035 mg/L in February to monthly mean maximum values of roughly 0.0084 mg/L in June/July (Figure 3.2-1). As expected, higher monthly As concentrations are experienced during the open water period (April to September) when the EP PTS and PG PTS are discharging.

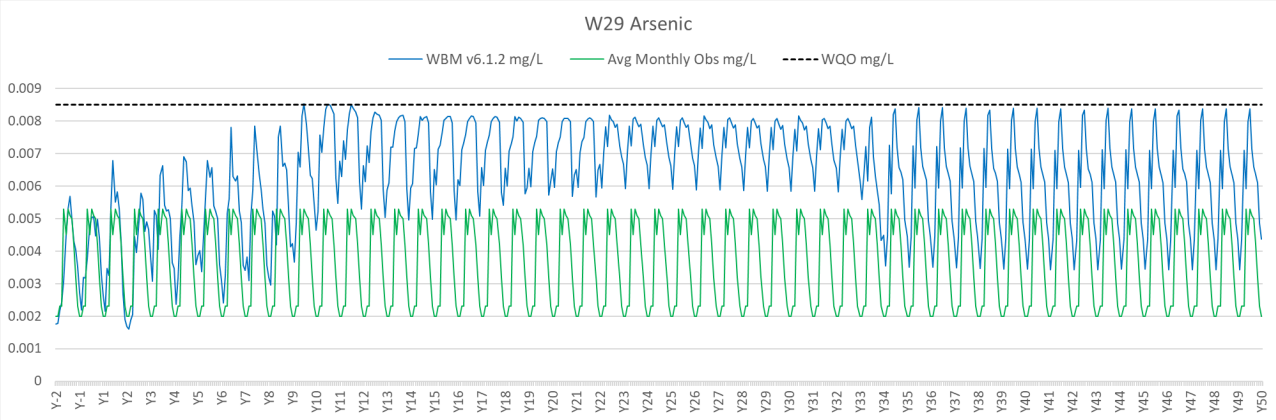

Figure 3.2-1: Predictions for Monthly Mean Total As at W29 in Haggart Creek for WBM v6.1.2. Baseline mean monthly concentration denoted by green line; Water Quality Objective denoted by dashed line.

The modeled peak monthly mean Se concentrations at W29 are predicted to occur during late operations and into the draindown period (*e.g.*, Yr-10 to Yr-33; Figure 3.2-2). Total monthly mean Se concentrations during this period are predicted to range from approximately 0.00015 mg/L, during higher flow months of May to July, to approximately 0.0018 mg/L, during winter low flow months (e.g., February and March). During closure, mean monthly total Se concentrations at W29 are predicted to more narrowly range between approximately 0.0006 mg/L to 0.0013 mg/L. The complete excel output data for all parameters modelled at station W29 is presented in Appendix C.

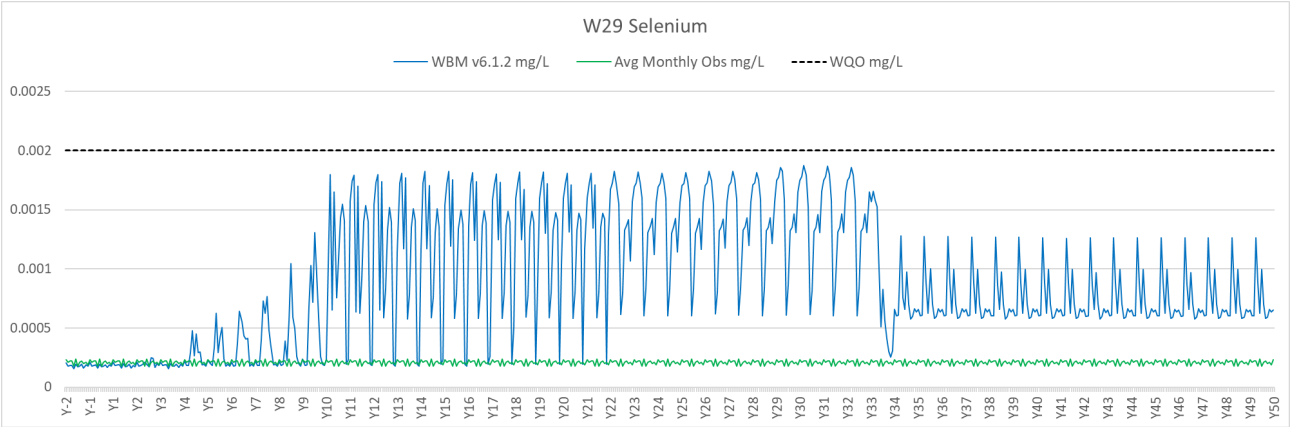

Figure 3.2-2: Predictions for Monthly Mean Total Se at W29 in Haggart Creek for WBM v6.1.2. Baseline mean monthly concentration denoted by green line; Water Quality Objective denoted by dashed line.

3.3 Station W99 –Haggart Creek

WBM v6.1.2 predictions for mean monthly total As and total Se at W99 in Haggart Creek are graphically presented in Figure 3.3-1 and Figure 3.3-2, respectively. Modeled prediction concentrations for both parameters are very similar to those values presented for station W29 although very slightly lower. These minor changes reflect the fact that the additional catchment at W99 is only 1.03 times (3%) greater than at W29. As such, modeled predicted concentrations are not materially different between the two stations.

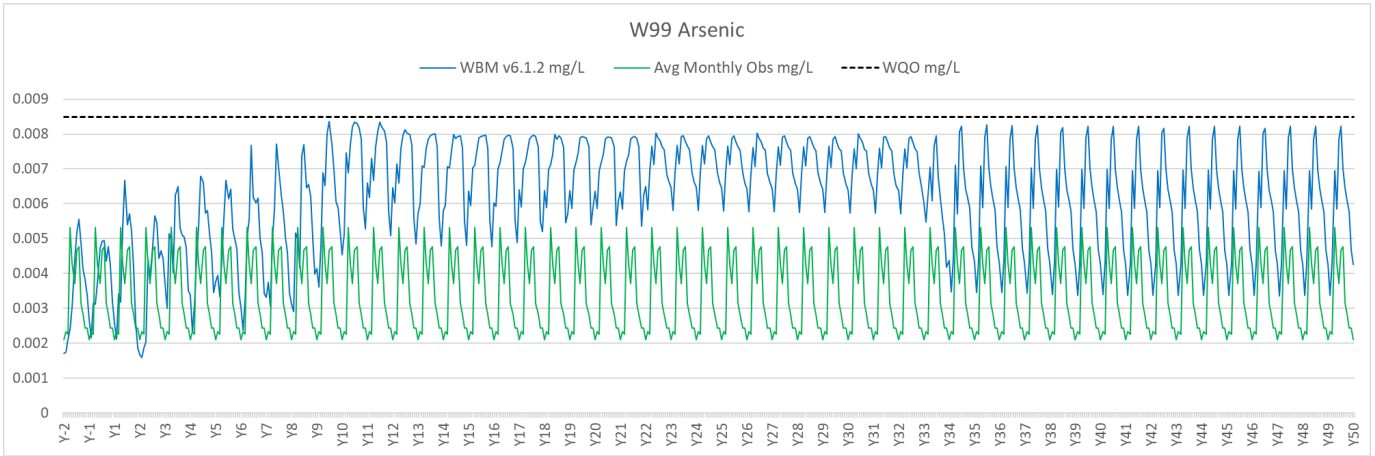

Figure 3.3-1: Predictions for Monthly Mean Total As at W99 in Haggart Creek for WBM v6.1.2. Baseline mean monthly concentration denoted by green line; Water Quality Objective denoted by dashed line.

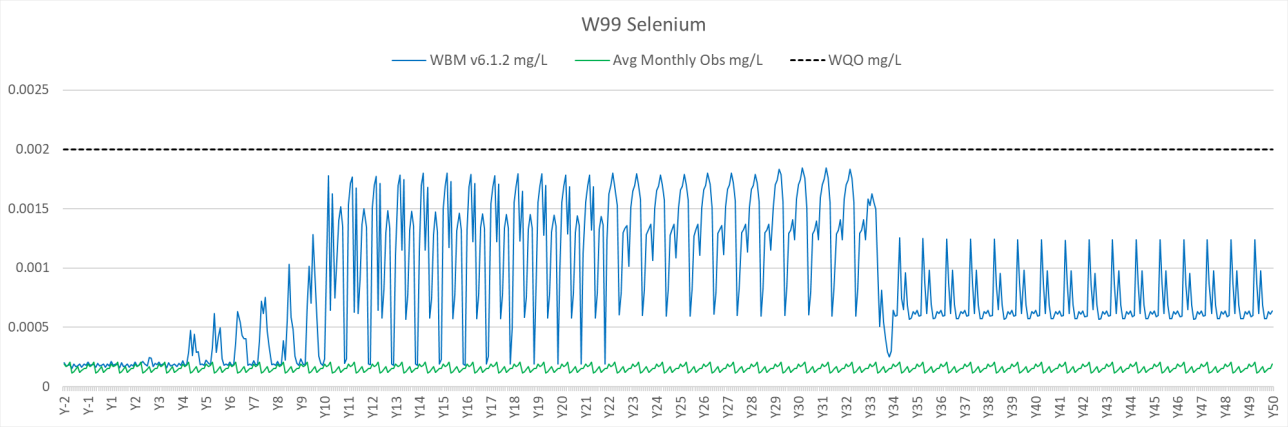

Figure 3.3-2: Predictions for Monthly Mean Total Se at W99 in Haggart Creek for WBM v6.1.2. Baseline mean monthly concentration denoted by green line; Water Quality Objective denoted by dashed line.

3.4 Station W23 – Far-Field Haggart Creek

WBM v6.1.2 predictions for total As at W23 in Haggart Creek are graphically presented in Figure 3.4-1. Unlike stations more proximal to the Eagle Mine in Haggart Creek (*e.g.*, W4 and W29), predicted peak As concentrations at W23 are less variable throughout the life of mine period. For example, peak As concentrations during the entire life of mine period are not predicted to exceed 0.0074 mg/L. Most notably, the maximum predicted incremental increase in As concentrations at W23, over baseline values, is roughly 0.0028 mg/L and occurs during March (Yr-9). During the open water period of April to September, predicted incremental increases in As over background range from less than 0.001 mg/L to approximately 0.002 mg/L. Predicted maximum concentrations of As at W23 throughout the mine life are all well below the water quality objective (Figure 3.4-1).

Water quality predictions for total Se at W23 are presented in Figure 3.4-2. Maximum predicted total Se concentrations in WBM v6.1.2 are approximately 0.0013 mg/L and, like upstream locations in Haggart Creek, occur during the late operations and draindown period. Closure (Yr-33+) monthly mean Se concentration predictions are between approximately 0.0005 mg/L and 0.00068 mg/L (Appendix C). All predicted concentrations are well below the water quality objective for Se of 0.002 mg/L.

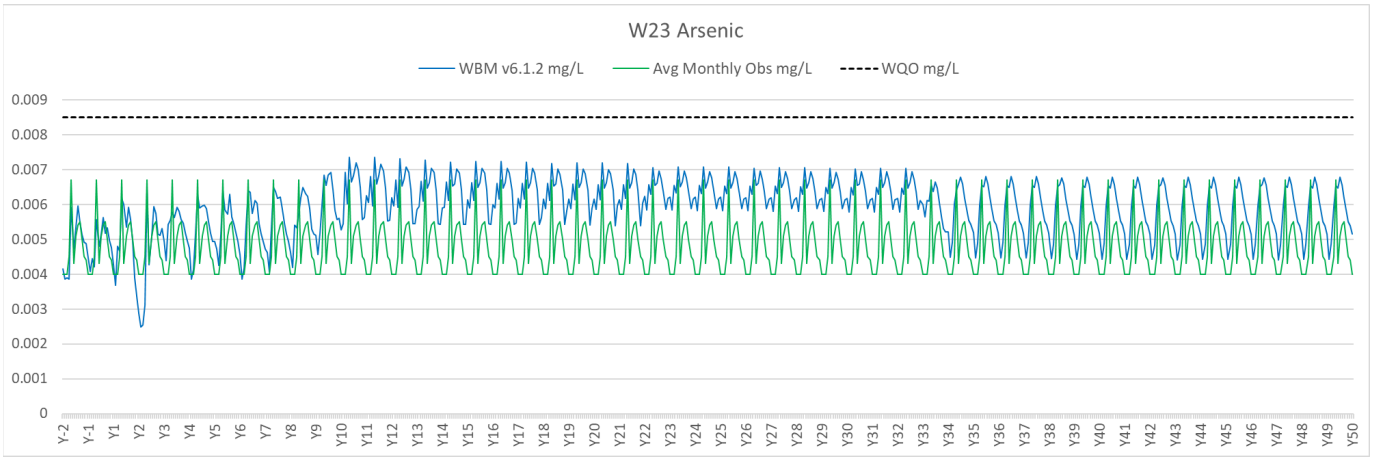

Figure 3.4-1: Predictions for Monthly Mean Total As at W23 in Haggart Creek for WBM v6.1.2. Baseline mean monthly concentration denoted by green line; Water Quality Objective denoted by dashed line.

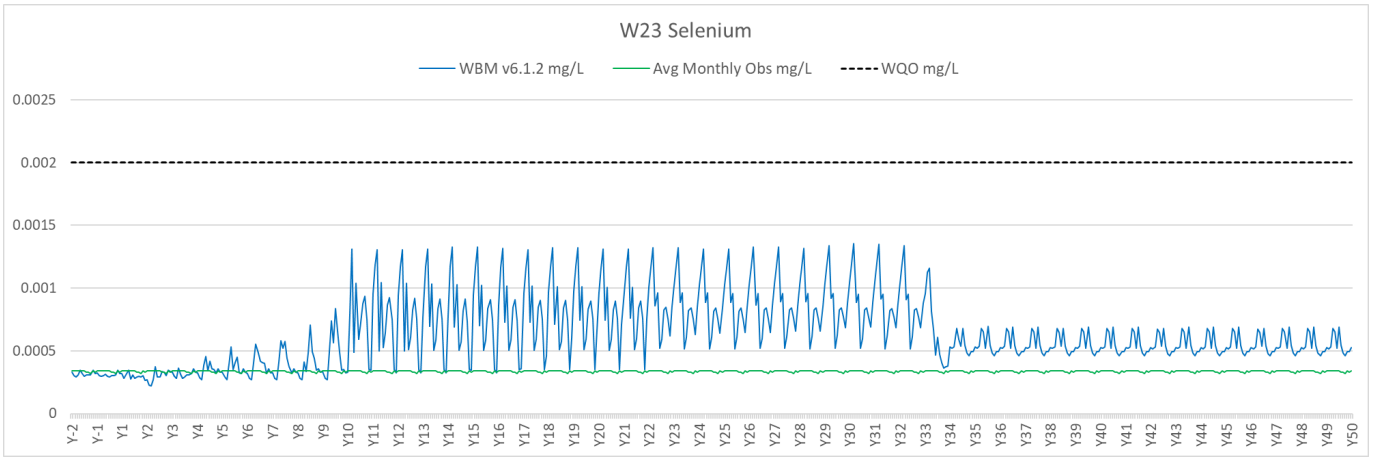

Figure 3.4-2: Predictions for Monthly Mean Total Se at W23 in Haggart Creek for WBM v6.1.2. Baseline mean monthly concentration denoted by green line; Water Quality Objective denoted by dashed line.

4. Water Quantity Predictions

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4. Water Quantity Predictions

4.1 Predicted Streamflow Changes

The results of the WBM v6.1.2 are presented in this section. There have been no substantive changes from the 2014 WBM outputs as a result of the changes in the mine plan since 2014. The predicted changes to the baseline streamflow regime (2010-2017 average) as a result of mine development and operation are presented for the average monthly discharge for four distinct years of the mine life – representative of key changes to the management of site water. These correspond to the WBM/WQM schematics presented in Figure 2.2-10 through Figure 2.2-13.

- Modelled Year 2020 = Year 2 (Phase 1 of the HLF)
    - 2020 climate series used as input, see discussion on wet conditions experienced in 2020 (Section 2.1.1.1)
- Modelled Year 2028 = Year 10 (first year of rinse/gold recovery)
- Modelled Year 2031 = Year 13 (first year of HLF draindown)
- Modelled Year 2051 = Year 33 (end of active closure)

The average monthly baseline and mine affected streamflows are presented for two key receiving environment nodes W4 (Haggart Creek downstream of Dublin Gulch) and W29 (Haggart Creek downstream of Platinum Gulch) in tabular (Table 4.1-1) and figure formats (Figure 4.1-1 through Figure 4.1-8).

Table 4.1-1:
Predicted percent change in flows at W4 and W29 nodes for Project years.

Mine Phase	Operations (Year 2)		First Year of HLF Rinsing		First Year of HLF Draindown		End of Active Closure	
Month	**W4**	**W29**	**W4**	**W29**	**W4**	**W29**	**W4**	**W29**
Jan	-8%	-16%	6%	0%	7%	1%	6%	0%
Feb	-6%	-12%	6%	2%	7%	3%	6%	2%
Mar	-9%	-13%	7%	5%	7%	4%	5%	2%
Apr	-74%	-76%	4%	1%	3%	0%	1%	0%
May	-34%	-35%	3%	2%	0%	-1%	-1%	-1%
Jun	90%	87%	-11%	-12%	-9%	-10%	-9%	-9%
Jul	153%	143%	2%	2%	2%	2%	2%	2%
Aug	59%	53%	4%	2%	4%	2%	2%	0%
Sep	88%	80%	5%	3%	7%	4%	4%	1%
Oct	210%	179%	41%	33%	42%	33%	37%	30%
Nov	58%	51%	-7%	-9%	-7%	-9%	-10%	-11%
Dec	28%	26%	8%	4%	8%	4%	3%	0%
Average	**46%**	**39%**	**5%**	**3%**	**6%**	**3%**	**4%**	**1%**
May-Sept	**71%**	**66%**	**1%**	**0%**	**1%**	**0%**	**0%**	**-1%**

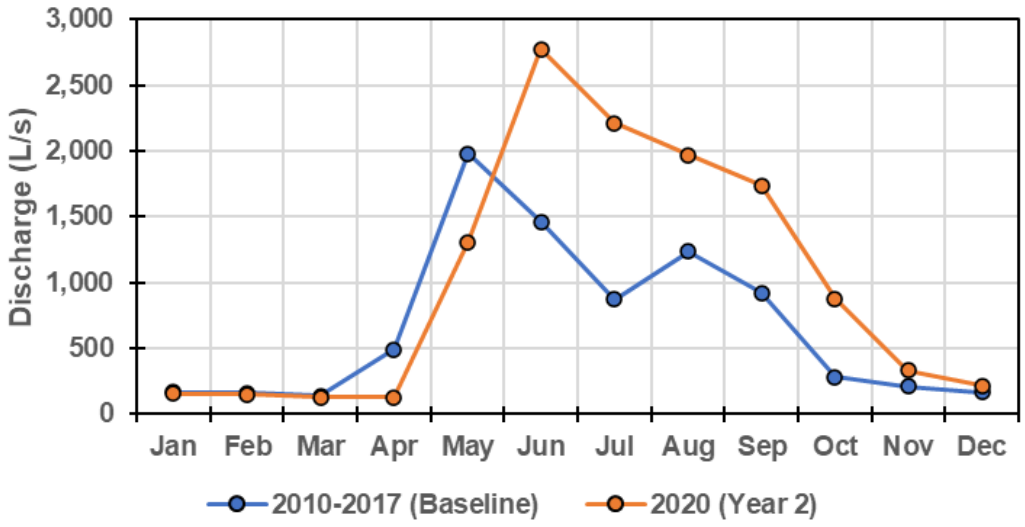

Figure 4.1-1: Average monthly and predicted mine affected streamflows for the W4 node (Year 2; WBM v6.1.2).

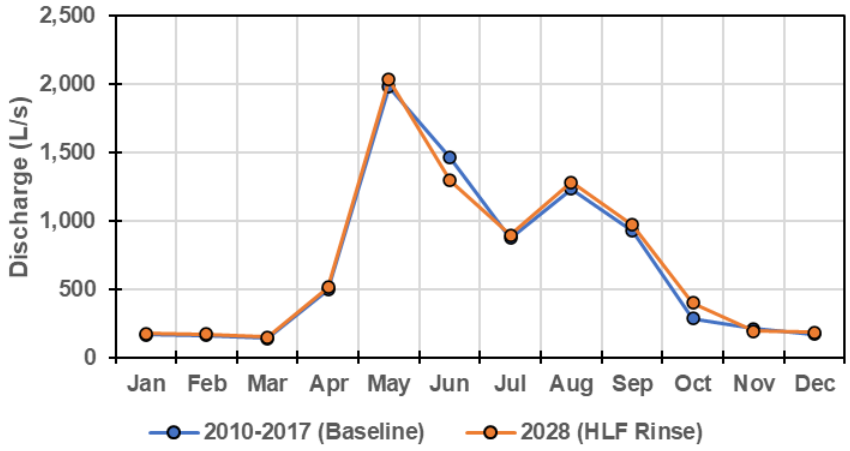

Figure 4.1-2: Average monthly and predicted mine affected streamflows for the W4 node (Year 10; WBM v6.1.2).

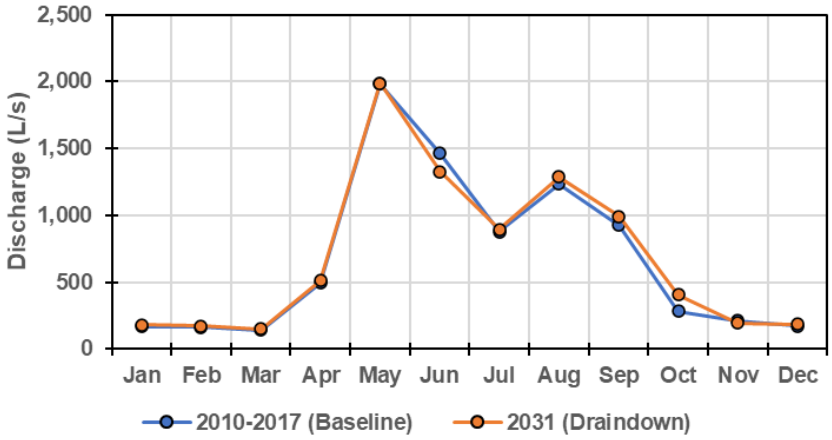

Figure 4.1-3: Average monthly and predicted mine affected streamflows for the W4 node (Year 13; WBM v6.1.2).

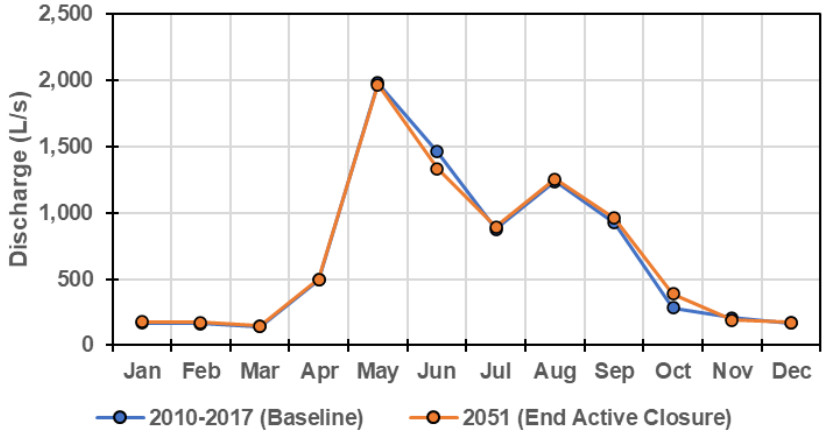

Figure 4.1-4: Average monthly and predicted mine affected streamflows for the W4 node (Year 33; WBM v6.1.2).

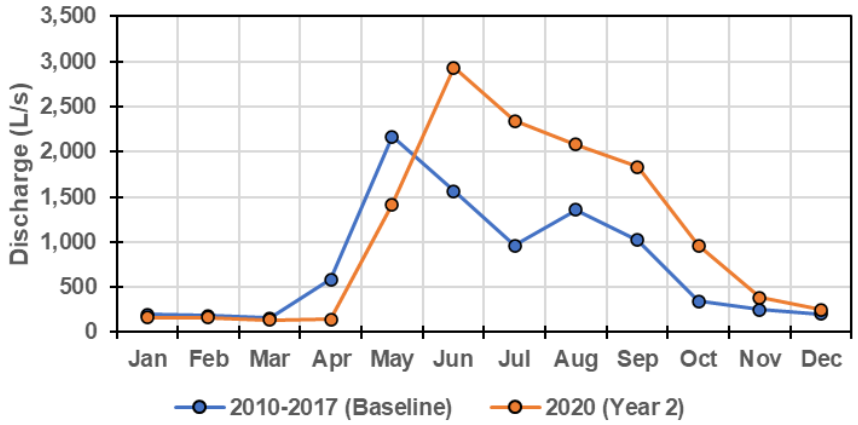

Figure 4.1-5: Average monthly and predicted mine affected streamflows for the W29 node (Year 2; WBM v6.1.2).

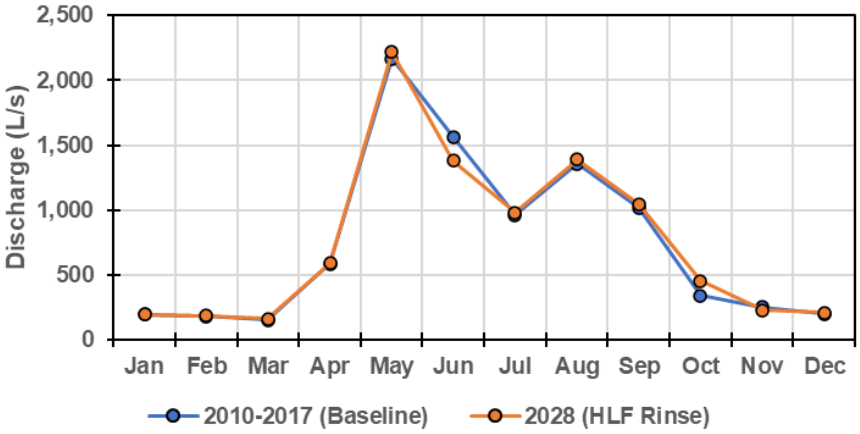

Figure 4.1-6: Average monthly and predicted mine affected streamflows for the W29 node (Year 10; WBM v6.1.2).

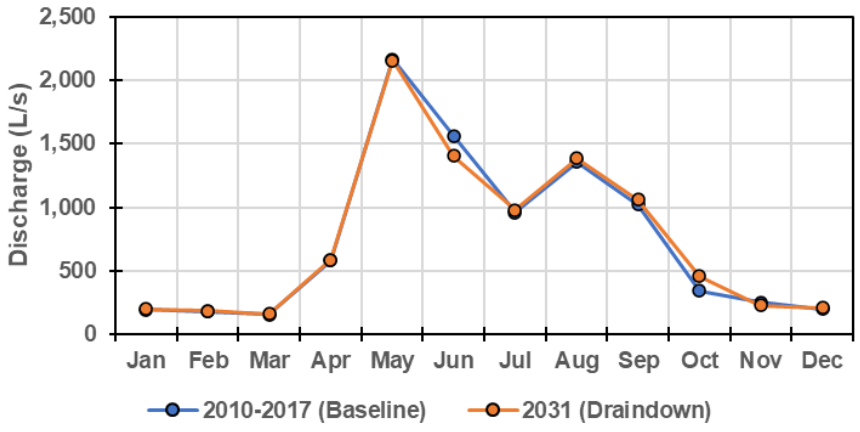

Figure 4.1-7: Average monthly and predicted mine affected streamflows for the W29 node (Year 13; WBM v6.1.2).

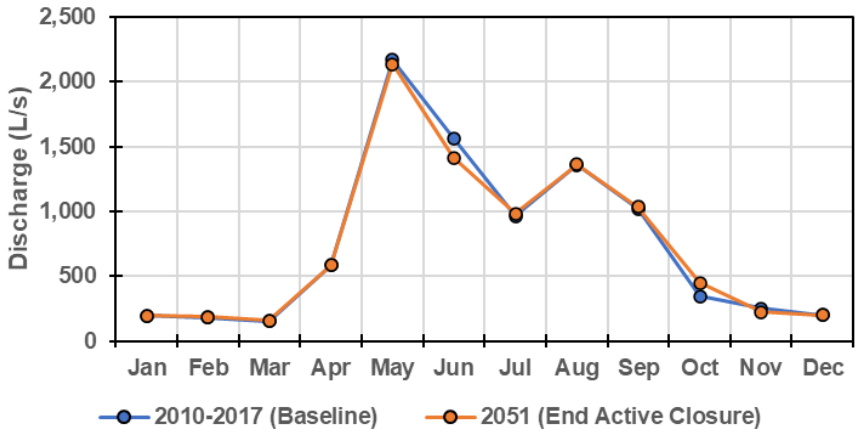

Figure 4.1-8: Average monthly and predicted mine affected streamflows for the W29 node (Year 33; WBM v6.1.2).

Elevated flows in 2020 relative to the baseline condition are reflective of the increased precipitation received at the Project site (Section 2.1.1.1), and not mine operations. Maximum expected decreases in the baseline streamflow volumes occur in June (-9% to -11%), and the minimum predicted changes occur in November through April (-11% to 8%; Table 4.1-1). The average open water season (May-September) flow changes are predicted to be 1% at W4 during Operations and the Active Closure (draindown) phase. On an average annual basis, flows in Haggart Creek at W4 are predicted to change from baseline by 5%, and by 2% at W29. The reductions in June flows (-10%) are due to staging of treated discharge to the receiving environment to maintain water quality within the prescribed limits. The substantial relative increases in predicted October flows are due to the MWTP continuing to discharge treated water at a higher rate than experienced under baseline conditions during this month. Note that due to the low flows experienced in Haggart Creek during the winter and shoulder seasons (October to April), small changes in predicted flows due to mine operations result in larger relative predicted changes to the baseline streamflow regime. This is also the period for which continuous flow data are not available due to extensive channel icing, and thus characterization of the baseline flow regime is based largely on infrequent spot flow measurements. For these reasons, relatively less weight is placed on the predicted changes to the winter streamflow regime in Haggart Creek.

5. Closure

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5. Closure

We trust that this report meets your expectations. Please contact the undersigned with any questions or comments.

Sincerely,

LORAX ENVIRONMENTAL SERVICES LTD.

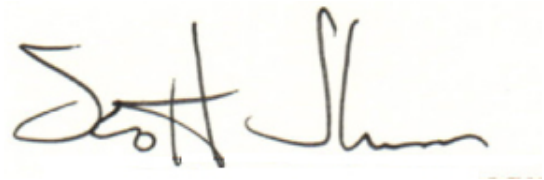
Prepared by:



David Flather, M.Sc.
Principal



Scott Tinis, Ph.D.
Senior Numerical Modeller



Scott Jackson, M.Sc., P.Geo.
Hydrologist



Timo Kirchner, M.Sc., P.Geo.
Environmental Geochemist

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Appendix A: Geochemical Source Team Update Memorandum

VICTORIA GOLD CORP

TECHNICAL MEMORANDUM

To:	**Stephen Wilbur** **Hugh Coyle, VGCX**	**Date: March 23, 2021**
From:	**Timo Kirchner, M.Sc., P.Geo.** **David Flather, M.Sc.**	**Project #: A610-1**
Subject:	**Eagle Gold Mine - Geochemical Source Terms for 2020 WBWQ Model Update**	

1. Introduction

Victoria Gold Corp. (VGCX) owns and operates the Eagle Gold mine located approximately 45 km north of Mayo. As part of annual reporting requirements for the Eagle Gold Project under the Water Use Licence (WUL) issued by the Yukon Water Board, Lorax Environmental Services Ltd. (Lorax) annually revisits available data and assumptions in support of the water balance and water quality model (WBWQM). This modelling effort accounts for updated climate, hydrology and water quality data as well as changes to the mine plan. Geochemical source terms represent an integral input into the water quality model. Due to changes in various of the above components, the revision of the geochemical source term model was considered necessary for the 2020 WBWQM update. Of most significance were updated geochemical data and findings from a new (2020) kinetic test program that was initiated, under Lorax's guidance, to quantify the arsenic (As) leaching behaviour of Eagle Mine waste under various conditions. This memorandum provides the rationale and methodology associated with the 2020 Eagle kinetic test program as well as preliminary results obtained to date in Section 2. An overview of the approach and results of the 2020 source term modelling exercise is given in Section 3.

2. Eagle Gold Kinetic Test Program (2020)

In 2012, a set of field kinetic tests (field barrels) were initiated by SRK consulting to gain insight into the geochemical behaviour of the main Eagle Pit waste rock units at intermediate scales and under site climatic conditions. These field barrels contained ~150 to 200 kg of waste rock and leachate was continuously sampled by VGC personnel until 2019. Data generated from these experiments has proven invaluable for the development of geochemical source terms generated in support of the Water Use Licence (WUL) application (Lorax, 2014) and model iterations thereafter (Lorax, 2017, 2018, 2019). Refer to SRK (2014) for an overview of the sample selection rationale as well as the sampling methodology for these field barrels.

Since 2015, the Oxide GND field barrel sample (DG12-MET-04) produced steadily increasing arsenic concentrations reaching maximum values of up to >3 mg/L in 2018. Consequently, the representativeness of this sample and whether similarly high As concentrations may be expected in full-scale mine drainage warranted further investigation. To address these findings, VGC discontinued the SRK program in 2020, disassembled all field barrels, and re-initiated field kinetic testing of two field barrels (Barrel 1, Barrel 2) with guidance from Lorax. The objective of this revised program is to assess:

i. the sorption capacity of a metasediment composite (new sample ID: LX-2020-FB1) underlying the high-As leaching material (DG12-MET-04); and
ii. As leaching characteristics of a mixed lithology field barrel constructed with lithological proportions that resemble those expected in the Eagle Gold waste rock storage areas (WRSAs) (new sample ID: LX-2020-FB2).

Data produced from these experiments are intended support the validation of source term model and especially as it pertains to As leaching from waste rock.

2.1 Methods

2.1.1 Eagle Waste Rock Field Barrels (SRK)

A breakdown of the SRK field barrel samples and how they were re-purposed for the 2020 kinetic test program is given in Table 2-1.

Table 2-1:
Breakdown of field barrel samples re-purposed for 2020 Eagle kinetic test program

	Sample ID (SRK)	Unit	Mass (kg)	Purpose
Barrel 1			150*	Assess arsenic attenuation capacity of MSED unit
Top Layer	DG12-MET-04	Oxide GND	75	
Bottom Layer (LX-2020-FB1)	DG12-MET-01	Oxide MSED	30	
	DG12-MET-02	Fresh MSED	30	
	DG12-MET-03	Oxide/Fresh MSED	30	
Barrel 2			150*	Constrain arsenic leaching behaviour from mixed lithology sample
Composite (LX-2020-FB2)	DG12-MET-01	Oxide MSED	45	
	DG12-MET-02	Fresh MSED	50	
	DG12-MET-04	Oxide GND	25	
	DG12-MET-05	Fresh GND	25	
	DG12-MET-06	Altered GND	5	
	DG12-MET-08	Overburden	15	

Notes:
GND = Granodiorite, MSED = Metasediment.
*Sample mass accounts for the removal of a subsample after compositing.

To obtain representative subsamples of the decommissioned SRK field barrels, compositing of the new field kinetic test samples was achieved using the cone-and-quarter

technique following thorough manual mixing of each composite subsample. Note that the top layer of Barrel 1 is composed of the former DG12-MET-04 sample only and therefore did not require processing prior to filling the field barrel. The sampling of leachate is being conducted in the same manner as previously where pH, conductivity, temperature and water volume are recorded in the field while the analysis of chemical solutes (anions, acidity, cations, etc.) is conducted at an external laboratory.

To gain an in-depth understanding of the solid-phase characteristics of materials undergoing additional kinetic testing, the three unique samples generated in 2020 (top and bottom layers of Barrel 1; all of Barrel 2) were subsampled and submitted for static geochemical analysis including ABA, aqua regia digestible metals, grain size analysis, mineralogical analysis (Rietveld X-Ray diffraction), as well as sequential extraction method that was specifically designed to quantify the speciation of As (CIEMAT procedure; Larios et al., 2012). An overview of the solvents used and solid phases targeted in this procedure is given in Table 2-2.

Table 2-2:
Procedural steps employed in the sequential
CIEMAT extraction methods designed to quantify on As speciation

Fraction targeted	Reagent/Solvent
Readily Soluble	Nanopure Distilled Water
Strongly Adsorbed on Mineral Surfaces	Na_2HPO_4
Al Oxyhydroxides	NH_4F
Organic Matter	$Na_4P_2O_7$
Amorphous Fe oxyhydroxides	Ammonium Oxalate + Oxalic Acid
Poorly Crystalline Fe oxyhydroxides	Na citrate + $NaHCO_3$ + Ascorbic Acid
Residual Fraction	Four Acid Digestion

2.1.2 Eagle Waste Rock Unsaturated Columns

To investigate the geochemical processes controlling the leachate chemistry of the revised field barrel program in a more controlled environment, subsamples of DG12-MET-04, LX-2020-FB1 and -FB2 were submitted for unsaturated column testing in the laboratory. For this, the samples were screened to < ¼“ to facilitate the comparison with other bench-scale kinetic tests. Each column consists of a 17 cm diameter acrylic cylinder that holds ~5 kg of waste rock material and has a leachate sampling port at the bottom. The main difference between the laboratory and field experimental set-up is that the upper and lower layers of Barrel 1 were split out into two separate columns which allows for the analysis of leachate after contact with the sample that had exhibited increasing As-leaching (DG12-MET-04) first before this leachate is routed through the attenuating MSED base (LX-2020-FB1). As a result, the As attenuation capacity can be calculated more accurately. Further, a duplicate

column of this same attenuating layer was constructed to provide a baseline of the As leaching behaviour of this material on its own. Figure 2-1 provides a schematic of the unsaturated column design for LX-2020-FB1 material. Conversely, LX-2020-FB2 material was treated as a single composite sample simply representing a bench-scale duplicate of Barrel 2.

After an initial rinse of each column with 1 to 2 L of deionized water, the irrigation rate was set to 300 mL for each individual column with the exception of the column constructed with sample DG12-MET-04 (top layer of Barrel 1). Since the effluent from this sample is additionally routed through the MSED column, 600 mL of deionized water is used for the first column in order to generate enough effluent for chemical analysis after passing through both columns. The Eagle unsaturated columns are irrigated weekly with a total experimental duration of 15 weeks. Since these materials have already been leached in the field for 7 years prior, this experimental runtime is considered sufficient to produce long-term leaching data.

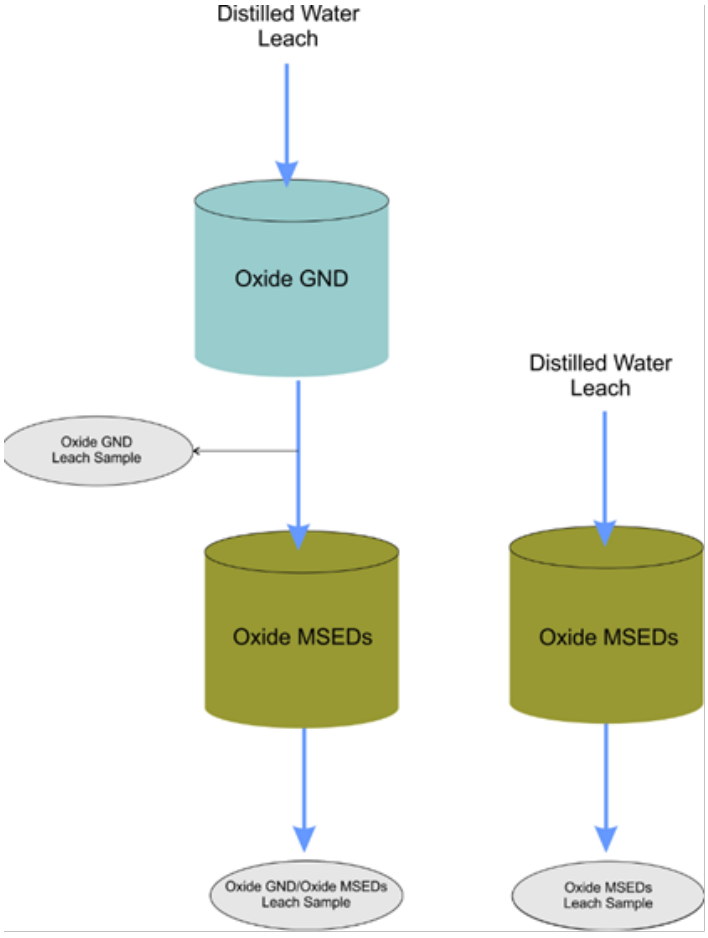

Figure 2-1: Schematic of the unsaturated column experimental design for Eagle field barrel subsamples (2020 kinetic test program).

2.2 Results

The following section gives an overview of the static characterization results for the composited samples as well as preliminary data from the field and laboratory kinetic experiments.

2.2.1 Static Characterization

2.2.1.1 ABA and Metals

All three unique samples that were used to construct the unsaturated columns for the laboratory portion of this study were submitted for static analysis. An overview of select static test parameters is given in Table 2-3.

Table 2-3:
Selected ABA and metals results for the three Eagle Pit samples chosen for advanced kinetic testing

Sample ID	Total S	Modified NP	NPR	As	Cd	Cu	Mo	Ni	Pb	Sb	Se	U	Zn
	%	*kg $CaCO_3$/t*		*ppm*	*ppm*	*ppm*	*ppm*	*ppm*	*ppm*	*ppm*	*ppm*	*ppm*	*ppm*
DG12-MET-04	0.20	18	2.8	2525	0.26	40	2.5	20	29	12	2.0	3.6	70
LX-2020-FB1	0.11	11	3.2	190	0.18	24	3.5	27	15	7.9	2.0	2.2	62
LX-2020-FB2	0.13	18	4.3	752	1.1	37	3.0	23	54	16	2.0	2.7	208

Note: Values in grey represent aqua regia digestible solid-phase metal contents exceeding 10x the AUCA.

With total S contents ranging from 0.11% to 0.20% and Modified NP values ranging from 11 to 18 kg $CaCO_3$/t, all three samples can be classified as NPAG. This is consistent with the pre-test geochemical characterization conducted on all field barrel subsamples (SRK, 2014).

Aqua regia digestible solid-phase metal contents exceeding 10x the average upper crustal abundance (AUCA) include As, Sb, and Se for all samples as well as Cd for LX-2020-FB2. Sample DG12-MET-04, which was selected to assess as a result of the high As leaching rates in the field was confirmed to also have very high As solid-phase content (2,525 ppm; Table 2-3). Note that this value is more than twice the As content that was reported (1,065 ppm) for the same sample in SRK (2014). It is assumed that this discrepancy is due to sample heterogeneity and the error associated with subsampling for static testing from a >150 kg sample.

2.2.1.2 Particle Size Distribution

The particle size distribution (PSD) of the three kinetic test samples is presented in Figure 2-2. Note that these were determined on the field barrel subsamples received by the lab "as-is" before further crushing for the laboratory kinetic program. The two samples making

up the two layers in the one field barrel intended to investigate As attenuation (DG12-MT-04 and LX-2020-FB1) show a comparable PSD with ≤10% of the sample falling into the sand fraction or finer (silt/clay). Therefore, >90% of the material mass is represented by the pebble fraction or coarser (i.e., boulders). Sample LX-2020-FB2 contains a slightly higher proportion fines with approximately 12% of the material mass falling into the sand fraction or finer. The relatively coarse makeup of the field barrel subsamples is relevant to the interpretation of metal leaching and attenuation rates.

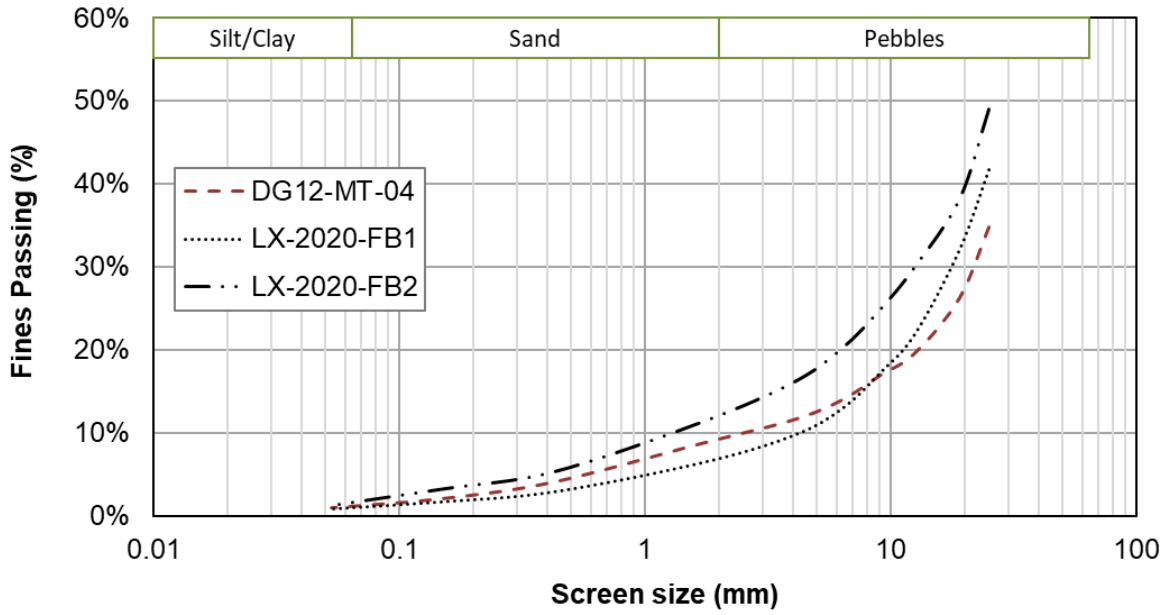

Figure 2-2: Particle size distribution curves for the three Eagle Pit kinetic test samples

2.2.1.3 Mineralogy (XRD)

Mineralogical analyses were conducted on the two samples that are the focus of the As attenuation investigation, namely the upper (DG12-MET-04) and lower (LX-20202-FB1) layers of the repurposed field barrel and sequential unsaturated columns. This work was completed to gain a high-level understanding of the As phase association as well as to identify, on a high level, any mineral phases with a large surface area that would be afford As sorption sites. Limitations to XRD analysis present relatively high detection limits (~0.5-1%) as well as the inability to identify poorly-crystalline and amorphous phases.

The rock-forming mineralogy of both samples is dominated by quartz, feldspars (microcline, albite, anorthite), as well as micas (biotite, muscovite). Chlorite, carbonates (calcite, ankerite), and rutile were detected at minor abundances in both samples (Table 2-4). It is notable that no sulphide minerals were detected by XRD. This is likely due to the high detection limit of this analytical method and possibly, to some extent, the fact that

these samples have been actively weathering for >8 years, thereby depleting sulphide phases.

Due to the lack of detection of poorly-crystalline and amorphous phases, it is difficult to quantify the sorption capacity of sample LX-20202-FB1 based on XRD analysis alone. Fe-oxyhydroxide are known to be the most potent sorbent for As and this phase would not have been detected via XRD. Findings from optical microscopy (to be completed) will provide more insight into the textural relationships of the two mineral assemblages and how these may affect As release and attenuation.

Table 2-4:
XRD results for the two samples that were re-purposed for the Eagle kinetic As attenuation study

Mineral	Formula	DG12-MET-04	LX-20202-FB1
		(wt %)	(wt %)
Quartz	SiO_2	32	47
Muscovite	$KAl_2(AlSi_3O_{10})(OH)_2$	4.4	13
Biotite	$K(Mg,Fe)_3(AlSi_3O_{10})(OH)_2$	4.3	6.0
Chlorite	$(Fe,(Mg,Mn)_5,Al)(Si_3Al)O_{10}(OH)_8$	4.7	3.6
Ankerite	$CaFe(CO_3)_2$	0.28	0.59
Calcite	$CaCO_3$	1.7	1.1
Rutile	TiO_2	0.38	0.98
Microcline	$KAlSi_3O_8$	26	11
Albite	$NaAlSi_3O_8$	26	11
Anorthite	$CaAl_2Si_2O_8$	-	4.9
TOTAL		***100***	***100***

2.2.1.4 Sequential Extractions (CIEMAT)

Sequential extraction testing is one way to assess the speciation of specific elements of interest by sequentially reacting a sample with a series of solvents that are known to attack specific solid phases only. With this knowledge, conclusion with respect to phase stability and elemental mobility may be drawn. Since As release was the driver in the design of the 2020 Eagle kinetic test program a sequential extraction test method that focusses on the accurate determination of As speciation was chosen for this purpose (Larios et al., 2012).

Sequential extraction results for As and S are shown in Figure 2-3 as relative (%) and absolute (mg/kg) extracted quantities. It is important to note that by design of the experimental procedure, sulphide phases are captured by the residual fraction step (Larios et al., 2012). This can be seen in Figure 2-3 which shows that >20% of all extracted sulphur is hosted in the residual fraction.

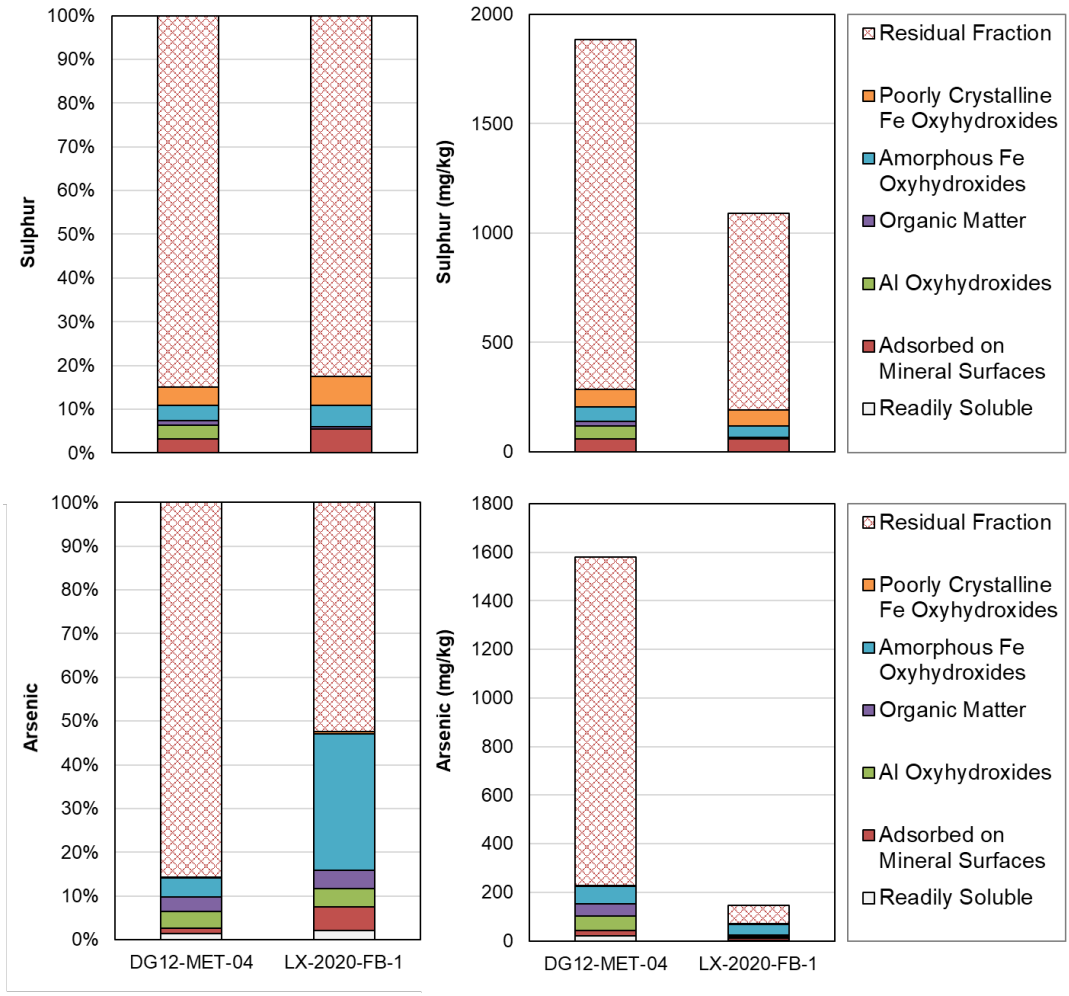

Figure 2-3: Sequential extraction results for the Barrel 1 sub-samples that were re-purposed for the Eagle kinetic As attenuation study

Pre-test characterization work conducted by SRK (2014) confirms that the majority of sulphur is hosted in sulphide phases across all field barrel samples. Due to the limitations with respect to the methods specificity, and with regards to the individual extraction steps for species other than As, it cannot be stated with certainty whether the more soluble sulphur is in fact associated with the phases defined by the procedure. It is likely that this fraction is represented in the form of primary and secondary sulphate phases that are leached alongside the targeted phases for As mobility. Note that extended oxic weathering of these samples may have re-distributed some of the sulphur into sulphide oxidation products.

Figure 2-3 shows that the majority of As is associated with the residual (sulphide) fraction (e.g., pyrite, arsenopyrite) as well. Specifically, sample DG12-MET-04 contains approximately 15% of non-sulphide bound As which is predominantly distributed across

all extraction steps with the exception of the poorly crystalline Fe-oxyhdroxides. This sample has a much higher total solid phase As content (1,581 ppm) compared with LX-20202-FB1 consistent with the results from aqua regia analysis (Table 2-3). Composite MSED sample, which is intended as the As attenuating layer, contains a cumulative solid-phase As content of 147 ppm and exhibits a markedly different distribution of this species. Here, just over 50% of the As is associated with the residual sulphide fraction, while the remaining portion is distributed over amorphous Fe oxyhydroxides (31%) and more soluble fractions. Of those, a non-negligible proportion (5%) is adsorbed to mineral surfaces.

2.2.2 Field Barrel Leachates

Field barrel leachate data collected before the initiation of the reconstructed 2020 kinetic test programs are presented in SRK (2014) as well as in the context of geochemical source terms most recently in Lorax (2019). Herein, these leachate results are not discussed in detail and are only included for comparative purposes (data shown from 2017 onward) to contextualize changes in drainage chemistry seen in response to the kinetic test re-initiation.

Figure 2-4 shows the pH and sulphate concentrations of the previous and re-purposed field barrels and illustrates that after re-compositing both parameters produced by both field barrels fall well within the range of the previous leachate results. While pH remains circum-neutral as expected, sulphate concentrations produced by the two field barrels appear to be stabilizing around 40 and 60 mg/L for Barrel 1 and Barrel 2, respectively. Coinciding temporal fluctuation trends between the two field barrels for pH and, to a lesser degree, for sulphate are evidence that leachate chemistry is at least in part driven by meteoric precipitation events.

Leachate concentrations for As, Sb, and Se are shown in Figure 2-5. The most notable finding from these plots is the narrow range of concentrations for As and Sb in particular across the two new field barrels in comparison with the observed variability before re-compositing. The bottom layer of Barrel 1 (LX-2020-FB1) is the last point of contact for the barrel infiltrate before leaching into the collection jugs. If the top layer of Barrel 2 (DG12-MET-04) is assumed to continue to produce As concentrations of >1mg/L, this would indicate that the LX-2020-FB1 provides significant attenuation capacity, since all Barrel 1 leachates collected to date have As concentrations of <0.1 mg/L. Interestingly, despite having variable solid-phase As contents (Table 2-3), both Barrel 1 and Barrel 2 produce remarkably similar As concentrations (Figure 2-5).

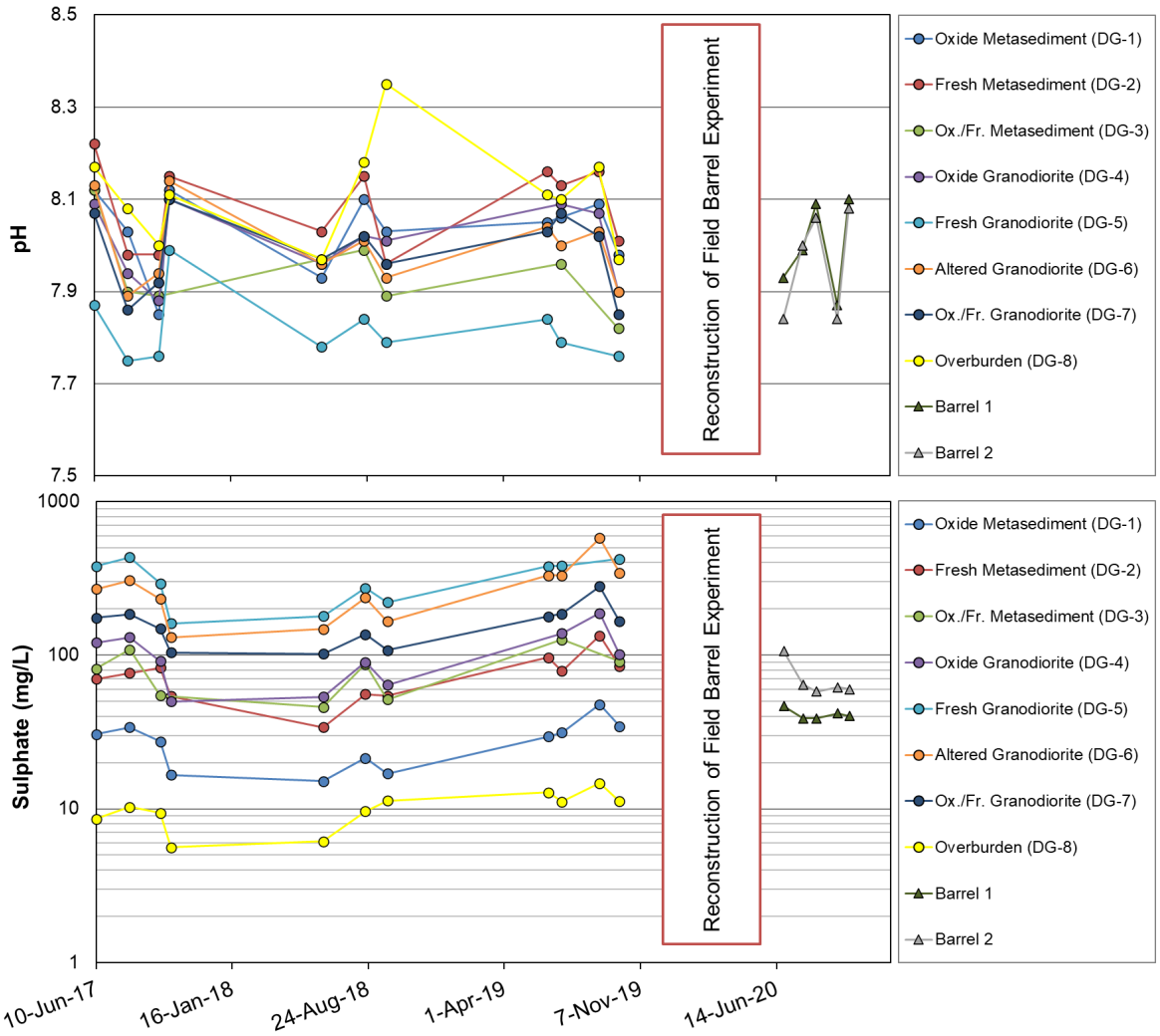

Figure 2-4: pH and sulphate concentrations in field barrel leachates before and after the reconstruction of the SRK kinetic experiments

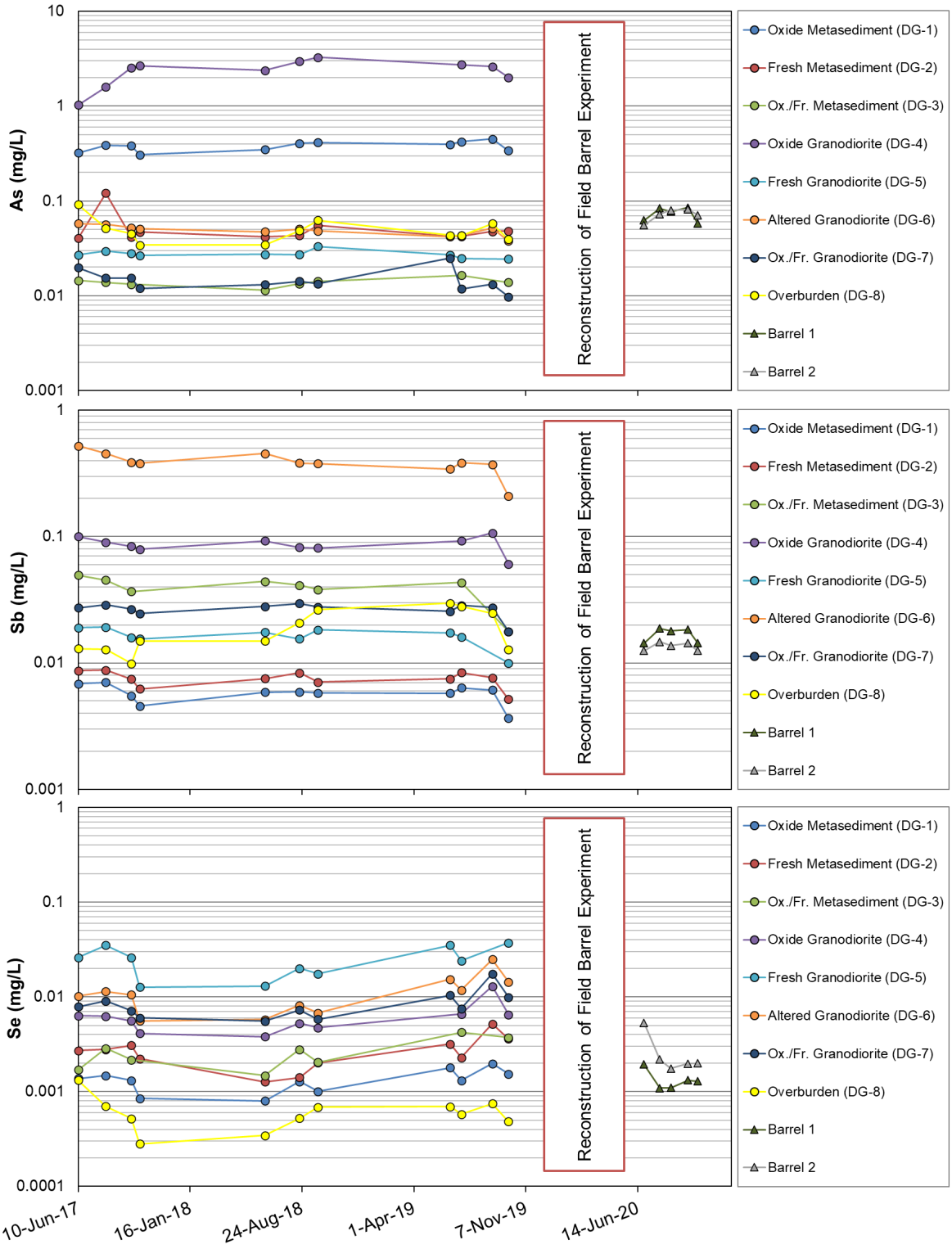

Figure 2-5: Arsenic, Sb, and Se concentrations in field barrel leachates before and after the reconstruction of the SRK kinetic experiments

Comparable concentrations were also measured for Sb which shows a relatively narrow range between 0.01 and 0.02 mg/L across the two field barrels to date. Temporal trends in Se leaching are almost identical in Barrel 1 and Barrel 2 effluent, although Barrel 2 has consistently released slightly higher Se concentrations peaking at 0.0053 mg/L and stabilizing approximately 0.0020 mg/L in the last three sampling cycles (Figure 2-5). The temporal trends and relative Se leaching behaviour for Barrels 1 and 2 mimics that of sulphur (Figure 2-4) providing additional evidence that Se may be closely tied to sulphur leaching.

Overall, the initial results from the re-constructed field barrel experiments appear to show that mixed lithology waste rock materials generate more consistent and moderate concentrations for various metals of concern. Waste rock from the MSED unit, which is expected make up a high proportion of the initial (basal) lifts of the different WRSAs seem to provide significant As attenuation capacity.

2.2.3 Unsaturated Columns

Time-series plots of pH and sulphate concentrations for the various field barrel subsamples are shown in Figure 2-6. As for the field barrels, effluent from the unsaturated columns has expectedly remained neutral circum-neutral to slightly alkaline in all samples collected to date. Importantly, measurements of column pH are comparable to those seen in field barrel leachates, suggesting that the same pH buffering controls apply. Sulphate concentrations are initially high in all column leachates, reaching up to 370 mg/L in Col 2. Over time, sulphate release has stabilized to 104 to 209 mg/L across the various columns in the most recent sampling cycles.

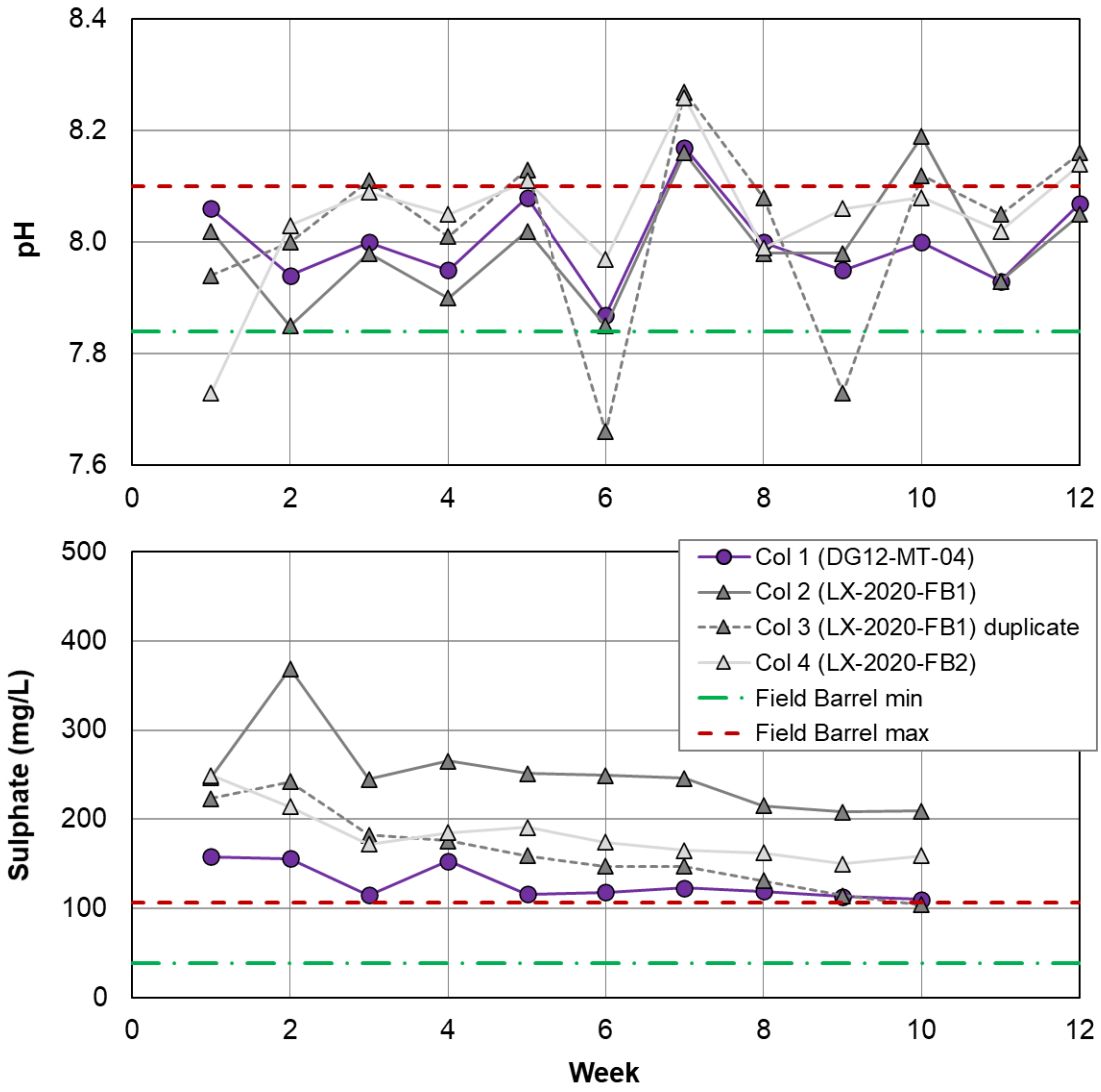

Figure 2-6: pH and sulphate concentrations in effluent from columns constructed with Eagle Pit field barrel duplicate samples

Effluent from Col 3, which contains a duplicate sample of Col 2 (LX-2020-FB1), shows markedly lower sulphate concentrations than Col 2 leachate. Note that the latter's influent represents Col 1 leachate, while Col 3 is irrigated with deionized water. The higher sulphate concentrations produced by Col 2 may therefore be a result of cumulative sulphate leaching from the two columns or, alternatively, may be a result of sample heterogeneity of the two LX-2020-FB1 split samples. It is important to note that the columns are producing sulphate concentrations that are consistently higher than those measured in the field barrels (Figure 2-6). The most likely explanation for this finding is the effect of crushing of the column subsamples to <1/4 inches leading to a smaller grain size. These results show that the scale

of an experiment is not the only control on the concentration of solutes in mine rock contact water.

Arsenic concentrations leaching from Col 4 are remarkably similar to the maximum concentration measured in field barrel leachates and generally fall between 0.08 and 0.09 mg/L (Figure 2-7). Col 2 and Col 3 produced As concentrations of 0.04 mg/L or lower. This is an important finding since the effluent from Col 1 (DG12-MT-04) exhibits As concentrations that are consistently elevated above 0.7 mg/L. Although the observed column effluent concentrations from this sample are not as high as those observed in the DG12-MT-04 field barrel prior to reconstruction (Figure 2-5), this trend nevertheless confirms that sample LX-2020-FB1 has significant attenuation capacity with an effectiveness of >90%. Since Col 3 releases comparable As concentrations without the application of high-As influent, an As solubility control is indicated for the MSED composite sample.

Attenuation is also observed in Col 2 for Sb, but not Se (Figure 2-7). In detail, Sb concentrations in effluent from Col 1 are reduced from >0.1 mg/L to <0.03 mg/L upon contact with Col 2 waste rock material. Since the Sb concentrations leaching from Col 3 are virtually identical, like for As, this suggests that solubility constraints for this species apply. Relatively elevated Sb concentrations measured in Col 4 (LX-2020-FB2) leachate may be explained by the increased solid-phase Sb content of this sample.

Initially, Se concentrations leaching from all column samples exceed those seen in the corresponding field barrels. However, a gradual transition to 0.003 mg/L or less has occurred in the more recent sampling cycles. Col 2 does not show appear to attenuate Se concentrations produced by Col 1 but does in fact release higher Se concentrations initially. As for the field barrel results, the trends observed indicate a connection between Se and sulphate leaching.

Albeit preliminary, the combined findings from the Eagle field barrel and duplicate laboratory experiments have increased the understanding of metal leaching and attenuation and are considered in the development of geochemical source terms.

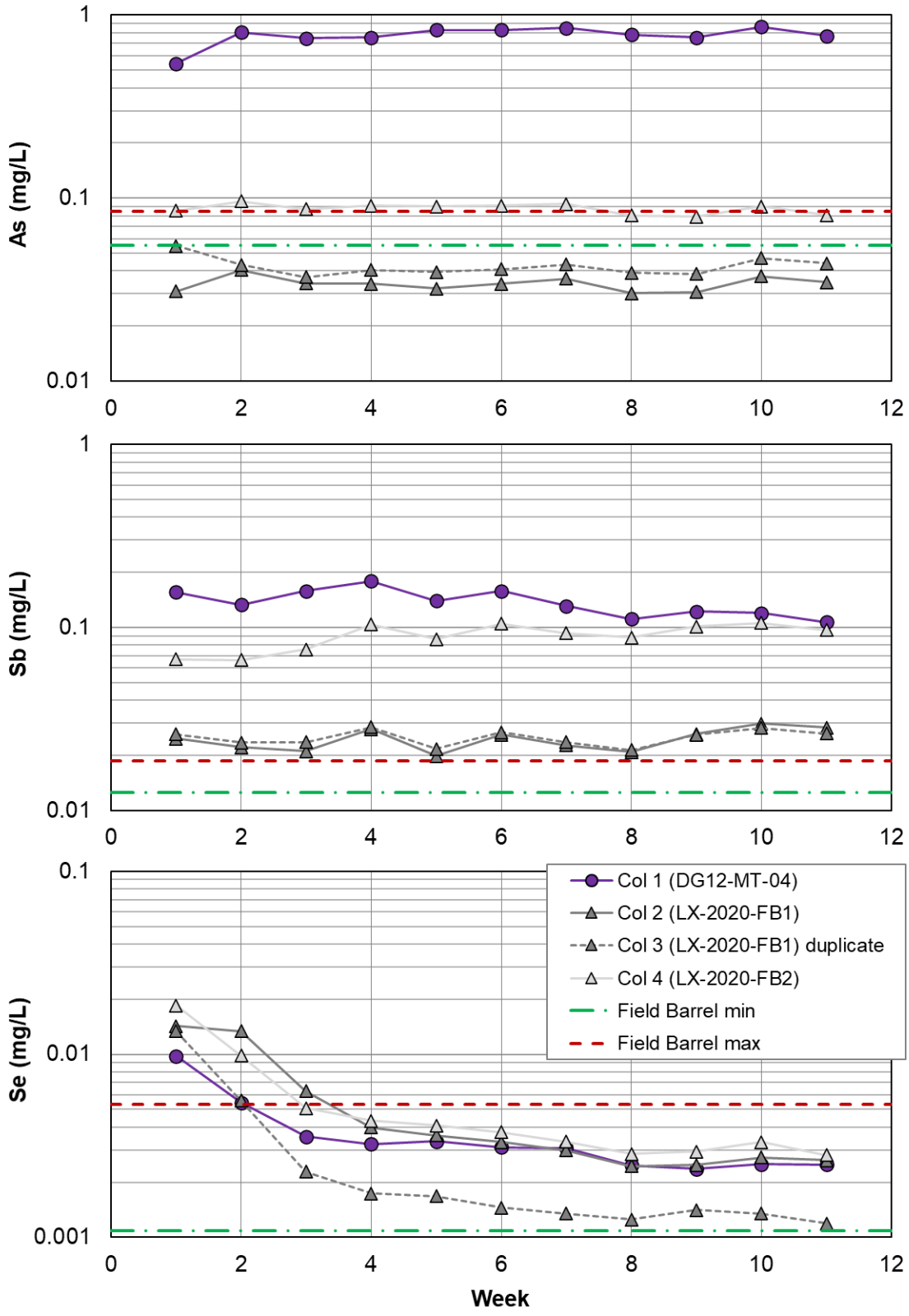

Figure 2-7: As, Sb, and Se concentrations in effluent from columns constructed with Eagle Pit field barrel duplicate samples

3. Development of Geochemical Source Terms

The prediction of the water chemistry in contact with the various Eagle Gold Project facilities containing disturbed mine rock (waste rock, ore) is required for the development of site-wide water quality models and, in turn, for the assessment of project effects on the aquatic environment and water treatment considerations. The modelled contact water chemistry effectively applies to drainage from the WRSAs, pit walls, or post-closure heap leach facility (HLF) and is referred to as *geochemical source terms*. Overarching controls that govern mine contact water quality include:

- mineralogy and geochemistry of the exposed material;
- grain size distribution;
- water/rock ratio;
- depositional environment (*e.g.*, saturated versus unsaturated conditions); and
- temperature.

The rate at which minerals weather chemically in laboratory kinetic tests is typically significantly faster than rates inferred in the field (Malmström, 2000). This discrepancy is in part due to the formation of distinct flow channels within the waste rock pile that results in the incomplete flushing of weathering products from the waste rock dump (Nichol et al., 2005).

While these factors will also play a role in the drainage chemistry from the HLF, the HLF source term is expected to be more strongly governed by gold leaching reagents (NaCN) being added as part of the barren solution application and solution recycling. During operations and in the early stages after mine closure, residual cyanide and its decay products (ammonia, nitrite, nitrate) will result in the increased mobility of various solutes until process solution pore water is displaced (e.g., Parshley et al, 2012).

The following provides an overview of the approach and results of the geochemical source term model developed for Eagle Gold waste rock facilities and HLF. Note that assumptions around the temporary (90 day) ore stockpile were not changed since the previous source term model iteration and as a result, this facility was not re-modelled within the scope of this work. Refer to Lorax (2020) for an overview of the operational source term predictions relating to stockpiled ore.

3.1 Approach: Waste Rock Facilities

For the Eagle Gold Mine, the prediction of both the major and trace elemental geochemistry of waters in contact with the modelled waste rock facilities was conducted via upscaling of loading rates derived from humidity cell tests. A flow chart illustrating the work stages involved in this exercise is given in Figure 3-1. On a high-level, the approach is similar to

that of the original source term model developed for the project (Lorax, 2014), however minor changes to the model assumptions were made and site-specific and supporting analogue datasets were updated.

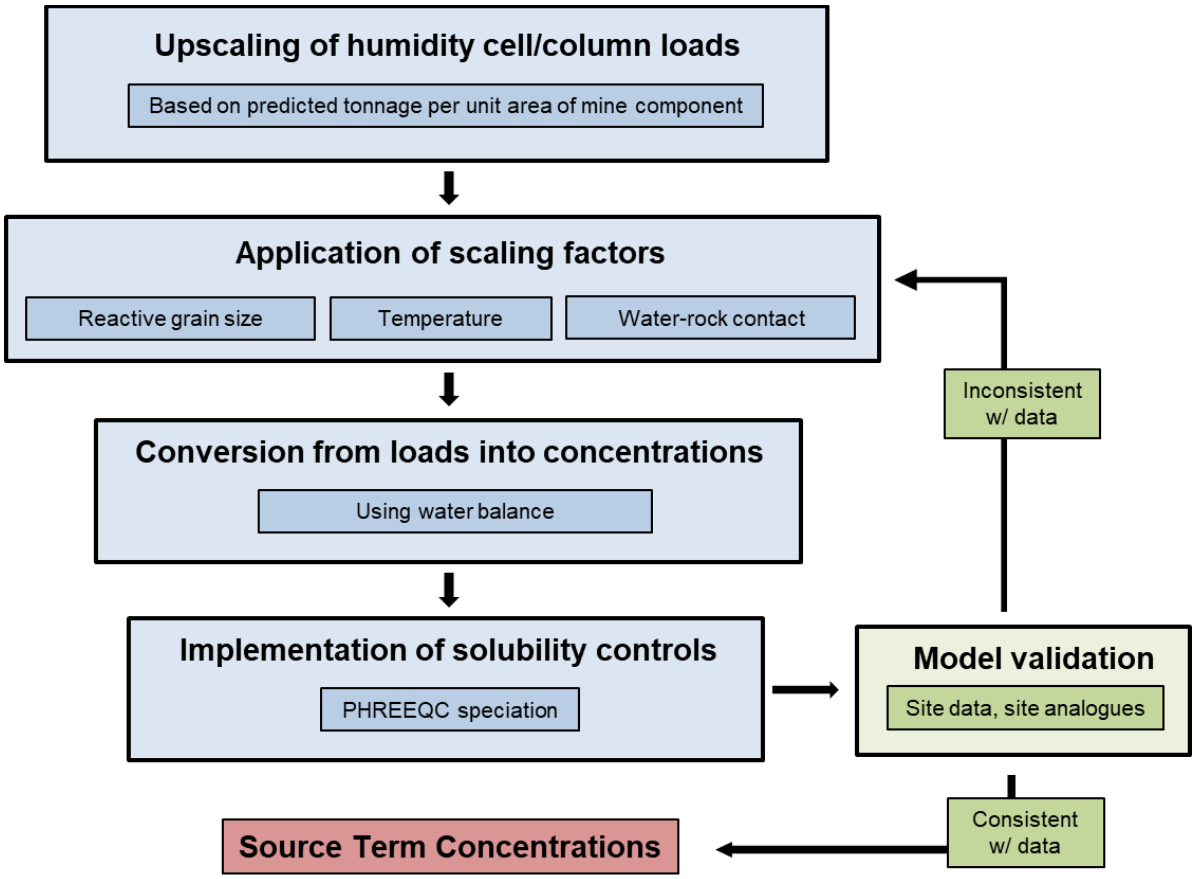

Figure 3-1: Work stages involved in the scaling of waste rock geochemical source terms

3.1.1 Selection of Input Loading Rates

As a first step in the development of geochemical source terms, the appropriate input solution chemistry was defined. For this purpose, Eagle humidity cell leaching rates were derived from the data presented in SRK (2014) and were grouped to represent the various waste rock types expected to be disturbed during mining. Humidity cells used to produce these contact water model input solutions are listed in Table 3-1.

Waste rock geochemical source terms were derived for the two WRSAs (Platinum Gulch, Eagle Pup) as well the open pit. During operations, the geochemical predictions were provided on an annual basis, while the post-closure source terms are expected to remain relatively stable in the long-term such that only one set of annually recurring predictions is accounted for in the site-wide water quality model.

To maintain conservatism, the 75th percentile values of all available humidity cell leachates for a given species were used as the model input solution. Conversely, the 75th percentile loading rates of the last three humidity cell cycles (weeks) with metals analyses were utilized to produce a solution input for the post-closure ("stable") scenario. This assumes that geochemical reaction rates reach a steady-steady state after soluble minerals have been flushed. Table 3-2 provides an overview of the input solution chemistries used for all Eagle Gold waste rock facilities.

Table 3-1:
Summary of kinetic test cells used for the individual block model units

Lithology/Material	Eagle Pit HC
Oxide GND	HC 5, HC 10
Fresh GND	HC 3, HC 9
Altered GND	HC 4, HC 6, HC 11
Oxide MSED	HC 8
Fresh MSED	HC 1, HC 2, HC 8, HC 13
Overburden (OB)	HC 10

Table 3-2:
Input loading rates (mg/kg/wk) used for the different model time steps for Eagle Pit materials

Scenario	Operational						Stable					
Unit	Oxide GND	Altered GND	Fresh GND	Oxide MSED	Fresh MSED	Over-burden	Oxide GND	Altered GND	Fresh GND	Oxide MSED	Fresh MSED	Over-burden
pH	7.6	7.7	7.6	7.3	7.4	7.3	7.5	7.6	7.4	7.1	7.3	7.1
SO_4	12	9.1	12	1.7	24	1.7	8.2	6.7	6.6	1.5	15	1.5
Cl	0.19	0.26	0.18	0.12	0.26	0.12	0.18	0.16	0.12	0.12	0.16	0.12
Ag	0.0000012	0.0000012	0.0000012	0.0000012	0.0000012	0.0000012	0.0000022	0.0000019	0.0000012	0.0000012	0.0000017	0.0000012
Al	0.025	0.032	0.049	0.021	0.033	0.021	0.019	0.026	0.038	0.016	0.025	0.016
As	0.0040	0.031	0.0012	0.016	0.012	0.016	0.0028	0.020	0.00048	0.014	0.0091	0.014
Ba	0.0049	0.0028	0.0036	0.00022	0.0028	0.00022	0.0044	0.0019	0.0022	0.00029	0.0015	0.00029
Ca	7.7	7.7	7.9	1.6	12	1.6	5.6	5.9	5.8	1.4	6.9	1.4
Cd	0.0000041	0.0000084	0.0000049	0.0000012	0.0000046	0.0000012	0.0000025	0.0000043	0.0000025	0.0000012	0.0000028	0.0000012
Co	0.000026	0.000040	0.000025	0.000018	0.000065	0.000018	0.000014	0.000024	0.000014	0.000014	0.000039	0.000014
Cr	0.000024	0.000024	0.000059	0.000042	0.000029	0.000042	0.000060	0.000035	0.000057	0.000076	0.000037	0.000076
Cu	0.00036	0.00051	0.00040	0.00023	0.00042	0.00023	0.00032	0.00023	0.00032	0.00021	0.00023	0.00021
Fe	0.0045	0.0033	0.0022	0.0038	0.0035	0.0038	0.0026	0.0036	0.0017	0.0031	0.0029	0.0031
Hg	0.0000024	0.0000024	0.0000025	0.0000024	0.0000024	0.0000024	0.0000024	0.0000024	0.0000024	0.0000024	0.0000024	0.0000024
K	2.2	1.2	1.2	0.41	2.1	0.41	1.6	0.48	0.54	0.35	0.96	0.35
Mg	0.90	1.1	0.86	0.099	1.1	0.099	0.74	1.0	0.61	0.082	0.66	0.082
Mn	0.0048	0.0038	0.0040	0.00097	0.0094	0.00097	0.0030	0.0019	0.0032	0.00053	0.0065	0.00053
Mo	0.0060	0.0037	0.0013	0.00048	0.00034	0.00048	0.0024	0.0014	0.00043	0.00029	0.00013	0.00029
Na	0.71	0.53	1.6	0.18	0.34	0.18	0.14	0.10	0.16	0.081	0.10	0.081
Ni	0.00013	0.00015	0.00014	0.00013	0.00030	0.00013	0.000088	0.000074	0.00010	0.00018	0.00016	0.00018
P	0.00062	0.0026	0.0010	0.00048	0.00049	0.00048	0.00048	0.0015	0.00048	0.00048	0.00048	0.00048
Pb	0.000028	0.000068	0.000027	0.000019	0.000036	0.000019	0.000015	0.000042	0.000022	0.0000047	0.00015	0.0000047
Sb	0.000099	0.021	0.017	0.00037	0.0027	0.00037	0.000073	0.012	0.0089	0.00023	0.0010	0.00023
Se	0.00028	0.0020	0.00056	0.00012	0.00077	0.00012	0.00018	0.0011	0.00035	0.000093	0.00028	0.000093
Si	0.68	0.70	0.65	0.45	0.97	0.45	0.56	0.38	0.53	0.40	0.63	0.40
Sn	0.000012	0.000015	0.000019	0.000015	0.00010	0.000015	0.0000089	0.000071	0.0000097	0.0000024	0.000097	0.0000024
Sr	0.054	0.20	0.26	0.012	0.069	0.012	0.043	0.15	0.17	0.0100	0.036	0.0100
Tl	0.0000076	0.000034	0.0000046	0.0000020	0.0000035	0.0000020	0.0000053	0.000030	0.0000035	0.0000019	0.0000027	0.0000019
U	0.0017	0.012	0.023	0.00091	0.00053	0.00091	0.0013	0.0051	0.0096	0.00067	0.00034	0.00067
V	0.00012	0.000094	0.00015	0.000048	0.00013	0.000048	0.00014	0.000048	0.000096	0.000048	0.000083	0.000048
Zn	0.00027	0.00044	0.00036	0.00019	0.00044	0.00019	0.00016	0.00032	0.00030	0.00013	0.00035	0.00013

Notes: All parameters except pH are given in mg/kg/wk.

3.1.2 Upscaling of Kinetic Test Loads

Once the input solution chemistry was defined, the geochemical loads were upscaled to match the tonnage of the mine facility in question. Current estimates of mine tonnage stored in WRSAs were provided by VGC. The waste production schedule and pit wall exposures used for this assessment are given in Table 3-4 and Table 3-5, respectively. Note that approximately 2.4 Mt of waste rock material were already deposited in the Platinum Gulch WRSA by the end of 2019 and a total of almost 13 Mt in 2020. This tonnage was accounted for in the upscaling exercise.

While the rock mass of the described mine components can be easily translated from the waste production schedule, the derivation of reactive rock mass within the exposed pit walls is less straightforward. The final pit walls are expected to be fractured as a result of blasting operations. Fracturing of the pit walls exposes a greater proportion of the wall rock to weathering and hence wall rock drainage will have the geochemical signature of the respective rock type. In this assessment, it was assumed that controlled blasting would be used at the limits of the proposed open pit mine. Controlled blasting of rock does not completely eliminate fracturing of underlying rock but results in a blast-damaged transition zone extending into the pit walls. This blast-damaged transition zone comprises a blast-fractured zone and a blast-influenced zone that would be subject to oxidative weathering. The penetration depth of the blast-damaged zones into the wall rock is dependent on a variety of parameters. Hustrulid (1999) estimated ranges of 0.85 to 1.05 m and 2.65 to 3.15 m for the blast-fractured and the blast-influenced zones, respectively. These estimates are based on controlled blasting and an intermediate rock strength. For modelling purposes thicknesses of 1.0 and 3.0 m were chosen for the blast-fractured and the blast-influenced zones, respectively. Using a bulk density of 2.5 t/m^3 along with the annual surface areas broken out into waste rock type, these thicknesses were subsequently used to calculate a rock mass that will come in contact with the pit walls.

Table 3-3:
Waste rock production schedule (in Mt) by mine year for the modelled Eagle Gold WRSAs

WRSA	Waste Type	2020	2021	2022	2023	2024	2025	2026	2027	2028	Total
Platinum Gulch (Eagle Pit material)	Oxide GND	1.3	0.67								1.9
	Altered GND	0.014	0.031								0.044
	Fresh GND	0.13	0.13								0.26
	Oxide MSED	7.5	2.2								9.6
	Fresh MSED	1.3	3.3								4.6
	Overburden	2.4	1.1								3.5
Eagle Pup (Eagle Pit material)	Oxide GND		0.79	2.3	4.6	1.3	0.13	0.54	2.9	0.30	13
	Altered GND		0.036	0.011	0.15	0.41	0.14	0.23	0.36	0.23	1.6
	Fresh GND		0.16	0.49	2.4	3.0	2.2	2.6	4.0	1.4	16
	Oxide MSED		2.6	6.1	4.3	3.6	2.8	3.5	3.8	0.58	27
	Fresh MSED		3.9	6.9	7.6	2.5	1.7	1.4	1.2	0.38	26
	Overburden		1.3	1.7	0.90	0.46	0.76	1.3	1.2	0.060	7.6

Notes: Waste rock deposited in the Platinum Gulch WRSA in 2019 (~2.4 Mt) is accounted for in the source term model.

Table 3-4:
Waste rock exposures (in m^2) by mine year for the Eagle open pit

Open Pit	Waste Type	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029
Eagle Pit: Pit Wall Exposures (m^2)	Oxide GND	131,593	146,210	183,533	149,955	128,841	108,666	101,567	95,936	72,934	70,832
	Altered GND	6,607	14,700	113,841	32,717	35,656	33,036	32,362	41,088	42,160	43,598
	Fresh GND	32,772	73,835	116,830	205,015	268,895	304,662	368,753	459,262	551,413	609,492
	Oxide MSED	148,178	144,455	149,383	134,749	119,837	157,153	177,772	177,846	166,605	165,705
	Fresh MSED	33,246	113,841	197,400	236,989	258,773	271,685	282,577	294,745	304,504	302,836
	Overburden	68,181	75,540	65,686	62,834	61,856	73,397	86,915	72,787	76,908	76,913

3.1.3 Scaling Factors

Owing to several empirical studies investigating the relationship of geochemical loads released in the laboratory compared to full-scale minesites, it has been recognized that drainage chemistry predictions based on direct mass upscaling often vastly overestimate the quantities of dissolved solids that are leached from the mine rock (Malmström et al., 2000; Sapsford *et al*., 2009; Plante *et al.,* 2014; Kirchner & Mattson, 2015). This is due to a variety of differences between laboratory and field conditions such as climate, water/rock ratios, hydrogeological pathways, grain size distribution and secondary mineral controls. All of these are factors that have the potential to reduce geochemical loads per unit mass contacted in the field. As a result, it is the industry standard to implement scaling factors when upscaling humidity cell leachate results to account for these discrepancies. The following describes the scaling factors applied in the Eagle Gold Project source term model and the rationale for correcting for specific conditions. Refer to Kempton (2012) for a review of the various scaling factors commonly considered for geochemical source term predictions.

3.1.3.1 Temperature

The Project is located in the Yukon with average monthly temperatures ranging from approximately -21 to 10.5˚C for January and July, respectively. Kinetic experiments used for the source term model were conducted at a temperature of 22˚C and it is well established that the rate of many geochemical reactions leading to the release of acidity and dissolved metals is temperature-dependent. For the waste rock assessed, the oxidation of pyrite can be considered the driving force in terms of contaminant leaching for most parameters of concern. This reaction has been extensively studied and its rate has been determined over a range of temperatures that can be expressed in terms of an Arrhenius correlation. The Arrhenius relationship describing pyrite oxidation rate as a function of temperature is given by:

$$Temperature\ adjustment\ [\%] = e^{[E_a * (T_x - T_y)/(R * T_x * T_y)]}$$

With E_a = activation energy;

R = universal gas constant = 8.314 J/K/mol;

T_x = temperature of interest; and

T_y = experimental temperature.

The activation energy determines the slope of this function and, therefore, the temperature-dependence of the oxidation reaction. For the purposes of this model, an E_a of 40 kJ/mol was chosen to be consistent with the range of values reported in the literature (e.g., Nicholson *et al.*, 1988; Kamei and Ohmoto, 1999).

The bulk portion of waste and ore piles will not adopt ambient air temperatures but have a much smaller amplitude in temperature variation throughout the year. To account for this thermal inertia, monthly temperatures were adjusted for these mine components to produce a smoother temperature distribution curve while still maintaining average annual ambient temperatures and an average temperature scaling factor of approximately 28% (range from 24-34% depending upon month; Table 3-6). For the pit walls, the temperature distribution was smoothed less strongly as the depth of reaction is shallow, yielding a wider range in scaling factors (16-41%) while showing a similar average scaling factor throughout the year.

Table 3-5:
Temperature scaling applied for the modelled waste rock mine components

Month	Pit walls	WRSAs
Jan	16%	24%
Feb	17%	24%
Mar	19%	25%
Apr	28%	29%
May	33%	31%
Jun	39%	33%
Jul	41%	34%
Aug	37%	33%
Sep	33%	31%
Oct	24%	28%
Nov	21%	26%
Dec	16%	24%
Average	27%	28%

3.1.3.2 Grain Size Distribution

Before representative material is placed into laboratory kinetic test cells, rock samples are crushed to a nominal grain size of <1/4" (6.35 mm) to allow for better comparability of reaction rates between different cells containing different geological material. The smaller the grain size, the higher the amount of surface area that is exposed to weathering, thereby causing increased reaction rates. Studies investigating the effect of grain size distribution on drainage chemistry in mine environments found that >80% of the geochemical loads are leached from the <25 mm fraction (Strömberg and Banwart, 1999; Stockwell *et al*., 2006). Dependent on the rock type and blasting method, it was estimated that this fraction represents between 10 and 40% by mass of a typical waste dump with the majority of studied waste dumps falling into the lower end of this range. Wickland and Wilson (2004) measured the particle size distribution of a waste rock dump and material less than 6 mm accounted for approximately 15% of the total dump mass. For the WRSA source term models, a scaling factor of 20% was utilized. For the pit wall blast-fractured zone, a reasonably conservative scaling factor of 30% was implemented to account for the increased mass

of reactive rock in response to blasting activities. A grain size scaling factor of 20% was assigned to the less damaged pit wall blast-influenced zone.

3.1.3.3 Contact Water

Humidity cell experiments are conducted using water/rock ratios that allow for the flushing of all rock material placed into the cells. Various studies suggest that only a portion of the rock mass contained in a waste dump is contacted by infiltrating water. In one study, for example, a small-scale waste rock dump was disassembled one year after its construction and the distribution of moisture contents within the dump indicated that the development of preferential flow paths is an important process (Marcoline *et al.,* 2006). Under low-flow conditions, water is preferentially retained in and will travel along the fine fractions within the waste dumps, whereas heavy rainfalls may flush relatively higher proportions of the coarser grain sizes (Andrina, 2009). It has also been postulated that, in months of higher rain intensity, a larger overall portion of the dump is contacted as more pathways are being activated. Further, the discrepancy between lab and field derived loading rates tends to be smaller for certain major ions that behave more conservatively (e.g., Kirchner & Mattson, 2015). This is likely as result of natural attenuation mechanisms (*e.g.,* co-precipitation, adsorption) that apply more effectively to minor and trace elements. In accordance with these concepts, contact water scaling factors were applied as a function of infiltration volume for each month as well as in dependence of the type of element modelled (major versus minor/trace). Specifically, four times larger scaling factors (*i.e.,* less correction) were applied to the following species: SO_4, Cl, F, Ca, Na, K, and Mg.

As the WRSAs becomes larger with time during operations, it can be assumed that the percentage of contact water decreases with increasing dump size over time since larger zones within the facility become isolated from infiltration as a result of the increasing rock volume/area ratio and corresponding decrease in the water/rock ratio. To account for this concept, the contact water scaling factors were adjusted across the different facilities proportional to the change in water/rock ratio modelled for each facility in a given model year. This approach was carried forward into the post-closure scenario where the WRSAs will be covered with soil as part of the closure process to reduce infiltration. An overview of the maximum assumed contact water factors for the two WRSAs is provided in Table 3-7. These maximum scaling factors apply in the month of the highest infiltration and are downscaled proportionally in lower-flow months.

The maximum contact water factor was held constant for pit walls over time where 100% and 80% contact water scaling factors were applied to the blast-fractured and blast-influenced zones, respectively, for the same major elements described above. For minor and trace elements, these maximum scaling factors were reduced by a factor of four to 25% and 20%. It is important to note that the scaling factors for pit walls and WRSAs are calibrated under consideration of the 2020 Eagle Gold kinetic test program described in Section 2.

Table 3-6:
Maximum contact water scaling factors implemented for the WRSA source term model

Facility	Platinum Gulch WRSA		Eagle Pup WRSA	
	Major Elements	*Minor/Trace Elements*	*Major Elements*	*Minor/Trace Elements*
2020	11%	3%		
2021	22%	6%	20%	5%
2022	27%	7%	15%	4%
2023			13%	3%
2024			13%	3%
2025			13%	3%
2026			12%	3%
2027			10%	3%
2028			10%	2%
PC	*12%*	*3%*	*6%*	*2%*

3.1.4 Model Output Adjustments

Water/rock ratios in humidity cell testing are generally high enough to prevent the saturation of leachates with respect to secondary mineral phases. Upscaling of geochemical loads, as described above, is generally carried out with no consideration given to mineral phases that may limit the dissolved concentrations of relatively insoluble elements such as Fe and Al, particularly at circum-neutral pH. In order to avoid the prediction of unrealistically high concentrations for species that are known to form secondary phases in mine drainage, PHREEQC - a thermodynamic mineral solubility model (Parkhurst and Appelo, 1999) - was employed on the upscaled model output concentrations to account for mineral solubility controls. As part of this modelling step, minerals commonly seen in mine drainage were allowed to precipitate from the predicted drainage solutions. An overview of the modelled phases is given in Table 3-8. Phases that were identified to be supersaturated in at least one output solution draining from the individual mine components are indicated by a check mark. Unmarked phases merely served as a theoretical concentration cap but do not affect the corresponding species.

In contrast to solutes that were capped via PHREEQC modelling, the comparison of the model output with the field barrel database revealed that some source term predictions may also be unrealistically low. This is interpreted to be an artifact of uncertainties relating to the scaling exercise and/or flow predictions. To maintain conservatism, a concentration minimum was implemented for each based on long-term field barrel data (pre-2020) and in consideration of waste rock lithological proportions for each given waste rock facility at end of mining. The resulting predicted minimum concentrations are summarized in Table 3-9. Note that these values were imposed equally for every model year and into post-closure.

Table 3-7:
Mineral phase allowed to precipitate in the Eagle Gold speciation model (PHREEQC)

Mineral	Ideal Formula	Eagle Pup WRSA	Platinum Gulch WRSA	Stewart Gulch WRSA	Pit walls
Barite	$BaSO_4$	✓	✓	✓	✓
Calcite	$CaCO_3$	✓	✓	✓	✓
Dolomite	$(Ca, Mg)(CO_3)_2$			✓	
Ferrihydrite	$Fe(OH)_3(a)$	✓	✓	✓	✓
Gibbsite	$Al(OH)_3$	✓	✓	✓	✓
Gypsum	$CaSO_4*2H_2O$				
Malachite	$CuCO_3$				
Quartz	SiO_2	✓	✓	✓	✓
Rhodochrosite	$MnCO_3$				
Smithsonite	$ZnCO_3$				

Notes: Phases with a check mark did in fact precipitate in the source term model output solutions.

Lastly, another adaption made to the upscaled loads is the derivation of selenium concentrations. Kinetic test data suggest that Se is strongly correlated with dissolved sulphate and is interpreted to be mineralogically associated with sulphur in both sulphate and sulphide minerals. For predictions made based on humidity cell upscaling, Se concentrations were modelled as a function of the sulphate concentration using Se/SO_4 ratios observed in the individual field barrels and proportioned according to rock type expected in a given mine year.

3.2 Results: Waste Rock Facilities

One of the key underlying assumptions with respect to WRSA and pit wall drainage chemistry is that PAG material is sufficiently sparse, evenly distributed and/or adequately managed to prevent the onset of acidic conditions. Therefore, all geochemical source terms generated as part of this document are assumed to remain circum-neutral in the long-term with pH values expected to fall around 8.0 based on observations from the field barrel program.

Model results are shown as time-series plots for the parameters of concern (As, Sb, Se, and SO_4) in Figure 3-2 and Figure 3-3. The relatively large range in the values within a scenario and mine component presented can be explained by the proportion of surfaces rinsed in response to seasonally variable flow rates and the consideration of temperature effects. Where seasonal variability is minor (*e.g.,* As in Eagle open pit), predictions are dominated by calibration with field barrel results (Table 3-9). The last year of the plotted drainage quality predictions represent post-closure conditions and are imported in the water quality model repeatedly on an annual basis. The full suite of source terms for Eagle Pup and Platinum Gulch WRSAs is presented in Appendix A and the source terms for the Eagle pit walls are presented in Appendix B.

Table 3-8:
Minimum source term concentrations imposed based on field barrel database

	Eagle Pup WRSA	Platinum Gulch WRSA	Eagle Pit
SO_4	163	57	239
Cl	0.92	0.52	0.94
F	0.72	0.52	0.77
Ag	0.000011	0.000010	0.000010
Al	0.0032	0.0033	0.0028
As	0.071	0.16	0.067
B	0.015	0.010	0.010
Ba	0.018	0.0099	0.022
Be	0.00010	0.00010	0.00010
Ca	66	37	88
Cd	0.000062	0.000018	0.000062
Co	0.00040	0.00012	0.00027
Cr	0.00019	0.00024	0.00015
Cu	0.0049	0.0036	0.0034
Fe	0.010	0.010	0.010
K	4.0	3.0	4.0
Li	0.013	0.0072	0.016
Mg	12	6.3	17
Mn	0.013	0.00070	0.0021
Mo	0.047	0.021	0.017
Na	18	2.8	4.9
Ni	0.0028	0.00094	0.0026
P	0.30	0.30	0.30
Pb	0.00031	0.000062	0.00019
Sb	0.021	0.015	0.017
Se	0.0058	0.0023	0.0019
Si	3.8	3.8	3.3
Sn	0.00010	0.00010	0.00010
Sr	1.1	0.38	2.1
Tl	0.000038	0.000014	0.000086
U	0.045	0.014	0.076
V	0.0010	0.0010	0.0010
Zn	0.0073	0.0025	0.0082

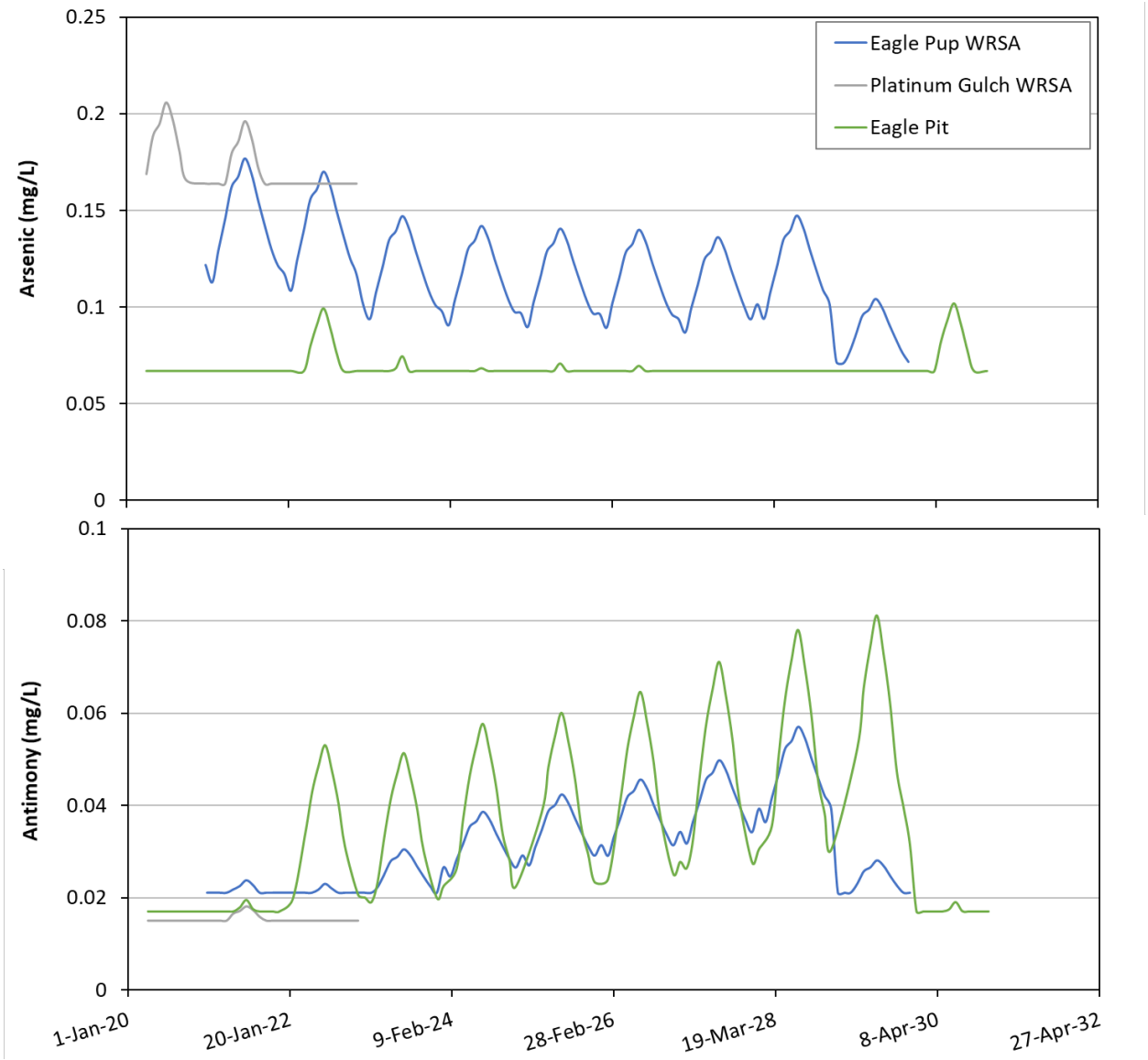

Figure 3-2: Source term predictions for the different Eagle Gold mine components for As and Sb

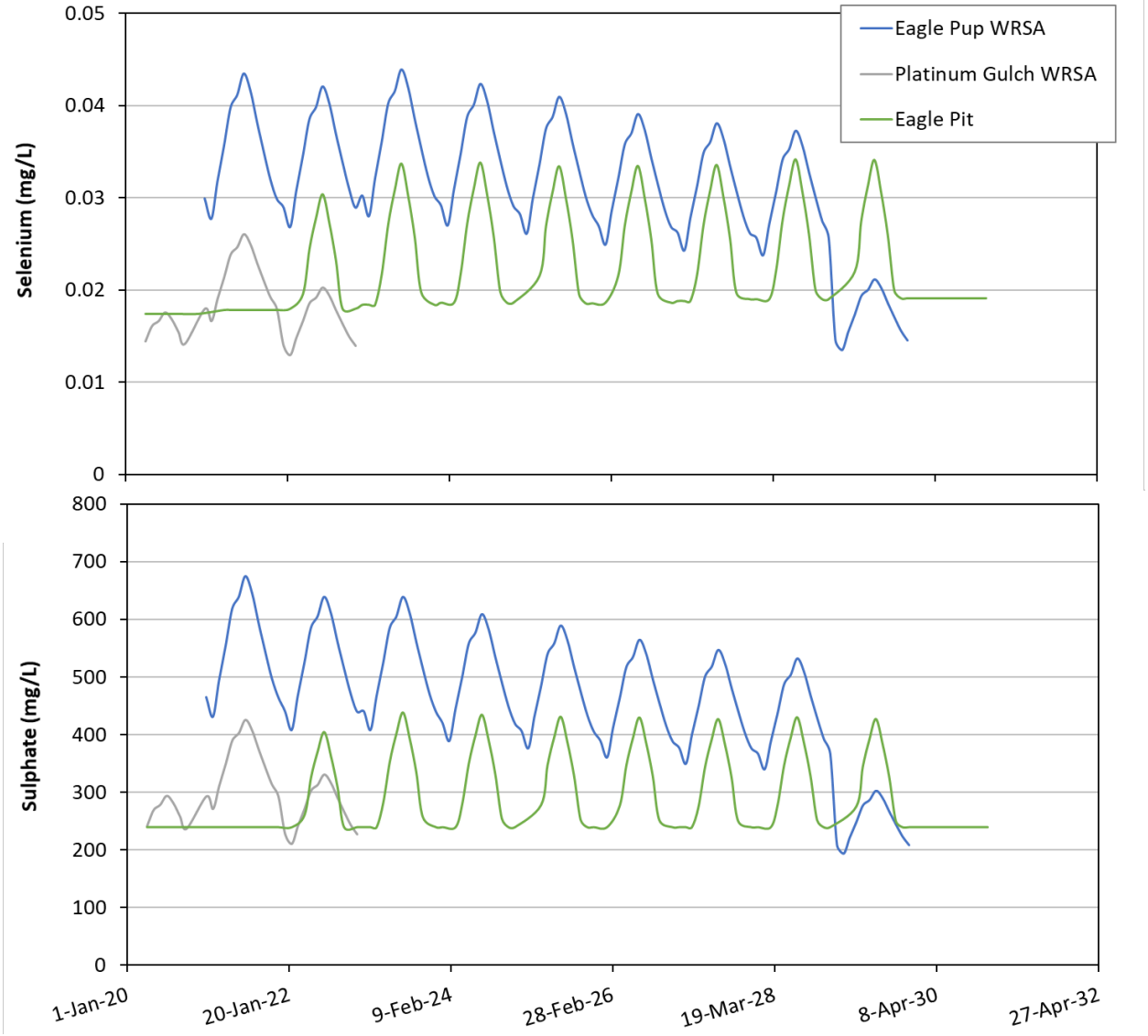

Figure 3-3: Source term predictions for the different Eagle Gold mine components for Se and sulphate

3.3 Heap Leach Facility

Prediction of the HLF drainage chemistry during operations and in post-closure (draindown phase and in the long-term) relied heavily on metallurgical column experiments as well as existing full-scale site-specific and site analogue data from the Brewery Creek Mine. It is anticipated that the operational and early post-closure HLF drainage chemistry will be governed by the effects of residual cyanide and its degradation products. The approach chosen for the prediction of HLF drainage chemistry is outlined in the following.

3.3.1 Barren Solution (Operations)

A barren solution source term was generated in support of water quality and treatment considerations during operations. Early-stage, full-scale barren solution data for the operating Eagle Gold mine was provided by VGC (Wilbur, 2020) and was reviewed by Lorax. Barren solution data from February 07, 2020 was used as the basis for the calculation of the geochemical source term however, due to these data representing an early-stage barren solution chemistry that will likely evolve over time as this water is being re-circulated, the following adjustments were made:

- A re-circulation factor was incorporated to account for the accumulation and attenuation of geochemical loads as the barren solution is recycled. This factor was derived based on observations from the metallurgical column testing over time. It was calculated as follows:

$$\text{Recirculation Factor} = \frac{\text{Median column concentration (cycles 2–4)}}{\text{Median column concentration (last 3 cycles)}}$$

- Several species that are required for the site-wide water quality model were not determined as part of the operational barren solution analysis. Predictions for these species were quantified either based on site analogue data (Brewery Creek), from the leach phase of the Eagle Gold metallurgical columns or based on expected operational concentrations provided by VGC.

The barren solution source term is presented in Table 3-10 along with a list of modifications made to the original analytical data received (February 7, 2020 barren solution).

Table 3-9:
HLF barren solution source term input and results (in mg/L)

Parameter	Barren Solution (Feb 07, 2020)	Recirculation factor	Data Source	Source Term
pH	10.5			10.5
SO_4	N/A	N/A	charge balance ion	540
Cl	N/A	N/A	from met. col.	28
F	N/A	N/A	from met. col.	3.9
NH_3 (as N)	N/A	N/A	from BC	18
NO_3 (as N)	N/A	N/A	from BC	250
NO_2 (as N)	N/A	N/A	from BC	13
Cyanate	57	N/A	barren solution	57
Total CN	338	N/A	expected (from VGCX)	250
WAD CN	332	N/A	% barren solution	246
Ag	0.042	1.0	Recirculated barren sol.	0.042
Al	0.22	0.69	Recirculated barren sol.	0.15
As	0.37	9.2	Recirculated barren sol.	3.4
Ca	273	0.36	Recirculated barren sol.	99
Cd	0.48	2.3	Recirculated barren sol.	1.1
Co	1.2	0.76	Recirculated barren sol.	0.90
Cr	0.0021	0.60	Recirculated barren sol.	0.0012
Cu	8.7	0.86	Recirculated barren sol.	7.5
Fe	0.90	4.9	Recirculated barren sol.	4.4
Hg	0.0086	1.8	Recirculated barren sol.	0.016
K	8.1	0.56	Recirculated barren sol.	4.5
Li	0.010	1.0	Recirculated barren sol.	0.010
Mg	1.0	1.0	Recirculated barren sol.	1.0
Mn	0.30	12	Recirculated barren sol.	3.6
Mo	0.42	0.56	Recirculated barren sol.	0.24
Na	185	1.9	from met. col.	820
Ni	1.4	6.8	Recirculated barren sol.	9.7
P	0.50	1.0	Recirculated barren sol.	0.50
Pb	0.00050	5.9	Recirculated barren sol.	0.0029
Sb	0.0076	5.3	Recirculated barren sol.	0.040
Se	0.13	2.7	Recirculated barren sol.	0.36
Si	4.9	N/A	Recirculated barren sol.	4.9
Sn	0.0010	1.0	Recirculated barren sol.	0.0010
Sr	0.80	0.28	Recirculated barren sol.	0.22
Tl	0.00010	20	Recirculated barren sol.	0.0020
U	0.00025	N/A	Recirculated barren sol.	0.00025
V	0.0050	1.7	Recirculated barren sol.	0.0085
Zn	45	1.1	Recirculated barren sol.	51

Notes: met. col. = Eagle metallurgical columns; BC = Brewery Creek; all concentrations are in mg/L.

3.3.2 Post-Closure

Two scenarios were modelled for the post-closure HLF drainage chemistry, namely an early draindown as well as a long-term period. For each of these temporal predictions, a base and an upper case were modelled, such that a total of four source terms were generated. The HLF source term model relied predominantly on data from metallurgical columns as well as Brewery Creek water quality monitoring (Viceroy Minerals, 2003; Alexco, 2012; SRK, 2014, Harrington, pers. comm., 2014). Specifically, for most species back-calculated scaling factors derived from the Brewery Creek HLF water quality monitoring with Brewery Creek metallurgical columns were applied to the metallurgical column data (post Au-leach and detox phase) available for Eagle Pit ore.

For the two temporal scenarios, base case scaling factors were calculated using Brewery Creek data as follows:

- Early draindown: $\text{Scaling Factor} = \frac{\text{Median HLF concentration (draindown)}}{\text{Median column concentration}}$
- Long-term: $\text{Scaling Factor} = \frac{\text{Median HLF concentration (long-term)}}{\text{Median column concentration}}$

For the upper case, the same general approach was employed, however instead of the median HLF monitoring data, the maximum observed concentrations were considered. The Brewery Creek HLF drainage databases used for this exercise include the following:

- Early draindown: Monitoring data from station BC-28a in in year 2002 (draindown)
- Long-Term: Monitoring data from station BC-28a in in years 2006-2012.

Note that no geochemical data was available for a number of solutes in the Brewery Creek metallurgical column dataset. Therefore, a subset of element-specific scaling factors were adopted from solutes where data was available based on the type of solute (major ions, minor/trace element, oxyanions). These scaling factors were then multiplied with the median concentrations produced by the Eagle Pit metallurgical columns after detoxification.

For CN and other N species (NH_3, NO_2, NO_3), scaling factors were not extrapolated, but rather median and maximum concentrations of these species from the Brewery Creek HLF monitoring database were used directly for the base and upper cases, respectively.

Lastly, in order to not produce unrealistically high source term predictions through uncertainties in scaling of metallurgical columns, concentrations caps were imposed. To maintain conservatism, these caps were calculated as 3 x the maximum water quality monitoring result from the Brewery Creek site (BC-28a) for a given species. The geochemistry model input data, scaling factors, as well as resulting source term predictions for the Eagle Gold HLF are summarized in Table 3-11.

Table 3-10:
Eagle Gold HLF post-closure source term model inputs and results (in mg/L)

	Eagle Column Data	Scaling Factors		Scaling Factors		Source Term Predictions		Source Term Predictions	
		Base Case		Upper Case		Base Case		Upper Case	
	Median (post-detox)	Early Draindown	Long-term	Early Draindown	Long-term	Early Draindown	Long-term	Early Draindown	Long-term
pH	8.7	1.0	0.97	1.1	1.0	9.1	8.4	9.4	8.7
SO_4	76	16	16	19	30	1183	1232	1450	2287
Cl	0.10	16	16	19	30	41	30	43	37
F	0.99	16	16	19	30	0.51	0.51	0.51	0.51
NH_3 (as N)	0.050	N/A	N/A	N/A	N/A	7.6	0.022	14	0.13
NO_3 (as N)	0.56	N/A	N/A	N/A	N/A	317	325	465	402
NO_2 (as N)	0.040	N/A	N/A	N/A	N/A	5.8	6.0	7.2	7.4
Cyanate	0.20	N/A	N/A	N/A	N/A	0.75	0.59	1.6	1.1
Total CN	0.27	N/A	N/A	N/A	N/A	0.90	0.84	1.9	1.6
WAD CN	0.021	0.038	0.011	0.17	0.076	0.31	0.088	1.4	0.61
Ag	0.0015	0.30	0.11	0.61	0.21	0.030	0.00017	0.030	0.00031
Al	3.0	N/A	N/A	N/A	N/A	0.14	0.017	1.0	0.36
As	3.5	0.11	0.067	0.16	0.084	0.56	0.34	0.77	0.39
Ca	7.4	16	16	19	30	183	288	269	355
Cd	0.00090	0.30	0.11	0.61	0.21	0.025	0.00018	0.025	0.00031
Co	0.0020	0.30	0.11	0.61	0.21	1.2	0.73	1.2	0.97
Cr	0.0020	0.30	0.11	0.61	0.21	0.030	0.0010	0.030	0.0025
Cu	0.012	0.031	0.0011	0.073	0.010	0.060	0.0021	0.14	0.0042
Fe	1.6	1.9	1.1	5.6	2.9	3.0	1.7	4.3	2.2
Hg	0.00036	25	0.47	104	6.0	0.0089	0.00017	0.037	0.0021
K	3.7	16	16	19	30	58	20	71	20
Li	0.020	16	16	19	30	0.030	0.030	0.030	0.030
Mg	0.53	16	16	19	30	9.5	57	21	79
Mn	0.052	0.30	0.11	0.61	0.21	0.076	0.028	0.47	0.044
Mo	0.0082	2.7	3.4	3.2	4.3	0.050	0.027	0.070	0.035
Na	180	16	16	19	30	1347	1689	1347	1689
Ni	0.0036	0.30	0.11	0.61	0.21	0.13	0.0080	0.16	0.011
P	0.89	2.7	3.4	3.2	4.3	1.3	0.90	1.3	0.90
Pb	0.27	0.30	0.11	0.61	0.21	0.081	0.031	0.16	0.055
Sb	0.51	2.0	4.7	2.6	6.3	1.0	2.4	1.3	3.2
Se	0.013	6.0	5.3	7.0	6.7	0.18	0.16	0.20	0.19
Si	23	N/A	N/A	N/A	N/A	4.2	3.6	7.2	4.5
Sn	0.010	0.30	0.11	0.61	0.21	0.0030	0.0011	0.030	0.0021
Sr	0.10	N/A	N/A	N/A	N/A	0.98	1.3	1.5	1.6
Tl	0.00040	0.30	0.11	0.61	0.21	0.0010	0.00031	0.025	0.00050
U	0.057	2.7	3.4	3.2	4.3	0.0030	0.074	0.0030	0.074
V	0.028	2.7	3.4	3.2	4.3	0.030	0.030	0.030	0.030
Zn	0.034	0.57	0.23	1.1	0.40	0.020	0.0080	0.039	0.014

Notes: All concentrations are given in mg/L.

4. Closure

This technical memorandum was prepared by the Lorax staff below for the exclusive use of Victoria Gold Corporation. Please contact the undersigned should you have any comments or concerns relating to the content of this document.

Respectfully,
Lorax Environmental Services Ltd.

Prepared by:	Reviewed by:
Original Signed by	*Original Signed by*
Timo Kirchner, M.Sc., P.Geo. Environmental Geoscientist	**David Flather, M.Sc.** Principal

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		pH	Alkalinity (as $CaCO_3$)	SO_4	Cl	Ag	Al	As	Ca	Cd	Co	Cr	Cu	Fe	Hg	K	Mg	Mn	Mo	Na	Ni	P	Pb	Sb	Se	U	V	Zn
Eagle Pup WRSA	Jan-21	8.0	31	466	7.0	0.000011	0.0073	0.122	142	0.000062	0.00040	0.00032	0.0049	0.0020	0.000022	50	24	0.047	0.047	18	0.0028	0.30	0.00031	0.021	0.030	0.045	0.0010	0.0074
	Feb-21	8.0	32	431	6.5	0.000011	0.0074	0.113	133	0.000062	0.00040	0.00030	0.0049	0.0019	0.000020	46	22	0.044	0.047	18	0.0028	0.30	0.00031	0.021	0.028	0.045	0.0010	0.0073
	Mar-21	8.0	31	494	7.4	0.000012	0.0072	0.13	150	0.000062	0.00040	0.00034	0.0049	0.0020	0.000023	53	25	0.050	0.047	18	0.0028	0.30	0.00031	0.021	0.032	0.045	0.0010	0.0074
	Apr-21	8.0	30	555	8.3	0.000013	0.0070	0.15	166	0.000062	0.00044	0.00038	0.0049	0.0020	0.000026	59	29	0.056	0.047	18	0.0028	0.30	0.00031	0.021	0.036	0.045	0.0010	0.0074
	May-21	8.0	29	619	9.3	0.000015	0.0068	0.16	184	0.000062	0.00049	0.00042	0.0049	0.0021	0.000029	66	32	0.063	0.047	18	0.0028	0.30	0.00034	0.022	0.040	0.045	0.0011	0.0074
	Jun-21	8.0	29	640	9.6	0.000015	0.0067	0.17	190	0.000062	0.00050	0.00044	0.0049	0.0021	0.000030	69	33	0.065	0.047	18	0.0028	0.30	0.00035	0.023	0.041	0.045	0.0012	0.0074
	Jul-21	7.9	29	676	10.1	0.000016	0.0066	0.18	200	0.000062	0.00053	0.00046	0.0049	0.0021	0.000032	72	35	0.069	0.047	18	0.0028	0.30	0.00037	0.024	0.044	0.045	0.0012	0.0074
	Aug-21	8.0	29	647	9.7	0.000015	0.0067	0.17	192	0.000062	0.00051	0.00044	0.0049	0.0021	0.000031	69	33	0.066	0.047	18	0.0028	0.30	0.00035	0.023	0.042	0.045	0.0012	0.0074
	Sep-21	8.0	30	594	8.9	0.000014	0.0068	0.16	177	0.000062	0.00047	0.00041	0.0049	0.0021	0.000028	64	31	0.060	0.047	18	0.0028	0.30	0.00032	0.021	0.038	0.045	0.0011	0.0074
	Oct-21	8.0	30	545	8.2	0.000013	0.0070	0.14	164	0.000062	0.00043	0.00037	0.0049	0.0020	0.000026	58	28	0.055	0.047	18	0.0028	0.30	0.00031	0.021	0.035	0.045	0.0010	0.0074
	Nov-21	8.0	31	498	7.5	0.000012	0.0071	0.13	151	0.000062	0.00040	0.00034	0.0049	0.0020	0.000024	53	26	0.051	0.047	18	0.0028	0.30	0.00031	0.021	0.032	0.045	0.0010	0.0074
	Dec-21	8.0	31	465	7.0	0.000011	0.0073	0.122	142	0.000062	0.00040	0.00032	0.0049	0.0020	0.000022	50	24	0.047	0.047	18	0.0028	0.30	0.00031	0.021	0.030	0.045	0.0010	0.0074
	Jan-22	8.0	32	441	6.8	0.000011	0.0074	0.117	134	0.000062	0.00040	0.00032	0.0049	0.0019	0.000022	49	23	0.045	0.047	18	0.0028	0.30	0.00031	0.021	0.029	0.045	0.0010	0.0074
	Feb-22	8.0	33	408	6.3	0.000011	0.0075	0.109	125	0.000062	0.00040	0.00029	0.0049	0.0019	0.000020	45	21	0.042	0.047	18	0.0028	0.30	0.00031	0.021	0.027	0.045	0.0010	0.0073
	Mar-22	8.0	32	467	7.2	0.000012	0.0073	0.124	141	0.000062	0.00040	0.00033	0.0049	0.0020	0.000023	51	25	0.048	0.047	18	0.0028	0.30	0.00031	0.021	0.031	0.045	0.0010	0.0074
	Apr-22	8.0	31	525	8.1	0.000013	0.0071	0.14	157	0.000062	0.00041	0.00038	0.0049	0.0020	0.000026	58	28	0.053	0.047	18	0.0028	0.30	0.00031	0.021	0.035	0.045	0.0010	0.0074
	May-22	8.0	30	586	9.0	0.000015	0.0069	0.16	173	0.000062	0.00046	0.00042	0.0049	0.0021	0.000029	65	31	0.060	0.047	18	0.0028	0.30	0.00032	0.021	0.039	0.045	0.0011	0.0074
	Jun-22	8.0	30	606	9.3	0.000015	0.0068	0.16	179	0.000062	0.00048	0.00043	0.0049	0.0021	0.000030	67	32	0.062	0.047	18	0.0028	0.30	0.00034	0.022	0.040	0.045	0.0011	0.0074
	Jul-22	8.0	29	640	9.8	0.000016	0.0068	0.17	188	0.000062	0.00050	0.00046	0.0049	0.0021	0.000032	71	34	0.065	0.047	18	0.0028	0.30	0.00035	0.023	0.042	0.045	0.0012	0.0074
	Aug-22	8.0	30	613	9.4	0.000015	0.0068	0.16	180	0.000062	0.00048	0.00044	0.0049	0.0021	0.000030	67	32	0.062	0.047	18	0.0028	0.30	0.00034	0.022	0.040	0.045	0.0011	0.0074
	Sep-22	8.0	30	562	8.6	0.000014	0.0070	0.15	167	0.000062	0.00044	0.00040	0.0049	0.0020	0.000028	62	30	0.057	0.047	18	0.0028	0.30	0.00031	0.021	0.037	0.045	0.0010	0.0074
	Oct-22	8.0	31	516	7.9	0.000013	0.0071	0.14	154	0.000062	0.00041	0.00037	0.0049	0.0020	0.000025	57	27	0.052	0.047	18	0.0028	0.30	0.00031	0.021	0.034	0.045	0.0010	0.0074
	Nov-22	8.0	32	472	7.2	0.000012	0.0073	0.13	142	0.000062	0.00040	0.00034	0.0049	0.0020	0.000023	52	25	0.048	0.047	18	0.0028	0.30	0.00031	0.021	0.031	0.045	0.0010	0.0074
	Dec-22	8.0	32	440	6.7	0.000011	0.0074	0.117	134	0.000062	0.00040	0.00031	0.0049	0.0019	0.000022	48	23	0.045	0.047	18	0.0028	0.30	0.00031	0.021	0.029	0.045	0.0010	0.0074
	Jan-23	8.0	32	441	6.6	0.000011	0.0074	0.101	134	0.000062	0.00040	0.00030	0.0049	0.0019	0.000021	50	24	0.044	0.047	18	0.0028	0.30	0.00031	0.021	0.030	0.045	0.0010	0.0074
	Feb-23	8.0	33	408	6.1	0.000011	0.0075	0.094	126	0.000062	0.00040	0.00028	0.0049	0.0019	0.000019	46	22	0.041	0.047	18	0.0028	0.30	0.00031	0.021	0.028	0.045	0.0010	0.0073
	Mar-23	8.0	32	467	7.0	0.000011	0.0073	0.108	142	0.000062	0.00040	0.00032	0.0049	0.0020	0.000022	53	25	0.047	0.047	18	0.0028	0.30	0.00031	0.022	0.032	0.045	0.0010	0.0074
	Apr-23	8.0	31	525	7.8	0.000012	0.0071	0.121	157	0.000062	0.00040	0.00036	0.0049	0.0020	0.000025	59	29	0.053	0.047	18	0.0028	0.30	0.00031	0.025	0.036	0.045	0.0010	0.0074
	May-23	8.0	30	586	8.7	0.000014	0.0069	0.13	174	0.000062	0.00044	0.00040	0.0049	0.0021	0.000027	66	32	0.059	0.047	20	0.0028	0.30	0.00032	0.028	0.040	0.045	0.0011	0.0074
	Jun-23	8.0	30	606	9.0	0.000014	0.0068	0.14	179	0.000062	0.00045	0.00041	0.0049	0.0021	0.000028	68	33	0.061	0.047	20	0.0028	0.30	0.00033	0.029	0.042	0.045	0.0011	0.0074
	Jul-23	8.0	29	640	9.5	0.000015	0.0067	0.15	188	0.000062	0.00048	0.00043	0.0049	0.0021	0.000030	72	35	0.064	0.047	22	0.0028	0.30	0.00034	0.031	0.044	0.045	0.0012	0.0074
	Aug-23	8.0	30	613	9.1	0.000014	0.0068	0.14	181	0.000062	0.00046	0.00042	0.0049	0.0021	0.000029	69	33	0.062	0.047	21	0.0028	0.30	0.00033	0.029	0.042	0.045	0.0012	0.0074
	Sep-23	8.0	30	562	8.4	0.000013	0.0070	0.13	167	0.000062	0.00042	0.00038	0.0049	0.0020	0.000026	63	31	0.057	0.047	19	0.0028	0.30	0.00031	0.027	0.039	0.045	0.0011	0.0074
	Oct-23	8.0	31	516	7.7	0.000012	0.0071	0.119	155	0.000062	0.00040	0.00035	0.0049	0.0020	0.000024	58	28	0.052	0.047	18	0.0028	0.30	0.00031	0.025	0.035	0.045	0.0010	0.0074
	Nov-23	8.0	31	471	7.0	0.000011	0.0073	0.108	143	0.000062	0.00040	0.00032	0.0049	0.0020	0.000022	53	26	0.047	0.047	18	0.0028	0.30	0.00031	0.022	0.032	0.045	0.0010	0.0074
	Dec-23	8.0	32	440	6.6	0.000011	0.0074	0.101	134	0.000062	0.00040	0.00030	0.0049	0.0019	0.000021	49	24	0.044	0.047	18	0.0028	0.30	0.00031	0.021	0.030	0.045	0.0010	0.0074
	Jan-24	8.0	32	420	6.4	0.000011	0.0075	0.098	128	0.000062	0.00040	0.00030	0.0049	0.0019	0.000020	47	23	0.042	0.047	18	0.0028	0.30	0.00031	0.027	0.029	0.045	0.0010	0.0073
	Feb-24	8.0	33	389	5.9	0.000011	0.0076	0.091	120	0.000062	0.00040	0.00028	0.0049	0.0019	0.000019	44	22	0.039	0.047	18	0.0028	0.30	0.00031	0.025	0.027	0.045	0.0010	0.0073
	Mar-24	8.0	32	445	6.8	0.000011	0.0074	0.104	135	0.000062	0.00040	0.00032	0.0049	0.0020	0.000022	50	25	0.045	0.047	18	0.0028	0.30	0.00031	0.028	0.031	0.045	0.0010	0.0074
	Apr-24	8.0	31	501	7.6	0.000012	0.0072	0.117	150	0.000062	0.00040	0.00036	0.0049	0.0020	0.000024	57	28	0.050	0.047	19	0.0028	0.30	0.00031	0.032	0.035	0.045	0.0010	0.0074
	May-24	8.0	30	558	8.5	0.000014	0.0070	0.13	165	0.000062	0.00042	0.00040	0.0049	0.0020	0.000027	63	31	0.056	0.047	22	0.0028	0.30	0.00031	0.035	0.039	0.045	0.0011	0.0074
	Jun-24	8.0	30	578	8.8	0.000014	0.0069	0.13	171	0.000062	0.00043	0.00042	0.0049	0.0021	0.000028	65	32	0.058	0.047	22	0.0028	0.30	0.00032	0.037	0.040	0.045	0.0011	0.0074
	Jul-24	8.0	30	610	9.3	0.000015	0.0068	0.14	179	0.000062	0.00046	0.00044	0.0049	0.0021	0.000030	69	34	0.061	0.047	24	0.0028	0.30	0.00034	0.039	0.042	0.045	0.0012	0.0074
	Aug-24	8.0	30	584	8.9	0.000014	0.0069	0.14	172	0.000062	0.00044	0.00042	0.0049	0.0021	0.000028	66	33	0.059	0.047	23	0.0028	0.30	0.00032	0.037	0.041	0.045	0.0012	0.0074
	Sep-24	8.0	31	536	8.2	0.000013	0.0071	0.125	159	0.000062	0.00040	0.00039	0.0049	0.0020	0.000026	61	30	0.054	0.047	21	0.0028	0.30	0.00031	0.034	0.037	0.045	0.0011	0.0074
	Oct-24	8.0	31	492	7.5	0.000012	0.0072	0.115	147	0.000062	0.00040	0.00036	0.0049	0.0020	0.000024	56	27	0.049	0.047	19	0.0028	0.30	0.00031	0.031	0.034	0.045	0.0010	0.0074
	Nov-24	8.0	32	449	6.9	0.000011	0.0074	0.105	136	0.000062	0.00040	0.00033	0.0049	0.0020	0.000022	51	25	0.045	0.047	18	0.0028	0.30	0.00031	0.028	0.031	0.045	0.0010	0.0074
	Dec-24	8.0	32	419	6.4	0.000011	0.0075	0.098	128	0.000062	0.00040	0.00030	0.0049	0.0019	0.000020	47	23	0.042	0.047	18	0.0028	0.30	0.00031	0.027	0.029	0.045	0.0010	0.0073
	Jan-25	8.0	33	406	6.3	0.000011	0.0076	0.097	124	0.000062	0.00040	0.00031	0.0049	0.0019	0.000020	46	23	0.041	0.047	18	0.0028	0.30	0.00031	0.029	0.028	0.045	0.0010	0.0073
	Feb-25	8.0	33	376	5.8	0.000011	0.0077	0.090	116	0.000062	0.00040	0.00029	0.0049	0.0019	0.000019	42	21	0.038	0.047	18	0.0028	0.30	0.00031	0.027	0.026	0.045	0.0010	0.0073
	Mar-25	8.0	32	431	6.7	0.000011	0.0075	0.103	131	0.000062	0.00040	0.00033	0.0049	0.0019	0.000021	49	24	0.043	0.047	18	0.0028	0.30	0.00031	0.031	0.030	0.045	0.0010	0.0074
	Apr-25	8.0	31	484	7.5	0.000012	0.0073	0.116	145	0.000062	0.00040	0.00037	0.0049	0.0020	0.000024	55	27	0.048	0.047	20	0.0028	0.30	0.00031	0.035	0.034	0.045	0.0010	0.0074
	May-25	8.0	31	540	8.4	0.000013	0.0071	0.13	160	0.000062	0.00041	0.00041	0.0049	0.0020	0.000027	61	30	0.054	0.047	22	0.0028	0.30	0.00031	0.039	0.038	0.045	0.0011	0.0074
	Jun-25	8.0	30	559	8.7	0.000014	0.0070	0.13	165	0.000062	0.00042	0.00043	0.0049	0.0020	0.000028	63	31	0.056	0.047	23	0.0028	0.30	0.00032	0.040	0.039	0.045	0.0011	0.0074

		pH	Alkalinity (as $CaCO_3$)	SO_4	Cl	Ag	Al	As	Ca	Cd	Co	Cr	Cu	Fe	Hg	K	Mg	Mn	Mo	Na	Ni	P	Pb	Sb	Se	U	V	Zn
Eagle Pup WRSA	Jan-21	8.0	31	466	7.0	0.000011	0.0073	0.122	142	0.000062	0.00040	0.00032	0.0049	0.0020	0.000022	50	24	0.047	0.047	18	0.0028	0.30	0.00031	0.021	0.030	0.045	0.0010	0.0074
	Jul-25	8.0	30	590	9.1	0.000015	0.0069	0.14	173	0.000062	0.00045	0.00045	0.0049	0.0021	0.000029	67	33	0.059	0.047	24	0.0028	0.30	0.00033	0.042	0.041	0.046	0.0012	0.0074
	Aug-25	8.0	30	565	8.8	0.000014	0.0070	0.13	167	0.000062	0.00043	0.00043	0.0049	0.0020	0.000028	64	32	0.057	0.047	23	0.0028	0.30	0.00032	0.041	0.039	0.045	0.0011	0.0074
	Sep-25	8.0	31	518	8.0	0.000013	0.0071	0.124	154	0.000062	0.00040	0.00039	0.0049	0.0020	0.000026	58	29	0.052	0.047	21	0.0028	0.30	0.00031	0.037	0.036	0.045	0.0011	0.0074
	Oct-25	8.0	32	476	7.4	0.000012	0.0073	0.114	143	0.000062	0.00040	0.00036	0.0049	0.0020	0.000024	54	27	0.048	0.047	20	0.0028	0.30	0.00031	0.034	0.033	0.045	0.0010	0.0074
	Nov-25	8.0	32	435	6.7	0.000011	0.0074	0.104	132	0.000062	0.00040	0.00033	0.0049	0.0019	0.000022	49	24	0.044	0.047	18	0.0028	0.30	0.00031	0.031	0.030	0.045	0.0010	0.0074
	Dec-25	8.0	33	406	6.3	0.000011	0.0076	0.097	124	0.000062	0.00040	0.00031	0.0049	0.0019	0.000020	46	23	0.041	0.047	18	0.0028	0.30	0.00031	0.029	0.028	0.045	0.0010	0.0073
	Jan-26	8.0	33	389	6.2	0.000011	0.0077	0.097	119	0.000062	0.00040	0.00032	0.0049	0.0019	0.000020	44	22	0.039	0.047	18	0.0028	0.30	0.00031	0.031	0.027	0.045	0.0010	0.0073
	Feb-26	8.0	34	361	5.7	0.000011	0.0078	0.089	111	0.000062	0.00040	0.00029	0.0049	0.0019	0.000019	41	20	0.036	0.047	18	0.0028	0.30	0.00031	0.029	0.025	0.045	0.0010	0.0073
	Mar-26	8.0	33	413	6.6	0.000011	0.0076	0.102	125	0.000062	0.00040	0.00033	0.0049	0.0019	0.000021	47	23	0.041	0.047	18	0.0028	0.30	0.00031	0.033	0.029	0.045	0.0010	0.0073
	Apr-26	8.0	32	464	7.4	0.000012	0.0074	0.115	139	0.000062	0.00040	0.00038	0.0049	0.0020	0.000024	53	26	0.046	0.047	21	0.0028	0.30	0.00031	0.037	0.032	0.045	0.0010	0.0074
	May-26	8.0	31	518	8.2	0.000013	0.0072	0.13	153	0.000062	0.00040	0.00042	0.0049	0.0020	0.000027	59	29	0.052	0.047	23	0.0028	0.30	0.00031	0.042	0.036	0.047	0.0011	0.0074
	Jun-26	8.0	31	535	8.5	0.000014	0.0071	0.13	158	0.000062	0.00041	0.00043	0.0049	0.0020	0.000028	61	30	0.054	0.047	24	0.0028	0.30	0.00031	0.043	0.037	0.049	0.0011	0.0074
	Jul-26	8.0	30	565	9.0	0.000015	0.0070	0.14	166	0.000062	0.00043	0.00046	0.0049	0.0020	0.000029	64	32	0.057	0.047	25	0.0028	0.30	0.00033	0.046	0.039	0.051	0.0012	0.0074
	Aug-26	8.0	31	541	8.6	0.000014	0.0071	0.13	159	0.000062	0.00041	0.00044	0.0049	0.0020	0.000028	61	31	0.054	0.047	24	0.0028	0.30	0.00032	0.044	0.037	0.049	0.0011	0.0074
	Sep-26	8.0	31	496	7.9	0.000013	0.0072	0.123	147	0.000062	0.00040	0.00040	0.0049	0.0020	0.000026	56	28	0.050	0.047	22	0.0028	0.30	0.00031	0.040	0.034	0.045	0.0010	0.0074
	Oct-26	8.0	32	456	7.2	0.000012	0.0074	0.113	137	0.000062	0.00040	0.00037	0.0049	0.0020	0.000024	52	26	0.046	0.047	20	0.0028	0.30	0.00031	0.037	0.032	0.045	0.0010	0.0074
	Nov-26	8.0	33	416	6.6	0.000011	0.0075	0.103	126	0.000062	0.00040	0.00034	0.0049	0.0019	0.000022	47	24	0.042	0.047	19	0.0028	0.30	0.00031	0.034	0.029	0.045	0.0010	0.0073
	Dec-26	8.0	33	389	6.2	0.000011	0.0077	0.096	119	0.000062	0.00040	0.00031	0.0049	0.0019	0.000020	44	22	0.039	0.047	18	0.0028	0.30	0.00031	0.031	0.027	0.045	0.0010	0.0073
	Jan-27	8.0	33	377	6.1	0.000011	0.0078	0.094	115	0.000062	0.00040	0.00032	0.0049	0.0019	0.000020	44	22	0.038	0.047	19	0.0028	0.30	0.00031	0.034	0.026	0.045	0.0010	0.0073
	Feb-27	8.0	34	349	5.7	0.000011	0.0079	0.087	108	0.000062	0.00040	0.00030	0.0049	0.0019	0.000019	41	20	0.035	0.047	18	0.0028	0.30	0.00031	0.032	0.024	0.045	0.0010	0.0073
	Mar-27	8.0	33	400	6.5	0.000011	0.0077	0.100	121	0.000062	0.00040	0.00034	0.0049	0.0019	0.000021	46	23	0.040	0.047	20	0.0028	0.30	0.00031	0.036	0.028	0.045	0.0010	0.0073
	Apr-27	8.0	32	450	7.3	0.000012	0.0074	0.112	134	0.000062	0.00040	0.00038	0.0049	0.0019	0.000024	52	26	0.045	0.047	22	0.0028	0.30	0.00031	0.041	0.031	0.048	0.0010	0.0074
	May-27	8.0	31	501	8.1	0.000014	0.0072	0.125	147	0.000062	0.00040	0.00043	0.0049	0.0020	0.000027	58	29	0.050	0.047	25	0.0028	0.30	0.00031	0.046	0.035	0.053	0.0011	0.0074
	Jun-27	8.0	31	519	8.4	0.000014	0.0072	0.13	152	0.000062	0.00040	0.00044	0.0049	0.0020	0.000028	60	30	0.052	0.047	26	0.0028	0.30	0.00031	0.047	0.036	0.055	0.0011	0.0074
	Jul-27	8.0	31	548	8.9	0.000015	0.0071	0.14	160	0.000062	0.00042	0.00047	0.0049	0.0020	0.000029	64	32	0.055	0.047	27	0.0028	0.30	0.00033	0.050	0.038	0.058	0.0012	0.0074
	Aug-27	8.0	31	524	8.5	0.000014	0.0072	0.13	153	0.000062	0.00040	0.00045	0.0049	0.0020	0.000028	61	31	0.052	0.047	26	0.0028	0.30	0.00031	0.048	0.036	0.056	0.0011	0.0074
	Sep-27	8.0	32	481	7.8	0.000013	0.0073	0.120	142	0.000062	0.00040	0.00041	0.0049	0.0020	0.000026	56	28	0.048	0.047	24	0.0028	0.30	0.00031	0.044	0.033	0.051	0.0010	0.0074
	Oct-27	8.0	32	442	7.2	0.000012	0.0075	0.110	132	0.000062	0.00040	0.00038	0.0049	0.0019	0.000024	51	26	0.044	0.047	22	0.0028	0.30	0.00031	0.040	0.031	0.047	0.0010	0.0074
	Nov-27	8.0	33	403	6.6	0.000011	0.0076	0.100	122	0.000062	0.00040	0.00034	0.0049	0.0019	0.000022	47	23	0.040	0.047	20	0.0028	0.30	0.00031	0.037	0.028	0.045	0.0010	0.0073
	Dec-27	8.0	33	377	6.1	0.000011	0.0078	0.094	115	0.000062	0.00040	0.00032	0.0049	0.0019	0.000020	44	22	0.038	0.047	19	0.0028	0.30	0.00031	0.034	0.026	0.045	0.0010	0.0073
	Jan-28	8.0	34	367	6.2	0.000013	0.0080	0.102	107	0.000062	0.00040	0.00032	0.0049	0.0018	0.00002	43	22	0.038	0.047	21	0.0028	0.30	0.00031	0.039	0.026	0.045	0.0010	0.0073
	Feb-28	8.1	35	340	5.7	0.000012	0.0081	0.094	101	0.000062	0.00040	0.00030	0.0049	0.0018	0.00002	40	21	0.035	0.047	19	0.0028	0.30	0.00031	0.036	0.024	0.045	0.0010	0.0073
	Mar-28	8.0	34	389	6.6	0.000014	0.0079	0.108	113	0.000062	0.00040	0.00034	0.0049	0.0019	0.00002	46	24	0.041	0.047	22	0.0028	0.30	0.00031	0.042	0.027	0.045	0.0010	0.0073
	Apr-28	8.0	33	437	7.4	0.000015	0.0077	0.121	125	0.000062	0.00040	0.00038	0.0049	0.0019	0.00002	52	27	0.046	0.047	25	0.0028	0.30	0.00031	0.047	0.031	0.049	0.0010	0.0074
	May-28	8.0	32	488	8.2	0.000017	0.0075	0.14	137	0.000062	0.00040	0.00042	0.0049	0.0019	0.00003	58	30	0.051	0.047	27	0.0028	0.30	0.00031	0.052	0.034	0.055	0.0011	0.0074
	Jun-28	8.0	32	505	8.5	0.000018	0.0074	0.14	142	0.000062	0.00041	0.00044	0.0049	0.0020	0.00003	59	31	0.053	0.047	28	0.0028	0.30	0.00031	0.054	0.035	0.057	0.0012	0.0074
	Jul-28	8.0	32	533	9.0	0.000019	0.0073	0.15	149	0.000062	0.00044	0.00046	0.0049	0.0020	0.00003	63	32	0.056	0.047	30	0.0028	0.30	0.00033	0.057	0.037	0.060	0.0012	0.0074
	Aug-28	8.0	32	510	8.6	0.000018	0.0074	0.14	143	0.000062	0.00042	0.00044	0.0049	0.0020	0.00003	60	31	0.053	0.047	29	0.0028	0.30	0.00032	0.055	0.036	0.057	0.0012	0.0074
	Sep-28	8.0	33	468	7.9	0.000017	0.0075	0.13	132	0.000062	0.00040	0.00041	0.0049	0.0019	0.00003	55	28	0.049	0.047	26	0.0028	0.30	0.00031	0.050	0.033	0.052	0.0011	0.0074
	Oct-28	8.0	33	430	7.2	0.000015	0.0077	0.119	123	0.000062	0.00040	0.00037	0.0049	0.0019	0.00002	51	26	0.045	0.047	24	0.0028	0.30	0.00031	0.046	0.030	0.048	0.0010	0.0074
	Nov-28	8.0	34	392	6.6	0.000014	0.0079	0.109	114	0.000062	0.00040	0.00034	0.0049	0.0019	0.00002	46	24	0.041	0.047	22	0.0028	0.30	0.00031	0.042	0.027	0.045	0.0010	0.0073
	Dec-28	8.0	34	366	6.2	0.000013	0.0080	0.101	107	0.000062	0.00040	0.00032	0.0049	0.0018	0.00002	43	22	0.038	0.047	21	0.0028	0.30	0.00031	0.039	0.026	0.045	0.0010	0.0073
	Jan-29	8.1	42	208	4.3	0.000014	0.010	0.072	58	0.000062	0.00040	0.00043	0.0049	0.0016	0.0000	21	14	0.023	0.047	18	0.0028	0.30	0.00036	0.021	0.015	0.045	0.0010	0.0073
	Feb-29	8.2	43	193	4.0	0.000013	0.010	0.071	55	0.000062	0.00040	0.00040	0.0049	0.0016	0.0000	20	13	0.021	0.047	18	0.0028	0.30	0.00034	0.021	0.014	0.045	0.0010	0.0073
	Mar-29	8.1	42	221	4.5	0.000014	0.010	0.076	60	0.000062	0.00040	0.00046	0.0049	0.0016	0.0000	23	14	0.024	0.047	18	0.0028	0.30	0.00038	0.021	0.015	0.045	0.0010	0.0073
	Apr-29	8.1	41	248	5.1	0.000016	0.0095	0.086	65	0.000062	0.00040	0.00052	0.0049	0.0017	0.0000	26	16	0.027	0.047	18	0.0028	0.30	0.00043	0.023	0.017	0.045	0.0010	0.0073
	May-29	8.1	40	277	5.7	0.000018	0.0093	0.095	71	0.000062	0.00040	0.00057	0.0049	0.0017	0.0000	28	18	0.030	0.047	18	0.0028	0.30	0.00048	0.026	0.019	0.045	0.0010	0.0073
	Jun-29	8.1	40	286	5.9	0.000019	0.0093	0.099	72	0.000062	0.00040	0.00059	0.0049	0.0017	0.0000	29	19	0.031	0.047	18	0.0028	0.30	0.00050	0.027	0.020	0.045	0.0010	0.0073
	Jul-29	8.1	39	302	6.2	0.000020	0.0092	0.104	75	0.000062	0.00040	0.00063	0.0049	0.0017	0.0000	31	20	0.033	0.047	18	0.0028	0.30	0.00053	0.028	0.021	0.045	0.0010	0.0073
	Aug-29	8.1	40	289	6.0	0.000019	0.0093	0.100	73	0.000062	0.00040	0.00060	0.0049	0.0017	0.0000	30	19	0.032	0.047	18	0.0028	0.30	0.00050	0.027	0.020	0.045	0.0010	0.0073
	Sep-29	8.1	40	265	5.5	0.000017	0.0094	0.092	68	0.000062	0.00040	0.00055	0.0049	0.0017	0.0000	27	17	0.029	0.047	18	0.0028	0.30	0.00046	0.025	0.019	0.045	0.0010	0.0073
	Oct-29	8.1	41	244	5.0	0.000016	0.0096	0.084	64	0.000062	0.00040	0.00051	0.0049	0.0017	0.0000	25	16	0.027	0.047	18	0.0028	0.30	0.00042	0.023	0.017	0.045	0.0010	0.0073
	Nov-29	8.1	42	223	4.6	0.000015	0.010	0.077	61	0.000062	0.00040	0.00046	0.0049	0.0016	0.0000	23	15	0.024	0.047	18	0.0028	0.30	0.00039	0.021	0.016	0.045	0.0010	0.0073
	Dec-29	8.1	42	208	4.3	0.000014	0.010	0.072	58	0.000062	0.00040	0.00043	0.0049	0.0016	0.0000	21	14	0.023	0.047	18	0.0028	0.30	0.00036	0.021	0.015	0.045	0.0010	0.0073

		pH	Alkalinity (as $CaCO_3$)	SO_4	Cl	Ag	Al	As	Ca	Cd	Co	Cr	Cu	Fe	Hg	K	Mg	Mn	Mo	Na	Ni	P	Pb	Sb	Se	U	V	Zn
Platinum Gulch	Apr-20	8.1	41	241	6.6	0.000014	0.0095	0.17	65	0.000022	0.00028	0.00045	0.0036	0.0017	0.000028	36	14	0.027	0.021	13	0.0017	0.30	0.00025	0.015	0.014	0.016	0.0010	0.0026
	May-20	8.1	40	269	7.4	0.000015	0.0093	0.19	71	0.000025	0.00031	0.00050	0.0036	0.0017	0.000031	40	16	0.030	0.021	14	0.0019	0.30	0.00028	0.015	0.016	0.018	0.0010	0.0029
	Jun-20	8.1	40	278	7.6	0.000016	0.0092	0.20	72	0.000026	0.00032	0.00052	0.0036	0.0017	0.000032	41	16	0.031	0.021	15	0.0019	0.30	0.00029	0.015	0.017	0.019	0.0010	0.0030
	Jul-20	8.1	39	294	8.1	0.000017	0.0091	0.21	75	0.000027	0.00034	0.00055	0.0037	0.0017	0.000033	43	17	0.032	0.021	15	0.0020	0.30	0.00031	0.015	0.018	0.020	0.0010	0.0032
	Aug-20	8.1	40	281	7.7	0.000016	0.0092	0.20	73	0.000026	0.00032	0.00052	0.0036	0.0017	0.000032	41	16	0.031	0.021	15	0.0019	0.30	0.00029	0.015	0.017	0.019	0.0010	0.0031
	Sep-20	8.1	40	258	7.1	0.000015	0.0094	0.18	69	0.000024	0.00030	0.00048	0.0036	0.0017	0.000029	38	15	0.029	0.021	14	0.0018	0.30	0.00027	0.015	0.015	0.017	0.0010	0.0028
	Oct-20	8.1	41	237	6.5	0.000014	0.0095	0.17	64	0.000022	0.00027	0.00044	0.0036	0.0017	0.000027	35	14	0.026	0.021	12.4	0.0016	0.30	0.00025	0.015	0.014	0.016	0.0010	0.0026
	Jan-21	8.1	37	293	6.0	0.000011	0.0085	0.16	86	0.000022	0.00028	0.00036	0.0036	0.0018	0.000023	37	16	0.031	0.021	11.1	0.0016	0.30	0.00023	0.015	0.018	0.015	0.0010	0.0025
	Feb-21	8.1	37	271	5.6	0.000011	0.0087	0.16	81	0.000020	0.00026	0.00033	0.0036	0.0017	0.000021	34	15	0.029	0.021	10.3	0.0014	0.30	0.00021	0.015	0.017	0.015	0.0010	0.0025
	Mar-21	8.1	36	311	6.4	0.000012	0.0084	0.16	90	0.000023	0.00030	0.00038	0.0036	0.0018	0.000024	39	17	0.033	0.021	11.8	0.0017	0.30	0.00024	0.015	0.019	0.015	0.0010	0.0026
	Apr-21	8.1	35	349	7.2	0.000014	0.0082	0.16	99	0.000026	0.00033	0.00043	0.0036	0.0018	0.000027	44	19	0.037	0.021	13	0.0019	0.30	0.00027	0.015	0.021	0.015	0.0010	0.0029
	May-21	8.0	35	389	8.0	0.000015	0.0080	0.18	109	0.000029	0.00037	0.00047	0.0036	0.0018	0.000030	49	21	0.041	0.021	15	0.0021	0.30	0.00030	0.017	0.024	0.017	0.0010	0.0032
	Jun-21	8.0	34	403	8.3	0.000016	0.0079	0.19	112	0.000030	0.00038	0.00049	0.0037	0.0019	0.000031	51	22	0.043	0.021	15	0.0021	0.30	0.00031	0.017	0.025	0.018	0.0010	0.0034
	Jul-21	8.0	34	425	8.8	0.000017	0.0078	0.20	117	0.000032	0.00040	0.00052	0.0039	0.0019	0.000033	53	23	0.045	0.021	16	0.0023	0.30	0.00033	0.018	0.026	0.019	0.0010	0.0035
	Aug-21	8.0	34	407	8.4	0.000016	0.0079	0.19	113	0.000031	0.00039	0.00050	0.0038	0.0019	0.000032	51	22	0.043	0.021	15	0.0022	0.30	0.00031	0.017	0.025	0.018	0.0010	0.0034
	Sep-21	8.0	35	373	7.7	0.000015	0.0081	0.17	105	0.000028	0.00035	0.00045	0.0036	0.0018	0.000029	47	20	0.039	0.021	14	0.0020	0.30	0.00029	0.016	0.023	0.016	0.0010	0.0031
	Oct-21	8.1	35	343	7.1	0.000013	0.0082	0.16	98	0.000026	0.00033	0.00042	0.0036	0.0018	0.000027	43	19	0.036	0.021	13	0.0018	0.30	0.00026	0.015	0.021	0.015	0.0010	0.0029
	Nov-21	8.1	36	313	6.5	0.000012	0.0084	0.16	91	0.000024	0.00030	0.00038	0.0036	0.0018	0.000024	39	17	0.033	0.021	11.9	0.0017	0.30	0.00024	0.015	0.019	0.015	0.0010	0.0026
	Dec-21	8.1	37	292	6.0	0.000011	0.0085	0.16	86	0.000022	0.00028	0.00036	0.0036	0.0018	0.000023	37	16	0.031	0.021	11.1	0.0016	0.30	0.00023	0.015	0.018	0.015	0.0010	0.0025
	Jan-22	8.1	39	228	4.7	0.000010	0.0090	0.16	71	0.000018	0.00022	0.00028	0.0036	0.0017	0.000018	29	12.5	0.024	0.021	8.7	0.00121	0.30	0.00018	0.015	0.014	0.015	0.0010	0.0025
	Feb-22	8.1	39	211	4.4	0.000010	0.0092	0.16	67	0.000018	0.00020	0.00026	0.0036	0.0017	0.000016	26	11.5	0.022	0.021	8.0	0.00112	0.30	0.00016	0.015	0.013	0.015	0.0010	0.0025
	Mar-22	8.1	38	241	5.0	0.000010	0.0089	0.16	74	0.000018	0.00023	0.00029	0.0036	0.0017	0.000019	30	13	0.026	0.021	9.2	0.0013	0.30	0.00019	0.015	0.015	0.015	0.0010	0.0025
	Apr-22	8.1	37	271	5.6	0.000011	0.0087	0.16	81	0.000020	0.00026	0.00033	0.0036	0.0017	0.000021	34	15	0.029	0.021	10.3	0.0014	0.30	0.00021	0.015	0.017	0.015	0.0010	0.0025
	May-22	8.1	36	303	6.3	0.000012	0.0085	0.16	88	0.000023	0.00029	0.00037	0.0036	0.0018	0.000024	38	17	0.032	0.021	11.5	0.0016	0.30	0.00023	0.015	0.019	0.015	0.0010	0.0025
	Jun-22	8.1	36	313	6.5	0.000012	0.0084	0.16	91	0.000024	0.00030	0.00038	0.0036	0.0018	0.000024	39	17	0.033	0.021	11.9	0.0017	0.30	0.00024	0.015	0.019	0.015	0.0010	0.0026
	Jul-22	8.1	36	331	6.8	0.000013	0.0083	0.16	95	0.000025	0.00031	0.00040	0.0036	0.0018	0.000026	41	18	0.035	0.021	13	0.0018	0.30	0.00025	0.015	0.020	0.015	0.0010	0.0028
	Aug-22	8.1	36	316	6.5	0.000012	0.0084	0.16	92	0.000024	0.00030	0.00039	0.0036	0.0018	0.000025	40	17	0.033	0.021	12.0	0.0017	0.30	0.00024	0.015	0.019	0.015	0.0010	0.0026
	Sep-22	8.1	37	290	6.0	0.000011	0.0086	0.16	86	0.000022	0.00028	0.00035	0.0036	0.0018	0.000023	36	16	0.031	0.021	11.0	0.0015	0.30	0.00022	0.015	0.018	0.015	0.0010	0.0025
	Oct-22	8.1	37	267	5.5	0.000010	0.0087	0.16	80	0.000020	0.00025	0.00032	0.0036	0.0017	0.000021	33	15	0.028	0.021	10.1	0.0014	0.30	0.00021	0.015	0.016	0.015	0.0010	0.0025
	Nov-22	8.1	38	244	5.0	0.000010	0.0089	0.16	75	0.000018	0.00023	0.00030	0.0036	0.0017	0.000019	31	13	0.026	0.021	9.3	0.0013	0.30	0.00019	0.015	0.015	0.015	0.0010	0.0025
	Dec-22	8.1	39	227	4.7	0.000010	0.0090	0.16	71	0.000018	0.00022	0.00028	0.0036	0.0017	0.000018	29	12.4	0.024	0.021	8.6	0.00121	0.30	0.00018	0.015	0.014	0.015	0.0010	0.0025

		pH	Alkalinity (as $CaCO_3$)	SO_4	Cl	Ag	Al	As	Ca	Cd	Co	Cr	Cu	Fe	Hg	K	Mg	Mn	Mo	Na	Ni	P	Pb	Sb	Se	U	V	Zn
Eagle Pit Walls	Apr-20	8.1	38	239	1.3	0.000010	0.0088	0.067	76	0.000062	0.00027	0.00015	0.0034	0.0017	0.0000050	10	17	0.0067	0.017	4.9	0.0026	0.30	0.00019	0.017	0.017	0.076	0.0010	0.0082
	May-20	8.1	39	239	1.6	0.000010	0.0091	0.067	70	0.000062	0.00027	0.00015	0.0034	0.0017	0.0000060	13	17	0.0084	0.017	5.1	0.0026	0.30	0.00019	0.017	0.017	0.076	0.0010	0.0082
	Jul-20	8.1	41	239	2.0	0.000010	0.0096	0.067	63	0.000062	0.00027	0.00015	0.0034	0.0017	0.0000070	16	17	0.010	0.017	6.4	0.0026	0.30	0.00019	0.017	0.017	0.076	0.0010	0.0082
	Sep-20	8.1	39	239	1.5	0.000010	0.0090	0.067	72	0.000062	0.00027	0.00015	0.0034	0.0017	0.0000050	12	17	0.0080	0.017	4.9	0.0026	0.30	0.00019	0.017	0.017	0.076	0.0010	0.0082
	Dec-20	8.1	36	239	0.94	0.000010	0.0084	0.067	82	0.000062	0.00027	0.00015	0.0034	0.0018	0.0000030	6.1	17	0.0041	0.017	4.9	0.0026	0.30	0.00019	0.017	0.017	0.076	0.0010	0.0082
	Apr-21	8.2	43	239	2.4	0.000010	0.010	0.067	57	0.000062	0.00027	0.00015	0.0034	0.0016	0.0000080	19	17	0.015	0.017	7.8	0.0026	0.30	0.00019	0.017	0.018	0.076	0.0010	0.0082
	May-21	8.1	41	239	3.0	0.000010	0.0095	0.067	65	0.000062	0.00027	0.00015	0.0034	0.0017	0.000010	24	17	0.018	0.017	9.7	0.0026	0.30	0.00019	0.017	0.018	0.076	0.0010	0.0082
	Jun-21	8.1	39	239	3.4	0.000010	0.0091	0.067	71	0.000062	0.00027	0.00016	0.0034	0.0017	0.000011	27	17	0.021	0.017	11	0.0026	0.30	0.00019	0.018	0.018	0.076	0.0010	0.0082
	Jul-21	8.1	38	239	3.7	0.000010	0.0088	0.067	76	0.000062	0.00027	0.00018	0.0034	0.0017	0.000012	30	17	0.023	0.017	12	0.0026	0.30	0.00019	0.020	0.018	0.076	0.0010	0.0082
	Aug-21	8.1	39	239	3.4	0.000010	0.0091	0.067	70	0.000062	0.00027	0.00016	0.0034	0.0017	0.000011	27	17	0.021	0.017	11	0.0026	0.30	0.00019	0.018	0.018	0.076	0.0010	0.0082
	Sep-21	8.1	41	239	2.8	0.000010	0.0096	0.067	63	0.000062	0.00027	0.00015	0.0034	0.0016	0.0000090	22	17	0.017	0.017	9.2	0.0026	0.30	0.00019	0.017	0.018	0.076	0.0010	0.0082
	Oct-21	8.1	42	239	2.2	0.000010	0.0099	0.067	59	0.000062	0.00027	0.00015	0.0034	0.0016	0.0000070	17	17	0.013	0.017	7.1	0.0026	0.30	0.00019	0.017	0.018	0.076	0.0010	0.0082
	Nov-21	8.1	40	239	1.8	0.000010	0.0094	0.067	66	0.000062	0.00027	0.00015	0.0034	0.0017	0.0000060	14	17	0.011	0.017	5.9	0.0026	0.30	0.00019	0.017	0.018	0.076	0.0010	0.0082
	Dec-21	8.1	38	239	1.5	0.000010	0.0089	0.067	73	0.000062	0.00027	0.00015	0.0034	0.0017	0.0000050	11	17	0.0089	0.017	4.9	0.0026	0.30	0.00019	0.017	0.018	0.076	0.0010	0.0082
	Feb-22	8.1	43	239	2.4	0.000010	0.0100	0.067	58	0.000062	0.00027	0.00015	0.0034	0.0016	0.0000070	18	17	0.015	0.017	7.5	0.0026	0.30	0.00019	0.020	0.018	0.076	0.0010	0.0082
	Apr-22	8.1	36	260	4.2	0.000010	0.0084	0.067	86	0.000062	0.00027	0.00018	0.0034	0.0018	0.000013	32	17	0.026	0.017	13	0.0026	0.30	0.00019	0.034	0.020	0.076	0.0010	0.0082
	May-22	8.0	34	325	5.3	0.000010	0.0080	0.080	103	0.000062	0.00027	0.00022	0.0034	0.0018	0.000016	40	22	0.032	0.017	16	0.0026	0.30	0.00022	0.043	0.024	0.076	0.0010	0.0082
	Jun-22	8.0	33	371	6.0	0.000010	0.0078	0.091	115	0.000062	0.00027	0.00025	0.0034	0.0019	0.000018	45	25	0.037	0.018	19	0.0026	0.30	0.00025	0.049	0.028	0.076	0.0010	0.0082
	Jul-22	8.0	33	405	6.6	0.000010	0.0076	0.099	124	0.000062	0.00030	0.00028	0.0034	0.0019	0.000019	49	27	0.040	0.019	20	0.0026	0.30	0.00027	0.053	0.030	0.076	0.0010	0.0082
	Aug-22	8.0	34	363	5.9	0.000010	0.0078	0.089	113	0.000062	0.00027	0.00025	0.0034	0.0019	0.000017	44	24	0.036	0.017	18	0.0026	0.30	0.00025	0.048	0.027	0.076	0.0010	0.0082
	Sep-22	8.1	35	308	5.0	0.000010	0.0081	0.076	98	0.000062	0.00027	0.00021	0.0034	0.0018	0.000015	38	21	0.031	0.017	15	0.0026	0.30	0.00021	0.040	0.023	0.076	0.0010	0.0082
	Oct-22	8.1	37	239	3.9	0.000010	0.0086	0.067	80	0.000062	0.00027	0.00016	0.0034	0.0017	0.000011	29	17	0.024	0.017	12	0.0026	0.30	0.00019	0.031	0.018	0.076	0.0010	0.0082
	Dec-22	8.1	42	239	2.6	0.000010	0.0099	0.067	60	0.000062	0.00027	0.00015	0.0034	0.0016	0.0000080	19	17	0.016	0.017	7.9	0.0026	0.30	0.00019	0.021	0.018	0.076	0.0010	0.0082
	Jan-23	8.1	41	239	2.5	0.000010	0.0096	0.067	64	0.000062	0.00027	0.00015	0.0034	0.0017	0.0000080	20	17	0.017	0.017	9.4	0.0026	0.30	0.00019	0.020	0.018	0.076	0.0010	0.0082
	Feb-23	8.1	42	239	2.4	0.000010	0.0097	0.067	62	0.000062	0.00027	0.00015	0.0034	0.0016	0.0000070	19	17	0.016	0.017	8.9	0.0026	0.30	0.00019	0.019	0.018	0.076	0.0010	0.0082
	Mar-23	8.1	39	239	2.9	0.000010	0.0091	0.067	71	0.000062	0.00027	0.00015	0.0034	0.0017	0.0000090	23	17	0.019	0.017	11	0.0026	0.30	0.00019	0.023	0.018	0.076	0.0010	0.0082
	Apr-23	8.1	35	282	4.2	0.000010	0.0082	0.067	93	0.000062	0.00027	0.00020	0.0034	0.0018	0.000013	32	17	0.028	0.017	16	0.0026	0.30	0.00019	0.033	0.022	0.076	0.0010	0.0082
	May-23	8.0	34	353	5.2	0.000010	0.0078	0.067	112	0.000062	0.00027	0.00025	0.0034	0.0019	0.000016	40	22	0.034	0.017	19	0.0026	0.30	0.00020	0.041	0.027	0.076	0.0010	0.0082
	Jun-23	8.0	33	402	5.9	0.000010	0.0075	0.069	125	0.000062	0.00028	0.00028	0.0034	0.0019	0.000018	46	25	0.039	0.017	22	0.0026	0.30	0.00022	0.047	0.031	0.076	0.0010	0.0082
	Jul-23	8.0	32	439	6.5	0.000010	0.0074	0.075	135	0.000062	0.00030	0.00031	0.0034	0.0020	0.000020	50	27	0.043	0.017	24	0.0026	0.30	0.00024	0.051	0.034	0.076	0.0010	0.0082
	Aug-23	8.0	33	394	5.8	0.000010	0.0076	0.067	123	0.000062	0.00027	0.00028	0.0034	0.0019	0.000018	45	24	0.038	0.017	22	0.0026	0.30	0.00022	0.046	0.030	0.076	0.0010	0.0082
	Sep-23	8.0	34	334	4.9	0.000010	0.0079	0.067	106	0.000062	0.00027	0.00023	0.0034	0.0019	0.000015	38	20	0.033	0.017	18	0.0026	0.30	0.00019	0.039	0.026	0.076	0.0010	0.0082
	Oct-23	8.1	36	257	3.8	0.000010	0.0084	0.067	86	0.000062	0.00027	0.00018	0.0034	0.0018	0.000011	29	17	0.025	0.017	14	0.0026	0.30	0.00019	0.030	0.020	0.076	0.0010	0.0082
	Dec-23	8.1	41	239	2.5	0.000010	0.0096	0.067	64	0.000062	0.00027	0.00015	0.0034	0.0017	0.0000080	19	17	0.017	0.017	9.4	0.0026	0.30	0.00019	0.020	0.018	0.076	0.0010	0.0082
	Jan-24	8.1	41	239	2.5	0.000010	0.0096	0.067	64	0.000062	0.00027	0.00015	0.0034	0.0017	0.0000070	19	17	0.016	0.017	9.9	0.0026	0.30	0.00019	0.023	0.019	0.076	0.0010	0.0082
	Mar-24	8.1	39	239	2.9	0.000010	0.0091	0.067	71	0.000062	0.00027	0.00015	0.0034	0.0017	0.0000090	22	17	0.019	0.017	12	0.0026	0.30	0.00019	0.026	0.019	0.076	0.0010	0.0082
	Apr-24	8.1	35	280	4.1	0.000010	0.0082	0.067	93	0.000062	0.00027	0.00020	0.0034	0.0018	0.000012	31	17	0.027	0.017	16	0.0026	0.30	0.00019	0.037	0.022	0.076	0.0010	0.0082
	May-24	8.0	34	350	5.1	0.000010	0.0078	0.067	112	0.000062	0.00027	0.00025	0.0034	0.0019	0.000015	39	21	0.034	0.017	20	0.0026	0.30	0.00019	0.046	0.027	0.076	0.0010	0.0082
	Jun-24	8.0	33	399	5.8	0.000010	0.0075	0.067	125	0.000062	0.00027	0.00028	0.0034	0.0019	0.000017	44	24	0.039	0.017	23	0.0026	0.30	0.00022	0.053	0.031	0.076	0.0010	0.0082
	Jul-24	8.0	32	435	6.3	0.000010	0.0074	0.069	135	0.000062	0.00029	0.00031	0.0034	0.0020	0.000019	48	27	0.042	0.017	25	0.0026	0.30	0.00024	0.058	0.034	0.076	0.0010	0.0082
	Aug-24	8.0	33	390	5.7	0.000010	0.0076	0.067	123	0.000062	0.00027	0.00028	0.0034	0.0019	0.000017	43	24	0.038	0.017	23	0.0026	0.30	0.00021	0.052	0.030	0.076	0.0010	0.0082
	Sep-24	8.0	34	331	4.8	0.000010	0.0079	0.067	106	0.000062	0.00027	0.00024	0.0034	0.0019	0.000014	37	20	0.032	0.017	19	0.0026	0.30	0.00019	0.044	0.026	0.076	0.0010	0.0082
	Oct-24	8.1	36	254	3.7	0.000010	0.0084	0.067	86	0.000062	0.00027	0.00018	0.0034	0.0018	0.000011	28	17	0.025	0.017	15	0.0026	0.30	0.00019	0.034	0.020	0.076	0.0010	0.0082
	Nov-24	8.1	38	239	3.1	0.000010	0.0089	0.067	75	0.000062	0.00027	0.00015	0.0034	0.0017	0.0000090	24	17	0.021	0.017	12	0.0026	0.30	0.00019	0.028	0.019	0.076	0.0010	0.0082
	Dec-24	8.1	41	239	2.4	0.000010	0.0096	0.067	64	0.000062	0.00027	0.00015	0.0034	0.0017	0.0000070	19	17	0.016	0.017	9.9	0.0026	0.30	0.00019	0.022	0.019	0.076	0.0010	0.0082
	Apr-25	8.1	35	277	4.1	0.000010	0.0082	0.067	92	0.000062	0.00027	0.00021	0.0034	0.0018	0.000012	30	17	0.027	0.017	17	0.0026	0.30	0.00019	0.039	0.022	0.076	0.0010	0.0082
	May-25	8.0	34	347	5.1	0.000010	0.0078	0.067	111	0.000062	0.00027	0.00026	0.0034	0.0019	0.000016	38	21	0.034	0.017	21	0.0026	0.30	0.00019	0.048	0.027	0.076	0.0010	0.0082
	Jun-25	8.0	33	396	5.8	0.000010	0.0076	0.067	124	0.000062	0.00027	0.00030	0.0034	0.0019	0.000018	43	24	0.038	0.017	24	0.0026	0.30	0.00022	0.055	0.031	0.076	0.0010	0.0082
	Jul-25	8.0	32	431	6.3	0.000010	0.0074	0.071	134	0.000062	0.00029	0.00032	0.0034	0.0019	0.000019	47	26	0.042	0.017	26	0.0026	0.30	0.00024	0.060	0.033	0.076	0.0010	0.0082
	Aug-25	8.0	33	387	5.7	0.000010	0.0076	0.067	122	0.000062	0.00027	0.00029	0.0034	0.0019	0.000017	42	24	0.037	0.017	23	0.0026	0.30	0.00021	0.054	0.030	0.076	0.0010	0.0082
	Sep-25	8.0	34	328	4.8	0.000010	0.0079	0.067	106	0.000062	0.00027	0.00025	0.0034	0.0019	0.000015	36	20	0.032	0.017	20	0.0026	0.30	0.00019	0.046	0.025	0.076	0.0010	0.0082
	Oct-25	8.1	36	252	3.7	0.000010	0.0084	0.067	85	0.000062	0.00027	0.00019	0.0034	0.0018	0.000011	28	17	0.024	0.017	15	0.0026	0.30	0.00019	0.035	0.020	0.076	0.0010	0.0082
	Nov-25	8.1	38	239	3.1	0.000010	0.0089	0.067	74	0.000062	0.00027	0.00016	0.0034	0.0017	0.0000090	23	17	0.020	0.017	13	0.0026	0.30	0.00019	0.029	0.019	0.076	0.0010	0.0082
	Dec-25	8.1	41	239	2.5	0.000010	0.0096	0.067	63	0.000062	0.00027	0.00015	0.0034	0.0017	0.0000070	18	17	0.016	0.017	10	0.0026	0.30	0.00019	0.023	0.019	0.076	0.0010	0.0082

		pH	Alkalinity (as $CaCO_3$)	SO_4	Cl	Ag	Al	As	Ca	Cd	Co	Cr	Cu	Fe	Hg	K	Mg	Mn	Mo	Na	Ni	P	Pb	Sb	Se	U	V	Zn
Eagle Pit Walls	Apr-20	8.1	38	239	1.3	0.000010	0.0088	0.067	76	0.000062	0.00027	0.00015	0.0034	0.0017	0.0000050	10	17	0.0067	0.017	4.9	0.0026	0.30	0.00019	0.017	0.017	0.076	0.0010	0.0082
	Feb-26	8.1	42	239	2.4	0.000010	0.0097	0.067	61	0.000062	0.00027	0.00015	0.0034	0.0016	0.0000070	17	17	0.015	0.017	10	0.0026	0.30	0.00019	0.024	0.019	0.076	0.0010	0.0082
	Apr-26	8.1	35	277	4.1	0.000010	0.0082	0.067	92	0.000062	0.00027	0.00022	0.0034	0.0018	0.000013	30	17	0.027	0.017	18	0.0026	0.30	0.00019	0.042	0.022	0.076	0.0010	0.0082
	May-26	8.0	34	346	5.1	0.000010	0.0078	0.067	110	0.000062	0.00027	0.00027	0.0034	0.0019	0.000016	38	21	0.033	0.017	22	0.0026	0.30	0.00019	0.052	0.027	0.076	0.0010	0.0082
	Jun-26	8.0	33	394	5.8	0.000010	0.0076	0.067	123	0.000062	0.00027	0.00031	0.0034	0.0019	0.000018	43	24	0.038	0.017	25	0.0026	0.30	0.00022	0.059	0.031	0.076	0.0010	0.0082
	Jul-26	8.0	32	430	6.4	0.000010	0.0074	0.070	133	0.000062	0.00029	0.00034	0.0034	0.0019	0.000020	47	26	0.041	0.017	28	0.0026	0.30	0.00024	0.065	0.034	0.078	0.0010	0.0082
	Aug-26	8.0	33	386	5.7	0.000010	0.0076	0.067	121	0.000062	0.00027	0.00031	0.0034	0.0019	0.000018	42	24	0.037	0.017	25	0.0026	0.30	0.00021	0.058	0.030	0.076	0.0010	0.0082
	Sep-26	8.0	34	327	4.8	0.000010	0.0079	0.067	105	0.000062	0.00027	0.00026	0.0034	0.0019	0.000015	36	20	0.031	0.017	21	0.0026	0.30	0.00019	0.049	0.026	0.076	0.0010	0.0082
	Oct-26	8.1	36	251	3.7	0.000010	0.0084	0.067	85	0.000062	0.00027	0.00020	0.0034	0.0018	0.000011	27	17	0.024	0.017	16	0.0026	0.30	0.00019	0.038	0.020	0.076	0.0010	0.0082
	Dec-26	8.1	41	239	2.5	0.000010	0.0096	0.067	63	0.000062	0.00027	0.00015	0.0034	0.0017	0.0000080	18	17	0.016	0.017	11	0.0026	0.30	0.00019	0.025	0.019	0.076	0.0010	0.0082
	Jan-27	8.1	41	239	2.5	0.000010	0.0096	0.067	63	0.000062	0.00027	0.00015	0.0034	0.0017	0.0000080	18	17	0.016	0.017	12	0.0026	0.30	0.00019	0.028	0.019	0.076	0.0010	0.0082
	Feb-27	8.1	42	239	2.4	0.000010	0.0098	0.067	61	0.000062	0.00027	0.00015	0.0034	0.0016	0.0000070	17	17	0.015	0.017	11	0.0026	0.30	0.00019	0.026	0.019	0.076	0.0010	0.0082
	Mar-27	8.1	39	239	2.9	0.000010	0.0092	0.067	70	0.000062	0.00027	0.00016	0.0034	0.0017	0.0000090	21	17	0.019	0.017	13	0.0026	0.30	0.00019	0.032	0.019	0.076	0.0010	0.0082
	Apr-27	8.1	35	275	4.1	0.000010	0.0083	0.067	91	0.000062	0.00027	0.00022	0.0034	0.0018	0.000013	30	17	0.026	0.017	19	0.0026	0.30	0.00019	0.046	0.022	0.076	0.0010	0.0082
	May-27	8.0	34	344	5.1	0.000010	0.0078	0.067	110	0.000062	0.00027	0.00028	0.0034	0.0019	0.000016	37	21	0.033	0.017	24	0.0026	0.30	0.00019	0.057	0.027	0.076	0.0010	0.0082
	Jun-27	8.0	33	392	5.8	0.000010	0.0076	0.067	123	0.000062	0.00027	0.00032	0.0034	0.0019	0.000018	42	24	0.037	0.017	27	0.0026	0.30	0.00022	0.065	0.031	0.080	0.0010	0.0082
	Jul-27	8.0	32	427	6.3	0.000010	0.0074	0.067	133	0.000062	0.00029	0.00035	0.0034	0.0019	0.000020	46	27	0.041	0.017	30	0.0026	0.30	0.00024	0.071	0.034	0.087	0.0010	0.0082
	Aug-27	8.0	33	383	5.7	0.000010	0.0076	0.067	121	0.000062	0.00027	0.00031	0.0034	0.0019	0.000018	41	24	0.037	0.017	27	0.0026	0.30	0.00021	0.064	0.030	0.078	0.0010	0.0082
	Sep-27	8.0	34	325	4.8	0.000010	0.0079	0.067	105	0.000062	0.00027	0.00027	0.0034	0.0018	0.000015	35	20	0.031	0.017	23	0.0026	0.30	0.00019	0.054	0.026	0.076	0.0010	0.0082
	Oct-27	8.1	36	250	3.7	0.000010	0.0084	0.067	85	0.000062	0.00027	0.00020	0.0034	0.0018	0.000011	27	17	0.024	0.017	17	0.0026	0.30	0.00019	0.042	0.020	0.076	0.0010	0.0082
	Dec-27	8.1	41	239	2.5	0.000010	0.0096	0.067	63	0.000062	0.00027	0.00015	0.0034	0.0017	0.0000080	18	17	0.016	0.017	11	0.0026	0.30	0.00019	0.028	0.019	0.076	0.0010	0.0082
	Jan-28	8.1	41	239	2.5	0.000010	0.0096	0.067	64	0.000062	0.00027	0.00015	0.0034	0.0017	0.0000080	18	17	0.016	0.017	12	0.0026	0.30	0.00019	0.030	0.019	0.076	0.0010	0.0082
	Mar-28	8.1	39	239	2.9	0.000010	0.0091	0.067	71	0.000062	0.00027	0.00016	0.0034	0.0017	0.0000090	21	17	0.019	0.017	14	0.0026	0.30	0.00019	0.036	0.019	0.076	0.0010	0.0082
	Apr-28	8.1	35	277	4.1	0.000010	0.0082	0.067	92	0.000062	0.00027	0.00023	0.0034	0.0018	0.000013	29	17	0.026	0.017	20	0.0026	0.30	0.00019	0.050	0.022	0.076	0.0010	0.0082
	May-28	8.0	34	346	5.1	0.000010	0.0078	0.067	111	0.000062	0.00027	0.00029	0.0034	0.0019	0.000016	37	22	0.033	0.017	25	0.0026	0.30	0.00019	0.063	0.028	0.077	0.0010	0.0082
	Jun-28	8.0	33	395	5.8	0.000010	0.0076	0.067	124	0.000062	0.00027	0.00033	0.0034	0.0019	0.000018	42	25	0.037	0.017	29	0.0026	0.30	0.00022	0.072	0.031	0.088	0.0010	0.0082
	Jul-28	8.0	32	430	6.4	0.000010	0.0074	0.067	134	0.000062	0.00029	0.00036	0.0034	0.0020	0.000020	46	27	0.041	0.017	32	0.0026	0.30	0.00024	0.078	0.034	0.096	0.0010	0.0082
	Aug-28	8.0	33	386	5.7	0.000010	0.0076	0.067	122	0.000062	0.00027	0.00032	0.0034	0.0019	0.000018	41	24	0.037	0.017	28	0.0026	0.30	0.00021	0.070	0.031	0.086	0.0010	0.0082
	Sep-28	8.0	34	328	4.8	0.000010	0.0079	0.067	106	0.000062	0.00027	0.00027	0.0034	0.0019	0.000015	35	21	0.031	0.017	24	0.0026	0.30	0.00019	0.060	0.026	0.076	0.0010	0.0082
	Oct-28	8.1	36	252	3.7	0.000010	0.0084	0.067	85	0.000062	0.00027	0.00021	0.0034	0.0018	0.000011	27	17	0.024	0.017	19	0.0026	0.30	0.00019	0.046	0.020	0.076	0.0010	0.0082
	Nov-28	8.1	38	239	3.1	0.000010	0.0089	0.067	74	0.000062	0.00027	0.00018	0.0034	0.0017	0.000010	22	17	0.020	0.017	15	0.0026	0.30	0.00019	0.038	0.019	0.076	0.0010	0.0082
	Dec-28	8.1	41	239	2.5	0.000010	0.0096	0.067	63	0.000062	0.00027	0.00015	0.0034	0.0017	0.0000080	18	17	0.016	0.017	12	0.0026	0.30	0.00019	0.030	0.019	0.076	0.0010	0.0082
	Apr-29	8.1	35	275	4.1	0.000010	0.0082	0.067	92	0.000062	0.00027	0.00024	0.0034	0.0018	0.000013	29	17	0.026	0.017	21	0.0026	0.30	0.00019	0.052	0.022	0.076	0.0010	0.0082
	May-29	8.0	34	344	5.1	0.000010	0.0078	0.067	110	0.000062	0.00027	0.00029	0.0034	0.0019	0.000016	36	22	0.032	0.017	26	0.0026	0.30	0.00019	0.065	0.027	0.081	0.0010	0.0082
	Jun-29	8.0	33	392	5.8	0.000010	0.0076	0.067	123	0.000062	0.00027	0.00034	0.0034	0.0019	0.000018	42	25	0.037	0.017	30	0.0026	0.30	0.00022	0.075	0.031	0.093	0.0010	0.0082
	Jul-29	8.0	32	427	6.3	0.000010	0.0074	0.067	133	0.000062	0.00028	0.00037	0.0034	0.0019	0.000020	45	27	0.040	0.017	33	0.0026	0.30	0.00024	0.081	0.034	0.10	0.0010	0.0082
	Aug-29	8.0	33	384	5.7	0.000010	0.0076	0.067	121	0.000062	0.00027	0.00033	0.0034	0.0019	0.000018	41	24	0.036	0.017	29	0.0026	0.30	0.00021	0.073	0.031	0.091	0.0010	0.0082
	Sep-29	8.0	34	325	4.8	0.000010	0.0079	0.067	105	0.000062	0.00027	0.00028	0.0034	0.0019	0.000015	34	21	0.031	0.017	25	0.0026	0.30	0.00019	0.062	0.026	0.077	0.0010	0.0082
	Oct-29	8.1	36	250	3.7	0.000010	0.0084	0.067	85	0.000062	0.00027	0.00021	0.0034	0.0018	0.000011	27	17	0.024	0.017	19	0.0026	0.30	0.00019	0.048	0.020	0.076	0.0010	0.0082
	Nov-29	8.1	38	239	3.1	0.000010	0.0089	0.067	74	0.000062	0.00027	0.00018	0.0034	0.0017	0.000010	22	17	0.020	0.017	16	0.0026	0.30	0.00019	0.040	0.019	0.076	0.0010	0.0082
	Dec-29	8.1	41	239	2.5	0.000010	0.0096	0.067	63	0.000062	0.00027	0.00015	0.0034	0.0017	0.0000080	18	17	0.016	0.017	13	0.0026	0.30	0.00019	0.032	0.019	0.076	0.0010	0.0082
	Jan-30	8.1	39	239	1.8	0.000010	0.0091	0.067	71	0.000062	0.00027	0.00018	0.0034	0.0017	0.0000080	7.6	17	0.0078	0.017	4.9	0.0026	0.30	0.00019	0.017	0.019	0.076	0.0010	0.0082
	Feb-30	8.1	39	239	1.7	0.000010	0.0090	0.067	72	0.000062	0.00027	0.00018	0.0034	0.0017	0.0000070	7.2	17	0.0074	0.017	4.9	0.0026	0.30	0.00019	0.017	0.019	0.076	0.0010	0.0082
	Mar-30	8.1	40	239	2.1	0.000010	0.0094	0.067	66	0.000062	0.00027	0.00022	0.0034	0.0017	0.0000090	8.8	17	0.0091	0.017	4.9	0.0026	0.30	0.00019	0.017	0.019	0.076	0.0010	0.0082
	Apr-30	8.2	45	239	2.9	0.000010	0.011	0.067	52	0.000062	0.00027	0.00030	0.0034	0.0016	0.000012	13	17	0.013	0.017	4.9	0.0026	0.30	0.00024	0.017	0.019	0.076	0.0010	0.0082
	May-30	8.2	46	239	3.6	0.000010	0.011	0.082	50	0.000062	0.00027	0.00038	0.0034	0.0016	0.000016	16	17	0.016	0.017	4.9	0.0026	0.30	0.00031	0.017	0.019	0.076	0.0010	0.0082
	Jun-30	8.2	44	239	4.1	0.000011	0.010	0.094	54	0.000062	0.00027	0.00043	0.0034	0.0016	0.000018	18	17	0.018	0.017	4.9	0.0026	0.30	0.00035	0.018	0.019	0.076	0.0010	0.0082
	Jul-30	8.2	43	239	4.5	0.000012	0.010	0.10	57	0.000062	0.00027	0.00047	0.0034	0.0016	0.000019	19	17	0.020	0.017	4.9	0.0026	0.30	0.00038	0.019	0.019	0.076	0.0010	0.0082
	Aug-30	8.2	45	239	4.1	0.000011	0.010	0.091	53	0.000062	0.00027	0.00042	0.0034	0.0016	0.000017	17	17	0.018	0.017	4.9	0.0026	0.30	0.00034	0.017	0.019	0.076	0.0010	0.0082
	Sep-30	8.2	47	239	3.4	0.000010	0.011	0.078	49	0.000062	0.00027	0.00036	0.0034	0.0016	0.000015	15	17	0.015	0.017	4.9	0.0026	0.30	0.00029	0.017	0.019	0.076	0.0010	0.0082
	Oct-30	8.2	43	239	2.6	0.000010	0.010	0.067	56	0.000062	0.00027	0.00028	0.0034	0.0016	0.000011	11	17	0.012	0.017	4.9	0.0026	0.30	0.00022	0.017	0.019	0.076	0.0010	0.0082
	Dec-30	8.1	39	239	1.8	0.000010	0.0091	0.067	71	0.000062	0.00027	0.00018	0.0034	0.0017	0.0000080	7.6	17	0.0078	0.017	4.9	0.0026	0.30	0.00019	0.017	0.019	0.076	0.0010	0.0082

Appendix B: Water Quality Model Plots for all Parameters

B.1. Haggart Creek below Dublin Gulch (W4) – Water Quality Predictions

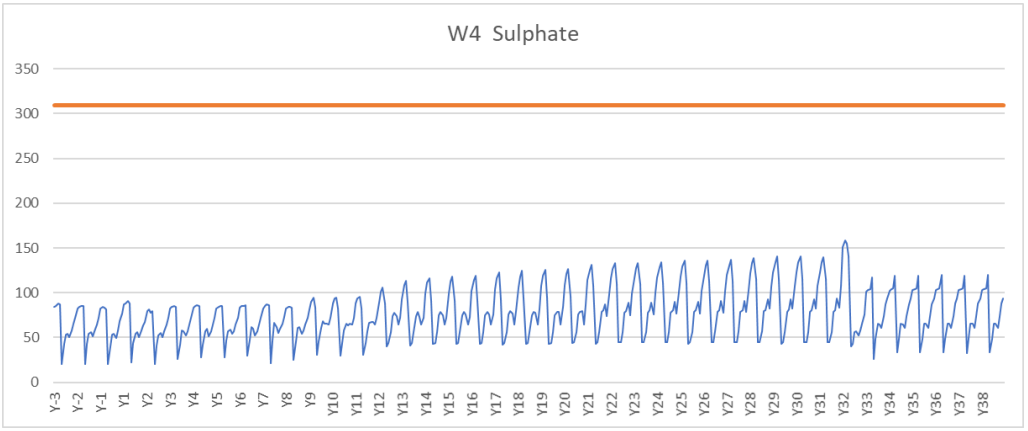
B.2. Haggart Creek below Eagle Creek (W29) – Water Quality Predictions

B.3. Haggart Creek below Eagle Creek (W99) – Water Quality Predictions

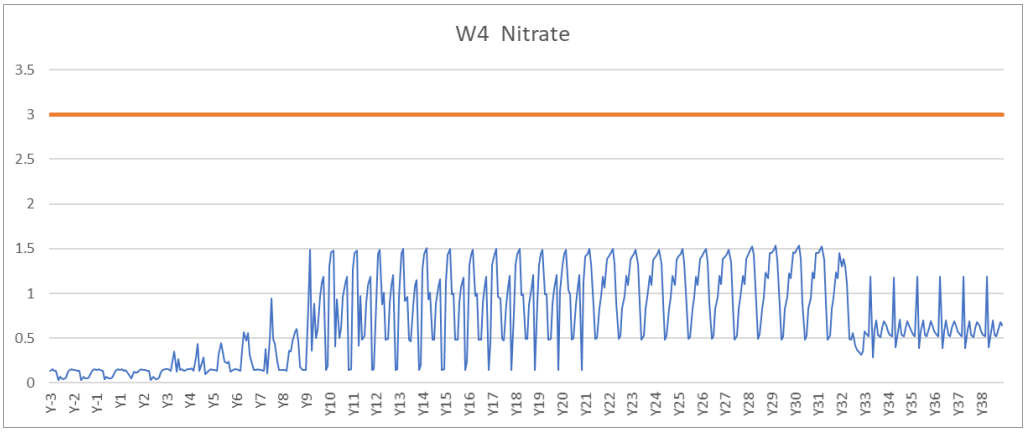
B.4. Haggart Creek below Lynx Creek (W23) – Water Quality Predictions

VICTORIA GOLD CORP

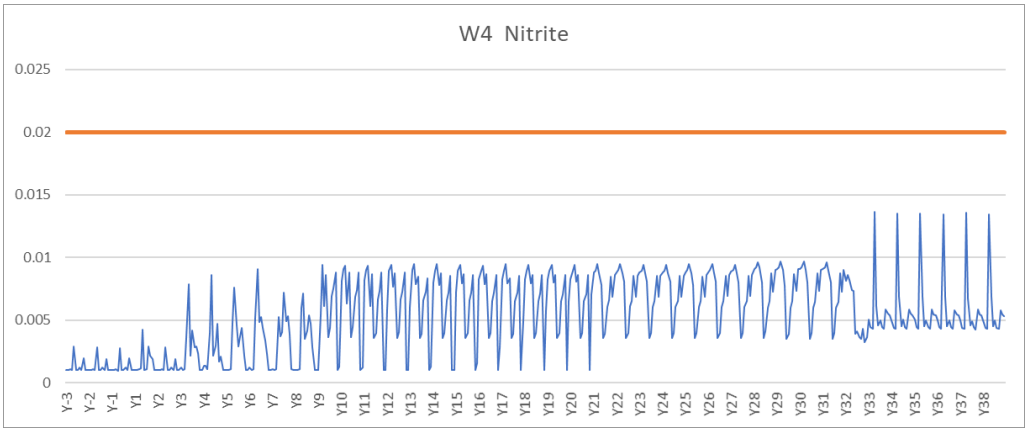
B.1. Haggart Creek below Dublin Gulch (W4) – Water Quality Predictions



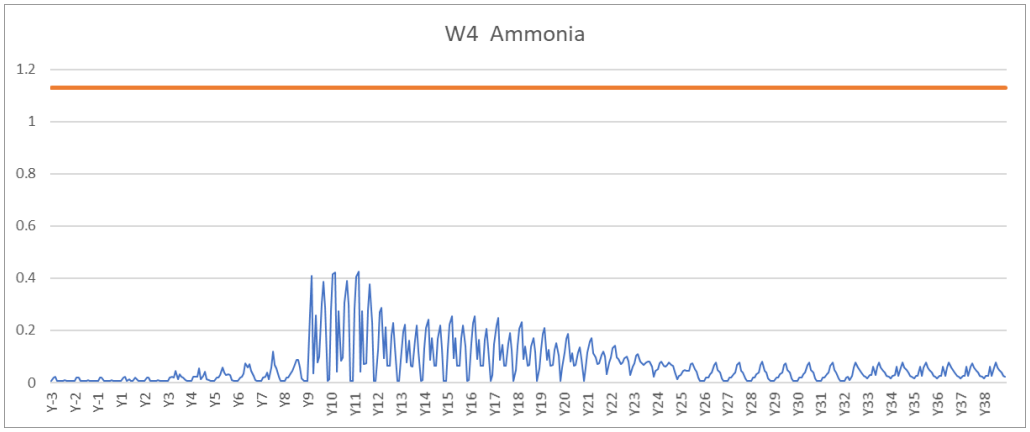
B.1-1: Time series of predicted sulphate concentrations (mg/L) for W4. Water Quality Objective is shown by red line.



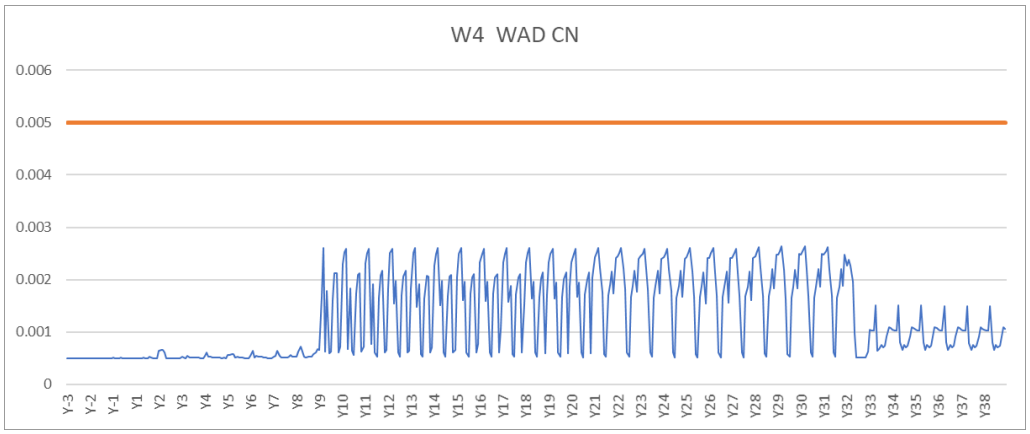
B.1-2: Time series of predicted nitrate concentrations (mg/L) for W4. Water Quality Objective is shown by red line.



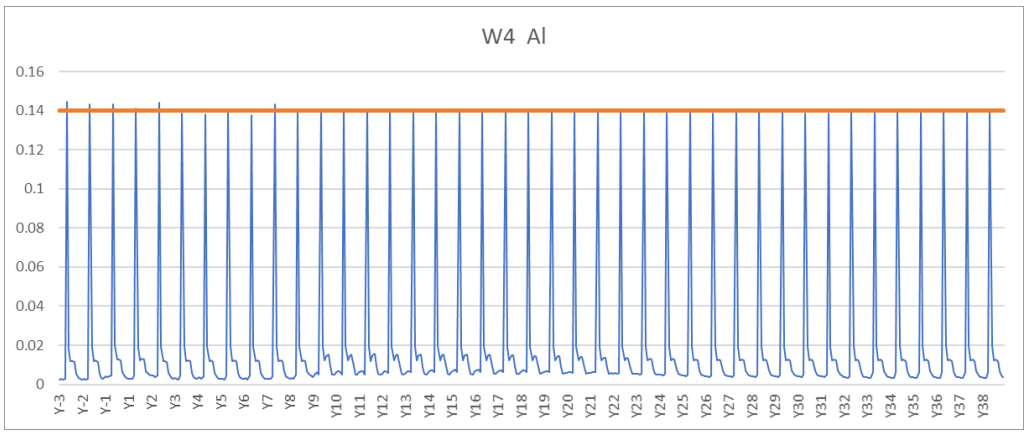
B.1-3: Time series of predicted nitrite concentrations (mg/L) for W4. Water Quality Objective is shown by red line.



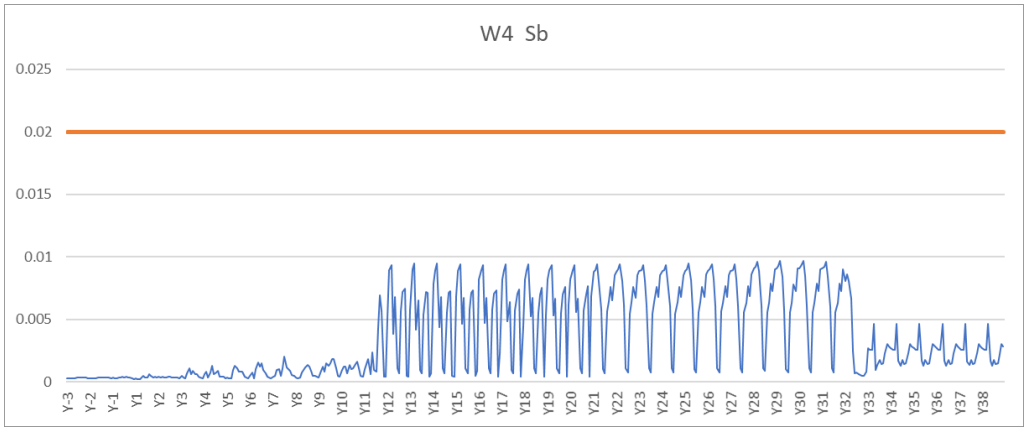
B.1-4: Time series of predicted ammonia concentrations (mg/L) for W4. Water Quality Objective is shown by red line.



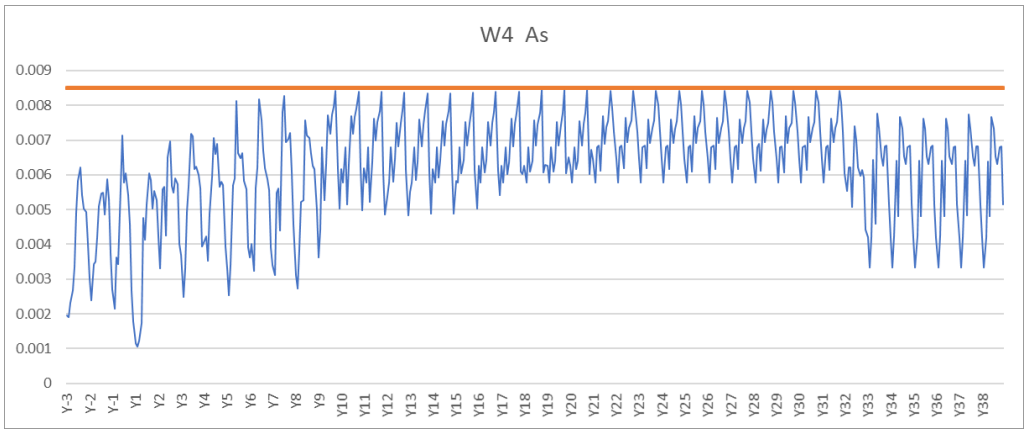
B.1-5: Time series of predicted WAD-CN concentrations (mg/L) for W4. Water Quality Objective is shown by red line.



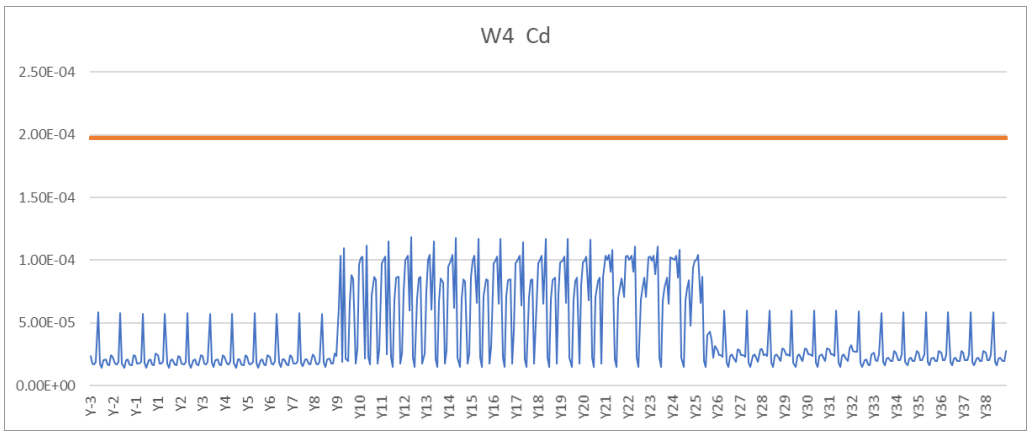
B.1-6: Time series of predicted aluminum concentrations (mg/L) for W4. Water Quality Objective is shown by red line.



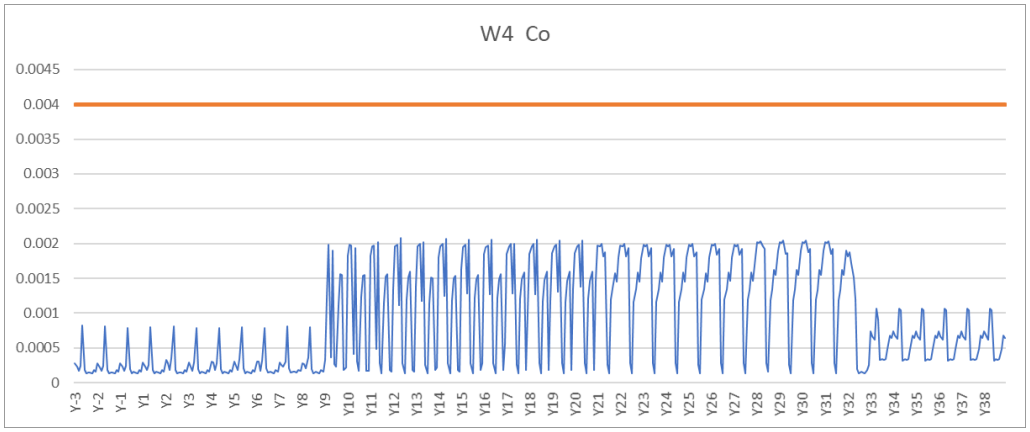
B.1-7: Time series of predicted antimony concentrations (mg/L) for W4. Water Quality Objective is shown by red line.



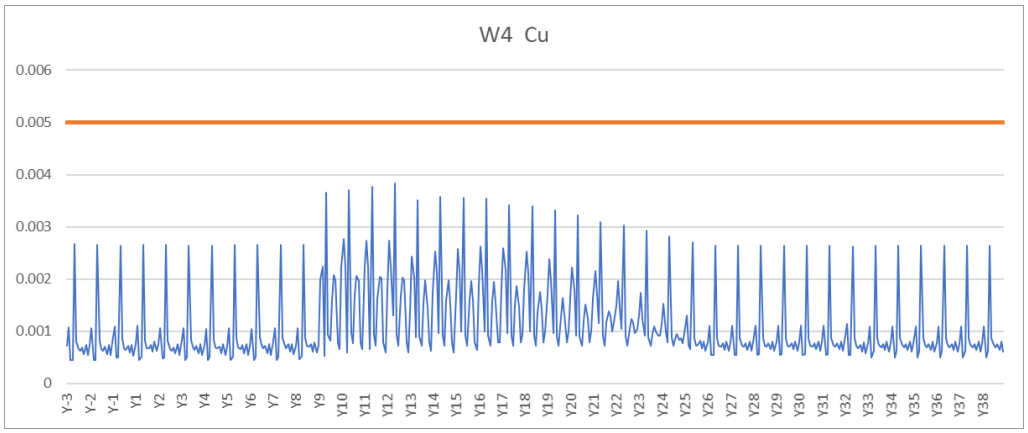
B.1-8: Time series of predicted arsenic concentrations (mg/L) for W4. Water Quality Objective is shown by red line.



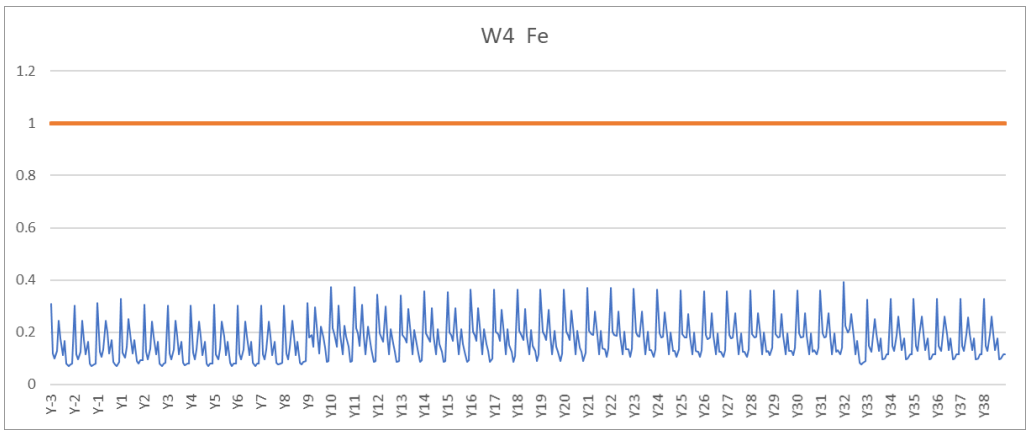
B.1-9: Time series of predicted cadmium concentrations (mg/L) for W4. Water Quality Objective is shown by red line.



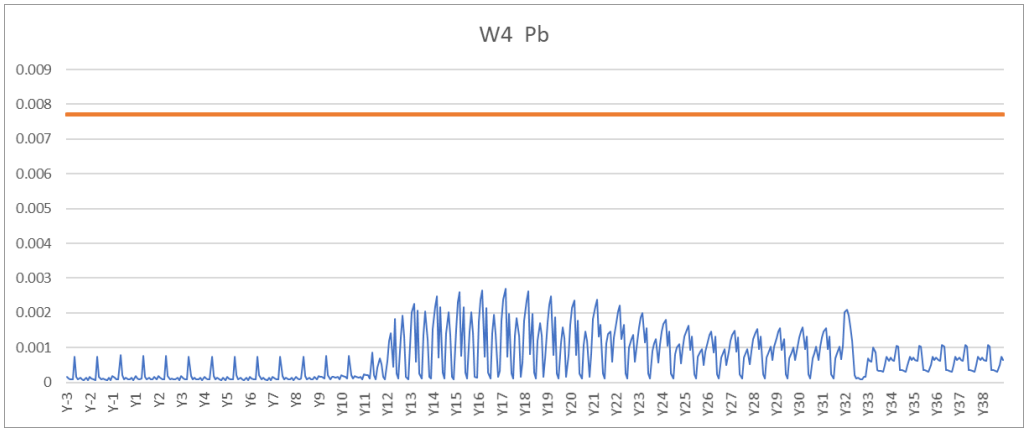
B.1-10: Time series of predicted cobalt concentrations (mg/L) for W4. Water Quality Objective is shown by red line.



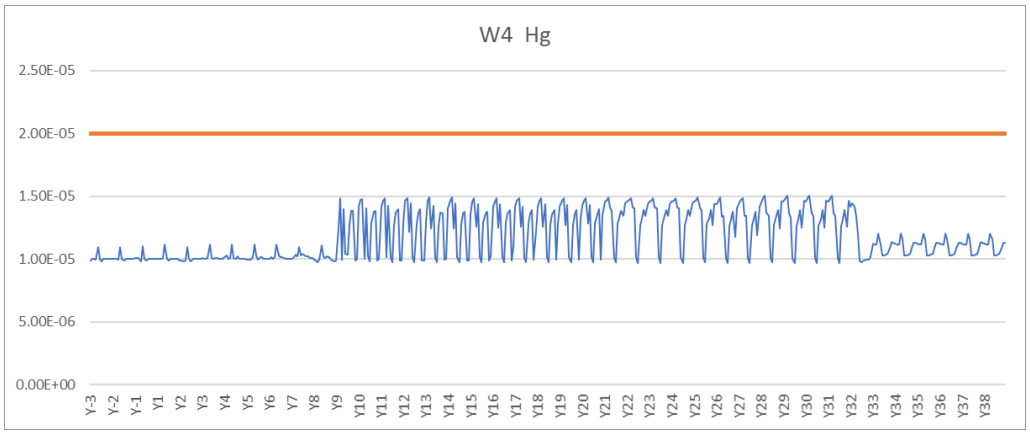
B.1-11: Time series of predicted copper concentrations (mg/L) for W4. Water Quality Objective is shown by red line.



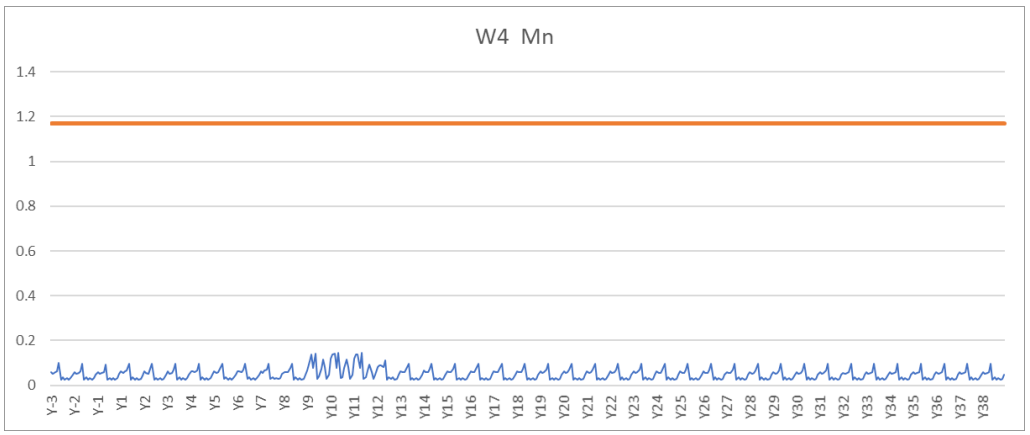
B.1-12: Time series of predicted iron concentrations (mg/L) for W4. Water Quality Objective is shown by red line.



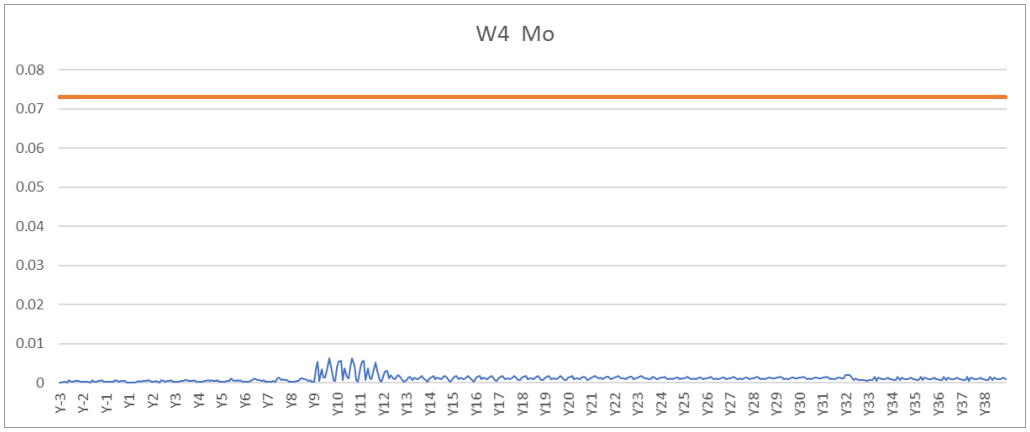
B.1-13: Time series of predicted lead concentrations (mg/L) for W4. Water Quality Objective is shown by red line.



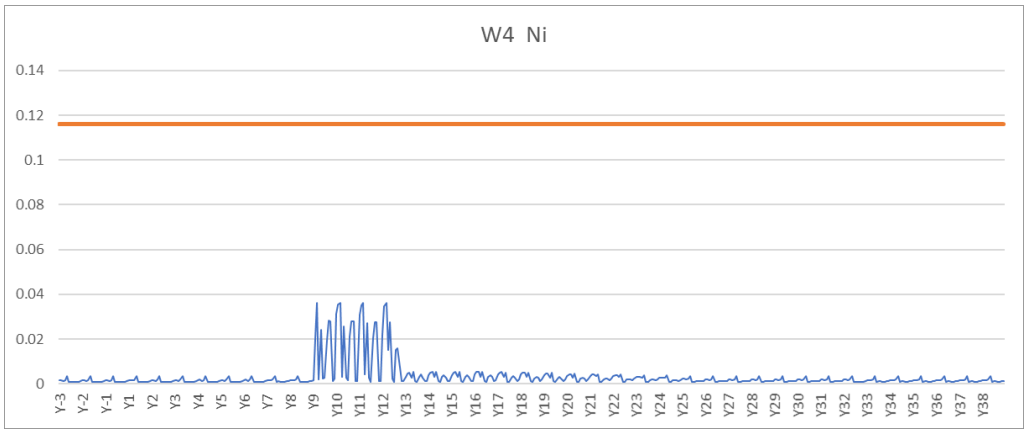
B.1-14: Time series of predicted mercury concentrations (mg/L) for W4. Water Quality Objective is shown by red line.



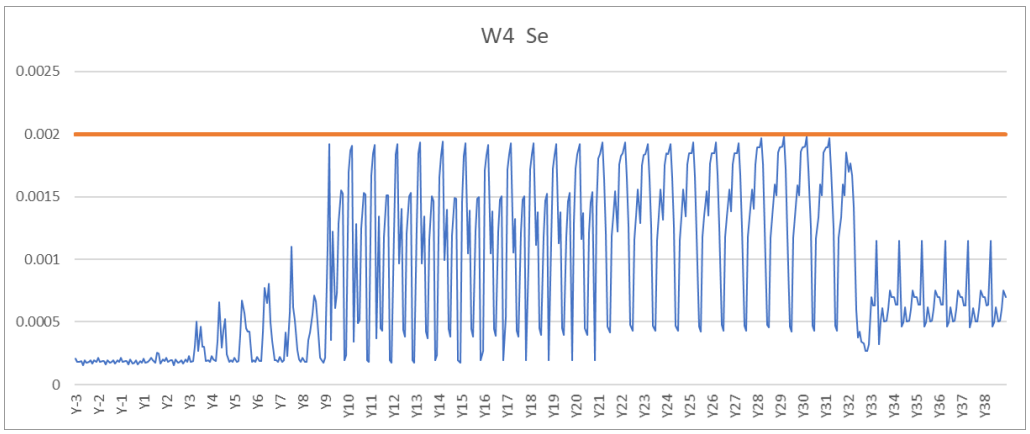
B.1-15: Time series of predicted manganese concentrations (mg/L) for W4. Water Quality Objective is shown by red line.



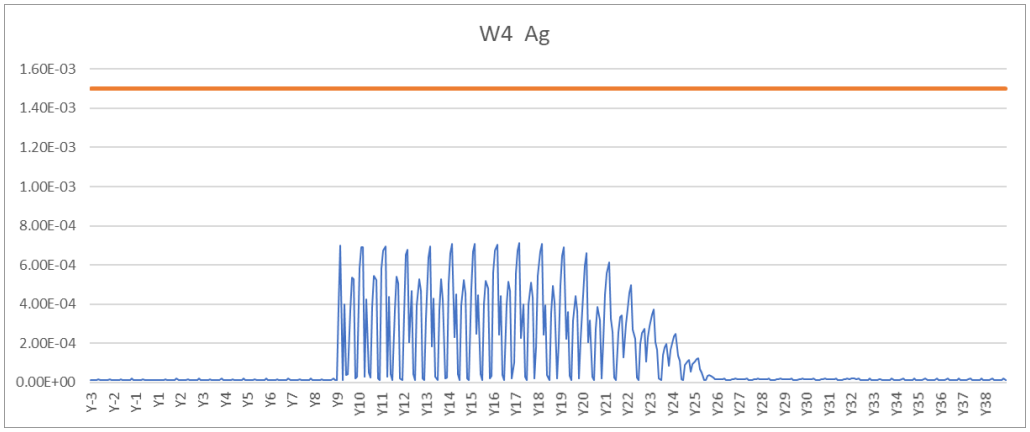
B.1-16: Time series of predicted molybdenum concentrations (mg/L) for W4. Water Quality Objective is shown by red line.



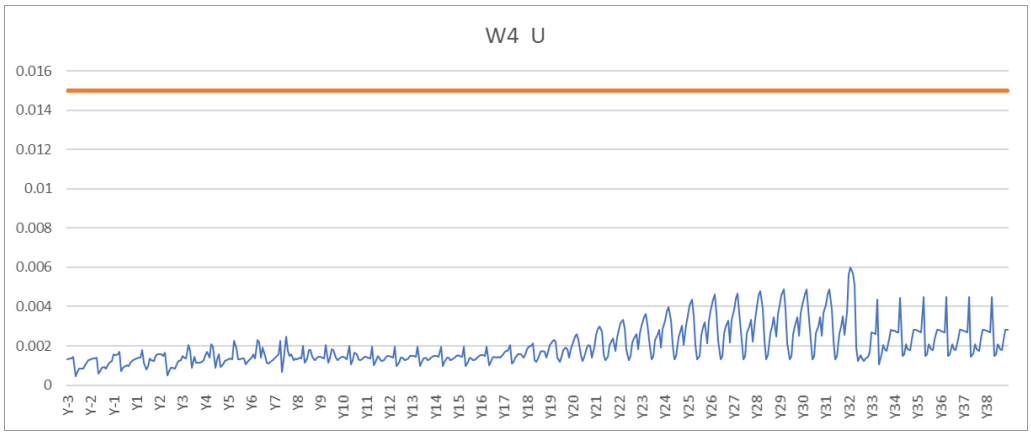
B.1-17: Time series of predicted nickel concentrations (mg/L) for W4. Water Quality Objective is shown by red line.



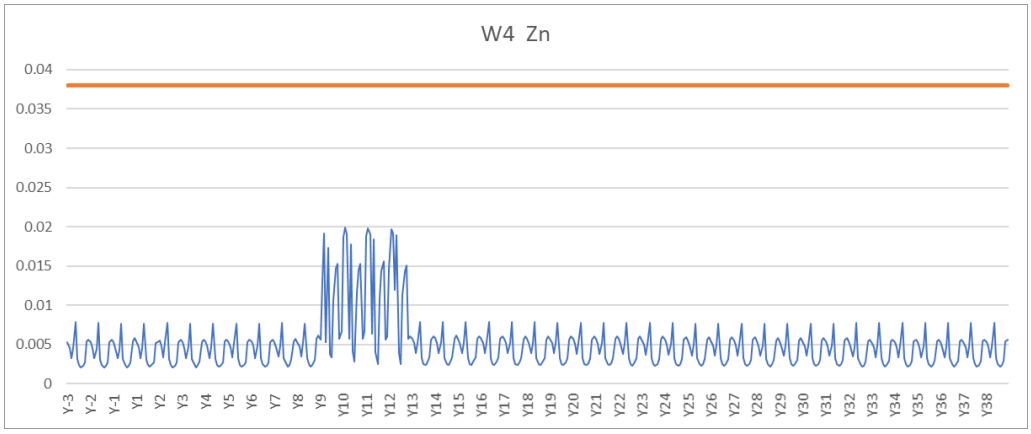
B.1-18: Time series of predicted selenium concentrations (mg/L) for W4. Water Quality Objective is shown by red line.



B.1-19: Time series of predicted silver concentrations (mg/L) for W4. Water Quality Objective is shown by red line.

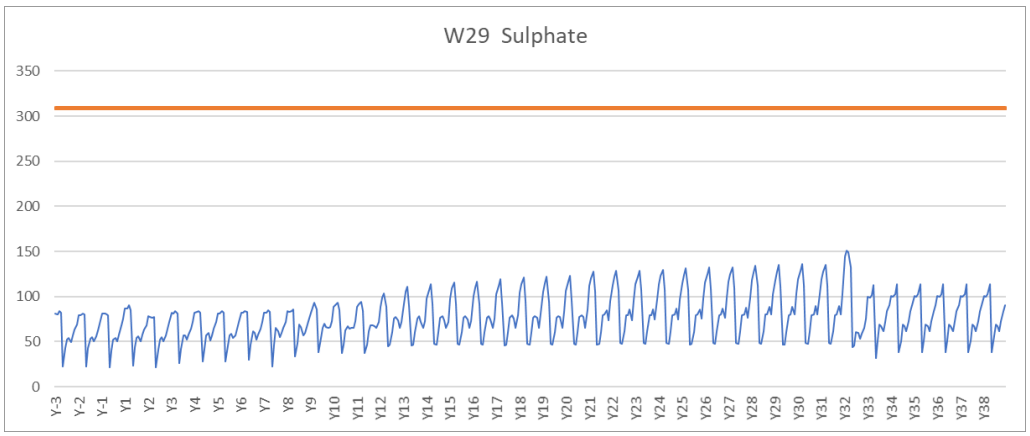


B.1-20: Time series of predicted uranium concentrations (mg/L) for W4. Water Quality Objective is shown by red line.

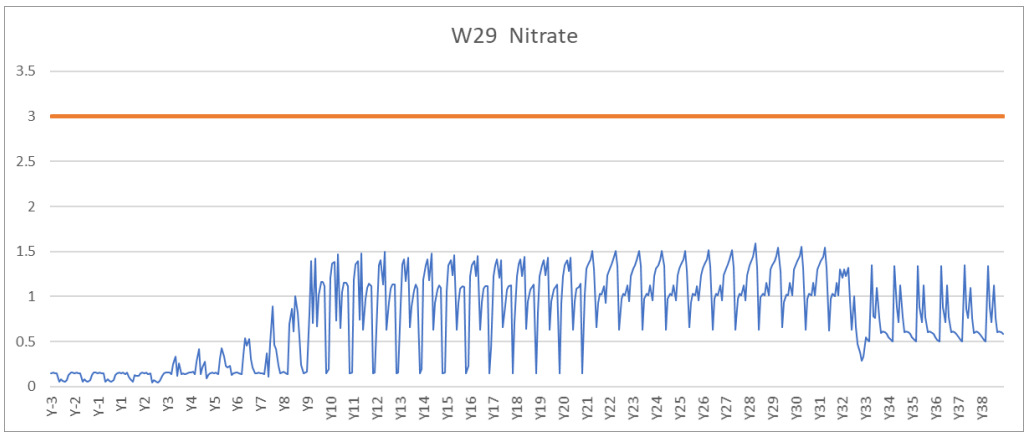


B.1-21: Time series of predicted zinc concentrations (mg/L) for W4. Water Quality Objective is shown by red line.

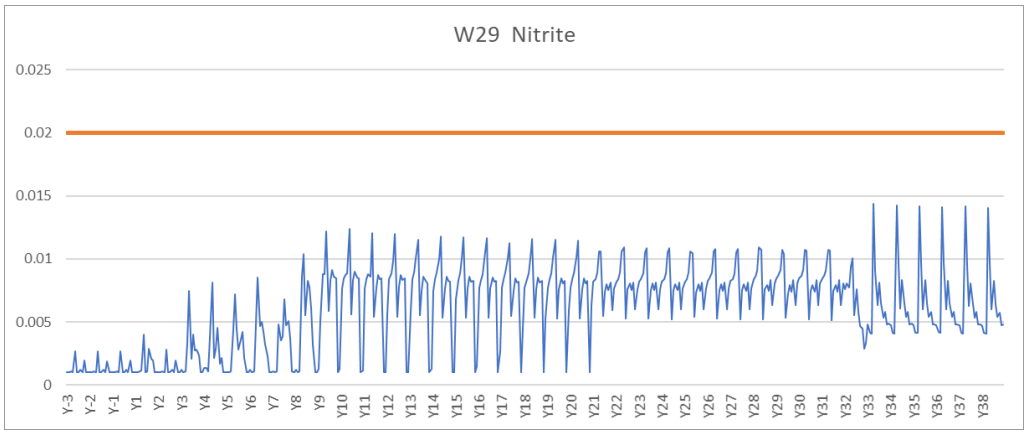
B.2. Haggart Creek below Eagle Creek (W29) – Water Quality Predictions



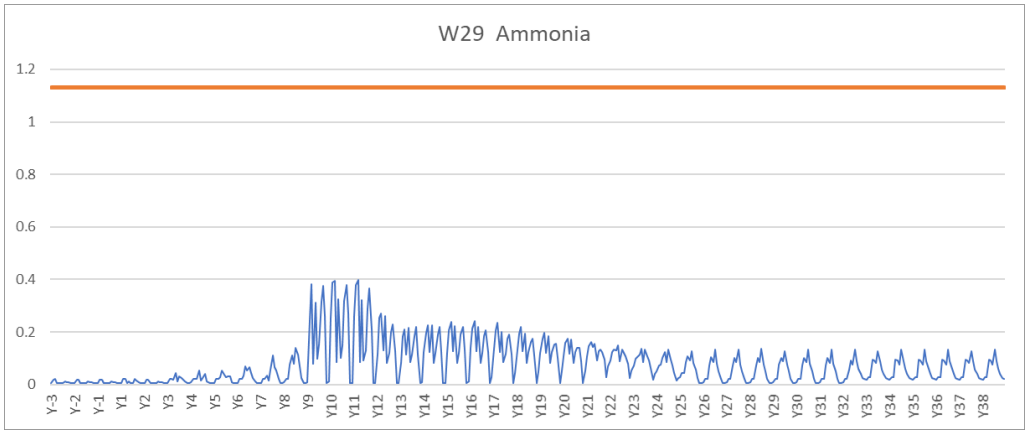
B.2-1: Time series of predicted sulphate concentrations (mg/L) for W29. Water Quality Objective is shown by red line.



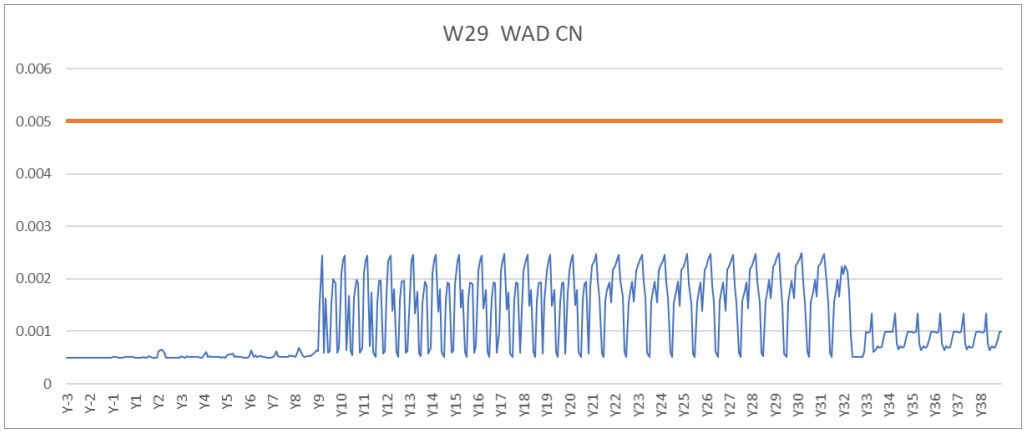
B.2-2: Time series of predicted nitrate concentrations (mg/L) for W29. Water Quality Objective is shown by red line.



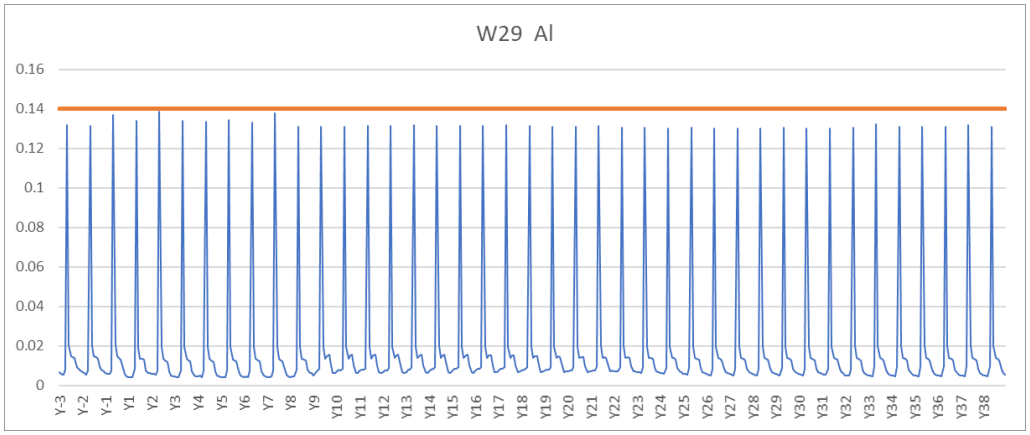
B.2-3: Time series of predicted nitrite concentrations (mg/L) for W29. Water Quality Objective is shown by red line.



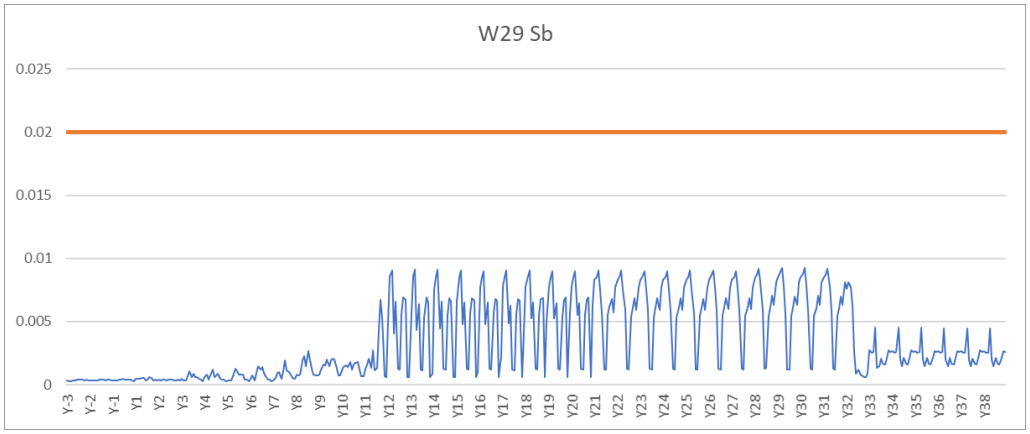
B.2-4: Time series of predicted ammonia concentrations (mg/L) for W29. Water Quality Objective is shown by red line.



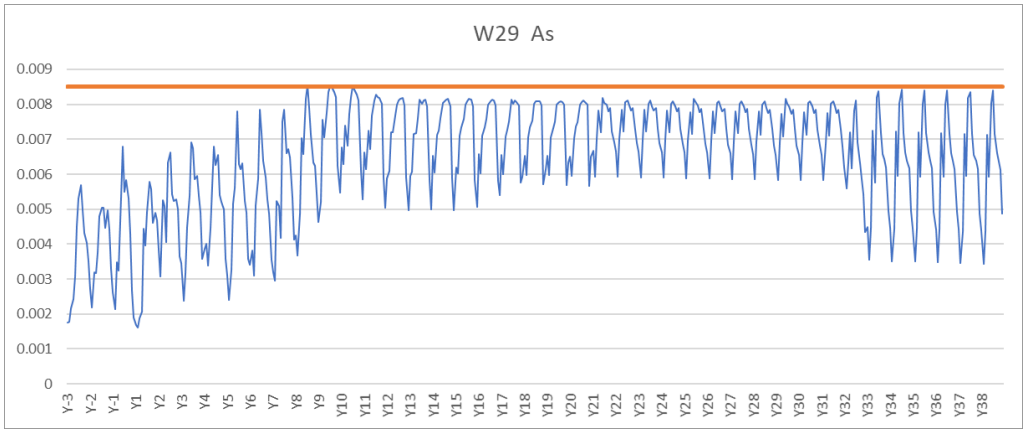
B.2-5: Time series of predicted WAD-CN concentrations (mg/L) for W29. Water Quality Objective is shown by red line.



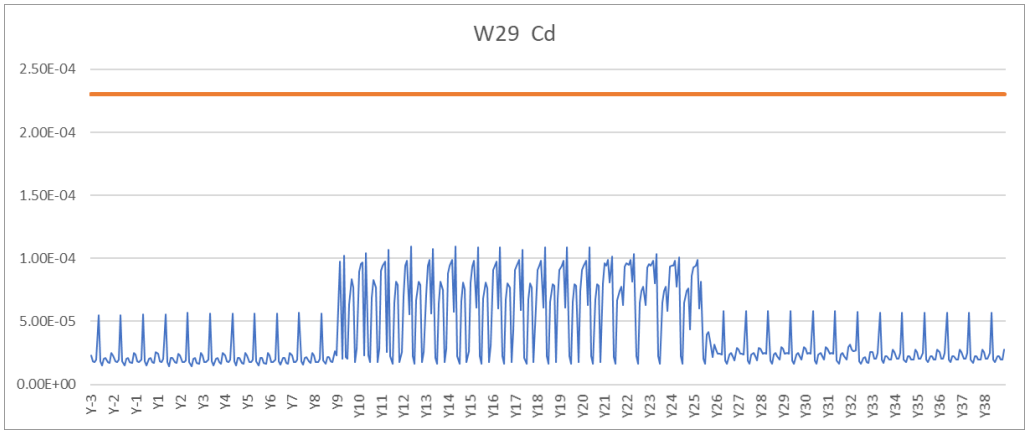
B.2-6: Time series of predicted aluminum concentrations (mg/L) for W29. Water Quality Objective is shown by red line.



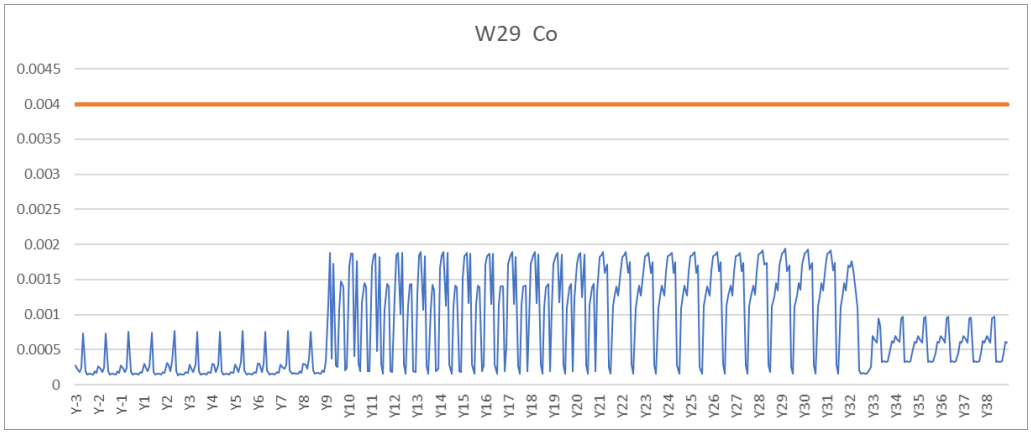
B.2-7: Time series of predicted antimony concentrations (mg/L) for W29. Water Quality Objective is shown by red line.



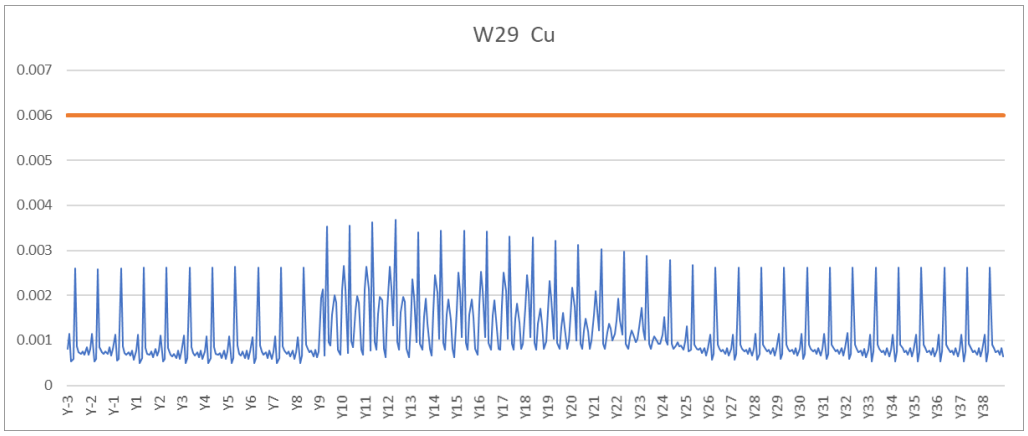
B.2-8: Time series of predicted arsenic concentrations (mg/L) for W29. Water Quality Objective is shown by red line.



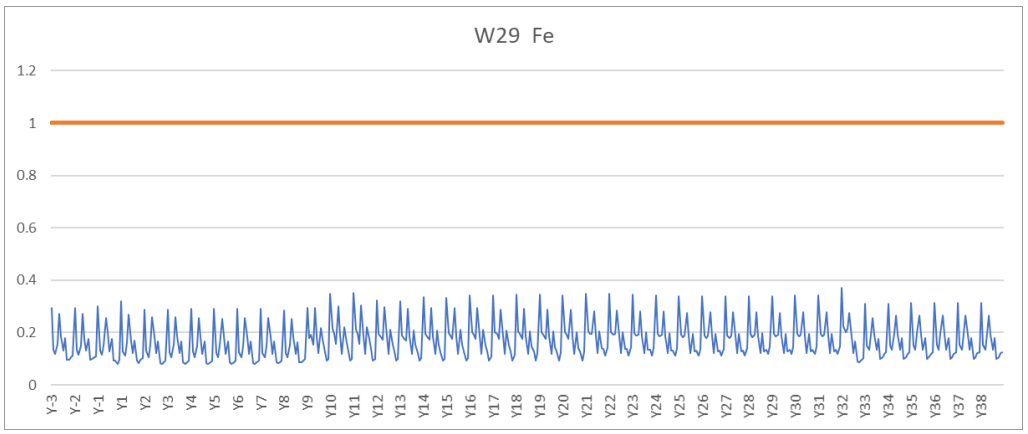
B.2-9: Time series of predicted cadmium concentrations (mg/L) for W29. Water Quality Objective is shown by red line.



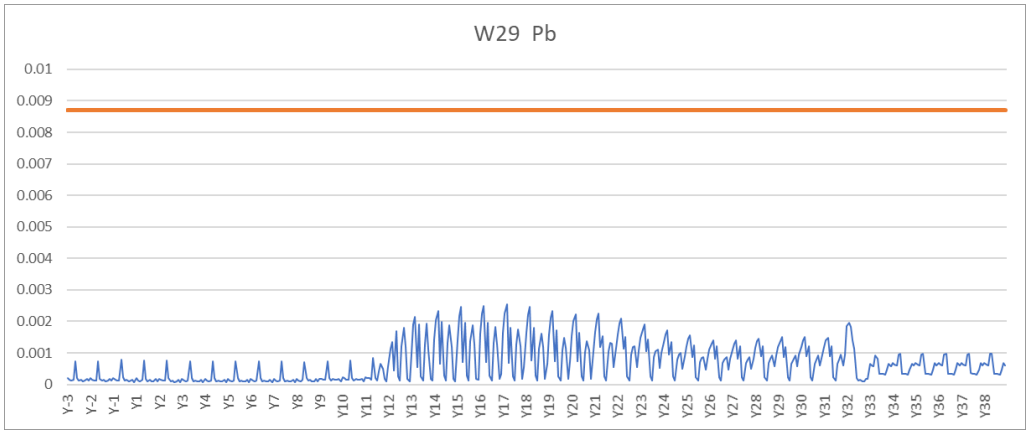
B.2-10: Time series of predicted cobalt concentrations (mg/L) for W29. Water Quality Objective is shown by red line.



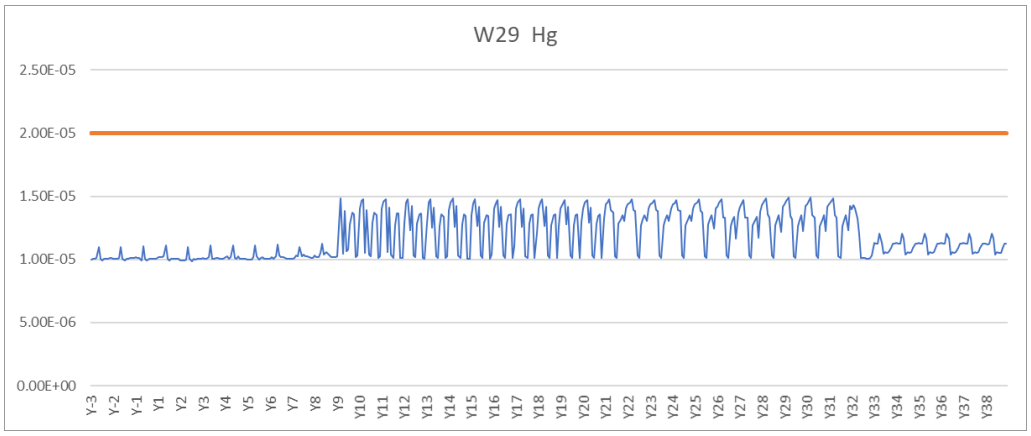
B.2-11: Time series of predicted copper concentrations (mg/L) for W29. Water Quality Objective is shown by red line.



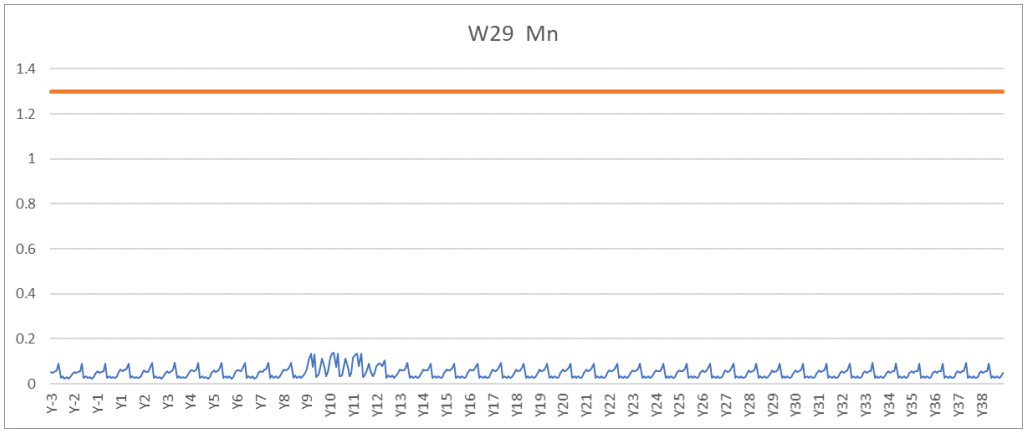
B.2-12: Time series of predicted iron concentrations (mg/L) for W29. Water Quality Objective is shown by red line.



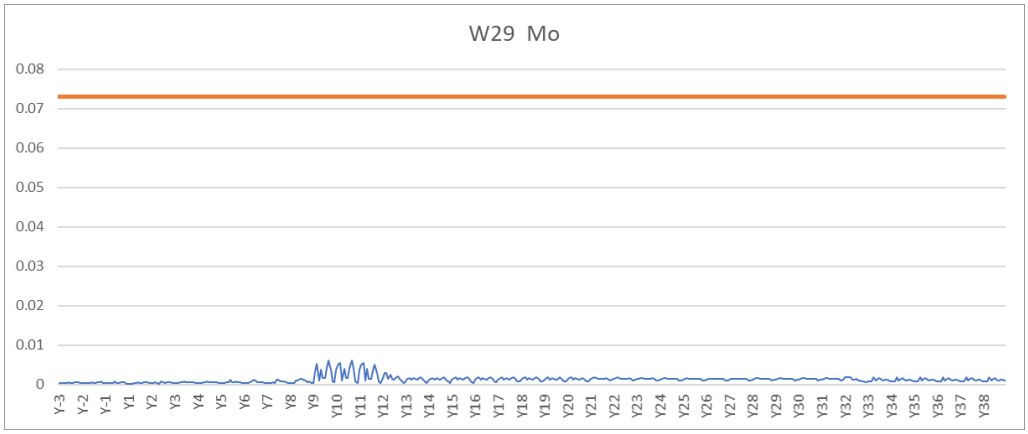
B.2-13: Time series of predicted lead concentrations (mg/L) for W29. Water Quality Objective is shown by red line.



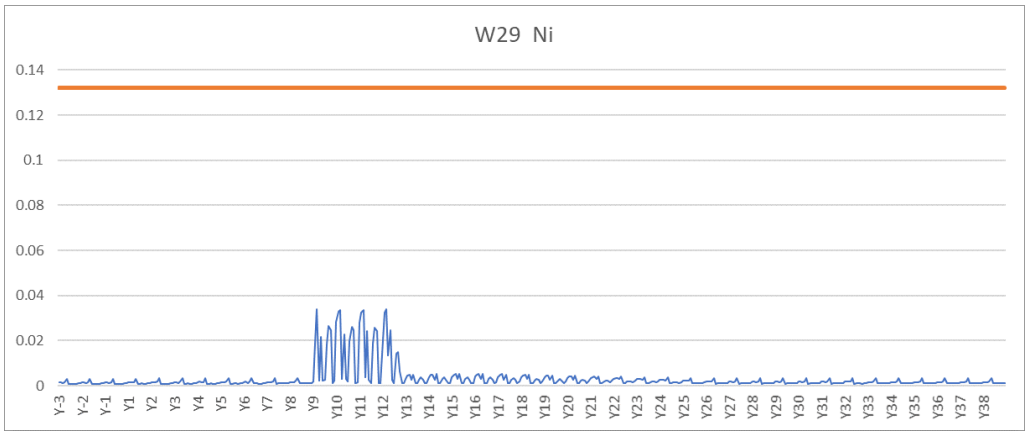
B.2-14: Time series of predicted mercury concentrations (mg/L) for W29. Water Quality Objective is shown by red line.



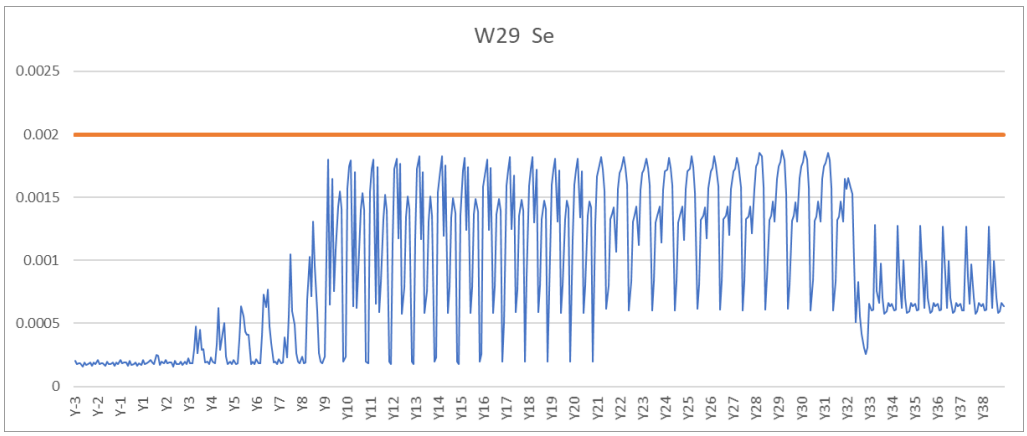
B.2-15: Time series of predicted manganese concentrations (mg/L) for W29. Water Quality Objective is shown by red line.



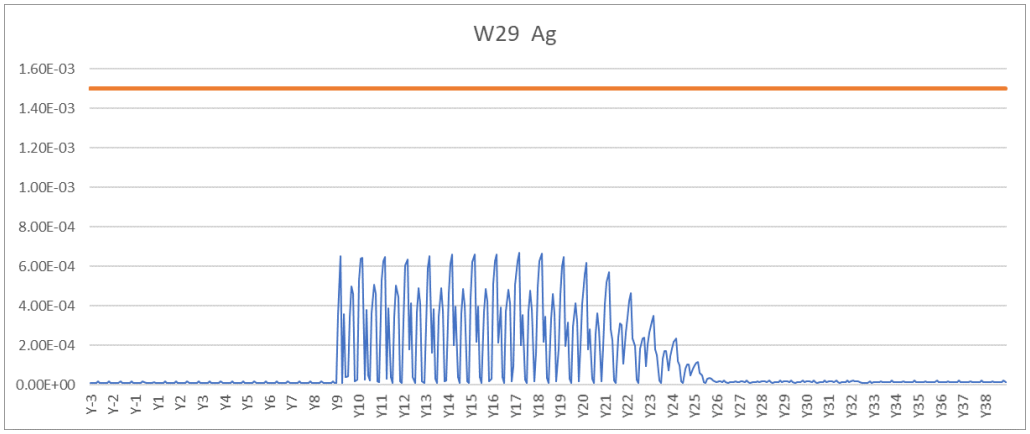
B.2-16: Time series of predicted molybdenum concentrations (mg/L) for W29. Water Quality Objective is shown by red line.



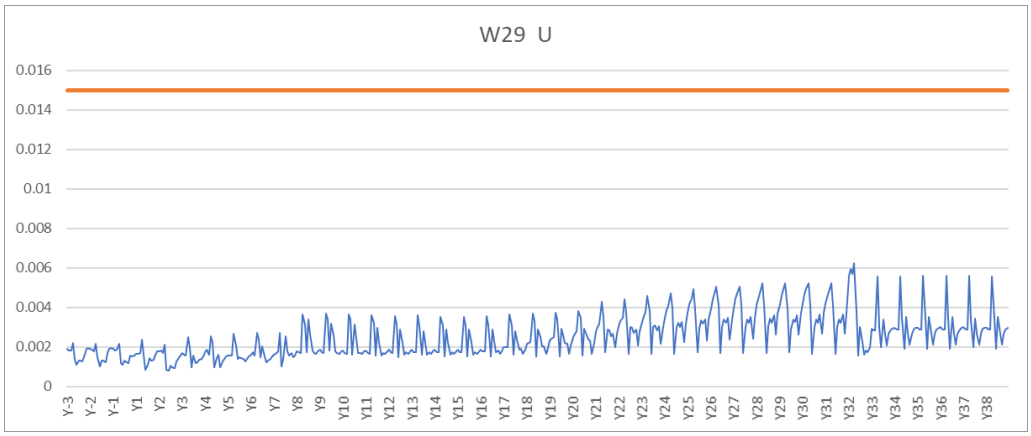
B.2-17: Time series of predicted nickel concentrations (mg/L) for W29. Water Quality Objective is shown by red line.



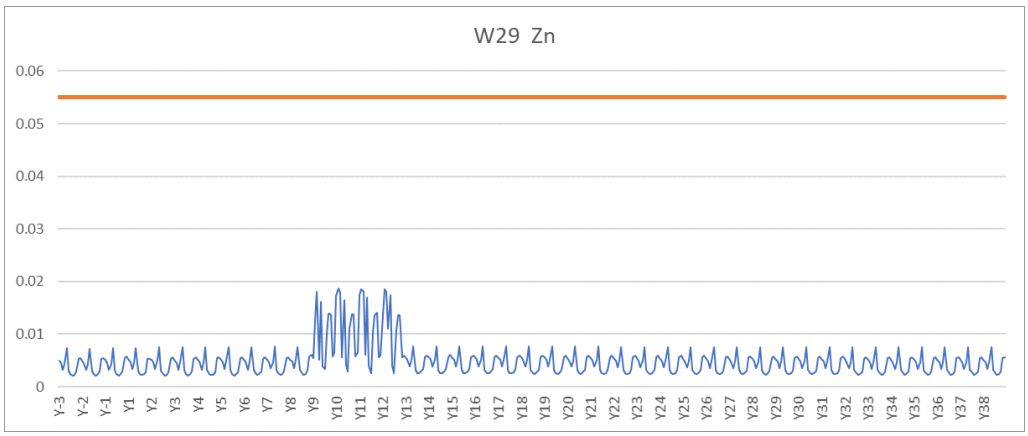
B.2-18: Time series of predicted selenium concentrations (mg/L) for W29. Water Quality Objective is shown by red line.



B.2-19: Time series of predicted silver concentrations (mg/L) for W29. Water Quality Objective is shown by red line.

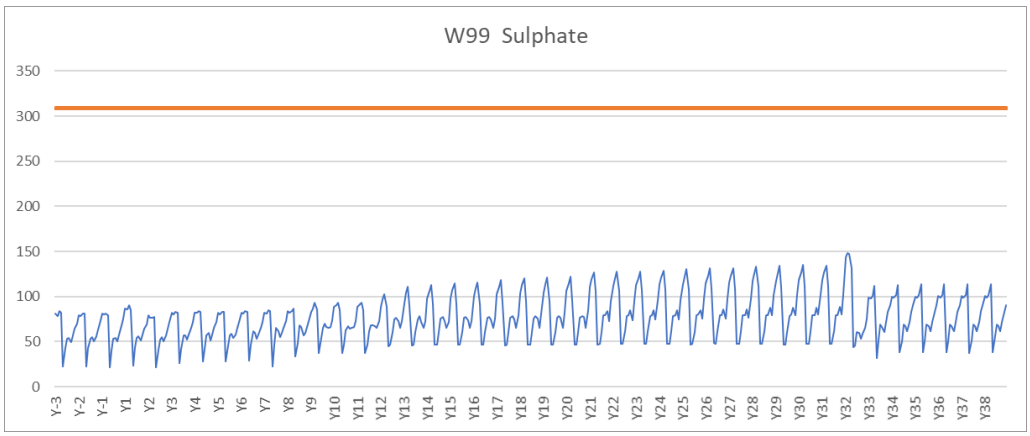


B.2-20: Time series of predicted uranium concentrations (mg/L) for W29. Water Quality Objective is shown by red line.

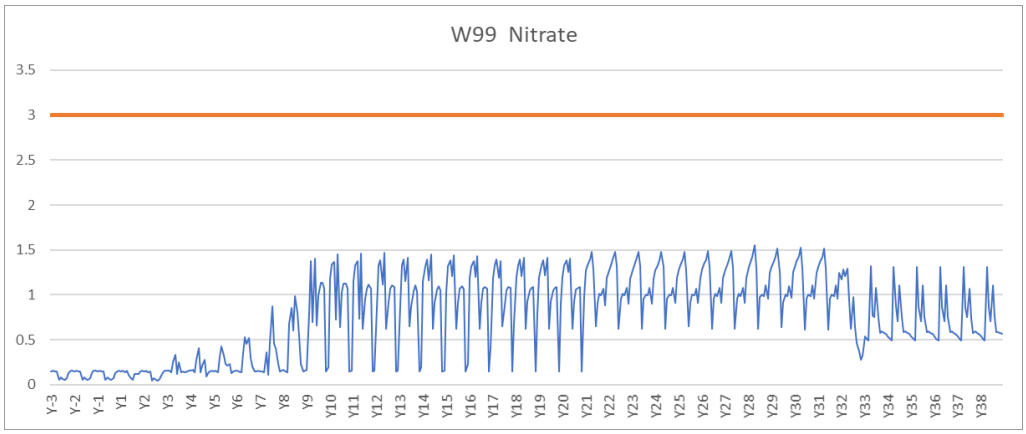


B.2-21: Time series of predicted zinc concentrations (mg/L) for W29. Water Quality Objective is shown by red line.

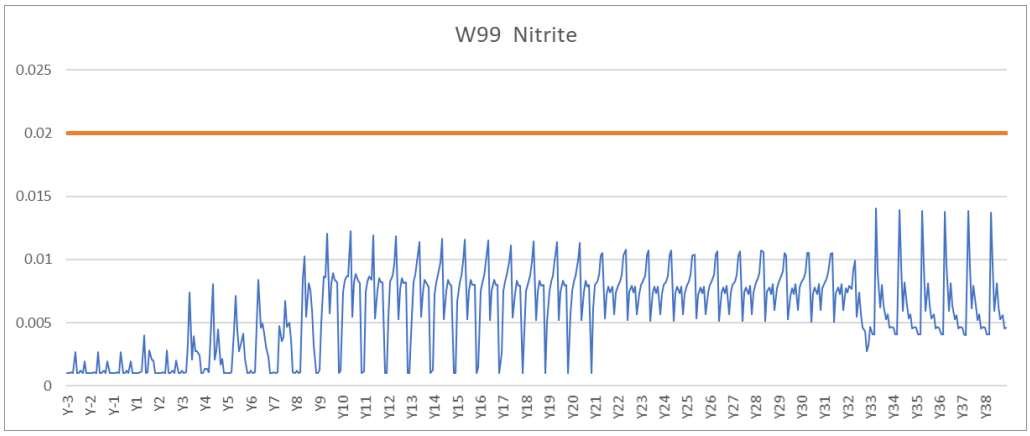
B.3. Haggart Creek below Eagle Creek (W99) – Water Quality Predictions



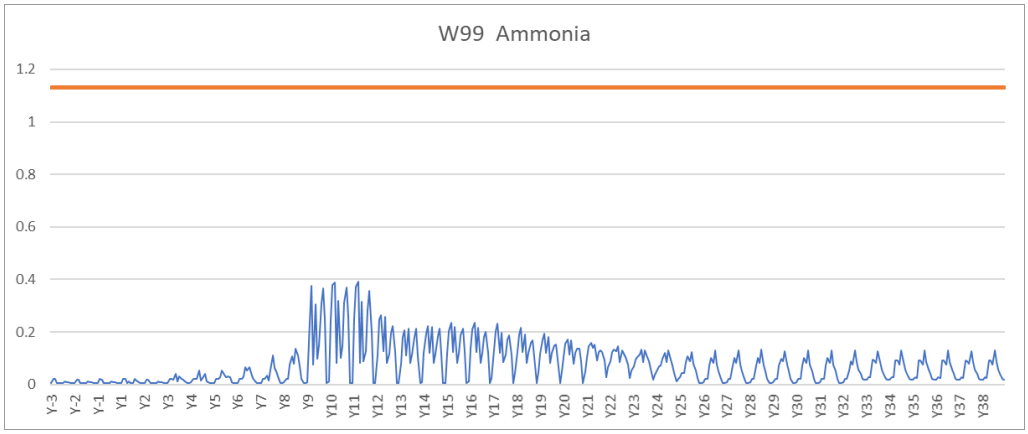
B.3-1: Time series of predicted sulphate concentrations (mg/L) for W99. Water Quality Objective is shown by red line.



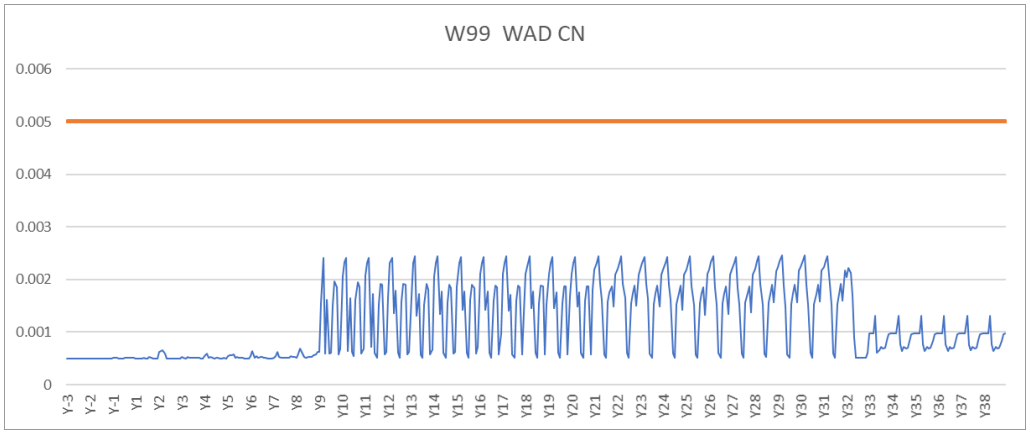
B.3-2: Time series of predicted nitrate concentrations (mg/L) for W99. Water Quality Objective is shown by red line.



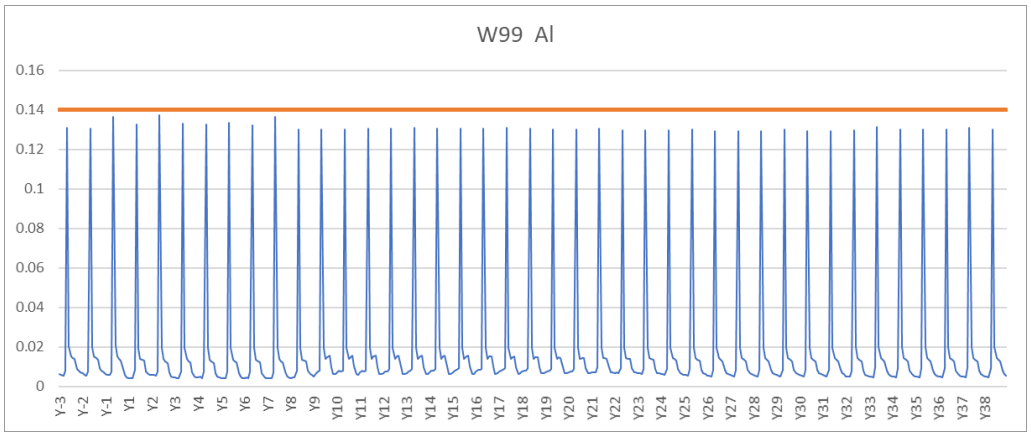
B.3-3: Time series of predicted nitrite concentrations (mg/L) for W99. Water Quality Objective is shown by red line.



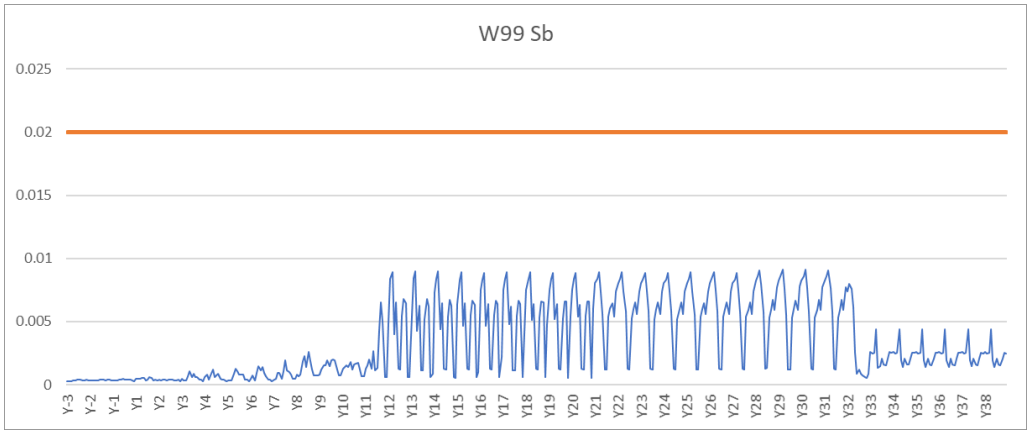
B.3-4: Time series of predicted ammonia concentrations (mg/L) for W99. Water Quality Objective is shown by red line.



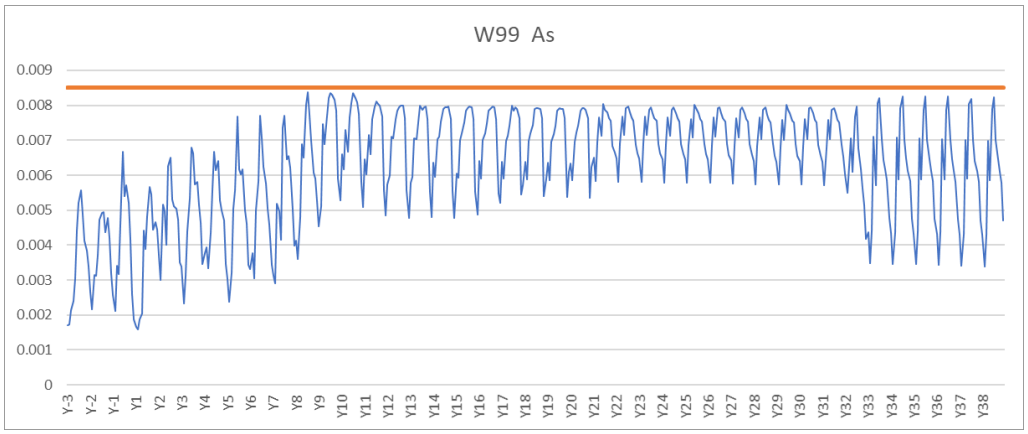
B.3-5: Time series of predicted WAD-CN concentrations (mg/L) for W99. Water Quality Objective is shown by red line.



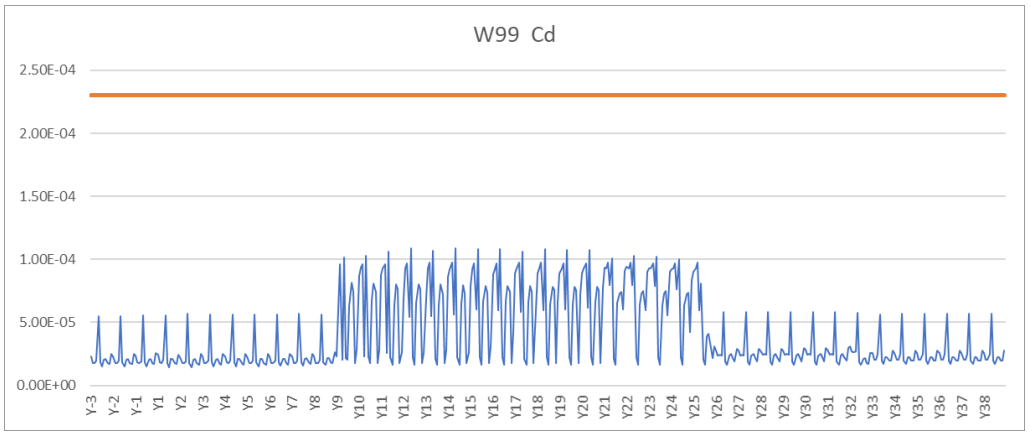
B.3-6: Time series of predicted aluminum concentrations (mg/L) for W99. Water Quality Objective is shown by red line.



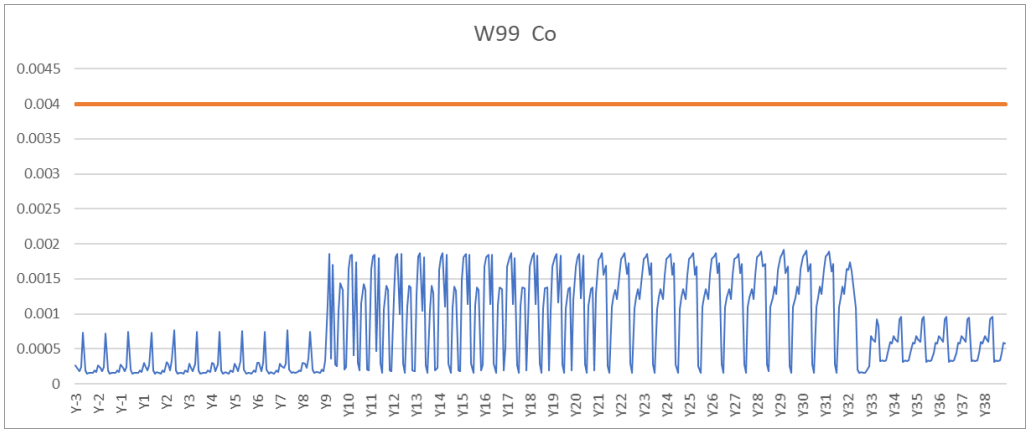
B.3-7: Time series of predicted antimony concentrations (mg/L) for W99. Water Quality Objective is shown by red line.



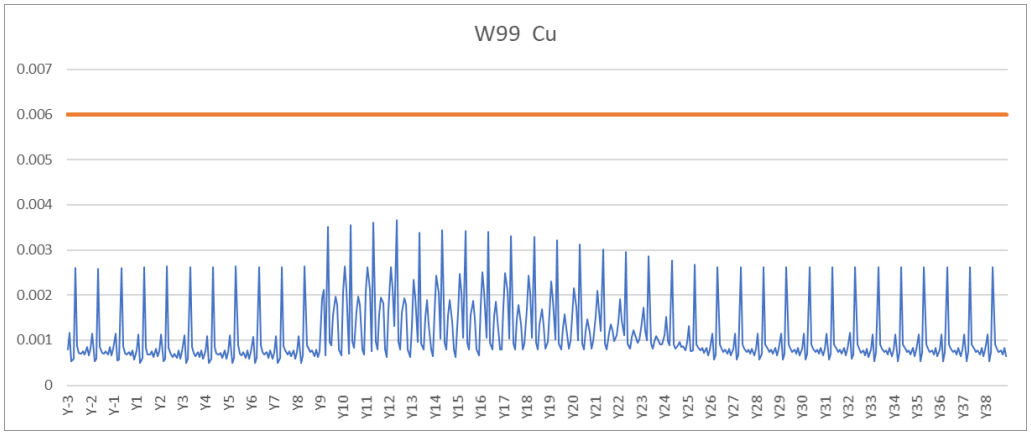
B.3-8: Time series of predicted arsenic concentrations (mg/L) for W99. Water Quality Objective is shown by red line.



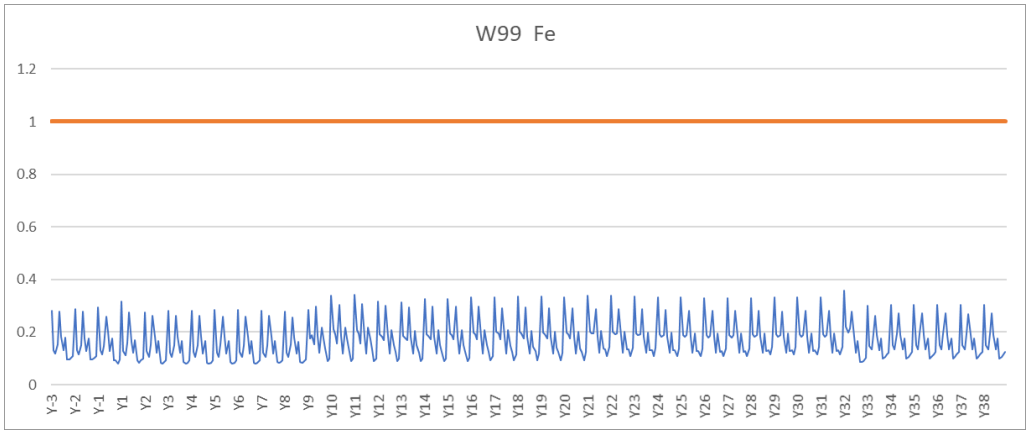
B.3-9: Time series of predicted cadmium concentrations (mg/L) for W99. Water Quality Objective is shown by red line.



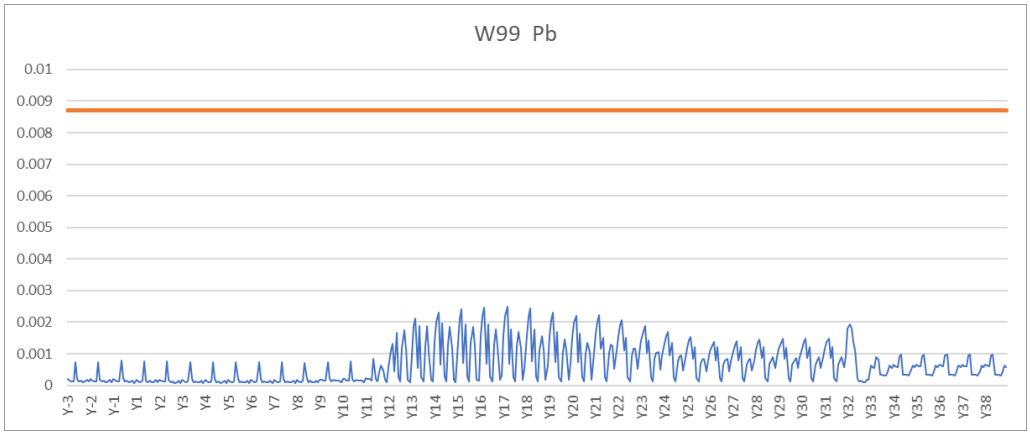
B.3-10: Time series of predicted cobalt concentrations (mg/L) for W99. Water Quality Objective is shown by red line.



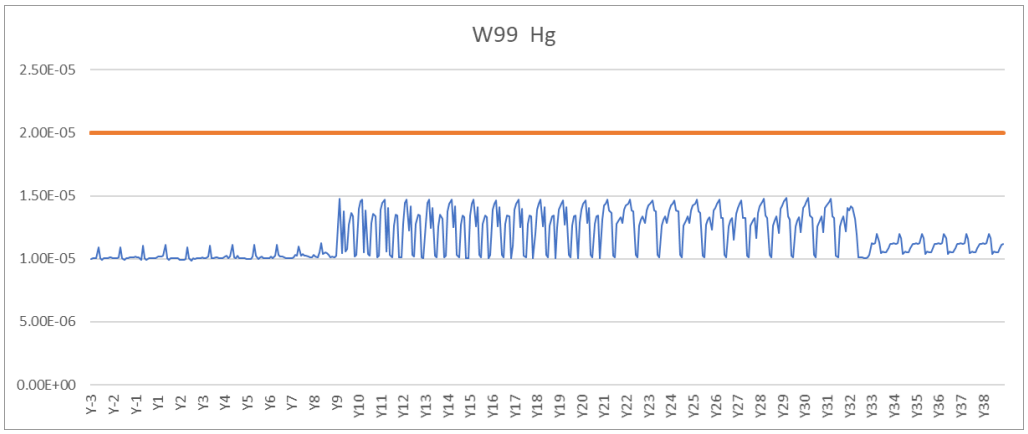
B.3-11: Time series of predicted copper concentrations (mg/L) for W99. Water Quality Objective is shown by red line.



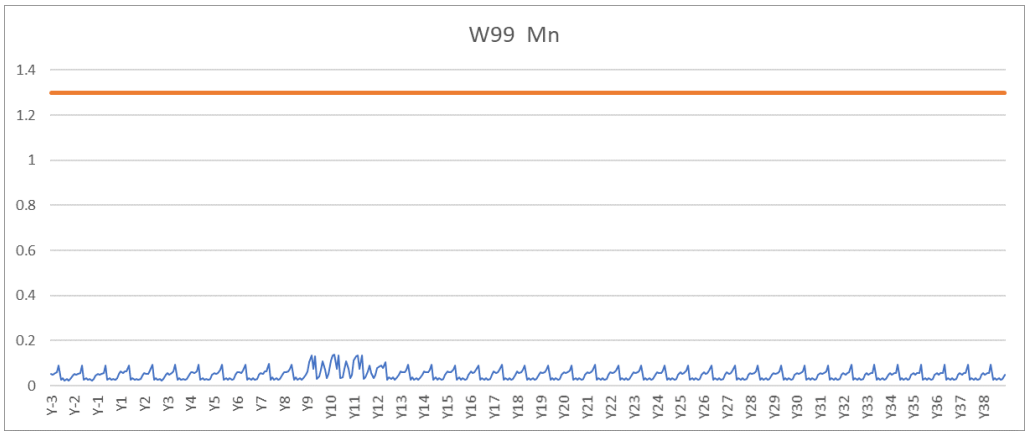
B.3-12: Time series of predicted iron concentrations (mg/L) for W99. Water Quality Objective is shown by red line.



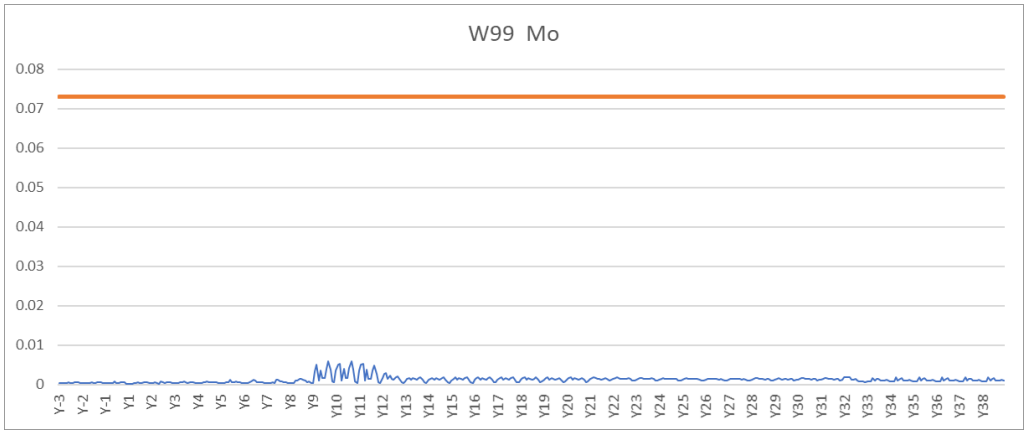
B.3-13: Time series of predicted lead concentrations (mg/L) for W99. Water Quality Objective is shown by red line.



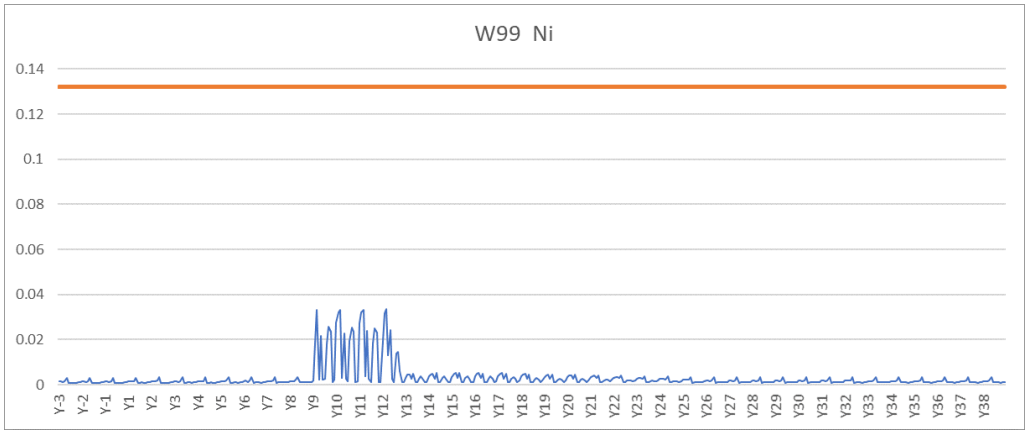
B.3-14: Time series of predicted mercury concentrations (mg/L) for W99. Water Quality Objective is shown by red line.



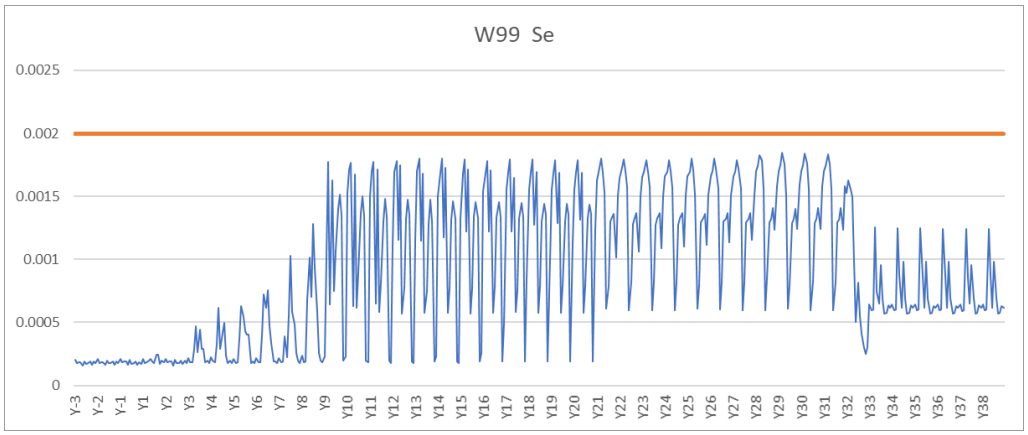
B.3-15: Time series of predicted manganese concentrations (mg/L) for W99. Water Quality Objective is shown by red line.



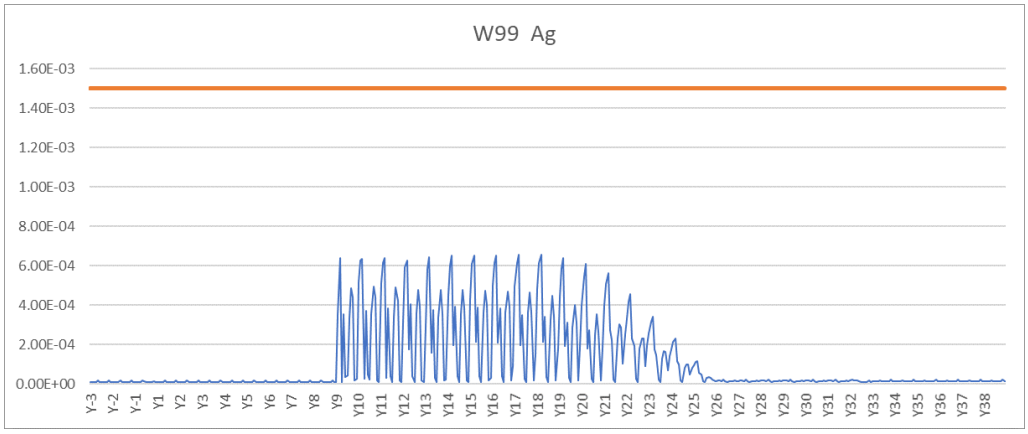
B.3-16: Time series of predicted molybdenum concentrations (mg/L) for W99. Water Quality Objective is shown by red line.



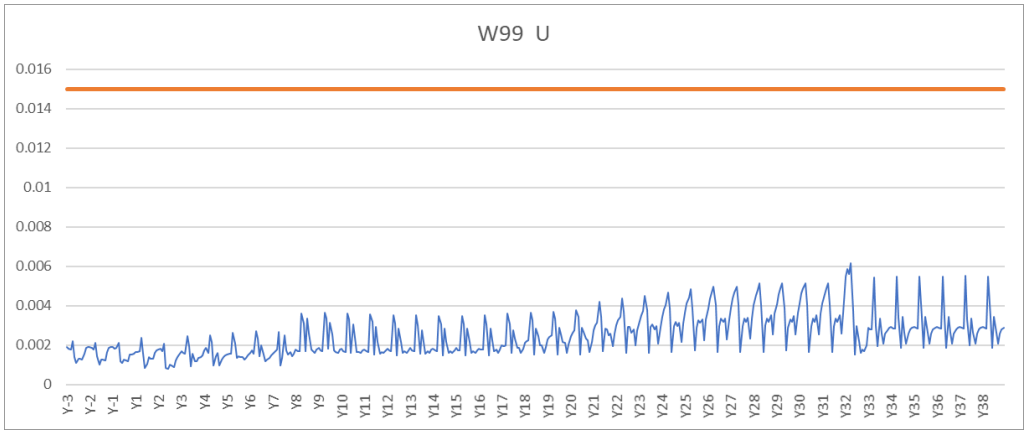
B.3-17: Time series of predicted nickel concentrations (mg/L) for W99. Water Quality Objective is shown by red line.



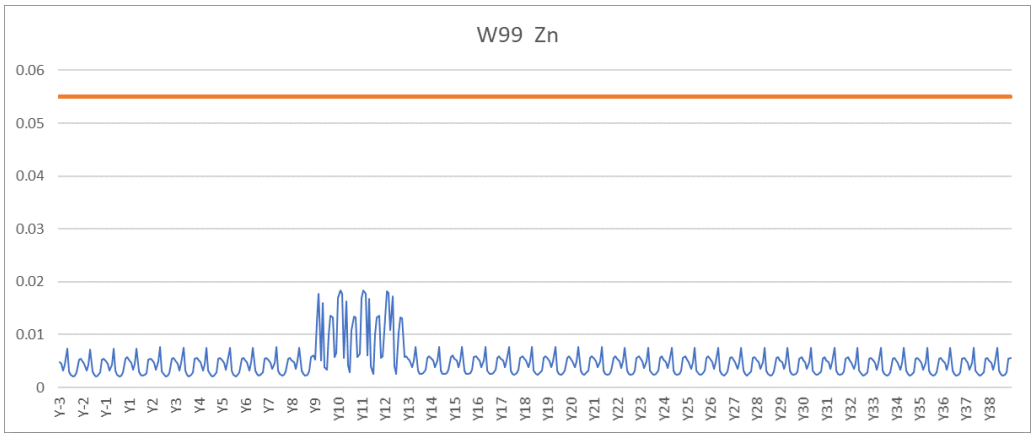
B.3-18: Time series of predicted selenium concentrations (mg/L) for W99. Water Quality Objective is shown by red line.



B.3-19: Time series of predicted silver concentrations (mg/L) for W99. Water Quality Objective is shown by red line.

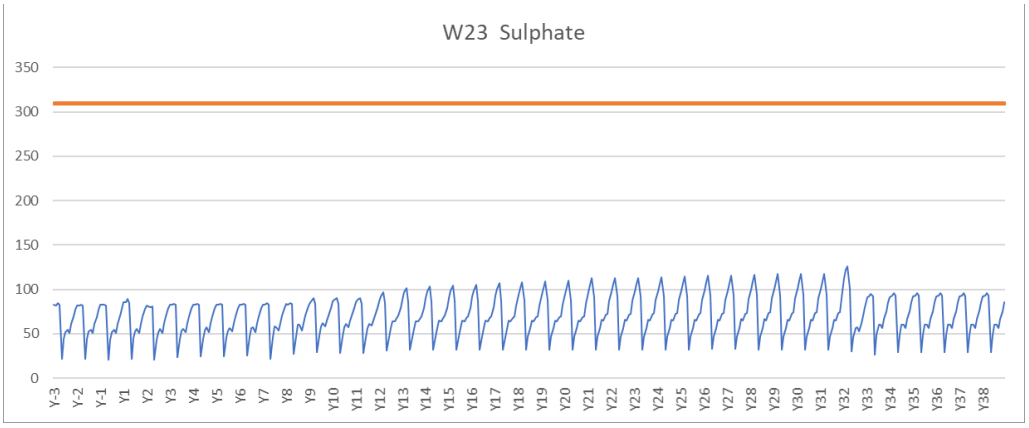


B.3-20: Time series of predicted uranium concentrations (mg/L) for W99. Water Quality Objective is shown by red line.

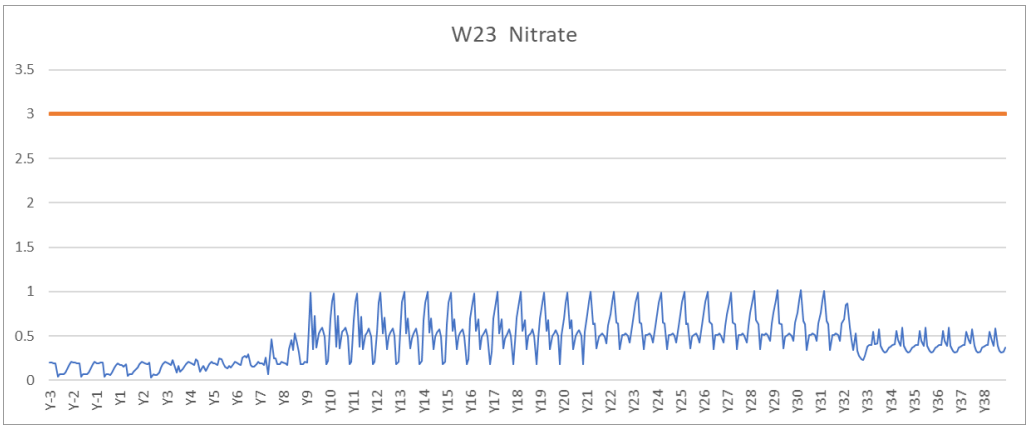


B.3-21: Time series of predicted zinc concentrations (mg/L) for W99. Water Quality Objective is shown by red line.

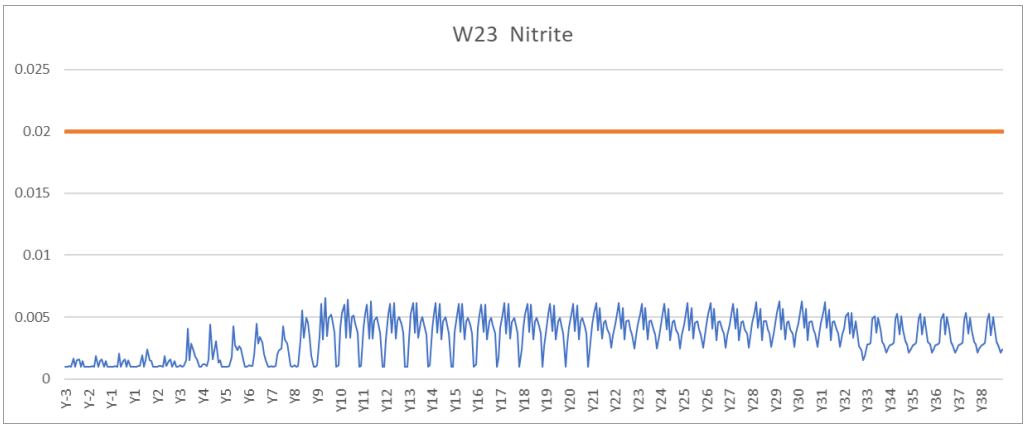
B.4. Haggart Creek below Lynx Creek (W23) – Water Quality Predictions



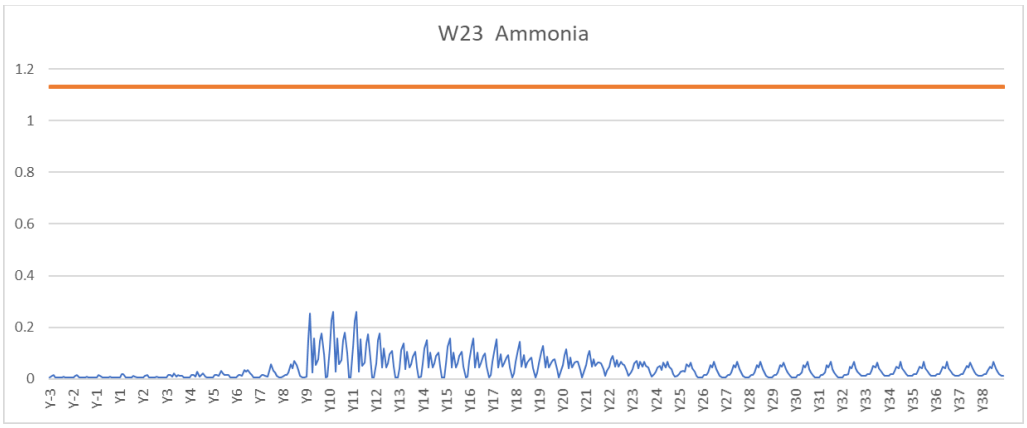
B.4-1: Time series of predicted sulphate concentrations (mg/L) for W23. Water Quality Objective is shown by red line.



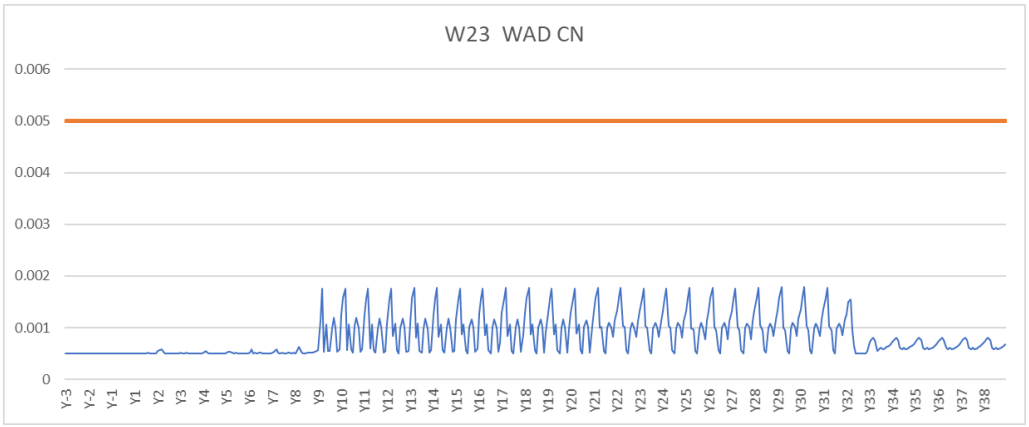
B.4-2: Time series of predicted nitrate concentrations (mg/L) for W23. Water Quality Objective is shown by red line.



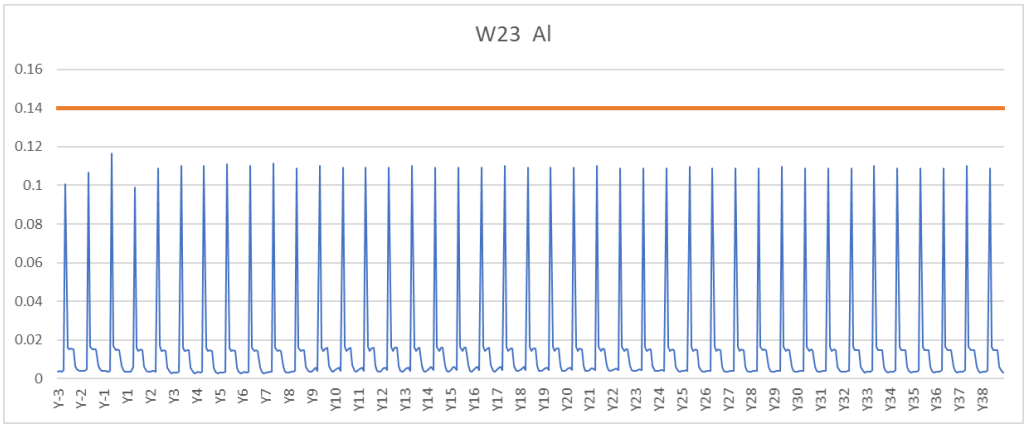
B.4-3: Time series of predicted nitrite concentrations (mg/L) for W23. Water Quality Objective is shown by red line.



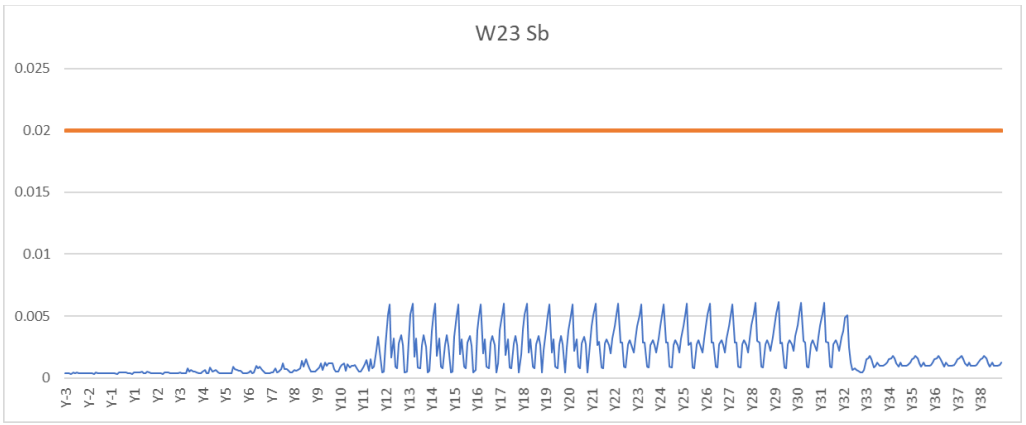
B.4-4: Time series of predicted ammonia concentrations (mg/L) for W23. Water Quality Objective is shown by red line.



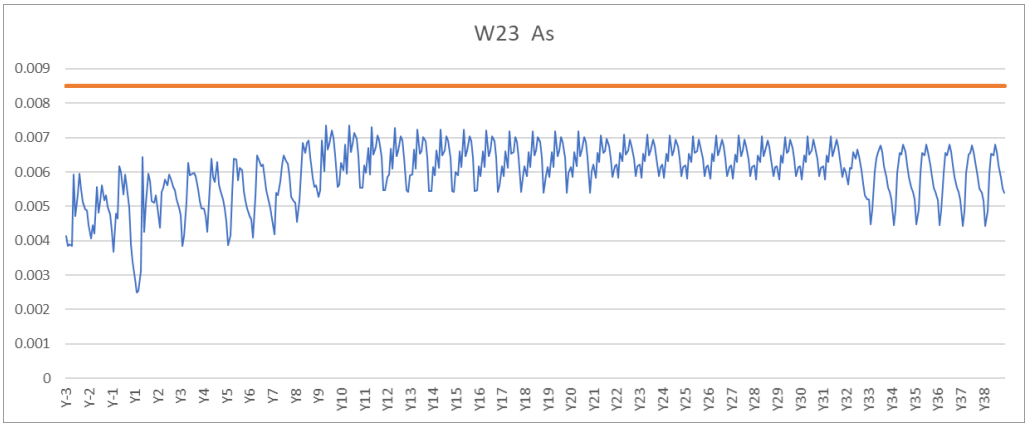
B.4-5: Time series of predicted WAD-CN concentrations (mg/L) for W23. Water Quality Objective is shown by red line.



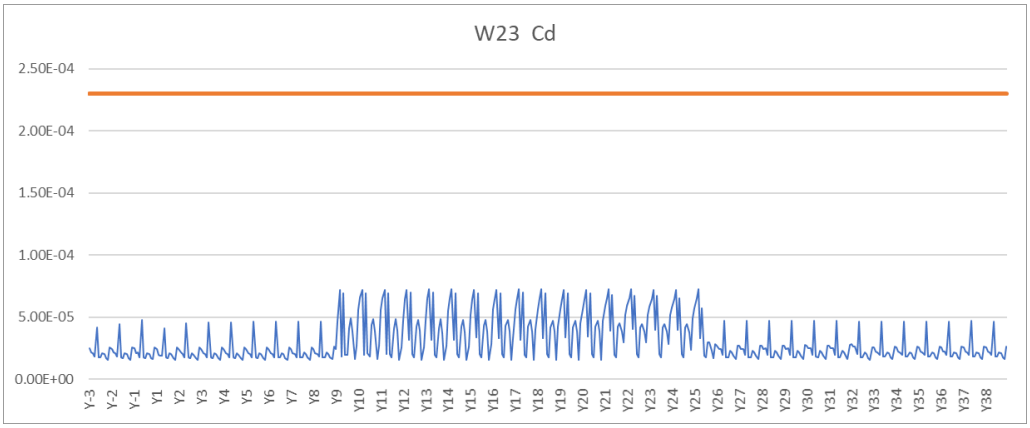
B.4-6: Time series of predicted aluminum concentrations (mg/L) for W23. Water Quality Objective is shown by red line.



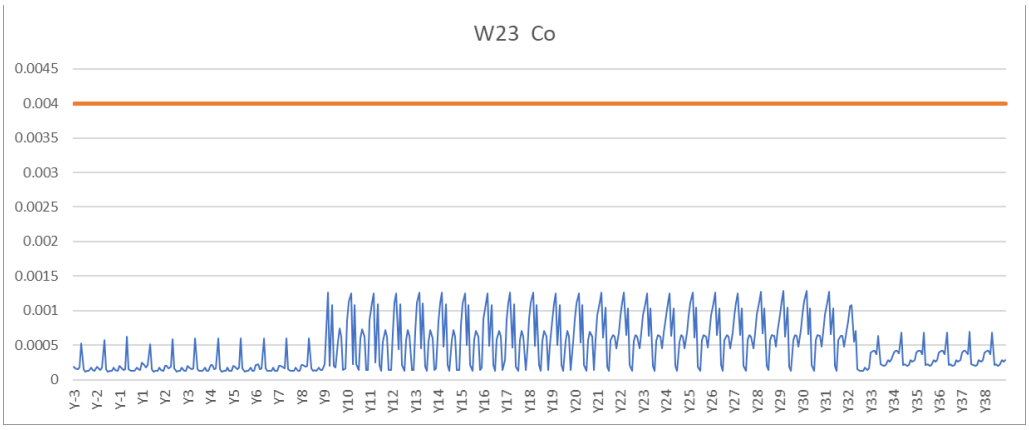
B.4-7: Time series of predicted antimony concentrations (mg/L) for W23. Water Quality Objective is shown by red line.



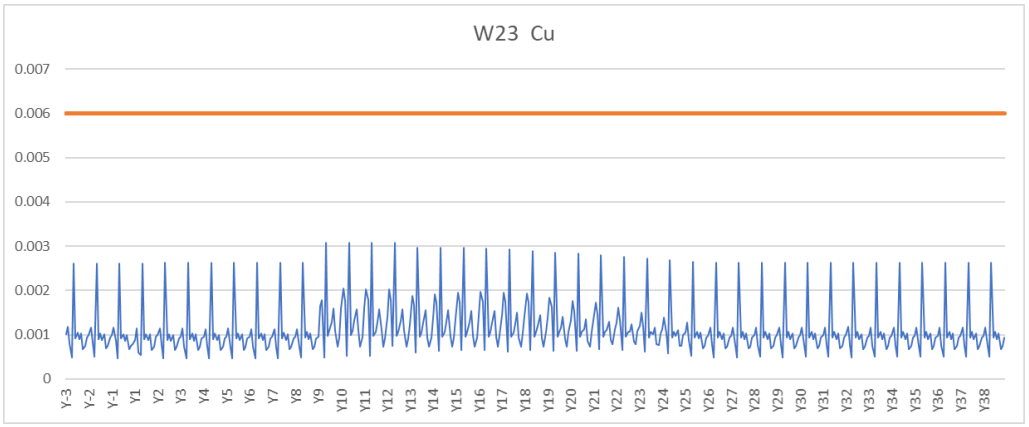
B.4-8: Time series of predicted arsenic concentrations (mg/L) for W23. Water Quality Objective is shown by red line.



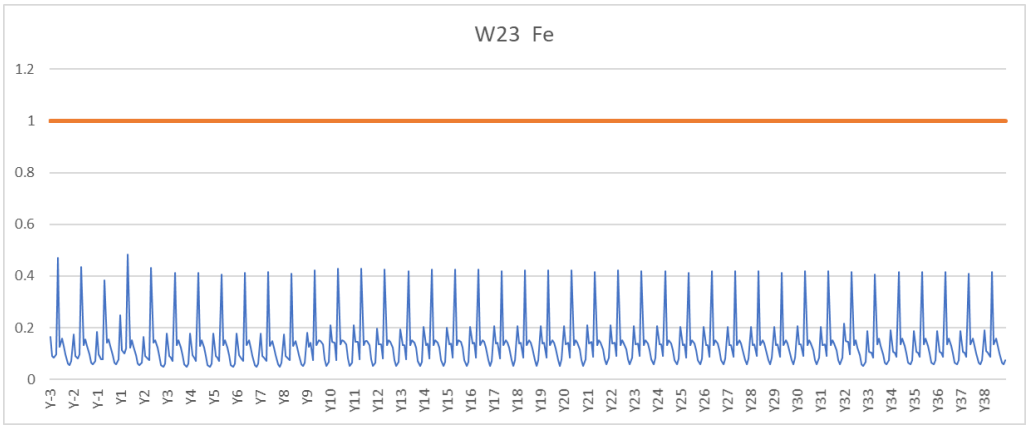
B.4-9: Time series of predicted cadmium concentrations (mg/L) for W23. Water Quality Objective is shown by red line.



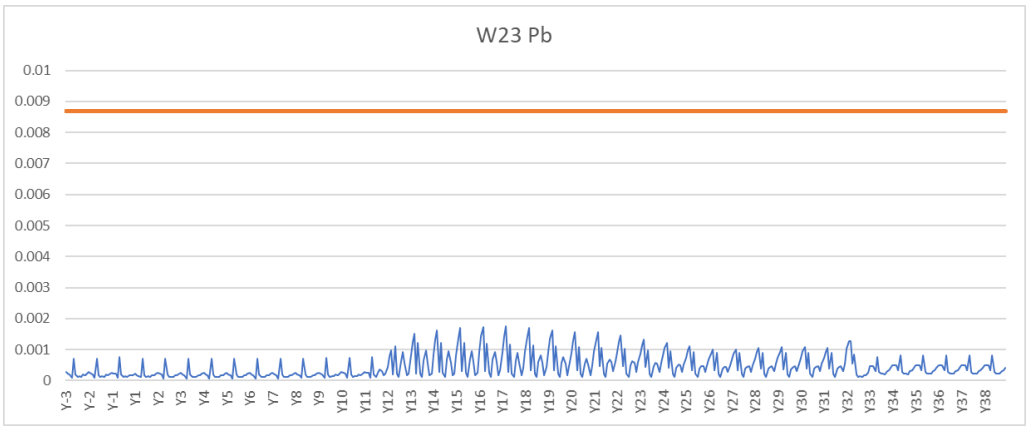
B.4-10: Time series of predicted cobalt concentrations (mg/L) for W23. Water Quality Objective is shown by red line.



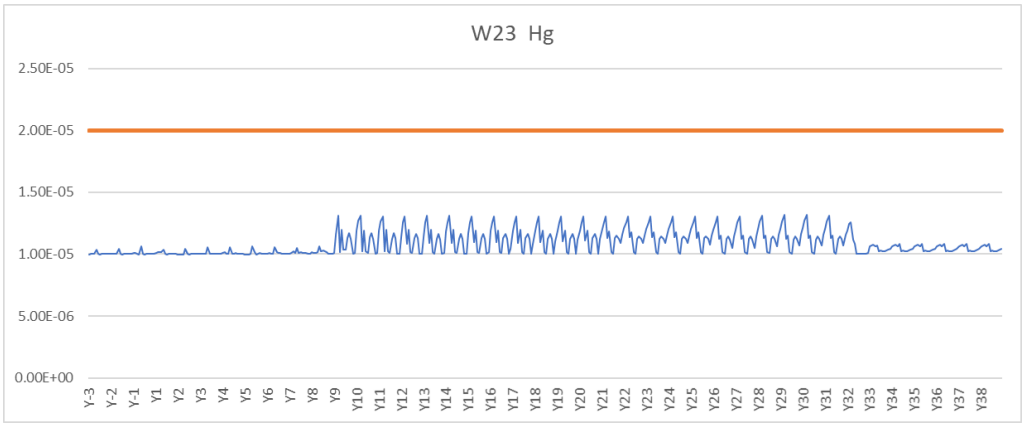
B.4-11: Time series of predicted copper concentrations (mg/L) for W23. Water Quality Objective is shown by red line.



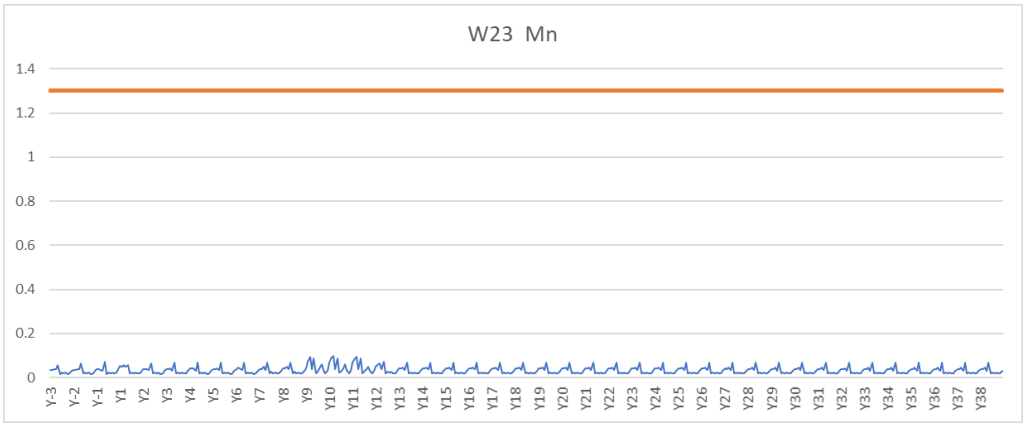
B.4-12: Time series of predicted iron concentrations (mg/L) for W23. Water Quality Objective is shown by red line.



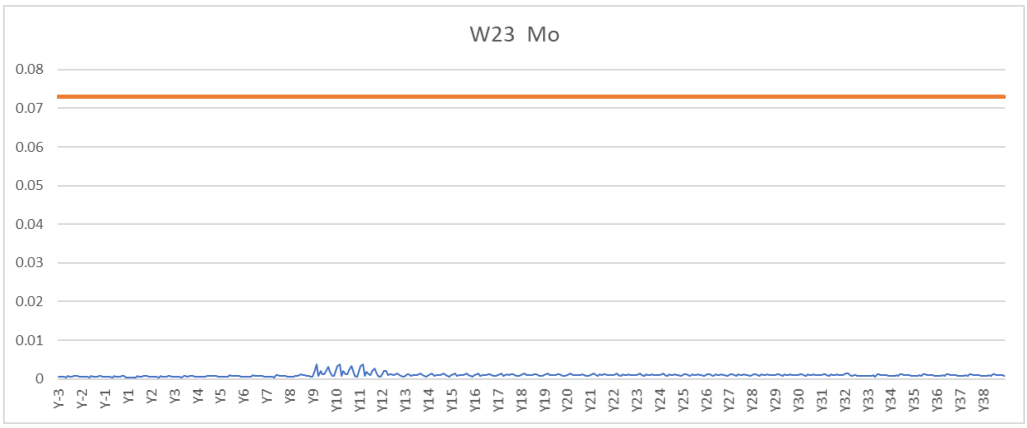
B.4-13: Time series of predicted lead concentrations (mg/L) for W23. Water Quality Objective is shown by red line.



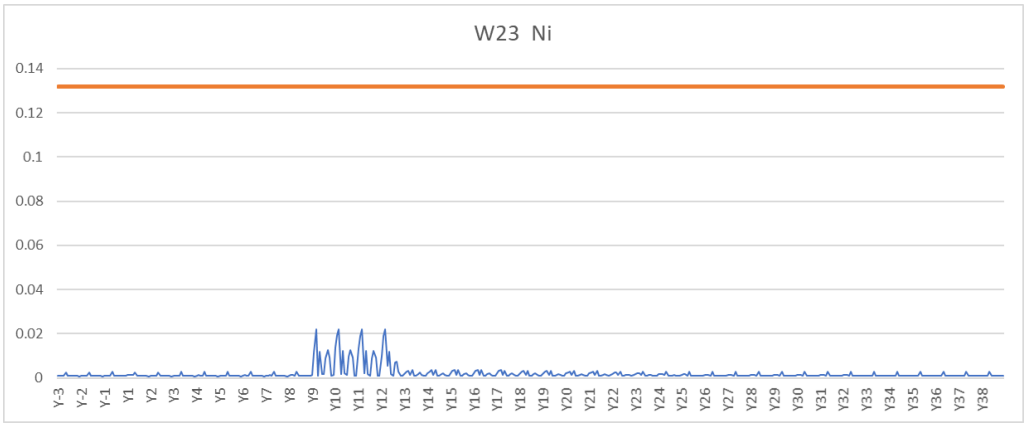
B.4-14: Time series of predicted mercury concentrations (mg/L) for W23. Water Quality Objective is shown by red line.



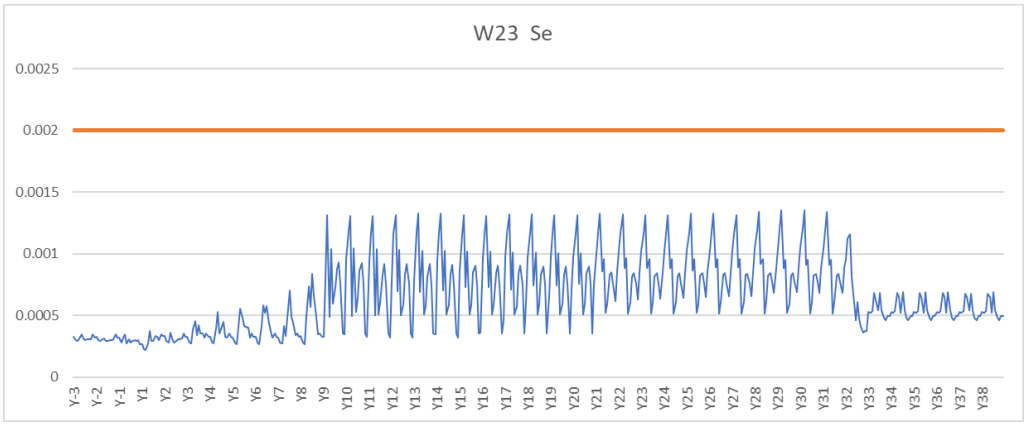
B.4-15: Time series of predicted manganese concentrations (mg/L) for W23. Water Quality Objective is shown by red line.



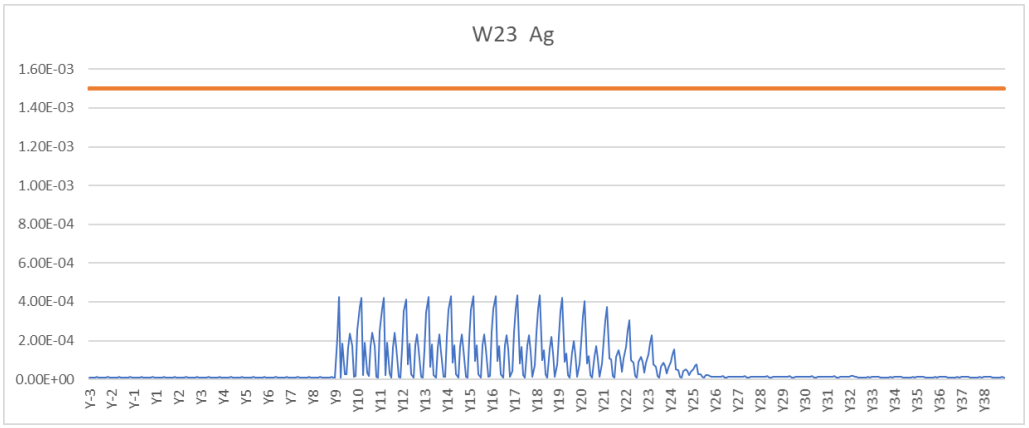
B.4-16: Time series of predicted molybdenum concentrations (mg/L) for W23. Water Quality Objective is shown by red line.



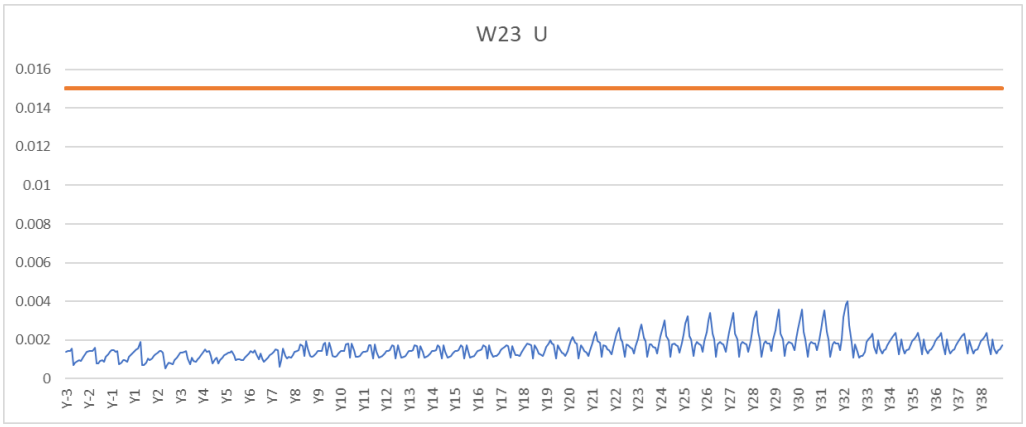
B.4-17: Time series of predicted nickel concentrations (mg/L) for W23. Water Quality Objective is shown by red line.



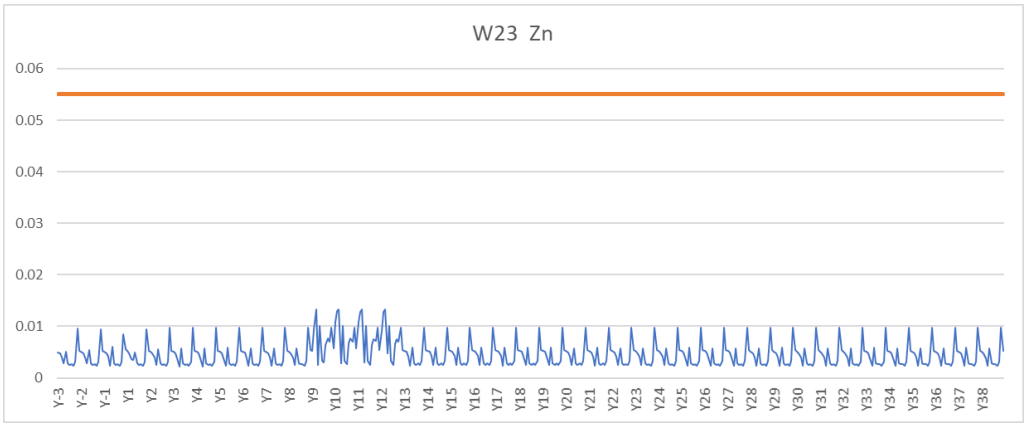
B.4-18: Time series of predicted selenium concentrations (mg/L) for W23. Water Quality Objective is shown by red line.



B.4-19: Time series of predicted silver concentrations (mg/L) for W23. Water Quality Objective is shown by red line.



B.4-20: Time series of predicted uranium concentrations (mg/L) for W23. Water Quality Objective is shown by red line.



B.4-21: Time series of predicted zinc concentrations (mg/L) for W23. Water Quality Objective is shown by red line.

Appendix C: Water Quality Model Output for all Parameters

Provided electronically

VICTORIA GOLD CORP

APPENDIX H

2021 HLF Annual Water Balance Modeling Report

VICTORIA GOLD CORP

Eagle Gold Mine

Project # 109005
Heap Leach Facilities
2021 Annual Water Balance Modeling Report
Document # 109005-51100-01-WBM-0001



Prepared by:

FORTE DYNAMICS, INC
120 Commerce Dr.
Unit 3
Fort Collins, CO 80524

Revision	Date	Status	Prepared By	Checked By	Approved By
A	16-Mar-2021	Issued for Client Review	JA	BF, WL	CG
B	25-Mar-2021	Re-Issued for Client Review	JA	BF	CG

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1. INTRODUCTION

This document has been prepared by Forte Dynamics, Inc. (Forte) on behalf of Victoria Gold (Yukon) Corp. (VGC) for the Eagle Project. Each year as per Water Use License (WUL) condition #107, VGC (The Licensee) must submit to the YWB updated surface water balance and water quality models which must include updated:

a) Site data collected as per the EMSAMP and the Heap Leach Facility (HLF) Solution Inventory Monitoring Program;
b) Input from any updates to the HLF water balance model; and
c) Predictions for Production Phase through to Permanent Closure including discussion on variances identified and implications on site water management.

Additionally, as per WUL condition #118, the annual report must include a stochastic projection of the expected water volumes stored within the HLF and Event Pond for the period of March 1 to August 31 of that year.

This report addresses the HLF water balance model specifically including the inputs and outputs for the HLF water balance. This includes updates to the HLF water balance model as well as the outputs developed for the surface water balance and water quality models as well as the stochastic projections surrounding the HLF and Event Pond.

2. INPUTS AND ASSUMPTIONS

This HLF Water Balance Model developed by Forte Dynamics is used for daily operations and uses measured meteorological and site operational data for the period in which such data are available from the July 1st, 2019 start date of the operations to the January 1st, 2021 forecasting date. This distinction in measured and forecasted data, detailed further in this document, effects the Deterministic and Stochastic model simulations, which are discussed in detail in the succeeding sections.

The HLF Water Balance Model used by Forte makes use of a large array of operational, meteorological, geotechnical, and metallurgical input data. During production, routine testing is conducted to characterize ore properties which have been used to refine certain input parameters for the heap water balance model. The heap water balance model incorporates details surrounding the HLF while providing operations with the ability to utilize more recorded inputs to support ongoing solution and pond level management.

2.1 Modeling Timeframe

- **Deterministic Modeling:**
    - 19.5 years of operations modelled from:
        - 7/1/2019 – 2/15/2028: Normal Operations (stacking and leaching of HLF)
            - Note that a Forecasting Date of 1/1/2021 was used in modeling, beyond which, all data is forecasted. Greater detail on the forecasting of specific data is provided in subsequent sections.
        - 2/15/2028 – 1/1/2040: Residual recovery, closure, solution management (ore rinsing, discharge to treatment)
        - *Resource:* VGC input with guidance from Forte engineering experience
- **Stochastic Modeling:**
    - 2.5 years of operations modelled from:
        - 7/1/2019 – 3/1/2021: Observed Normal Operations (stacking and leaching of HLF)
        - 3/1/2021 – 1/1/2022: Normal Operations (stacking and leaching of HLF)
            - 3/1/2021 is the Forecasting Date at which point the Stochastic Climate/Meteorological datasets are introduced and all data is forecasted.
        - *Resource:* VGC input with guidance from Forte engineering experience

2.2 Ore Properties

- **Initial Moisture Content:**
    - 1.5% by weight
        - *Resource:* Based on site measurements taken during operation
- **Residual Moisture Content:**
    - 8.6% by weight, corresponding to a 7.69% by weight for Brooks-Corey Calculations
        - *Resource:* Calibrated for Brooks-Corey Residual Moisture equation

- **Active Leaching Ore Moisture Content**
  - 14.35% - 11.46% by weight
    - *Resource:* Calculated based on current site ore properties and changes in density based on loading
- **Bulk Dry Density**
  - 1.72 tonne/m^3
    - *Resource:* Unchanged
- **Density Consolidation**
  - Density_Consolidated=Bulk_Density*Material_Depth^(Power_Factor), curve fit equation developed from test work with the Power Factor calculated as 0.0195
    - *Resource:* KCA test work at loads simulating heap depths of 0m to 170m
- **Specific Gravity**
  - 2.65
    - *Resource:* Unchanged
- **Saturated Hydraulic Conductivity**
  - 0.07268 cm/s (universally scaled down by 1 order of magnitude in model for in-field correction)
    - *Resource:* VGC site measurements and calibrated model confirmation
- **Saturated Hydraulic Conductivity Consolidation**
  - K_sat_consolidated=Density_Consolidated*Slope+Intercept, linear fit equation developed from test work with Slope=-0.2285 and Intercept=0.4657
    - *Resource:* KCA test work at loads simulating heap depths of 0m to 170m
- **SCS Curve Number – Loaded HLF**
  - 70 for un-leached ore, 91 for leached ore
    - *Resource:* Engineering judgement and prior experience
- **SCS Curve Number – Un-loaded HLF**
  - 99 for un-loaded HLF area, treated as bare HDPE liner surface
    - *Resource:* Engineering judgement and prior experience

2.3 Heap Leach Facility Parameters

- **Total Tonnes:**
  - 86Mt
    - *Resource:* VGC
- **Loading Months:**
  - April through December each year (9 months of loading)
    - *Resource:* VGC
- **Ultimate Elevation:**

- 1225m above mean sea level
  - *Resource:* VGC provided, ultimate HLF design

- **Lift Height:**
  - 10m
    - *Resource:* VGC provided
- **Precipitation Soak-up/Initial Abstraction of Precipitation:**
  - SCS Curve Number Excess Moisture Method Used
    - *Resource:* engineering judgement and prior experience
- **Evaporation Loss from Drip Emitters:**
  - 0.5% only in months with average daily temperatures above 0 Celsius
    - *Resource:* VGC provided, buried drip emitters in sub-zero months

2.4 Operational Parameters

- **Initial Leach Cycle:**
  - 45 days
    - *Resource:* VGC provided with planned operations
- **Leaching Application Rate (nominal):**
  - 7 L/hr/m^2 for fresh and aged ore
    - *Resource:* VGC provided
- **Target Plant Flow Rate:**
  - 1500 m^3/hr, varies through start-up and dependent on total available area for leaching, see Additional Discussion for more information on how this was treated for modeling of the mine closure in the Deterministic Modeling
    - *Resource:* VGC provided
  - Additional Discussion: For the updated Deterministic Model simulations performed by Forte, additional specificity of the plant flow rate and its effects on overall solution management is necessary.
    - *From the model start date (7/1/2019) to the model forecasting date (1/1/2021):* The measured Total Plant Flow Rate is used.
    - *After the forecasting date:* During normal operations (following initial ramp-up during development of the HLF), the Target Plant Flow Rate is a maximum of 1500 m^3/hr limited by the Leaching Application Rate with the Evaporation Loss from Drip Emitters being subtracted off in the applicable months.
    - *Once the mine reaches the end of loading (1/1/2028):* After one complete Leach Cycle of the last ore loaded (45 days, 2/15/2028), the Make-up Water supply is turned off, at which point solution begins to be managed through the discharge of barren solution to treatment, in order to reduce total volume of solution in the

system in preparation for HLF closure. More information for the modeling of Make-up Water, Discharge to Treatment, Leach Cycle, In-Heap Pond, and Event Pond can be found in each of those respective sections.

- **Discharge to Treatment Rate:**
  - 1000m Climate Series:12.1 L/s after stacking and initial leach cycle for loaded ore is complete (2/15/2028 to 1/1/2030), 19 L/s after 2030
  - Climate Change Climate Series: 19 L/s after stacking and initial leach cycle for loaded ore is complete (2/15/2028 to 1/1/2030), 28.5 L/s after 2030
    - *Resource:* The 12.1 and 19 L/s discharge to treatment rates used in the updated model were selected based on engineering judgement by Forte to match previous assumptions while maintaining a maximum rate of less than 20 L/s per VGC direction. The Climate Change Climate Series Discharge to Treatment Rate was increased after model calibration to ensure that metastable equilibrium during the closure period of the HLF is maintained.
- **Event Pond Storage:**
  - 300,577 m^3 maximum, 0.5 m Freeboard Volume of 19,325 m^3
    - *Resource:* As-built surveyed volume
  - Additional Discussion: For all the modeling simulations performed by Forte, the Event Pond was modeled being the first source of make-up water required to meet leaching demands. Then, after 2/15/2028, the Event Pond is allowed to partially fill from meteoric inputs, then periodically discharged through the system to the In-Heap Pond when the In-Heap Pond is empty. During this time period, the In-Heap Pond level is primarily managed by recirculation and through discharge to treatment.
- **In-Heap Pond Storage Volume:**
  - 63,338 m^3 (always occupied during operation) plus 53,803 m^3 (maximum available storage volume during operation before overflowing to the Event Pond)
    - *Resource:* Consistent with the assumptions utilized for the last annual report, Forte calculation was updated with as-built survey information and placed density and particle size distribution of In-Heap Pond material. This is currently considered a conservative estimate based on assumptions of placed material properties, adjusted for consolidation. This volume will be verified after the conclusion of the In-Heap Pond verification test.
  - Additional Discussion: For all of the modeling simulations performed by Forte, the In-Heap Pond was drawn from in the following way:
    - The measured plant flow rate from 7/26/2019 to 1/1/2021

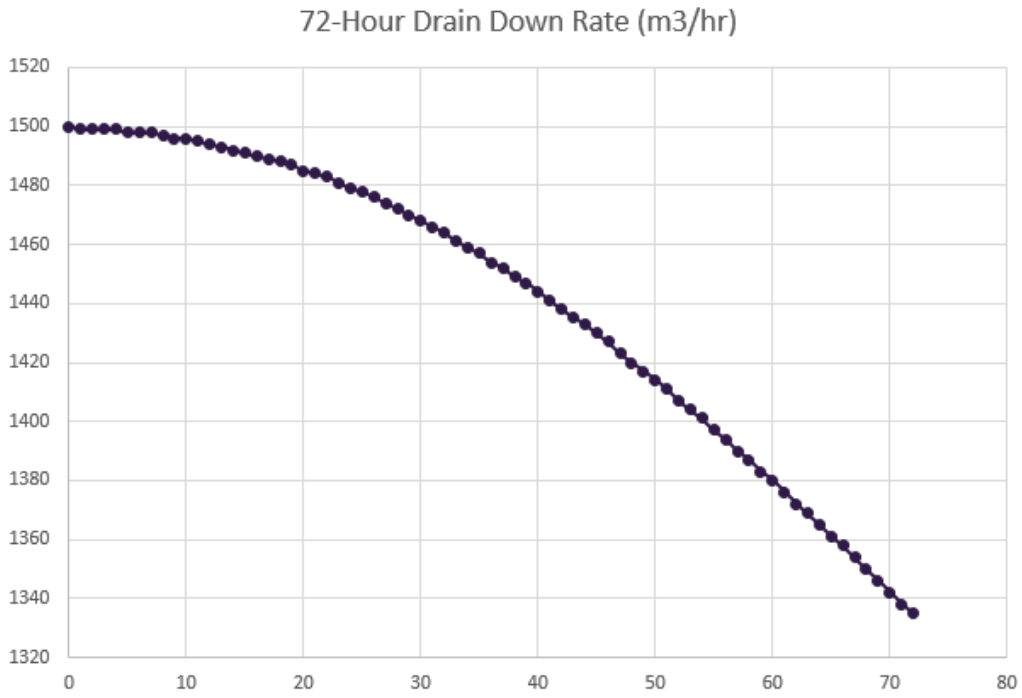
- As much as possible to maintain the circulation of the targeted flow rate of 1500 m^3/hr, with that flow rate acting as the maximum total withdrawal rate from the In-Heap Pond throughout the entire mine life beginning 1/1/2021.
- As much as possible to maintain the target for Discharge to Treatment rates with those rates acting as the maximum solution removal rates from the system beginning 2/15/2028.

- **Total Available Storage Volume vs Desired Available Storage**
  - The Maximum Total Available Storage Volume is **354,380 m^3**, which is calculated by subtracting the amount of solution considered to always be stored in the In-Heap from the Maximum Total Storage Volume:
    - 117,141 m^3 (In-Heap Pond Total Volume) – 63,338 m^3 (Occupied In-Heap Pond Volume) = **53,803 m^3** (Maximum Available In-Heap Pond Storage Volume)
    - **300,577 m^3** (Maximum Available Event Pond Storage Volume to the spillway invert)
    - **300,577 + 53,803 = 354,380 m^3**
- **Desired Available Storage Volume:**
  - 183,259 m^3 (Extreme Precipitation Reference Event as described below plus a 0.5 m Freeboard Volume buffer as described previously, and matching the volume used for the 2020 Annual Update)
    - *Resource:* 0.5 m Freeboard Volume of the Events Pond updated based on as-built survey.

2.5 Meteorological Inputs and Parameters

For the 2021 Annual Update, Lorax provided Forte with measured meteorological data for the site from 2020 and incorporated it into an updated set of 1000m data. The set of Climate Change meteorological data was unchanged for this modeling from what was provided in 2020.

- **Extreme Precipitation Reference Event:**
  - 54 mm (24-hr, 100 yr Event) maximum volume of 58,733 m^3 plus a 72-hr Heap Draindown of 105,199 m^3 (based on an initial nominal 1500 m^3/hr leach rate, see Plot 1 below), for a total volume of 163,932 m^3.



Plot 1 – 72 hr Draindown Curve for HLF

- *Resources:* Lorax, 2017 meteorological data, using design values regarding catchment area for final HLF (catchment area for the In-Heap Pond and Event Pond through closure)

  Forte, June 27, 2018 Yukon Water Board Responses for Plot 1 above

- **Precipitation Data used in Deterministic Modeling:**
  - Two updated, separate composite sets of data provided by Lorax were used by Forte for the updated water balance model.
    - 1000m Set: The daily Site Synthetic data is used through 2020 with the data from the hydrologic 2016 year (Oct 2015 to September 2016) repeated as a typical year from start of 2021 through closure.
    - Climate Change Set: This set has the identical basis as the 1000m set (Site Synthetic through 2020, 2016 data repeated for years 2020 through 2099); however, Lorax provided a data set to incorporate the effects of climate change on the weather at the site.
    - *Resource:* Lorax 1000m and Climate Change (CC) data sets provided to Forte in 2020
    - Refer to Figures 1-4
- **Potential Evaporation Data used in Deterministic Modeling:**

- Two separate composite sets of data provided by Lorax were used by Forte for the water balance model.
  - 1000m Set: The daily Site Synthetic data is used through 2020 with the data from the hydrologic 2016 year (October 2015 to September 2016) repeated as a typical year from start of 2020 through closure.
  - Climate Change Set: This set has the identical basis as the 1000m set (Site Synthetic through 2020, 2016 data repeated for years 2020 through 2099); however, Lorax provided a data set to incorporate the effects of climate change on the weather at the site.
  - *Resource:* Lorax 1000m and Climate Change (CC) data sets provided to Forte in 2020
  - Refer to Figures 5-8

- **Temperature Data used in Deterministic Modeling:**
  - Two separate composite sets of data provided by Lorax were used by Forte for the updated water balance model.
    - 1000m Set: The daily Site Synthetic data is used through 2020 with the data from the hydrologic 2016 year (October 2015 to September 2016) repeated as a typical year from start of 2021 through closure.
    - Climate Change Set: This set has the identical basis as the 1000m set (Site Synthetic through 2020, 2016 data repeated for years 2021 through 2099); however, Lorax provided a data set to incorporate the assumed effects of climate change on the weather at the site.
    - *Resource:* Lorax 1000m and Climate Change (CC) data sets provided to Forte in 2021 and 2020, respectively
    - Refer to Figures 9-12
- **Stochastic Sampling and Iterations:**
  - Latin Hypercube Sampling, 100 iterations/realizations
    - *Resource:* Engineering and statistical modeling experience updated to reflect the added robustness and detail of the updated operational model with a quarter day timestep.
- **Precipitation Data used in Stochastic Modeling:**
    - 7/1/2019 to 1/1/2021: Measured data is used to represent data prior to the Forecasting Date.
    - 1/1/2021 to 3/1/2021: 1000m dataset is used prior to the Stochastic data starting date.

- 3/1/2021 to 1/1/2022: WGEN (Richardson and Wright, USDA, 1984) with up-front detailed descriptive statistic parameter generation was used on the 71 years of daily Site Synthetic data. Using the stochastic sampling and iterations described previously, 100 realizations of data were produced for each day of data for Precipitation, Maximum and Minimum Temperature, Evaporation, and Solar Radiation.
- *Resource:* Lorax Site Synthetic dataset from 1948-2019 provided to Forte in 2020 for use in WGEN Stochastic data production.
- Refer to Figures 13 and 14

- **Potential Evaporation Data used in Stochastic Modeling:**
  - 7/1/2019 to 1/1/2021: Measured data is used to represent data prior to the Forecasting Date.
  - 1/1/2021 to 3/1/2021: 1000m dataset is used prior to the Stochastic data starting date.
  - 3/1/2021 to 1/1/2022: Refer to the Precipitation Data used in Stochastic Modeling section for a description of how the 100 yearly Realizations of data were produced for Precipitation, Maximum and Minimum Temperature, Evaporation, and Solar Radiation.
  - *Resource:* Lorax Site Synthetic dataset from 1948-2019 provided to Forte in 2020 for use in WGEN Stochastic data production.
  - Refer to Figures 15 and 16
- **Temperature Data used in Stochastic Modeling:**
  - 7/1/2019 to 1/1/2021: Measured data is used to represent data prior to the Forecasting Date.
  - 1/1/2021 to 3/1/2021: 1000m dataset is used prior to the Stochastic data starting date.
  - 3/1/2021 to 1/1/2022: Refer to the Precipitation Data used in Stochastic Modeling section for a description of how the 100 yearly Realizations of data are produced for Precipitation, Maximum and Minimum Temperature, Evaporation, and Solar Radiation. As WGEN outputs the Minimum and Maximum Average Daily Temperature, the Forte model calculates the Overall Average Daily Temperature from these.
  - *Resource:* Lorax Site Synthetic dataset from 1948-2019 provided to Forte in 2020 for use in WGEN Stochastic data production.
  - Refer to Figures 17 and 18
- **Solar Radiation Data used in Stochastic Modeling:**

  - 7/1/2019 to 1/1/2021: Measured data is used to represent data prior to the Forecasting Date.
  - 1/1/2021 to 3/1/2021: The monthly average from the Solar Radiation dataset (Eagle Climate Data) is used to represent data prior to the Stochastic data starting date.
  - 3/1/2021 to 1/1/2022: Refer to the Precipitation Data used in Stochastic Modeling section for a description of how the 100 yearly Realizations of data are produced for Precipitation, Maximum and Minimum Temperature, Evaporation, and Solar Radiation. The Solar Radiation is used in the calculation of Evapotranspiration specifically for the HLF.
  - *Resource:* Lorax Eagle Climate Data provided to Forte in 2020.
  - Refer to Figure 19

- **Evapotranspiration Calculated on HLF Only:**
  - Specifically, for the HLF, the Eagle Climate Data was used for the solar radiation, wind speed, and relative humidity necessary (along with temperature data from the 1000m and Climate Change data) for the calculation of evapotranspiration. The evaporation data provided in the 1000m and Climate Change datasets were used for the ponds.
    - *Resource:* Lorax 1000m and Climate Change (CC) data sets provided to Forte in 2021 and 2020 respectively, calculations/technique determined by Forte from engineering and HLF modeling experience
- **Sublimation Calculated:**
  - Sublimation is calculated using heat transfer principles and is included implicitly within the Snow 17 (Snow Accumulation and Ablation, Anderson, 2016) submodel used by Forte discussed in greater detail below.
    - *Resource:* Lorax 1000m, Climate Change (CC), and Site Synthetic data sets provided to Forte in 2021 and 2020 respectively as the necessary inputs for Snow 17 (Snow Accumulation and Ablation, Anderson, 2016)
  - Additional Discussion: Snow 17 uses heat transfer and energy balance methodologies to calculate the energy exchange at the snow-air interface taking into account latent and sensible heat exchange, vapor pressure differential, dew-point temperature.
- **Snowfall, Rain, and Melt:**
  - The division of precipitation between rain and snow and the calculation of Snow Water Equivalent and excess water (rain and melt) are modeled by Forte using the Snow 17 submodel. The Snow 17 submodel takes average daily temperature and precipitation as the critical inputs but also corrects for seasonal solar radiation changes, latitude and altitude in the implicit calculations of melt factor and lapse rate most notably. Snow 17 also

makes use of daily heat deficit accounting for determination of the internal condition of the snowpack based on the net heat transfer effects caused by the daily temperature and precipitation at the snow surface.

3. RESULTS AND DISCUSSION

Please refer to figures 20-34 below for the following discussion of the Deterministic modeling performed from 7/1/2019 through 12/31/2039 and figures 36 and 37 for the Stochastic modeling performed through 2021.

3.1 Deterministic Modeling Results

Deterministic modeling of the HLF was performed using two sets of Climate/Meteorological data provided to Forte by Lorax labeled in the graphs and discussed below as “1000m” and “Climate Change”/“CC”. Lorax stated that the basis of both sets of data before 1/1/2021 is historic and after 1/1/2021 is the 2016 calendar year of climate records. The key difference between the 1000m and CC data are changes to account for the impact of climate change for the Eagle site. For the 20+ year timeline modeled by Forte in the Deterministic modeling, the results were consolidated into Monthly datasets and graphed as such.

- **Total Available Storage Volume vs Desired Available Storage**
    - For both the 1000m and Climate Change datasets and model runs, the total available storage volume fell below the Desired Available Storage (DAS) volume for short periods during the measured period (prior to 1/1/2021); however, as this infringement occurred for less than 30 days (meeting the current license requirements) the plotted monthly average values show no encroachment on the DAS. The only exception to this in which the Total Available Storage infringes upon the DAS for greater than 30 days occurred in the historic data period of summer 2020 as shown in Figure 20. There were no infringements on the DAS in the forecasting period.
    - During the forecasted period, the minimum average monthly total available pond storage volume resulting from the Deterministic modeling for the Climate Change dataset was in May of 2025. For the 1000m dataset there were no infringements on the DAS and the minimum total available pond storage volume was in May of 2024.
    - Refer to Figures 20-23
- **Total Flow to Plant and Drainage from Heap**
    - The Total Flow to Plant (presumed to flow through the plant with negligible changes in volume to be pumped back to the HLF) and Drainage from HLF rates represent the measured and forecasted values of the “barren” solution flow rate pumped to the HLF and the “pregnant” solution reporting back to the In-Heap Pond from the HLF respectively.
    - Total Flow to Plant:
        - From 7/1/2019 to about 1/1/2022, the rate increases over this period and is primarily a function of the increasing HLF area available for leaching at the planned solution application rate of 7 L/hr/m^2 as the HLF is being developed. The gradual increase in this rate reflects the increase in ore loaded onto the HLF and the total area available for barren solution application.

- From about 1/1/2022 to 2/15/2028, this rate is primarily a function of the Target Plant Flow Rate of 1500 m^3/hr and this rate is seen to stay near the 1500 m^3/hr target throughout most of this time period. Slight dips can be correlated with both peaks in the total volume available for storage and the Make-Up Water supply indicating that water is being added into the system to maintain the Target Plant Flow Rate (Figure 24 and Figure 25). These periodic drops in the Total Flow to Plant also coincide with the winter months in which the stacking of new ore onto the HLF is continued from October through December as precipitation is largely in the form of snow instead of immediately infiltrating rain. From January through the freshet runoff until about mid-May, there is sufficient volume of solution maintained in the In-Heap Pond for the Total Flow to Plant to consistently meet the target leaching demand at about 1500 m^3/hr. In the event that there is not enough solution to meet the Target Plant Flow Rate requirement, the demand for Make-Up Water is triggered as shown in Figure 28 and Figure 29.
- From 2/15/2028 to about 3/1/2036 for the 1000m Climate Series and about 4/1/2031 for the Climate Change Climate Series, the Total Flow to Plant demand for solution from the In-Heap Pond becomes secondary after the initial leach cycle is completed on the last ore loaded onto the HLF. Solution from the In-Heap Pond is actively pumped out to be discharged to treatment as the top priority and the remaining solution/water is recirculated to the HLF for storage within the ore to maintain the DAS while residual gold recovery continues.
- Beyond 3/1/2036 for the 1000m Climate Series and 4/1/2031 for the Climate Change Climate Series, the In-Heap Pond reaches sufficiently low levels that there is no longer a need for continuous recirculation of solution. It is at this point the Total Flow to Plant falls to zero in perpetuity, and the flow from the pond is directed to the HLF passive treatment system. The Climate Change Climate Series yields an earlier date for the Total Flow to Plant Rate falling to zero due to the relatively greater continuous Discharge to Treatment targeted. The Climate Change model utilizes a higher discharge rate than the 19 L/s rate used for the 1000m Climate Series as this showed to be insufficient to eliminate all recirculation requirements.

o Drainage from Heap

- Generally, the Drainage from Heap is a function of the Total Flow to Plant plus Make-Up Water with the addition of meteorological factors. Energy transfer (e.g., sublimation of snow and evapotranspiration) is applied at the surface of the HLF as well as the percentage of precipitation (rain or melt) that infiltrates into the HLF. Note that the portion of this precipitation that does not infiltrate into the HLF reports

to the In-Heap Pond by running off the heap or exposed liner then infiltrates into the ore at the lowest surface elevation of the heap facility.

- Refer to Figures 24-27

- **Make-Up Water and Discharge to Treatment Rates**
  - The Make-Up Water is taken as the difference between the solution demand for leaching of ore on the HLF and the available solution in both the In-Heap and Event Pond sent through the plant. The Make-Up water requirement is generally seasonal, up until the Make-Up Water supply is shut off to facilitate the closure of the HLF in 2/15/2028. The Make-Up Water requirement is reduced to near zero levels around February each year. This coincides with the middle of the three-month period in which the mine does not load fresh ore onto the HLF. Once the runoff from snow melt is completed in about mid-May each year, the demand for Make-Up Water from an outside source begins to increase and fluctuate through the summer until the average temperature falls below 0 Celsius. Once the site is generally below freezing in about October, precipitation no longer adds significantly to the In-Heap Pond Volume and the requirement for Make-Up Water reaches its highest levels throughout the remaining period of the winter in which the mine continues to stack new ore on the HLF.
  - The Discharge to Treatment Rates used by Forte are in line with the WUL with an updated solution management strategy to reduce solution earlier while residual gold recovery continues from the HLF with the majority of solution continuing to be recirculated through the HLF. This will serve to continue producing gold while gradually reducing solution in the system; approximately 1000 m^3/hr is maintained in circulation through the HLF for more than 2 years after the initiation of the Discharge to Treatment.
    - 1000m Climate Series: After the initial leach cycle of the last ore loaded is complete on 2/15/2028, discharge to treatment begins at a constant rate of 12.1 L/s. This rate is maintained without interruption until it is increased on 1/1/2030 to 19 L/s per previous model runs, Forte engineering judgement, and site direction to not exceed a Discharge to Treatment rate of 20 L/s in line with the WUL.
    - Climate Change Climate Series: After the initial leach cycle of the last ore loaded is complete on 2/15/2028, discharge to treatment begins at a constant rate of 19 L/s. This rate is maintained without interruption until it is increased on 1/1/2030 to 28.5 L/s per calibration model runs and Forte engineering judgement. Given the increased overall quantity of precipitation in the latter years of the Climate Change Climate Series, the use of the same discharge rates as for the 1000m series are insufficient to drain the HLF of solution. Even with a constant discharge rate of 19 L/s from 2/15/2028 onward, there is sufficient meteoric inflow that the HLF

remains in a pseudo-equilibrium requiring constant recirculation. As such, Forte increased the Discharge to Treatment Rate by 50% on 1/1/2030 to 28.5 L/s thus ensuring a swift draindown of the HLF by about 4/1/2031.

  - Refer to Figures 28-31

- **Snow Water Equivalent**
  - The Snow Water Equivalent (SWE) as modeled by the Snow 17 method shows both the 1000m and Climate Change datasets repeatedly peaking in April of each year, reaching zero (signifying complete melt) in June of each year, and beginning to increase again in September of each year. The Climate Change dataset yields greater and lesser maximum SWE values than the repeated 1000m dataset indicating that some years the overall effect of the increased temperature will outweigh the effect of the increased precipitation resulting in lower SWE values while in other years the exact reversal of effects is seen.
  - Refer to Figures 32-35

3.2 Stochastic Modeling Results

Stochastic modeling of the HLF was performed using Climate/Meteorological data generated utilizing WGEN and historic data records. For each model run, measured data was taken from the 1000m climate series dataset from 7/1/2019 to 1/1/2021 then from the forecasted 1000m climate series from 1/1/2021 to 3/1/2021 at which point the stochastically created Climate/Meteorological data was used. The basis of the stochastically created data is the 71-year Site Synthetic data provided by Lorax which was used in the WGEN model to produce 100 realizations of daily climate data for a single-year record. For the 2.5-year total timeline modeled by Forte in the Stochastic modeling, the results were consolidated into Weekly datasets and graphed as such.

- **Total Available Storage Volume vs Desired Available Storage**
    - Only the freshet and summer period from 3/1/2021 to 8/31/2021 were graphed to show the highest resolution in the period in which the Total Available Storage Volume reaches its minimum for all datasets.
    - The minimum Total Available Storage Volume, of 240,170 m^3, (corresponding to the 1st Percentile/Lower “Tail”) is reached in the week of June 7th, 2021. Based on this, there is shown to be no probability of an infringement on the DAS during the summer of 2021.
    - Refer to Figure 36
- **Snow Water Equivalent**
    - For the Stochastic modeling, the simulated SWE values reach their maximum around early May with all of the maximum SWE values between 190mm and 240mm. In all datasets, the SWE shows a decrease from the peak value to about zero over the course of late-May and early-June with variations correlated to variations in the climate input data, especially precipitation and temperature.
    - Refer to Figure 37

4. CONCLUSION/SUMMARY

4.1 Deterministic Modeling

For the historic period:

- During the summer of 2020 there was a period in which the Total Available Storage Volume infringed upon the DAS as seen in Figure 20.
    - There was no uncontrolled release to the environment during this period.

For the 1000m climate dataset presented on a monthly basis, during the forecasted period:

- The Total Available Storage Volume available in the In-Heap and Event Pond never falls below the DAS volume.
    - Implicit in this is that there was no release to the environment during this period.
    - By turning off the supply of Make-Up water, turning on a first priority 12.1 L/s Discharge to Treatment (increased to 19 L/s in 2030) and maintaining secondary recirculatory pumping after all of the ore has been loaded onto the HLF and undergone initial leaching, the HLF In-Heap Pond and Event Pond can maintain storage volumes above the DAS volume.

For the Climate Change climate dataset presented on a monthly basis, during the forecasted period:

- The Total Available Storage Volume available in the In-Heap and Event Pond never falls below the DAS volume.
    - Implicit in this is that there was no release to the environment during this period.
    - By turning off the supply of Make-Up water, turning on a first priority 19 L/s Discharge to Treatment (increased to 28.5 L/s in 2030) and maintaining secondary recirculatory pumping after all of the ore has been loaded onto the HLF and undergone initial leaching, the HLF In-Heap Pond and Event Pond can maintain storage volumes above the DAS volume.

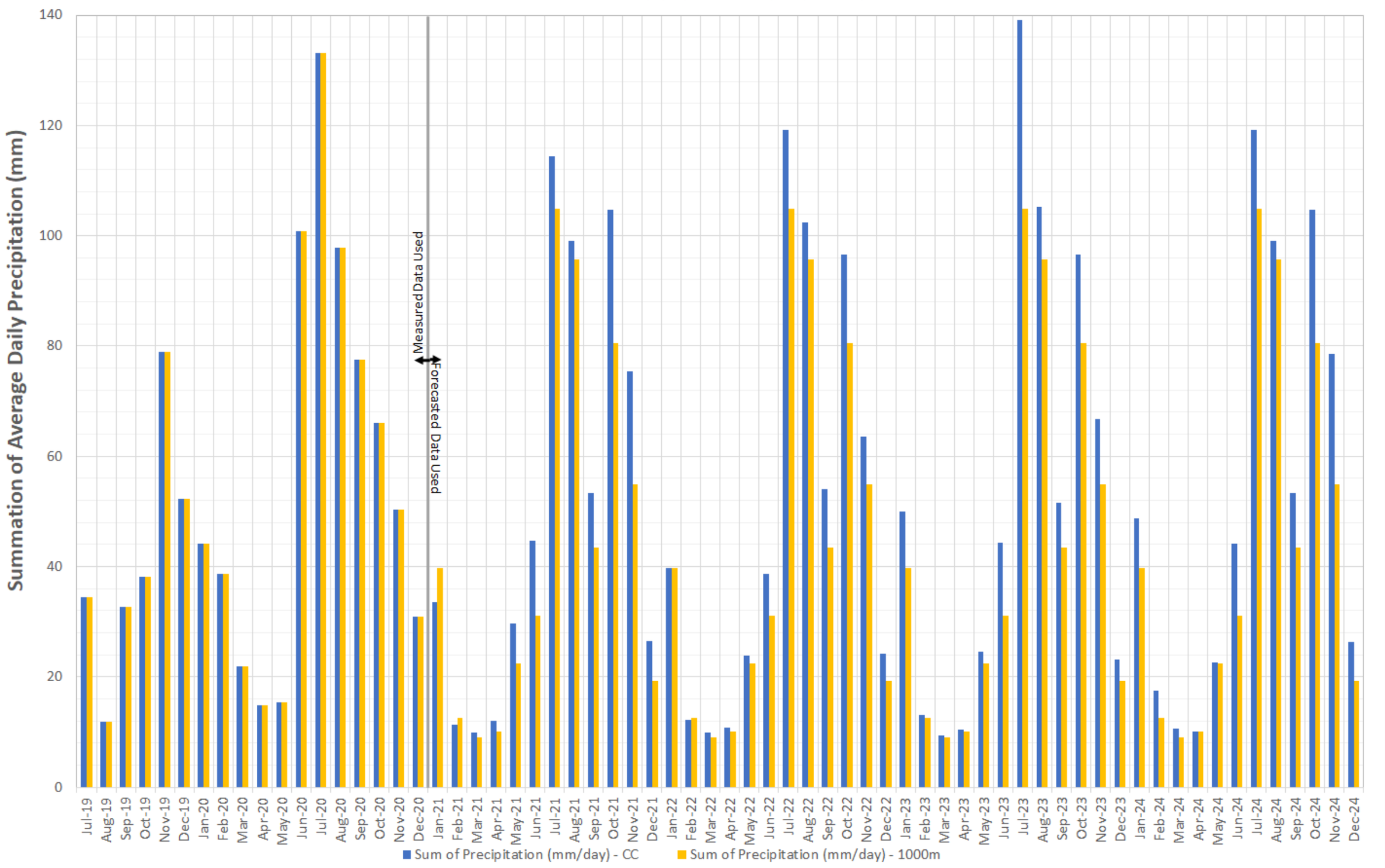
4.2 Stochastic Modeling

For all stochastically generated climate datasets presented on a weekly basis:

- Based on water management methodology utilized in the modeling for the HLF, the Total Available Storage Volume in the In-Heap Pond and Event Pond has a 0% probability of falling below the DAS volume required at any point in 2021, utilizing the 100 iterations of stochastic climate data.

Figures

Figure 1


Deterministic - 1000m and Climate Change Precipitation Monthly Summation
(7/1/2019-12/31/2024)
Summation of Average Daily Precipitation (mm)
140
120
100
80
60
40
20
0
Measured Data Used
Forecasted Data Used
Jul-19
Aug-19
Sep-19
Oct-19
Nov-19
Dec-19
Jan-20
Feb-20
Mar-20
Apr-20
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Jun-20
Jul-20
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Oct-24
Nov-24
Dec-24
Sum of Precipitation (mm/day) - CC
Sum of Precipitation (mm/day) - 1000m

Figure 2

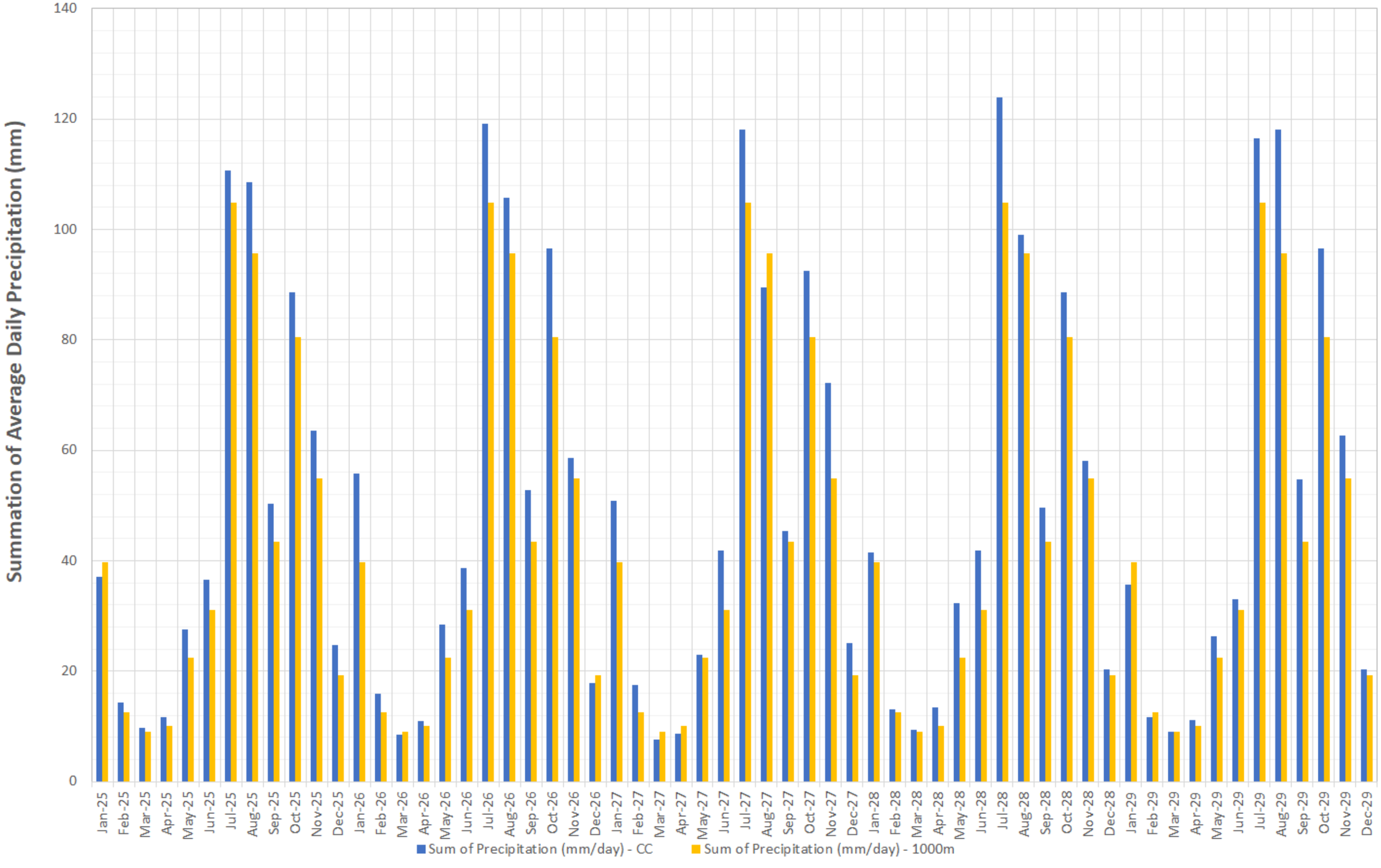

Deterministic - 1000m and Climate Change Precipitation Monthly Summation
(1/1/2025-12/31/2029)
Summation of Average Daily Precipitation (mm)
140
120
100
80
60
40
20
0
Jan-25
Feb-25
Mar-25
Apr-25
May-25
Jun-25
Jul-25
Aug-25
Sep-25
Oct-25
Nov-25
Dec-25
Jan-26
Feb-26
Mar-26
Apr-26
May-26
Jun-26
Jul-26
Aug-26
Sep-26
Oct-26
Nov-26
Dec-26
Jan-27
Feb-27
Mar-27
Apr-27
May-27
Jun-27
Jul-27
Aug-27
Sep-27
Oct-27
Nov-27
Dec-27
Jan-28
Feb-28
Mar-28
Apr-28
May-28
Jun-28
Jul-28
Aug-28
Sep-28
Oct-28
Nov-28
Dec-28
Jan-29
Feb-29
Mar-29
Apr-29
May-29
Jun-29
Jul-29
Aug-29
Sep-29
Oct-29
Nov-29
Dec-29
Sum of Precipitation (mm/day) - CC
Sum of Precipitation (mm/day) - 1000m

Figure 3

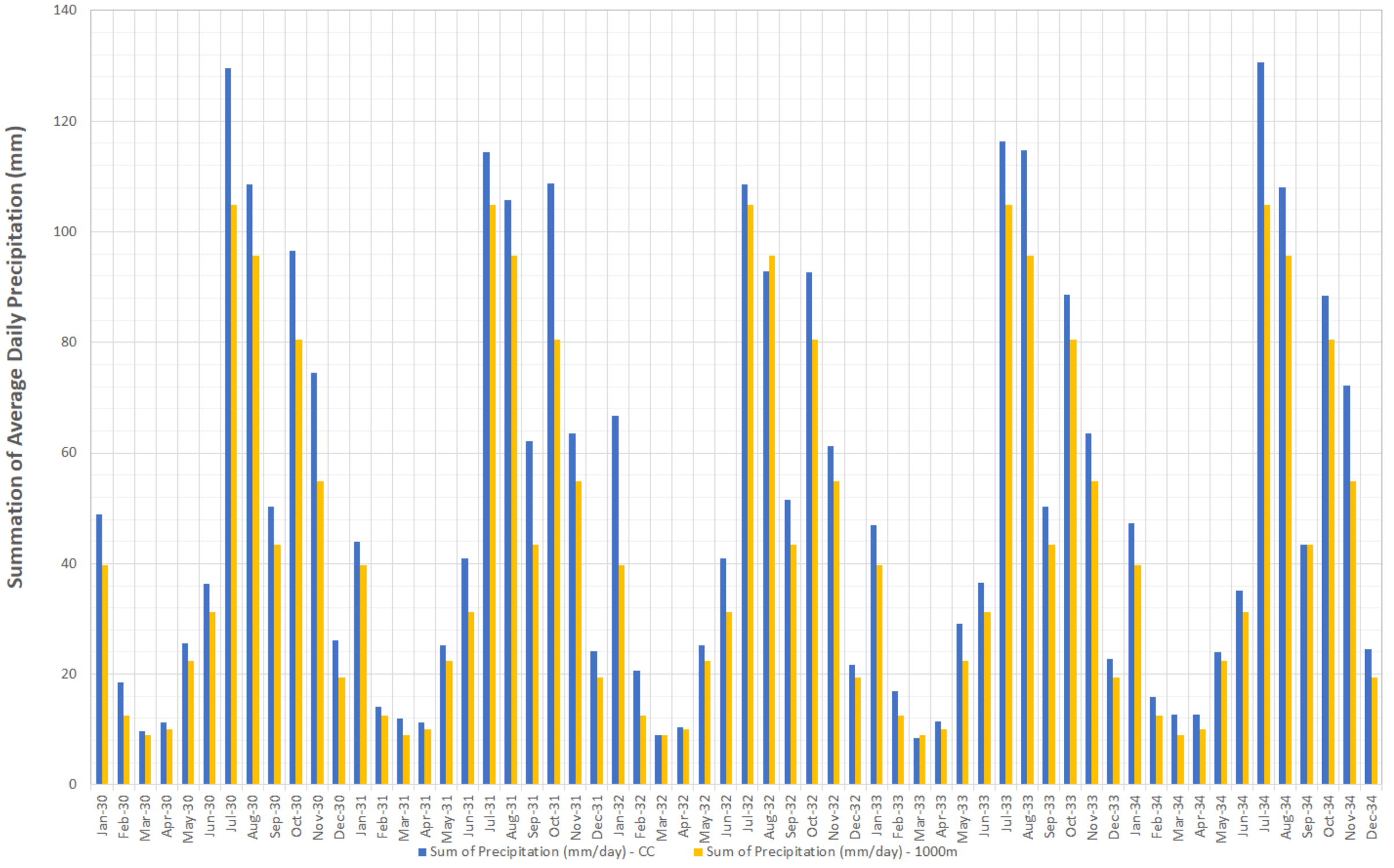

Deterministic - 1000m and Climate Change Precipitation Monthly Summation
(1/1/2030-12/31/2034)
Summation of Average Daily Precipitation (mm)
140
120
100
80
60
40
20
0
Jan-30
Feb-30
Mar-30
Apr-30
May-30
Jun-30
Jul-30
Aug-30
Sep-30
Oct-30
Nov-30
Dec-30
Jan-31
Feb-31
Mar-31
Apr-31
May-31
Jun-31
Jul-31
Aug-31
Sep-31
Oct-31
Nov-31
Dec-31
Jan-32
Feb-32
Mar-32
Apr-32
May-32
Jun-32
Jul-32
Aug-32
Sep-32
Oct-32
Nov-32
Dec-32
Jan-33
Feb-33
Mar-33
Apr-33
May-33
Jun-33
Jul-33
Aug-33
Sep-33
Oct-33
Nov-33
Dec-33
Jan-34
Feb-34
Mar-34
Apr-34
May-34
Jun-34
Jul-34
Aug-34
Sep-34
Oct-34
Nov-34
Dec-34
Sum of Precipitation (mm/day) - CC
Sum of Precipitation (mm/day) - 1000m

Figure 4

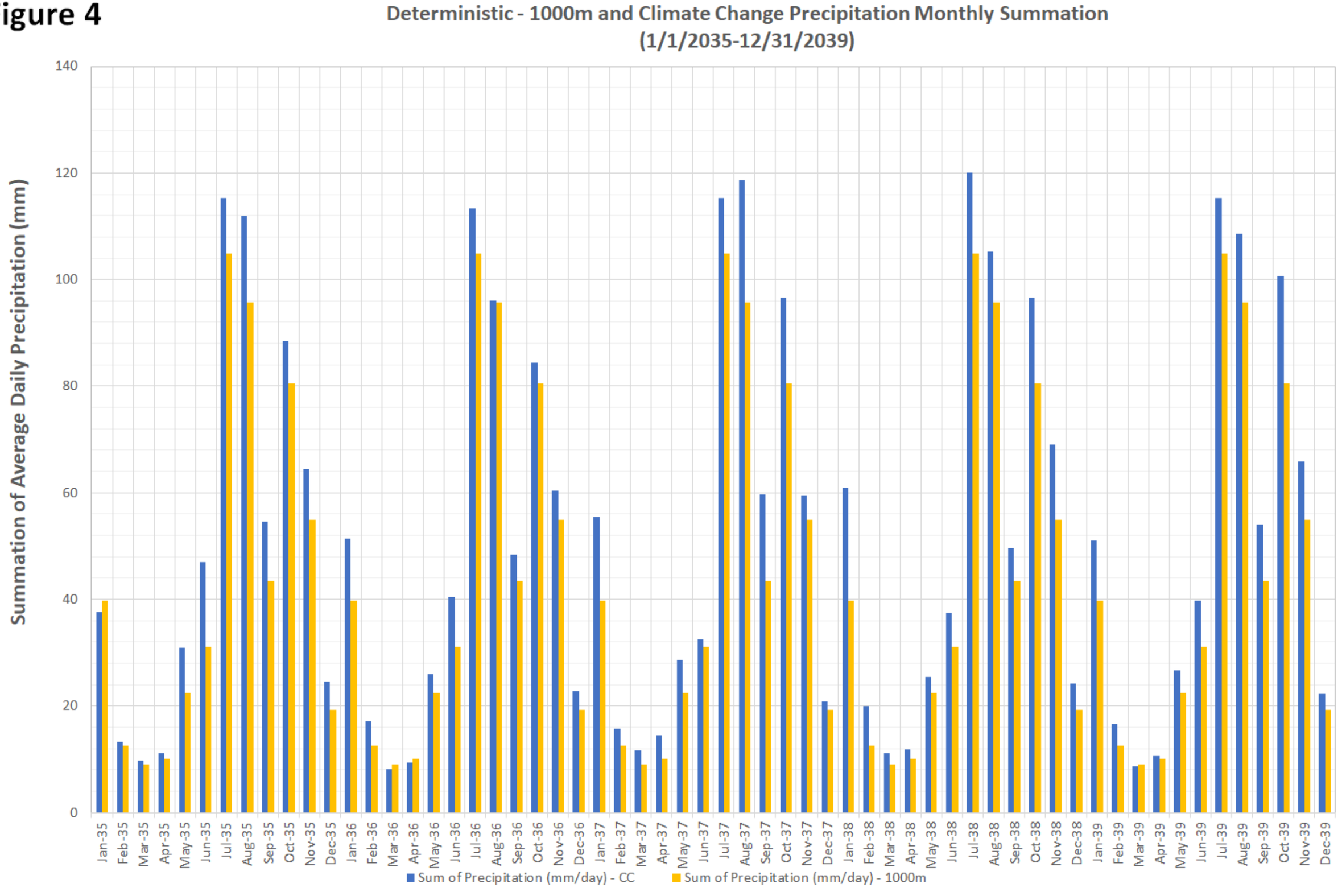

Deterministic - 1000m and Climate Change Precipitation Monthly Summation
(1/1/2035-12/31/2039)
Summation of Average Daily Precipitation (mm)
140
120
100
80
60
40
20
0
Jan-35
Feb-35
Mar-35
Apr-35
May-35
Jun-35
Jul-35
Aug-35
Sep-35
Oct-35
Nov-35
Dec-35
Jan-36
Feb-36
Mar-36
Apr-36
May-36
Jun-36
Jul-36
Aug-36
Sep-36
Oct-36
Nov-36
Dec-36
Jan-37
Feb-37
Mar-37
Apr-37
May-37
Jun-37
Jul-37
Aug-37
Sep-37
Oct-37
Nov-37
Dec-37
Jan-38
Feb-38
Mar-38
Apr-38
May-38
Jun-38
Jul-38
Aug-38
Sep-38
Oct-38
Nov-38
Dec-38
Jan-39
Feb-39
Mar-39
Apr-39
May-39
Jun-39
Jul-39
Aug-39
Sep-39
Oct-39
Nov-39
Dec-39
Sum of Precipitation (mm/day) - CC
Sum of Precipitation (mm/day) - 1000m

Figure 5

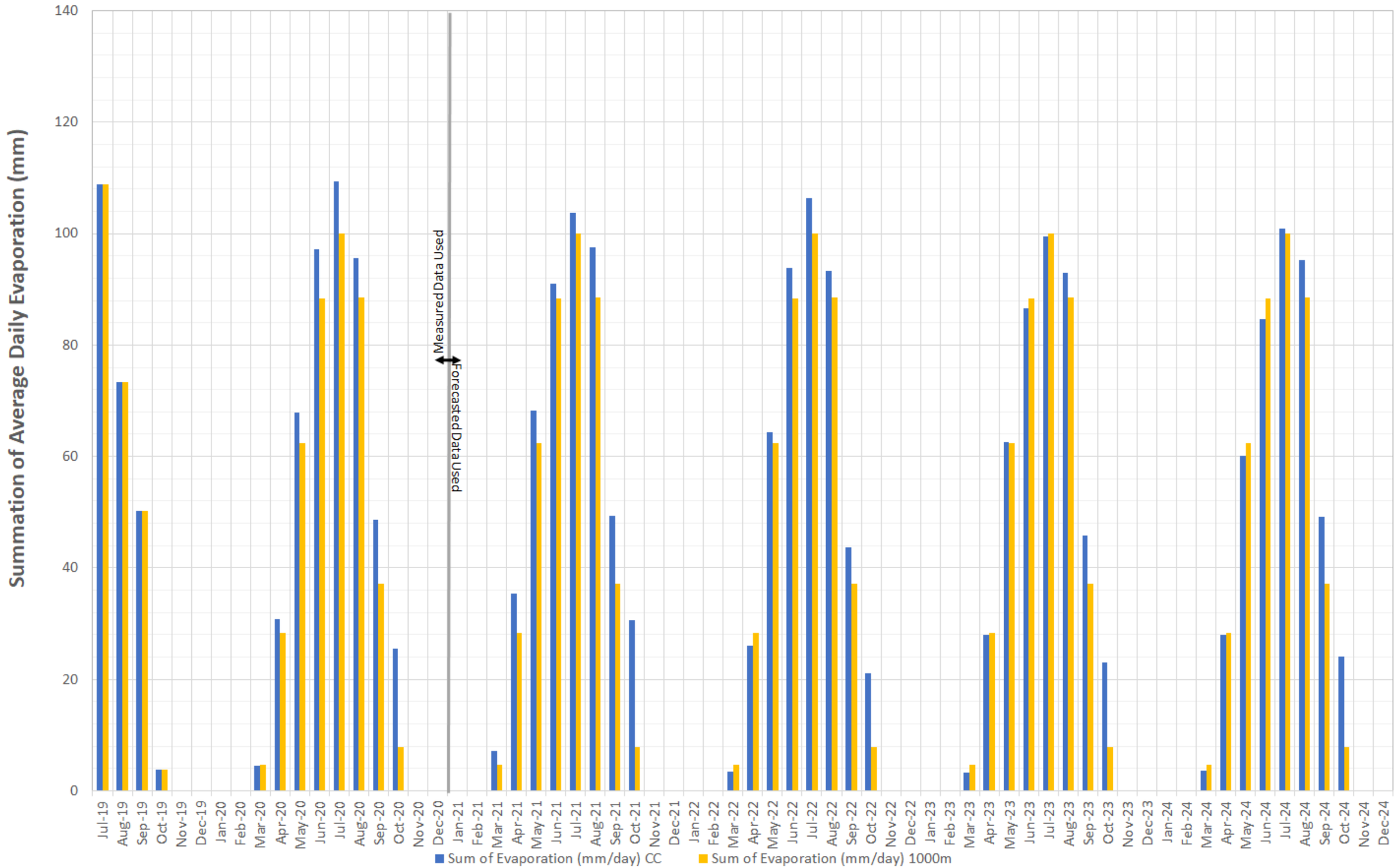

Deterministic - 1000m and Climate Change Potential Evaporation Monthly Summation
(7/1/2019-12/31/2024)
Summation of Average Daily Evaporation (mm)
140
120
100
80
60
40
20
0
Measured Data Used
Forecasted Data Used
Jul-19
Aug-19
Sep-19
Oct-19
Nov-19
Dec-19
Jan-20
Feb-20
Mar-20
Apr-20
May-20
Jun-20
Jul-20
Aug-20
Sep-20
Oct-20
Nov-20
Dec-20
Jan-21
Feb-21
Mar-21
Apr-21
May-21
Jun-21
Jul-21
Aug-21
Sep-21
Oct-21
Nov-21
Dec-21
Jan-22
Feb-22
Mar-22
Apr-22
May-22
Jun-22
Jul-22
Aug-22
Sep-22
Oct-22
Nov-22
Dec-22
Jan-23
Feb-23
Mar-23
Apr-23
May-23
Jun-23
Jul-23
Aug-23
Sep-23
Oct-23
Nov-23
Dec-23
Jan-24
Feb-24
Mar-24
Apr-24
May-24
Jun-24
Jul-24
Aug-24
Sep-24
Oct-24
Nov-24
Dec-24
Sum of Evaporation (mm/day) CC
Sum of Evaporation (mm/day) 1000m

Figure 6

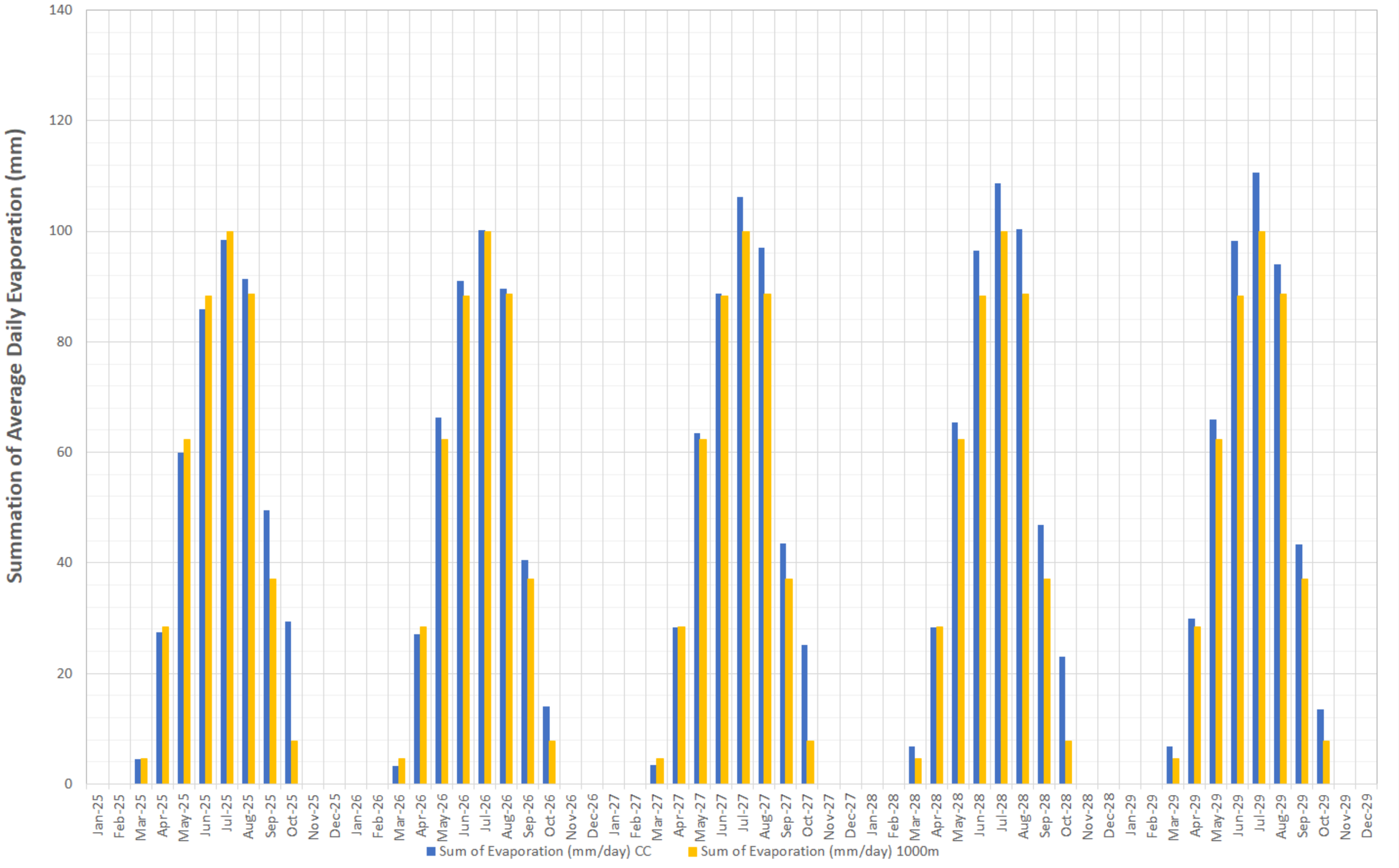

Deterministic - 1000m and Climate Change Potential Evaporation Monthly Summation
(1/1/2025-12/31/2029)
Summation of Average Daily Evaporation (mm)
140
120
100
80
60
40
20
0
Jan-25
Feb-25
Mar-25
Apr-25
May-25
Jun-25
Jul-25
Aug-25
Sep-25
Oct-25
Nov-25
Dec-25
Jan-26
Feb-26
Mar-26
Apr-26
May-26
Jun-26
Jul-26
Aug-26
Sep-26
Oct-26
Nov-26
Dec-26
Jan-27
Feb-27
Mar-27
Apr-27
May-27
Jun-27
Jul-27
Aug-27
Sep-27
Oct-27
Nov-27
Dec-27
Jan-28
Feb-28
Mar-28
Apr-28
May-28
Jun-28
Jul-28
Aug-28
Sep-28
Oct-28
Nov-28
Dec-28
Jan-29
Feb-29
Mar-29
Apr-29
May-29
Jun-29
Jul-29
Aug-29
Sep-29
Oct-29
Nov-29
Dec-29
Sum of Evaporation (mm/day) CC
Sum of Evaporation (mm/day) 1000m

Figure 7

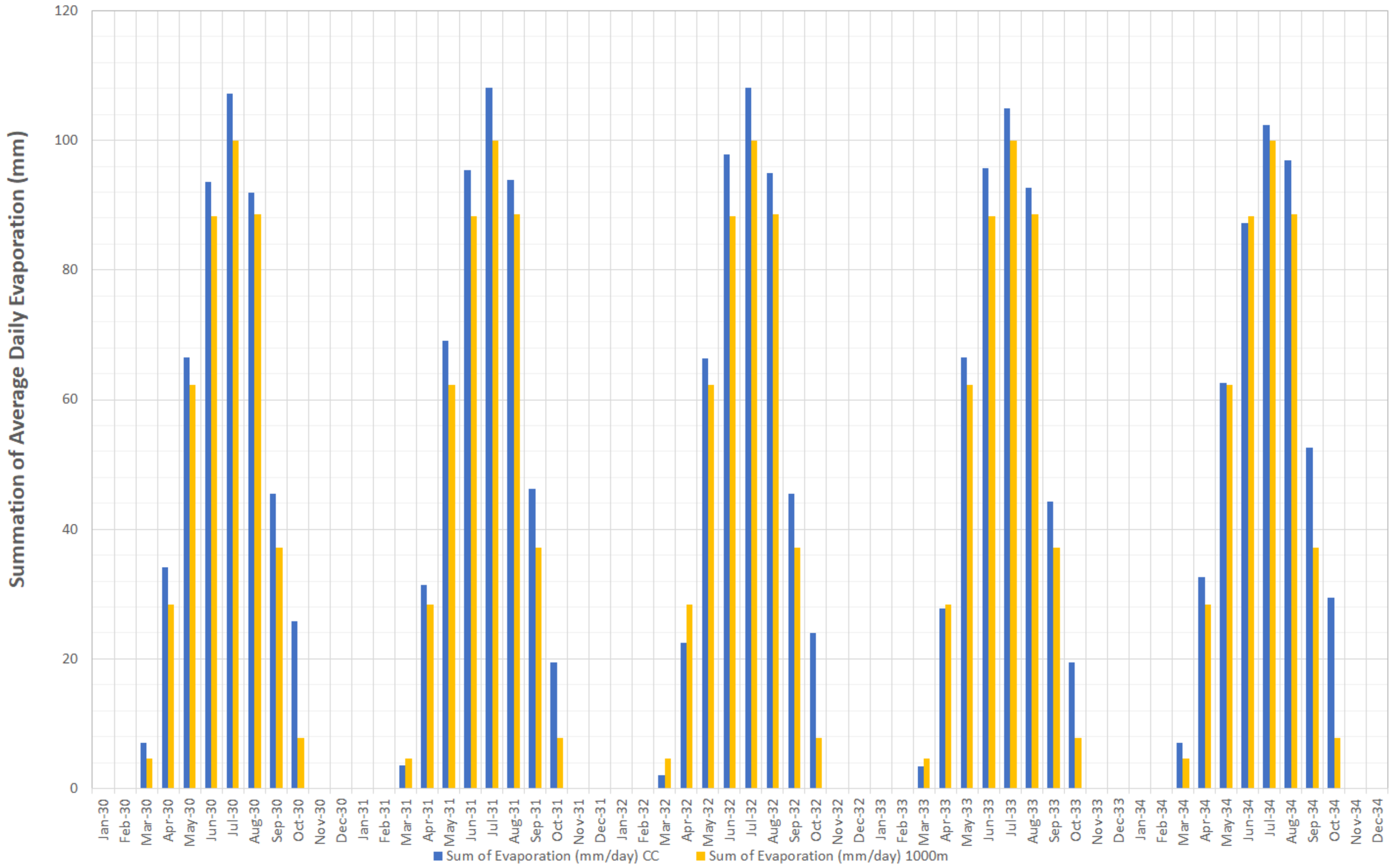

Deterministic - 1000m and Climate Change Potential Evaporation Monthly Summation
(1/1/2030-12/31/2034)
Summation of Average Daily Evaporation (mm)
120
100
80
60
40
20
0
Jan-30
Feb-30
Mar-30
Apr-30
May-30
Jun-30
Jul-30
Aug-30
Sep-30
Oct-30
Nov-30
Dec-30
Jan-31
Feb-31
Mar-31
Apr-31
May-31
Jun-31
Jul-31
Aug-31
Sep-31
Oct-31
Nov-31
Dec-31
Jan-32
Feb-32
Mar-32
Apr-32
May-32
Jun-32
Jul-32
Aug-32
Sep-32
Oct-32
Nov-32
Dec-32
Jan-33
Feb-33
Mar-33
Apr-33
May-33
Jun-33
Jul-33
Aug-33
Sep-33
Oct-33
Nov-33
Dec-33
Jan-34
Feb-34
Mar-34
Apr-34
May-34
Jun-34
Jul-34
Aug-34
Sep-34
Oct-34
Nov-34
Dec-34
Sum of Evaporation (mm/day) CC
Sum of Evaporation (mm/day) 1000m

Figure 8

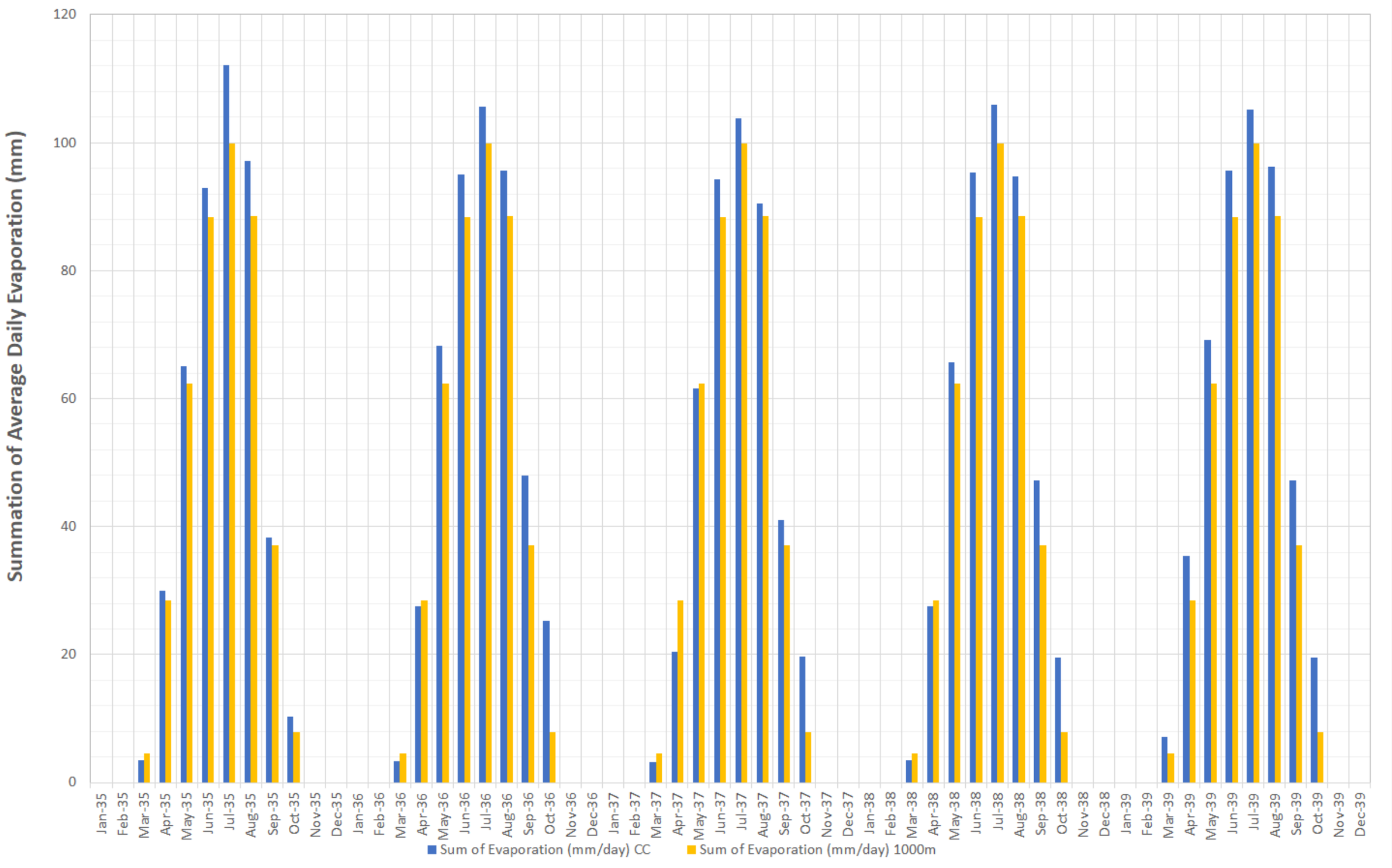

Deterministic - 1000m and Climate Change Potential Evaporation Monthly Summation
(1/1/2035-12/31/2039)
Summation of Average Daily Evaporation (mm)
120
100
80
60
40
20
0
Jan-35
Feb-35
Mar-35
Apr-35
May-35
Jun-35
Jul-35
Aug-35
Sep-35
Oct-35
Nov-35
Dec-35
Jan-36
Feb-36
Mar-36
Apr-36
May-36
Jun-36
Jul-36
Aug-36
Sep-36
Oct-36
Nov-36
Dec-36
Jan-37
Feb-37
Mar-37
Apr-37
May-37
Jun-37
Jul-37
Aug-37
Sep-37
Oct-37
Nov-37
Dec-37
Jan-38
Feb-38
Mar-38
Apr-38
May-38
Jun-38
Jul-38
Aug-38
Sep-38
Oct-38
Nov-38
Dec-38
Jan-39
Feb-39
Mar-39
Apr-39
May-39
Jun-39
Jul-39
Aug-39
Sep-39
Oct-39
Nov-39
Dec-39
Sum of Evaporation (mm/day) CC
Sum of Evaporation (mm/day) 1000m

Figure 9

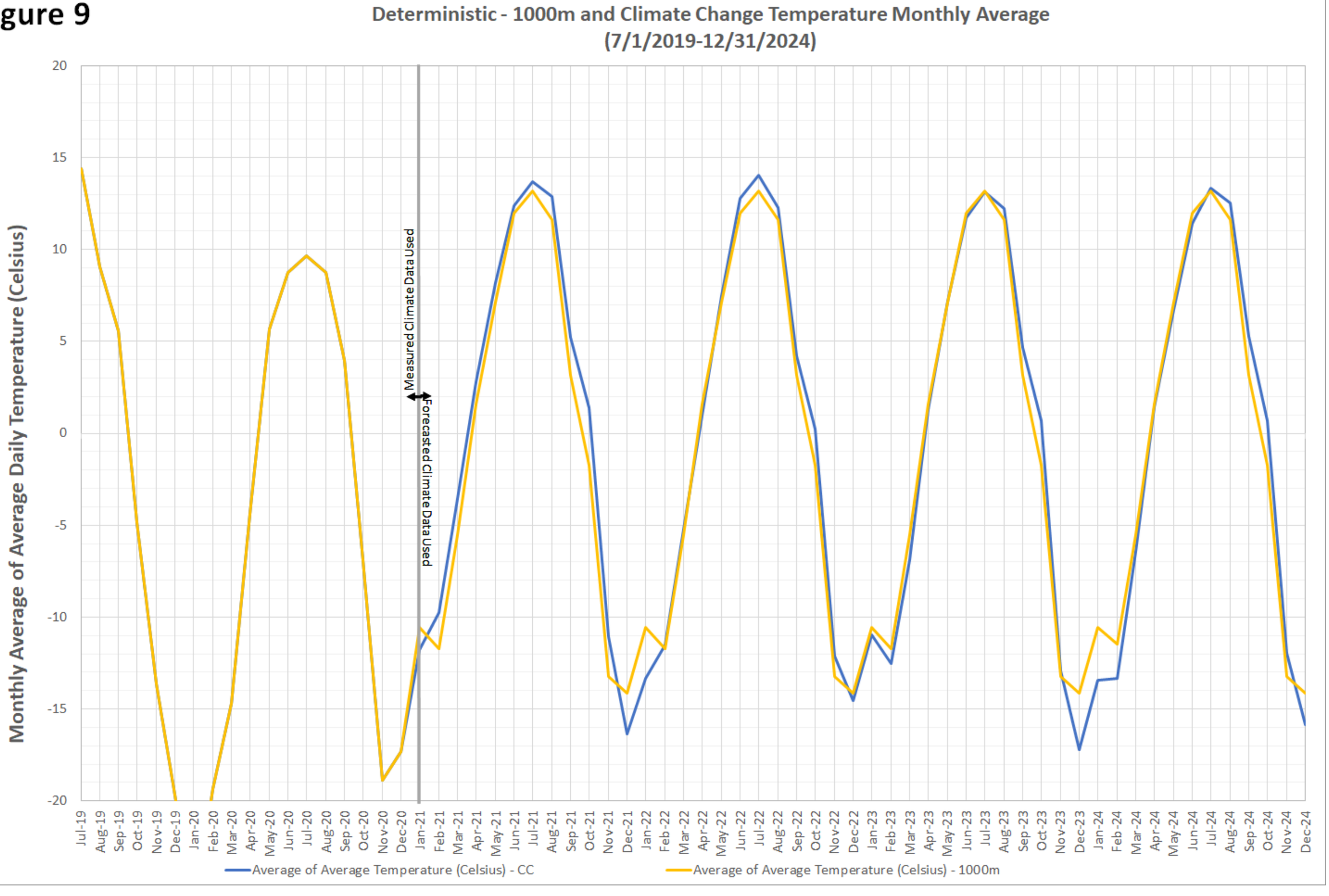

Deterministic - 1000m and Climate Change Temperature Monthly Average
(7/1/2019-12/31/2024)
Monthly Average of Average Daily Temperature (Celsius)
20
15
10
5
0
-5
-10
-15
-20
Measured Climate Data Used
Forecasted Climate Data Used
Jul-19
Aug-19
Sep-19
Oct-19
Nov-19
Dec-19
Jan-20
Feb-20
Mar-20
Apr-20
May-20
Jun-20
Jul-20
Aug-20
Sep-20
Oct-20
Nov-20
Dec-20
Jan-21
Feb-21
Mar-21
Apr-21
May-21
Jun-21
Jul-21
Aug-21
Sep-21
Oct-21
Nov-21
Dec-21
Jan-22
Feb-22
Mar-22
Apr-22
May-22
Jun-22
Jul-22
Aug-22
Sep-22
Oct-22
Nov-22
Dec-22
Jan-23
Feb-23
Mar-23
Apr-23
May-23
Jun-23
Jul-23
Aug-23
Sep-23
Oct-23
Nov-23
Dec-23
Jan-24
Feb-24
Mar-24
Apr-24
May-24
Jun-24
Jul-24
Aug-24
Sep-24
Oct-24
Nov-24
Dec-24
Average of Average Temperature (Celsius) - CC
Average of Average Temperature (Celsius) - 1000m

Figure 10

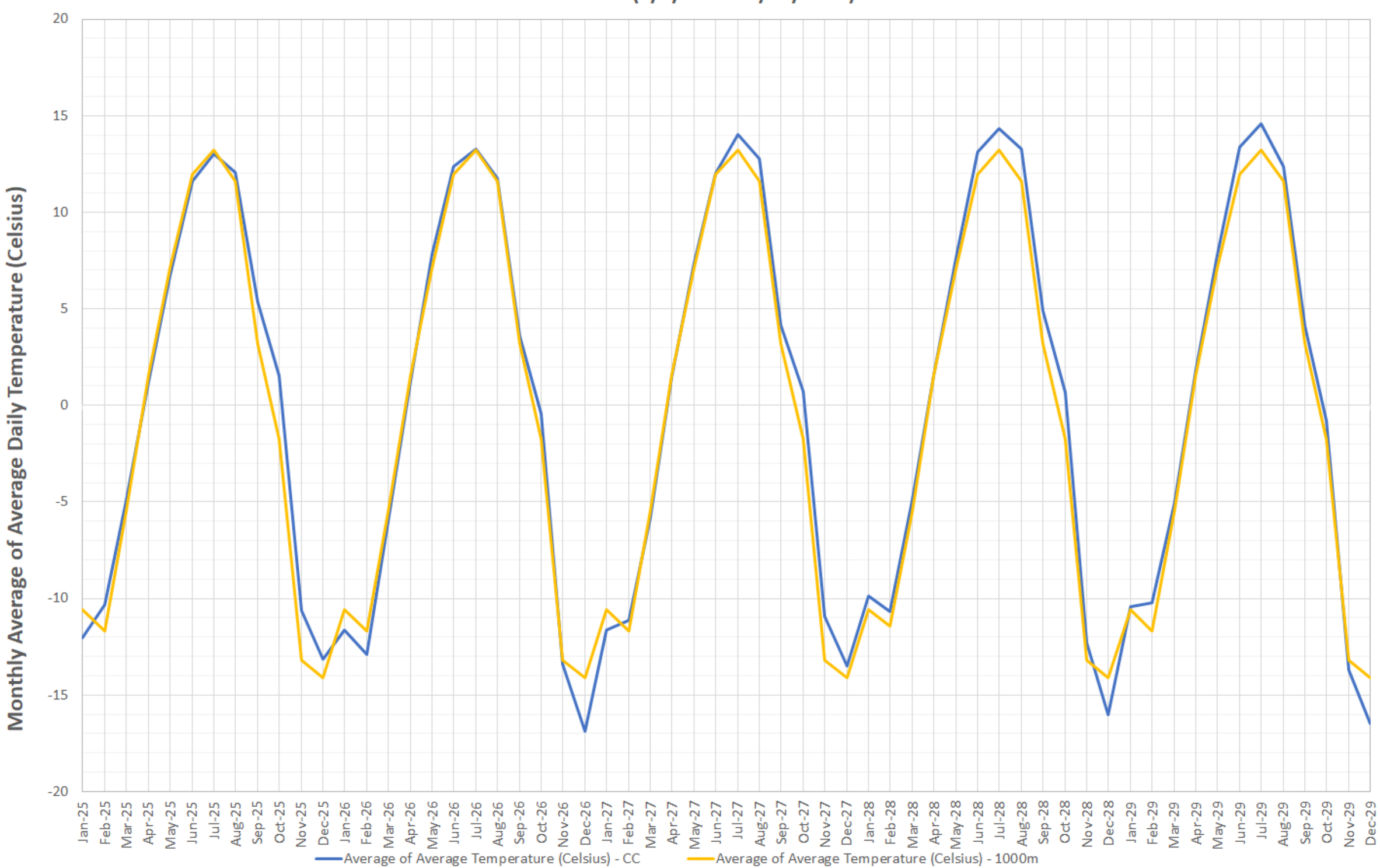

Deterministic - 1000m and Climate Change Temperature Monthly Average
(1/1/2025-12/31/2029)
Monthly Average of Average Daily Temperature (Celsius)
20
15
10
5
0
-5
-10
-15
-20
Jan-25
Feb-25
Mar-25
Apr-25
May-25
Jun-25
Jul-25
Aug-25
Sep-25
Oct-25
Nov-25
Dec-25
Jan-26
Feb-26
Mar-26
Apr-26
May-26
Jun-26
Jul-26
Aug-26
Sep-26
Oct-26
Nov-26
Dec-26
Jan-27
Feb-27
Mar-27
Apr-27
May-27
Jun-27
Jul-27
Aug-27
Sep-27
Oct-27
Nov-27
Dec-27
Jan-28
Feb-28
Mar-28
Apr-28
May-28
Jun-28
Jul-28
Aug-28
Sep-28
Oct-28
Nov-28
Dec-28
Jan-29
Feb-29
Mar-29
Apr-29
May-29
Jun-29
Jul-29
Aug-29
Sep-29
Oct-29
Nov-29
Dec-29
Average of Average Temperature (Celsius) - CC
Average of Average Temperature (Celsius) - 1000m

Figure 11

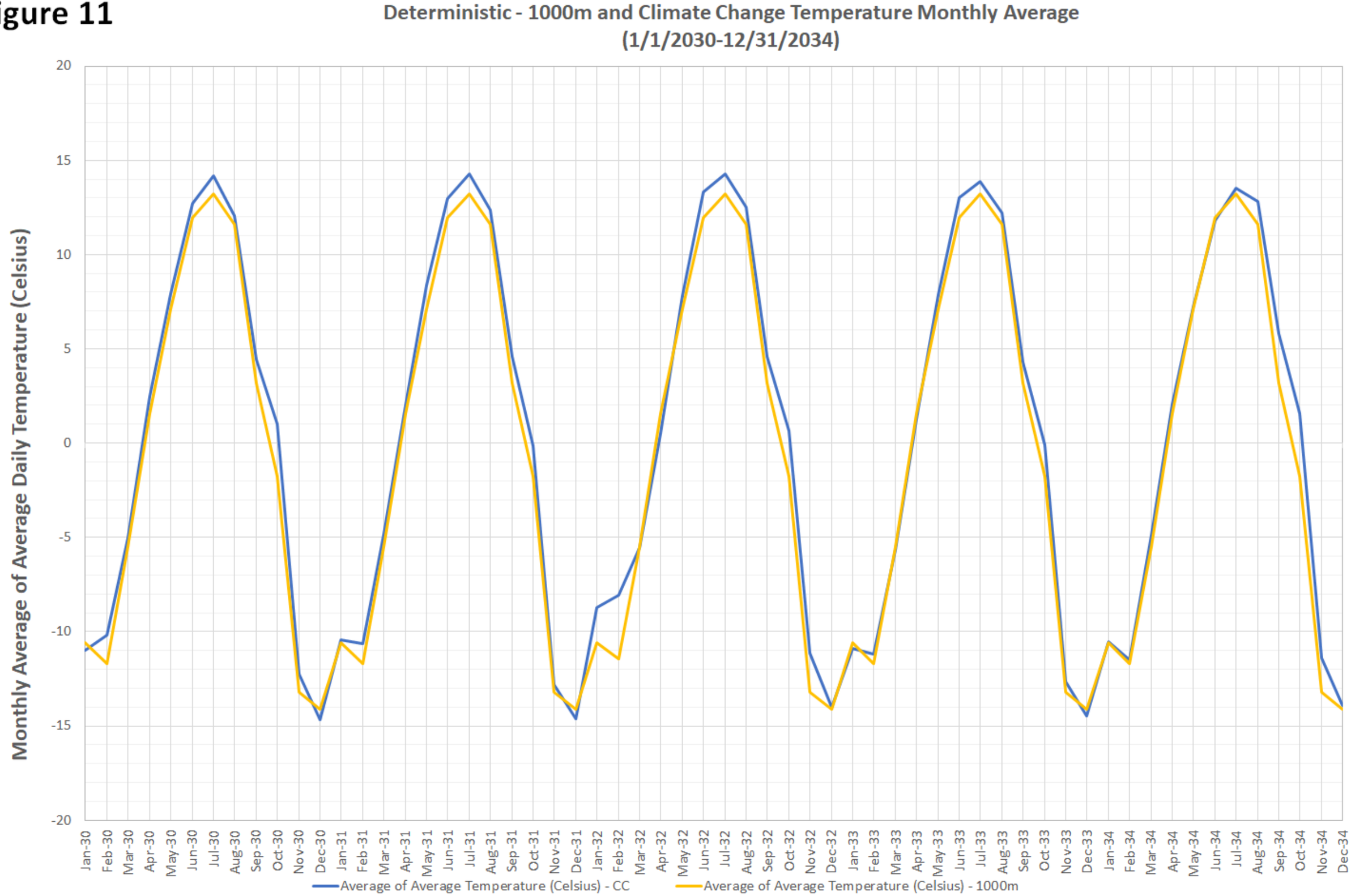

Deterministic - 1000m and Climate Change Temperature Monthly Average
(1/1/2030-12/31/2034)
Monthly Average of Average Daily Temperature (Celsius)
20
15
10
5
0
-5
-10
-15
-20
Jan-30
Feb-30
Mar-30
Apr-30
May-30
Jun-30
Jul-30
Aug-30
Sep-30
Oct-30
Nov-30
Dec-30
Jan-31
Feb-31
Mar-31
Apr-31
May-31
Jun-31
Jul-31
Aug-31
Sep-31
Oct-31
Nov-31
Dec-31
Jan-32
Feb-32
Mar-32
Apr-32
May-32
Jun-32
Jul-32
Aug-32
Sep-32
Oct-32
Nov-32
Dec-32
Jan-33
Feb-33
Mar-33
Apr-33
May-33
Jun-33
Jul-33
Aug-33
Sep-33
Oct-33
Nov-33
Dec-33
Jan-34
Feb-34
Mar-34
Apr-34
May-34
Jun-34
Jul-34
Aug-34
Sep-34
Oct-34
Nov-34
Dec-34
Average of Average Temperature (Celsius) - CC
Average of Average Temperature (Celsius) - 1000m

Figure 12

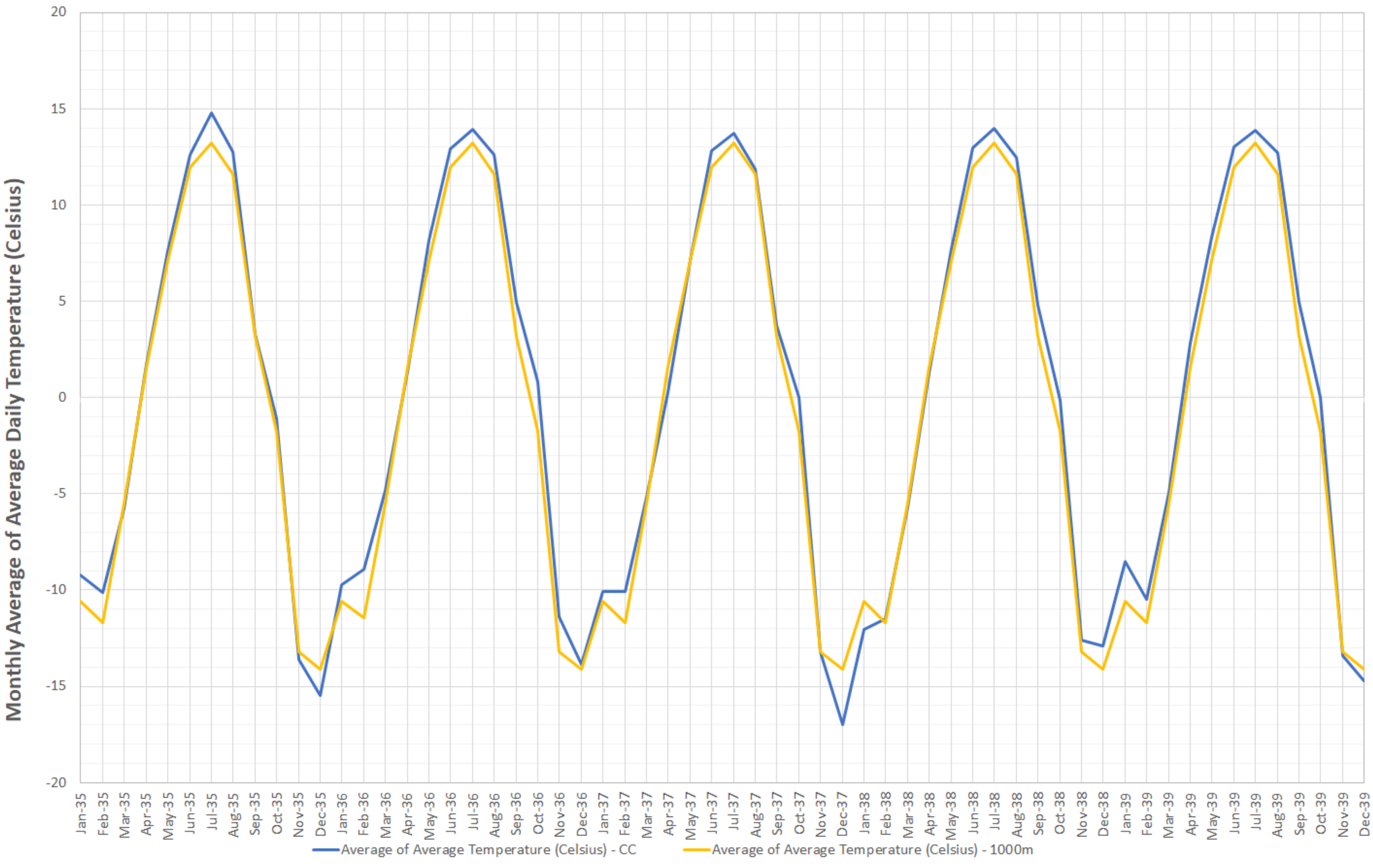

Deterministic - 1000m and Climate Change Temperature Monthly Average
(1/1/2035-12/31/2039)
Monthly Average of Average Daily Temperature (Celsius)
20
15
10
5
0
-5
-10
-15
-20
Jan-35
Feb-35
Mar-35
Apr-35
May-35
Jun-35
Jul-35
Aug-35
Sep-35
Oct-35
Nov-35
Dec-35
Jan-36
Feb-36
Mar-36
Apr-36
May-36
Jun-36
Jul-36
Aug-36
Sep-36
Oct-36
Nov-36
Dec-36
Jan-37
Feb-37
Mar-37
Apr-37
May-37
Jun-37
Jul-37
Aug-37
Sep-37
Oct-37
Nov-37
Dec-37
Jan-38
Feb-38
Mar-38
Apr-38
May-38
Jun-38
Jul-38
Aug-38
Sep-38
Oct-38
Nov-38
Dec-38
Jan-39
Feb-39
Mar-39
Apr-39
May-39
Jun-39
Jul-39
Aug-39
Sep-39
Oct-39
Nov-39
Dec-39
Average of Average Temperature (Celsius) - CC
Average of Average Temperature (Celsius) - 1000m

Figure 13

Stochastic Precipitation Data Used - Weekly Summation

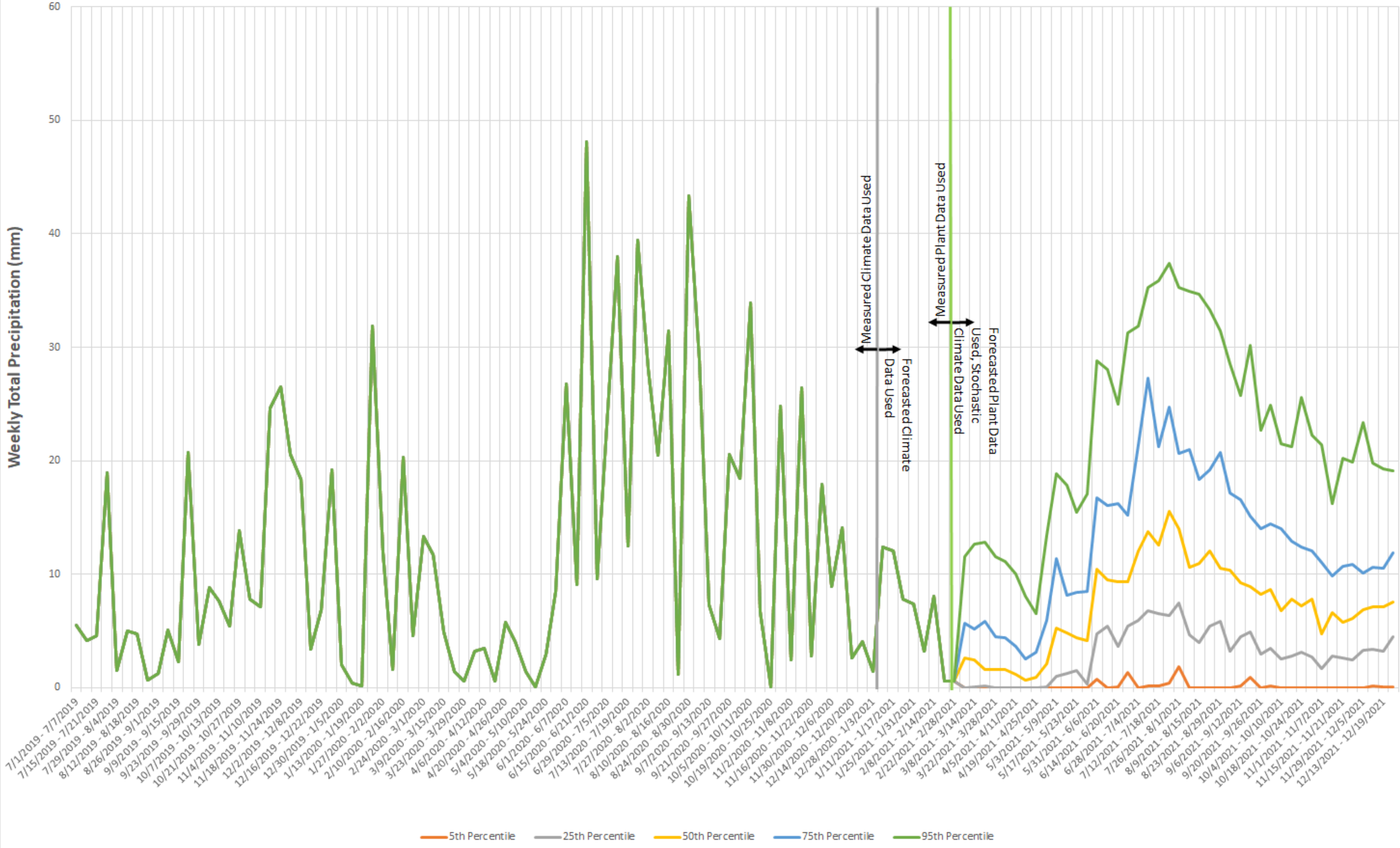


Figure 14

Stochastic Precipitation Data Used - Weekly Cumulative

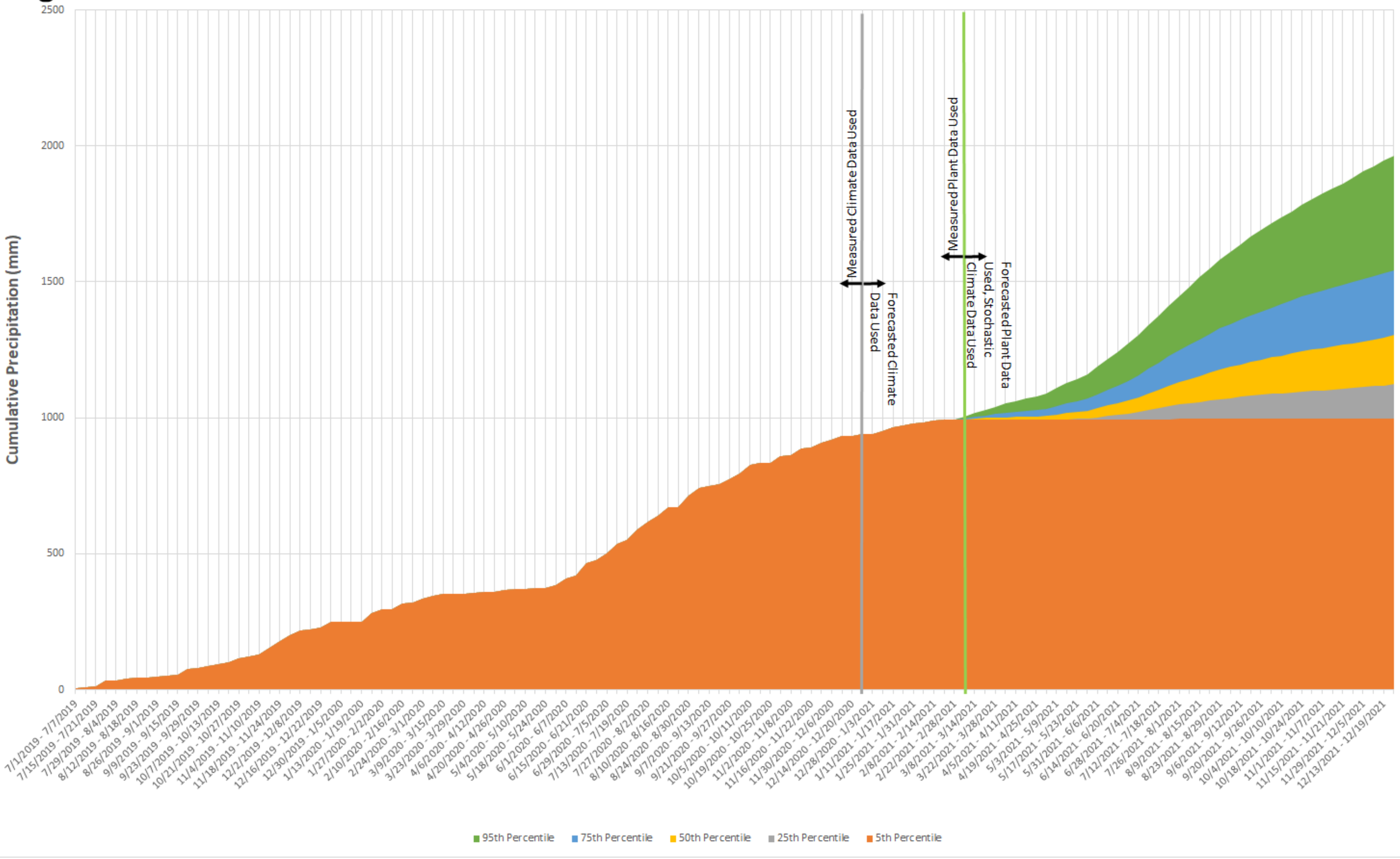


Figure 15

Stochastic Evaporation Data Used - Weekly Summation

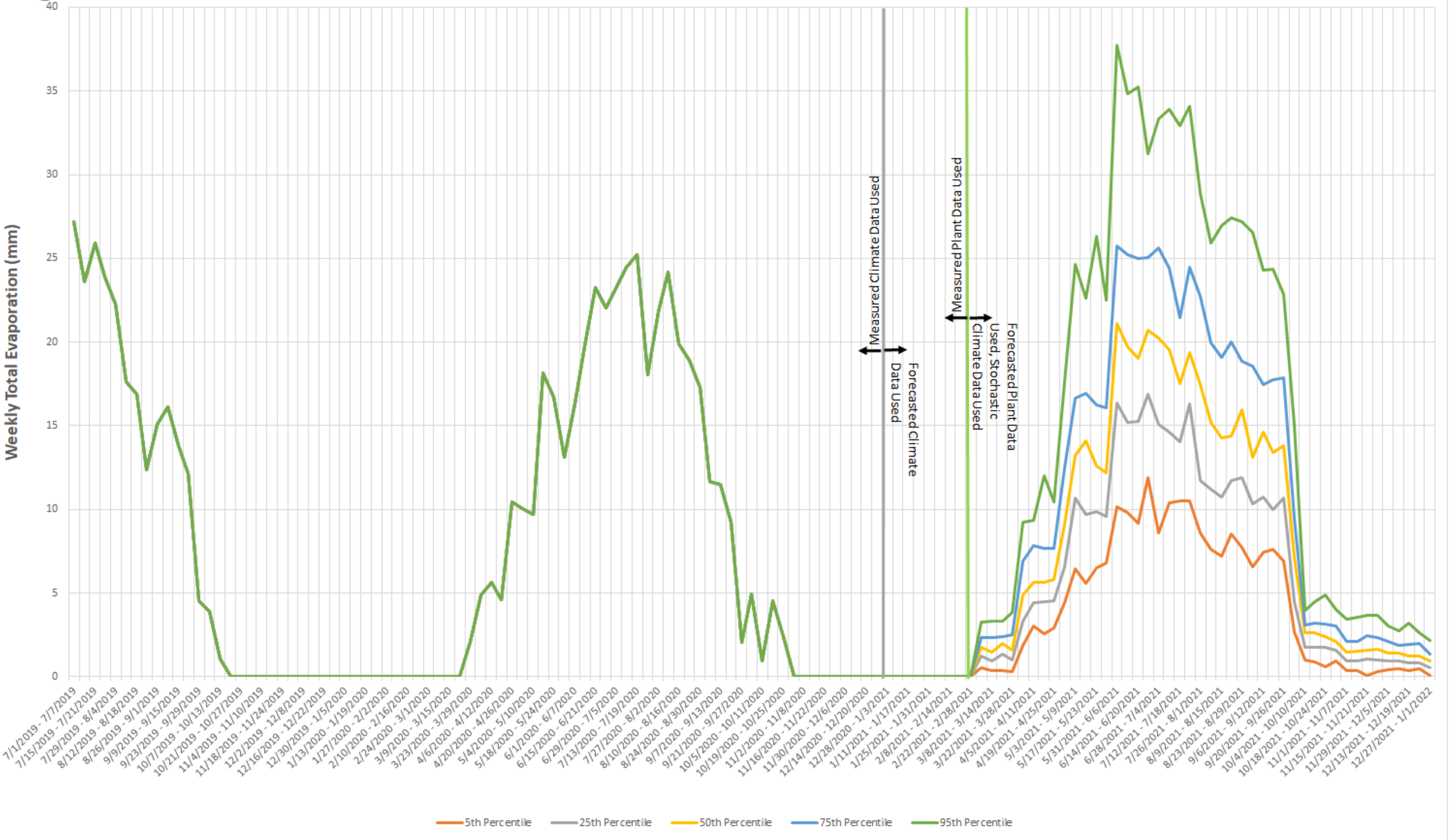


Figure 16

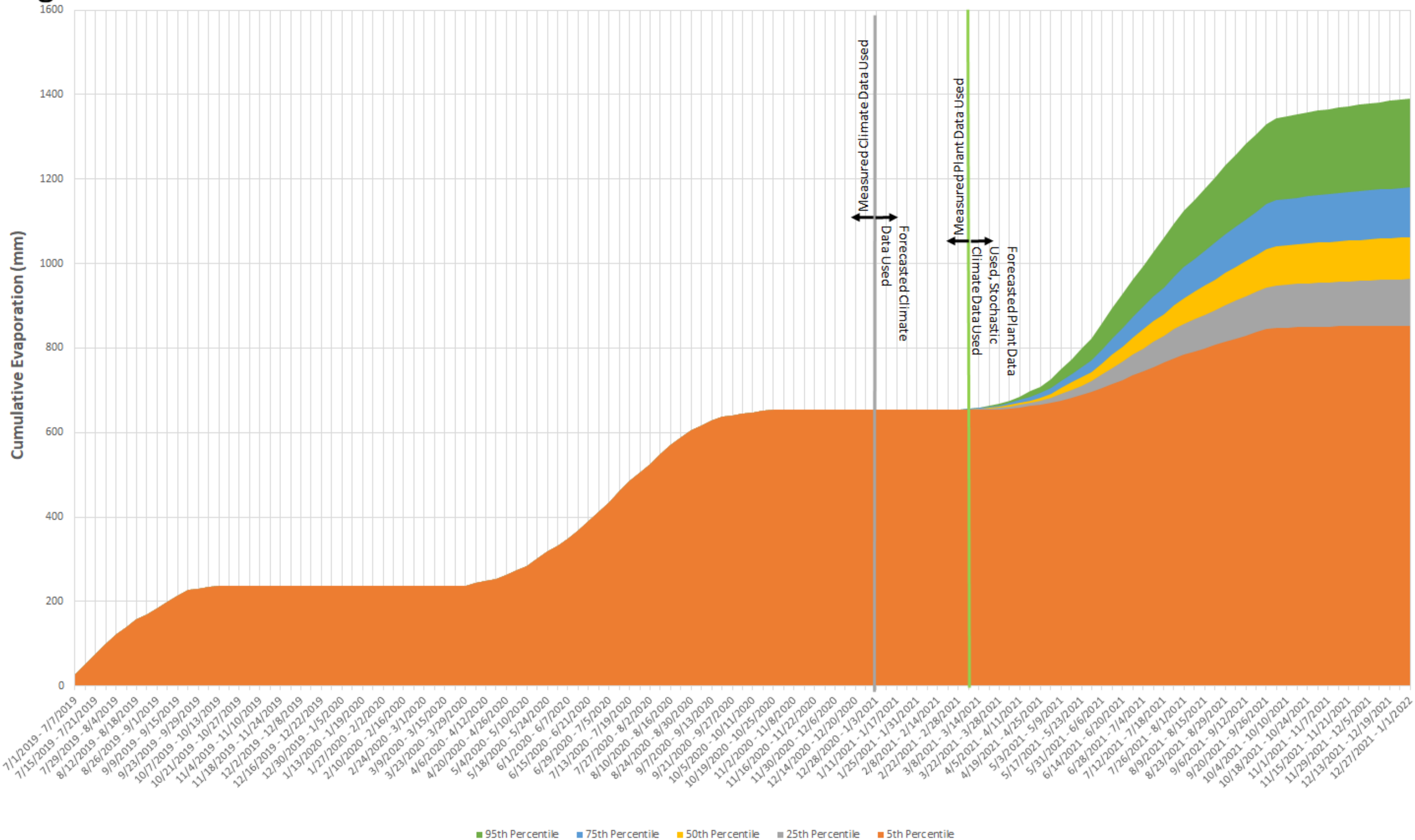

Stochastic Evaporation Data Used - Weekly Cumulative
Cumulative Evaporation (mm)
1600
1400
1200
1000
800
600
400
200
0
Measured Climate Data Used
Forecasted Climate Data Used
Measured Plant Data Used
Forecasted Plant Data Used, Stochastic Climate Data Used
7/1/2019 - 7/7/2019
7/15/2019 - 7/21/2019
7/29/2019 - 8/4/2019
8/12/2019 - 8/18/2019
8/26/2019 - 9/1/2019
9/9/2019 - 9/15/2019
9/23/2019 - 9/29/2019
10/7/2019 - 10/13/2019
10/21/2019 - 10/27/2019
11/4/2019 - 11/10/2019
11/18/2019 - 11/24/2019
12/2/2019 - 12/8/2019
12/16/2019 - 12/22/2019
12/30/2019 - 1/5/2020
1/13/2020 - 1/19/2020
1/27/2020 - 2/2/2020
2/10/2020 - 2/16/2020
2/24/2020 - 3/1/2020
3/9/2020 - 3/15/2020
3/23/2020 - 3/29/2020
4/6/2020 - 4/12/2020
4/20/2020 - 4/26/2020
5/4/2020 - 5/10/2020
5/18/2020 - 5/24/2020
6/1/2020 - 6/7/2020
6/15/2020 - 6/21/2020
6/29/2020 - 7/5/2020
7/13/2020 - 7/19/2020
7/27/2020 - 8/2/2020
8/10/2020 - 8/16/2020
8/24/2020 - 8/30/2020
9/7/2020 - 9/13/2020
9/21/2020 - 9/27/2020
10/5/2020 - 10/11/2020
10/19/2020 - 10/25/2020
11/2/2020 - 11/8/2020
11/16/2020 - 11/22/2020
11/30/2020 - 12/6/2020
12/14/2020 - 12/20/2020
12/28/2020 - 1/3/2021
1/11/2021 - 1/17/2021
1/25/2021 - 1/31/2021
2/8/2021 - 2/14/2021
2/22/2021 - 2/28/2021
3/8/2021 - 3/14/2021
3/22/2021 - 3/28/2021
4/5/2021 - 4/11/2021
4/19/2021 - 4/25/2021
5/3/2021 - 5/9/2021
5/17/2021 - 5/23/2021
5/31/2021 - 6/6/2021
6/14/2021 - 6/20/2021
6/28/2021 - 7/4/2021
7/12/2021 - 7/18/2021
7/26/2021 - 8/1/2021
8/9/2021 - 8/15/2021
8/23/2021 - 8/29/2021
9/6/2021 - 9/12/2021
9/20/2021 - 9/26/2021
10/4/2021 - 10/10/2021
10/18/2021 - 10/24/2021
11/1/2021 - 11/7/2021
11/15/2021 - 11/21/2021
11/29/2021 - 12/5/2021
12/13/2021 - 12/19/2021
12/27/2021 - 1/1/2022
95th Percentile
75th Percentile
50th Percentile
25th Percentile
5th Percentile

Figure 17

Stochastic Minimum Temperature Data Used - Weekly Summation

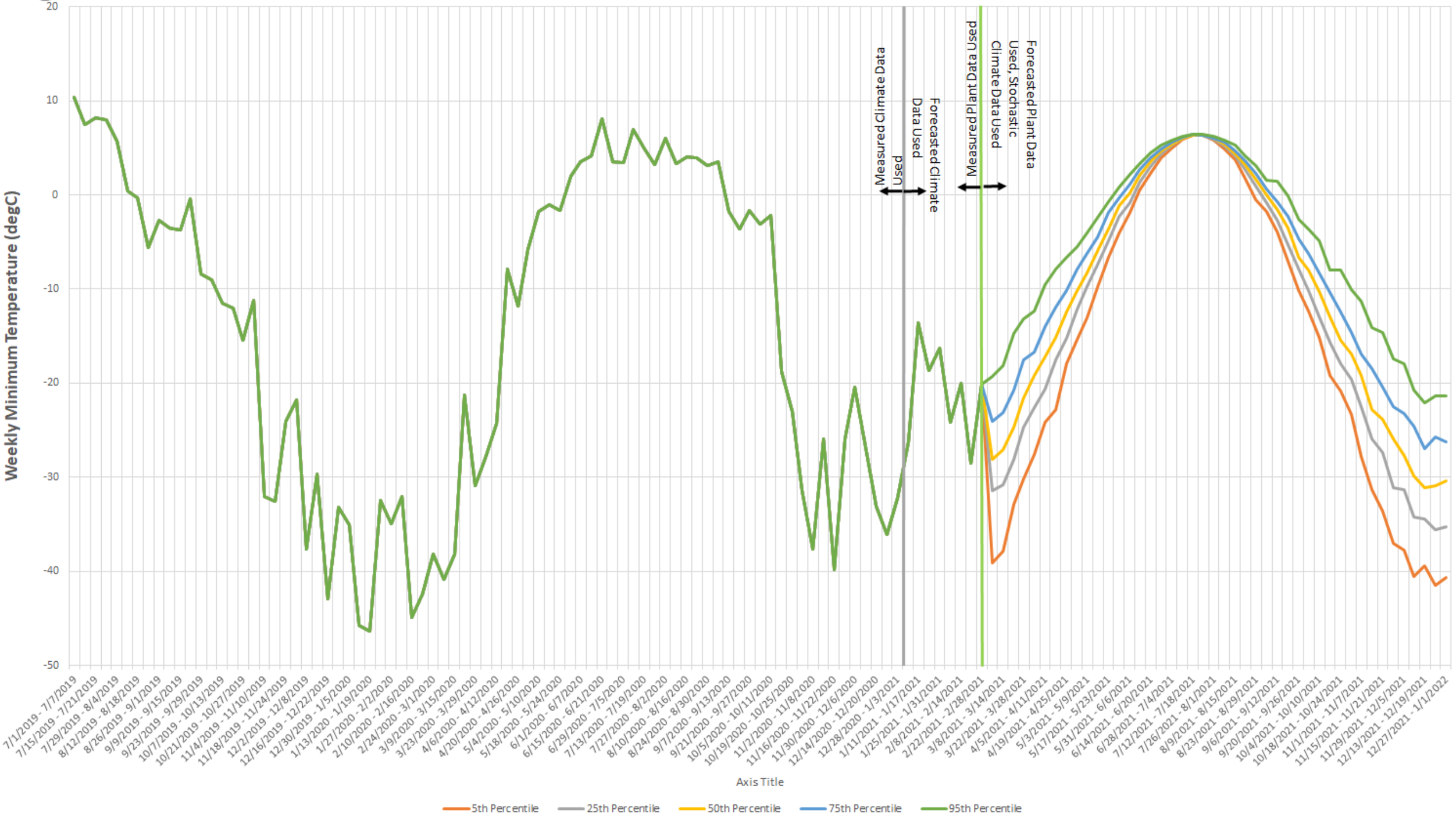


Figure 18

Stochastic Maximum Temperature Data Used - Weekly Summation

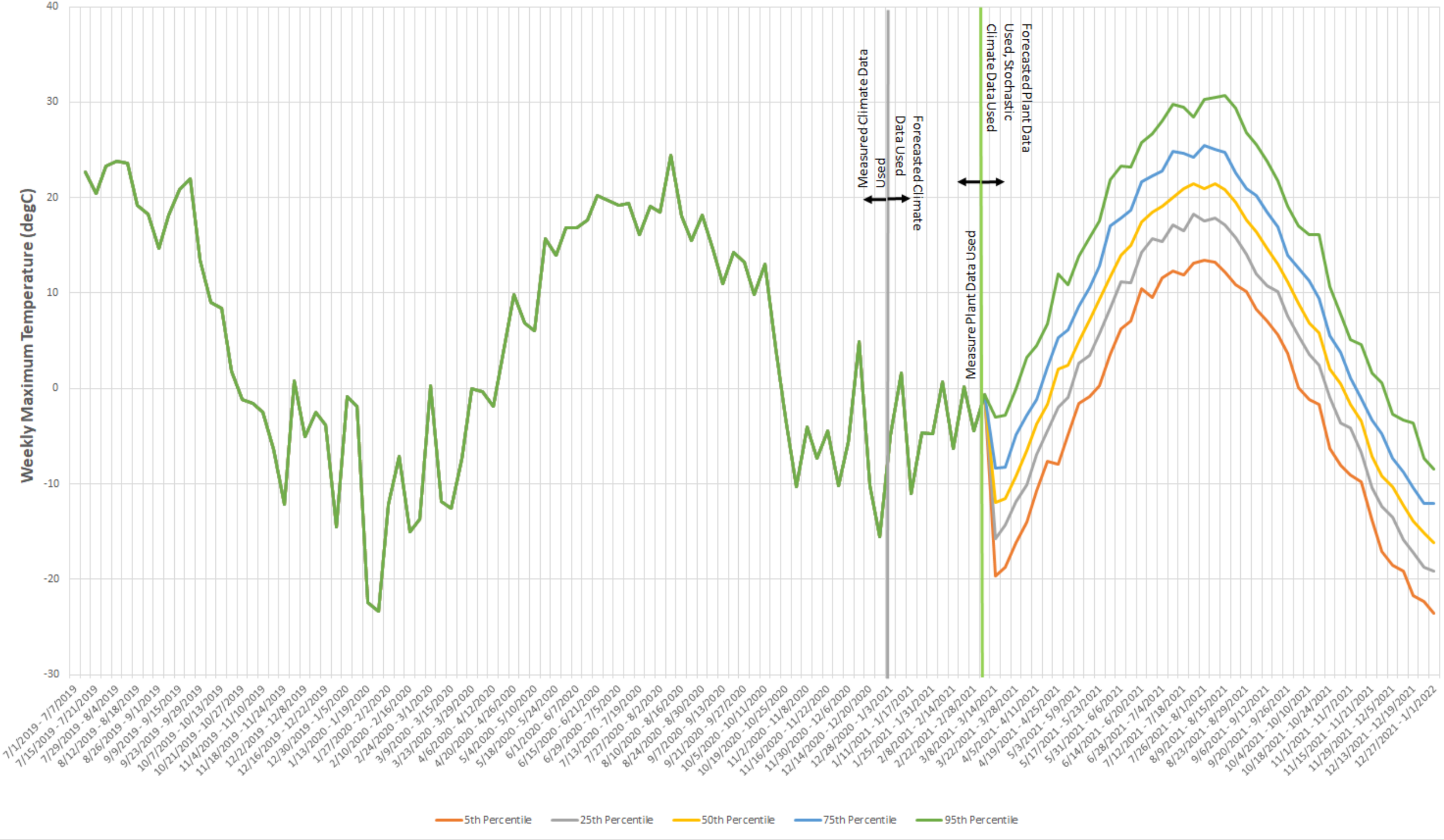


Figure 19

Stochastic Solar Radiation Data Used - Weekly Summation

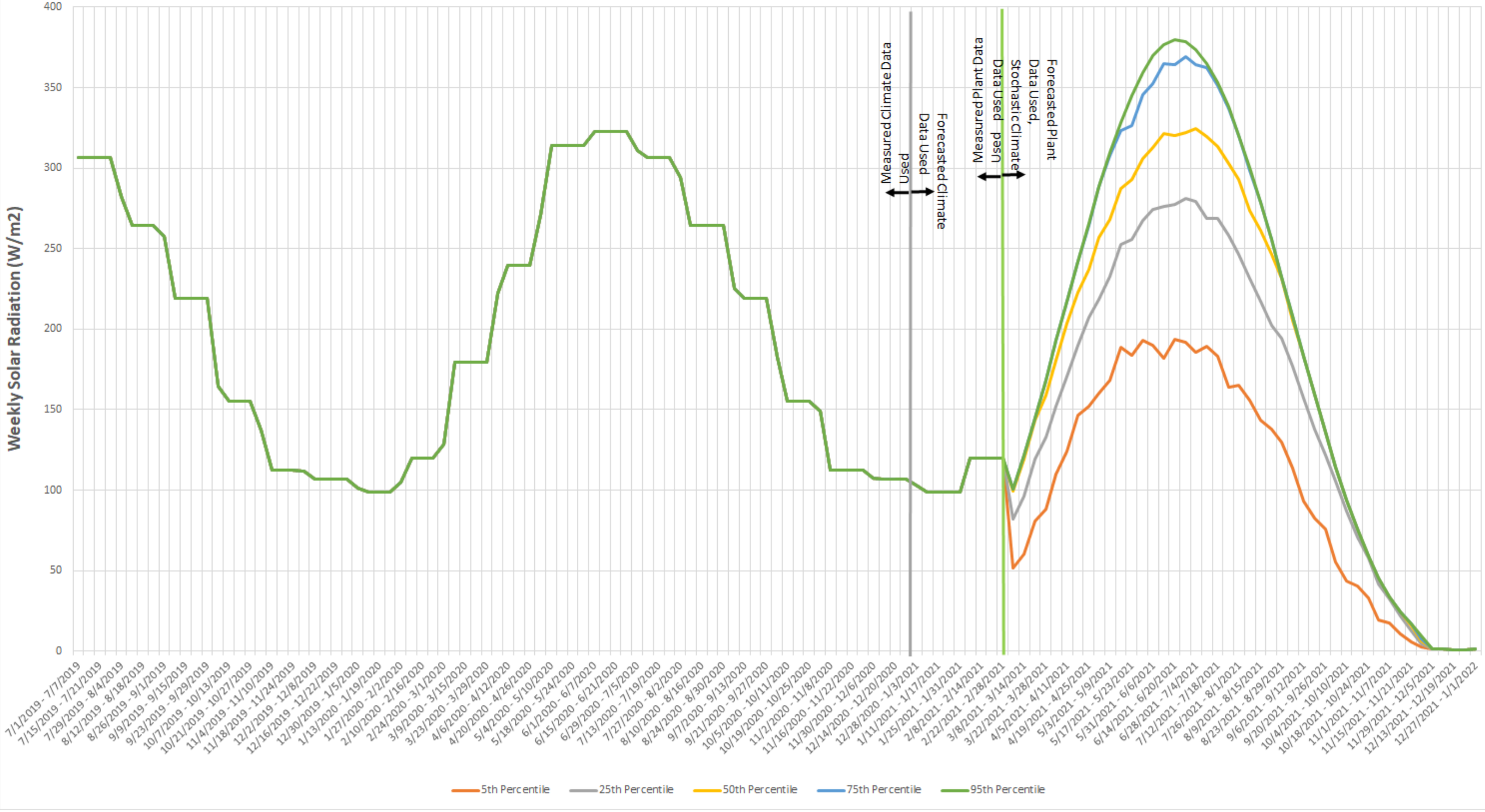


Figure 20

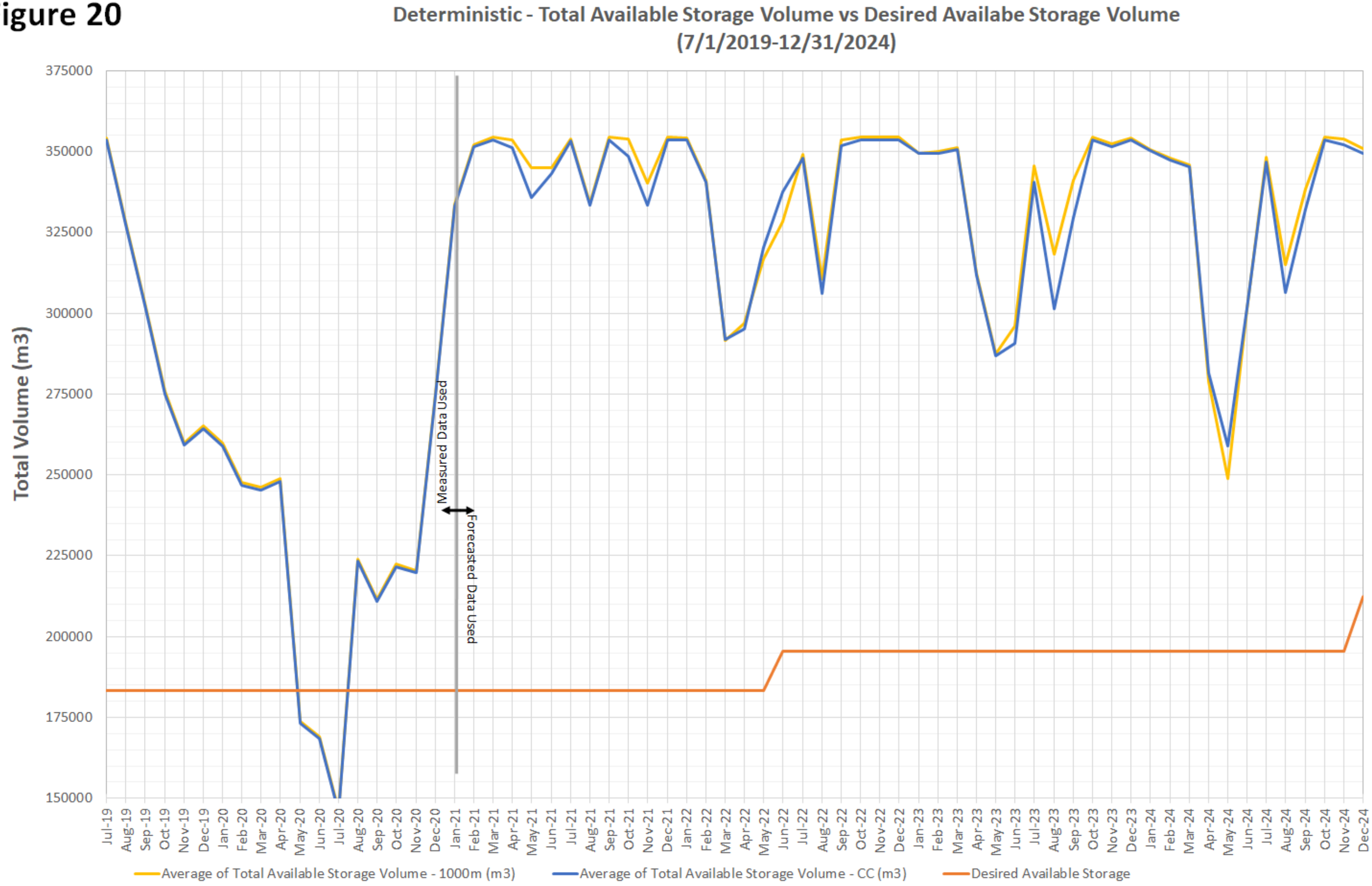

Deterministic - Total Available Storage Volume vs Desired Availabe Storage Volume
(7/1/2019-12/31/2024)
Total Volume (m3)
375000
350000
325000
300000
275000
250000
225000
200000
175000
150000
Measured Data Used
Forecasted Data Used
Jul-19
Aug-19
Sep-19
Oct-19
Nov-19
Dec-19
Jan-20
Feb-20
Mar-20
Apr-20
May-20
Jun-20
Jul-20
Aug-20
Sep-20
Oct-20
Nov-20
Dec-20
Jan-21
Feb-21
Mar-21
Apr-21
May-21
Jun-21
Jul-21
Aug-21
Sep-21
Oct-21
Nov-21
Dec-21
Jan-22
Feb-22
Mar-22
Apr-22
May-22
Jun-22
Jul-22
Aug-22
Sep-22
Oct-22
Nov-22
Dec-22
Jan-23
Feb-23
Mar-23
Apr-23
May-23
Jun-23
Jul-23
Aug-23
Sep-23
Oct-23
Nov-23
Dec-23
Jan-24
Feb-24
Mar-24
Apr-24
May-24
Jun-24
Jul-24
Aug-24
Sep-24
Oct-24
Nov-24
Dec-24
Average of Total Available Storage Volume - 1000m (m3)
Average of Total Available Storage Volume - CC (m3)
Desired Available Storage

Figure 21

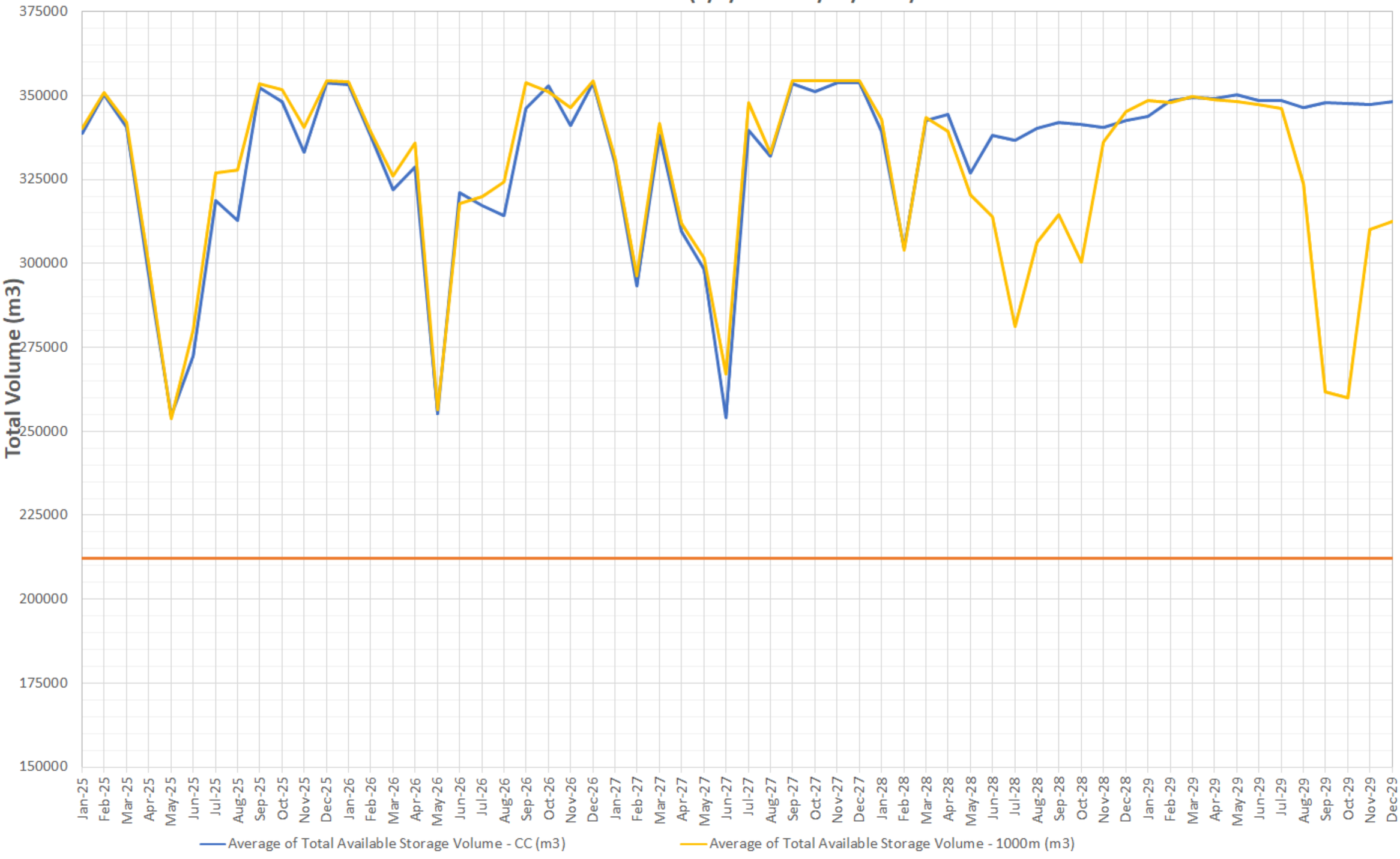

Deterministic - Total Available Storage Volume vs Desired Availabe Storage Volume
(1/1/2025-12/31/2029)
Total Volume (m3)
375000
350000
325000
300000
275000
250000
225000
200000
175000
150000
Jan-25
Feb-25
Mar-25
Apr-25
May-25
Jun-25
Jul-25
Aug-25
Sep-25
Oct-25
Nov-25
Dec-25
Jan-26
Feb-26
Mar-26
Apr-26
May-26
Jun-26
Jul-26
Aug-26
Sep-26
Oct-26
Nov-26
Dec-26
Jan-27
Feb-27
Mar-27
Apr-27
May-27
Jun-27
Jul-27
Aug-27
Sep-27
Oct-27
Nov-27
Dec-27
Jan-28
Feb-28
Mar-28
Apr-28
May-28
Jun-28
Jul-28
Aug-28
Sep-28
Oct-28
Nov-28
Dec-28
Jan-29
Feb-29
Mar-29
Apr-29
May-29
Jun-29
Jul-29
Aug-29
Sep-29
Oct-29
Nov-29
Dec-29
Average of Total Available Storage Volume - CC (m3)
Average of Total Available Storage Volume - 1000m (m3)

Figure 22

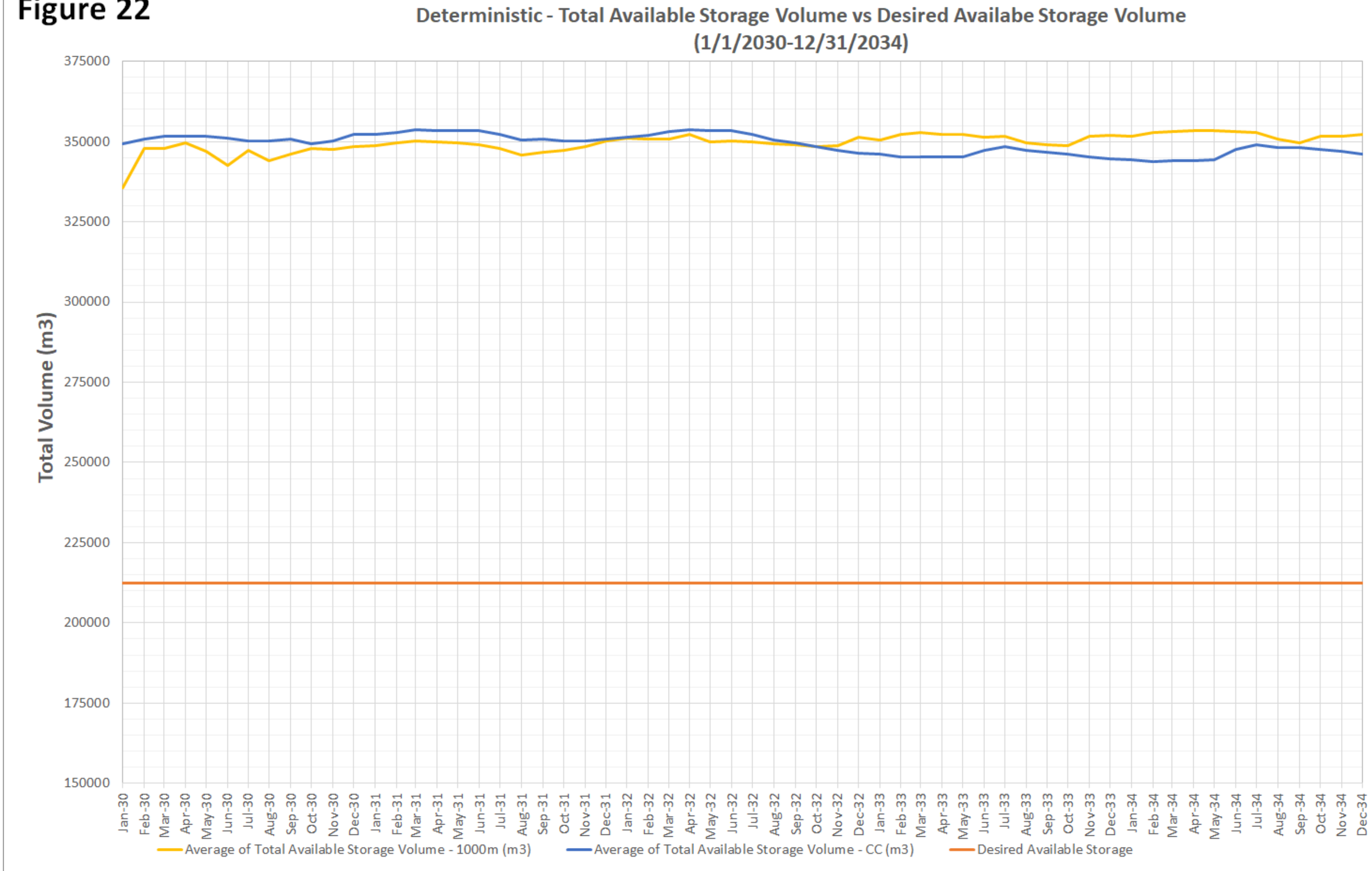

Deterministic - Total Available Storage Volume vs Desired Availabe Storage Volume
(1/1/2030-12/31/2034)
Total Volume (m3)
375000
350000
325000
300000
275000
250000
225000
200000
175000
150000
Jan-30
Feb-30
Mar-30
Apr-30
May-30
Jun-30
Jul-30
Aug-30
Sep-30
Oct-30
Nov-30
Dec-30
Jan-31
Feb-31
Mar-31
Apr-31
May-31
Jun-31
Jul-31
Aug-31
Sep-31
Oct-31
Nov-31
Dec-31
Jan-32
Feb-32
Mar-32
Apr-32
May-32
Jun-32
Jul-32
Aug-32
Sep-32
Oct-32
Nov-32
Dec-32
Jan-33
Feb-33
Mar-33
Apr-33
May-33
Jun-33
Jul-33
Aug-33
Sep-33
Oct-33
Nov-33
Dec-33
Jan-34
Feb-34
Mar-34
Apr-34
May-34
Jun-34
Jul-34
Aug-34
Sep-34
Oct-34
Nov-34
Dec-34
Average of Total Available Storage Volume - 1000m (m3)
Average of Total Available Storage Volume - CC (m3)
Desired Available Storage

Figure 23

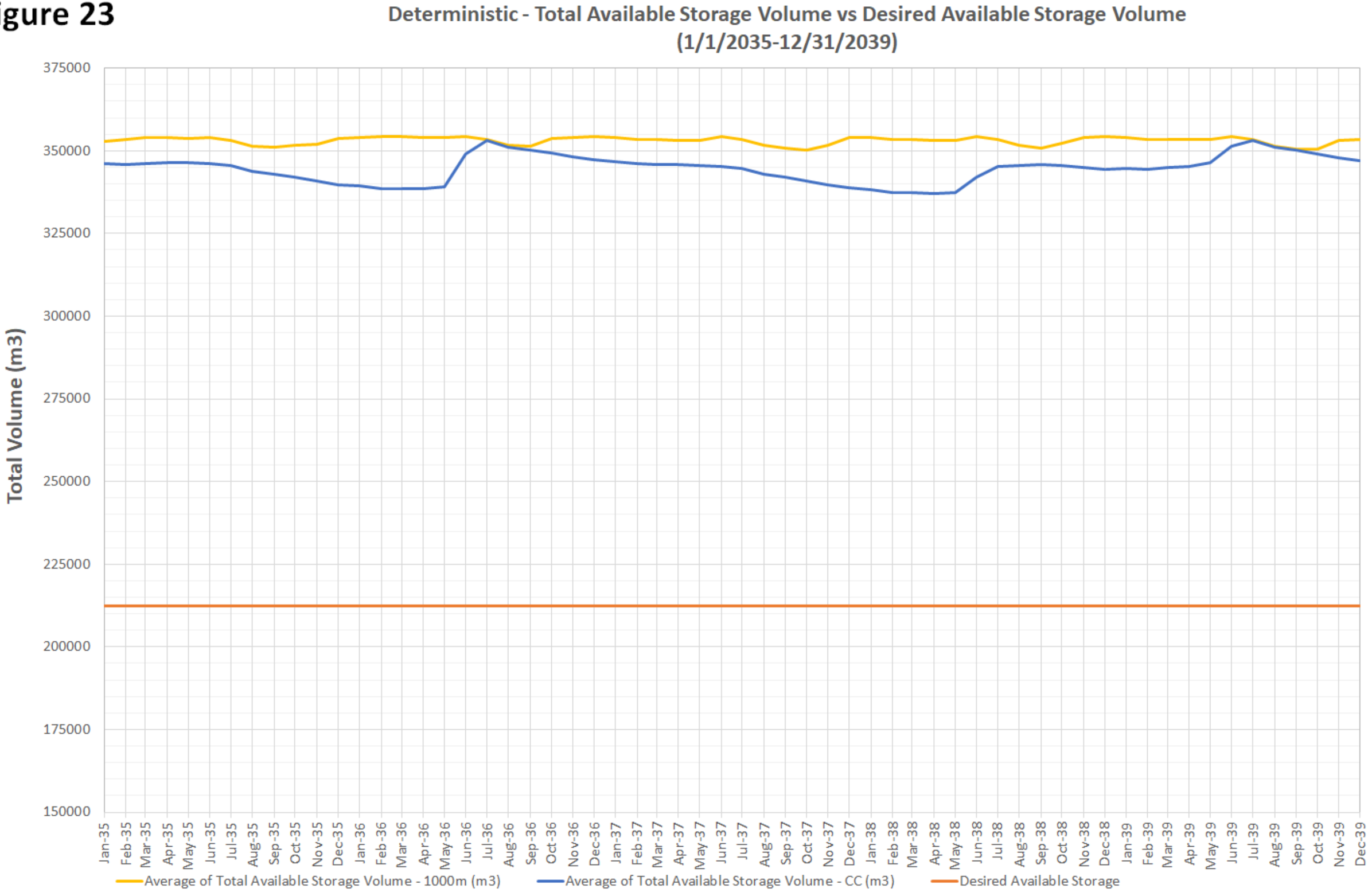

Deterministic - Total Available Storage Volume vs Desired Available Storage Volume
(1/1/2035-12/31/2039)
Total Volume (m3)
375000
350000
325000
300000
275000
250000
225000
200000
175000
150000
Jan-35
Feb-35
Mar-35
Apr-35
May-35
Jun-35
Jul-35
Aug-35
Sep-35
Oct-35
Nov-35
Dec-35
Jan-36
Feb-36
Mar-36
Apr-36
May-36
Jun-36
Jul-36
Aug-36
Sep-36
Oct-36
Nov-36
Dec-36
Jan-37
Feb-37
Mar-37
Apr-37
May-37
Jun-37
Jul-37
Aug-37
Sep-37
Oct-37
Nov-37
Dec-37
Jan-38
Feb-38
Mar-38
Apr-38
May-38
Jun-38
Jul-38
Aug-38
Sep-38
Oct-38
Nov-38
Dec-38
Jan-39
Feb-39
Mar-39
Apr-39
May-39
Jun-39
Jul-39
Aug-39
Sep-39
Oct-39
Nov-39
Dec-39
Average of Total Available Storage Volume - 1000m (m3)
Average of Total Available Storage Volume - CC (m3)
Desired Available Storage

Figure 24

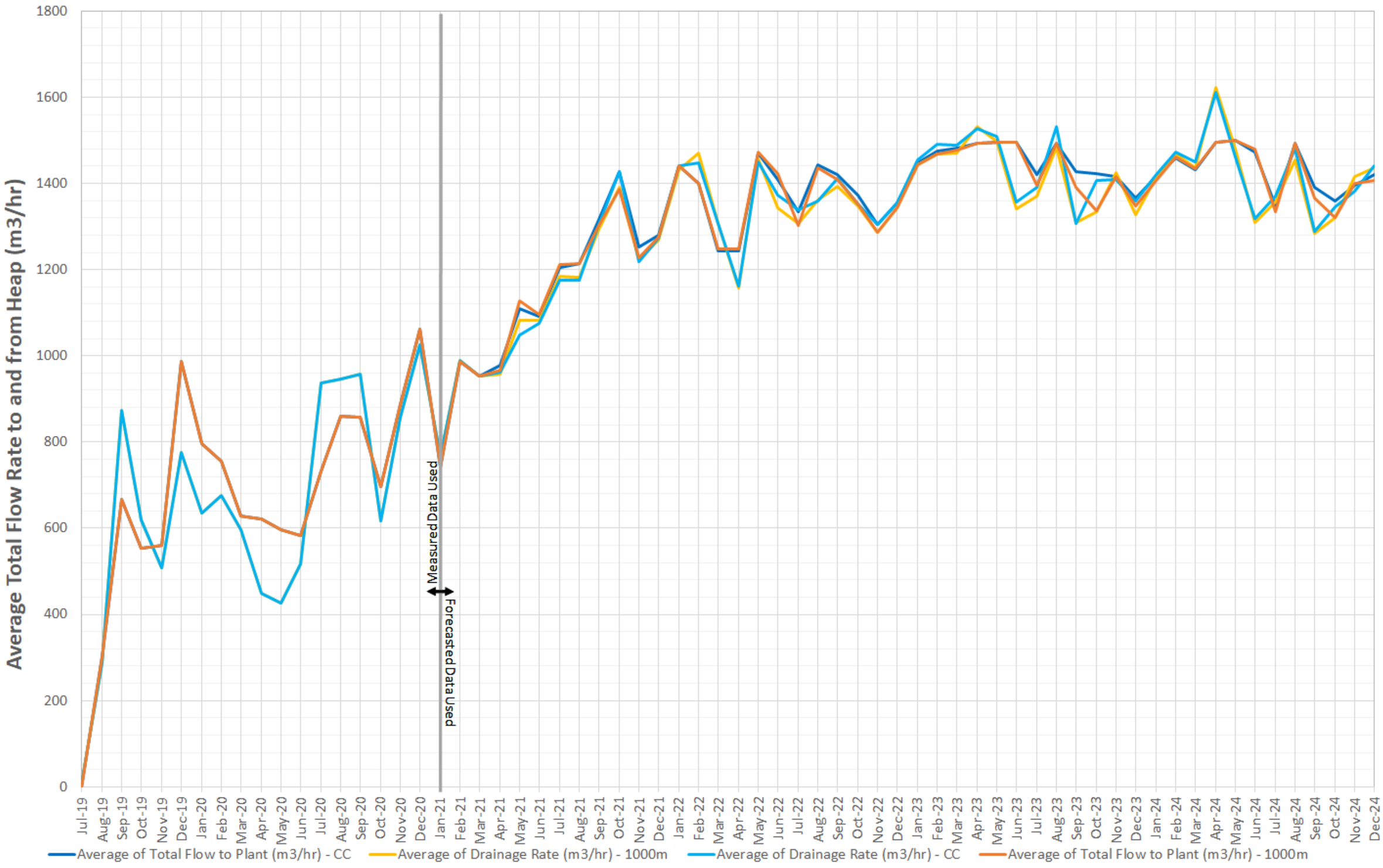

Deterministic - Monthly Average Total Flow to Plant and Drainage from Heap
(7/1/2019-12/31/2024)
Average Total Flow Rate to and from Heap (m3/hr)
1800
1600
1400
1200
1000
800
600
400
200
0
Measured Data Used
Forecasted Data Used
Jul-19
Aug-19
Sep-19
Oct-19
Nov-19
Dec-19
Jan-20
Feb-20
Mar-20
Apr-20
May-20
Jun-20
Jul-20
Aug-20
Sep-20
Oct-20
Nov-20
Dec-20
Jan-21
Feb-21
Mar-21
Apr-21
May-21
Jun-21
Jul-21
Aug-21
Sep-21
Oct-21
Nov-21
Dec-21
Jan-22
Feb-22
Mar-22
Apr-22
May-22
Jun-22
Jul-22
Aug-22
Sep-22
Oct-22
Nov-22
Dec-22
Jan-23
Feb-23
Mar-23
Apr-23
May-23
Jun-23
Jul-23
Aug-23
Sep-23
Oct-23
Nov-23
Dec-23
Jan-24
Feb-24
Mar-24
Apr-24
May-24
Jun-24
Jul-24
Aug-24
Sep-24
Oct-24
Nov-24
Dec-24
Average of Total Flow to Plant (m3/hr) - CC
Average of Drainage Rate (m3/hr) - 1000m
Average of Drainage Rate (m3/hr) - CC
Average of Total Flow to Plant (m3/hr) - 1000m

Figure 25

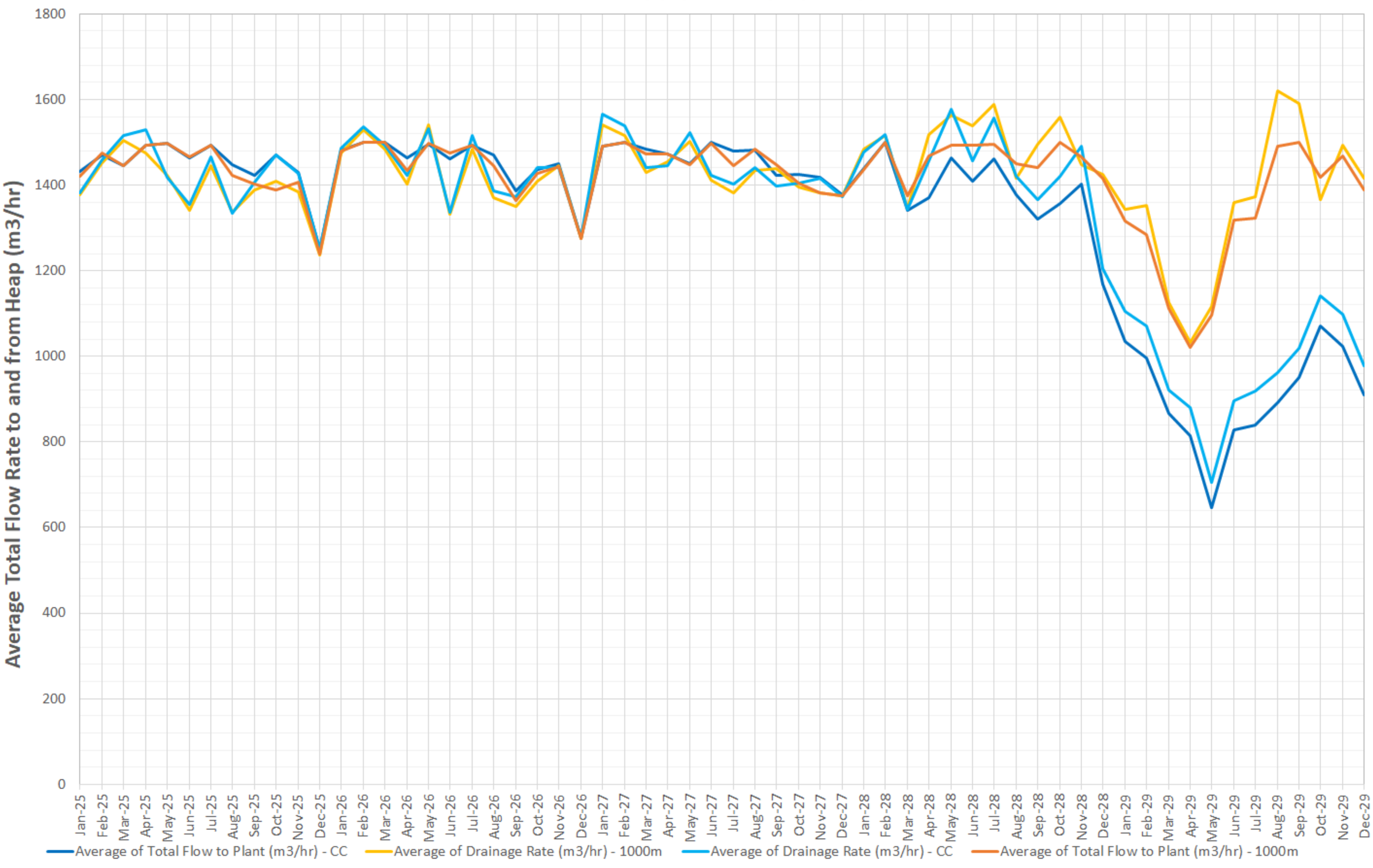
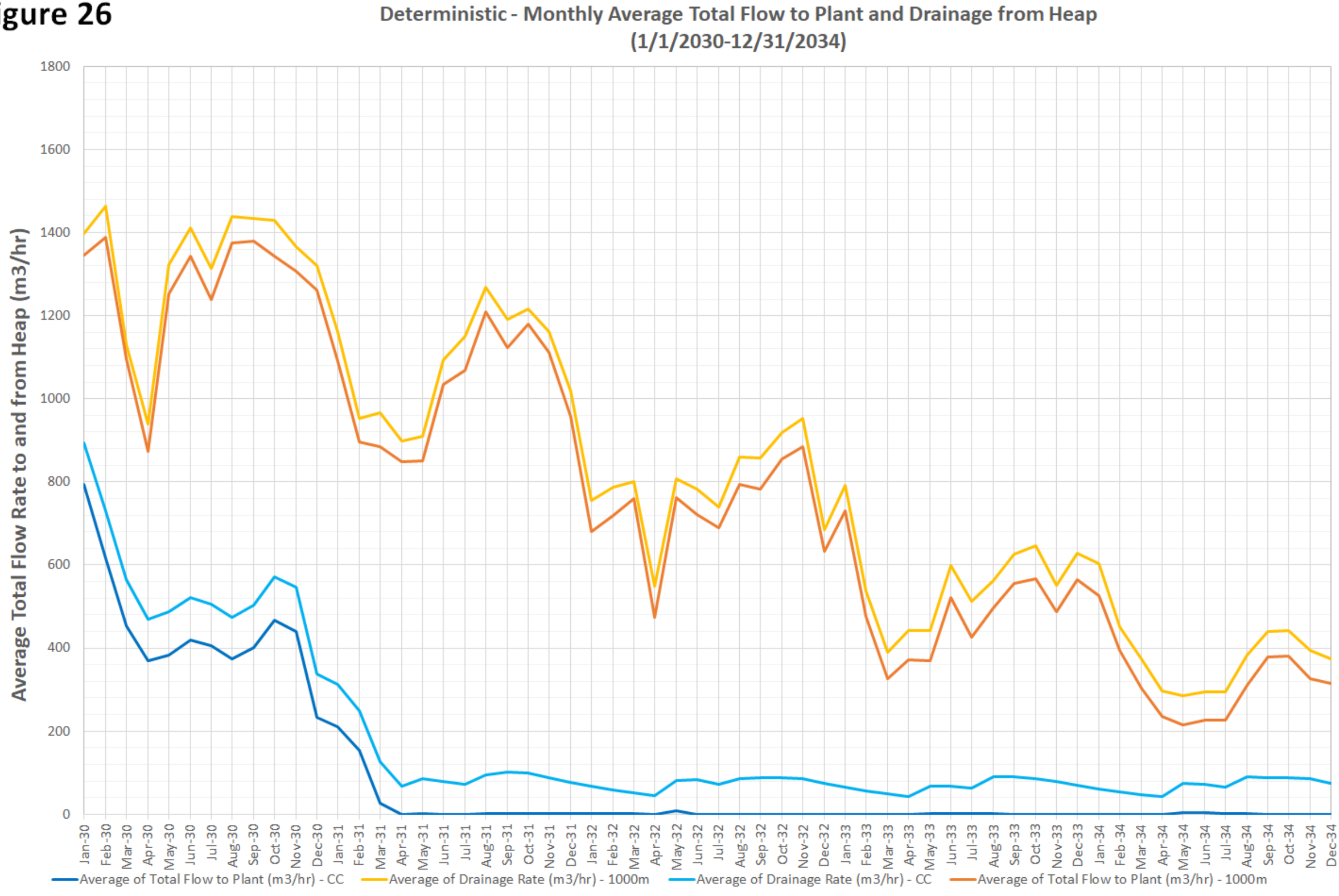

Deterministic - Monthly Average Total Flow to Plant and Drainage from Heap
(1/1/2025-12/31/2029)
Average Total Flow Rate to and from Heap (m3/hr)
1800
1600
1400
1200
1000
800
600
400
200
0
Jan-25
Feb-25
Mar-25
Apr-25
May-25
Jun-25
Jul-25
Aug-25
Sep-25
Oct-25
Nov-25
Dec-25
Jan-26
Feb-26
Mar-26
Apr-26
May-26
Jun-26
Jul-26
Aug-26
Sep-26
Oct-26
Nov-26
Dec-26
Jan-27
Feb-27
Mar-27
Apr-27
May-27
Jun-27
Jul-27
Aug-27
Sep-27
Oct-27
Nov-27
Dec-27
Jan-28
Feb-28
Mar-28
Apr-28
May-28
Jun-28
Jul-28
Aug-28
Sep-28
Oct-28
Nov-28
Dec-28
Jan-29
Feb-29
Mar-29
Apr-29
May-29
Jun-29
Jul-29
Aug-29
Sep-29
Oct-29
Nov-29
Dec-29
Average of Total Flow to Plant (m3/hr) - CC
Average of Drainage Rate (m3/hr) - 1000m
Average of Drainage Rate (m3/hr) - CC
Average of Total Flow to Plant (m3/hr) - 1000m

Figure 26


Deterministic - Monthly Average Total Flow to Plant and Drainage from Heap
(1/1/2030-12/31/2034)
Average Total Flow Rate to and from Heap (m3/hr)
1800
1600
1400
1200
1000
800
600
400
200
0
Jan-30
Feb-30
Mar-30
Apr-30
May-30
Jun-30
Jul-30
Aug-30
Sep-30
Oct-30
Nov-30
Dec-30
Jan-31
Feb-31
Mar-31
Apr-31
May-31
Jun-31
Jul-31
Aug-31
Sep-31
Oct-31
Nov-31
Dec-31
Jan-32
Feb-32
Mar-32
Apr-32
May-32
Jun-32
Jul-32
Aug-32
Sep-32
Oct-32
Nov-32
Dec-32
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Feb-33
Mar-33
Apr-33
May-33
Jun-33
Jul-33
Aug-33
Sep-33
Oct-33
Nov-33
Dec-33
Jan-34
Feb-34
Mar-34
Apr-34
May-34
Jun-34
Jul-34
Aug-34
Sep-34
Oct-34
Nov-34
Dec-34
Average of Total Flow to Plant (m3/hr) - CC
Average of Drainage Rate (m3/hr) - 1000m
Average of Drainage Rate (m3/hr) - CC
Average of Total Flow to Plant (m3/hr) - 1000m

Figure 27

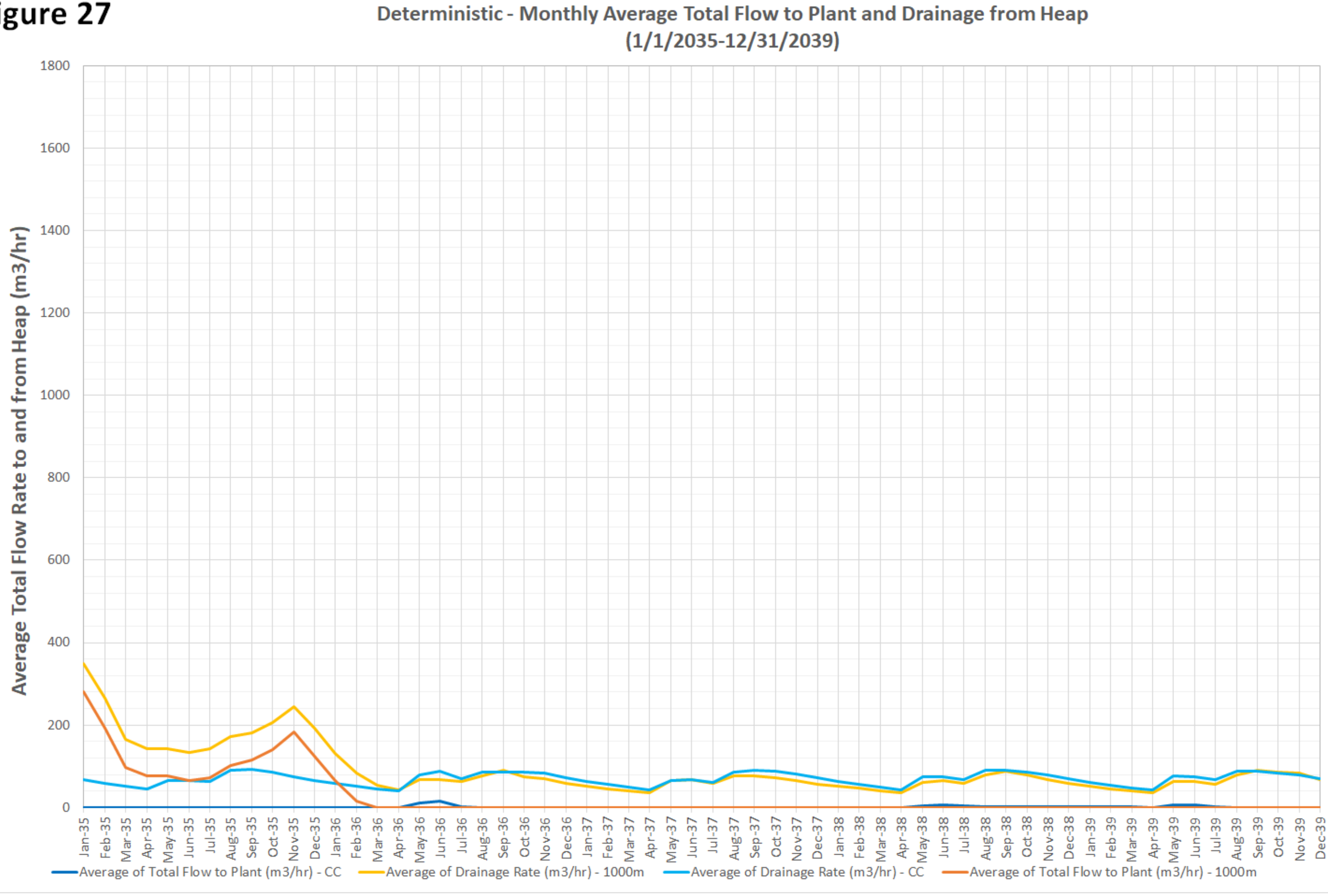

Deterministic - Monthly Average Total Flow to Plant and Drainage from Heap
(1/1/2035-12/31/2039)
Average Total Flow Rate to and from Heap (m3/hr)
1800
1600
1400
1200
1000
800
600
400
200
0
Jan-35
Feb-35
Mar-35
Apr-35
May-35
Jun-35
Jul-35
Aug-35
Sep-35
Oct-35
Nov-35
Dec-35
Jan-36
Feb-36
Mar-36
Apr-36
May-36
Jun-36
Jul-36
Aug-36
Sep-36
Oct-36
Nov-36
Dec-36
Jan-37
Feb-37
Mar-37
Apr-37
May-37
Jun-37
Jul-37
Aug-37
Sep-37
Oct-37
Nov-37
Dec-37
Jan-38
Feb-38
Mar-38
Apr-38
May-38
Jun-38
Jul-38
Aug-38
Sep-38
Oct-38
Nov-38
Dec-38
Jan-39
Feb-39
Mar-39
Apr-39
May-39
Jun-39
Jul-39
Aug-39
Sep-39
Oct-39
Nov-39
Dec-39
Average of Total Flow to Plant (m3/hr) - CC
Average of Drainage Rate (m3/hr) - 1000m
Average of Drainage Rate (m3/hr) - CC
Average of Total Flow to Plant (m3/hr) - 1000m

Figure 28

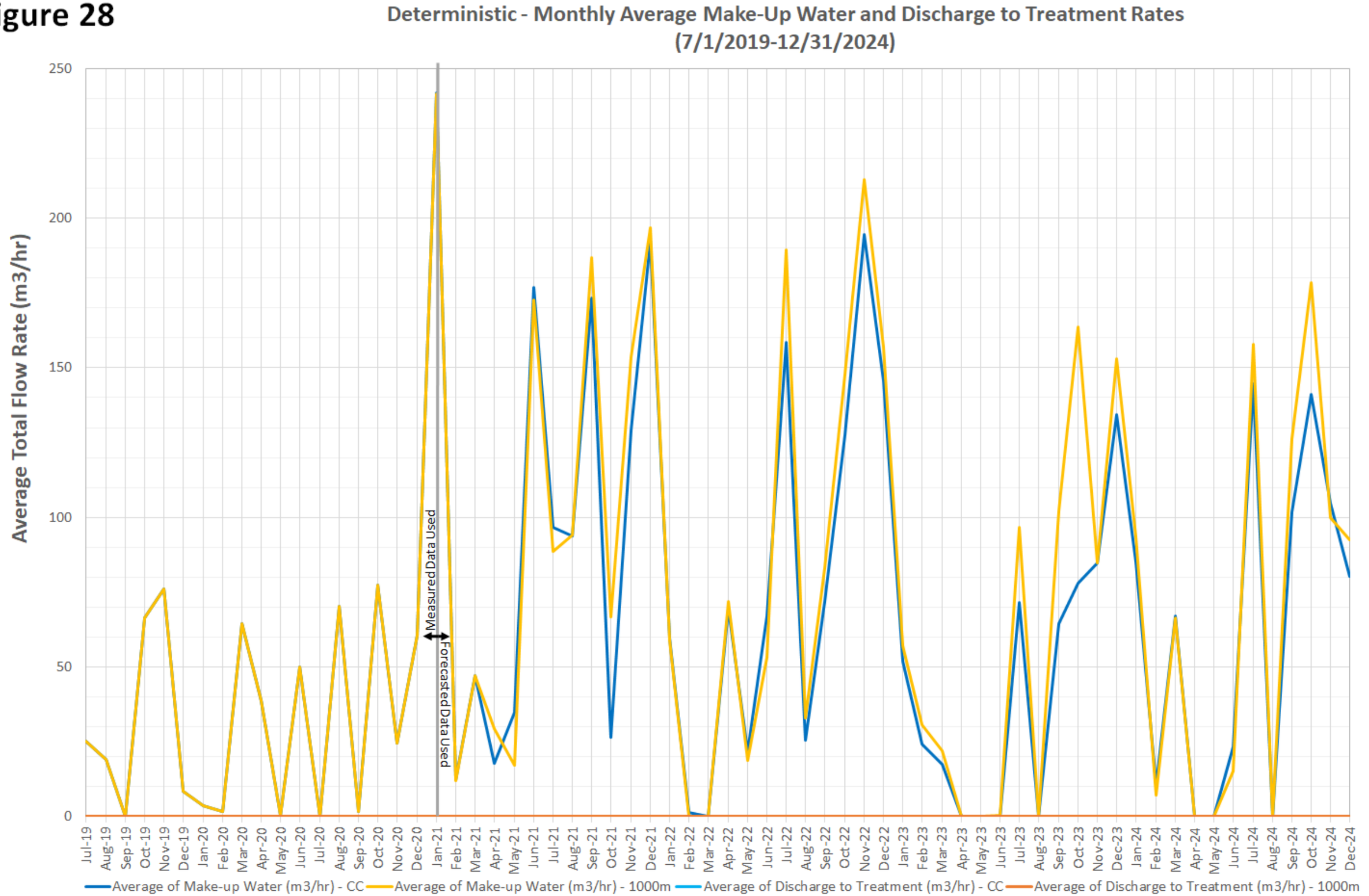

Deterministic - Monthly Average Make-Up Water and Discharge to Treatment Rates
(7/1/2019-12/31/2024)
Average Total Flow Rate (m3/hr)
250
200
150
100
50
0
Measured Data Used
Forecasted Data Used
Jul-19
Aug-19
Sep-19
Oct-19
Nov-19
Dec-19
Jan-20
Feb-20
Mar-20
Apr-20
May-20
Jun-20
Jul-20
Aug-20
Sep-20
Oct-20
Nov-20
Dec-20
Jan-21
Feb-21
Mar-21
Apr-21
May-21
Jun-21
Jul-21
Aug-21
Sep-21
Oct-21
Nov-21
Dec-21
Jan-22
Feb-22
Mar-22
Apr-22
May-22
Jun-22
Jul-22
Aug-22
Sep-22
Oct-22
Nov-22
Dec-22
Jan-23
Feb-23
Mar-23
Apr-23
May-23
Jun-23
Jul-23
Aug-23
Sep-23
Oct-23
Nov-23
Dec-23
Jan-24
Feb-24
Mar-24
Apr-24
May-24
Jun-24
Jul-24
Aug-24
Sep-24
Oct-24
Nov-24
Dec-24
Average of Make-up Water (m3/hr) - CC
Average of Make-up Water (m3/hr) - 1000m
Average of Discharge to Treatment (m3/hr) - CC
Average of Discharge to Treatment (m3/hr) - 1000m

Figure 29

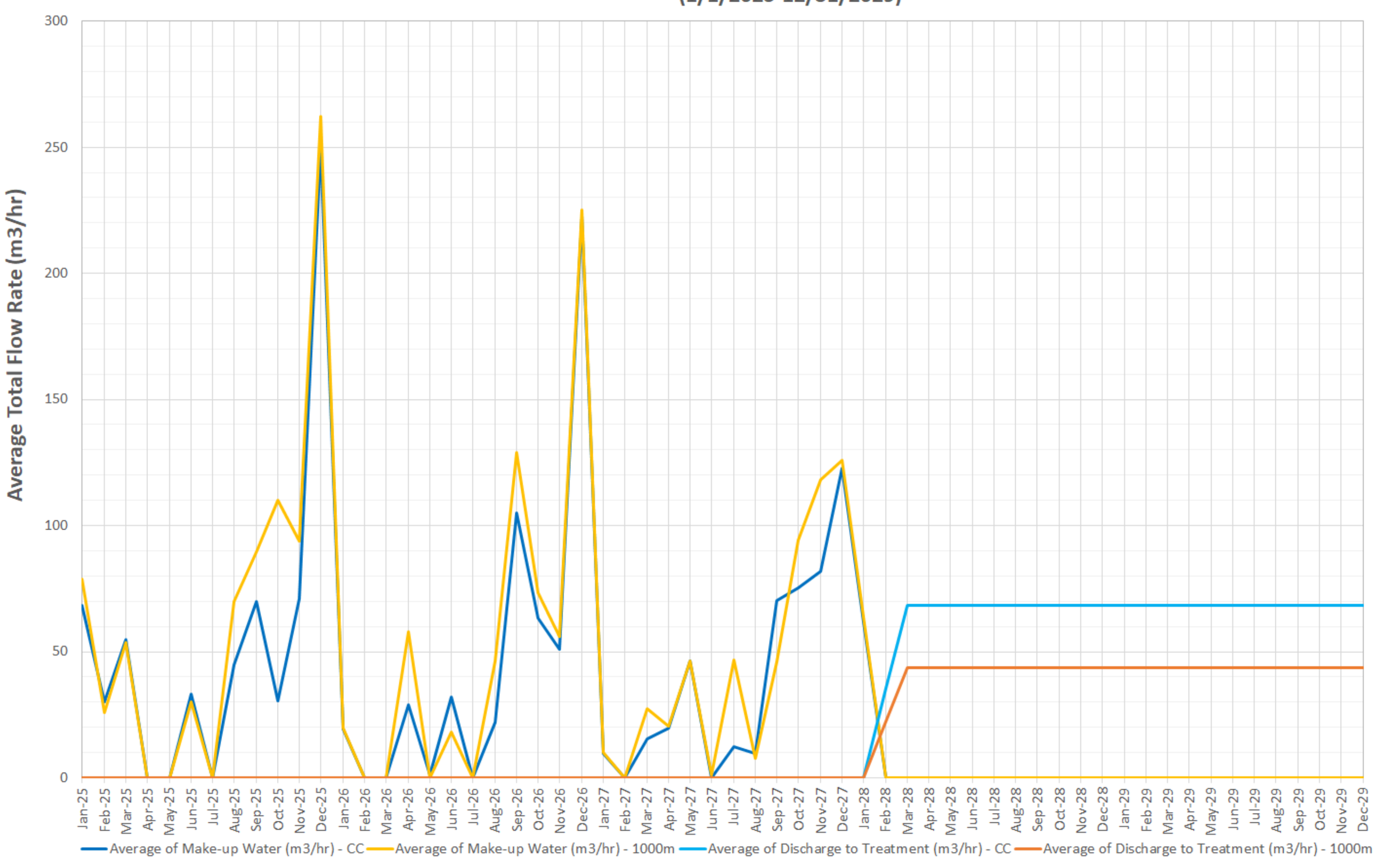

Deterministic - Monthly Average Make-Up Water and Discharge to Treatment Rates
(1/1/2025-12/31/2029)
Average Total Flow Rate (m3/hr)
300
250
200
150
100
50
0
Jan-25
Feb-25
Mar-25
Apr-25
May-25
Jun-25
Jul-25
Aug-25
Sep-25
Oct-25
Nov-25
Dec-25
Jan-26
Feb-26
Mar-26
Apr-26
May-26
Jun-26
Jul-26
Aug-26
Sep-26
Oct-26
Nov-26
Dec-26
Jan-27
Feb-27
Mar-27
Apr-27
May-27
Jun-27
Jul-27
Aug-27
Sep-27
Oct-27
Nov-27
Dec-27
Jan-28
Feb-28
Mar-28
Apr-28
May-28
Jun-28
Jul-28
Aug-28
Sep-28
Oct-28
Nov-28
Dec-28
Jan-29
Feb-29
Mar-29
Apr-29
May-29
Jun-29
Jul-29
Aug-29
Sep-29
Oct-29
Nov-29
Dec-29
Average of Make-up Water (m3/hr) - CC
Average of Make-up Water (m3/hr) - 1000m
Average of Discharge to Treatment (m3/hr) - CC
Average of Discharge to Treatment (m3/hr) - 1000m

Figure 30

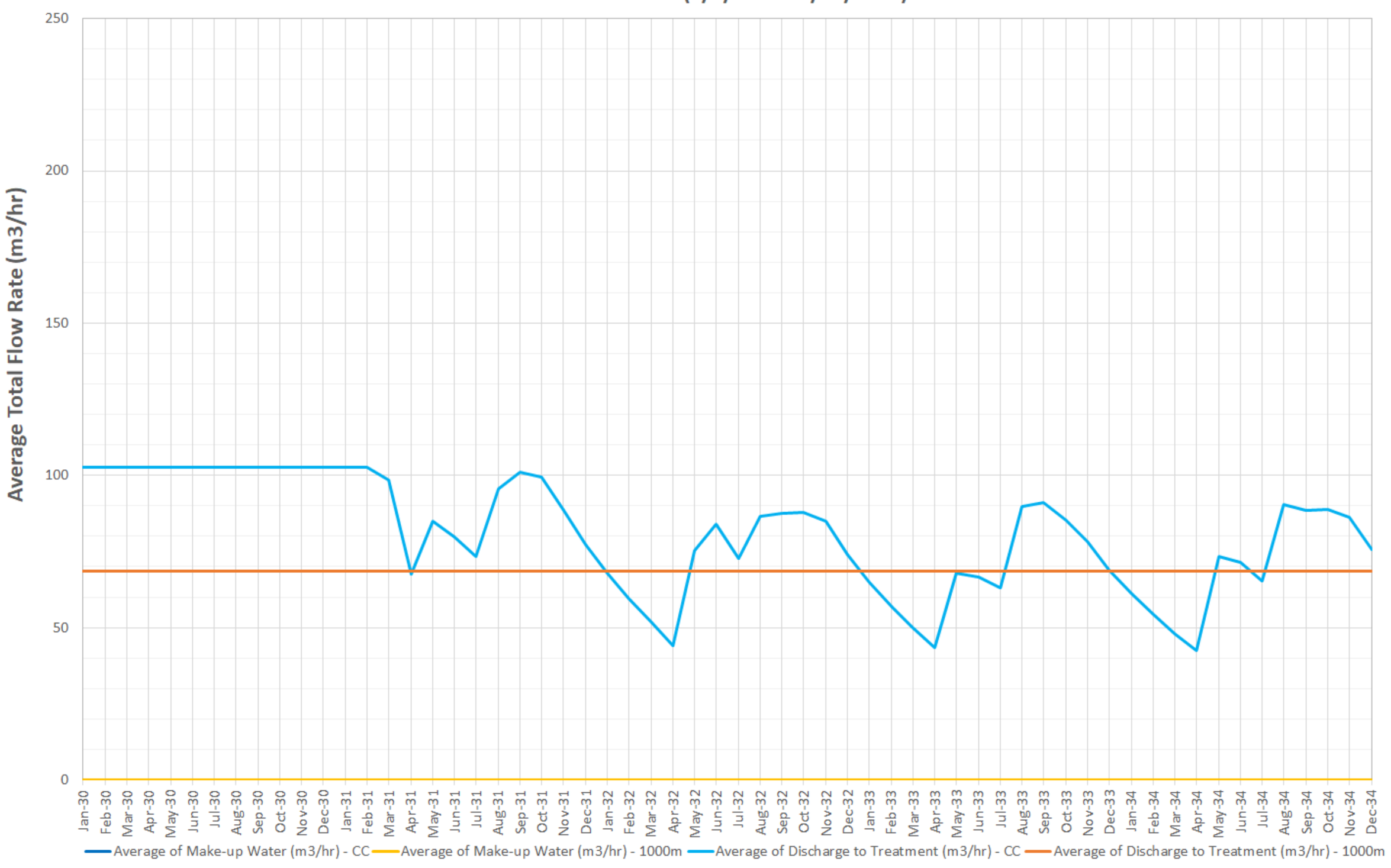

Deterministic - Monthly Average Make-Up Water and Discharge to Treatment Rates
(1/1/2030-12/31/2034)
Average Total Flow Rate (m3/hr)
250
200
150
100
50
0
Jan-30
Feb-30
Mar-30
Apr-30
May-30
Jun-30
Jul-30
Aug-30
Sep-30
Oct-30
Nov-30
Dec-30
Jan-31
Feb-31
Mar-31
Apr-31
May-31
Jun-31
Jul-31
Aug-31
Sep-31
Oct-31
Nov-31
Dec-31
Jan-32
Feb-32
Mar-32
Apr-32
May-32
Jun-32
Jul-32
Aug-32
Sep-32
Oct-32
Nov-32
Dec-32
Jan-33
Feb-33
Mar-33
Apr-33
May-33
Jun-33
Jul-33
Aug-33
Sep-33
Oct-33
Nov-33
Dec-33
Jan-34
Feb-34
Mar-34
Apr-34
May-34
Jun-34
Jul-34
Aug-34
Sep-34
Oct-34
Nov-34
Dec-34
Average of Make-up Water (m3/hr) - CC
Average of Make-up Water (m3/hr) - 1000m
Average of Discharge to Treatment (m3/hr) - CC
Average of Discharge to Treatment (m3/hr) - 1000m

Figure 31

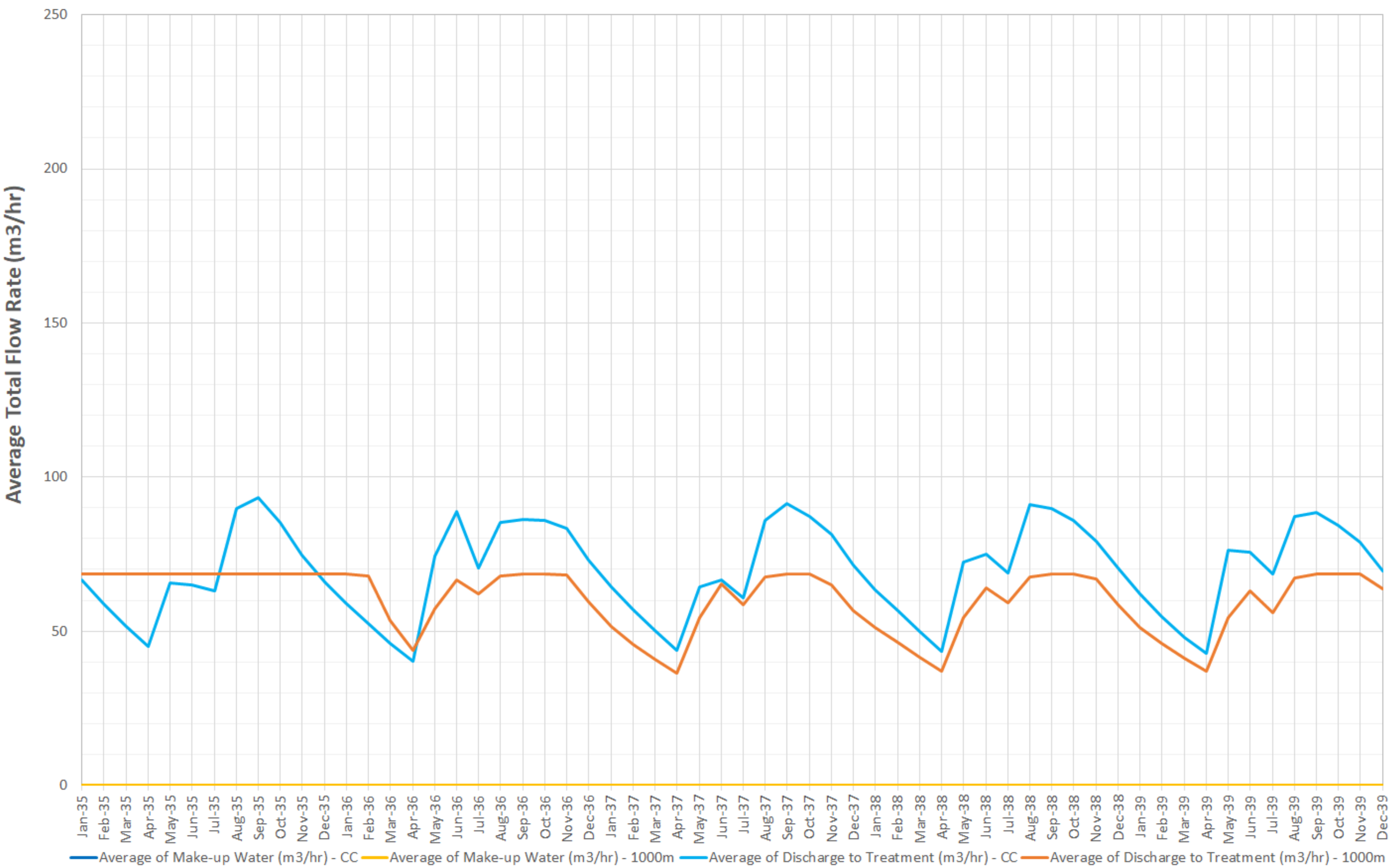
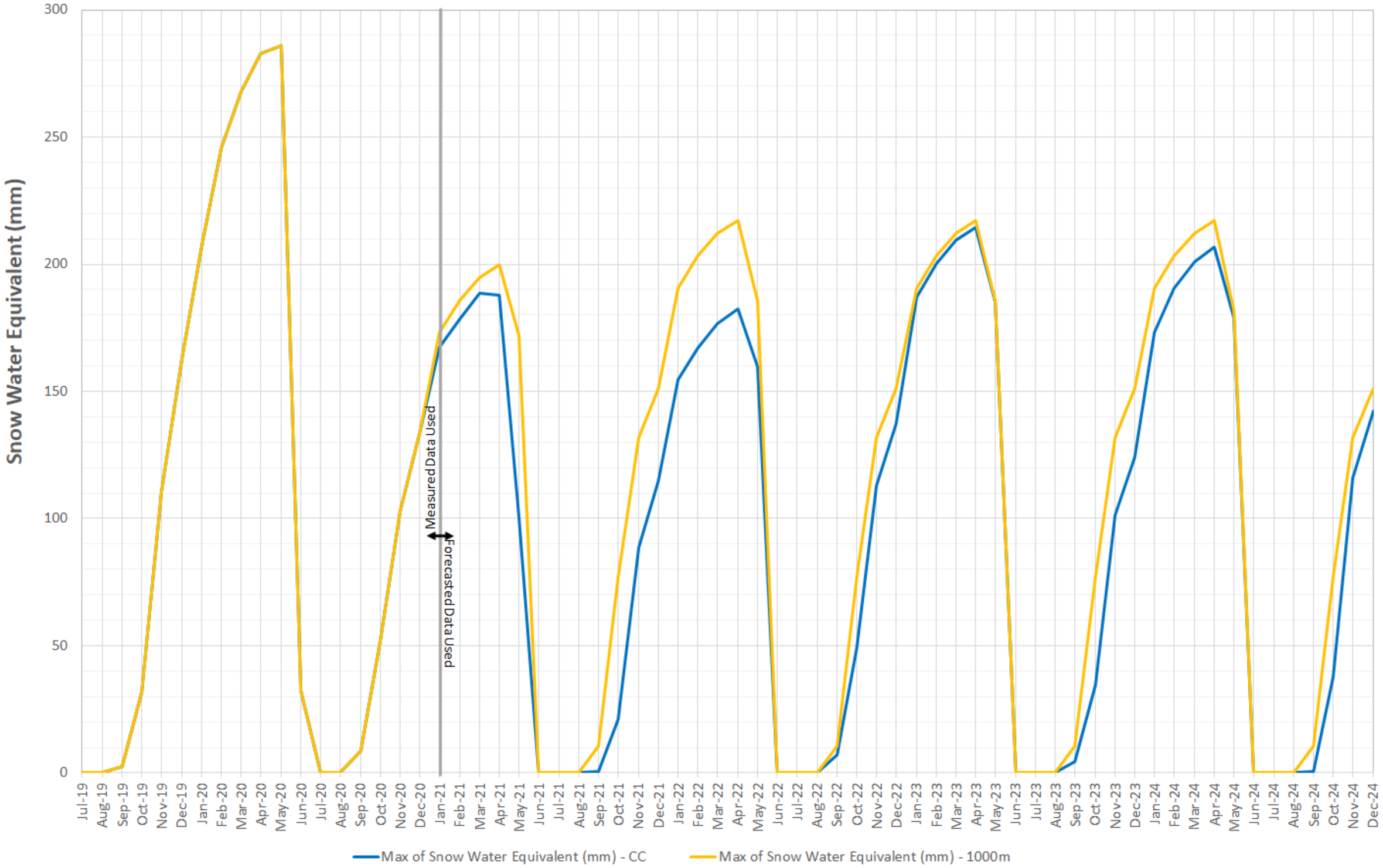

Deterministic - Monthly Average Make-Up Water and Discharge to Treatment Rates
(1/1/2035-12/31/2039)
Average Total Flow Rate (m3/hr)
250
200
150
100
50
0
Jan-35
Feb-35
Mar-35
Apr-35
May-35
Jun-35
Jul-35
Aug-35
Sep-35
Oct-35
Nov-35
Dec-35
Jan-36
Feb-36
Mar-36
Apr-36
May-36
Jun-36
Jul-36
Aug-36
Sep-36
Oct-36
Nov-36
Dec-36
Jan-37
Feb-37
Mar-37
Apr-37
May-37
Jun-37
Jul-37
Aug-37
Sep-37
Oct-37
Nov-37
Dec-37
Jan-38
Feb-38
Mar-38
Apr-38
May-38
Jun-38
Jul-38
Aug-38
Sep-38
Oct-38
Nov-38
Dec-38
Jan-39
Feb-39
Mar-39
Apr-39
May-39
Jun-39
Jul-39
Aug-39
Sep-39
Oct-39
Nov-39
Dec-39
Average of Make-up Water (m3/hr) - CC
Average of Make-up Water (m3/hr) - 1000m
Average of Discharge to Treatment (m3/hr) - CC
Average of Discharge to Treatment (m3/hr) - 1000m

Figure 32


Deterministic - Monthly Maximum Snow Water Equivalent
(7/1/2019-12/31/2024)
Snow Water Equivalent (mm)
300
250
200
150
100
50
0
Measured Data Used
Forecasted Data Used
Jul-19
Aug-19
Sep-19
Oct-19
Nov-19
Dec-19
Jan-20
Feb-20
Mar-20
Apr-20
May-20
Jun-20
Jul-20
Aug-20
Sep-20
Oct-20
Nov-20
Dec-20
Jan-21
Feb-21
Mar-21
Apr-21
May-21
Jun-21
Jul-21
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Nov-21
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Jan-22
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Feb-23
Mar-23
Apr-23
May-23
Jun-23
Jul-23
Aug-23
Sep-23
Oct-23
Nov-23
Dec-23
Jan-24
Feb-24
Mar-24
Apr-24
May-24
Jun-24
Jul-24
Aug-24
Sep-24
Oct-24
Nov-24
Dec-24
Max of Snow Water Equivalent (mm) - CC
Max of Snow Water Equivalent (mm) - 1000m

Figure 33

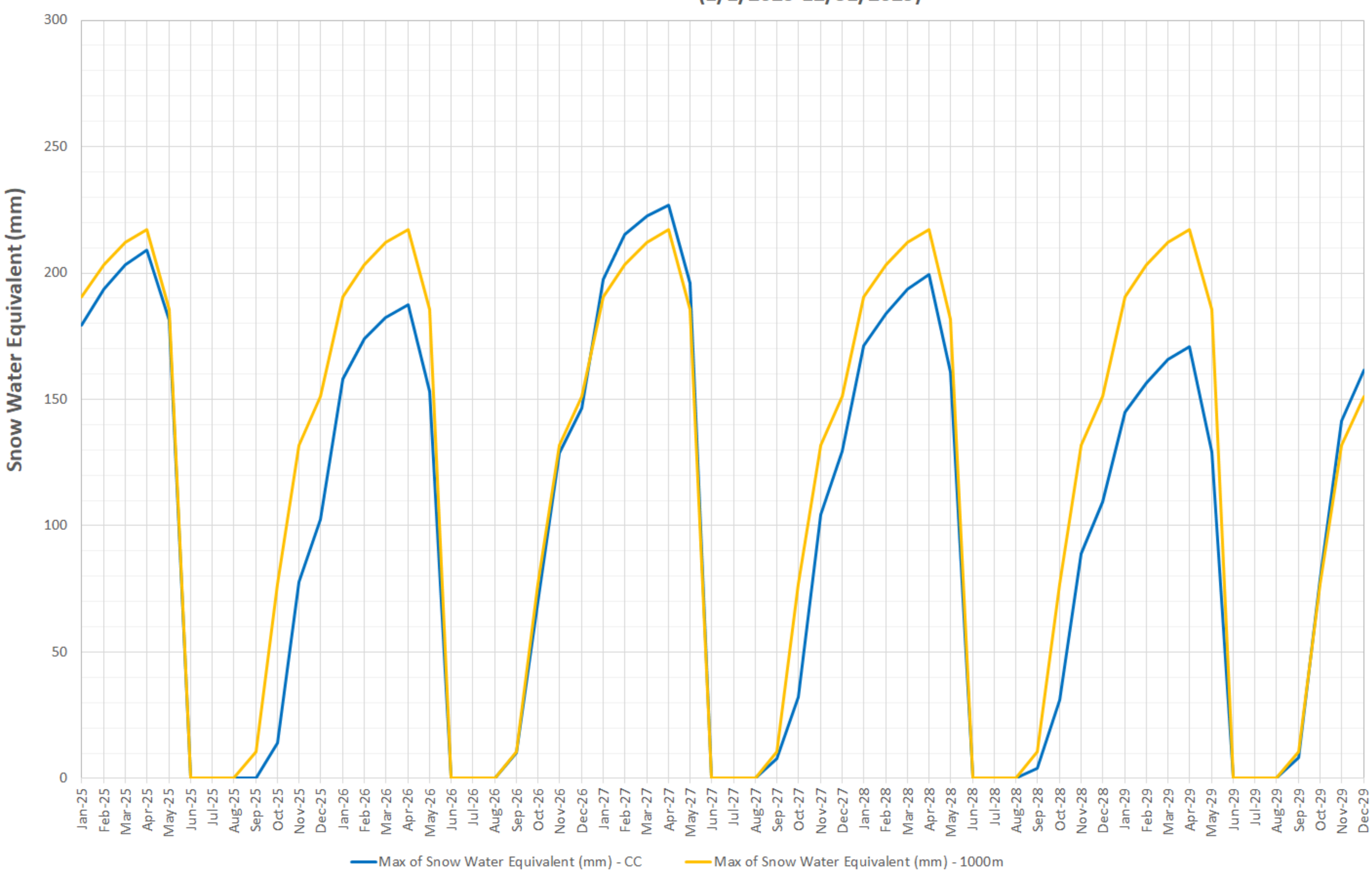

Deterministic - Monthly Maximum Snow Water Equivalent
(1/1/2025-12/31/2029)
Snow Water Equivalent (mm)
300
250
200
150
100
50
0
Jan-25
Feb-25
Mar-25
Apr-25
May-25
Jun-25
Jul-25
Aug-25
Sep-25
Oct-25
Nov-25
Dec-25
Jan-26
Feb-26
Mar-26
Apr-26
May-26
Jun-26
Jul-26
Aug-26
Sep-26
Oct-26
Nov-26
Dec-26
Jan-27
Feb-27
Mar-27
Apr-27
May-27
Jun-27
Jul-27
Aug-27
Sep-27
Oct-27
Nov-27
Dec-27
Jan-28
Feb-28
Mar-28
Apr-28
May-28
Jun-28
Jul-28
Aug-28
Sep-28
Oct-28
Nov-28
Dec-28
Jan-29
Feb-29
Mar-29
Apr-29
May-29
Jun-29
Jul-29
Aug-29
Sep-29
Oct-29
Nov-29
Dec-29
Max of Snow Water Equivalent (mm) - CC
Max of Snow Water Equivalent (mm) - 1000m

Figure 34

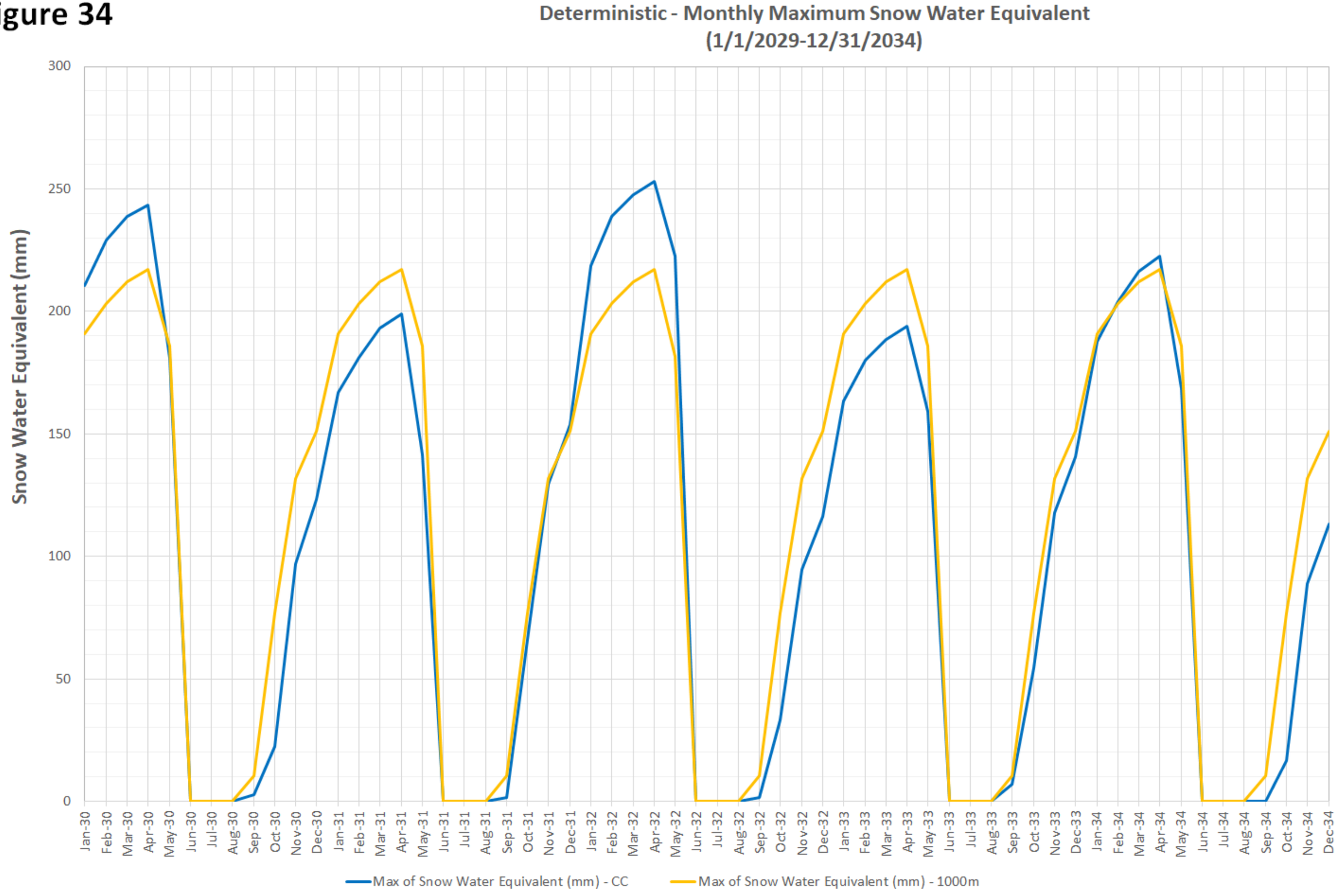

Deterministic - Monthly Maximum Snow Water Equivalent
(1/1/2029-12/31/2034)
Snow Water Equivalent (mm)
300
250
200
150
100
50
0
Jan-30
Feb-30
Mar-30
Apr-30
May-30
Jun-30
Jul-30
Aug-30
Sep-30
Oct-30
Nov-30
Dec-30
Jan-31
Feb-31
Mar-31
Apr-31
May-31
Jun-31
Jul-31
Aug-31
Sep-31
Oct-31
Nov-31
Dec-31
Jan-32
Feb-32
Mar-32
Apr-32
May-32
Jun-32
Jul-32
Aug-32
Sep-32
Oct-32
Nov-32
Dec-32
Jan-33
Feb-33
Mar-33
Apr-33
May-33
Jun-33
Jul-33
Aug-33
Sep-33
Oct-33
Nov-33
Dec-33
Jan-34
Feb-34
Mar-34
Apr-34
May-34
Jun-34
Jul-34
Aug-34
Sep-34
Oct-34
Nov-34
Dec-34
Max of Snow Water Equivalent (mm) - CC
Max of Snow Water Equivalent (mm) - 1000m

Figure 34

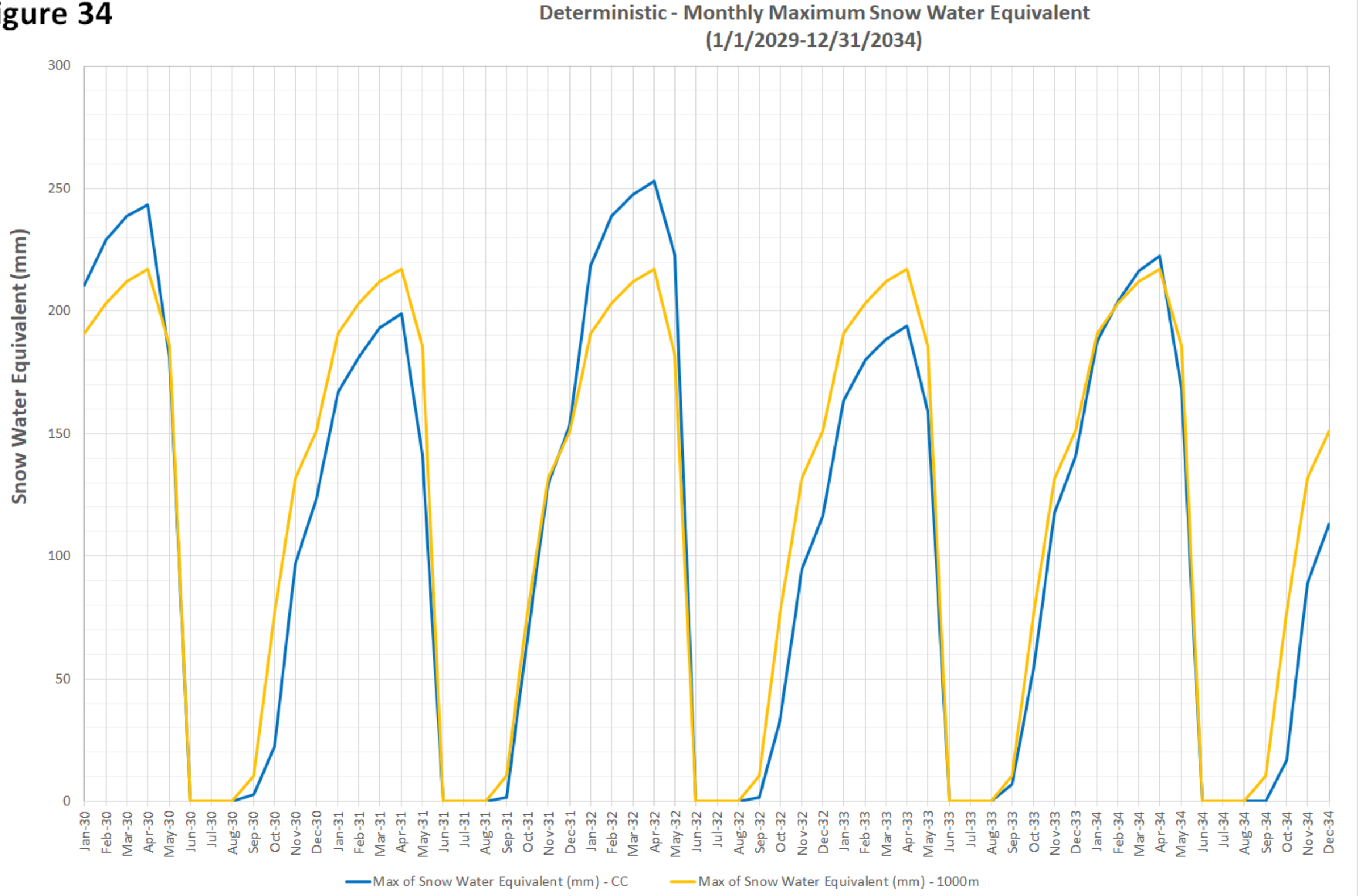

Deterministic - Monthly Maximum Snow Water Equivalent
(1/1/2029-12/31/2034)
Snow Water Equivalent (mm)
300
250
200
150
100
50
0
Jan-30
Feb-30
Mar-30
Apr-30
May-30
Jun-30
Jul-30
Aug-30
Sep-30
Oct-30
Nov-30
Dec-30
Jan-31
Feb-31
Mar-31
Apr-31
May-31
Jun-31
Jul-31
Aug-31
Sep-31
Oct-31
Nov-31
Dec-31
Jan-32
Feb-32
Mar-32
Apr-32
May-32
Jun-32
Jul-32
Aug-32
Sep-32
Oct-32
Nov-32
Dec-32
Jan-33
Feb-33
Mar-33
Apr-33
May-33
Jun-33
Jul-33
Aug-33
Sep-33
Oct-33
Nov-33
Dec-33
Jan-34
Feb-34
Mar-34
Apr-34
May-34
Jun-34
Jul-34
Aug-34
Sep-34
Oct-34
Nov-34
Dec-34
Max of Snow Water Equivalent (mm) - CC
Max of Snow Water Equivalent (mm) - 1000m

Figure 36

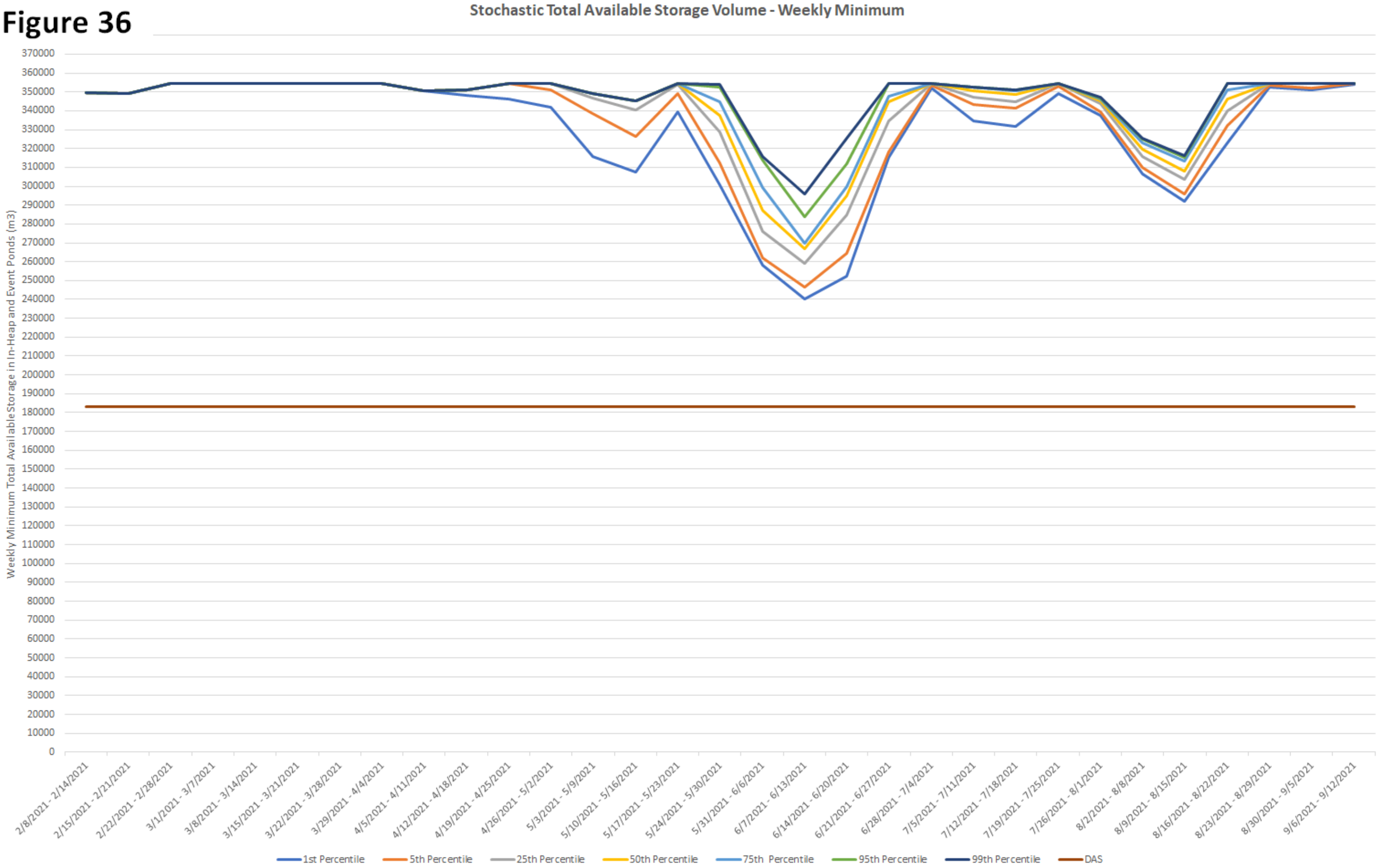
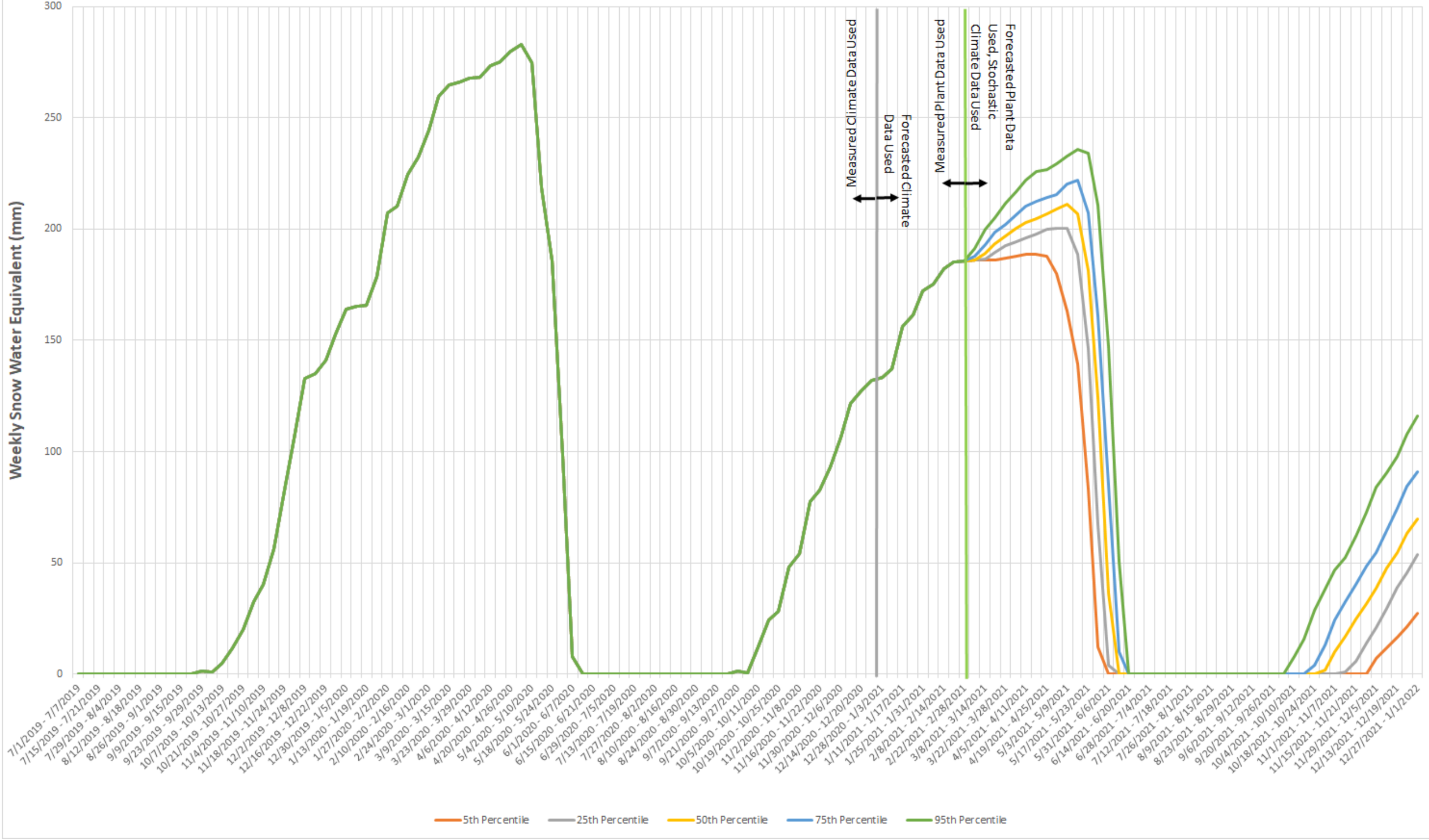

Stochastic Total Available Storage Volume - Weekly Minimum
Weekly Minimum Total Available Storage in In-Heap and Event Ponds (m3)
370000
360000
350000
340000
330000
320000
310000
300000
290000
280000
270000
260000
250000
240000
230000
220000
210000
200000
190000
180000
170000
160000
150000
140000
130000
120000
110000
100000
90000
80000
70000
60000
50000
40000
30000
20000
10000
0
2/8/2021 - 2/14/2021
2/15/2021 - 2/21/2021
2/22/2021 - 2/28/2021
3/1/2021 - 3/7/2021
3/8/2021 - 3/14/2021
3/15/2021 - 3/21/2021
3/22/2021 - 3/28/2021
3/29/2021 - 4/4/2021
4/5/2021 - 4/11/2021
4/12/2021 - 4/18/2021
4/19/2021 - 4/25/2021
4/26/2021 - 5/2/2021
5/3/2021 - 5/9/2021
5/10/2021 - 5/16/2021
5/17/2021 - 5/23/2021
5/24/2021 - 5/30/2021
5/31/2021 - 6/6/2021
6/7/2021 - 6/13/2021
6/14/2021 - 6/20/2021
6/21/2021 - 6/27/2021
6/28/2021 - 7/4/2021
7/5/2021 - 7/11/2021
7/12/2021 - 7/18/2021
7/19/2021 - 7/25/2021
7/26/2021 - 8/1/2021
8/2/2021 - 8/8/2021
8/9/2021 - 8/15/2021
8/16/2021 - 8/22/2021
8/23/2021 - 8/29/2021
8/30/2021 - 9/5/2021
9/6/2021 - 9/12/2021
1st Percentile
5th Percentile
25th Percentile
50th Percentile
75th Percentile
95th Percentile
99th Percentile
DAS

Figure 37


Stochastic Snow Water Equivalent- Weekly Summation
Weekly Snow Water Equivalent (mm)
300
250
200
150
100
50
0
Measured Climate Data Used
Forecasted Climate Data Used
Measured Plant Data Used
Forecasted Plant Data Used, Stochastic Climate Data Used
7/1/2019 - 7/7/2019
7/15/2019 - 7/21/2019
7/29/2019 - 8/4/2019
8/12/2019 - 8/18/2019
8/26/2019 - 9/1/2019
9/9/2019 - 9/15/2019
9/23/2019 - 9/29/2019
10/7/2019 - 10/13/2019
10/21/2019 - 10/27/2019
11/4/2019 - 11/10/2019
11/18/2019 - 11/24/2019
12/2/2019 - 12/8/2019
12/16/2019 - 12/22/2019
12/30/2019 - 1/5/2020
1/13/2020 - 1/19/2020
1/27/2020 - 2/2/2020
2/10/2020 - 2/16/2020
2/24/2020 - 3/1/2020
3/9/2020 - 3/15/2020
3/23/2020 - 3/29/2020
4/6/2020 - 4/12/2020
4/20/2020 - 4/26/2020
5/4/2020 - 5/10/2020
5/18/2020 - 5/24/2020
6/1/2020 - 6/7/2020
6/15/2020 - 6/21/2020
6/29/2020 - 7/5/2020
7/13/2020 - 7/19/2020
7/27/2020 - 8/2/2020
8/10/2020 - 8/16/2020
8/24/2020 - 8/30/2020
9/7/2020 - 9/13/2020
9/21/2020 - 9/27/2020
10/5/2020 - 10/11/2020
10/19/2020 - 10/25/2020
11/2/2020 - 11/8/2020
11/16/2020 - 11/22/2020
11/30/2020 - 12/6/2020
12/14/2020 - 12/20/2020
12/28/2020 - 1/3/2021
1/11/2021 - 1/17/2021
1/25/2021 - 1/31/2021
2/8/2021 - 2/14/2021
2/22/2021 - 2/28/2021
3/8/2021 - 3/14/2021
3/22/2021 - 3/28/2021
4/5/2021 - 4/11/2021
4/19/2021 - 4/25/2021
5/3/2021 - 5/9/2021
5/17/2021 - 5/23/2021
5/31/2021 - 6/6/2021
6/14/2021 - 6/20/2021
6/28/2021 - 7/4/2021
7/12/2021 - 7/18/2021
7/26/2021 - 8/1/2021
8/9/2021 - 8/15/2021
8/23/2021 - 8/29/2021
9/6/2021 - 9/12/2021
9/20/2021 - 9/26/2021
10/4/2021 - 10/10/2021
10/18/2021 - 10/24/2021
11/1/2021 - 11/7/2021
11/15/2021 - 11/21/2021
11/29/2021 - 12/5/2021
12/13/2021 - 12/19/2021
12/27/2021 - 1/1/2022
5th Percentile
25th Percentile
50th Percentile
75th Percentile
95th Percentile

APPENDIX I1

Eagle Gold Mine Hydrograph Update (2020 Data)

BGC ENGINEERING INC.
AN APPLIED EARTH SCIENCES COMPANY
Suite 500 - 980 Howe Street, Vancouver, BC Canada V6Z 0C8
Telephone (604) 684-5900 Fax (604) 684-5909

Transmittal

To:	**Victoria Gold Corporation**	**Doc. No.:**	**N/A**
Attention:	**Stephen Wilbur**	**cc:**	**Lindsay Rear**
From:	**Andrew Krentz**	**Date:**	**March 19, 2021**
Subject:	**Eagle Gold Mine Hydrograph Update (2020 Data)**		
Project No.:	**0792029**		

BGC Engineering Inc. (BGC) was retained by Victoria Gold Corporation (VGC) to review and process physical hydrogeological and climate data collected from the Eagle Gold mine site by VGC during 2020. BGC has previously provided these services to VGC and the methods used for the data review and processing described herein are similar to those used previously (BGC, March 9, 2020). This transmittal letter documents the review and includes hydrograph plots (Figures 1 through 24) and a potentiometric map (Figure 25) updated with data collected in 2020. Hydrograph plots are only provided for locations where data were collected in 2020. The potentiometric map considers all locations where groundwater data are available, including data collected prior to 2020, with consideration given to the effects of mining activities such as dewatering.

The groundwater data to be reviewed and processed were provided via email from Lindsay Rear (VGC) on January 20, 2021 and January 22, 2021. The data included field notes, manual depth to water measurements, and data from Solinst Leveloggers and a Solinst Barologger. A summary of the locations where data from 2020 were received is provided in Table 1.

The data provided by VGC were processed by BGC to produce hydrograph plots showing the groundwater elevation through time at each location. The tasks completed by BGC to produce the hydrographs were limited to:

1. Reviewing the data to identify gaps, inconsistencies, and duplicates. As part of this review, the depth to the bottom of each hole (as measured by Victoria Gold field staff in 2020) was compared to records of screen depths and borehole depths maintained by BGC and documented in bore hole logs available for each location. Discrepancies that were observed were reported to VGC and were resolved.
2. Converting manual measurements of groundwater levels to groundwater elevations. These elevations were calculated based on top of casing elevations that are consistent with those used during the previous hydrograph update (BGC, March 9, 2020).
3. Barometrically correcting data from the Leveloggers with data from the Barologger. The corrected data were then converted into groundwater elevations through comparison with the manual measurements of groundwater levels. During this step, the data were corrected for discrepancies associated with deploying the loggers at inconsistent depths throughout time. The manual data generally aligned well with the barometrically corrected datalogger data.

4. The processed Levelogger data were converted to average daily values to decrease the volume of data, and relevant field notes were added to each plot.
5. Climate data from the Camp Meteorological Station (Figure 25) were added in a second plot below each of the hydrographs. These data were converted to daily averages (for temperature) and daily totals (for precipitation) prior to plotting.

CLOSURE

BGC Engineering Inc. (BGC) prepared this document for the account of Victoria Gold Corporation. The material in it reflects the judgment of BGC staff in light of the information available to BGC at the time of document preparation. Any use which a third party makes of this document or any reliance on decisions to be based on it is the responsibility of such third parties. BGC accepts no responsibility for damages, if any, suffered by any third party as a result of decisions made or actions based on this document.

As a mutual protection to our client, the public, and ourselves all documents and drawings are submitted for the confidential information of our client for a specific project. Authorization for any use and/or publication of this document or any data, statements, conclusions or abstracts from or regarding our documents and drawings, through any form of print or electronic media, including without limitation, posting or reproduction of same on any website, is reserved pending BGC's written approval. A record copy of this document is on file at BGC. That copy takes precedence over any other copy or reproduction of this document.

Yours sincerely,

BGC ENGINEERING INC.
per:



Andrew Krentz, M.A.Sc., P.Eng. (BC, ON)
Hydrogeological Engineer

Reviewed by:

Trevor Crozier, M.Eng., P.Eng.
Principal Hydrogeological Engineer

AK/TWC/wn/syt

Attachment(s): Tables
Figures

REFERENCES

BGC Engineering Inc. (2020, March 9). *Eagle Gold Project 2020 Numerical Hydrogeological Model Update* [Transmittal]. Prepared for Victoria Gold Corporation.

TABLE

Table 1. Summary of 2020 data for monitoring wells at Eagle Gold.

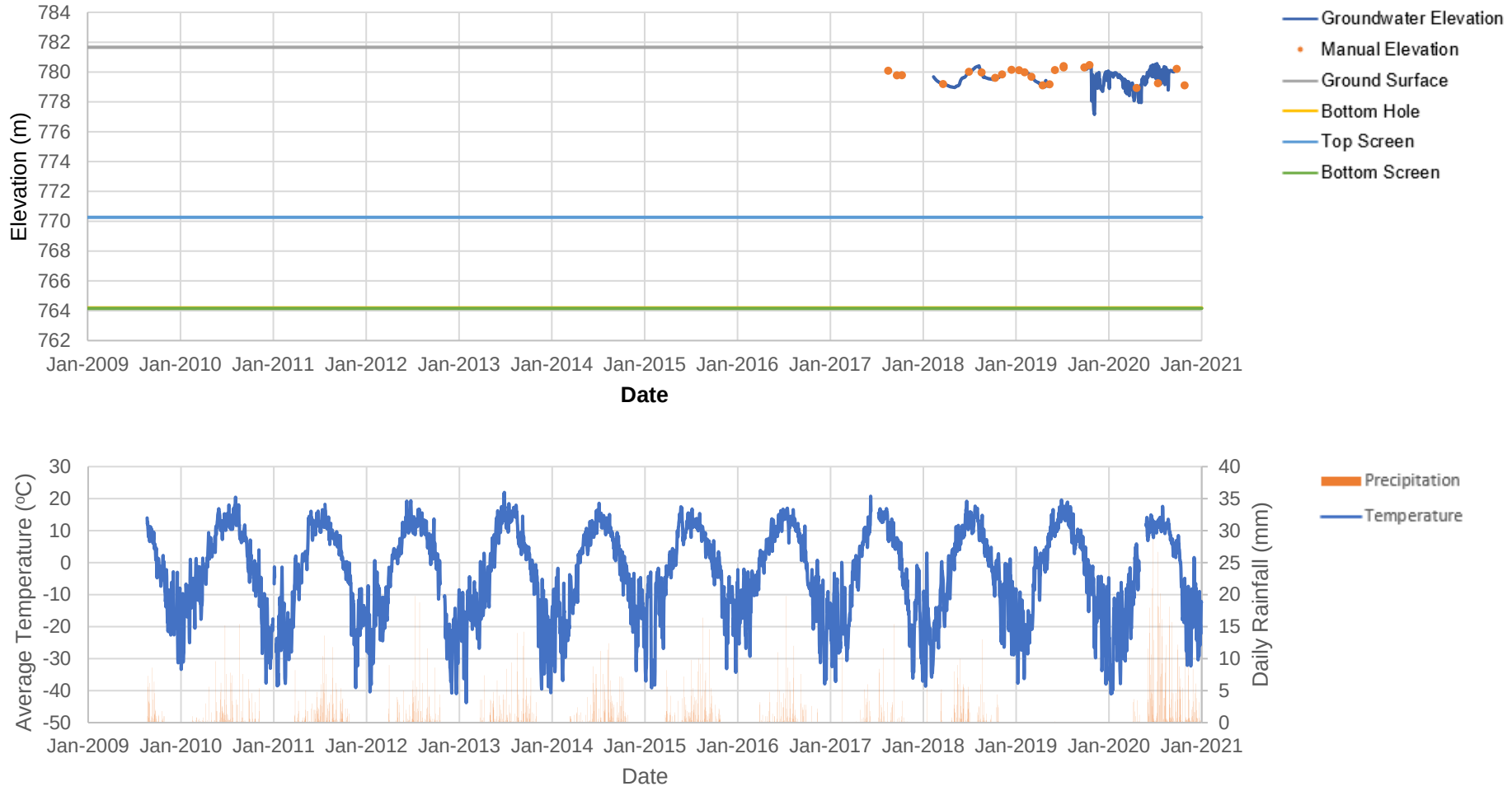
Well	Northing (m)	Easting (m)	Manual (M) or Dry[2]				2020 Level Logger ID
			Q1	Q2	Q3	Q4	
BH-BGC11-26	7102088	460206	Decommissioned				-
BH-BGC11-72	7101087	458238	M	M	M	M	2079898
BH-BGC11-73	7099368	460410	Decommissioned				-
BH-BGC11-74	7101163	458275	M	M	M	M	-
MW6	7100854	458641	Dry	Dry	M	Dry	
MW09-AG1	7101949	459425	-	-	-	-	-
MW09-AG2	7101981	459785	Decommissioned				-
MW09-DG1	7101009	459325	Well Damaged				-
MW09-DG2	7100877	458992	-	-	-	-	-
MW09-DG4	7101111	458284	-	-	-	-	-
MW09-OG3	7101552	461223	-	-	-	-	-
MW09-STU2	7100799	459212	-	-	-	-	-
MW10-AG3A	7102013	459681	Decommissioned				-
MW10-AG3B	7102016	459676	Decommissioned				-
MW10-AG5	7101626	459549	Decommissioned				-
MW10-AG6	7101392	459637	Decommissioned				-
MW10-DG6	7101125	459235	Replaced with MW19-DG6R A/B				-
MW10-OBS-1	7101116	458443	-	-	-	M	-
MW10-PG1	7099557	458988	M	M	M	M	2107767
MW18-DG2R	7100865	458950	M	M	M		2100811
MW19-DG6RA	7101121	459225	M	M	M	M	2066224
MW19-DG6RB	7101119	459221	M	M	M	M	-
MW19-EPW1A	7100996	459751	M	M	M	M	2100823
MW19-EPW1B	7100991	459752	M	M	M	M	2079412
MW19-EVP1A	7101188	459264	Dry	Dry	Dry	Dry	-
MW19-EVP1B	7101193	459264	M	M	M	M	-
MW19-EVP2A	7101091	459073	M	M	Dry	M	-
MW19-EVP2B	7101088	459075	M	M	M	M	-
MW19-HLF1A	7101316	459542	Dry	Dry	Dry	Dry	1057770
MW19-HLF1B	7101309	459540	M	M	M	M	-
MW19-LDSP-2A	7101045	458365	Dry	M	M	M	2079423
MW19-LDSP-2B	7101088	459075	M	M	M	M	1049612
MW19-PWG1A	7099539	459169	M	M	M	M	2100819
MW19-PWG1B	7099539	459169	Well Damaged				
MW95-151	7100862	459768	M	M	M	M	
MW96-9B	7101252	463073	-	-	M	M	1050237
MW96-14B	7100609	460145	M	M	M	M	-

Well	Northing (m)	Easting (m)	Manual (M) or Dry[2]				2020 Level Logger ID
			Q1	Q2	Q3	Q4	
MW96-15A	7101037	459679	M	M	M	M	1058360
MW96-15B	7101037	459679	M	M	M	M	1058345
MW96-17A	7099563	460490	-	-	-	-	-
MW96-17B	7099563	460490	Decommissioned				-
MW96-19	7099490	460523	Decommissioned				-
MW96-23	7099264	459586	-	-	-	-	-
Barologger[3]	7101088	459075	-	-	-	-	2100686

Notes:

1. Data provided by Victoria Gold Corp. (Personal communication, Email, Lindsay Rear, January 20, 2021; January 22, 2021).
2. "-" = no data available; "M" = Manual reading taken; "Dry" = Manual reading taken, but well dry.
3. Barologger installed at MW19-LDSP-2B.

FIGURES



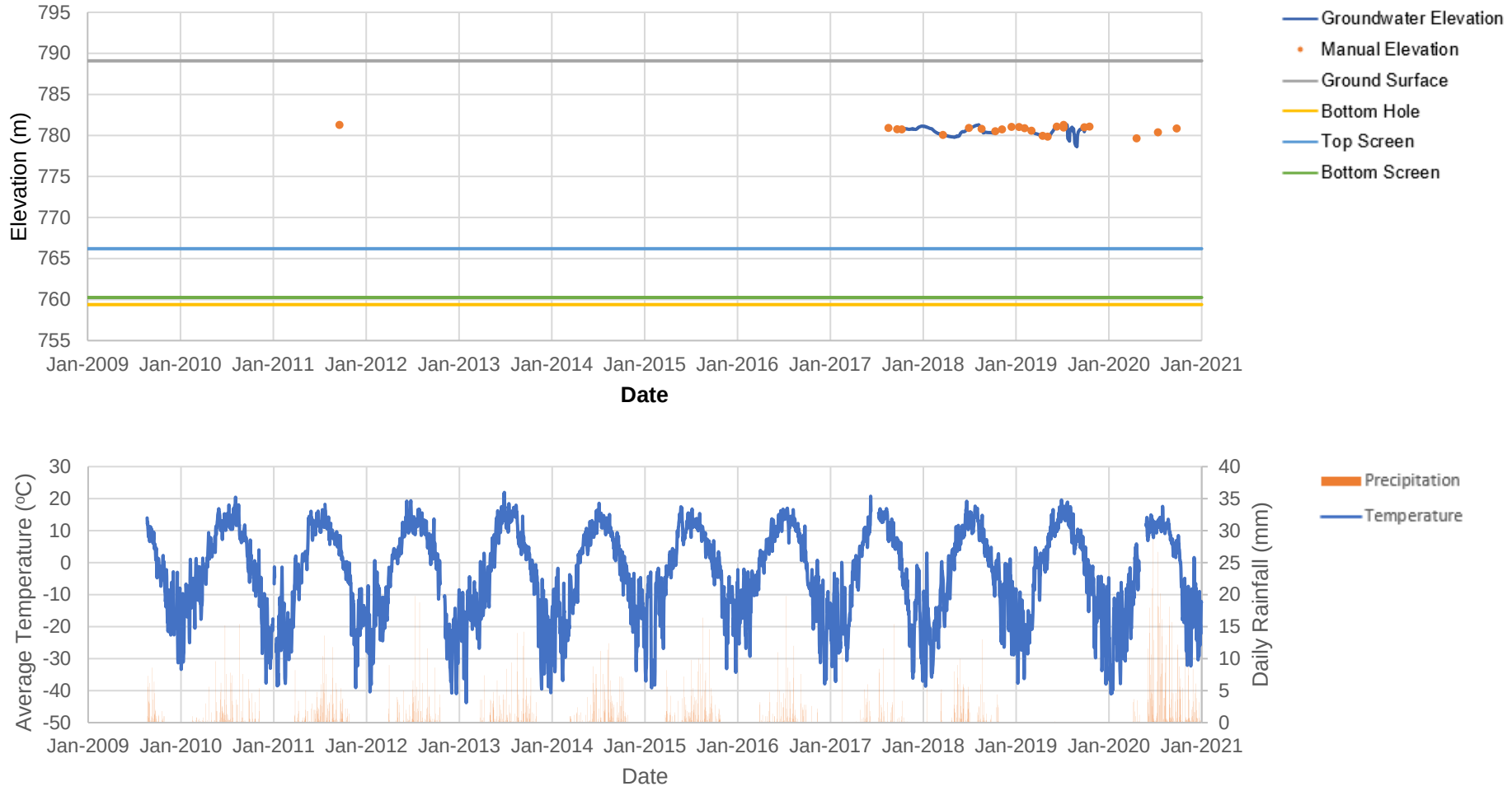
Notes:

1. THIS FIGURE SHOULD BE READ IN CONJUNCTION WITH BGC'S LETTER TITLED EAGLE GOLD MINE HYDROGRAPH UPDATE (2020 DATA), AND DATED MARCH 19, 2021.
2. PRECIPITATION DATA ARE NOT AVAILABLE FOR 2019 DUE TO A DATALOGGER MALFUNCTION.
3. BOTTOM OF HOLE DEPTH MEASURED BY VICTORIA GOLD FIELD STAFF ON APRIL 20, 2020 (EQUAL TO BOTTOM SCREEN).

PREPARED BY: AK	FIGURE TITLE: BH-BGC11-72 GROUNDWATER ELEVATION AND METEOROLOGICAL DATA		
CHECKED BY: TC	CLIENT: VICTORIA GOLD CORP.		
APPROVED BY: AK	SCALE: AS-SHOWN	PROJECT NO: 0792029	FIGURE NO: 1

0 5 10 mm in ANSI A sized paper

BGC ENGINEERING INC.



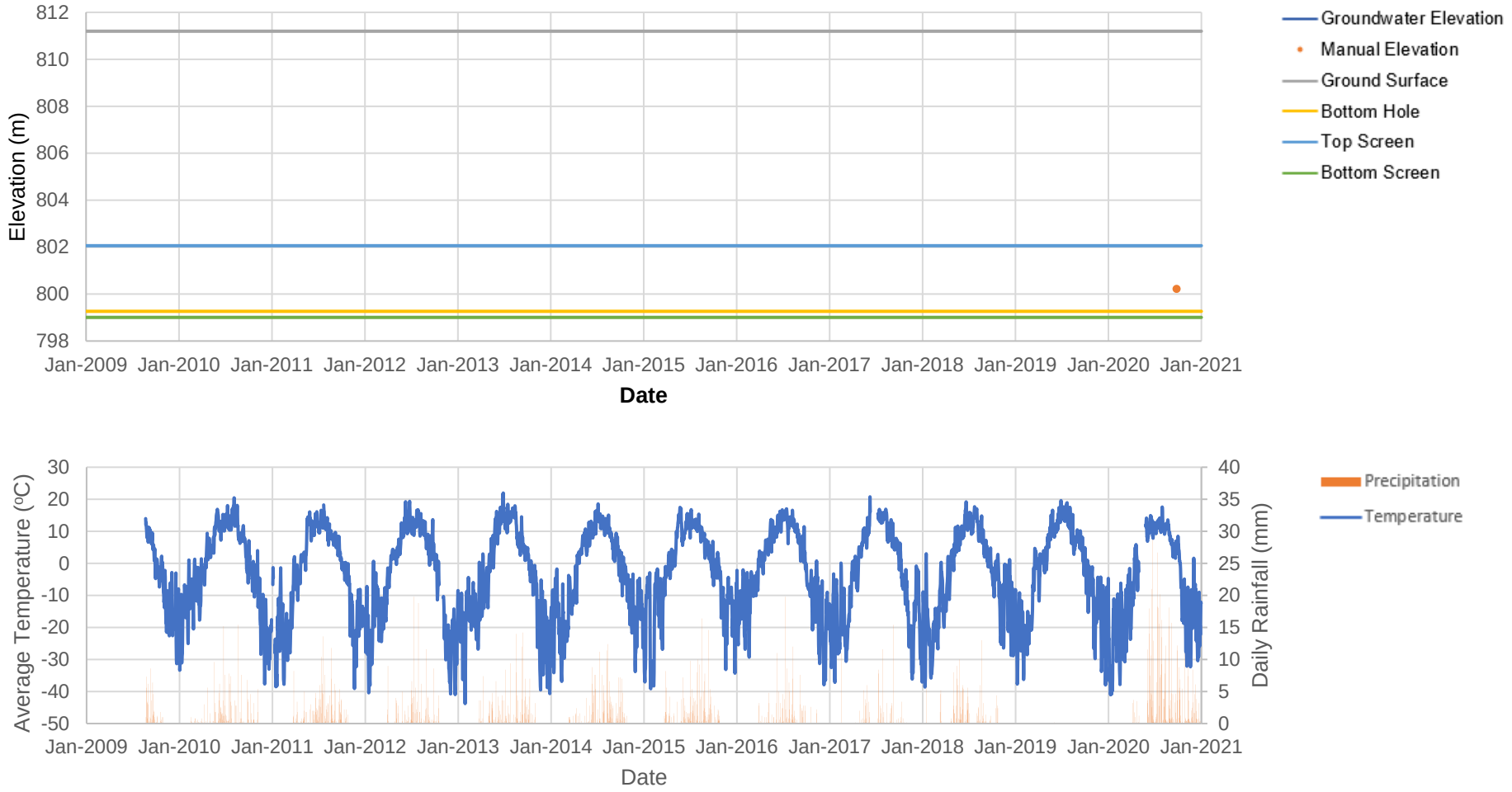
Notes:

1. THIS FIGURE SHOULD BE READ IN CONJUNCTION WITH BGC'S LETTER TITLED EAGLE GOLD MINE HYDROGRAPH UPDATE (2020 DATA), AND DATED MARCH 19, 2021.
2. PRECIPITATION DATA ARE NOT AVAILABLE FOR 2019 DUE TO A DATALOGGER MALFUNCTION.
3. BOTTOM OF HOLE DEPTH MEASURED BY VICTORIA GOLD FIELD STAFF ON APRIL 20, 2020
4. NO LOGGER DATA WERE COLLECTED AT BH-BGC11-74 IN 2020.

PREPARED BY:	FIGURE TITLE		
AK	BH-BGC11-74 GROUNDWATER ELEVATION AND METEOROLOGICAL DATA		
CHECKED BY:	CLIENT:		
TC	VICTORIA GOLD CORP.		
APPROVED BY:	SCALE:	PROJECT NO:	FIGURE NO:
AK	AS-SHOWN	0792029	2

0 5 10 mm in ANSI A sized paper

BGC ENGINEERING INC.



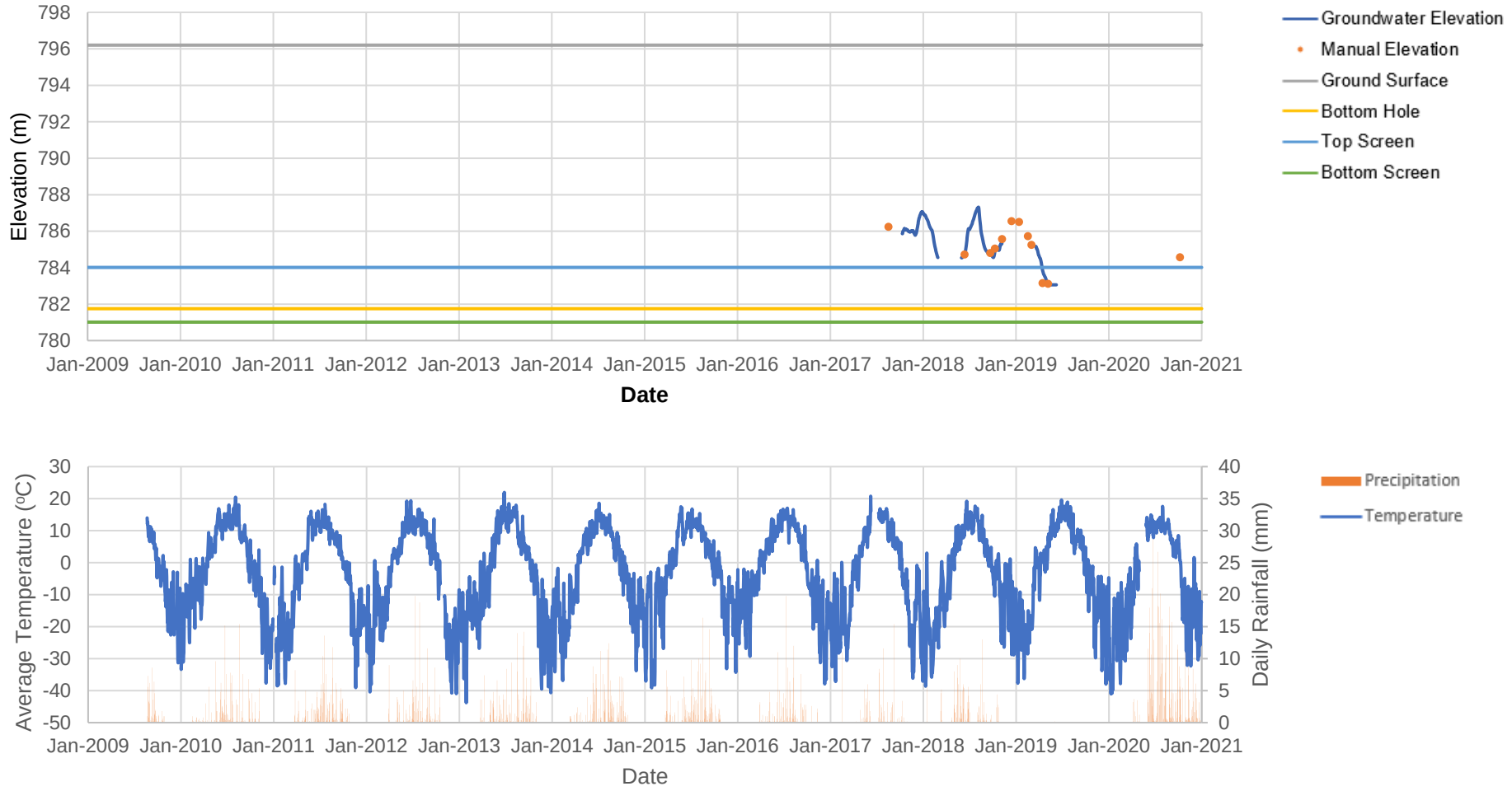
Notes:

1. THIS FIGURE SHOULD BE READ IN CONJUNCTION WITH BGC'S LETTER TITLED EAGLE GOLD MINE HYDROGRAPH UPDATE (2020 DATA), AND DATED MARCH 19, 2021.
2. PRECIPITATION DATA ARE NOT AVAILABLE FOR 2019 DUE TO A DATALOGGER MALFUNCTION.
3. BOTTOM OF HOLE DEPTH MEASURED BY VICTORIA GOLD FIELD STAFF ON APRIL 24, 2020
4. NO LOGGER DATA WERE COLLECTED AT MW6 IN 2020.
5. MW6 WAS ORIGINALLY NAMED MW18-LDSP1A; NAME WAS CHANGED SHORTLY AFTER CONSTRUCTION COMPLETED.

PREPARED BY:	FIGURE TITLE		
AK	MW6 GROUNDWATER ELEVATION AND METEOROLOGICAL DATA		
CHECKED BY:	CLIENT:		
TC	VICTORIA GOLD CORP.		
APPROVED BY:	SCALE:	PROJECT NO:	FIGURE NO:
AK	AS-SHOWN	0792029	3

0 5 10 mm in ANSI A sized paper

BGC ENGINEERING INC.



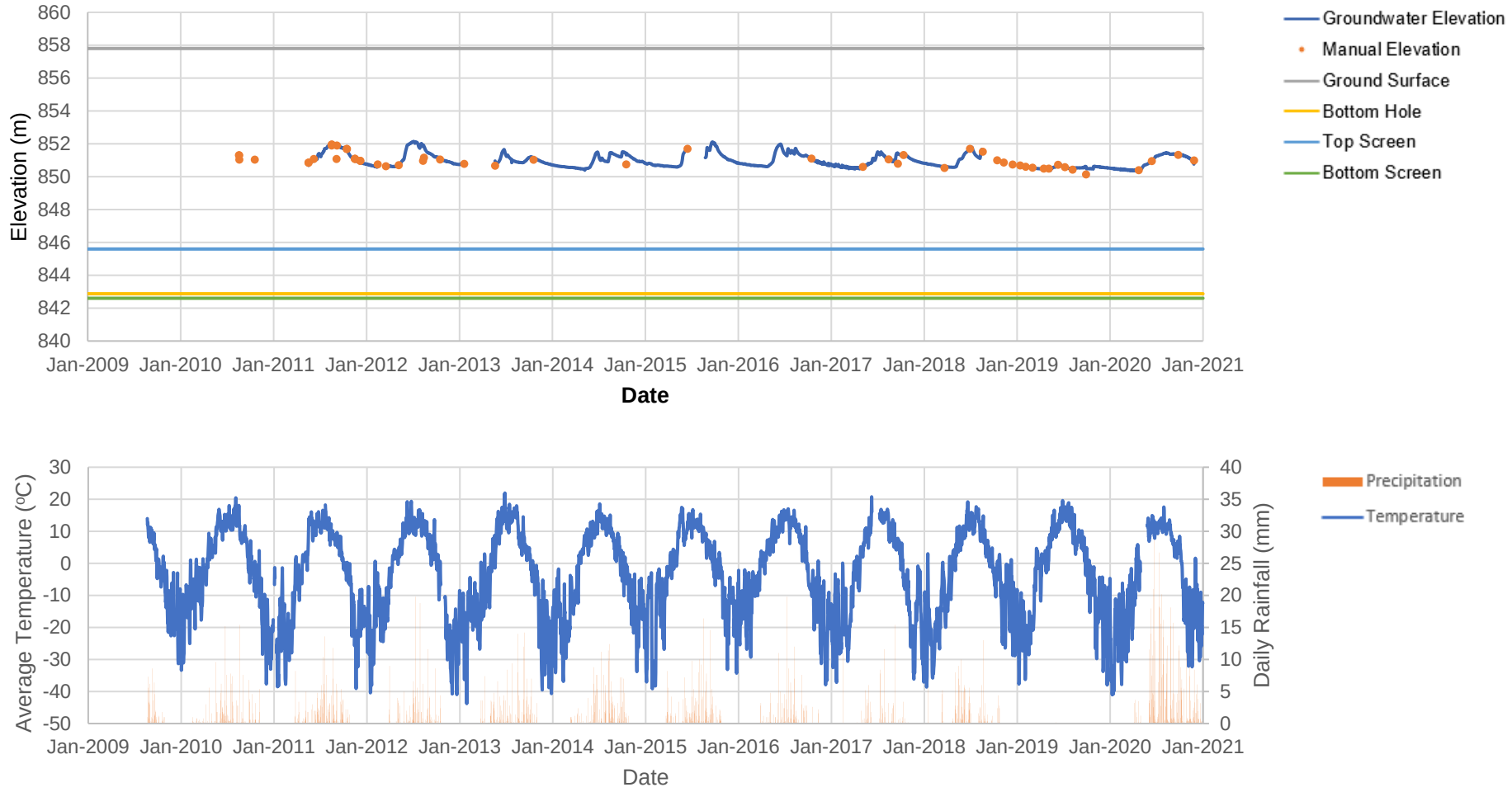
Notes:

1. THIS FIGURE SHOULD BE READ IN CONJUNCTION WITH BGC'S LETTER TITLED EAGLE GOLD MINE HYDROGRAPH UPDATE (2020 DATA), AND DATED MARCH 19, 2021.
2. PRECIPITATION DATA ARE NOT AVAILABLE FOR 2019 DUE TO A DATALOGGER MALFUNCTION.
3. BOTTOM OF HOLE DEPTH MEASURED BY VICTORIA GOLD FIELD STAFF ON OCTOBER 8, 2020
4. NO LOGGER DATA WERE COLLECTED AT MW10-OBS1 IN 2020.

PREPARED BY: AK	FIGURE TITLE: MW10-0BS1 GROUNDWATER ELEVATION AND METEOROLOGICAL DATA		
CHECKED BY: TC	CLIENT: VICTORIA GOLD CORP.		
APPROVED BY: AK	SCALE: AS-SHOWN	PROJECT NO: 0792029	FIGURE NO: 4

0 5 10 mm in ANSI A sized paper

BGC ENGINEERING INC.



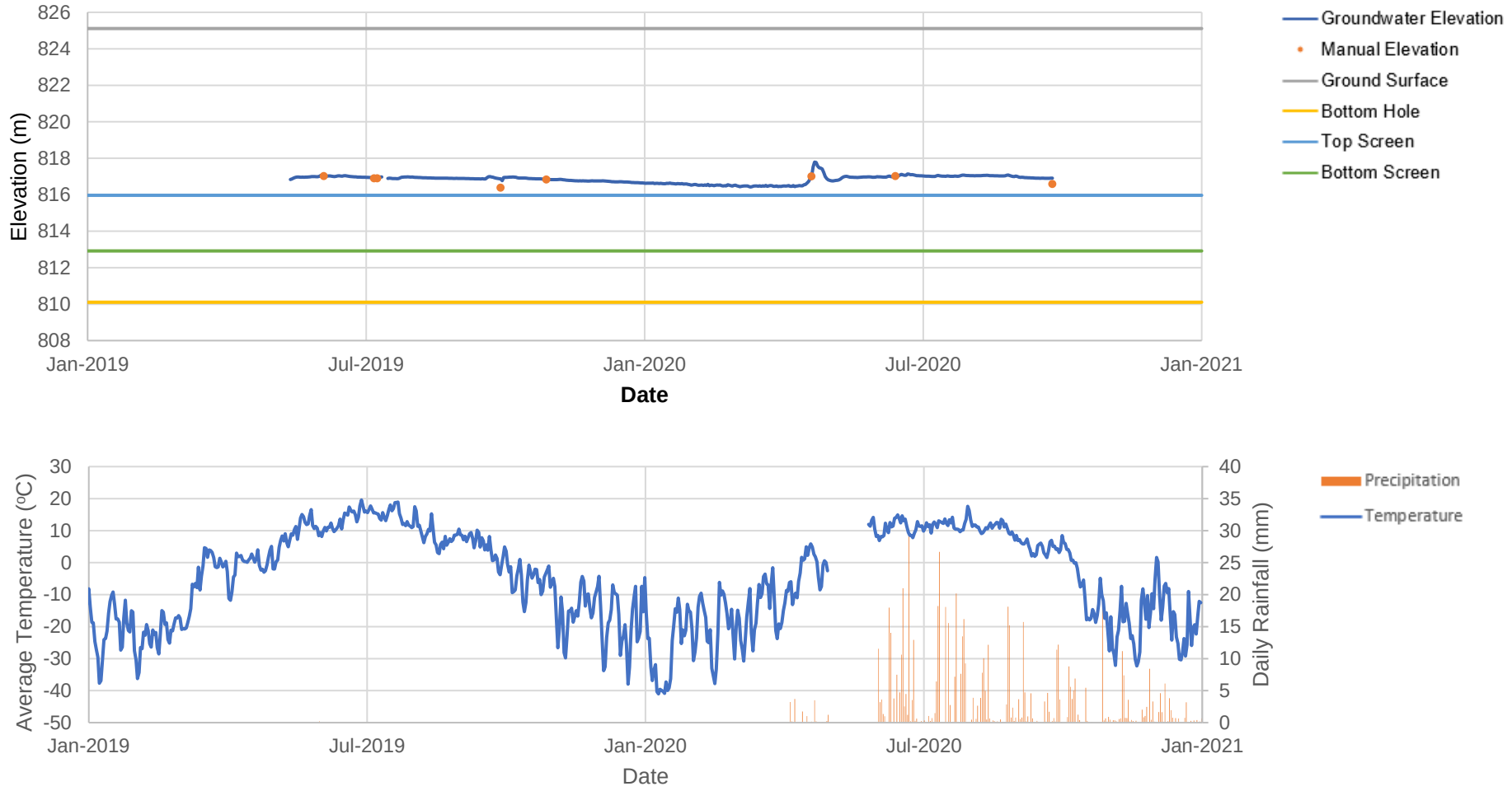
Notes:

1. THIS FIGURE SHOULD BE READ IN CONJUNCTION WITH BGC'S LETTER TITLED EAGLE GOLD MINE HYDROGRAPH UPDATE (2020 DATA), AND DATED MARCH 19, 2021.
2. PRECIPITATION DATA ARE NOT AVAILABLE FOR 2019 DUE TO A DATALOGGER MALFUNCTION.
3. BOTTOM OF HOLE DEPTH MEASURED BY VICTORIA GOLD FIELD STAFF ON APRIL 24, 2020

PREPARED BY: AK	FIGURE TITLE: MW10-PG1 GROUNDWATER ELEVATION AND METEOROLOGICAL DATA		
CHECKED BY: TC	CLIENT: VICTORIA GOLD CORP.		
APPROVED BY: AK	SCALE: AS-SHOWN	PROJECT NO: 0792029	FIGURE NO: 5

0 5 10 mm in ANSI A sized paper

BGC ENGINEERING INC.



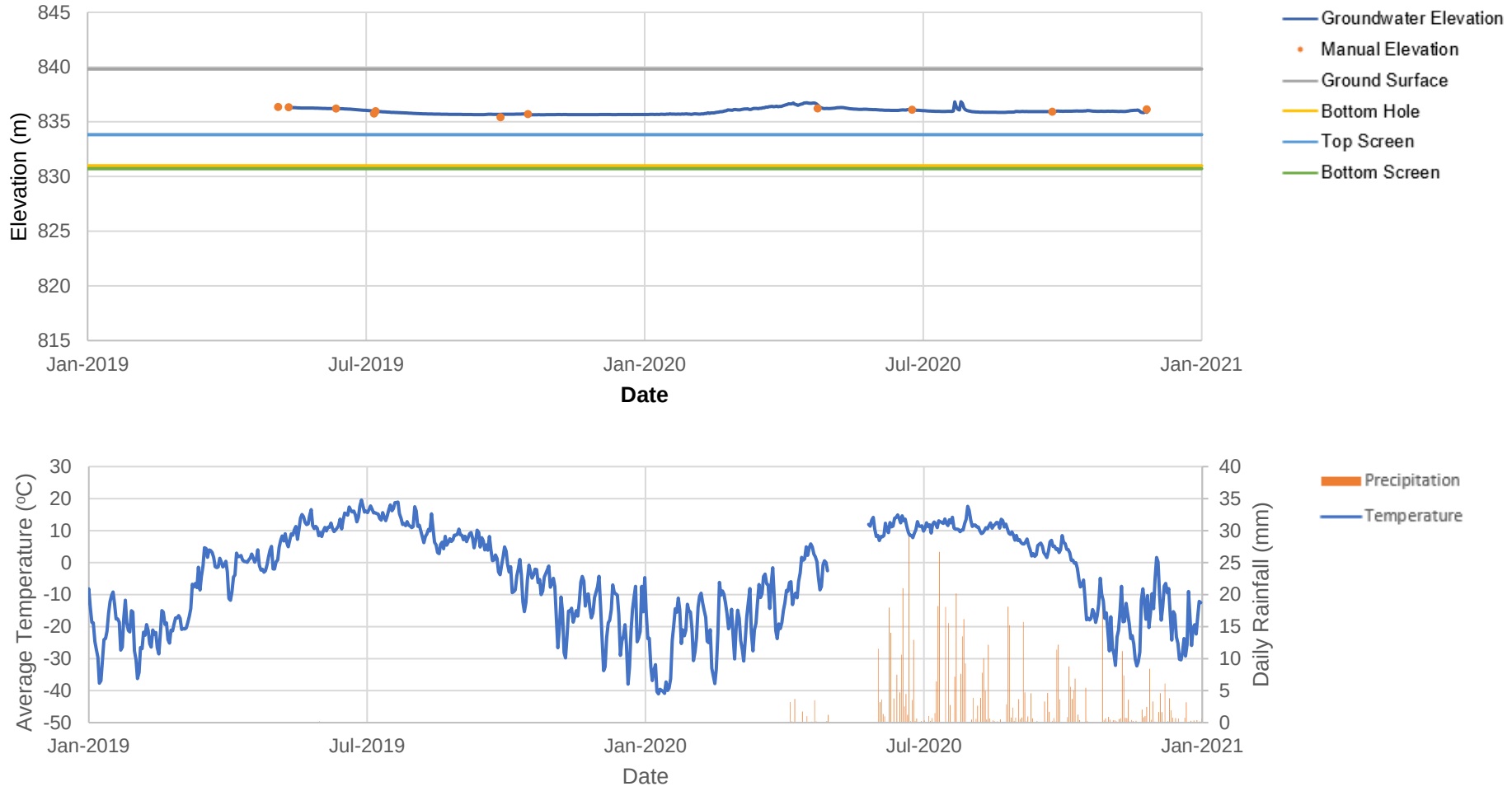
Notes:

1. THIS FIGURE SHOULD BE READ IN CONJUNCTION WITH BGC'S LETTER TITLED EAGLE GOLD MINE HYDROGRAPH UPDATE (2020 DATA), AND DATED MARCH 19, 2021.
2. PRECIPITATION DATA ARE NOT AVAILABLE FOR 2019 DUE TO A DATALOGGER MALFUNCTION.
3. BOTTOM OF HOLE DEPTH MEASURED BY VICTORIA GOLD FIELD STAFF ON APRIL 20, 2020.

PREPARED BY: AK	FIGURE TITLE: MW18-DG2R GROUNDWATER ELEVATION AND METEOROLOGICAL DATA		
CHECKED BY: TC	CLIENT: VICTORIA GOLD CORP.		
APPROVED BY: AK	SCALE: AS-SHOWN	PROJECT NO: 0792029	FIGURE NO: 6

0 5 10 mm in ANSI A sized paper

BGC ENGINEERING INC.



Notes:

1. THIS FIGURE SHOULD BE READ IN CONJUNCTION WITH BGC'S LETTER TITLED EAGLE GOLD MINE HYDROGRAPH UPDATE (2020 DATA), AND DATED MARCH 19, 2021.
2. PRECIPITATION DATA ARE NOT AVAILABLE FOR 2019 DUE TO A DATALOGGER MALFUNCTION.
3. BOTTOM OF HOLE DEPTH MEASURED BY VICTORIA GOLD FIELD STAFF ON APRIL 29, 2020
4. MW18-DGR6A IS A NESTED MONITORING LOCATION WITH MW18-DGR6B.

PREPARED BY: AK	FIGURE TITLE: MW18-DG6RA GROUNDWATER ELEVATION AND METEOROLOGICAL DATA		
CHECKED BY: TC	CLIENT: VICTORIA GOLD CORP.		
APPROVED BY: AK	SCALE: AS-SHOWN	PROJECT NO: 0792029	FIGURE NO: 7

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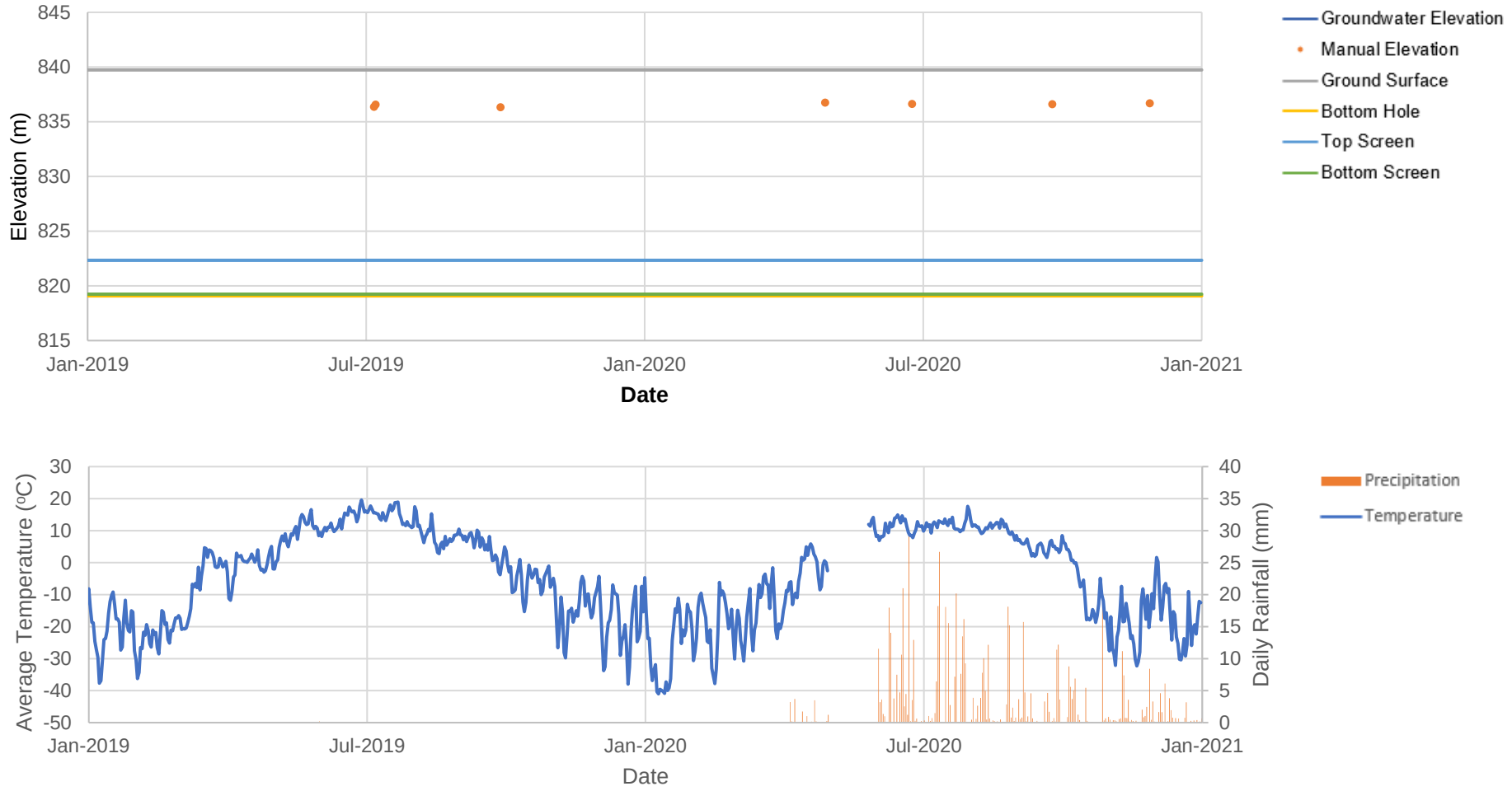
BGC ENGINEERING INC.



Notes:

1. THIS FIGURE SHOULD BE READ IN CONJUNCTION WITH BGC'S LETTER TITLED EAGLE GOLD MINE HYDROGRAPH UPDATE (2020 DATA), AND DATED MARCH 19, 2021.
2. PRECIPITATION DATA ARE NOT AVAILABLE FOR 2019 DUE TO A DATALOGGER MALFUNCTION.
3. BOTTOM OF HOLE DEPTH MEASURED BY VICTORIA GOLD FIELD STAFF ON JUNE 25, 2020.
4. MW18-DGR6B IS A NESTED MONITORING LOCATION WITH MW18-DGR6A.

PREPARED BY: AK	FIGURE TITLE: MW18-DG6RB GROUNDWATER ELEVATION AND METEOROLOGICAL DATA		
CHECKED BY: TC	CLIENT: VICTORIA GOLD CORP.		
APPROVED BY: AK	SCALE: AS-SHOWN	PROJECT NO: 0792029	FIGURE NO: 8

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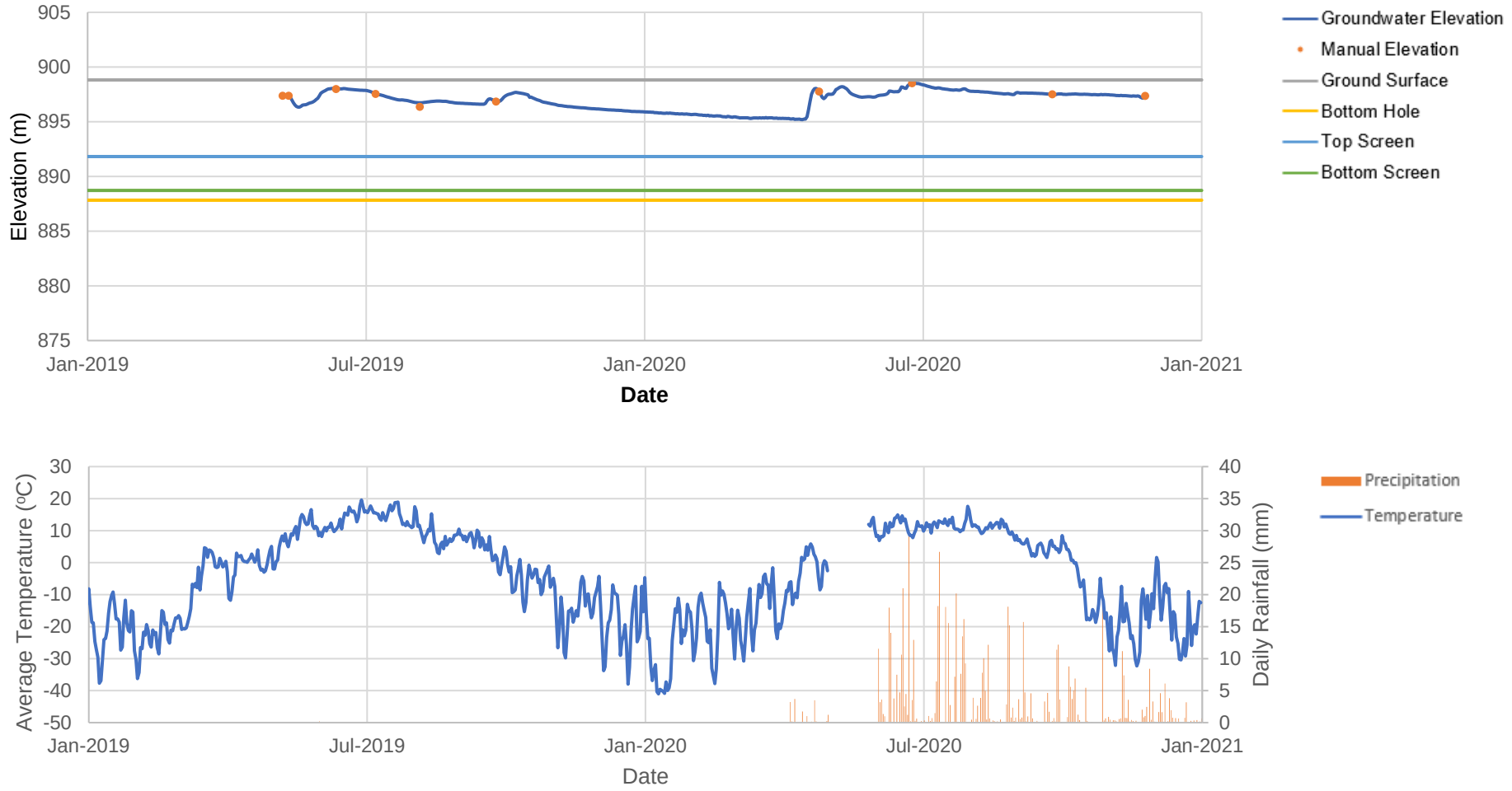
BGC ENGINEERING INC.



Notes:

1. THIS FIGURE SHOULD BE READ IN CONJUNCTION WITH BGC'S LETTER TITLED EAGLE GOLD MINE HYDROGRAPH UPDATE (2020 DATA), AND DATED MARCH 19, 2021.
2. PRECIPITATION DATA ARE NOT AVAILABLE FOR 2019 DUE TO A DATALOGGER MALFUNCTION.
3. BOTTOM OF HOLE DEPTH MEASURED BY VICTORIA GOLD FIELD STAFF ON April 25, 2020.
4. MW19-EPW1A IS A NESTED MONITORING LOCATION WITH MW19-EPW1B.

PREPARED BY:	FIGURE TITLE		
AK	MW19-EPW1A GROUNDWATER ELEVATION AND METEOROLOGICAL DATA		
CHECKED BY:	CLIENT:		
TC	VICTORIA GOLD CORP.		
APPROVED BY:	SCALE:	PROJECT NO:	FIGURE NO:
AK	AS-SHOWN	0792029	9

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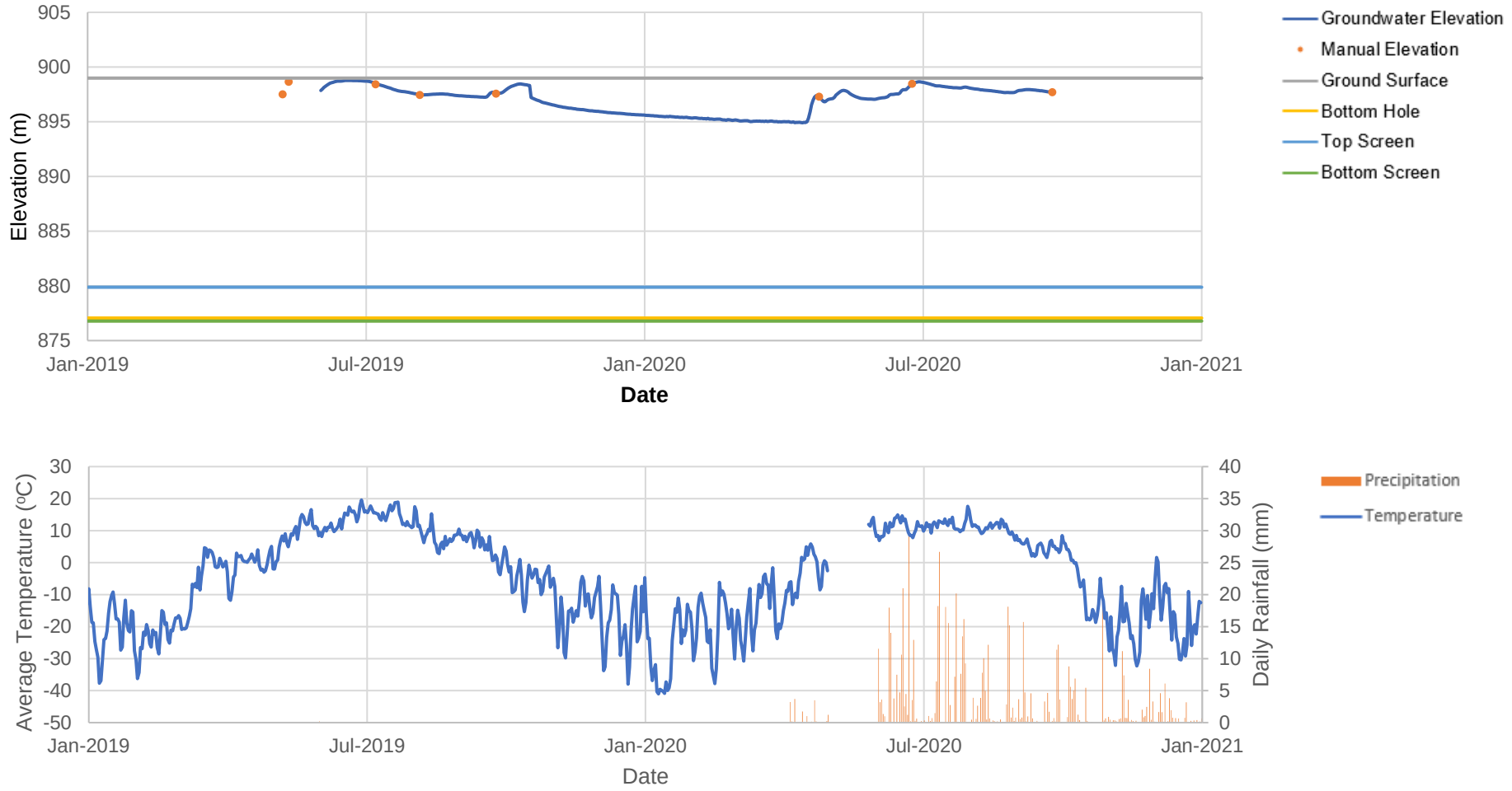
BGC ENGINEERING INC.



Notes:

1. THIS FIGURE SHOULD BE READ IN CONJUNCTION WITH BGC'S LETTER TITLED EAGLE GOLD MINE HYDROGRAPH UPDATE (2020 DATA), AND DATED MARCH 19, 2021.
2. PRECIPITATION DATA ARE NOT AVAILABLE FOR 2019 DUE TO A DATALOGGER MALFUNCTION.
3. BOTTOM OF HOLE DEPTH MEASURED BY VICTORIA GOLD FIELD STAFF ON April 25, 2020.
4. MW19-EPW1B IS A NESTED MONITORING LOCATION WITH MW19-EPW1A.

PREPARED BY:	FIGURE TITLE		
AK	MW19-EPW1B GROUNDWATER ELEVATION AND METEOROLOGICAL DATA		
CHECKED BY:	CLIENT:		
TC	VICTORIA GOLD CORP.		
APPROVED BY:	SCALE:	PROJECT NO:	FIGURE NO:
AK	AS-SHOWN	0792029	10

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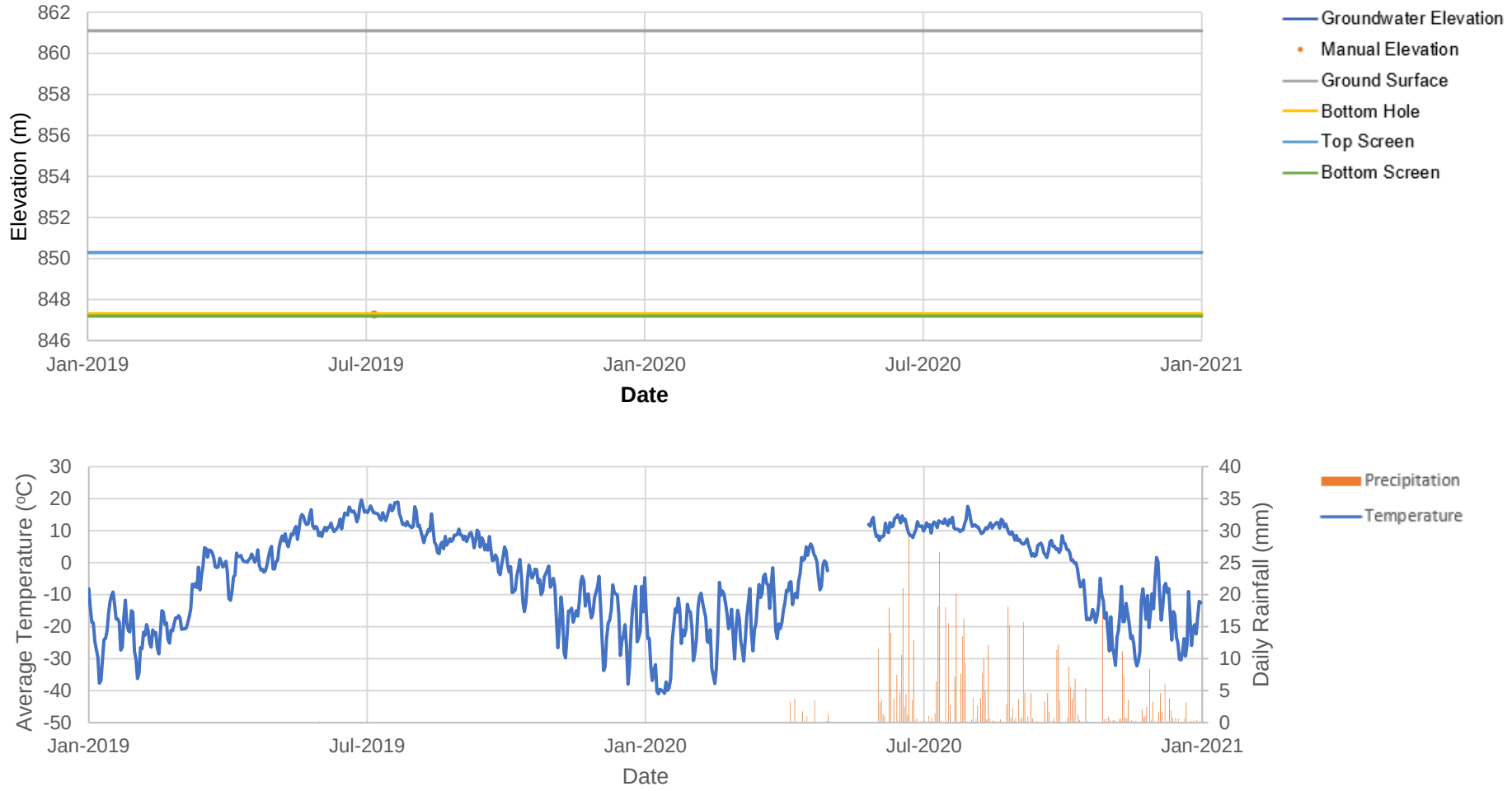

Notes:

1. THIS FIGURE SHOULD BE READ IN CONJUNCTION WITH BGC'S LETTER TITLED EAGLE GOLD MINE HYDROGRAPH UPDATE (2020 DATA), AND DATED MARCH 19, 2021.
2. PRECIPITATION DATA ARE NOT AVAILABLE FOR 2019 DUE TO A DATALOGGER MALFUNCTION.
3. BOTTOM OF HOLE DEPTH MEASURED BY VICTORIA GOLD FIELD STAFF ON MAY 4, 2020.
4. MW19-EVP1A IS A NESTED MONITORING LOCATION WITH MW19-EVP1B.
5. WATER LEVELS IN MW19-EVP1A WERE CHECKED 4 TIMES IN 2020; THE HOLE WAS DRY EACH TIME.

PREPARED BY:	FIGURE TITLE		
AK	MW19-EVP1A GROUNDWATER ELEVATION AND METEOROLOGICAL DATA		
CHECKED BY:	CLIENT:		
TC	VICTORIA GOLD CORP.		
APPROVED BY:	SCALE:	PROJECT NO:	FIGURE NO:
AK	AS-SHOWN	0792029	11

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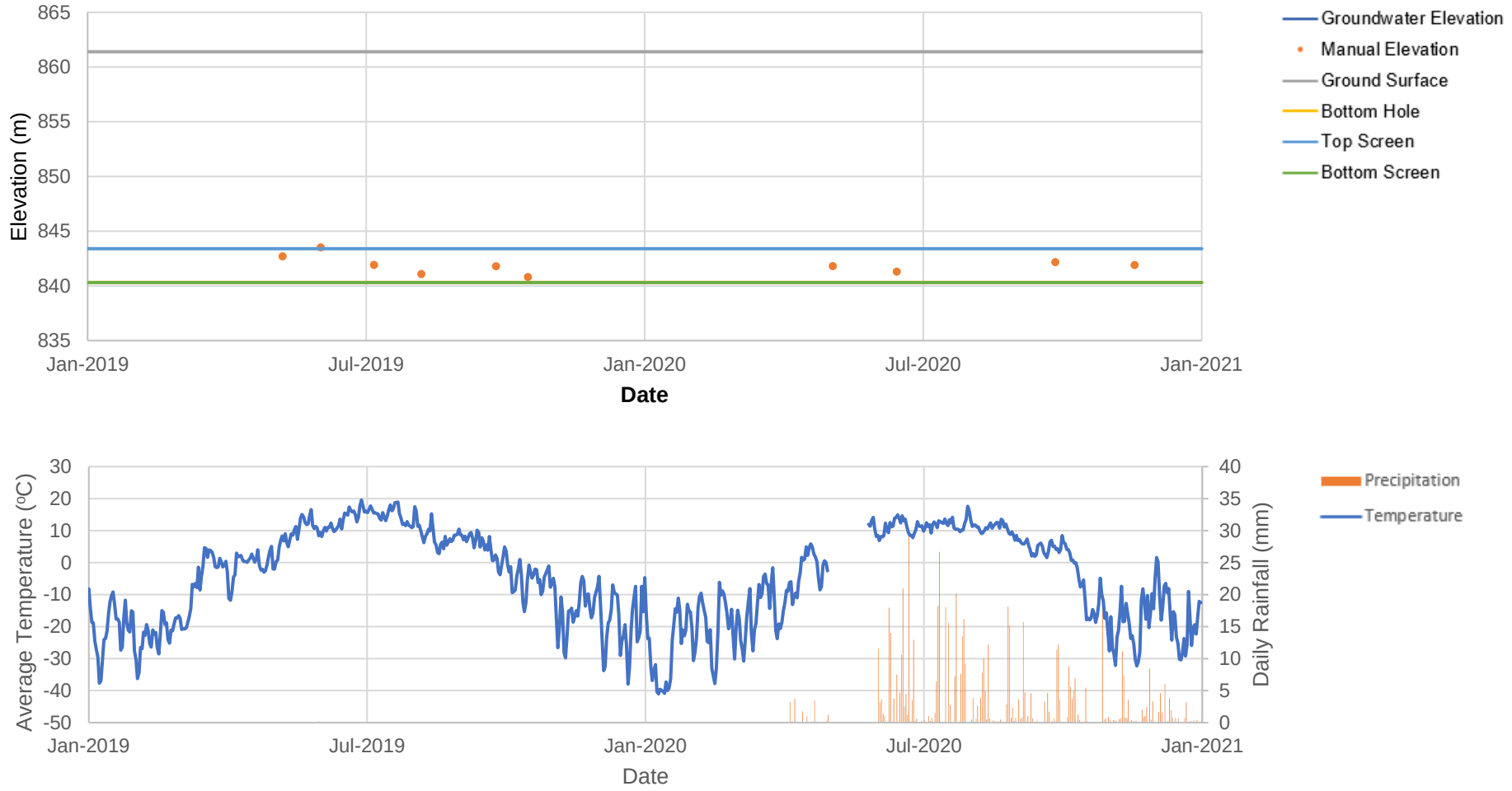

Notes:

1. THIS FIGURE SHOULD BE READ IN CONJUNCTION WITH BGC'S LETTER TITLED EAGLE GOLD MINE HYDROGRAPH UPDATE (2020 DATA), AND DATED MARCH 19, 2021.
2. PRECIPITATION DATA ARE NOT AVAILABLE FOR 2019 DUE TO A DATALOGGER MALFUNCTION.
3. BOTTOM OF HOLE DEPTH MEASURED BY VICTORIA GOLD FIELD STAFF ON MAY 4, 2020 (EQUAL TO BOTTOM SCREEN)..
4. MW19-EPW1B IS A NESTED MONITORING LOCATION WITH MW19-EPW1A.

PREPARED BY: AK	FIGURE TITLE: MW19-EVP1B GROUNDWATER ELEVATION AND METEOROLOGICAL DATA		
CHECKED BY: TC	CLIENT: VICTORIA GOLD CORP.		
APPROVED BY: AK	SCALE: AS-SHOWN	PROJECT NO: 0792029	FIGURE NO: 12

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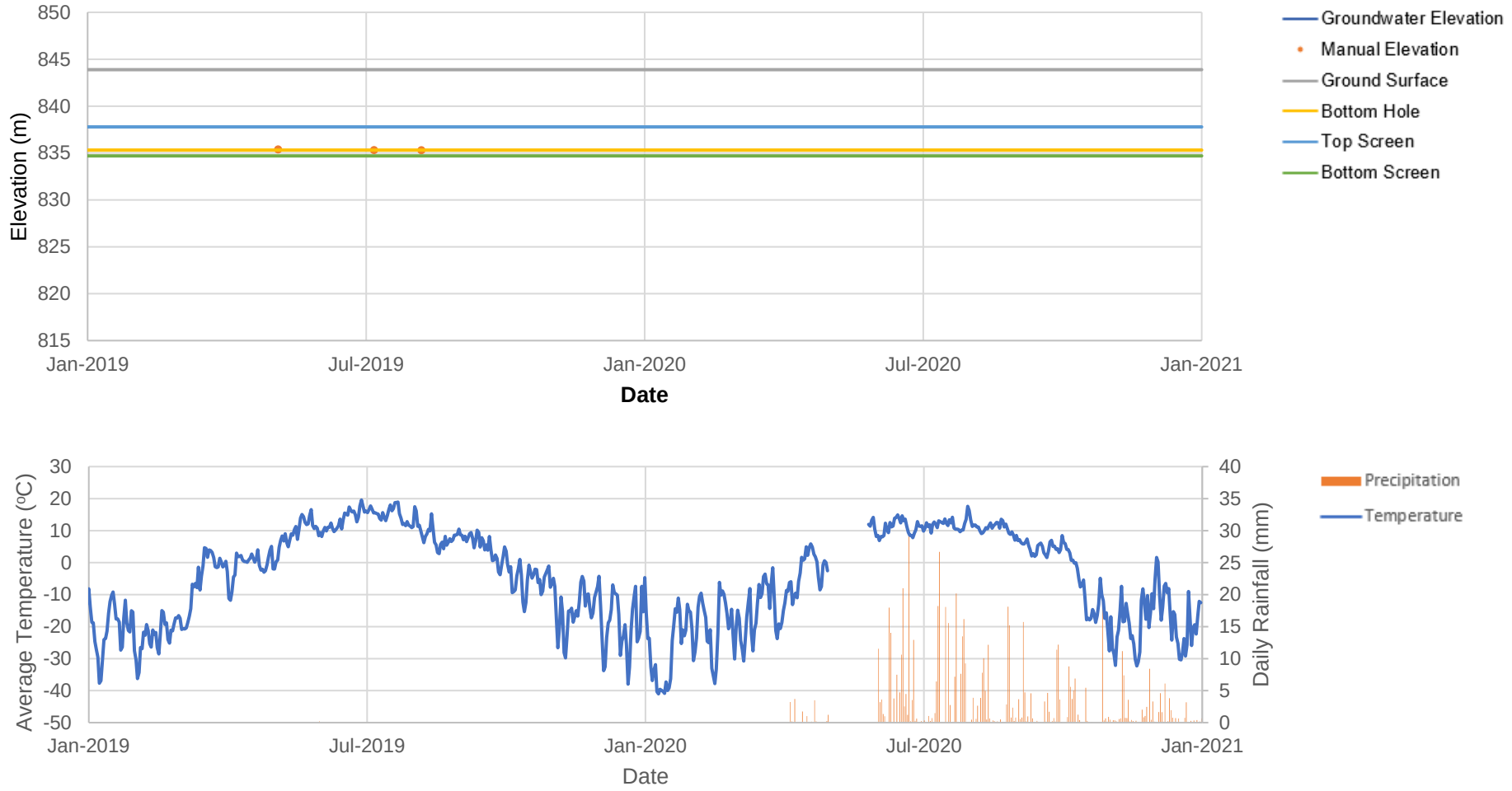
BGC ENGINEERING INC.



Notes:

1. THIS FIGURE SHOULD BE READ IN CONJUNCTION WITH BGC'S LETTER TITLED EAGLE GOLD MINE HYDROGRAPH UPDATE (2020 DATA), AND DATED MARCH 19, 2021.
2. PRECIPITATION DATA ARE NOT AVAILABLE FOR 2019 DUE TO A DATALOGGER MALFUNCTION.
3. BOTTOM OF HOLE DEPTH MEASURED BY VICTORIA GOLD FIELD STAFF ON APRIL 29, 2020.
4. MW19-EVP2A IS A NESTED MONITORING LOCATION WITH MW19-EVP2B.
5. WATER LEVELS IN MW19-EVP2A WERE CHECKED 4 TIMES IN 2020; THE HOLE WAS DRY EACH TIME.

PREPARED BY:	FIGURE TITLE		
AK	MW19-EVP2A GROUNDWATER ELEVATION AND METEOROLOGICAL DATA		
CHECKED BY:	CLIENT:		
TC	VICTORIA GOLD CORP.		
APPROVED BY:	SCALE:	PROJECT NO:	FIGURE NO:
AK	AS-SHOWN	0792029	13

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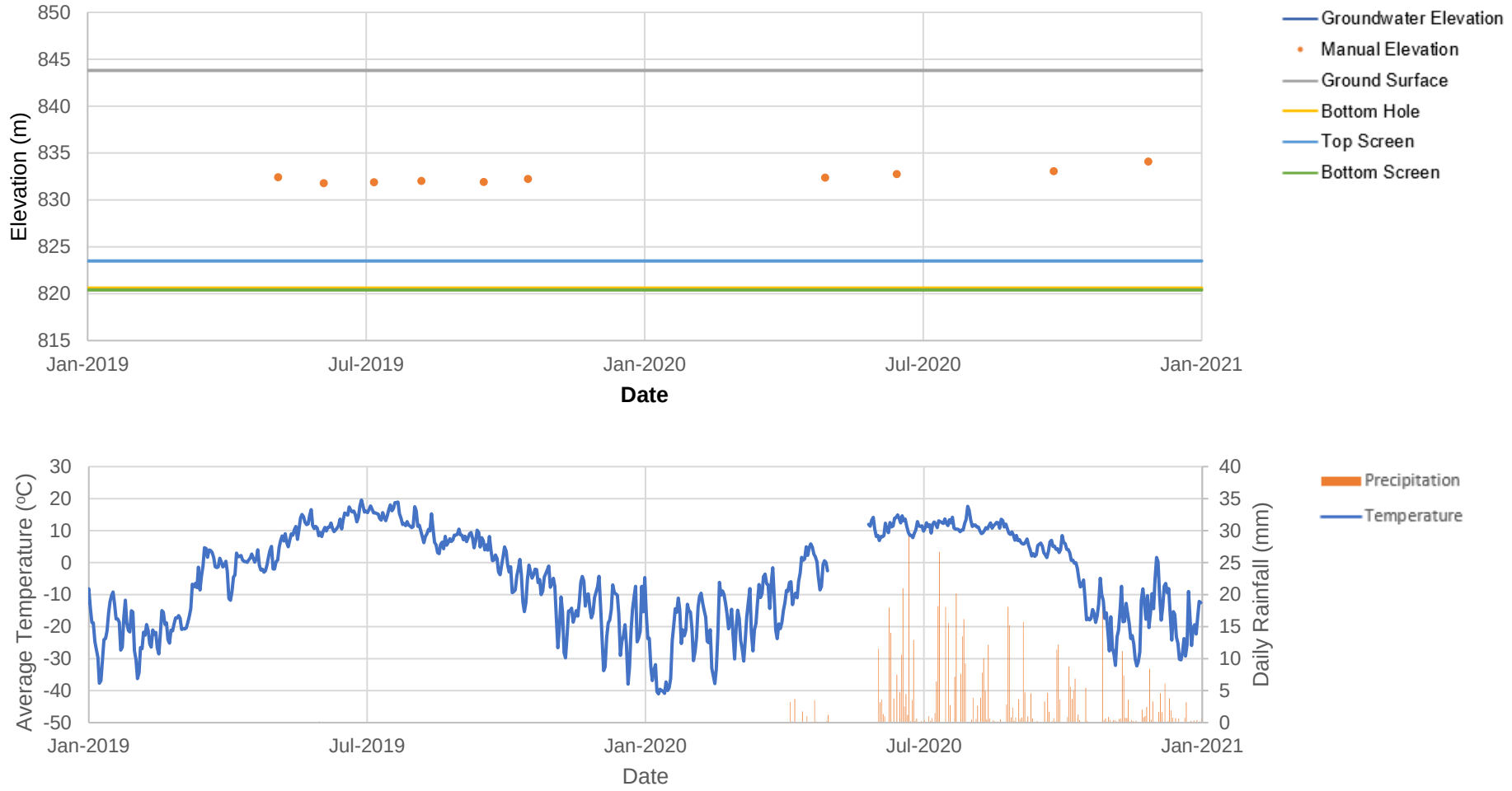
BGC ENGINEERING INC.



Notes:

1. THIS FIGURE SHOULD BE READ IN CONJUNCTION WITH BGC'S LETTER TITLED EAGLE GOLD MINE HYDROGRAPH UPDATE (2020 DATA), AND DATED MARCH 19, 2021.
2. PRECIPITATION DATA ARE NOT AVAILABLE FOR 2019 DUE TO A DATALOGGER MALFUNCTION.
3. BOTTOM OF HOLE DEPTH MEASURED BY VICTORIA GOLD FIELD STAFF ON APRIL 29, 2020.
4. MW19-EVP2B IS A NESTED MONITORING LOCATION WITH MW19-EVP2A.

PREPARED BY:	FIGURE TITLE		
AK	MW19-EVP2B GROUNDWATER ELEVATION AND METEOROLOGICAL DATA		
CHECKED BY:	CLIENT:		
TC	VICTORIA GOLD CORP.		
APPROVED BY:	SCALE:	PROJECT NO:	FIGURE NO:
AK	AS-SHOWN	0792029	14

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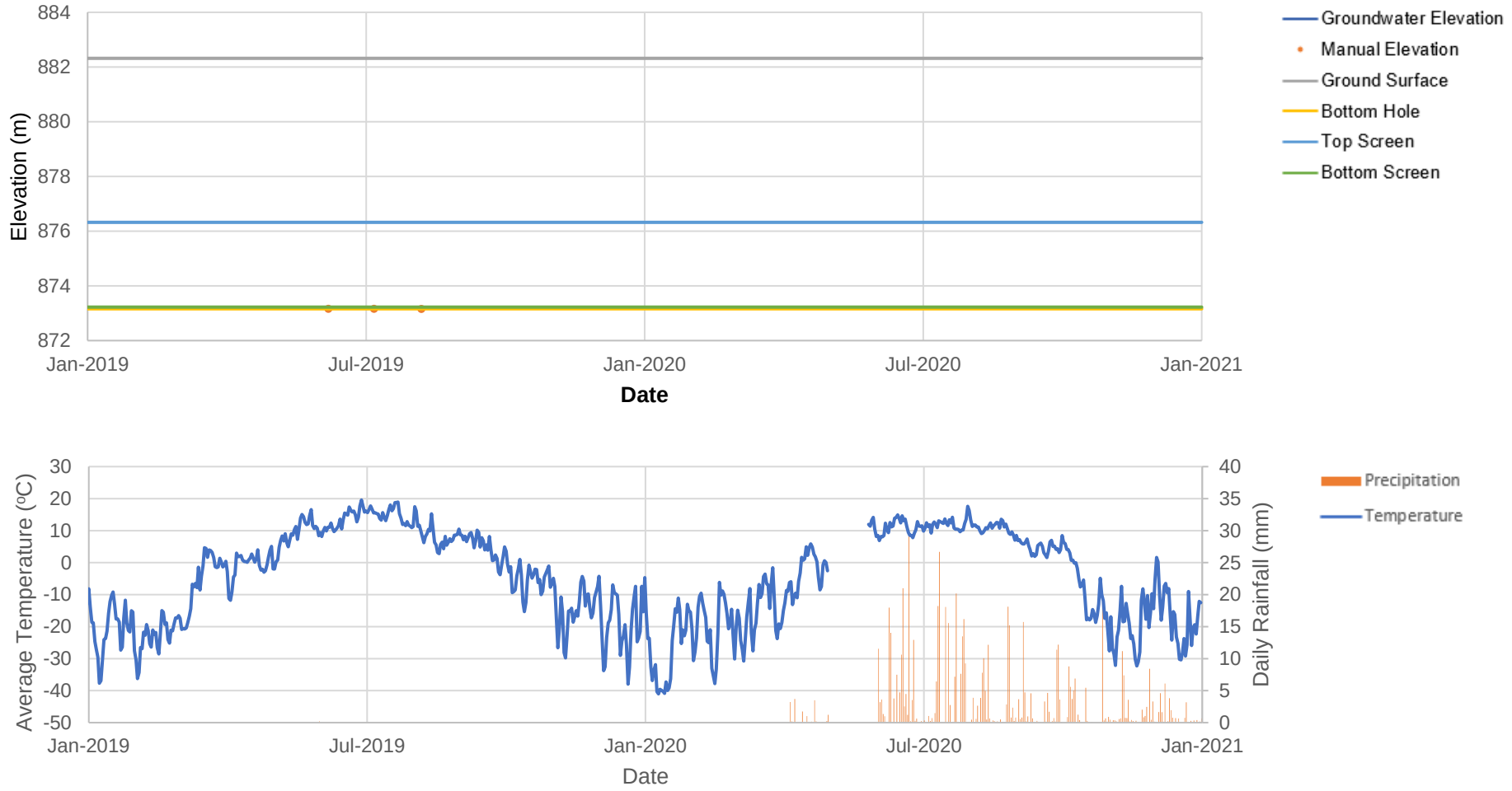
BGC ENGINEERING INC.



Notes:

1. THIS FIGURE SHOULD BE READ IN CONJUNCTION WITH BGC'S LETTER TITLED EAGLE GOLD MINE HYDROGRAPH UPDATE (2020 DATA), AND DATED MARCH 19, 2021.
2. PRECIPITATION DATA ARE NOT AVAILABLE FOR 2019 DUE TO A DATALOGGER MALFUNCTION.
3. BOTTOM OF HOLE DEPTH MEASURED BY VICTORIA GOLD FIELD STAFF ON APRIL 29, 2020.
4. MW19-HLF1A IS A NESTED MONITORING LOCATION WITH MW19-HLF1B.
5. WATER LEVELS IN MW19-EVP2A WERE CHECKED 4 TIMES IN 2020; THE HOLE WAS DRY EACH TIME.

PREPARED BY:	FIGURE TITLE		
AK	MW19-HLF1A GROUNDWATER ELEVATION AND METEOROLOGICAL DATA		
CHECKED BY:	CLIENT:		
TC	VICTORIA GOLD CORP.		
APPROVED BY:	SCALE:	PROJECT NO:	FIGURE NO:
AK	AS-SHOWN	0792029	15

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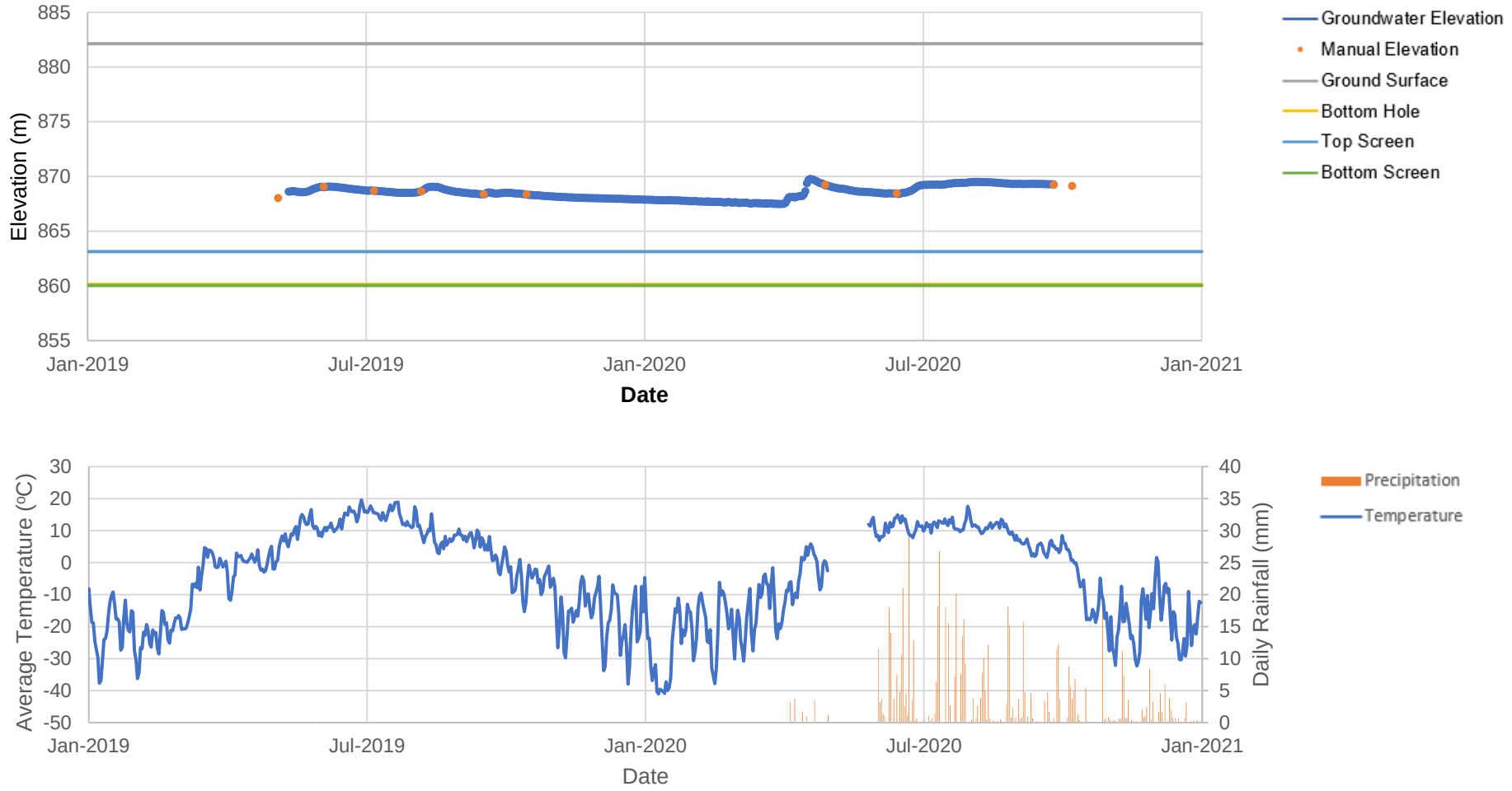
BGC ENGINEERING INC.



Notes:

1. THIS FIGURE SHOULD BE READ IN CONJUNCTION WITH BGC'S LETTER TITLED EAGLE GOLD MINE HYDROGRAPH UPDATE (2020 DATA), AND DATED MARCH 19, 2021.
2. PRECIPITATION DATA ARE NOT AVAILABLE FOR 2019 DUE TO A DATALOGGER MALFUNCTION.
3. BOTTOM OF HOLE DEPTH MEASURED BY VICTORIA GOLD FIELD STAFF ON APRIL 29, 2020 (EQUAL TO BOTTOM SCREEN).
4. MW19-HLF1B IS A NESTED MONITORING LOCATION WITH MW19-HLF1A.

PREPARED BY:	FIGURE TITLE		
AK	MW19-HLF1B GROUNDWATER ELEVATION AND METEOROLOGICAL DATA		
CHECKED BY:	CLIENT:		
TC	VICTORIA GOLD CORP.		
APPROVED BY:	SCALE:	PROJECT NO:	FIGURE NO:
AK	AS-SHOWN	0792029	16

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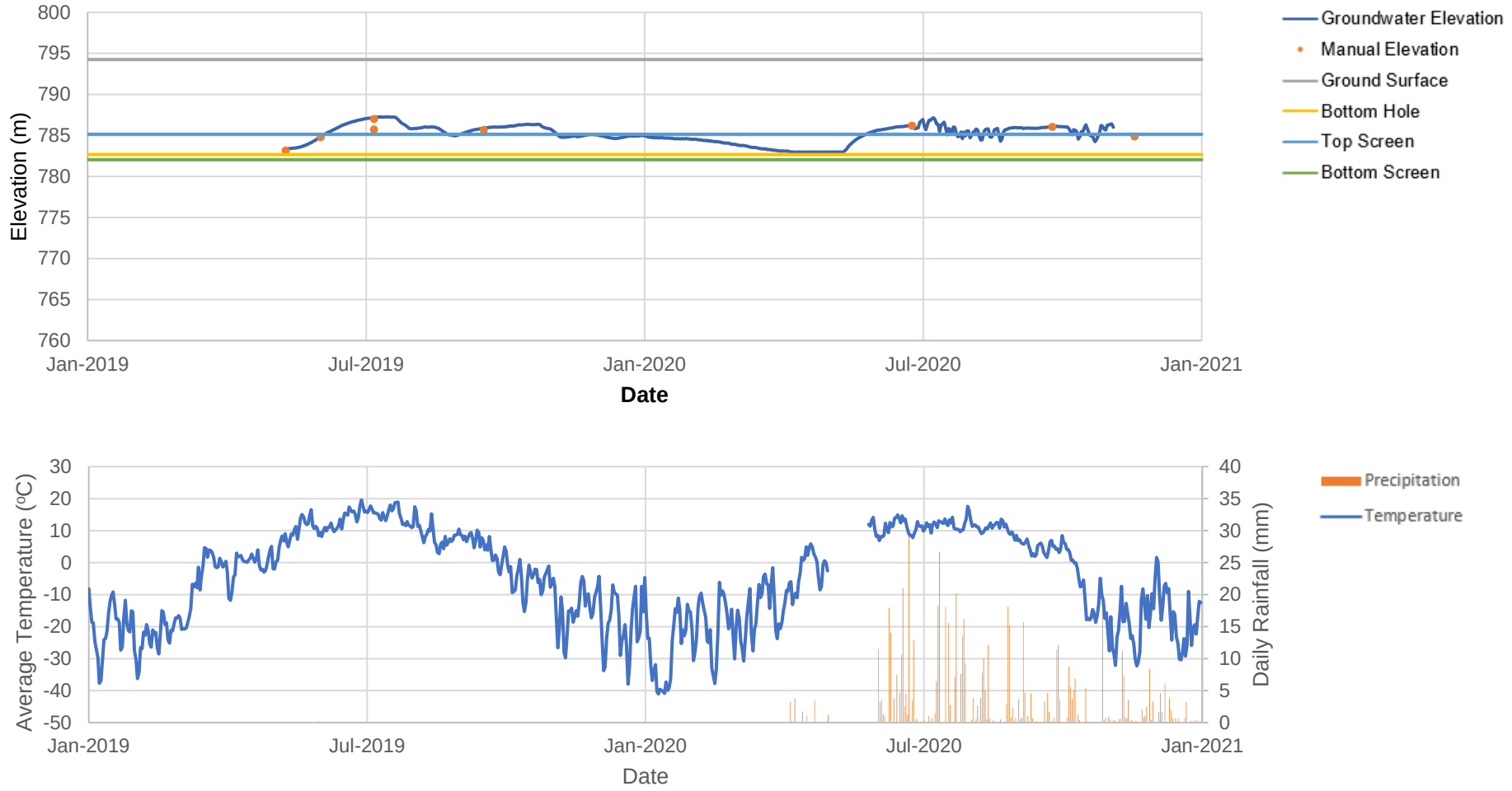
BGC ENGINEERING INC.



Notes:

1. THIS FIGURE SHOULD BE READ IN CONJUNCTION WITH BGC'S LETTER TITLED EAGLE GOLD MINE HYDROGRAPH UPDATE (2020 DATA), AND DATED MARCH 19, 2021.
2. PRECIPITATION DATA ARE NOT AVAILABLE FOR 2019 DUE TO A DATALOGGER MALFUNCTION.
3. BOTTOM OF HOLE DEPTH MEASURED BY VICTORIA GOLD FIELD STAFF ON APRIL 20, 2020.
4. MW19-LDSP2A IS A NESTED MONITORING LOCATION WITH MW19-LDSP2B.

PREPARED BY: AK	FIGURE TITLE: MW19-LDSP-2A GROUNDWATER ELEVATION AND METEOROLOGICAL DATA		
CHECKED BY: TC	CLIENT: VICTORIA GOLD CORP.		
APPROVED BY: AK	SCALE: AS-SHOWN	PROJECT NO: 0792029	FIGURE NO: 17

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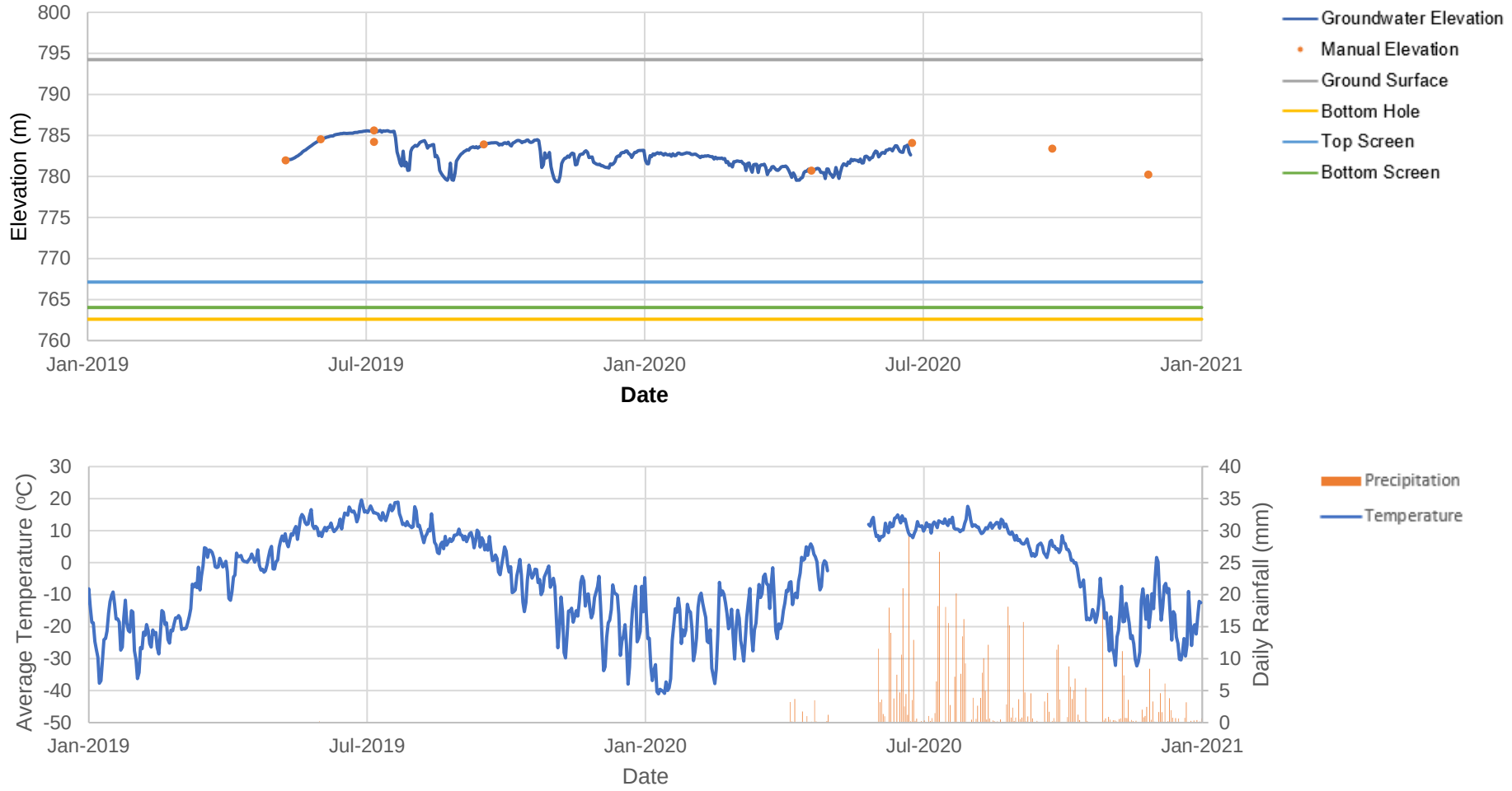
BGC ENGINEERING INC.



Notes:

1. THIS FIGURE SHOULD BE READ IN CONJUNCTION WITH BGC'S LETTER TITLED EAGLE GOLD MINE HYDROGRAPH UPDATE (2020 DATA), AND DATED MARCH 19, 2021.
2. PRECIPITATION DATA ARE NOT AVAILABLE FOR 2019 DUE TO A DATALOGGER MALFUNCTION.
3. BOTTOM OF HOLE DEPTH MEASURED BY VICTORIA GOLD FIELD STAFF ON APRIL 20, 2020.
4. MW19-LDSP2B IS A NESTED MONITORING LOCATION WITH MW19-LDSP2A.

PREPARED BY:	FIGURE TITLE		
AK	MW19-LDSP-2B GROUNDWATER ELEVATION AND METEOROLOGICAL DATA		
CHECKED BY:	CLIENT:		
TC	VICTORIA GOLD CORP.		
APPROVED BY:	SCALE:	PROJECT NO:	FIGURE NO:
AK	AS-SHOWN	0792029	18

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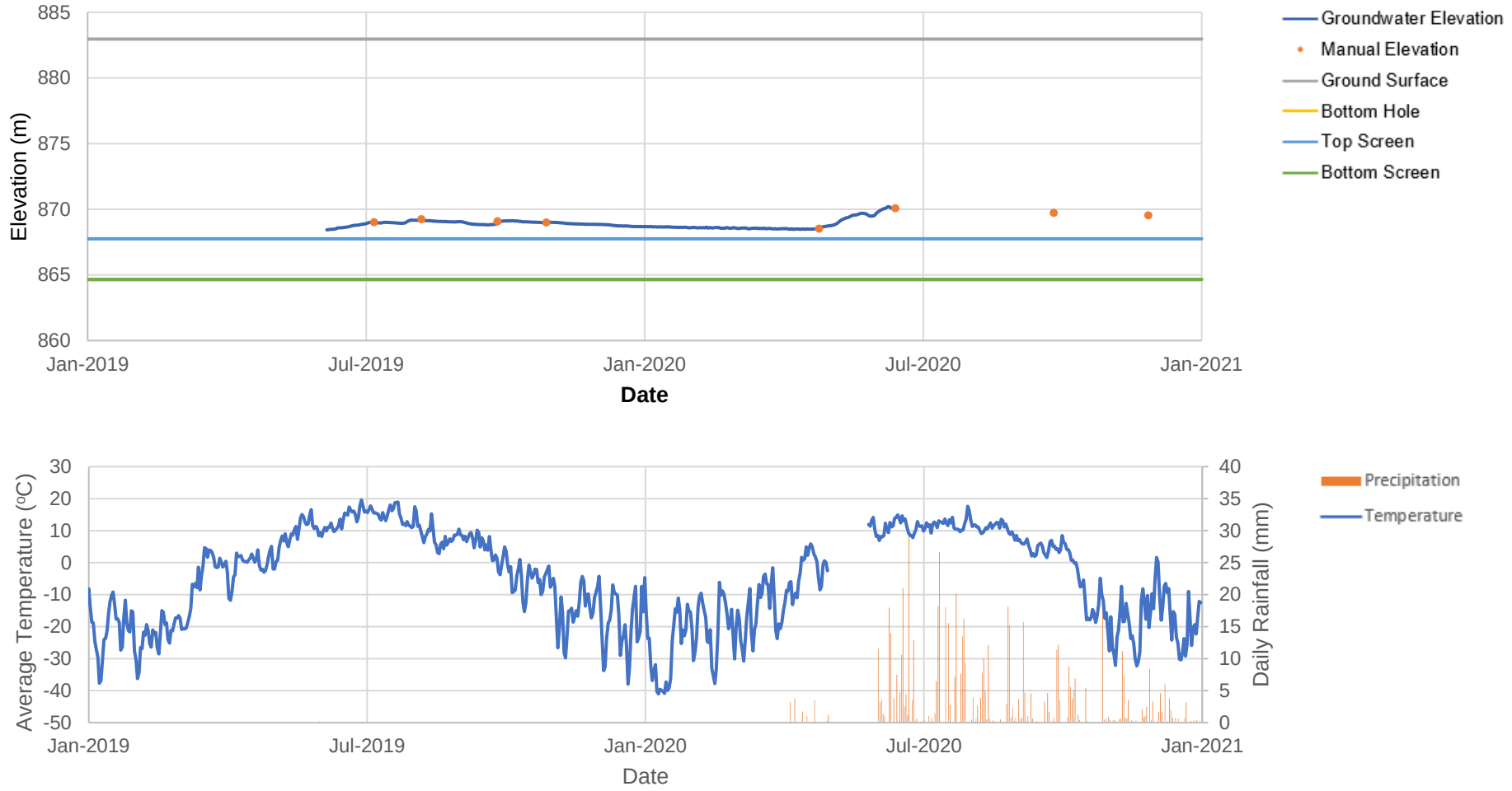
BGC ENGINEERING INC.



Notes:

1. THIS FIGURE SHOULD BE READ IN CONJUNCTION WITH BGC'S LETTER TITLED EAGLE GOLD MINE HYDROGRAPH UPDATE (2020 DATA), AND DATED MARCH 19, 2021.
2. PRECIPITATION DATA ARE NOT AVAILABLE FOR 2019 DUE TO A DATALOGGER MALFUNCTION.
3. BOTTOM OF HOLE DEPTH MEASURED BY VICTORIA GOLD FIELD STAFF ON APRIL 25, 2020 (EQUAL TO BOTTOM SCREEN).

PREPARED BY: AK	FIGURE TITLE: MW19-PWG1A GROUNDWATER ELEVATION AND METEOROLOGICAL DATA		
CHECKED BY: TC	CLIENT: VICTORIA GOLD CORP.		
APPROVED BY: AK	SCALE: AS-SHOWN	PROJECT NO: 0792029	FIGURE NO: 19

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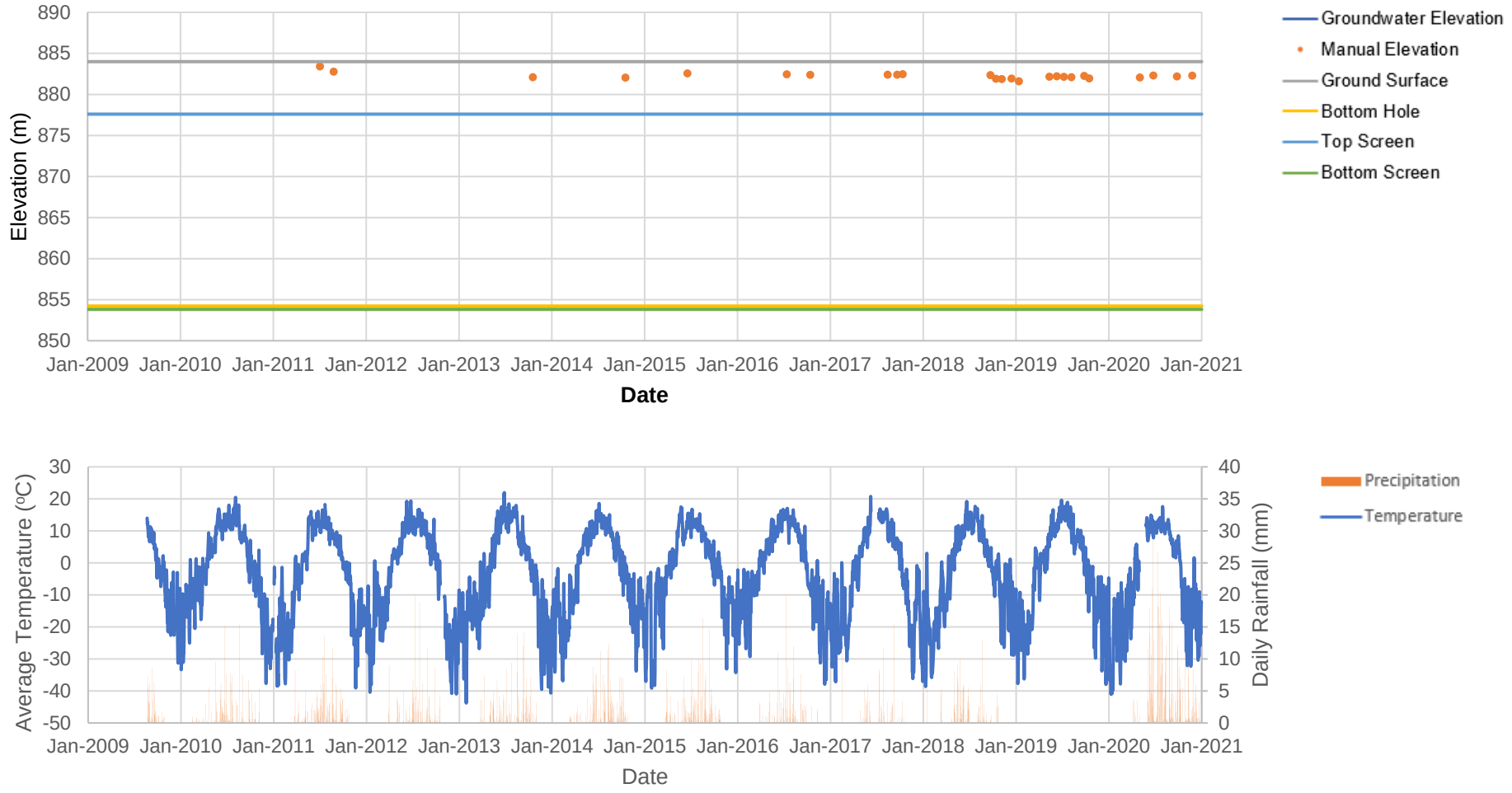

Notes:

1. THIS FIGURE SHOULD BE READ IN CONJUNCTION WITH BGC'S LETTER TITLED EAGLE GOLD MINE HYDROGRAPH UPDATE (2020 DATA), AND DATED MARCH 19, 2021.
2. PRECIPITATION DATA ARE NOT AVAILABLE FOR 2019 DUE TO A DATALOGGER MALFUNCTION.
3. BOTTOM OF HOLE DEPTH MEASURED BY VICTORIA GOLD FIELD STAFF ON SEPTEMBER 26, 2020.

PREPARED BY: AK	FIGURE TITLE: MW95-151 GROUNDWATER ELEVATION AND METEOROLOGICAL DATA		
CHECKED BY: TC	CLIENT: VICTORIA GOLD CORP.		
APPROVED BY: AK	SCALE: AS-SHOWN	PROJECT NO: 0792029	FIGURE NO: 20

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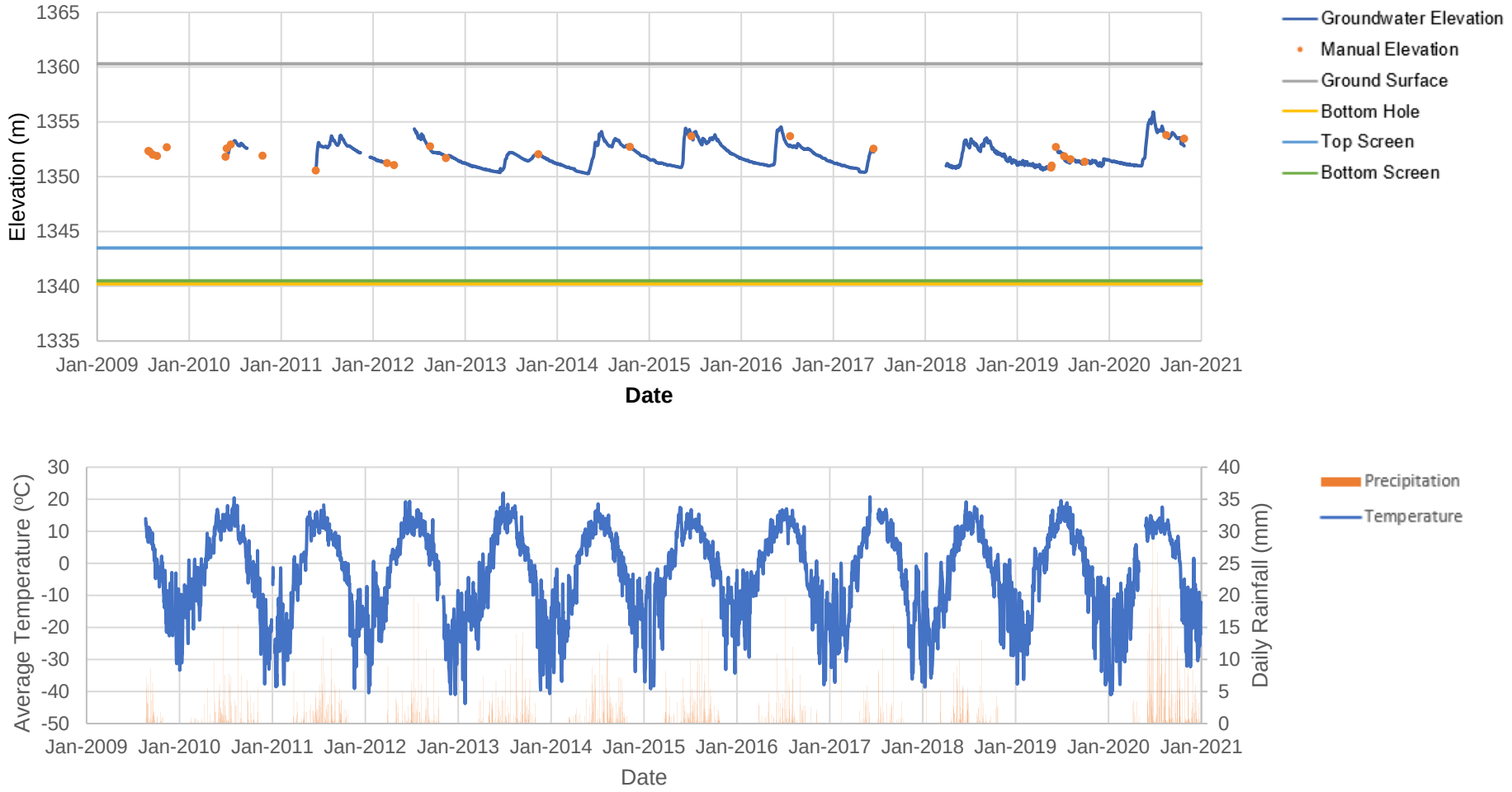
BGC ENGINEERING INC.



Notes:

1. THIS FIGURE SHOULD BE READ IN CONJUNCTION WITH BGC'S LETTER TITLED EAGLE GOLD MINE HYDROGRAPH UPDATE (2020 DATA), AND DATED MARCH 19, 2021.
2. PRECIPITATION DATA ARE NOT AVAILABLE FOR 2019 DUE TO A DATALOGGER MALFUNCTION.
3. BOTTOM OF HOLE DEPTH MEASURED BY VICTORIA GOLD FIELD STAFF ON AUGUST 15, 2020.

PREPARED BY: AK	FIGURE TITLE: MW96-9B GROUNDWATER ELEVATION AND METEOROLOGICAL DATA		
CHECKED BY: TC	CLIENT: VICTORIA GOLD CORP.		
APPROVED BY: AK	SCALE: AS-SHOWN	PROJECT NO: 0792029	FIGURE NO: 21

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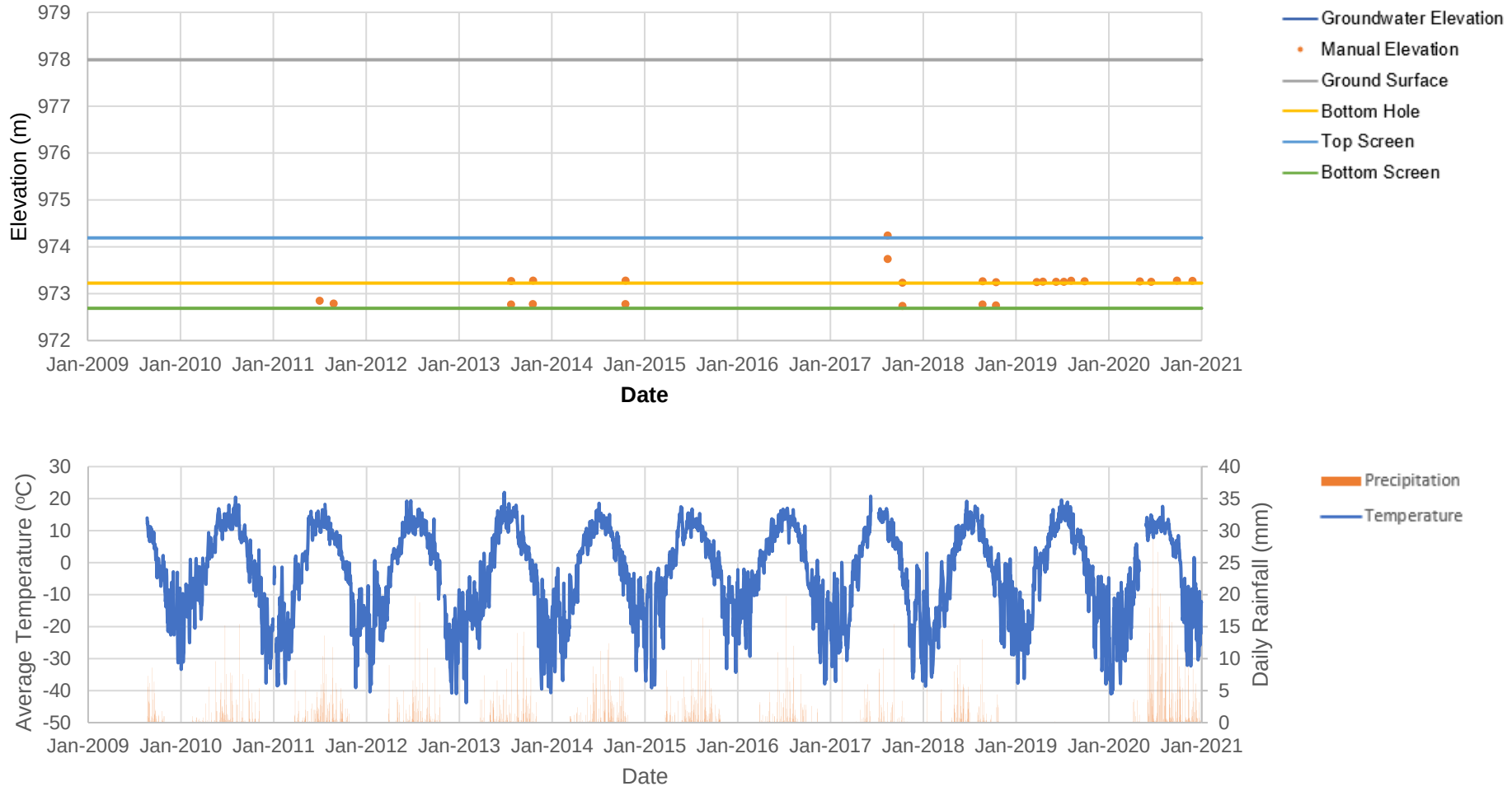
BGC ENGINEERING INC.



Notes:

1. THIS FIGURE SHOULD BE READ IN CONJUNCTION WITH BGC'S LETTER TITLED EAGLE GOLD MINE HYDROGRAPH UPDATE (2020 DATA), AND DATED MARCH 19, 2021.
2. PRECIPITATION DATA ARE NOT AVAILABLE FOR 2019 DUE TO A DATALOGGER MALFUNCTION.
3. BOTTOM OF HOLE DEPTH MEASURED BY VICTORIA GOLD FIELD STAFF ON SEPTEMBER 26, 2020.

PREPARED BY: AK	FIGURE TITLE: MW96-14A GROUNDWATER ELEVATION AND METEOROLOGICAL DATA		
CHECKED BY: TC	CLIENT: VICTORIA GOLD CORP.		
APPROVED BY: AK	SCALE: AS-SHOWN	PROJECT NO: 0792029	FIGURE NO: 22

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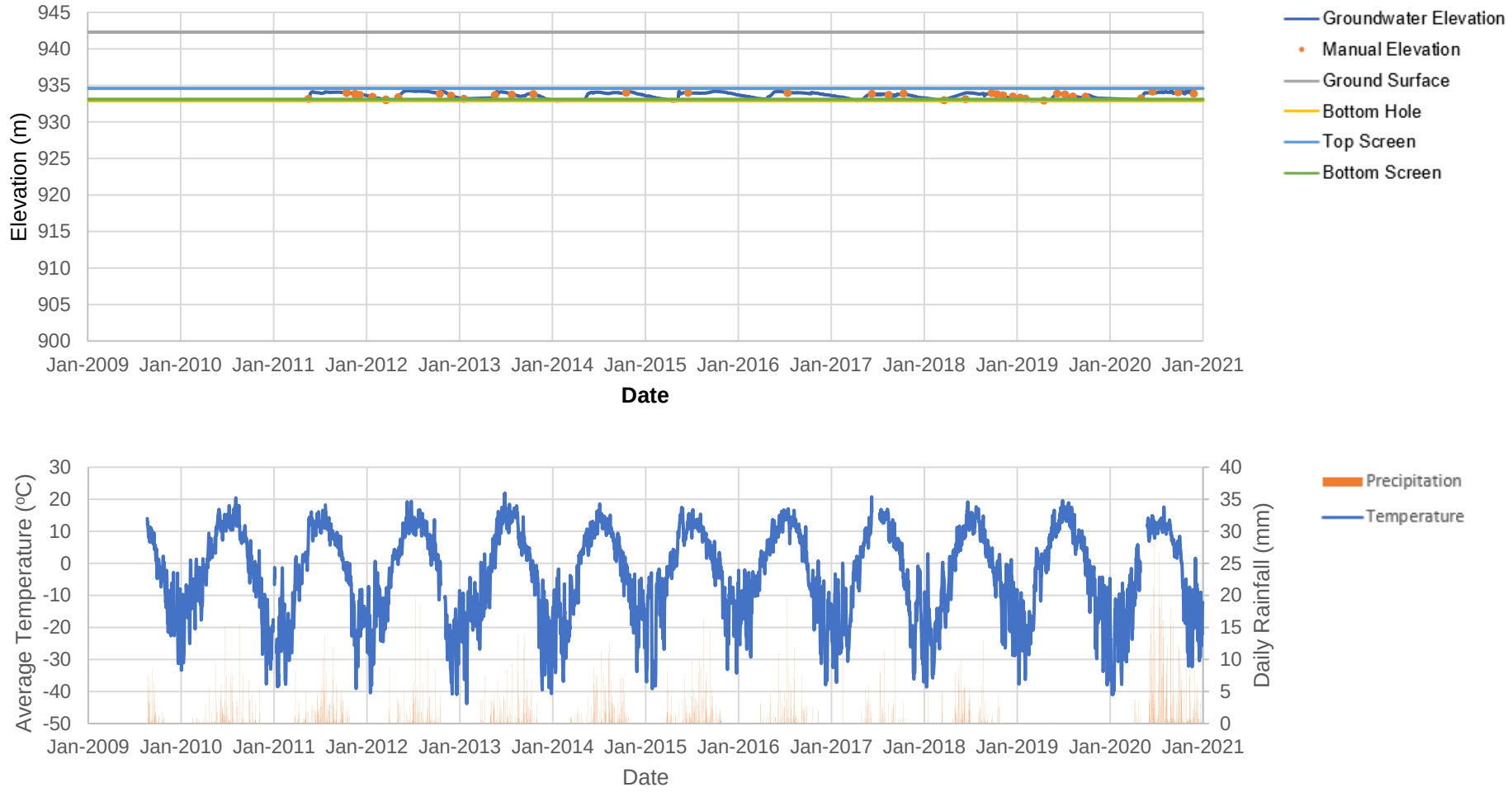
BGC ENGINEERING INC.



Notes:

1. THIS FIGURE SHOULD BE READ IN CONJUNCTION WITH BGC'S LETTER TITLED EAGLE GOLD MINE HYDROGRAPH UPDATE (2020 DATA), AND DATED MARCH 19, 2021.
2. PRECIPITATION DATA ARE NOT AVAILABLE FOR 2019 DUE TO A DATALOGGER MALFUNCTION.
3. BOTTOM OF HOLE DEPTH MEASURED BY VICTORIA GOLD FIELD STAFF ON MAY 3, 2020.
4. MW96-15A IS A NESTED MONITORING LOCATION WITH MW96-15B.

PREPARED BY: AK	FIGURE TITLE: MW96-15A GROUNDWATER ELEVATION AND METEOROLOGICAL DATA		
CHECKED BY: TC	CLIENT: VICTORIA GOLD CORP.		
APPROVED BY: AK	SCALE: AS-SHOWN	PROJECT NO: 0792029	FIGURE NO: 23

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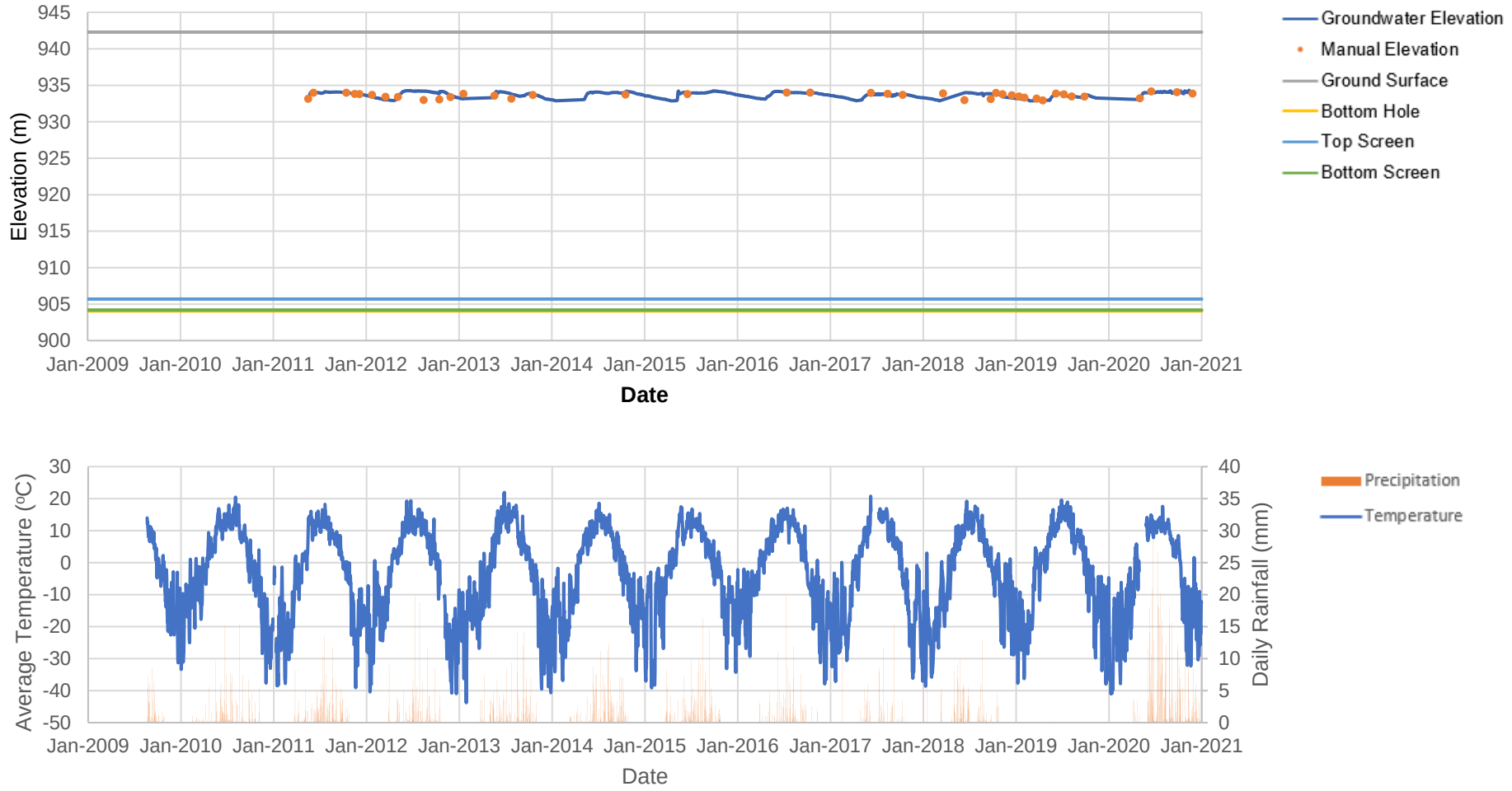
BGC ENGINEERING INC.



Notes:

1. THIS FIGURE SHOULD BE READ IN CONJUNCTION WITH BGC'S LETTER TITLED EAGLE GOLD MINE HYDROGRAPH UPDATE (2020 DATA), AND DATED MARCH 19, 2021.
2. PRECIPITATION DATA ARE NOT AVAILABLE FOR 2019 DUE TO A DATALOGGER MALFUNCTION.
3. BOTTOM OF HOLE DEPTH MEASURED BY VICTORIA GOLD FIELD STAFF ON MAY 3, 2020.
4. MW96-15B IS A NESTED MONITORING LOCATION WITH MW96-15A.

PREPARED BY: AK	FIGURE TITLE: MW96-15B GROUNDWATER ELEVATION AND METEOROLOGICAL DATA		
CHECKED BY: TC	CLIENT: VICTORIA GOLD CORP.		
APPROVED BY: AK	SCALE: AS-SHOWN	PROJECT NO: 0792029	FIGURE NO: 24

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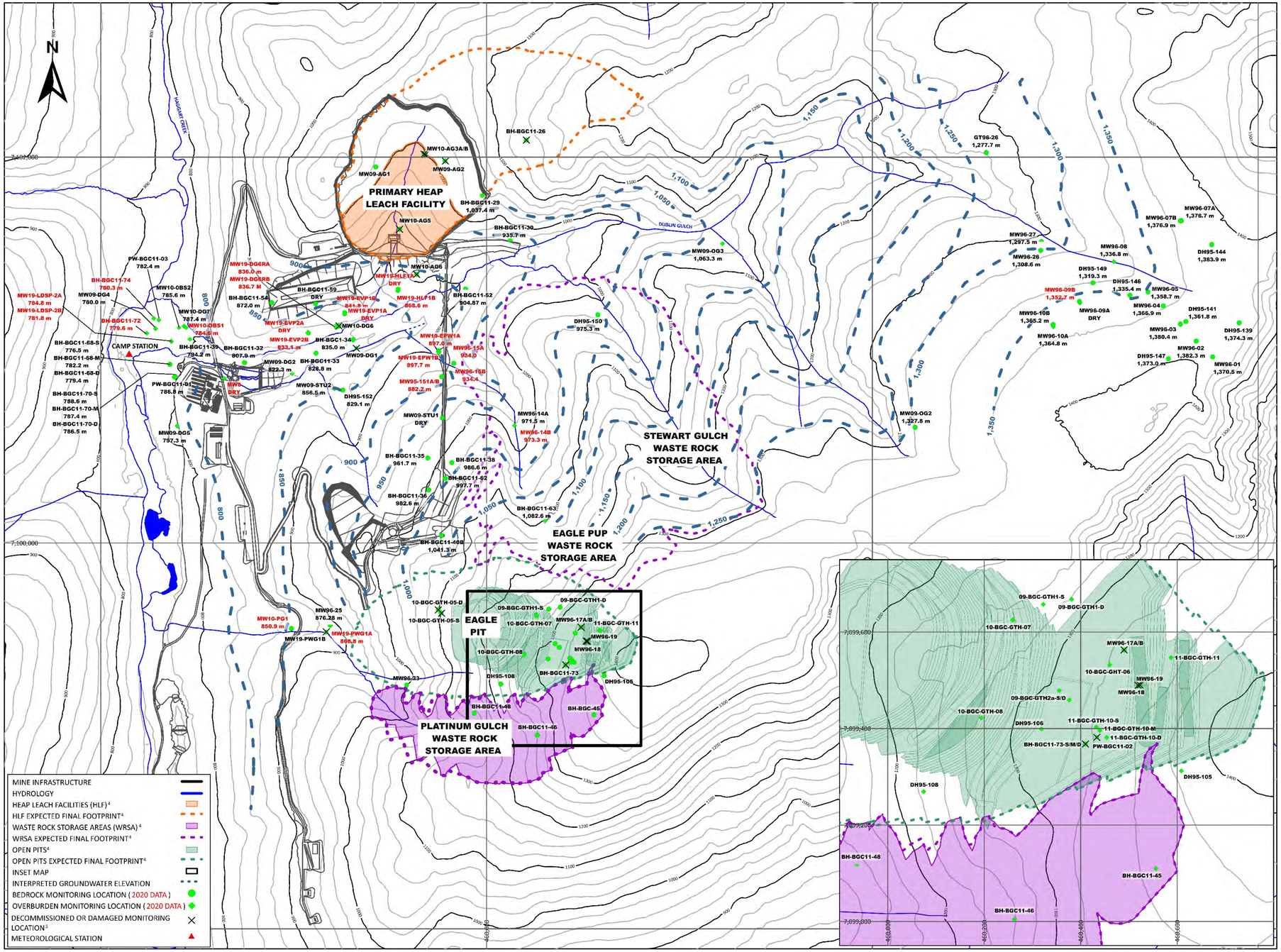

1. THIS FIGURE SHOULD BE READ IN CONJUNCTION WITH BGC'S LETTER MEMO TITLED "EAGLE GOLD MINE HYDROGRAPH UPDATE (2020 DATA)", AND DATED MARCH 19, 2021.
2. COORDINATE SYSTEM IS NAD 1983 UTM ZONE 8N. VERTICAL DATUM IS CGVD 1928.
3. TOPOGRAPHIC DATASET PROVIDED BY VICTORIA GOLD CORPORATION APRIL 9, 2020. CONTOUR INTERVAL IS 25 m.
4. CURRENT MINE FOOTPRINTS AND EXPECTED FINAL FOOTPRINTS PROVIDED BY VICTORIA GOLD CORPORATION (APRIL 9, 2020; NOVEMBER 2, 2020).
5. LOCATIONS NOTED BY VICTORIA GOLD CORPORATION AS DECOMMISSIONED OR DAMAGED.
6. AVERAGE GROUNDWATER LEVEL DATA SHOWN, BASED ON DATA COLLECTED IN 2020 ALONG WITH HISTORICAL OBSERVATIONS. GROUNDWATER ELEVATION CONTOUR INTERVAL IS 50 m.

PREPARED BY: AK	FIGURE TITLE: GROUNDWATER LEVEL DATA AND INTERPRETED GROUNDWATER ELEVATION CONTOURS		
CHECKED BY: TC	CLIENT: VICTORIA GOLD CORPORATION		
APPROVED BY: AK	SCALE: AS SHOWN	PROJECT NO: 0792-028	FIGURE NO: 25

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APPENDIX J1

Eagle Gold Mine Phase 1 Environmental Effects Monitoring Study Design

VICTORIA GOLD CORP
TSX | VGCX

December 1, 2020

Ms. Myra Page
Environmental Effects Monitoring Coordinator
Environmental Stewardship Branch
Environment and Climate Change Canada
101-401 Burrard Street
Vancouver, BC V3C 3R2

Dear Ms. Page,

Re: Eagle Gold Mine Phase 1 EEM Study Design Addendum (File #: MM4039)

Please accept this letter as a response from Victoria Gold Corp. (VGC) to the Eagle Gold Mine Phase #1 EEM Study Design- Action items identified review document provided by Environment and Climate Change Canada dated November 10, 2020. The response provided herein has been prepared by VGC and Minnow Environmental Inc. (Minnow), the Environmental Effects Monitoring (EEM) study design lead consultant retained by VGC.

This detailed response has been prepared as an addendum to the Eagle Gold Mine Phase 1 Environmental Effects Monitoring Study Design. Action Item #1 has been addressed by VGC while Action Items 2 through 5 have been addressed by Minnow.

Action Item #1: Details required for all Final Discharge Points (FDP) and water treatment processes.

Comment: *Schedule 5 paragraph 10(a)(iii) requires information regarding the production processes used by a mine.*

- *Section 2.2.1 of the Phase 1 study design provides some details regarding the treatment of mine water/solution from the HLF and Gold Recovery Plant and lists four final discharge points. The mine water treatment plant is not built and it is unclear when water treatment will commence. Currently water is being directed to the Lower Dublin South Pond (LDSP) but no details are provided as to what, if any, water treatment is used prior to discharge.*
- *The Eagle Gold Project Environmental Monitoring Surveillance and Adaptive Management Plan Version 2019-02 (received via email 2019-08-14) section 2.4.3 indicated that water from LDSP will also be used for dust suppression.*
- *The study design indicated that a fifth FDP, the LDSP Contingency Sump has been decommissioned; however, the 2020 Quarterly effluent monitoring, 2nd quarter, report submitted to the Mine Effluent Reporting System on August 13, 2020, reported a*

Suite 1000 – 1050 W. Pender Street
Vancouver, BC V6E 3S7 CANADA

TEL 604-682-5122
FAX 604 682-5232

vitgoldcorp.com

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discharge from the contingency sump on April 20, 2020 that exceeded the total suspended solids authorized limits for deleterious substances (Schedule 4 of the MDMER).”

Action Item*:* Provide details for current water treatment processes and all proposed uses for water held in the Lower Dublin South Pond. Provide details for the missing FDP LDSP Contingency Sump.

Response: As discussed in the VGC Eagle Gold Mine Phase 1 EEM Study Design, water management at the Eagle Gold Mine is operated in two discrete areas that are bisected by Dublin Gulch. The southern management area includes the Lower Dublin South Pond (LDSP). The primary water management strategy for the southern management area involves the capture of contact water via a series of engineered ditches which is then conveyed to the LDSP. The LDSP was designed, and is constructed, with a forebay for deposition of coarse material (primarily sand) and a main sedimentation pond for deposition of fine-grained material (silts and clay). The pond system is designed to allow a minimum 24-hour residence time to allow settling of Total Suspended Solids (TSS) and associated total metals such as arsenic, while water migrates to the area of the LDSP FDP#3.

Prior to a decision to discharge contact water from FDP #3, VGC staff collect predischarge samples of LDSP water to compare with the Authorized Limits of Deleterious Substances defined in Schedule 4 of the Metal and Diamond Mine Effluent Regulations (MDMER). These results are used to determine compliance with the MDMER authorized limits and to inform management decisions with respect to mine contact water.

VGC is currently targeting the construction of a Mine Water Treatment Plant (MWTP) during 2021 with final commissioning scheduled in Q4 2021. A preliminary design was developed as part of the territorial water licencing process, and that design is currently under review and refinement. The final issued for construction design will be based on the available water quality dataset, modelled water chemistry that will be encountered as the Mine develops, the currently licensed effluent quality standards and the limits prescribed in the MDMER.

Water transfers between the LDSP and the Events Pond (a large lined containment pond in the northern water management area), the Heap Leach Pad and the gold plant are also utilised to manage contact water at the mine. This transferred contact water is utilised for process needs including leaching ore on the heap leach pad or for gold elution within the gold recovery plant. The Events Pond also provides a mechanism for additional settling time to support achieving deleterious standards or for storing water for process needs.

As noted, contact water within the LDSP is also utilised for dust suppression primarily on Project

Suite 1000 – 1050 W. Pender Street
Vancouver, BC V6E 3S7 CANADA

TEL 604-682-5122
FAX 604 682-5232

vitgoldcorp.com

roadways but also within the crushing and conveying circuits.

With respect to the discharge to the contingency sump on April 20, 2020. The FDP (identified as FDP #5 LDSP Contingency Sump) is located at approximately 64° 2'0.84"N 135°50'9.11"W. A letter to ECCC on July 24, 2019 explained that the LDSP Contingency Sump FDP #5 was no longer necessary; however, on April 20, 2020, Victoria informed our ECCC Enforcement Officer that due to significant freshet water volumes and lack of adequate pumping infrastructure, that the LDSP Contingency Sump FDP#5 would be required and was to be utilised to discharge water from the LDSP by the process of exfiltration. LDSP Contingency Sump FDP #5, which discharges to ground, was utilised in late April 2020, and re-added to the FDPs identified for the mine, as it represented a Final Discharge Point with the lowest potential for environmental effects. The exfiltration mitigated TSS exceeded deleterious substance criteria during the discharge. The Eagle Gold Mine Phase 1 EEM Study Design was drafted prior to the occurrence of this spring Freshet discharge from the LDSP Contingency Sump FDP#5. Therefore, the Eagle Gold Mine Phase 1 EEM Study Design submission did not document the potential for the continued use of LDSP Contingency Sump FDP #5. FDP #5 and FDP#3 are documented and reported on regularly in MERS now that discharges have occurred from both FDPs following the Mine becoming subject to MDMER.

If ECCC requires any further discussion or clarity regarding the information provided herein, Victoria proposes arranging a conference call to discuss any remaining items to the satisfaction of ECCC.

Sincerely,
William Bowden, Environmental Superintendent
Victoria Gold (Yukon) Corp.

Suite 1000 – 1050 W. Pender Street
Vancouver, BC V6E 3S7 CANADA

TEL 604-682-5122
FAX 604 682-5232

vitgoldcorp.com

2 Lamb Street
Georgetown, Ontario
L7G 3M9
Tel: 905-873-3371
Fax: 905-873-6370

December 1, 2020

Ms. Myra Page
Environmental Effects Monitoring Coordinator
Environmental Stewardship Branch
Environment and Climate Change Canada
101-401 Burrard Street
Vancouver, BC V3C 3R2

Dear Ms. Page,

Re: Eagle Gold Mine Phase 1 EEM Study Design Addendum

Environment and Climate Change Canada (ECCC) has completed an initial review of the "Eagle Gold Mine Phase 1 Environmental Effects Monitoring Study Design", dated April 2020, submitted by Victoria Gold Corporation (VGC). In a letter dated November 10th, 2020, ECCC identified Action Items that required a response from VGC in order for ECCC to complete their review and provide approval of the Environmental Effects Monitoring (EEM) Study Design (ECCC 2020). This detailed response has been prepared as an addendum to the aforementioned study design to address four of the five Action Items (2 through 5) and one review comment provided by ECCC upon their initial review of the study design document.

Action Item #2: Additional details regarding effluent mixing.

Comment: "*Schedule 5, paragraph 10(a)(i) requires a description of the manner in which effluent mixes in exposure areas at 100 metres and 250 metres.*

- *Section 2.4.1 of the study design indicates that the estimated effluent concentration at Haggart Creek near-field was 13.8%. However, the distances from the near-field sampling site (W4) and the far-field site (W22) to the FDP are not provided. The scale used by Figure 2.2 showing the hydrology station locations is too small to accurately determine the location of the sampling station in relation to the final discharge point. The study design suggests that concentrations greater than 10% can occur at the Haggart Creek effluent-exposed area but the total length is not defined.*

- *Section 2.2.1.2 of the EEM TGD covers measuring conductivity in effluent using a formula to determine relative concentrations (formula indicated). Temperature readings are also recommended since conductivity rises approximately 2% for every 1º C rise in temperature.*
- *Section 2.3 of the study design used data from two days, however, conductivity was not measured for the reference W22 or the effluent LPSD Outlet for both days. The effluent concentration (Ca) was calculated using an average of the two readings for W4 while Cb and Ce had only one measurement each. Samples should have been collected on the same days and Cr calculated for each day rather than averaging the measured conductivity at W4. By not using an average for W4 the estimated effluent concentration for April 18 would be 34%. It is also unclear from Table 2.2 how far the extent of the reported 13.8% concentration is in the near-field."*

Action Item*: "Provide additional information for the sampling sites used to estimate effluent concentrations (W22 and W4) in terms of distance from the FDP discharge in metres. Provide a larger scale map that provides greater detail for locations of sampling sites W22 and W4 in relation to each other and the final discharge point."*

Response: The Haggart Creek near-field effluent-exposed station W4 is located approximately 70 m downstream of the Ditch C confluence, and approximately 170 m downstream of the Dublin Gulch confluence on Haggart Creek (Figure 1). As indicated in Study Design Section 2.4.1, effluent from LDSP is discharged to Haggart Creek via Ditch C, and thus areas downstream of the Ditch C confluence on Haggart Creek are designated as the "effluent-exposed" area. The Haggart Creek reference station W22 is located approximately 250 m upstream of the Ditch C confluence, and approximately 150 m upstream of the Dublin Gulch confluence on Haggart Creek (Figure 1). The location of Station W22 is well upstream of the influence from effluent discharge, potential surface water runoff, and potential seepage from the Eagle Gold Mine. Station W22 was approved as a reference location for the Eagle Gold Mine through the *Yukon Environmental and Socio-economic Assessment Act* process and for territorial Water Use License (WUL) monitoring programs designed to assess potential mine-related effects on aquatic resources.

As requested, a larger scale map of the effluent receiving area of Haggart Creek is provided in this addendum to provide further perspective for the proposed EEM study areas (Figure 1). Limited effluent discharge data were available for determining effluent mixing and/or effluent concentrations in Haggart Creek during study design preparation (i.e., effluent had only been discharged a total of four days in April 2019 prior to study design development). Based on the examination of data used at the time of study design development, it was clear that effluent concentrations approximately 10% and higher could be expected to extend from the Ditch C confluence to approximately 1,050 m downstream of Ditch C in Haggart Creek, near the Gil Gulch confluence based on derivation from hydrological station data and specific conductance data

(Study Design Appendix Tables 2.1 and 2.2). In September 2020, VGC conducted visual dye experiments to improve understanding of effluent mixing within the Haggart Creek receiver. The results of these initial studies indicated that effluent primarily remained within the right half of the Haggart Creek channel as far downstream as 100 m from the Ditch C confluence (Photos 1 to 3), and partial effluent mixing was evident to at least 150 m downstream of Ditch C (Photo 4) under the September 2020 flow conditions. The Ditch C plume characteristics in Haggart Creek are expected to be variable and dependent upon seasonal flow conditions (e.g., freshet versus summer low flow). Additional plume characterization work in 2021 will be aimed at better defining the full effluent mixing zone, and will include the estimation of effluent concentrations at 100 m and 250 m downstream of the Ditch C (effluent) discharge. Conductivity measurements of the final effluent, Haggart Creek at the reference area, and Haggart Creek at the effluent-exposed area 100 m and 250 m downstream of the effluent discharge will also be conducted at the time of the benthic invertebrate community and fish population field studies to allow effluent concentration determination at these key distances from the discharge. Based on these studies, a description of the manner in which effluent mixes in Haggart Creek will be provided in the Eagle Gold Mine Phase 1 Interpretive Report.



Photo 1: Effluent Plume in Haggart Creek at the Confluence of Ditch C during the September 2020 Dye Study



Photo 2: Effluent Plume in Haggart Creek Approximately 70 m Downstream of Ditch C, at Station W4, during the September 2020 Dye Study



Photo 3: Effluent Plume in Haggart Creek Approximately 100 m Downstream of Ditch C during the September 2020 Dye Study



Photo 4: Effluent Plume in Haggart Creek Approximately 150 m Downstream of Ditch C during the September 2020 Dye Study

Action Item #3: Fish population study clarification

Comment: "*Schedule 5 paragraph 10(b)(ii) requires an explanation as to how the study will provide the information necessary to determine the effluent effect on fish. The study design is proposing to use a control-impact lethal design for slimy sculpin and a control-impact non-lethal design for arctic grayling.*

- *Section 3.3.2 of the study design provides details of the sample sizes and collection methods for slimy sculpin and arctic grayling. Table 3.3 indicates that lethal sampling (should be non-lethal) will be conducted for arctic grayling and that 100 individuals will be taken for each study area. It is unclear from the information in Table 2.12 in the study design that 100 fish per sample site would be attainable given the low density numbers presented from past baseline sampling (53 fish total caught for Haggart Creek and 13 fish total caught for Lynx Creek). The study design does not address if 100 fish/site (total 200) proposed can actually be met."*

Action Item*: "Provide information detailing how the arctic grayling non-lethal sampling will be able to collect 100 fish/site (2 sites x 100 = 200 fish) given the low density numbers. Details should include any proposed alternate studies if 100 fish/site cannot be obtained."*

Response: As noted, slimy sculpin will be targeted using a traditional (lethal) sampling approach, and arctic grayling will be targeted using a non-lethal sampling approach. We apologize for any confusion related to reference to a lethal sampling approach targeting arctic grayling in Table 3.3 of the study design.

Arctic grayling densities appear to be relatively low in Haggart Creek and Lynx Creek based on depletion sampling methods conducted using backpack electrofishing during baseline, construction, and the first year of operations. These density estimates provided in the study design were determined for 'closed' stations (i.e., area enclosed by stop nets at upstream and downstream boundaries) established at pre-defined areas that are then sampled at the same location each year. The establishment of closed-station locations/station boundaries was not determined randomly, but rather habitat features that allowed for efficient sampling (e.g., absence of large/deep pools, avoidance of high gradient areas, avoidance of boulder habitat and/or areas with large amounts of overhanging and/or woody debris) were selected considering habitat features at all study areas. This methodology allowed for repeatable sampling over time without the confounding influences associated with 'difficult' habitat. Because the historical closed stations were not established randomly and may not incorporate all types of habitat, it is currently unclear whether a target number of 100 arctic grayling cannot be attained at each study area employing an 'open' station sampling method (i.e., no use of stop nets) of all available habitat types at each of the Haggart Creek effluent-exposed area and Lynx Creek reference area.

Fish sampling for the EEM study will also be conducted over a larger area than the historical baseline and current biennial monitoring programs. Thus, sampling using an 'open' station electrofishing approach over a larger surface area at each of the effluent-exposed and reference areas is the logical first step in determining whether the target number of 100 arctic grayling can be achieved at each area. Although backpack electrofishing has been shown to be the most efficient method for arctic grayling collection historically, minnow trapping has also shown modest success. Therefore, minnow trapping will be used as a back-up collection method to electrofishing if the latter is unsuccessful for capturing the requisite number of arctic grayling. Notably, no other fish species appeared to be present in sufficient abundance at either Haggart Creek or Lynx Creek to allow successful implementation of lethal or non-lethal sampling approaches based on historical baseline and current biennial monitoring programs.

Action Item #4: Benthic study sampling site requirements

Comment: "*Schedule 5 sub-paragraph 10(c)(1)(A) requires a description of the sampling areas and a scientific rationale why the sampling areas were selected.*

- *The study design proposes a control-impact design using exposure/reference sampling sites. Section 3.2.1 of the study design (pg42) states "The effluent-exposed and reference study areas indicated above correspond to Stations W4/W29 and W22, respectively, that are used to assess Project-related effects on chemical and biological conditions at Haggart Creek in accordance with territorial WUL stipulations (VGC 2020). These same study areas (and station locations, if possible) are proposed for benthic sampling as part of the Phase 1 EEM (Figure 3.1)." However, Table 3.1 indicates only 2 study areas W4 and W22. It is unclear if study area W29 is part of the proposed study.*
- *There is concern with the reference sampling site (W22) given its close proximity to the discharge point and mine footprint. The study design states that the site is sufficiently upstream of the LDSP outlet but details on how far are not provided and the map in Figure 3.1 does not provide any details on sampling site locations or distances. Note that the MDMER paragraph 2(2)(b) defines effluent as "any seepage or surface runoff containing any deleterious substance that flows over, through or out of the site of a mine." Thus any reference sampling site must not be situated where there is the potential for any effluent including seepage or surface runoff from the mine site that may impact the reference site."*

Action Item*: "Provide additional details to support the scientific rationale for the exposure and reference sites selected and the total number of sampling sites proposed. Update Table 3.1 if W29 is to be used as an exposure site. Update the Figure 3.1 map showing locations of sampling sites at a larger scale.*"

Response: Consistent with standard EEM nomenclature, study areas were identified for the Eagle Gold Mine Phase 1 EEM that included an effluent-exposed area (downstream of the Ditch C effluent discharge on Haggart Creek) and two reference areas (a benthic invertebrate community reference area located upstream of the Ditch C effluent discharge on Haggart Creek, and a fish reference area located on Lynx Creek) in the Study Design. In an attempt to facilitate harmonization between the EEM study sampling locations and territorial sampling locations under the Eagle Gold Mine WUL, benthic invertebrate community stations used for the latter were intended to be evaluated for adequacy for EEM and if suitable, fall within the EEM study areas.

The intended definition for the (near-field) effluent-exposed area in Haggart Creek was the area bound by Station W4 on the upstream end, and Station W29 on the downstream end. This corresponds to approximately 1,600 m of creek length, extending from about 70 m downstream of Ditch C at the upstream (north; Station W4) end to about 1,670 m downstream of Ditch C at the downstream (south; Station W29) end on Haggart Creek (Figure 1). This (near-field) area is the only effluent-exposed area proposed for the Phase 1 EEM study. Five benthic invertebrate community stations will be established within this (near-field) effluent-exposed area for EEM purposes. Although a different naming convention will be used for the EEM benthic invertebrate community samples, samples may be collected at WUL Station W4 and Station W29 (as two of the five EEM benthic invertebrate community samples from the effluent-exposed area) to serve

as benthic invertebrate community samples for both the EEM and WUL programs. Except for stations W4 and W29, benthic invertebrate community station locations have yet to be determined and will be established at the time of sampling. Similarly, fish population survey sampling will be confined to the 1,600 m length of creek defined by the (near-field) effluent-exposed area for EEM purposes.

The Haggart Creek (benthic) reference area used for EEM purposes will include WUL Station W22 (at the lower end of the reference area) to allow dual use of this station in the EEM and WUL programs. The EEM benthic reference area on Haggart Creek will extend approximately 1,300 m in length, beginning approximately 250 m upstream of Ditch C at the downstream (south; Station W22) end to about 1,550 m upstream of Ditch C at the upstream (north) end on Haggart Creek. The location of Station W22, and thus the lower end of the EEM reference area, is well upstream of the influence from effluent discharge, surface water runoff, and potential seepage from the Eagle Gold Mine. As indicated previously, Station W22 was approved as a reference location for the Eagle Gold Mine through the *Yukon Environmental and Socio-economic Assessment Act* process and for territorial WUL monitoring programs designed to assess potential mine-related effects on aquatic resources.

The scientific rationale for the selection of effluent-exposed and reference areas for the EEM, as well as the total number of benthic community sampling stations, was provided in the study design (Section 3.2). As requested, a larger scale map of the Haggart Creek study areas (including currently applicable WUL stations) is provided in this addendum to provide better perspective (Figure 1)

Action Item #5: Benthic study sediment sampling

Comment: "*Schedule 5 paragraphs 10(c)(i) and (ii) and subparagraph 12(1)e)(ii) require the description and scientific rationale for benthic studies, explaining how the study will provide the information necessary to determine effect. In addition, "if the study is conducted in an area where it is possible to sample sediment, total organic carbon content of sediment and particle size distribution of sediment" should be provided.*

- *The study design does not indicate if any sediment sampling will be conducted.*

Action Item*: "Provide details for sediment sampling, and if no sediment sampling is to be conducted, provide the rationale.*"

Response: No sediment sampling is proposed for the Eagle Gold Mine Phase 1 EEM. As indicated in the study design, benthic invertebrate community samples will be collected from erosional riffle-run habitat characterized by coarse gravel-small cobble substrate in the 64 mm to 256 mm diameter size range (Wentworth Scale) at the effluent-exposed and reference study areas of Haggart Creek. Substrates in these size ranges are generally not subject to total organic

carbon (TOC) content analysis (i.e., substrates are entirely mineral in composition) or particle size analyses.

Review Comment #1: Bray-Curtis critical effect size

Comment: "*Schedule 5 subsection 1(2) requires critical effect sizes (CES) and provides the CES for benthic density, evenness and richness. For the Bray-Curtis Index, Table 1-3 of the EEM Technical Guidance Document sets the CES at +2SD.*"

Response: The Bray-Curtis Index will be computed and assessed statistically using procedures recently recommended by ECCC for the analysis of EEM benthic invertebrate community data (i.e., Borcard and Legendre 2013). Based on our understanding of this method, the Mantel R^2 and dbRDA R^2 values can be construed as a measurement of effect size (i.e., how well the data fit each test model, represented by the proportion of variance of the community data explained by the reference versus exposed classification criterion), with values closer to 1 indicating greater difference in community characteristics between two populations for each of the Mantel and dbRDA tests. Based on this approach, no generation of a CES based on standard deviations of the reference mean, as stipulated in the Environment Canada (2012) Technical Guidance Document, appears to be possible. If ECCC can provide guidance as to how CES can be applied to the newly recommended method of assessing differences in community structure using the Bray-Curtis Index, VGC will apply a comparison to CES for this metric in the Eagle Gold Mine Phase 1 EEM Interpretive Report.

Closing

If you would like to further discuss any aspects of this study approach, please do not hesitate to contact Bill Bowden, Environmental Superintendent for the VGC Eagle Gold Mine (bbowden@vgcx.com; 867.456.7700 x6381).

Sincerely,
Minnow Environmental Inc.



Paul LePage, M.Sc.
Senior Project Manager

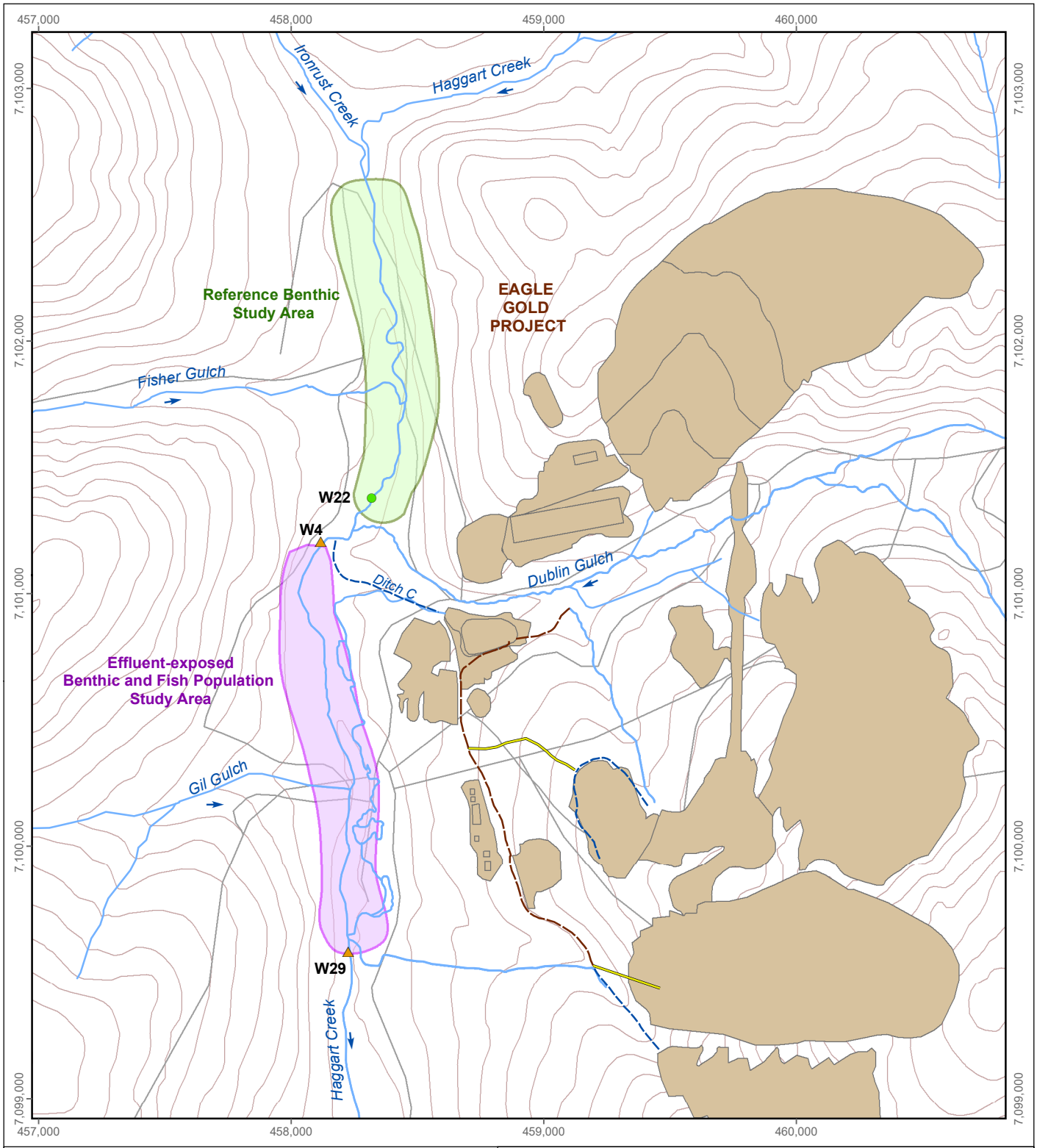
Attachments

References

Borcard, D. and P. Legendre. 2013. Review of the pros and cons of available indices applicable to the Environmental Effects Monitoring (EEM) to evaluate changes in benthic invertebrate community structure in response to effluent exposure. Final report, Environment Canada, Project #K2A80-12-0010.

ECCC (Environment and Climate Change Canada). 2020. Eagle Gold Mine Phase #1 EEM Study Design: Action Items Identified. Letter report addressed to Hugh Coyle, Victoria Gold Corp., on November 10, 2020.

Environment Canada. 2012. Metal Mining Technical Guidance for Environmental Effects Monitoring. ISBN 978-1-100-20496-3.



LEGEND

- EMSAMP Effluent-Exposed Station
- EMSAMP Reference Station
- Effluent-exposed Benthic and Fish Population Study Area
- Reference Benthic Study Area
- Collection Ditch
- Collection Ditch and Pipeline
- Pipeline
- Mine Infrastructure
- Contour (20m interval)

Haggart Creek Proposed EEM Effluent-Exposed and Reference Study Areas

0 0.375 0.75 1.5 km

Projection: North American Datum 1983 UTM Zone 8V, 8W
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N W E S

Date: December 2020
Project 207202.0026

minnow environmental inc.

Figure 1

Document Path: C:\Users\MLaPalme\Trinity Consultants, Inc\Victoria Gold - 207202.0026 - Phase 1 EEM Study Design\3 - GIS\Addendum\20-26 Figure 1 Haggart Creek Proposed EEM Effluent-Exposed and Reference Study Areas-zoomed.mxd



Eagle Gold Mine Phase 1 Environmental Effects Monitoring Study Design

Prepared for:
Victoria Gold (Yukon) Corp.
Whitehorse, Yukon

Prepared by:
Minnow Environmental Inc.
Georgetown, Ontario

April 2020

Eagle Gold Mine Phase 1 Environmental Effects Monitoring Study Design

Paul LePage, M.Sc.
Project Manager

Pierre Stecko, M.Sc., R.P. Bio., EP
Senior Project Advisor

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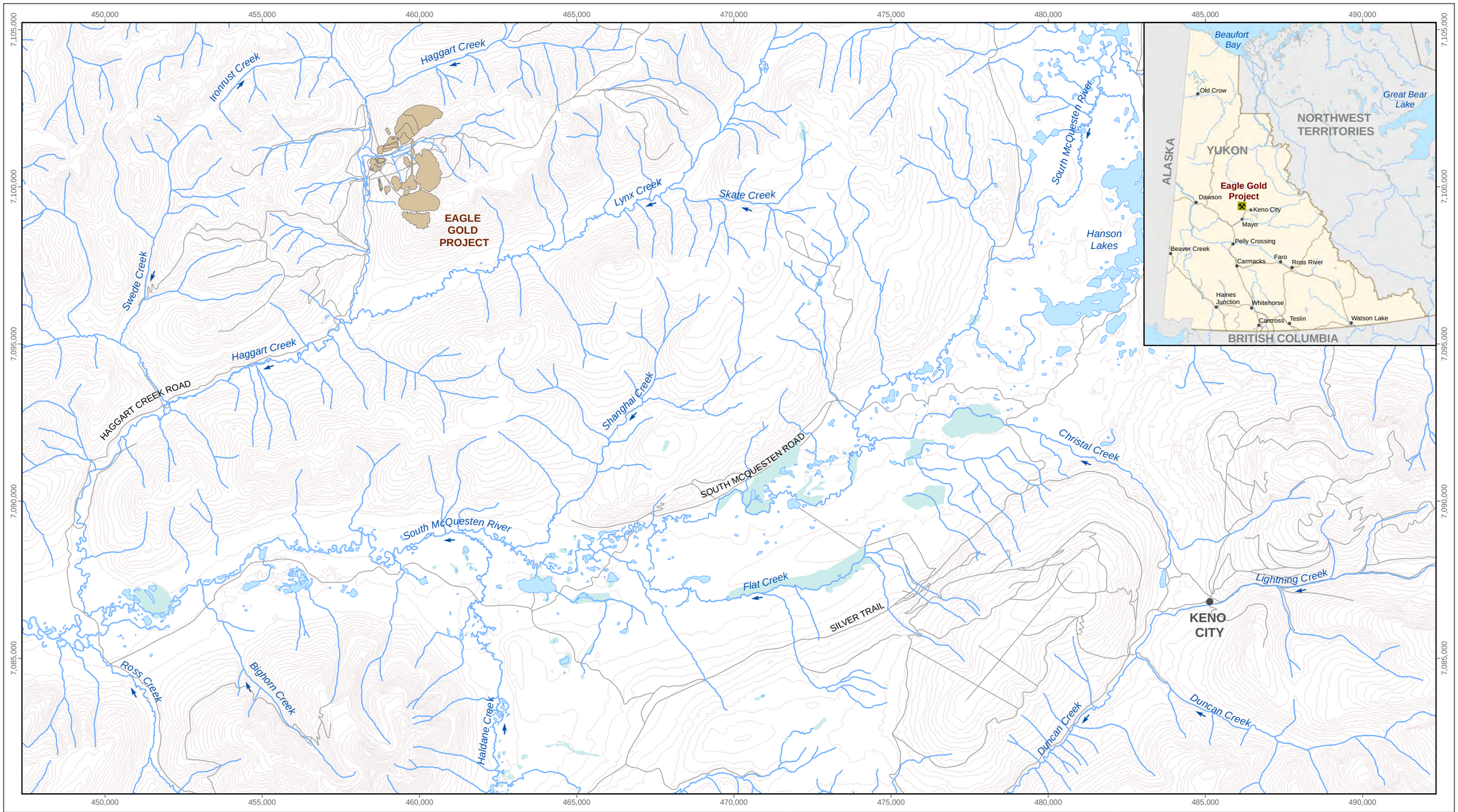
1 INTRODUCTION

Victoria Gold (Yukon) Corp. (VGC), a directly held, wholly owned subsidiary of Victoria Gold Corp., operates the Eagle Gold Mine (the Project) in the Mayo Mining District of central Yukon, approximately 45 km (85 km by existing road access) north-northeast of the Village of Mayo (Figure 1.1). The Project will include an open pit gold mine, material storage and stockpile management areas, and process facilities that include crushing, heap leaching, carbon adsorption, desorption, and recovery (ADR) for gold extraction. Mine construction was completed in July 2019, and gold production began in September 2019. Approximately 29,500 tonnes of ore will be mined daily and, following three-stage crushing and cyanide heap leaching, gold is recovered using carbon ADR, electrowinning, and smelting processes to produce gold doré.

Water management at the Project is operated in two discrete areas that are bisected by Dublin Gulch. The northern management area includes leak detection, monitoring, and recovery systems to ensure the containment of solution within the heap leach facility, a lined external events pond to contain excess solution from the heap leach facility (all of which operates as a closed system with no planned release to the environment), and surface water management ditches and berms for roads, laydowns, and the ADR plant. For the other major Project infrastructure (i.e., the open pit, waste rock dumps, crushing area) in the southern management area, various surface water interceptor/diversion ditches and pipes are utilized to direct contact and non-contact waters to appropriate locations. Excess contact water from these sources is directed to a lined collection pond, referred to as the Lower Dublin South Pond (LDSP), for temporary storage and recirculation within the gold extraction process as conditions allow. Following achievement of effluent quality limits, effluent from the LDSP is released to Haggart Creek. From the point of effluent reception, Haggart Creek flows approximately 23 km southwest into South McQuesten River, which is located within the Stewart River sub-basin of the Yukon River watershed.

On April 20, 2019, the Project became subject to the Metal and Diamond Mining Effluent Regulations (MDMER) under the federal *Fisheries Act* as a result of the discharge of effluent in excess of 50 cubic metres (m^3) in a single day from the LDSP. The MDMER outline requirements for routine effluent and water quality monitoring and for biological monitoring, collectively referred to as Environmental Effects Monitoring (EEM) studies, as a condition governing the authority to discharge effluent. The objective of EEM is to determine whether mine effluent is causing an effect on the fish population, human use of fisheries resources (i.e., mercury accumulation in fish tissues) and/or benthic invertebrate communities. An EEM Study Design is required within 12 months of a mine becoming subject to the MDMER, and at least 6 months prior to conducting the biological monitoring field study. In accordance with the MDMER, this Study Design provides



LEGEND

- Eagle Gold Project
- Wetland

0 1.75 3.5 7 km

N W E S

Projection: North American Datum 1983 UTM Zone 8V, 8W

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Location of the Eagle Gold Project

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Figure 1.1

Document Path: S:\Projects\207202\207202.0026 - VGC Eagle Gold Mine Phase 1 EEM Study Design\3 - GIS\Report\20-26 Figure 1.1 Location.mxd

detailed site characterization information and outlines the approach to the Project's first (Phase 1) EEM biological study, the field component of which is scheduled for 2021.

2 SITE CHARACTERIZATION

2.1 Overview

Site characterization provides key background information that forms the foundation for the design of each study phase within the EEM program (see Environment Canada 2012). The content of this site characterization reflects the requirements outlined under the EEM studies portion of the MDMER (Schedule 5, Division 1; Government of Canada 2019). Accordingly, information regarding mine operations, effluent mixing characteristics, effluent receiving environment and reference area characteristics, confounding influences for the evaluation of effluent-related effects within the receiving environment, and other mine/study area aspects relevant to the development of the Phase 1 EEM biological study are summarized herein as specified in the MDMER.

2.2 Project Operations

2.2.1 Project History and Process Description

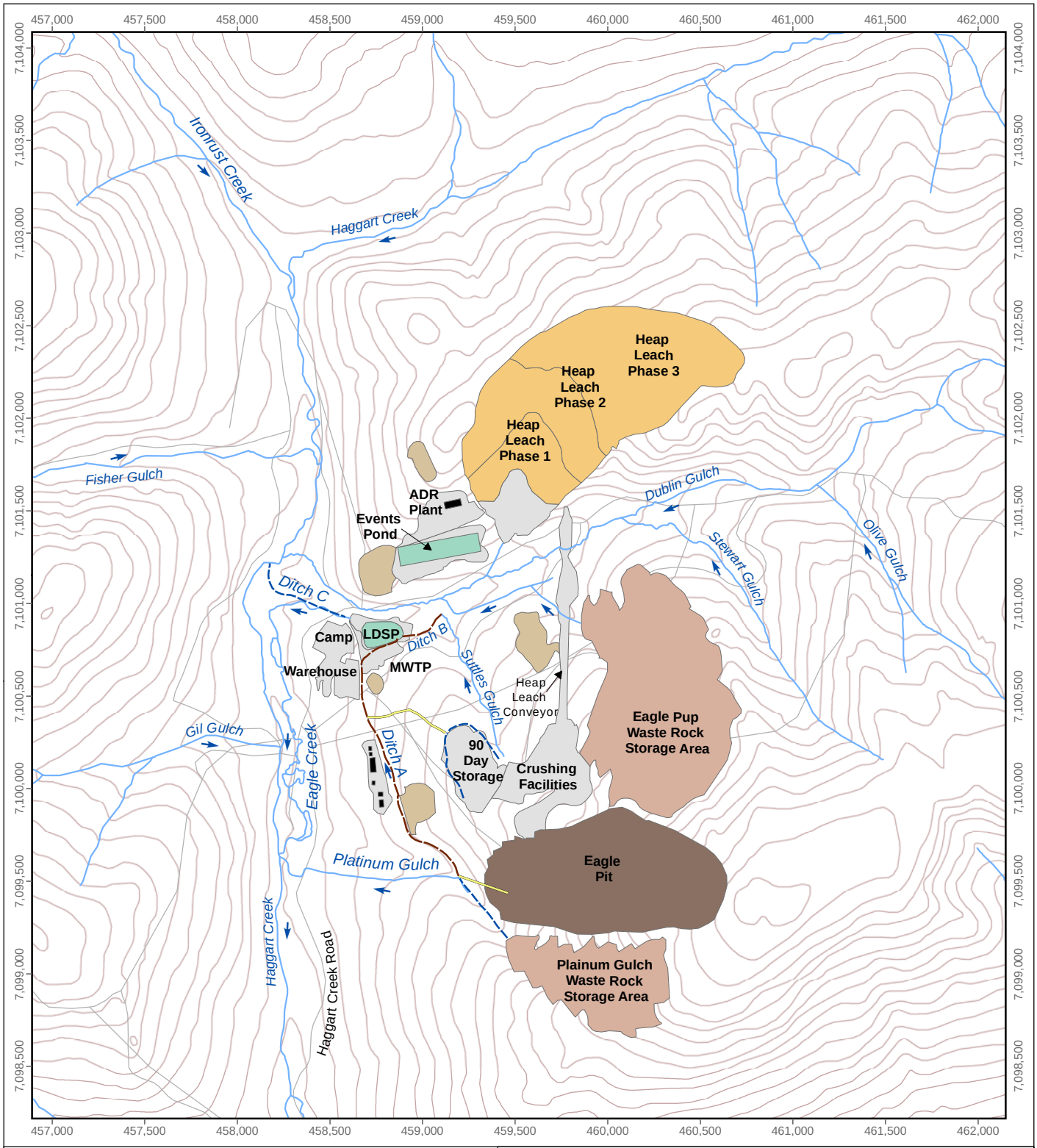
The Project is located in central Yukon in the Traditional Territory of the First Nation of Na-Cho Nyäk Dun (FNNND). Placer gold was discovered on Haggart Creek in 1895 and on Dublin Gulch in 1898. Prospecting and subsequent surface (i.e., placer) mining on Haggart Creek and Dublin Gulch was undertaken by multiple claim owners on a relatively small scale (pick and shovel and small placer workings) until the late 1930s when larger mechanized equipment including draglines was brought to the area. Placer mining in the local area is ongoing; however, in the immediate area of the Project, larger scale placer mining ceased in the mid-1990s. The first hard rock claims for the Dublin Gulch area were recorded in 1901, and from 1904 to 2004 the development of the hard rock deposits included trenching, adits, shallow shafts, and exploratory drilling by various companies, including Treadwell Yukon Ltd. (1937 to 1946), Keno Hill Mining Company/Avoca (1946 to 1962), Peso Silver Mines (1962 to 1973), Adonis Mine Ltd. (1973 to 1978), Queenstake Resource Ltd. and Canada Tungsten Corporation Ltd. (1978 to 1991), Amax Gold Inc. (1991 to 1993), Ivanhoe Goldfields Ltd./First Dynasty Mines Ltd./Sterlite Gold Ltd. (1993 to 2004). In 2004, StrataGold Corporation acquired all the Dublin Gulch interests. In 2009, VGC acquired StrataGold Corporation and subsequently advanced the Project through pre-feasibility to feasibility study level design, the regulatory process, and into final detailed design for construction and operation.

Construction of the Project commenced in August 2017 and was completed in July 2019. The Eagle Deposit is currently being mined by conventional drill, blast, shovel, and haul operation. The benches are mined at a height of 10 m with an overall 20 m effective bench height based on a double-bench final wall configuration. Over the life of the Project, the open pit will be advanced

in stages with an ultimate pit size of approximately 1,300 m long and 550 m wide totaling about 67 hectares (ha; Figure 2.1). Based on the surface topography, the Eagle Pit will be scalloped-shaped with a lower west highwall. To maintain access to the primary crusher, a single ramp will spiral down to the bottom of the final pit. The currently authorized Project is expected to produce a total of 86 million tonnes (Mt) of heap leach feed and 98 Mt of waste (at a 1.14:1 overall strip ratio) over the life of mine. Waste rock for the Project is to be deposited at storage facilities located north (Eagle Pup Waste Rock Storage Area) and south (Platinum Gulch Waste Rock Storage Area) of the Eagle Pit, whereas overburden will be categorized and segregated into reclamation (top)soil stockpiles and ice-rich overburden storage areas (Figure 2.1).

Economic ore is fed through a three-stage crushing plant to produce an 80% passing (P80) 6.5 mm product (referred to as crushed ore). The crushing circuit consists of a primary gyratory crusher, a secondary cone crusher, and three tertiary cone crushers. Ore is conveyed between the primary, secondary, and tertiary crushing stations by covered conveyor or enclosed conveyor gallery. After the tertiary crushing stage, ore is transported by covered conveyor to the HLF area where the ore is stacked on a lined solution collection pad via a series of portable conveyors and finally a radial stacking conveyor. The HLF is located in Ann Gulch, approximately 1.2 km north of the Eagle Pit. The toe of the HLF embankment occurs at an elevation of approximately 880 metres above sea level (masl), and at full height will extend up to the height of land in Ann Gulch and accommodate about 86 Mt of ore. The HLF pad consists of a confining embankment to provide stability to the base of the HLF and create an operational *in situ* storage sump for process solution, a composite lined area for ore leaching and solution containment, pumping wells for the extraction of solution, a lined external events pond to contain excess solution in extreme events, upstream surface water interceptor ditches, and leak detection, recovery, and monitoring systems to ensure solution containment. The gold extraction process includes irrigation of ore in the HLF with a barren cyanide solution via drip emitters fed from the Gold Recovery Plant. The barren solution is allowed to percolate through ore in the HLF, dissolving the gold to produce a gold-bearing “pregnant” solution (pregnant leach solution [PLS]). The PLS is pumped from the HLF to the Gold Recovery Plant for further processing.

At the Gold Recovery Plant, the PLS is processed through a carbon ADR circuit that consists of two trains of five cascading-flow carbon columns Briefly, loaded carbon is extracted from the first carbon adsorption columns and is acid washed prior to advancing to the desorption circuit in the strip vessel. The pregnant solution from the strip vessel flows to the electrowinning circuit. At the conclusion of the strip cycle, the stripped carbon is thermally regenerated in the carbon reactivation kiln and then returned to the carbon columns. Gold sludge is plated onto steel wool cathodes in electrowinning cells, and is then dried, fluxed, and smelted to produce gold doré. The barren solution discharged from the final carbon column is pumped to a barren solution tank



LEGEND

- Building
- Topsoil Stockpile or Laydown Area
- General Mine Infrastructure
- Open Pit
- Waste Rock Storage Area
- Mine Water Storage Pond
- Heap Leach Facility
- Collection Ditch
- Collection Ditch and Pipeline
- Pipeline

Site Layout of the Eagle Gold Project

0 0.5 1 2 km

Projection: North American Datum 1983 UTM Zone 8V, 8W
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Figure 2.1

Document Path: S:\Projects\207202\207202.0026 - VGC Eagle Gold Mine Phase 1 EEM Study Design\3 - GIS\Report\20-26 Figure 2.1 Site Layout.mxd

where liquid sodium cyanide solution, caustic, and antiscalant are added to maintain the required pH and optimal cyanide concentrations for leaching. The resulting barren sodium cyanide solution is then applied to the ore in the HLF to repeat the process.

Mine water/solution from the HLF and Gold Recovery Plant are not expected to require treatment and release through the planned Mine Water Treatment Plant[1] (MWTP) until closure or in the unlikely case that extreme freshet, precipitation or process upset events are experienced. Mine contact water from other Project areas that are directed to the LDSP will be preferentially utilized to meet barren solution requirement such that any retention of water and subsequent discharges from the LDSP are expected to occur only rarely under freshet or extreme precipitation events. The current MWTP treatment design considers both HLF contact waters and water collected in the LDSP from other Project areas. Upon meeting regulatory effluent quality standards, treated effluent from the MWTP will discharge through the LDSP Final Discharge Point (FDP) to Haggart Creek via Ditch C (Figure 2.1). This FDP, referred to as "LDSP Outlet" (or FDP #3), is one of four FDP maintained at the Project (StrataGold 2019a,b,c).[2] Effluent was discharged from this FDP over two separate events in 2019, including a single day event on April 20, 2019 in which a total of 3,186 m^3 was released, and a three-day event from April 27th to 29th, 2019 in which a total of 12,229 m^3 was released. The other Project FDPs include:

- The HLF underdrain (referred to as the "HLF Underdrain Monitoring Vault", or FDP #1), that intercepts non-contact groundwater beneath the HLF and is either directed back to the Gold Recovery Plant for process feed water or directed to Dublin Gulch if water meets discharge criteria.
- The Events Pond Emergency Spillway serves as the location for FDP #2. The Events Pond, used primarily for temporary storage of direct precipitation or water diverted from the LDSP. This water is then used as make-up water within the HLF process circuit. The Events Pond is also designed as overflow containment for the HLF in the event of extreme precipitation within the HLF catchment or process upset events within the HLF. Water would discharge through FDP #2 to the Dublin Gulch receiving waterbody only under a very unlikely emergency scenario (StrataGold 2019c).
- The LDSP is designed with an emergency spillway that serves as the location for FDP #4. The spillway is designed to protect the pond infrastructure in the event of extreme

[1] A Mine Water Treatment Plant (MWTP) will be constructed and commissioned prior to stacking ore into HLF Phase 2 that includes cyanide detoxification and ability to treat 13,824 m^3 of Mine Water and 691 m^3 of HLF solution daily while achieving the effluent quality standards set out in the Project's territorial Water Use Licence (Q14-041-1).

[2] A fifth FDP, the LDSP Contingency Sump, was in place during construction of the Project, but has since been decommissioned (StrataGold 2019c)

runoff events. The LDSP Emergency Spillway FDP is unlikely to be used, but in the very unlikely occurrence of an emergency flow event, would discharge to Haggart Creek via Ditch C (StrataGold 2019c).

2.2.2 Deposit Geochemical Characterization

The geology of the Project[3] is principally composed of two lithological units, including a granodiorite intrusive and metasedimentary host rock (Brown et al. 2001; SRK 2014). The granodiorite is a Cretaceous-aged intrusive stock comprised of four phases, including the predominant granodiorite as well as younger phases compositionally consisting of quartz diorite, quartz monzonite, leucogranite, and aplite dikes and sills that cut both the granodiorite and the surrounding metasediments (StrataGold 2009). The stock intruded Proterozoic to Lower Cambrian-aged Hyland Group metasediments comprised of interbedded quartzites and phyllitic metasedimentary rocks. These quartzites are variably gritty, micaceous and massive, whereas the phyllitic metasediments are predominantly comprised of muscovite-sericite and chlorite with a relatively thin but definite hornfelsic contact aureole adjacent to the intrusive.

Gold mineralization associated with the stock occurs as quartz veins along the intrusive contacts, and as sheeted quartz veins within the granodiorite itself. The sheeted veins are discontinuous and primarily contain quartz, feldspar with or without muscovite, and biotite. Gold occurs primarily as pure gold and in association with very small (less than 1%) amounts of metallic bismuth (Bi) and arsenopyrite (FeAsS). Other vein minerals include, in decreasing occurrence, pyrite/ marcasite (FeS_2), pyrrhotite ($Fe_{1-x}S$), and minor amounts of sphalerite ([Zn,Fe]S), chalcopyrite ($CuFeS_2$), galena (PbS), molybdenite (MoS_2), and iron oxides/hydroxides. Intimately admixed with the sulphides are inclusions of metallic bismuth, Pb-Sb-(Cu,Zn) sulphosalts (e.g., bournonite [$PbCuSbS_3$] and boulangerite [$Pb_5Sb_4S_{11}$]) and tetrahedrite [$Cu_{12}Sb_4S_{13}$]. Suphide particle sizes varied from <5 micron to over 1 mm, with typical sizes on the order of 300 to 800 microns. Alteration is limited and localized to the vestiges of the veins; alteration phases include albite, potassium feldspar, sericite, carbonate, and chlorite. Weathered ore material has included oxidation products of bismuth, particularly bismite (Bi_2O_3) and minor bismutite ($Bi_2[CO_3]O_2$), as well as arsenic-bearing hydrous iron oxides and/or scorodite ($Fe[AsO_4]•2H_2O$).

Within the deposit material, carbonates predominantly as calcite (1 to 4%) generally occurred well in excess of sulphides (less than 0.5%). Static testing has shown a strong propensity towards non-acid generating conditions based on most samples having a neutralization potential to acid

[3] The discussion of Project geology provided herein was largely taken from SRK (2014), who completed a geochemical characterization of the deposit material using existing documentation in combination with expanded sample testing.

potential ratio above four (4). Therefore, limited potential for acid rock drainage (ARD) is anticipated for the Project. Kinetic testing based on humidity cell testing and a field barrel program indicated that although neutral pH conditions were expected, some leaching of sulphate, arsenic, cadmium, manganese, antimony, selenium, and uranium, and potentially also fluoride, iron, lead, molybdenum, and zinc, may still occur from the deposit material (e.g., ore and waste rock; SRK 2014).

2.2.3 Environmental Protection Practices

Management plans, emergency response plans, adaptive management plans, and operation, maintenance, and surveillance (OMS) manuals have been developed by VGC to monitor/ensure long-term chemical and physical stability of waste rock and overburden storage areas/stockpiles, proper functioning and environmental performance of the HLF, and to identify thresholds for adaptive management actions (VGC 2020). These include:

- Waste Rock and Overburden Facility Management Plan;
- Frozen Materials Management Plan;
- Heap Leach Facility Operation, Maintenance and Surveillance Manual;
- Heap Leach Facility Contingency Water Management Plan;
- Heap Leach and Process Facilities Emergency Response Plan;
- Cyanide Management Plan, including:
    - Standard Operating Procedures;
    - ADR Plant Operations Plan;
    - ADR Plant Preventative Maintenance Plan;
- Environmental Monitoring, Surveillance and Adaptive Management Plan (EMSAMP); and,
- Waste Management Plan.

Monitoring and surveillance of the material storage and stockpile areas includes routine visual and/or drone inspections and evaluation using various instrumentation and survey tools to detect movement and stability of the facilities. In addition, characterization of seepage water quality, runoff water quality, and flow conditions are monitored at the material storage and stockpile areas to inform water management strategies including water treatment requirements, conveyance and storage needs, and sediment and erosion control practices (VGC 2020). Regular visual surveillance and monitoring of instrumentation is conducted at the HLF to ensure ongoing safety of the heap leach and process facilities and to identify areas requiring maintenance before problems and safety concerns develop (Appendix Table A.1). Physical inspections of the Gold Recovery Plant are conducted to allow the identification of areas, components, or issues that are not functioning as designed or could potentially require modification, repair, or rehabilitation (Appendix Table A.2). An Emergency Response Plan (ERP) has been developed by VGC that

considered HLF foundation/slope failure and overtopping, ore heap slope failure, Events Pond foundation/slope failure and overtopping, HLF liner system failure, leak detection and recovery system failure, failure of overliner drain fill, failure of solution collection and delivery system, and catastrophic release of hydrogen cyanide from the Gold Recovery Plant or during transportation of dry cyanide briquettes to the Project. For each scenario, the potential causes, preventative measures, detection methods, site response, emergency level classification, potential effects, and follow up activities have been described along with internal and external communication protocols.

Adaptive management is used as a tool to advance continuous improvement of environmental management policies and practices at the Project, and is focused on specific areas where uncertainty regarding performance expectations exist including surface water hydrology, surface water quality, groundwater quality, HLF and Events Pond leak detection, and in-heap pond maximum available storage volume. Adaptive management plans (AMP) were developed for these components using a science-based learning process in which outcomes are used for evaluation and adjustment (Environment Canada 2009; VGC 2020). The AMP include definitions for the indicator(s) that describe a condition and thresholds used to trigger a corresponding response plan. Performance objectives have been developed for each environmental resource and major Project facility, and are used as thresholds for mitigative response(s). Action will also be taken if trends are observed that indicate a high likelihood of not meeting a performance objective in the future. Monthly and annual reporting is used to summarize the monitoring and surveillance information, compare the results to AMP action triggers, assess the adequacy and appropriateness of the various components of adaptive management, and to provide recommendations for modification as necessary (VGC 2020).

2.3 Receiving Environment Effluent Mixing

A tracer-based effluent plume delineation study has not been conducted at the Project to evaluate the concentration of the Project effluent in Haggart Creek. However, effluent concentrations during the two brief discharges in late April 2019 to Haggart Creek were estimated using the 2019 (April) LDSP Outlet effluent discharge data together with monthly average unit yield discharge data available for the mine baseline period (2007 to 2016) from three hydrometric stations on Haggart Creek located near the Ditch C confluence (Table 2.1).[4] Because site-specific hydrometric station data were not available for the days in which effluent discharge occurred in April 2019, effluent concentrations were estimated using average monthly baseline period data for April and May to bracket low flow and high flow (freshet) scenarios, respectively.

[4] Haggart Creek hydrology stations W22 (upstream of Dublin Gulch), W4 (downstream of Dublin Gulch), and W29 (downstream of Eagle Creek) were used to provide unit area flow data for the calculation of effluent concentrations.

Table 2.1: Raw Hydrological Data Used to Estimate the LPSD Outlet Effluent Concentration at the Edge of the Mixing Zone in Haggart Creek for the April 2019 Effluent Discharge Event

Descriptor	Units		Date	
			April 20, 2019	April 27 to April 29, 2019
Effluent Discharge	m^3/day		3,186	4,076
	m^3/s		0.037	0.047
Average April Unit Yield by Station	W22	L/s/km^2	3.98	
	W4	L/s/km^2	4.58	
	W29	L/s/km^2	5.13	
Haggart Creek Near-Field Average[a]	Unit Yield (L/s/km^2)		4.56	
	Discharge (m^3/s)		0.350	
Estimated Effluent Concentration at Haggart Creek Near-Field	Percent (%)		9.5	11.9

[a] Haggart Creek near-field average calculated using data from Stations W22, W4, and W29.

Using the LDSP Outlet effluent discharge rates from April 2019, estimates of effluent concentrations in Haggart Creek just below the confluence with Ditch C ranged from 9.5% to 11.9% under low flow conditions typically expected to occur in April (Table 2.1). Notably, an effluent concentration of 13.8% was estimated at the Haggart Creek effluent-exposed area immediately below the effluent discharge using field-based specific conductance measurements of the LDSP Outlet effluent and waters of Haggart Creek upstream and downstream of the Ditch C confluence at the time of effluent release from April 27th to 29th, 2019 (Table 2.2). The relatively close agreement in estimated concentrations between methods suggested that effluent concentrations greater than 10% can occur at the Haggart Creek effluent-exposed area. Only minor sources of dilution occur between the Ditch C confluence and Gil Gulch, located approximately 1,050 m downstream, on Haggart Creek (Figure 2.2). Therefore, similar concentrations of effluent can be expected in Haggart Creek at points 100 m and 250 m downstream of the confluence with the ditch that receives LDSP Outlet effluent (i.e., Ditch C).

Table 2.2: Raw Specific Conductance Data Used to Estimate the LDSP Outlet Effluent Concentration at the Edge of the Mixing Zone in Haggart Creek for the April 2019 Effluent Discharge Event

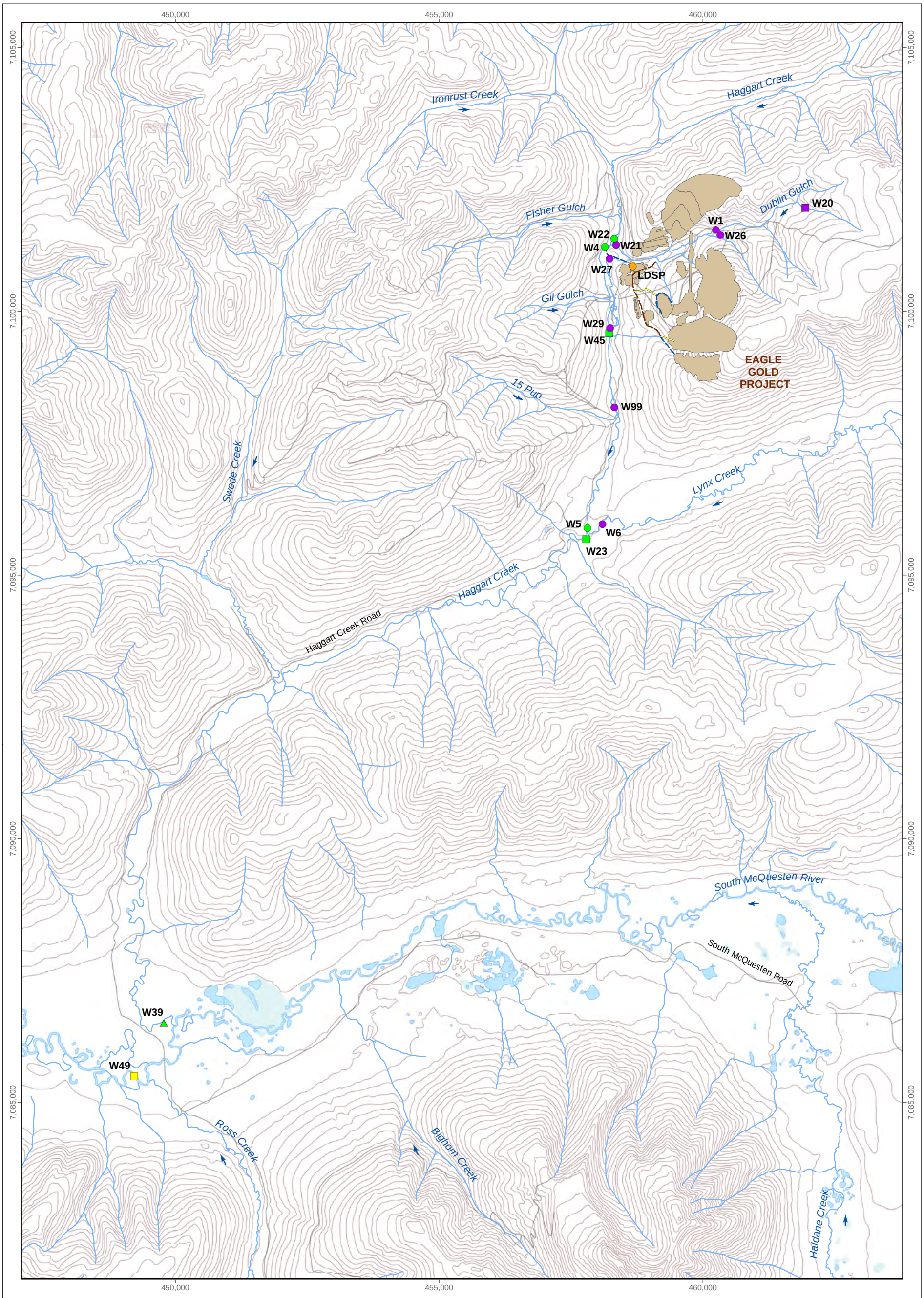
Sampling Date	Specific Conductance (uS/cm)			Estimated Effluent Concentration at Haggart Creek Near-Field[a]
	LPSD Outlet Effluent	Haggart Creek Area		
		W22 (Reference)	W4 (Effluent-Exposed)	
April 28, 2019	519	not measured	425	13.8%
April 29, 2019	not measured	376	366	

[a] Effluent concentration calculated as the average of W4 specific conductance from April 28 and 29 less the W22 specific conductance from April 29, divided by the LPSD Outlet effluent specific conductance from April 28 less the W22 specific conductance from April 29, expressed as a percentage.

2.4 Study Area Biophysical Descriptions

2.4.1 Proposed Study Areas

For mines that have more than one FDP, the receiving environment that has the greatest potential to show adverse environmental impacts as determined through evaluation of greatest total monthly loadings of deleterious substances and the manner in which effluent mixes within the receiving environment serves as the focus for EEM biological studies (Government of Canada 2019). Effluent discharges from the Project's four potentially active FDP are anticipated to occur rarely and intermittently in response to extreme precipitation and/or runoff events. To date, effluent has only been discharged from the LDSP Outlet (FDP #3), and therefore the evaluation of effects from this FDP serves as the focus for EEM biological studies at the Project. Accordingly, Haggart Creek downstream of the Ditch C confluence will serve as the effluent-exposed study area, and the portion of Haggart Creek upstream of Ditch C will serve as an appropriate reference study area, for this Phase 1 EEM biological study. Because no barriers to fish movement exist between the effluent-exposed and reference areas of Haggart Creek indicated above, Lynx Creek is proposed as the reference area for the fish population survey component of the EEM biological study. Habitat, hydrological, chemical (e.g., water quality, sediment quality), and biological characteristics available for the proposed EEM effluent-exposed and reference areas are summarized below. In accordance with the MDMER, a summary of previous biological study results, including comparisons to reference conditions and a description



LEGEND

- Haggart Creek - Continuous
- Haggart Creek - Manual Monthly
- Haggart Creek - Manual Quarterly
- Tributary - Continuous
- Tributary - Manual Monthly
- South McQuesten - Manual Quarterly
- Mine FDP - Continuous
- Collection Ditch
- Collection Ditch and Pipeline
- Pipeline
- Mine Infrastructure

Hydrology Station Locations

0 1 2 4
km

N
W E
S

Projection: North American Datum 1983 UTM Zone 8V, 8W
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Figure 2.2

Document Path: S:\Projects\207202\207202.0026 - VGC Eagle Gold Mine Phase 1 EEM Study Design\3 - GIS\Report\20-26 Figure 2.2 Hydrology Stations.mxd

of any determined cause of effect(s), has been integrated into the biophysical characterization of the proposed EEM study areas.

2.4.2 Haggart Creek

2.4.2.1 Habitat Description

The Project is situated within the Yukon Plateau North Ecoregion, in the Boreal Cordillera Ecozone, which encompasses the Stewart, MacMillan, and Pelly plateaus and southern part of the Selwyn Mountains (Smith et al. 2004). The majority of the Project lies within the Dublin Gulch watershed, for which elevations range from 765 m above sea level (masl) near the Dublin Gulch confluence with Haggart Creek, to 1,525 masl at the eastern boundary of the Dublin Gulch watershed near the summit of Potato Hills. Most of the Project area remained un-glaciated during the last glacial period (Bostock 1965) and has not been glaciated for more than 200,000 years (Stantec 2011). As a result, valleys tend to be deep, narrow, and V-shaped to the head of streams, where they rise steeply and end abruptly as transition to rounded upland surfaces occurs. Prior to the last glacial period, glacial-ice action formed many of the tributaries to Haggart Creek, including Dublin, Ann, Eagle, and Platinum gulches. Within these gulches, headscarps of landslides and rock and debris slides are common, and through the erosion of these features, contribute to elevated sediment loads to Haggart Creek during freshet and other high flow events.

Vegetation in the vicinity of the Project is characteristic of the Yukon Plateau North Ecoregion, which includes a combination of northern boreal forest and subalpine ridges and plateaus. The forested zone near the Project extends to an elevation of approximately 1,225 masl, and is characterized by a mix of coniferous and deciduous species at various stages of succession. Vegetation monitoring conducted at the Project indicated the forested zone overstory was dominated by white spruce (*Picea glauca*), black spruce (*P. mariana*), trembling aspen (*Populus tremuloides*), balsam poplar (*P. balsamifera*), and paper birch (*Betula neoalaskana*), understory dominated by willow (*Salix* sp.) and dwarf birch (*B. glandulosa*) shrubs, and ground cover including horsetail (*Equisetum* sp.), mosses, grasses and lichens (Laberge 2019a). Vegetation at Project area elevations from 1,225 masl to about 1,400 masl is characterized by discontinuous, open canopy subalpine-fir-dominated forest patches, and by shrub-lichen dominated ecosystems (Stantec 2011). Dwarf birch and willow shrubs, and fescue (*Festuca altaica*) and lichen groundcover, were the dominant vegetation observed at sub-alpine plots monitored in 2019, with some scattered subalpine fir (*Abies lasiocarpa*) and white spruce also present (Laberge 2019a). Vegetation at elevations above 1,500 masl is dominated by ecosystems containing a mixture of shrubs, graminoids, herbs, bryophytes, and lichens (Stantec 2011).

The headwaters of Haggart Creek originate approximately 11 km north and east of the Project. Near the Dublin Gulch confluence, Haggart Creek occurs as a moderate-sized third-order stream, draining a watershed of approximately 77 square kilometres (km^2). Key tributaries to Haggart Creek upstream of the Project include Ironrust Creek and Fisher Gulch, whereas downstream of the Project, Haggart Creek receives flow from Gil, Platinum, and 15 Pup gulches before meeting Lynx Creek approximately 5.6 km downstream of Dublin Gulch. Haggart and Lynx creeks share similar watershed size at their confluence (i.e., approximately 98 km^2 and 101 km^2, respectively). Downstream of Lynx Creek, Haggart Creek receives flow from Swede Creek before draining into South McQuesten River approximately 22 km downstream of the Dublin Gulch confluence.

Haggart Creek is a low gradient, perennial flowing stream in the vicinity of the Project, with grades ranging from 1.1% to 1.4% at locations used for fish monitoring between Fisher Gulch and Lynx Creek (upstream and downstream of the Project, respectively). The stream morphology of Haggart Creek consists predominantly of riffle-run habitat with occasional presence of pools and rapids reflecting localized topography. Average wetted and bankfull width of Haggart Creek downstream of the Project extending to the confluence of Lynx Creek has ranged from 5.6 to 7.3 m (overall average of 6.3 m) and 7.6 to 9.8 m (overall average of 8.8 m) wide, respectively, during biological monitoring studies conducted in September from 2017 to 2019, which were slightly greater than at the area upstream of Dublin Gulch (Table 2.3). The average water depth of riffle habitat in Haggart Creek at the time of these studies ranged from 0.20 to 0.36 m (overall average of 0.27 m) downstream of the Project, and was comparable to that upstream of Dublin Gulch (i.e., approximately 0.25 m; Table 2.3). Water velocities at Haggart Creek stations between Dublin Gulch and Lynx Creek ranged from 0.35 to 0.48 m/s (overall average of 0.43 m/s), which were slightly greater than the average water velocity observed at the reference area upstream Dublin Gulch based on conditions observed in September (2017 to 2019 data; Table 2.3).

The surficial substrate at erosional habitat of Haggart Creek is composed predominantly of coarse gravel, with the sub-dominant bed material generally including a combination of medium gravel and small cobble (Table 2.3). Sand and small gravel generally constitute the interstitial material at the riffle areas (de Graff 2017, 2019, 2020). Large cobble and small boulder substrate occur in low abundance at Haggart Creek stations used historically for biological monitoring with the exception of near the confluence with Platinum Gulch (Station W29), where these substrates occur in moderate abundance (Laberge 2018, 2019b, 2020). The substrate of pool habitats in Haggart Creek generally has a greater proportion of fines, including silt, and variable amounts of organic detritus. No substantial differences in surficial substrate characteristics has been noted between Haggart Creek biological monitoring stations located downstream and upstream of the Project. In-stream vegetation is sparse and limited to algae typically present as periphyton

Table 2.3: Summary of Habitat Features at Haggart Creek and Lynx Creek Benthic and Fish Monitoring Stations

Metric	Statistic	Haggart Creek					Lynx Creek
		W22 reference	W4 near-field	W29 near-field	W5 near-field	W23 far-field	W6 reference
Bankfull Width (m)	Average	5.8	8.9	7.6	9.8	12.7	7.4
	Minimum	4.7	7.2	6.5	8.1	10.5	6.0
	Maximum	6.5	10.8	8.7	11.8	15.2	11.4
Wetted Width (m)	Average	5.2	6.0	5.6	7.3	9.5	5.5
	Minimum	4.2	3.3	4.7	5.0	8.2	4.7
	Maximum	6.1	7.1	6.9	9.1	10.8	6.4
Water Depth (m)	Average	0.25	0.20	0.36	0.25	0.25	0.15
	Minimum	0.16	0.18	0.19	0.17	0.18	0.11
	Maximum	0.30	0.23	0.55	0.33	0.40	0.20
Water Velocity (m/s)	Average	0.37	0.35	0.46	0.48	0.28	0.31
	Minimum	0.31	0.27	0.35	0.39	0.28	0.26
	Maximum	0.42	0.42	0.56	0.57	0.28	0.36
Substrate Embeddedness (%)	Average	52	52	25	48	63	26
	Minimum	25	25	25	38	63	6
	Maximum	68	68	25	60	63	44
Canopy Coverage (%)	Average	3	3	12	5	2	5
	Minimum	0	0	5	5	0	5
	Maximum	5	5	20	5	5	5
Substrate Description	Qualitative	coarse gravel, small cobble	coarse gravel, small cobble	not reported	coarse gravel, small cobble	not reported	coarse gravel, medium gravel

(i.e., biofilms attached to substrate), with similar abundance suggested between Haggart Creek biological monitoring stations in September from 2017 to 2019 based on visual observations (de Graff 2017, 2019, 2020).

2.4.2.2 Hydrology

Hydrology monitoring was conducted at Haggart Creek during baseline and as part of on-going streamflow monitoring to comply with territorial Water Use Licence conditions (Lorax 2020; VGC 2020). Seven hydrology stations have been established downstream, and one station has been established upstream, of the LDSP Outlet effluent discharge on Haggart Creek (Table 2.4; Figure 2.2). In addition to these stations, seven hydrology stations have been established on tributaries feeding Haggart Creek in the Project area, and one station has been established on South McQuesten River (Figure 2.2). Hydrological monitoring data has generally been collected at the Haggart Creek stations using a combination of continuous recording (using automated pressure transducer datalogging units) and manual stage and discharge measurements during the ice-free period (i.e., from prior to freshet to just before freeze-up; Table 2.4).[5]

The hydrology of Haggart Creek is characterized by a dominant snowmelt-driven freshet signature that typically occurs between early May and early June (Lorax 2020). The receding limb of the freshet tapers to a lower summer flow regime primarily reflective of groundwater baseflow punctuated by periodic rainfall-driven runoff events that result in higher flow over one- to four-day durations. Baseflows are lowest in the winter and although sub-ice flow typically occurs over the winter months in Haggart Creek, groundwater may be depleted in tributaries to Haggart Creek resulting in no winter flow at these tributaries. Aufeis (i.e., groundwater that seeps and freezes onto and adjacent to local watercourses) and shelf ice occurs in Haggart Creek, generally melting during freshet but in some cases persisting into early summer (Lorax 2020). Historical placer mining activities have altered natural channel conditions and drainage areas in Haggart Creek and sub-watersheds within the system (Stantec 2012), potentially contributing to altered unit yield flow based on the ratio of natural to altered channel and/or riparian characteristics.

Hydrology stations with the most complete continuous recordings showed relatively low variation in unit yields and runoff for the open water season at the Haggart Creek effluent-exposed area between Dublin Gulch and Lynx Creek (Table 2.5). Slightly higher average annual discharge was indicated between the Dublin Gulch and Platinum Gulch confluences on Haggart Creek, but no change in annual average discharge was indicated between the Platinum Gulch confluence and

[5] Salt dilution methods were also implemented to determine discharge during baseline studies. However, this method is no longer used at the Project as part of its routine hydrological monitoring program (VGC 2020).

Table 2.4: Haggart Creek and Lynx Creek Hydrometric Stations Maintained at the Eagle Gold Project

Station ID	Station Name	Northing	Easting	Drainage Area (km^2)	Median Basin Elevation (m)	Notes
W22	Haggart Creek above Dublin Gulch	7101378	458319	66.8	1,113	continuous discharge time-series
W4	Haggart Creek below Dublin Gulch	7101223	458144	76.9	1,125	continuous discharge time-series
W29	Haggart Creek below Platinum Gulch	7099583	458225	86.1	1,112	manual monthly discharge
W99	Haggart Creek above 15 Pup	7098180	458322	not reported	not reported	continuous discharge time-series
W5	Haggart Creek above Lynx Creek	7095888	457814	97.5	1,091	continuous discharge time-series
W23	Haggart Creek below Lynx Creek	7095682	457790	198.4	1,040	manual monthly discharge
W39	Haggart Creek above South McQuesten River	7086504	449780	not reported	not reported	manual quarterly discharge
W6	Lynx Creek above Haggart Creek	7095964	458099	100.9	1,049	continuous discharge time-series

Table 2.5: Summary of Monthly Average Discharge, Unit Yield, and Runoff for Haggart Creek and Lynx Creek Hydrology Stations during the Open-Water Period, 2007 to 2016 [a]

Watercourse	Station Identifier	Description	Watershed Area (km^2)	Variable	April	May	June	July	August	September	October	November	Average/ Total
Haggart Creek	W22	Reference Upstream of Project	66.8	Average Discharge (m^3/s)	0.27	1.97	0.81	0.66	0.81	0.78	0.68	-	0.85
				Average Yield ($L/s/km^2$)	3.98	29.44	12.15	9.91	12.12	11.73	10.16	-	12.78
				Runoff (mm)	4.1	60.2	30.1	24.0	30.8	30.4	18.5	-	198.1
	W4	Near-Field Downstream of Dublin Gulch	76.9	Average Discharge (m^3/s)	-	2.03	1.02	0.85	0.89	0.91	0.81	-	1.09
				Average Yield ($L/s/km^2$)	-	26.38	13.27	11.11	11.53	11.80	10.48	-	14.10
				Runoff (mm)	-	50.5	31.5	29.8	29.4	30.6	19.0	-	190.8
	W29	Near-Field Downstream of Platinum Gulch	88.6	Average Discharge (m^3/s)	-	2.51	1.20	1.21	1.06	1.11	0.87	-	1.33
				Average Yield ($L/s/km^2$)	-	29.13	13.94	14.09	12.25	12.88	10.05	-	15.39
				Runoff (mm)	-	44.0	26.1	37.7	31.3	33.4	16.3	-	188.8
	W5	Near-Field Upstream of Lynx Creek	97.5	Average Discharge (m^3/s)	-	2.68	1.30	1.09	0.99	0.96	0.97	-	1.33
				Average Yield ($L/s/km^2$)	-	27.54	13.33	11.15	10.17	9.89	9.92	-	13.67
				Runoff (mm)	-	56.5	29.5	29.9	25.6	25.6	15.6	-	182.7
Lynx Creek	W6	Reference Lower Portion of System	100.9	Average Discharge (m^3/s)	-	3.24	1.27	0.98	1.09	1.19	0.94	1.30	1.43
				Average Yield ($L/s/km^2$)	-	32.11	12.63	9.74	10.81	11.77	9.28	12.88	14.17
				Runoff (mm)	-	62.4	24.3	26.1	27.6	30.5	15.8	15.0	201.7

Note: "-" indicates no data collected from those months.

[a] Reproduced from Lorax 2018. No data reported for months of ice-cover in January, February, March, and December.

just upstream of Lynx Creek on Haggart Creek over the open water season (Table 2.5). Only minor sources of flow were indicated between the Dublin Gulch and Lynx Creek confluences on Haggart Creek over the open water season based on the hydrology station data, suggesting relatively consistent effluent concentrations can be expected within Haggart Creek to a distance of approximately 4 km downstream of the Project effluent discharge to the Lynx Creek confluence.

2.4.2.3 Surface Water Quality

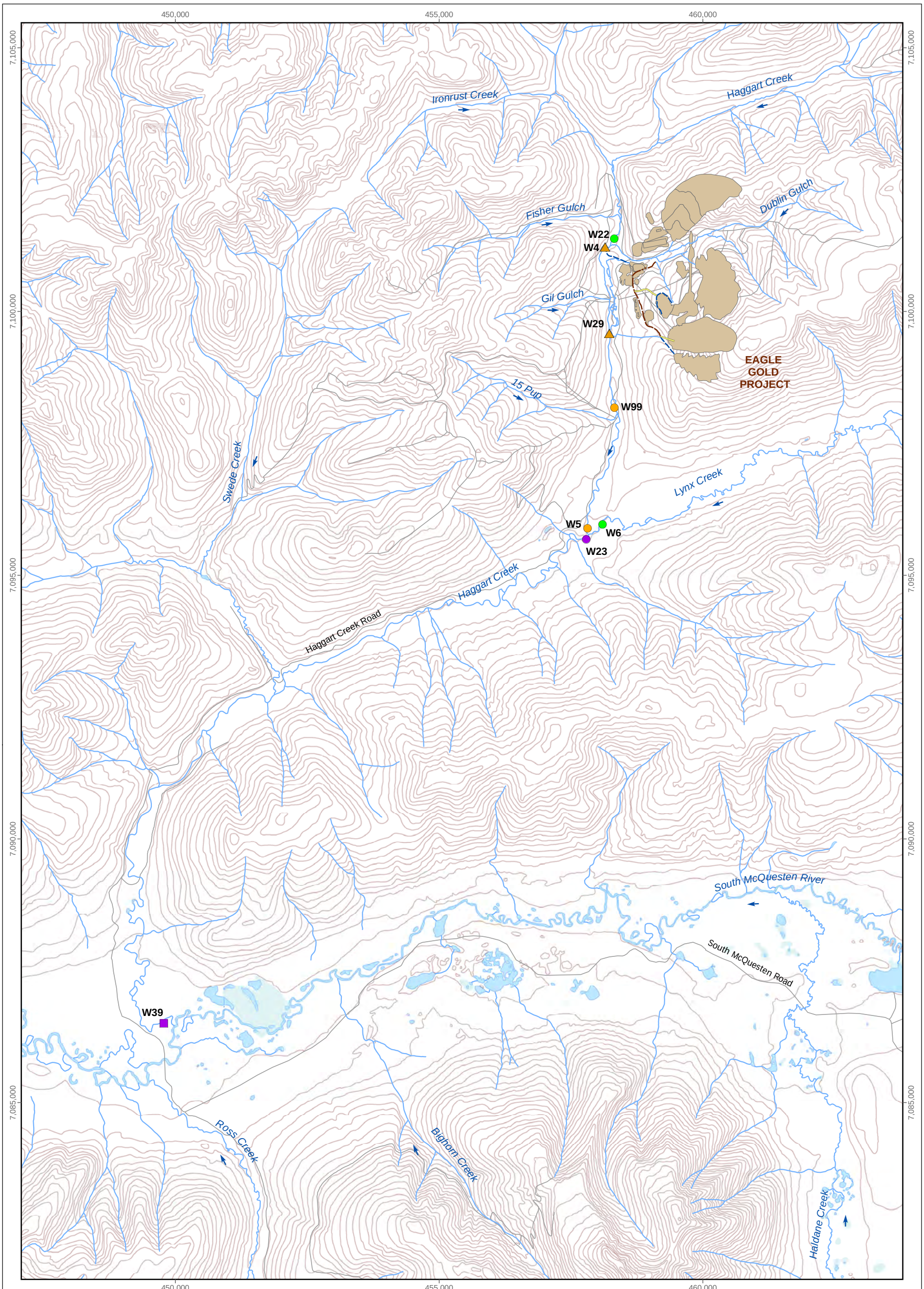
Surface water quality was monitored at seven stations on Haggart Creek during baseline and as part of on-going water quality monitoring to comply with territorial Water Use Licence conditions (Table 2.6; Figure 2.3; Stantec 2012; Lorax 2013, 2017; VGC 2020). Surface water of Haggart Creek has historically shown high dissolved oxygen concentrations that were well above the applicable water quality guideline (WQG) lowest acceptable concentration for the protection of early life stages of cold-water biota (i.e., 9.5 mg/L), reflecting predominantly erosional, turbulent flow conditions within the creek (Stantec 2011; Laberge 2018). The pH at all Haggart Creek stations located within the area of Project influence during baseline and monthly sampling in 2019 was slightly basic, but was consistently within the WQG acceptable range for the protection of aquatic life. The surface water of Haggart Creek naturally shows high acid buffering capacity as indicated by annual average total alkalinity and hardness concentrations greater than 75 mg/L and 130 mg/L (as $CaCO_3$), respectively (Table 2.7; Stantec 2012). In addition, moderately high conductivity has been observed at Haggart Creek stations located within the area of Project influence, reflecting moderate concentrations of total dissolved solids and major ions including chloride and sulphate (Table 2.7). No consistent differences in pH or conductivity were shown between the Haggart Creek mine-exposed stations and applicable reference stations, nor with progression downstream of Dublin Gulch within Haggart Creek, based on baseline records and on monthly sampling completed in 2019 (Appendix Tables B.1 to B.3), suggesting no marked influences on these field parameters related to the past or present Project footprint.

Water quality monitoring conducted at the Haggart Creek mine-exposed stations during baseline studies indicated annual average concentrations of all monitored parameters were below applicable WQG except aluminum, which was elevated above WQG downstream of Platinum Gulch (Table 2.7). No elevation in parameter concentrations were indicated at Haggart Creek stations located downstream of the Project compared to the upstream reference station and Lynx Creek reference station based on overall annual averages for the baseline period except for arsenic. On average, arsenic concentrations at Station W4 were roughly four times that observed at Station W22, reflecting significant natural loadings of arsenic entering Haggart Creek from Dublin Gulch (Lorax 2017). At individual stations during baseline, average concentrations of most parameters showed relatively low variation among months except in May and to a lesser

Table 2.6: Water Quality Monitoring Stations Maintained on Haggart Creek and Lynx Creek

Station ID	Station Name	Coordinates (Zone 8)		Sampling Frequency	
		Northing	Easting	Field Measurements[a]	Analytical Suite
W22	Haggart Creek above Dublin Gulch	7101378	458319	monthly	monthly
W4	Haggart Creek below Dublin Gulch	7101223	458144	daily during effluent discharge, monthly during non-discharge	daily during effluent discharge, monthly during non-discharge
W29	Haggart Creek below Platinum Gulch	7099583	458225	daily during effluent discharge, monthly during non-discharge	daily during effluent discharge, monthly during non-discharge
W5	Haggart Creek above Lynx Creek	7095888	457814	monthly	monthly
W23	Haggart Creek below Lynx Creek	7095682	457790	monthly	monthly
W99	Haggart Creek above 15 Pup	7098180	458322	monthly	monthly
W39	Haggart Creek above South McQuesten River	7086504	449780	quarterly	quarterly
W6	Lynx Creek above Haggart Creek	7095964	458099	monthly	monthly

[a] Includes *in situ* measurement of water temperature, dissolved oxygen, pH, and specific conductance.



LEGEND

- Far-Field - Monthly
- Far-Field - Quarterly
- Near-Field - Monthly
- Near-Field - Daily/Monthly
- Reference - Monthly
- Collection Ditch
- Collection Ditch and Pipeline
- Pipeline
- Mine Infrastructure

Current and Historical Surface Water Quality Monitoring Stations on Haggart Creek and Lynx Creek

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km

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Projection: North American Datum 1983 UTM Zone 8V, 8W
Reproduced under licence from Her Majesty the Queen in Right of Canada, Department of Natural Resources Canada.

Date: April 2020
Project 207202.0026

minnow environmental inc.

Figure 2.3

Document Path: S:\Projects\207202\207202.0026 - VGC Eagle Gold Mine Phase 1 EEM Study Design\3 - GIS\Report\20-26 Figure 2.3 WQ Stations.mxd

Table 2.7: Average Water Chemistry at Haggart Creek and Lynx Creek, 2007 to 2016

Parameters		Units	Water Quality Guideline	Haggart Creek			Lynx Creek (W6)
				Upstream (W22)	Downstream (W4)	Downstream (W29)	
Conventionals	Conductivity (lab)	umho/cm	-	309	301	327	377
	pH (lab)	pH	6.5 - 9.0[a,b]	7.85	7.90	7.96	7.74
	Hardness (as $CaCO_3$)	mg/L	-	169	162	179	169
	Total Suspended Solids (TSS)	mg/L	-	5.3	6.0	9.3	5.6
	Total Dissolved Solids (TDS)	mg/L	-	201	194	213	207
	Alkalinity (as $CaCO_3$)	mg/L	-	96	94	105	101
Nutrients and Organics	Total Ammonia	mg/L	-	0.0087	0.0067	0.0075	0.0058
	Nitrate	mg/L	3[b]	0.106	0.105	0.102	0.168
	Nitrite	mg/L	0.02[a,c]	0.001	0.001	0.001	0.001
	Dissolved Organic Carbon	mg/L	-	3.5	3.4	3.5	5.4
	Total Organic Carbon	mg/L	-	4.2	4.3	3.7	6.1
	Orthophosphorus	mg/L	-	0.001	0.001	0.001	0.002
Anions	Chloride (Cl)	mg/L	120[b]	0.595	0.883	0.691	0.582
	Fluoride (Fl)	mg/L	0.3[c]	0.10	0.10	0.10	0.09
	Sulphate (SO_4)	mg/L	309[a]	69	66	72	63
	Cyanide, WAD	mg/L	0.005[a,c]	0.005	0.005	0.005	0.005
	Cyanide, Total	mg/L	-	0.005	0.005	0.005	0.005
Total Metals	Aluminum (Al)	mg/L	0.100[b]	0.0689	0.0781	0.1566	0.0735
	Antimony (Sb)	mg/L	0.020[b,c]	0.000243	0.000343	0.000663	0.000398
	Arsenic (As)	mg/L	0.005[a,b,c]	0.0009	0.0032	0.0049	0.0063
	Cadmium (Cd)	mg/L	0.00031[a,d]	0.000023	0.000021	0.000022	0.000022
	Calcium (Ca)	mg/L	-	41	40	44	54
	Chromium (Cr)	mg/L	0.009[c]	0.000458	0.000458	0.000404	0.000587
	Cobalt (Co)	mg/L	0.004[a]	0.000242	0.000219	0.000237	0.000159
	Copper (Cu)	mg/L	0.0039[b]	0.00083	0.00091	0.00104	0.00106
	Iron (Fe)	mg/L	1.0[a,d]	0.21	0.21	0.31	0.14
	Lead (Pb)	mg/L	0.0095	0.0001	0.0002	0.0004	0.0002
	Magnesium (Mg)	mg/L	-	16	15	17	8
	Manganese (Mn)	mg/L	1.39[a]	0.051	0.042	0.046	0.016
	Mercury (Hg)	mg/L	0.000026[b]	0.00001	0.00001	0.00001	0.00001
	Molybdenum (Mo)	mg/L	0.073[b]	0.00014	0.00025	0.00022	0.00083
	Nickel (Ni)	mg/L	0.15[b]	0.00136	0.00128	0.00141	0.00081
	Potassium (K)	mg/L	-	1.59	1.57	1.54	1.59
	Selenium (Se)	mg/L	0.002[a,d]	0.00017	0.00019	0.00021	0.00045
	Silver (Ag)	mg/L	0.0015[a,c,d]	0.0000106	0.0000105	0.0000122	0.0000106
	Sodium (Na)	mg/L	-	1.95	2.13	2.19	2.13
	Thallium (Tl)	mg/L	0.0008[b]	0.00001	0.00001	0.00001	0.00001
	Uranium (U)	mg/L	0.015[b]	0.00099	0.00103	0.00140	0.00083
	Vanadium (V)	mg/L	0.006[b]	0.0010	0.0010	0.0011	0.0010
	Zinc (Zn)	mg/L	0.074[a,d]	0.0042	0.0036	0.0039	0.0040

Indicates parameter concentration above applicable Water Quality Guideline.

[a] British Columbia Water Quality Guideline (BCMOE 2020).

[b] Canadian Water Quality Guideline for the protection of aquatic life (CCME 1999, 2020).

[c] Yukon Contaminated Sites Regulation (CSR), (Yukon Government 2012).

[d] Indicates water quality guideline may not have been the most stringent criterion, but rather reflected the most recent update.

extent June, during which time concentrations of total suspended solids (TSS), organic carbon, and non-ionic parameters were generally higher, and conductivity, hardness, and concentrations of several ionic parameters were generally lower than during the other months (Appendix Tables B.1 to B.4). This phenomenon reflected varying proportions of snow-melt driven surface runoff (lower ionic strength) and groundwater inputs (higher ionic strength) as driven by the seasonal water balance. Aluminum concentrations were associated with high TSS concentrations during freshet, indicating natural surface runoff was the source of aluminum (Stantec 2012; Lorax 2013, 2017). Water quality during the effluent discharge events (Table 2.8) was generally comparable to average water quality data collected over the baseline period.

2.4.2.4 Sediment Geochemical Characterization

Surficial materials within the area of Haggart Creek include abundant Pleistocene and Holocene colluvial deposits that are typically composed of diamicton, gravel, shattered bedrock, and lenses of sand and silt derived from bedrock and surficial materials (SRK 2013). Glacial till occurs infrequently, but when observed is typically composed of either a silty or sandy clay matrix with some proportion of larger clasts. The Haggart Creek valley bottom is dominated by alluvium and tailings from placer mining (SRK 2013), and widespread covering of bedrock by colluvium occurs in the region (BGC 2012). Geochemical characterization of overburden within the Project area, including soils, colluvium, and gravels (alluvium or placer tailings) indicated low sulphur content (i.e., less than 0.02%) suggesting a largely non-reactive condition. Although neutralization potential ratios suggested that up to 14% of these surficial materials may be Potentially Acid Generating (PAG), sulphides present in these materials were hypothesized to mainly be encapsulated within larger gravel to cobble size particles, and thus would be unavailable for reaction and pose very low risk for ARD (SRK 2013). Solid-phase metal analyses completed on overburden material showed consistent enrichment of arsenic, bismuth, and silver, and to a lesser extent, enrichment in antimony, cadmium, gold, lead, gold, potassium, and tungsten (SRK 2013).

Stream sediment monitoring was conducted at five stations in Haggart Creek during baseline and biennially as part of on-going sediment monitoring to comply with territorial Water Use Licence conditions (StrataGold 2019d; VGC 2020). Four sediment stations have been established downstream, and one station has been established upstream, of the LDSP Outlet effluent discharge on Haggart Creek, the locations of which generally correspond to the same stations as water quality monitoring (Table 2.9; Figure 2.4). Stream sediment monitoring was conducted in triplicate at each station, and included collection of fine-grained material at depositional habitat using a stainless steel trowel. At the laboratory, the samples were sieved and the portion passing 63 microns was analyzed for total metals (including mercury), pH, and total organic carbon (TOC) content. The sediment chemistry data were compared to British Columbian Sediment

Table 2.8: Water Chemistry at Haggart Creek During the Period of LDSP Effluent Discharge in April 2019

Parameters		Units	Water Quality Guideline	LDSP	Upstream	Downstream of Dublin Gulch			Downstream of Platinum Gulch			Upstream of 15 Pup		
				Average	W22	W4	W4	W4	W29	W29	W29	W99	W99	W99
				27-28 Apr	29-Apr-19	27-Apr-19	28-Apr-19	29-Apr-19	27-Apr-19	28-Apr-19	29-Apr-19	27-Apr-19	28-Apr-19	29-Apr-19
Conventionals	Conductivity (lab)	umho/cm	-	501	349	447	431	351	434	441	375	423	431	413
	pH (lab)	pH	6.5 - 9.0[a,b]	8.12	8.13	8.14	8.10	8.17	8.15	8.18	8.22	8.09	8.11	8.12
	Hardness (as $CaCO_3$)	mg/L	-	232	181	207	212	183	211	221	200	215	219	220
	Total Suspended Solids (TSS)	mg/L	-	33.7	7.1	36	12.8	51.9	46.2	8	30.1	25	12.8	14.9
	Total Dissolved Solids (TDS)	mg/L	-	305	215	264	262	214	260	270	230	256	264	259
	Alkalinity (as $CaCO_3$)	mg/L	-	141	106	126	124	108	127	133	116	125	129	127
Nutrients and Organics	Total Ammonia	mg/L	-	0.0072	<0.0050	0.0059	<0.0050	0.0052	0.0068	0.0066	0.0068	0.0156	0.0061	<0.0050
	Nitrate	mg/L	3[b]	0.111	0.113	0.116	0.107	0.110	0.107	0.106	0.101	0.098	0.101	0.100
	Nitrite	mg/L	0.02[a,c]	0.0046	<0.0010	0.0030	0.0024	<0.0010	0.0018	0.0014	<0.0010	<0.0010	0.0012	<0.0010
	Dissolved Organic Carbon	mg/L	-	13.5	3.2	6.0	8.4	3.2	5.9	5.9	3.3	5.6	5.0	4.8
	Total Organic Carbon	mg/L	-	9.7	3.3	6.0	6.5	3.3	5.5	5.8	3.4	5.4	5.1	4.3
	Orthophosphorus	mg/L	-	0.001	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
Anions	Chloride (Cl)	mg/L	120[b]	16.1	<0.50	9.17	7.05	<0.50	6.82	5.85	0.89	2.27	4.17	3.09
	Flouride (Fl)	mg/L	0.3[c]	0.16	0.12	0.15	0.15	0.12	0.15	0.15	0.12	0.14	0.14	0.14
	Sulphate (SO_4)	mg/L	309[a]	102	83	94	93	80	92	97	85	96	97	95
	Cyanide, WAD	mg/L	0.005[a,c]	0.005	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
	Cyanide, Total	mg/L	-	0.005	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Total Metals	Aluminum (Al)	mg/L	0.100[b]	1.820	0.114	1.470	1.030	0.974	1.160	0.698	0.433	0.640	0.662	0.253
	Antimony (Sb)	mg/L	0.020[b,c]	0.00572	0.00035	0.00328	0.00256	0.00135	0.00261	0.00205	0.00116	0.00136	0.00170	0.00128
	Arsenic (As)	mg/L	0.005[a,b,c]	0.0868	0.0019	0.0501	0.0377	0.0338	0.0388	0.0260	0.0173	0.0187	0.0213	0.0158
	Cadmium (Cd)	mg/L	0.00035[a,d]	0.00011	0.00003	0.00007	0.00006	0.00004	0.00005	0.00005	0.00004	0.00004	0.00004	0.00003
	Calcium (Ca)	mg/L	-	52	47	48	50	48	47	50	49	49	49	50
	Chromium (Cr)	mg/L	0.009[c]	0.00285	0.00021	0.00222	0.00139	0.00192	0.0017	0.00178	0.00074	0.00098	0.00102	0.00047
	Cobalt (Co)	mg/L	0.004[a]	0.00166	0.00038	0.00124	0.00081	0.00113	0.00108	0.00055	0.00059	0.00069	0.0006	0.00049
	Copper (Cu)	mg/L	0.004[b]	0.00729	0.00084	0.00445	0.00327	0.00299	0.00359	0.00249	0.00170	0.00227	0.00229	0.00167
	Iron (Fe)	mg/L	1.0[a,d]	3.0	0.4	2.3	1.2	2.1	1.9	0.9	1.0	1.1	0.9	0.6
	Lead (Pb)	mg/L	0.0113	0.0086	0.0003	0.0046	0.0031	0.0028	0.0042	0.0022	0.0015	0.0021	0.0020	0.0014
	Magnesium (Mg)	mg/L	-	23	20	23	21	19	20	22	20	20	20	22
	Manganese (Mn)	mg/L	1.52[a]	0.139	0.095	0.110	0.094	0.105	0.112	0.092	0.097	0.121	0.099	0.102
	Mercury (Hg)	mg/L	0.000026[b]	0.0000163	<0.0000050	0.0000105	0.00001	<0.0000050	0.00001	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050
	Molybdenum (Mo)	mg/L	0.073[b]	0.001190	<0.000050	0.000733	0.000632	0.000209	0.000575	0.000554	0.000236	0.000276	0.000386	0.000305
	Nickel (Ni)	mg/L	0.15[b]	0.005205	0.00241	0.00417	0.00329	0.00384	0.00363	0.00265	0.00255	0.00288	0.00254	0.00222
	Potassium (K)	mg/L	-	4.37	1.31	3.25	2.81	1.73	2.57	2.39	1.60	1.94	2.17	1.86
	Selenium (Se)	mg/L	0.002[a,d]	0.000503	0.000233	0.000331	0.000325	0.000233	0.000340	0.000238	0.000260	0.000212	0.000231	0.000227
	Silver (Ag)	mg/L	0.0015[a,c,d]	0.000062	<0.000010	0.000037	0.000028	0.000027	0.000033	0.000019	0.000018	0.000018	0.000021	0.000011
	Sodium (Na)	mg/L	-	12.40	2.19	8.46	6.84	2.22	6.04	5.53	2.54	3.43	4.72	4.38
	Thallium (Tl)	mg/L	0.0008[b]	0.0000395	<0.000010	0.000035	0.000018	0.000038	0.000031	0.000017	0.000022	0.000019	0.000015	0.000012
	Uranium (U)	mg/L	0.015[b]	0.00586	0.00125	0.00400	0.00341	0.00153	0.00340	0.00322	0.00182	0.00232	0.00277	0.00276
	Vanadium (V)	mg/L	0.006[b]	0.0036	<0.00050	0.00264	0.00186	0.00212	0.00211	0.00135	0.00109	0.00117	0.00116	0.00058
	Zinc (Zn)	mg/L	0.095[a,d]	0.01245	0.0048	0.01	0.0065	0.0115	0.009	0.0059	0.0068	0.0067	0.0058	0.0055

Indicates parameter concentration above applicable Water Quality Guideline.

[a] British Columbia Water Quality Guideline (BCMOE 2020).

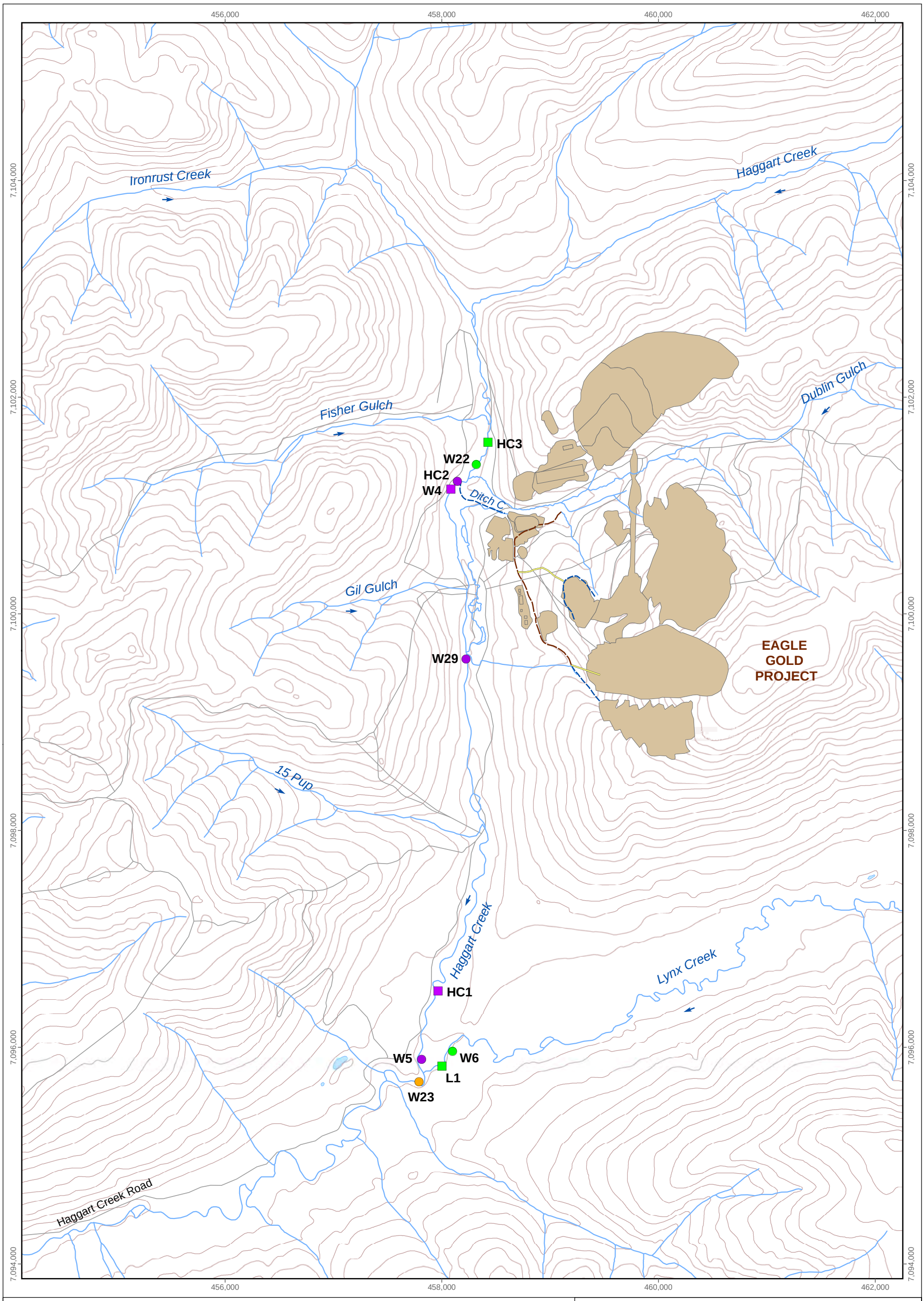
[b] Canadian Water Quality Guideline for the protection of aquatic life (CCME 1999, 2020).

[c] Yukon Contaminated Sites Regulation (Yukon Government 2012).

[d] Indicates instance in which selected water quality guideline may not have been the lowest, most stringent, criteria, but rather reflected the most recent update.

Table 2.9: Sediment Quality and Benthic Monitoring Stations Maintained on Haggart Creek and Lynx Creek

Station ID	Station Name	Coordinates (Zone 8)		Rationale	Sampling Frequency
		Northing	Easting		
W22	Haggart Creek above Dublin Gulch	7101378	458319	reference, above Project influence	biennial
W4	Haggart Creek below Dublin Gulch	7101223	458144	near-field mine-exposed	biennial
W29	Haggart Creek below Platinum Gulch	7099583	458225	near-field mine-exposed	biennial
W5	Haggart Creek above Lynx Creek	7095888	457814	near-field mine-exposed	biennial
W23	Haggart Creek below Lynx Creek	7095682	457790	far-field mine-exposed	biennial
W6	Lynx Creek above Haggart Creek	7095964	458099	reference, no Project influence	biennial



LEGEND

- Far-Field - Sediment/Benthic
- Near-Field - Fish
- Near-Field, - Sediment/Benthic
- Reference - Sediment/Benthic
- Reference - Fish
- Collection Ditch
- Collection Ditch and Pipeline
- Pipeline
- Mine Infrastructure

Current Sediment Quality and Biological Monitoring Stations on Haggart Creek and Lynx Creek

0 0.5 1 2
km

N W E S

Projection: North American Datum 1983 UTM Zone 8V, 8W
Reproduced under licence from Her Majesty the Queen in Right of Canada, Department of Natural Resources Canada.

Date: April 2020
Project 207202.0026

minnow environmental inc.

Figure 2.4

Document Path: S:\Projects\207202\207202.0026 - VGC Eagle Gold Mine Phase 1 EEM Study Design\3 - GIS\Report\20-26 Figure 2.4 Sediment and Bio Monitoring Stations.mxd

Quality Guideline (SQG) probable effect levels (PEL). These SQG are based on whole sediment rather than the fine fraction analyzed for the Project, and therefore because higher concentrations of metals were expected in fine sediment than the whole sediment, comparison to the SQG was considered highly conservative. Moreover, because depositional habitat sampled for sediment was not the dominant habitat present within Haggart Creek, fine sediment deposits are unlikely to be an important exposure route for metal uptake by biota. Therefore, the use of SQG for predicting effects to sediment dwelling biota is highly conservative for the Haggart Creek system.

Average concentrations of metals in in-stream sediment collected at Haggart Creek stations downstream of the Project from 2007 to 2019 were below applicable SQG except for arsenic and manganese (Table 2.10). However, average concentrations of both arsenic and manganese were above SQG at the Haggart Creek upstream reference area, and arsenic was also above SQG at the Lynx Creek reference area (Table 2.10; Appendix Table B.5), indicating natural elevation of these metals above guidelines in local watercourse sediments. Arsenic concentrations were notably elevated within Haggart Creek downstream compared to upstream of Dublin Gulch (i.e., Station W4 compared to W22, respectively). This was consistent with patterns in water quality data that suggested that Dublin Gulch was a natural source of arsenic to Haggart Creek, reflecting background mineralization in the watershed (Stantec 2012; Lorax 2017; Laberge 2018, 2020). The pH of in-stream sediments throughout Haggart Creek was slightly alkaline, and showed no substantial changes between stations located downstream and upstream of the Project operations (Table 2.10).

2.4.2.5 Biological Characteristics

Benthic Invertebrate Community

Benthic invertebrate community (benthic) monitoring was conducted at Haggart Creek during baseline studies and as part of on-going annual biological monitoring to comply with territorial Water Use Licence (WUL) conditions (StrataGold 2019d; VGC 2020). Benthic samples were collected from riffle habitat containing cobble-gravel substrate using a Surber sampler (0.093 m^2 sampling area) outfitted with a 250 µm mesh net during baseline studies completed in mid-August (2010) or mid-September (2007 and 2009), or with a 300 µm mesh net for WUL studies conducted in mid-September (2017, 2018, and 2019). Five replicate samples were collected at as many as four stations within the current stream area influenced by the Project, and at one reference station located upstream of Dublin Gulch during baseline studies conducted at Haggart Creek (Figure 2.4). For annual monitoring conducted from 2017 to 2019, three replicate samples were collected at each of the same five Haggart Creek stations sampled during baseline. Data analysis for the baseline and WUL studies generally included qualitative comparisons of benthic invertebrate density (number of benthic invertebrates per square metre), richness (number of taxa

Table 2.10: Mean pH, TOC, and Metal Concentrations in Sediment at Haggart and Lynx Creeks, 2007 to 2019

Parameter	Units	Sediment Quality Guideline (SQG)[a]	Haggart Creek					Lynx Creek
			W22 Upstream	W4	W29	W5	W23	W6
pH	%	-	7.7	7.8	7.8	8.0	7.6	7.7
Total Organic Carbon	%	10	1.20	0.58	1.02	0.58	0.87	0.80
Aluminum (Al)	mg/kg	-	10,135	10,035	9,090	9,900	9,858	12,517
Antimony (Sb)	mg/kg	-	4.4	7.5	9.0	8.5	6.9	2.7
Arsenic (As)	mg/kg	17	82	180	104	115	104	83
Barium (Ba)	mg/kg	-	182	161	131	166	200	207
Beryllium (Be)	mg/kg	-	0.39	0.50	0.34	0.41	0.36	0.42
Bismuth (Bi)	mg/kg	-	0.63	0.63	0.59	0.58	0.52	0.28
Cadmium (Cd)	mg/kg	3.5	0.77	0.43	0.49	0.44	0.58	1.02
Calcium (Ca)	mg/kg	-	3,907	3,887	4,087	4,817	4,730	6,290
Chromium (Cr)	mg/kg	90	21.8	21.6	19.4	24.9	25.1	26.2
Cobalt (Co)	mg/kg	-	16.9	14.8	12.6	12.3	12.6	11.1
Copper (Cu)	mg/kg	197	23.7	25.8	24.8	26.7	26.6	24.1
Iron (Fe)	mg/kg	43,776	34,684	28,633	26,534	27,817	25,617	24,133
Lead (Pb)	mg/kg	91	24.1	28.2	32.8	30.2	25.6	16.6
Lithium (Li)	mg/kg	-	15.7	17.5	13.3	15.0	14.6	17.865
Magnesium (Mg)	mg/kg	-	3,715	3,822	3,755	4,679	4,400	5,140
Manganese (Mn)	mg/kg	1,100	1,715	1,105	944	1,124	935	877
Mercury (Hg)	mg/kg	0.486	0.089	0.056	0.048	0.055	0.055	0.051
Molybdenum (Mo)	mg/kg	-	1.04	1.55	0.92	1.28	1.19	1.59
Nickel (Ni)	mg/kg	75	35.8	32.3	27.9	31.8	31.5	30.2
Phosphorus (P)	mg/kg	2,000	651	658	696	749	794	822
Potassium (K)	mg/kg	-	978	1,402	883	1,149	982	972
Selenium (Se)	mg/kg	-	0.45	0.39	0.36	0.40	0.44	0.845
Silver (Ag)	mg/kg	-	0.17	0.23	0.25	0.18	0.19	0.14
Sodium (Na)	mg/kg	-	96	102	83	105	115	179
Strontium (Sr)	mg/kg	-	33.6	32.7	33.6	38.5	36.1	41.9
Thallium (Tl)	mg/kg	-	0.16	0.19	0.11	0.13	0.11	0.14
Tin (Sn)	mg/kg	-	0.88	0.75	0.73	0.76	0.61	0.52
Titanium (Ti)	mg/kg	-	242	317	258	296	308	344
Uranium (U)	mg/kg	-	1.39	1.65	1.46	1.35	1.29	1.27
Vanadium (V)	mg/kg	-	26	27	23	27	31	33
Zinc (Zn)	mg/kg	315	105	100	99	97	103	109

Indicates parameter concentration above Sediment Quality Guideline (SQG).

[a] British Columbia Working Sediment Quality Guideline (BCSQG) probable effects level (PEL; BCMOE 2015).

per sample), Simpson's Diversity, relative abundance of dominant taxonomic groups, most notably including the collective Ephemeroptera-Plecoptera-Trichoptera (EPT) orders of insects, and the associated EPT Index (i.e., the number of distinct EPT taxa).

Density, richness, and Simpson's Diversity showed no substantial spatial differences with distance downstream of the Dublin Gulch confluence (i.e., Stations W4 to W23) among study years from 2007 to 2019 that were suggestive of a consistent longitudinal change in community compositional features (Table 2.11). In addition, each of these respective benthic metrics showed close similarity between Haggart Creek stations located downstream and upstream of Dublin Gulch, as well as between Haggart Creek and the Lynx Creek reference station (Table 2.11; Appendix Table B.6). The benthic invertebrate community at riffle habitat of Haggart Creek was composed predominantly of Ephemeroptera (mayflies) and Plecoptera (stoneflies), and on occasion oligochaete aquatic worms, in studies conducted from 2007 to 2019 (Table 2.11). The relative abundance of all dominant taxonomic groups at Haggart Creek stations located downstream of Dublin Gulch generally bracketed those observed at reference stations within any given study year. Because mayflies are generally considered sensitive to elevated concentrations of metals, nutrients, and/or suspended solids (Ward 1992; Resh and Rosenberg 1993; Mebane et al. 2020), a high relative abundance of this group at all Haggart Creek stations located downstream of Dublin Gulch suggested no adverse influences to aquatic biota associated with the mine construction phase (Laberge 2020). Overall, the baseline and WUL studies suggested no unusual natural gradients in key benthic metrics at Haggart Creek with distance downstream of the Project, nor any substantial differences in these key benthic metrics between Haggart Creek stations currently within the effluent-exposed area compared to applicable reference stations.

Fish Population

Fish community assessments have been conducted at Haggart Creek as part of baseline fisheries evaluations and on-going annual fish and fish habitat monitoring to comply with territorial WUL conditions (Jacques Whitford 2008; VGC 2020). Baseline fisheries assessments conducted in 2007 and 2008 at Haggart Creek used closed-station depletion surveys[6] to determine fish presence and habitat usage in summer (August) and early fall (October), provide fish population density estimates, characterize fish health (size and condition), and provide samples for determination of metal concentrations in fish tissues (Jacques Whitford 2008). Since 2017, annual fish and fish habitat monitoring has been conducted at Haggart Creek in late summer

[6] Closed stations enclosing a station area approximately 100 m in length were established using ¼ inch mesh stop nets and two to four successive passes by an electrofishing team were conducted working in an upstream direction until a depletion pattern was identified.

Table 2.11: Average Benthic Invertebrate Community Data Collected at Haggart Creek and Lynx Creek, 2007 to 2019

Benthic Endpoint	Haggart Creek					Lynx Creek
	W22 reference	W4 near-field	W29 near-field	W5 near-field	W23 far-field	W6 reference
Density (no. organisms/m^2)	4,219	4,661	6,101	4,351	6,222	9,664
Richness (no. of family level taxa)	17.0	18.4	17.7	16.9	18.1	15.8
Simpson's Diversity	0.83	0.86	0.79	0.86	0.87	0.81
EPT (% of community)	60	67	52	75	67	69
Ephemeroptera (% of community)	33	39	28	36	41	40
Plecoptera (% of community)	21	25	21	37	24	28
Trichoptera (% of community)	6	3	3	2	2	1
Diptera (% of community)	9	12	8	17	21	9
Oligochaeta (% of community)	25	15	35	2	5	21

(mid-September) using open-station single-pass surveys[7] to provide a basis for tracking changes in relative numbers of fish and potential effects of Project activities on fish and fish habitat (VGC 2020). Backpack electrofishing was the primary method of fish sampling for the baseline and WUL studies, although minnow trapping, gill netting, and angling methods also have been applied. Two fish sampling stations established in lower Haggart Creek between Dublin Gulch and Lynx Creek (Stations H2 and H1, respectively), one station established in upper Haggart Creek (upstream of Dublin Gulch; Reference Station H3), and one station in lower Lynx Creek (Reference Station L1) have served as monitoring locations for the Project since baseline (Figure 2.4). Notably, no barriers to fish movement occur in Haggart Creek between Ironrust Creek (approximately 1.5 km upstream of Dublin Gulch) and South McQuesten River (Jacques Whitford 2008).

A total of 11 fish species have been recorded from the South McQuesten River watershed by DFO (2010), including arctic grayling (*Thymallus arcticus*), Chinook salmon (*Oncorhynchus tshawytscha*), rainbow trout (*O. mykiss*), northern pike (*Esox lucius*), longnose sucker (*Catostomus catostomus*), arctic lamprey (*Lampetra camtschatica*), burbot (*Lota lota*), slimy sculpin (*Cottus cognatus*), round whitefish (*Prosopium cylindraceum*), inconnu (*Stenodus leucichthys*), and lake whitefish (*Coregonus clupeaformis*). Of these, arctic grayling, Chinook salmon, burbot, round whitefish, and slimy sculpin have been reported from Haggart Creek (Jacques Whitford 2008; DFO 2010; Stantec 2011; de Graff 2017, 2019, 2020). No COSEWIC (2018)-listed endangered, threatened, or special concern fish species have been captured at Haggart Creek historically, and none are found in the entire Yukon Territory (COSEWIC 2018).

Slimy sculpin was the most abundant species captured at Haggart Creek during baseline and WUL fish monitoring (Stantec 2011; de Graff 2017, 2019, 2020). Densities of slimy sculpin in lower Haggart Creek ranged from 1.0 to 4.6 individuals/100 m^2 of wetted area during depletion surveys conducted in August and October 2007, which was comparable to densities observed at reference areas on Haggart Creek (i.e., Station HC3; 5.7 individuals/100 m^2) and Lynx Creek (1.9 to 4.6 individuals/100m^2) based on sampling conducted in August (Table 2.12). Catch-per-unit-effort (CPUE) from single-pass electrofishing and minnow trapping also suggested similar abundance of slimy sculpin between lower Haggart Creek and candidate reference areas on upper Haggart Creek and Lynx Creek (Appendix Table B.9). Lower densities of slimy sculpin were captured in fall than in summer at lower Haggart Creek during baseline (Table 2.12), suggesting that slimy sculpin may migrate downstream and/or seek pool habitat for overwintering.

[7] A standard effort (minimum) of 500 active seconds of electrofishing were applied at each station in fish community monitoring studies conducted beginning in 2017 (de Graff 2017, 2019, 2020)

Table 2.12: Slimy Sculpin and Arctic Grayling Density Estimates for Haggart Creek and Lynx Creek Stations Determined from Depletion Sampling Conducted During Baseline for the Project, 2007

Fish Species	Creek	Area Type	Station ID	Sampling Date	Area Sampled (m^2)	No. of Fish Caught	Observed Catch Rate (no. / $100m^2$)	Estimated Density (no. / $100m^2$)
Slimy Sculpin	Haggart	Reference	HC3	August 2007	647	37	5.7	nr
		Near-Field	HC2	August 2007	920	25	2.7	nr
				October 2007	920	9	1.0	4.3
		Near-Field	HC1	August 2007	736	34	4.6	6.0
				October 2007	736	29	3.9	nr
	Lynx	Reference	L1	August 2007	802	37	4.6	nr
			L4	August 2007	696	10	1.4	1.9
Arctic Grayling	Haggart	Reference	HC3	August 2007	647	7	1.1	1.1
		Near-Field	HC2	August 2007	920	4	0.4	0.4
				October 2007	920	0	0	0
		Near-Field	HC1	August 2007	736	25	3.4	nr
				October 2007	736	17	2.3	4.5
	Lynx	Reference	L1	August 2007	802	6	0.7	0.7
			L4	August 2007	696	7	1.0	1.4

Note: nr - indicates no regression generated during depletion sampling, and therefore density could not be estimated.

Total lengths of slimy sculpin captured at lower Haggart Creek has ranged from 33 to 120 mm, the majority of which (95%) were greater than 50 mm long (Appendix Tables B.10 and B.13), consistent with an adult size class based on comparison to published literature accounts (e.g., McPhail 2007; Barrett and Munkittrick 2010). Slimy sculpin aged from three years to seven years collected at lower Haggart Creek during baseline (Appendix Table B.10) were also consistent with an adult size class (Barrett and Munkittrick 2010). Plotted weight-at-length relationships suggested similar condition between slimy sculpin captured at lower Haggart Creek and those from candidate reference areas at upper Haggart Creek and Lynx Creek (Figure 2.5).

Arctic grayling densities at lower Haggart Creek ranged from 0.4 to 3.4 individuals/100 m^2 in summer and nil to 4.5 individuals/100 m^2 in fall during baseline (Table 2.12). Although depletion sampling suggested similar arctic grayling densities between lower Haggart Creek and the candidate reference areas (Table 2.12), CPUE from single-pass electrofishing and minnow trapping suggested a higher abundance of arctic grayling at lower Haggart Creek, near the Lynx Creek confluence, than at areas further upstream including the candidate reference area on upper Haggart Creek as well as at Lynx Creek (Appendix Table B.9). The fork length of arctic grayling captured at lower Haggart Creek has ranged from 64 to 358 mm (Appendix Tables B.11 and B.16), reflective of young-of-the-year (YOY) to adult size classes based on comparison to published literature accounts (e.g., Scott and Crossman 1998; McPhail 2007; Barrett and Munkittrick 2010). However, the majority of arctic grayling captured at lower Haggart Creek, including all fish taken from riffle-run areas during single-pass sampling conducted from 2017 to 2019, were reflective of juveniles aged one year or less (i.e., YOY; Appendix Table B.11). Plotted weight-at-length relationships suggested very similar condition between arctic grayling captured at lower Haggart Creek and those captured from candidate reference areas at upper Haggart Creek and Lynx Creek (Figure 2.5).

The majority of arctic grayling in the Project area appear to overwinter in South McQuesten River and migrate into Haggart Creek and its tributaries to rear in June and July (Pendray 1983). However, moderate to good quality overwintering habitat was identified in Haggart Creek based on the presence of some pools with residual depths ≥0.8 m that most likely do not freeze to the bottom in winter (Stantec 2011). In addition to capture of juvenile arctic grayling in Haggart Creek 19 km upstream from the South McQuesten River in May (Pendray 1983), the presence of arctic grayling under ice in April at temporary pools developed as a result of placer mining (Jacques Whitford 2008) confirmed that low numbers of arctic grayling overwinter in the Haggart Creek watershed. Pendray (1983) observed that most arctic grayling spawning in the region occurred predominantly in South McQuesten River during the last two weeks of May. Although a small area at the mouth of Haggart Creek on South McQuesten River was identified as a probable arctic grayling spawning site, arctic grayling primarily use Haggart Creek as summer rearing

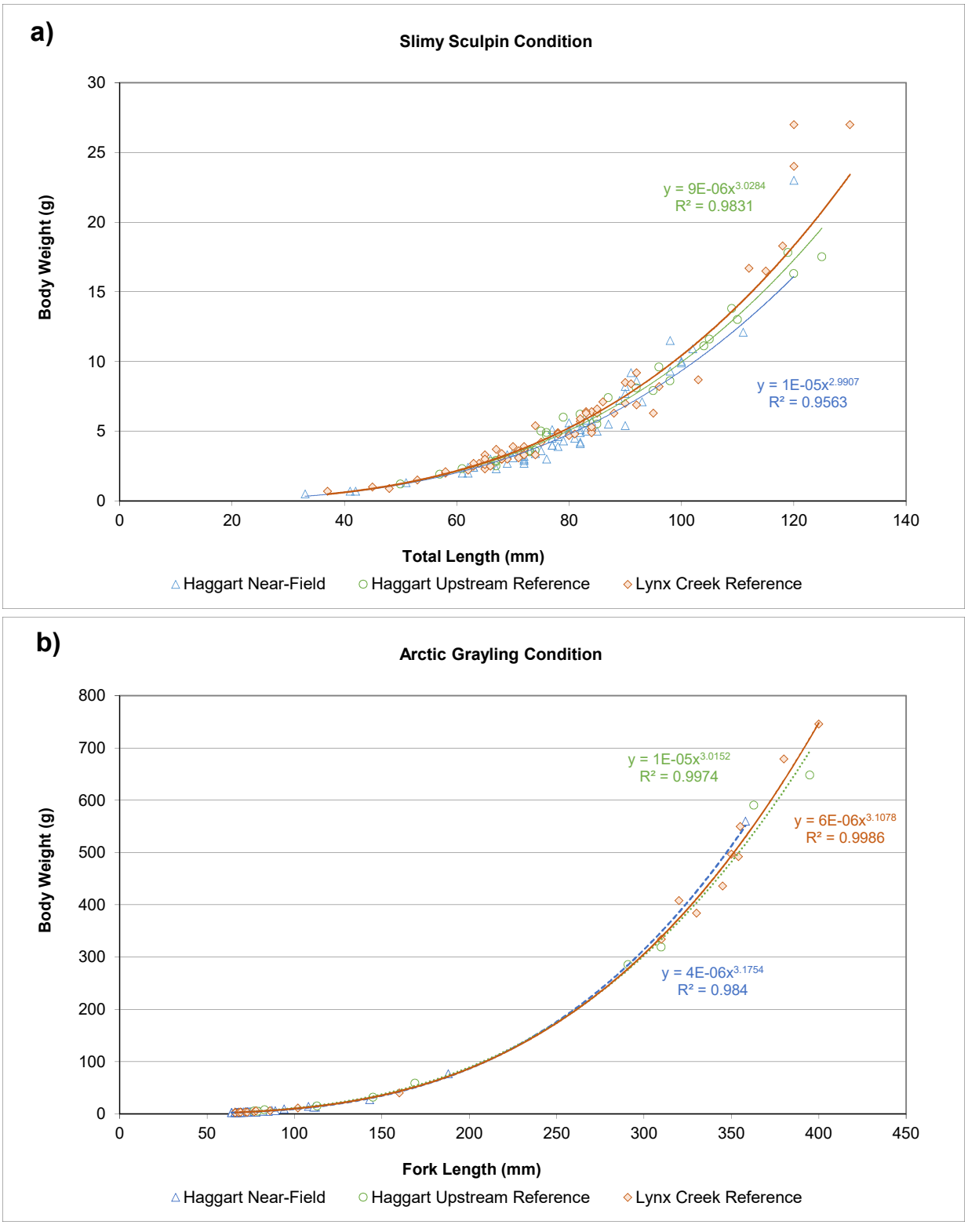


Figure 2.5: Comparison of Condition (Weight-at-fork-length Relationship) for Pooled Slimy Sculpin (a) and Arctic Grayling (b) Data Collected at Haggart and Lynx Creeks, 2007 to 2019

habitat (Pendray 1983; Stantec 2011). Haggart Creek was observed to provide good to excellent rearing habitat for arctic grayling based on the presence of abundant complex cover and availability of pool, riffle, and run habitats (Jacques Whitford 2008). The timing of outmigration to overwintering areas has not been confirmed at Haggart Creek, but similar densities of arctic grayling between August and October during baseline, even after anchor ice was beginning to form on the stream margins in October, suggested that significant outmigration may not occur until after October (Stantec 2011).

2.4.3 Lynx Creek

2.4.3.1 Background and General Habitat Description

Lynx Creek has served as a reference area for the evaluation of potential Project-related effects on water quality, sediment quality, and biological receptors at Haggart Creek during baseline studies and for on-going territorial WUL monitoring (Stantec 2011; VGC 2020). Lynx Creek drains a small catchment to the south of the Project that has not been affected by placer mining or any other development activities (Stantec 2011). Geological and vegetative community features of Lynx Creek have not been thoroughly assessed, although each can be expected to be similar to baseline features described for Haggart Creek (Section 2.4.2.1). The headwaters of Lynx Creek originate approximately 18 km east of its confluence with Haggart Creek. Lynx Creek occurs as a small fourth-order stream at the point at which it drains into Haggart Creek and shares a similar watershed size to Haggart Creek at this location (i.e., approximate watershed sizes of 101 km^2 and 98 km^2 at Lynx Creek and Haggart Creek, respectively).

Lynx Creek is perennial flowing stream characterized by grades below 1% at locations used for fish monitoring in the lower portion of the watercourse (Stantec 2011; de Graff 2020). The stream morphology of Lynx Creek consists predominantly of riffle-run habitat with some pools, and is occasionally dammed by beavers (de Graff 2020). The average wetted and bankfull width of lower Lynx Creek was 5.5 m (range from 4.7 to 6.4 m) and 7.4 m (range from 6.0 to 11.4 m) wide, respectively, during biological monitoring studies conducted in September from 2017 to 2019 (Table 2.3). The average water depth and water velocity of riffle habitat at lower Lynx Creek at the time of these studies was 0.15 m (range from 0.11 to 0.20 m) and 0.31 m/s (range from 0.26 to 0.36 m/s), respectively (Table 2.3). The surficial substrate at erosional habitat of lower Lynx Creek is composed predominantly of coarse gravel, with the sub-dominant bed material generally including a combination of medium-sized gravel and small cobble (Table 2.3). Sand generally constitutes the interstitial material at riffle areas (de Graff 2017, 2019, 2020). In-stream vegetation at Lynx Creek is sparse and limited to a thin layer of algae typically as periphyton on physically stable substrates (de Graff 2017, 2019, 2020).

2.4.3.2 Hydrology

Hydrology monitoring conducted at Lynx Creek indicated a similar flow regime to that of Haggart Creek, including a dominant snowmelt-driven freshet signature that typically occurs between early May and early June that tapers to a lower summer flow regime primarily reflective of groundwater baseflow (Lorax 2020). Baseflows are lowest in the winter, at which time aufeis and shelf ice can occur that may persist through freshet into early summer (Lorax 2020). Average discharge and unit yield at Lynx Creek over the open water period (i.e., May through November) were comparable to those at Haggart Creek, suggesting close similarity in flow between watercourses (Table 2.5).

2.4.3.3 Surface Water Quality

Surface water in Lynx Creek has historically shown high dissolved oxygen concentrations well above WQG lowest acceptable concentrations for the protection of early life stages of cold-water biota (i.e., 9.5 mg/L; Laberge 2018). The pH at Lynx Creek was slightly basic, but consistently within the WQG acceptable range for the protection of aquatic life, during baseline and recent water quality monitoring. The surface water of Lynx Creek showed naturally high hardness (i.e., 169 mg/L as $CaCO_3$) indicating high acid buffering capacity (Table 2.7; Stantec 2012). Moderately high conductivity has also been observed at Lynx Creek, likely reflecting moderate concentrations of total dissolved solids and major ions including chloride and sulphate (Table 2.7). Average concentrations of monitored parameters were all below applicable WQG at Lynx Creek over the course of baseline studies from 2007 to 2016 except for arsenic (Table 2.7). Naturally elevated arsenic concentrations in surface waters of the Project region were hypothesized to reflect background geology and mineralization (Lorax 2020). Similar to monthly water quality patterns at Haggart Creek, average concentrations of most parameters at Lynx Creek showed relatively low variation among months except in May and to a lesser extent June, during which time concentrations of TSS, organic carbon, and non-ionic parameters were generally higher, and conductivity, hardness, and concentrations of several ionic parameters were generally lower, than during the other months (Appendix Table B.4). This phenomenon reflected varying proportions of snow-melt driven surface runoff (lower ionic strength) and groundwater inputs (higher ionic strength) as driven by the seasonal flow regimes (Lorax 2018).

2.4.3.4 Sediment Quality

Average concentrations of metals in the fine fraction (i.e., fraction passing 63 microns) of in-stream sediment collected at Lynx Creek from 2007 to 2019 were all below applicable SQG PEL (that are based on whole sediment rather than the fine fraction) except arsenic (Table 2.10). Natural elevation of arsenic above guidelines in reference area watercourse sediments may

reflect background geology what includes the presence of arsenopyrite (FeAsS) and arsenic-bearing hydrous iron oxides and/or scorodite ($Fe[AsO_4]•2H_2O$) in the area (Stantec 2012; SRK 2014). Elevated concentrations of arsenic in fine sediment of Lynx Creek were consistent with relatively high concentrations of arsenic in surface water of Lynx Creek (see previous section) compared to applicable environmental quality guidelines, and suggested that arsenic was readily mobilized from solid to aqueous phases. The pH of in-stream sediments at Lynx Creek was slightly alkaline (Table 2.10).

2.4.3.5 Biological Characteristics

Benthic Invertebrate Community

Benthic invertebrate density at Lynx Creek was moderately variable among study years from 2007 to 2019, and ranged from 3,701 organisms/m^2 to 14,535 organisms/m^2 (Table 2.11). Benthic invertebrate richness and Simpson's Diversity were moderate, and were not highly variable over these study years (Table 2.11). The benthic invertebrate community at riffle habitat of Lynx Creek was dominated by mayflies and stoneflies in all study years except 2007, when aquatic worms numerically composed approximately half of the benthic invertebrate community (Table 2.11; Appendix Table B.6). A high proportion of relatively metal-sensitive mayflies at Lynx Creek suggested that this watercourse can serve as a suitable reference area for the assessment of potential effluent-related influences on biota at the Haggart Creek effluent-exposed area.

Fish Population

Arctic grayling, Chinook salmon, burbot, and slimy sculpin have been captured at Lynx Creek historically (Jacques Whitford 2008; DFO 2010; Stantec 2011; de Graff 2017, 2019, 2020). Slimy sculpin was the most abundant species captured at Lynx Creek during baseline and WUL fish monitoring (Stantec 2011; de Graff 2017, 2019, 2020). Densities of slimy sculpin at lower Lynx Creek averaged 3.0 individuals per 100 m^2 of wetted area during depletion sampling conducted in August 2007 (Table 2.12). The relative abundance of slimy sculpin was quite variable at lower Lynx Creek in annual monitoring conducted from 2017 to 2019 in early September based on CPUE from single-pass electrofishing and minnow trapping, with sequentially lower relative abundance occurring since 2017 (Appendix Table B.9). The total length of slimy sculpin captured at lower Lynx Creek ranged from 37 to 130 mm (Figure 2.5), the majority of which (97%) were greater than 50 mm long (Appendix Tables B.10 and B.14) suggesting that most were likely adult size class based on comparison to published literature accounts (e.g., McPhail 2007; Barrett and Munkittrick 2010). Slimy sculpin sampled from Lynx Creek were aged as three to nine years old during baseline monitoring, which was also consistent with an adult size class for these fish (Barrett and Munkittrick 2010).

Arctic grayling densities at lower Lynx Creek were low, average just 0.9 individuals/100 m^2 in mid-August 2007 (Table 2.12). Fish monitoring to meet WUL requirements from 2017 to 2019 also indicated relatively low arctic grayling relative abundance at Lynx Creek based on CPUE from single-pass electrofishing and minnow trapping (Appendix Table B.9). The fork length of arctic grayling captured at lower Lynx Creek has ranged from 66 to 400 mm (Appendix Tables B.11 and B.15), reflective of YOY to adult size classes based on comparison to published literature accounts (e.g., Scott and Crossman 1998; McPhail 2007; Barrett and Munkittrick 2010). However, only low numbers of YOY arctic grayling were captured at lower Lynx Creek during the most recent fish monitoring conducted from 2017 to 2019 (i.e., a collective total of 7 individuals), indicating relatively low numbers of arctic grayling reside within lower Lynx Creek in early September.

2.5 Potential Confounding Factors

Potential anthropogenic influences on chemical and biological conditions of Haggart Creek in the vicinity of the Project relate primarily to physical disturbances to Haggart Creek itself as well as tributaries feeding into the creek stemming from past and present placer mining (Stantec 2012). Placer mining activities were first reported in Haggart Creek and Dublin Gulch in 1895 and 1898, respectively, and continued at relatively minor levels in the Project area over the next several decades. Beginning in the 1970s, extensive placer mining occurred within the Dublin Gulch and Haggart Creek channels and tributaries which continued in the valley bottoms until the mid-1990s (New Millennium Mining 1997). Limited placer mining was conducted within Haggart Creek and its tributaries in the 2000s, and since 2009, placer-related activity has occurred only in Swede Creek, 15 Pup, Gil Gulch and Fisher Gulch, and not within the main channel of Haggart Creek or within the Dublin Gulch/Eagle Creek basin. Historical placer mining activity potentially has implications on physical substrate properties, channel and riparian features, erosion/ sedimentation, and flow regimes within the Haggart Creek watershed.

3 PHASE 1 EEM STUDY DESIGN

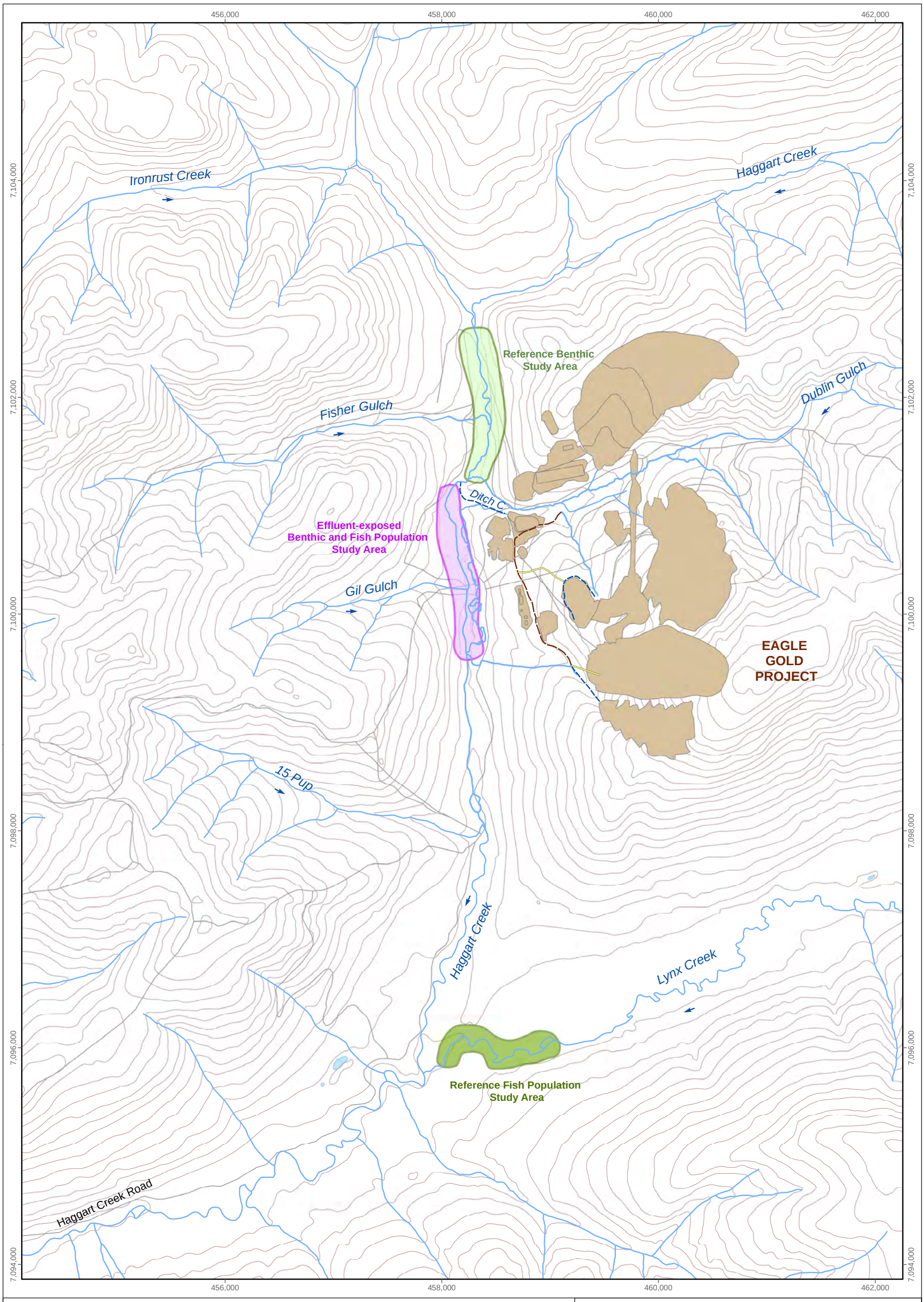
3.1 Overview

The Eagle Gold Project Phase 1 EEM biological study will include a benthic invertebrate community survey, a fish population survey, and supporting water quality assessments to assist with data interpretation. In accordance with MDMER requirements, this study design provides a description of, and the scientific rationale for, sampling areas, sample sizes, species selection (fish population survey only), and methods for field sample collection, laboratory analysis, and data analysis that will be used for the benthic invertebrate and fish population surveys, as well as a schedule for study completion. Notably, no fish tissue mercury or selenium studies are required for the Phase 1 EEM, the rationale for which is provided herein (Section 3.4). Other EEM components routinely implemented by VGC, including effluent quality monitoring (i.e., effluent characterization, effluent sublethal toxicity testing) and receiving environment water quality monitoring, will be incorporated into the Eagle Gold Project Phase 1 EEM Interpretive Report, and therefore methods for these components are briefly discussed in this study design. This Phase 1 EEM Study Design was devised through consideration of available site characterization information, as well as consideration of the methods and results of historical biological monitoring studies completed to satisfy territorial WUL conditions (e.g., Laberge 2018, 2019b, 2020; de Graffe 2017, 2019, 2020).

3.2 Benthic Invertebrate Community Survey

3.2.1 General Approach and Study Area Overview

During the effluent deposits in late April 2019, maximum concentrations of LDSP Outlet effluent in the Haggart Creek receiving environment greater than 1% were estimated within 100 m from the point at which effluent entered the creek (i.e., the effluent ditch outlet; Section 2.3). Therefore, the MDMER requires implementation of a benthic invertebrate community (benthic) survey (Government of Canada 2019). The Phase 1 EEM benthic survey will employ a standard control-impact design incorporating quantitative sampling at an effluent-exposed area and a comparable reference area located on Haggart Creek downstream and upstream, respectively, of the confluence with Ditch C that receives Project effluent (Figure 3.1; Table 3.1). Five stations, separated from one another by a distance of at least 20 m, will be sampled at each of the effluent-exposed and reference study areas. This level of replication provides adequate statistical power to detect differences of ± two standard deviations from the reference area mean (± 2 SD_{REF}) based on Type I and II error probability (α and β, respectively) set equally at 0.10 for the analysis as recommended in EEM standard guidance (Environment Canada 2012).



LEGEND

- Effluent-exposed Benthic and Fish Population Study Area
- Reference Benthic Study Area
- Reference Fish Population Study Area
- Collection Ditch
- Collection Ditch and Pipeline
- Pipeline
- Mine Infrastructure

Proposed Benthic and Fish Population Study Areas for the Phase 1 EEM

0 0.5 1 2
km

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W E
S

Projection: North American Datum 1983 UTM Zone 8V, 8W
Reproduced under licence from Her Majesty the Queen in Right of Canada, Department of Natural Resources Canada.

Date: April 2020
Project 207202.0026

minnow environmental inc.

Figure 3.1

Document Path: S:\Projects\207202\207202.0026 - VGC Eagle Gold Mine Phase 1 EEM Study Design\3 - GIS\Report\20-26 Figure 3.1 Proposed Benthic and Fish Population Study Areas.mxd

Table 3.1: Summary of Study Areas, Sampling Information, and Laboratory Processing Information for the Phase 1 EEM Benthic Survey

Study Detail	Description
Study Areas	Haggart Creek Downstream (effluent-exposed; W4) Haggart Creek Upstream (reference; W22)
Survey Timing	September 2021
Number of Stations	5 per study area
Sampling Device	0.10 m^2 Hess Sampler
Target Substrate	5 to 10 cm diameter cobble
Target Sampling Depth	0.15 to 0.3 m
Processing Mesh Size	300 um
Composite Sample Area Size	0.3 m^2 per station (3 grabs)
Processing Level of Taxonomy	Lowest practical level (genus, species)

The effluent-exposed and reference study areas indicated above correspond to Stations W4/W29 and W22, respectively, that are used to assess Project-related effects on chemical and biological conditions at Haggart Creek in accordance with territorial WUL stipulations (VGC 2020). These same study areas (and station locations, if possible) are proposed for benthic sampling as part of the Phase 1 EEM (Figure 3.1) based on the following rationale:

- During periods of discharge, effluent concentrations were estimated to range from 1% to 15% at the effluent-exposed area (Section 2.3), and therefore this area is ideal for evaluating effects related to the Project effluent.
- The proposed reference area is sufficiently upstream of the LDSP Outlet effluent discharge precluding any effluent-related influences on physical, chemical, and biological conditions at this area. Metal concentrations in water and sediment collected at the reference area have generally been below applicable guidelines (Tables 2.7 and 2.10), suggesting no substantial anthropogenic influences upstream of and at this area.
- Average channel dimensions, water depth, water velocity, and substrate size were similar between the proposed effluent-exposed and reference study areas on Haggart Creek indicated above (Section 2.4.2.1), reducing the potential confounding influence of differing physical habitat for evaluating effluent-related influences on benthic invertebrates. Notably, locations of historical placer mining in Haggart Creek will be taken into account during the selection of suitable benthic sampling stations during the Phase 1 EEM field study.

- Because the proposed study areas incorporate the locations of stations sampled historically, the use of these study areas for EEM provides temporal continuity and a basis for tracking changes in benthic invertebrate community endpoints over time.

The Phase 1 EEM benthic survey will be conducted in early September 2021 (Table 3.1), which generally coincides with the seasonal timing of fieldwork for WUL benthic studies conducted from 2017 to 2019. This seasonal timing is considered optimal for benthic sampling as it ensures that benthic invertebrate communities are relatively stable (i.e., late summer is typically outside of any major aquatic insect emergence periods) and organisms are reasonably well developed, allowing identification to suitable taxonomic levels.

3.2.2 Sample Collection and Laboratory Processing

Shallow (i.e., ≤0.4 m) riffle-run habitat characterized by coarse gravel-small cobble substrate will be targeted for benthic sample collection at each of the effluent-exposed and reference study areas. The benthic samples will preferentially be collected using a Hess sampler (0.1 m^2 sampling area) as recommended in EEM technical guidance (Environment Canada 2012). Previous and current benthic sampling implemented for baseline and WUL monitoring was conducted using a Surber sampler (0.093 m^2 sampling area), presumably because depths less than 10 cm did not allow effective sampling using a Hess sampler. Therefore, a Surber sampler will be used for benthic sampling only if very shallow water depths are encountered at the time of the EEM benthic survey field study that preclude sampling using a Hess sampler. The Hess sampler (or Surber sampler, as appropriate) will be outfitted with a 300-µm mesh net rather than a conventional 500-µm mesh net to provide consistency with all previous baseline and WUL benthic monitoring. One sample, representing a composite of three sub-samples (i.e., 0.3 m^2 total area), will be collected at each station to ensure adequate representation of the benthic invertebrate community. Each sub-sample will be collected by carefully placing the base of the sampler onto undisturbed substrate and subsequently scrubbing all coarse material within the sampler area to a depth of approximately 10 cm and allowing the current to carry all dislodged organisms into the sampler net. After all substrate within the sampler has been completely washed and all organisms have been rinsed into the collection net, the sampler will be moved to the next sub-sample location and the procedure repeated. Following collection of the third sub-sample using the above procedure, all material and organisms retained in the collection net will be carefully transferred into labelled plastic sample jars. The benthic samples will then be preserved to a level of 10% buffered formalin in ambient water.

Supporting information collected at each benthic station at the time of sample collection will include substrate description (type and approximate diameter), water velocity (m/s), sampling

depth (cm), water quality at the sediment-water interface (see Section 3.4), stream dimensions (wetted and bankfull width), general habitat notes (e.g., stream morphology, extent of riparian cover, surrounding land use, potential confounding influences, etc.), and global positioning system (GPS) coordinates (recorded in latitude and longitude decimal degrees and based on the North American Datum of 1983 [NAD 83] to conform with standard EEM requirements).

Upon completion of the field program, benthic samples will be submitted to and processed by a qualified laboratory that includes Society of Freshwater Sciences (SFS) certified taxonomists. Benthic sample processing will be conducted using standard sorting methods that incorporate recognized quality assurance and quality control (QA/QC) measures (e.g., Environment Canada 2012). Sample material retained by the 300-µm mesh will be examined under a stereomicroscope using a magnification of at least ten times. All benthic organisms will be removed from the sample debris and placed into vials containing 70% ethanol by a technician. A senior taxonomist will then enumerate and identify the benthic organisms to lowest practical level (typically genus or species) using up-to-date taxonomic keys. This level of taxonomy exceeds the Environment Canada (2012) minimum requirements of "family level" for EEM studies, and will be conducted to provide additional supporting information for effects assessment. During taxonomic identification, representative specimens of each taxon will be placed into separately labeled vials and preserved with a 75% ethanol/3% glycerol solution to create a site-specific voucher collection for potential future reference. Benthic invertebrate community sample processing QA/QC measures will be conducted on a minimum of 10% of samples. These measures will be used to verify that sub-sampling accuracy and precision is within 20% and that greater than 90% of the total organisms were recovered from the benthic invertebrate community samples (Environment Canada 2012).

3.2.3 Data Analysis

Benthic invertebrate communities will be evaluated using EEM primary metrics of mean taxonomic richness (as identified to family level), mean invertebrate density (average number of organisms per m^2), Simpson's Evenness Index, and the Bray-Curtis Index of Dissimilarity as required by the MDMER (Table 3.2). Additional comparisons may also be conducted using lowest practical level (LPL) taxonomic richness, percent composition of dominant or indicator taxa (calculated as the abundance of each respective taxonomic group relative to the total number of organisms in the sample), and any other metrics (e.g., functional feeding groups, habit preference groups) that may assist with data interpretation.

All required and selected endpoints, with the exception of Bray-Curtis Index, will be summarized by separately reporting mean, median, minimum, maximum, standard deviation, standard error,

and sample size for each study area. For these endpoints, statistical comparisons between the effluent-exposed and reference areas will be conducted using Analysis-of-Variance (ANOVA).

Table 3.2: Required and Supporting Endpoints to be Examined for the Eagle Gold Mine Phase 1 EEM Benthic Invertebrate Community Survey

Response	Endpoint	Critical Effect Size
Effects on Benthic Invertebrates[a]	Organism density (number of invertebrates·m^2)	± 2 standard deviations of the reference mean
	Taxonomic richness (number of taxa)	± 2 standard deviations of the reference mean
	Simpson's Evenness	± 2 standard deviations of the reference mean
	Bray-Curtis Index of dissimilarity	-
Supporting Response Variables[b]	Proportion of dominant groups	-
	Proportion of metal-sensitive groups	-
	Proportion of Functional Feeding Groups (FFG)	-
	Shannon-Wiener Diversity	-
	Proportion of Habit Preference Groups (HPG)	-

[a] Endpoints to be used for determining "effects" as designated by statistically significant differences between effluent-exposed and reference areas (Environment Canada 2012)

[b] These analyses are for informational purposes and significant differences between exposure and reference areas are not necessarily used to designate an effect (Environment Canada 2012).

Briefly, the benthic data will be assessed for normality and homogeneity of variance, with the data transformed as required to satisfy the assumptions of ANOVA. If data significantly violate the assumption of normality following transformation, non-parametric statistics will be applied using the untransformed data. An effect on the benthic invertebrate community will be defined as a statistically significant difference between the effluent-exposed area and the reference area at an alpha level of 0.10 (Environment Canada 2012). The magnitude of effect for all benthic invertebrate community effect indicators that differ significantly between study areas will be calculated for the effluent-exposed area based on the formula provided in the MDMER. For effect indicators of density, richness, and Simpson's Evenness, the derived magnitude of difference will be compared to applicable critical effect sizes (CES) that are presented in the MDMER (i.e., ±2 SD_{REF}; Table 3.2). A statistical analysis will also be completed using these latter effect indicators to determine the probability of correctly detecting an effect for a range of pre-defined

sizes, as well as to determine the degree of confidence placed in these calculations. All statistical analyses will be described in detail in the Interpretive Report, including any transformations or alterations performed on the data.

The Bray-Curtis Index will be used to evaluate community level differences between study areas, as computed and assessed statistically using procedures recommended by Environment and Climate Change Canada (ECCC) for EEM studies (i.e., Borcard and Legendre 2013). Specifically, abundance data will be ln-transformed in preparation for Bray-Curtis Index calculation. Community level differences between study areas will be assessed in a pairwise fashion, with homogeneity of group variance calculated according to the PERMDISP2 procedure provided by Anderson (2006). A Mantel Test and distance-based Redundancy Analysis (dbRDA) will then be used to assess for differences in community structure between study areas using R statistical software (as per Borcard and Legendre 2013).

3.3 Fish Population Survey

3.3.1 General Approach and Study Area Overview

During the effluent deposits in late April 2019, maximum concentrations of LDSP Outlet effluent in the Haggart Creek receiving environment greater than 1% were estimated within 250 m from the point at which effluent entered the creek (Section 2.3). Therefore, the MDMER requires implementation of a fish population survey (Government of Canada 2019). The Phase 1 EEM fish population survey will employ a control-impact lethal design targeting slimy sculpin (*Cottus cognatus*) and a control-impact non-lethal design targeting arctic grayling (*Thymallus arcticus*). The fish population sampling will be conducted at the same Haggart Creek effluent-exposed study area sampled to evaluate effluent-related effects on benthic invertebrates, but rather than using upper Haggart Creek, reference area fish samples will be collected from Lynx Creek (Figure 3.1; Table 3.3). These study areas correspond to Stations H1/H2 and L1,[8] respectively, that are used to assess Project-related effects on fish and fish habitat at Haggart Creek in accordance with territorial WUL stipulations (de Graffe 2020; VGC 2020). The rationale for the sentinel fish species, sampling approach, and fish population study area selection for the Phase 1 EEM is as follows:

- Slimy sculpin and arctic grayling were the most abundant fish species present at the proposed effluent-exposed and reference areas during baseline and previous WUL monitoring (Section 2.4.2.5). In addition, all other fish species did not appear to be present

[8] The proposed Haggart Creek effluent-exposed fish population survey study area also incorporates Stations W4 and W29, which are used for water quality, sediment quality, and benthic invertebrate community monitoring to meet WUL conditions (VGC 2020).

- in sufficient numbers to support the implementation of either a lethal or non-lethal EEM fish population survey (i.e., minimum of 40 mature adults or 100 individuals, respectively).
- Environment Canada (2012) generally recommends the monitoring of two sexually mature, sedentary, fish species using a lethal sampling approach for EEM fish population surveys. However, arctic grayling historically captured at Haggart Creek and Lynx Creek have primarily been represented by YOY individuals (i.e., >95% of sampled individuals) and very few adults (i.e., seven-year-old individuals greater than approximately 33 cm long; Barrett and Munkittrick 2010). A short-term residency can also be expected for most of the relatively few adult arctic grayling that reside in Haggart Creek over the open water period (Pendray 1983). The low numbers of adult arctic grayling within the Haggart Creek system coupled with low residency time within a given effluent-exposed or reference area of Haggart Creek precludes using adult arctic grayling for the fish population study.
- During periods of discharge, effluent concentrations were estimated to range from 1% to 15% at the proposed effluent-exposed area (Section 2.3) and therefore this area is ideal for evaluating effects related to the Project effluent. Upper Haggart Creek, upstream of Ditch C, was not selected as a reference area of the EEM fish population survey due to insufficient area between the proposed effluent-exposed and reference study areas (i.e., questionable site fidelity and associated exposure time to reflect ambient local conditions on fish health; Gray et al. 2004) and relatively low numbers of each of the sentinel species at upper Haggart Creek (Section 2.4.2.5). The use of Lynx Creek as a reference area for the fish population survey avoids these issues, and is consistent with the sampling areas utilized under the territorial WUL fish and fish habitat monitoring program (VGC 2020). Metal concentrations in water and sediment collected at Lynx Creek were generally below applicable guidelines (except naturally high arsenic concentrations) and were indicative of no substantial anthropogenic influences.

The Phase 1 EEM fish population survey will be conducted in May 2021 (Table 3.3), which corresponds with the seasonal timing at which sufficient gonad development has occurred in slimy sculpin for the evaluation of all EEM endpoints, including reproduction (Barrett and Munkittrick 2010). Slimy sculpin are resident single spawners that spawn in May at water temperatures ranging from 5° to 10°C (Coad et al. 1995; Barrett and Munkittrick 2010). Notably, high flows at this time of year may present challenging field conditions for the collection of fish in lotic environments like those at Haggart Creek, and therefore adequate precautions must be taken to ensure the safety of field crews. To ensure EEM sampling is initiated prior to slimy sculpin spawning activity, water temperatures will be monitored daily in Haggart Creek following



ice-off in the spring of 2021 with the aim of initiating sampling when approximately 5°C water temperatures occur in the morning and taking into account effluent discharge history.

Table 3.3: Summary of Sampling Information for the Eagle Gold Mine Phase 1 EEM Fish Population Survey

Study Component	Study Detail	Description
General	Effluent-Exposed Area	Haggart Creek Near-Field (effluent-exposed; W4)
	Reference Area	Lynx Creek (reference; L1)
	Fieldwork Timing	May 2021
Lethal (Traditional) Survey	Target Species	Slimy Sculpin
	Sampling Method	Backpack Electrofishing
	Sample Size	20 males / study area 20 females / study area
Lethal (Traditional) Survey	Target Species	Arctic Grayling
	Sampling Method	Backpack Electrofishing
	Sample Size	100 individuals / study area

3.3.2 Sample Sizes and Sample Collection Methods

At each of the Haggart Creek effluent-exposed and Lynx Creek reference area, a minimum of twenty (20) sexually mature male and twenty (20) sexually mature female slimy sculpin will be targeted for the lethal survey, and one hundred (100) arctic grayling will be targeted for the non-lethal survey. Slimy sculpin and arctic grayling will be collected using an electrofishing team consisting of a backpack electrofisher operator and a single netter (Table 3.3). 'Open' station sampling will be conducted in an upstream direction at each study area. All fish captured at each open station will be placed into buckets containing aerated water. At the conclusion of sampling at each station, total shocking effort (i.e., electrofishing seconds) will be recorded to allow calculation of time-standardized catch, station upstream and downstream boundaries will be georeferenced using a handheld GPS unit, and habitat notes pertinent to the fish population survey will be recorded. All captured fish will be identified to species and enumerated. Slimy sculpin and arctic grayling will be retained for subsequent measures (see description below), whereas all non-target fish species will be released at the area of capture once the requisite number of sentinel species has been captured.

3.3.3 Field and Laboratory Processing

For slimy sculpin retained for lethal sampling, the fish will be transported to a dedicated field laboratory for processing as soon as is practical following capture (i.e., within hours). Measurements and observations collected from each individual fish will include those recommended for the EEM program (Environment Canada 2012) as briefly described herein. From each individual fish, total length will be measured to the nearest tenth of a millimetre using digital calipers and fish weight will be measured to the nearest milligram using an appropriately sized electronic balance. The external condition of each fish will be assessed for abnormalities and incidence/types of parasites during the collection of these measurements. The body cavity of each individual will then be opened and the sex and/or sexual maturity will be recorded. Whole gonads and livers will be removed from all sexually mature fish and weighed to the nearest milligram (0.001 g) using an analytical balance outfitted with a surrounding draft shield. Following weighing, whole ovaries from each sexually mature female will be placed in individually labelled sampling bags and preserved using an appropriate fixative (e.g., 10% buffered formalin solution). Any internal abnormalities observed during processing will be recorded on laboratory bench sheets. Finally, appropriate aging structures (otoliths, using pectoral fin rays as backup) will be collected from each individual fish, placed into a separately labelled bag, and following the field study, submitted to a qualified laboratory for age analysis.

For arctic grayling retained for non-lethal sampling, the fish will be processed on the shoreline at each study area shortly following collection. For each individual, external condition will be assessed, fork and total length will be measured to the nearest millimetre using a standard measuring board, and fresh body weight will be measured to the nearest milligram using an analytical balance with ± one percent precision that has been outfitted with a surrounding draft shield or appropriately sized spring scales for fish less than or greater than 50 grams, respectively. A subset of individuals spanning the size range of captured fish at each study area will be sacrificed for age determination (i.e., approximately 10% of the total number of fish sampled from each study area). Otoliths will be extracted in the field from all arctic grayling sampled for age determination and placed in separately labelled containers and upon return from the field, submitted for age determination. Immediately following the measurements indicated above, arctic grayling not retained for age analysis will be placed in a bucket containing aerated water and later, upon recovery to an upright, alert position, released to the study area at which they were collected after marking with a visible implant elastomer (VIE) tag to be used to ensure that in the event of re-capture later in the survey, that measurements are not repeated.

Slimy sculpin ovary samples will be shipped to a qualified laboratory to determine fecundity and egg weight. Briefly, following rinsing to remove the preservative, ovary samples will be weighed

to the nearest milligram at the laboratory. Three gonad tissue sub-samples will be separated from the ovaries, weighed to the nearest milligram, and then subject to the tallying of the number of eggs in the sub-sample with the aid of a dissecting microscope. In the event that a subsample does not contain 100 eggs, an additional portion of ovary tissue will be taken, processed as described above, and added to the subsample to ensure at least 100 eggs are processed as part of the sub-sample. Laboratory QA/QC measures that will be applied to the processing of samples for fecundity determination will include recounting the numbers of eggs in ten percent of sub-samples assessed to verify ±5% precision. The egg count data will then be used to estimate the total fecundity and the average individual egg weight for each female. Tissue samples for age determination will be shipped to a qualified laboratory for age analysis upon completion of the field study. Otoliths will be used as the primary aging structure, with pectoral fin rays and/or scales used as backup and/or confirmatory age structures. Prepared sections of otoliths or pectoral fin ray, and/or scale samples will be mounted on a glass slide using a mounting medium and aged (annuli counted) under a compound microscope or similar magnifying device and the age and edge condition will be recorded along with a confidence rating for the age determination.

3.3.4 Data Analysis

Fish community sampling data will be tabulated and catch-per-unit-effort (CPUE) will be calculated separately for the Haggart Creek effluent-exposed and Lynx Creek reference study areas. Electrofishing CPUE will be calculated as the number of fish captured per electrofishing minute. Analysis of the fish community sampling data will include comparisons of total fish species richness, total number of fish captured, and total CPUE between study areas. In addition, temporal comparison of fish assemblage and relative abundance (i.e., CPUE) will be conducted to evaluate potential changes in fish community features compared to historical data.

Data analysis methods will follow those recommended for EEM fish population surveys (Environment Canada 2012) as briefly described herein. For the slimy sculpin lethal population survey fish measurements, summary statistics including mean, median, minimum, maximum, standard deviation, standard error and sample size will be calculated separately for each sex by study area (effluent-exposed area and the reference area) for all endpoints related to survival (age and age structure), energy use (growth and reproduction), and energy storage (condition and relative liver size; Table 3.4). All data sets will be assessed for normality and equality of variance in order to determine the suitability of parametric statistical procedures. If data significantly violate the assumption of normality following transformation, non-parametric statistics will be applied. For each of the calculated endpoints, statistical differences between the effluent-exposed and reference study areas, assessed separately for each fish sex, will be made using ANOVA, Mann-Whitney U-tests, or Analysis-of-Covariance (ANCOVA) as appropriate and



Table 3.4: EEM Endpoints Examined for Lethal and Non-Lethal Fish Population Surveys

Response			Endpoint	Statistical Procedure[c,d,e]	Applicable Critical Effect Size
Lethal Survey (Slimy Scupin)	Effects on Fish[a]	Survival	Age	ANOVA	± 25%
			Age-frequency distribution	K-S Test	-
		Growth	Size-at-age (body weight against age)	ANCOVA	± 25%
		Reproduction	Relative gonad size (gonad weight against body weight)	ANCOVA	± 25%
		Energy Storage	Condition (body weight against length)	ANCOVA	± 10%
			Relative liver size (liver weight against body weight)	ANCOVA	± 25%
	Supporting Response Variables[b]	Growth	Length	K-S Test	-
			Body weight (whole)	ANOVA	-
			Size-at-age (length against age)	ANCOVA	-
		Reproduction	Relative fecundity (no. of eggs/female against body weight)	ANCOVA	-
			Relative egg size (mean egg weight against body weight)	ANCOVA	-
Non-Lethal Survey (Arctic Grayling)	Effects on Fish[a]	Survival	Length-frequency distribution	K-S Test	-
		Growth	Body weight (whole)	ANOVA	± 25%
			Length	ANOVA	± 25%
		Reproduction	Relative abundance of YOY (% composition)	K-S Test	-
		Energy Storage	Condition (body weight against length)	ANCOVA	± 10%

Note: "-" indicates no CES applicable.

[a] Endpoints to be used for determining "effects" as designated by statistically significant differences between exposure and reference areas (Government of Canada 2019).

[b] These analyses are for informational purposes and significant differences between exposure and reference areas are not necessarily used to designate an effect (Government of Canada 2019).

[c] ANOVA (Analysis of Variance) used except for non-parametric data, where Mann Whitney U-test may have been used.

[d] ANCOVA (Analysis of Covariance). For the ANCOVA analyses, the first term in parentheses is the endpoint (dependent variable Y) that is analyzed for an effluent effect. The second term in parentheses is the covariate, X (age, weight, or length).

[e] K-S Test (Kolmogorov-Smirnov test).

following accepted approaches as described in available technical guidance (Table 3.4; Environment Canada 2012).

For the arctic grayling non-lethal population survey, length-frequency distributions will be plotted so that, together with aging data, YOY individuals can be distinguished from non-YOY individuals separately for each study area. Summary statistics including mean, median, minimum, maximum, standard deviation, standard error and sample size for length and weight measures will be calculated by study area (effluent-exposed and reference) and, if possible, YOY and non-YOY (juvenile/adult) age categories separately based on the outcome of the length-frequency distribution analysis. The proportion of YOY and individual length and weight measurements will be used to calculate endpoints associated with survival, growth, reproduction, and energy storage for each study area according to the procedures outlined for a non-lethal assessment (Table 3.4; Environment Canada 2012). Briefly, length-frequency distributions will be compared using a non-parametric, two-sample, Kolmogorov-Smirnov goodness of fit test. Relative proportions of YOY will be compared between the effluent-exposed and reference area to evaluate potential differences in reproductive success. Mean length and body weight will be compared separately for YOY and non-YOY groups between the effluent-exposed and reference study areas using ANOVA, with the data inspected for normality and homogeneity of variance before applying parametric statistical procedures. In cases where data do not meet the assumptions of ANOVA despite log transformation, non-parametric Mann-Whitney U-tests will be performed to test for differences between areas. Body weight at fork length (condition) will be compared using ANCOVA based on methods provided in EEM technical guidance (Table 3.4; Environment Canada 2012).

An effect on the fish population, defined as a statistically significant difference between an effluent-exposed area and a reference area at an alpha level of 0.10 (Environment Canada 2012), will be evaluated for each of the EEM effect endpoints (Table 3.4; Government of Canada 2019). For endpoints showing significant area differences, the magnitude of difference between the effluent-exposed and reference areas will be calculated as described by Environment Canada (2012) using mean (ANOVA), adjusted mean (ANCOVA with no significant interaction) or predicted values (ANCOVA with significant interaction). Similar to the Critical Effect Sizes (CES) applied to the benthic invertebrate community survey, a magnitude of difference of ± 25% for survival and growth indicators, and a magnitude of difference of ± 10% for the indicator of condition, will be used as fish population survey CES applicable for defining ecologically relevant differences between study areas (Table 3.4; Munkittrick et al. 2009; Government of Canada 2019). Finally, an a priori power analyses will be completed to determine appropriate sample sizes for future fish population surveys as recommended by Environment Canada (2012). The power analyses will be completed based on the mean square error values generated during

the ANOVA or ANCOVA procedures calculated with alpha and beta equal to 0.10. The power analysis results will be reported as the minimum sample size (number of fish/area) required to detect a given magnitude of difference (effect size) between the effluent-exposed and reference area populations for each effect endpoint.

3.4 Fish Tissue Surveys

The LPSD Outlet effluent contained mercury and selenium concentrations below the EEM triggers for conducting applicable fish tissue surveys as defined in the MDMER (i.e., average annual concentrations of mercury and selenium in effluent were below 0.10 µg/L and 10 µg/L, respectively)[9] in two separate samples collected over the four days in April 2019 that effluent was released to the receiving environment (Table 3.5). Therefore, VGC is not required to conduct either a fish tissue mercury survey or a fish tissue selenium survey as part of their MDMER obligations for the Eagle Gold Project Phase 1 EEM.

3.5 Supporting Environmental Information

Additional environmental information collected to support the benthic invertebrate community and fish population surveys during the EEM biological field program will include water quality assessment. The supporting environmental data will be collected from the Haggart Creek effluent-exposed area, Haggart Creek upstream reference area, and/or Lynx Creek reference area at the same time as benthic invertebrate community and fish population sampling is conducted in September and May 2021, respectively. Water quality information used to support interpretation of the biological data will include *in situ* water quality and water chemistry assessment. Water temperature, dissolved oxygen, pH, and specific conductance (i.e., temperature-standardized measurement of conductivity) will be measured *in situ* near the water-sediment interface at each benthic station and fish survey sampling area using portable field meters that have been calibrated and/or checked against standard solutions on the day of measurement. *In situ* water quality data collected at benthic stations and fish survey sampling areas will be statistically compared between the effluent-exposed and reference areas using appropriate tests and following any applicable data transformation to satisfy statistical test assumptions.

Water samples for chemical analysis will be collected at each study area during the benthic and fish population monitoring field surveys conducted in May and September 2021, respectively. A single water sample will be collected from approximately mid-column at each study area

[9] This statement also takes into account that (calendar) annual average concentrations of mercury and method detection limits for mercury were well below 0.10 µg/L, and (calendar) annual mean concentrations of selenium and laboratory method detection limits were less than 5 µg/L, as per the MDMER.

Table 3.5: LDSP Outlet Effluent Chemistry During Discharge in April 2019

Parameters		Units	April 27, 2019	April 28, 2019
Conventionals	Conductivity (lab)	umho/cm	504	497
	pH (lab)	pH	8.11	8.12
	Hardness (as $CaCO_3$)	mg/L	238	226
	Total Suspended Solids (TSS)	mg/L	20.2	47.2
	Total Dissolved Solids (TDS)	mg/L	308	301
	Alkalinity (as $CaCO_3$)	mg/L	142	139
Nutrients and Organics	Total Ammonia	mg/L	0.005	0.009
	Nitrate	mg/L	0.113	0.108
	Nitrite	mg/L	0.0049	0.0042
	Dissolved Organic Carbon	mg/L	10.1	16.9
	Total Organic Carbon	mg/L	8.9	10.4
	Orthophosphorus	mg/L	0.001	0.001
Anions	Chloride (Cl)	mg/L	16.5	15.7
	Fluoride (Fl)	mg/L	0.17	0.16
	Sulphate (SO_4)	mg/L	102	101
	Cyanide, WAD	mg/L	<0.0050	0.005
	Cyanide, Total	mg/L	<0.0050	0.005
Total Metals	Aluminum (Al)	mg/L	2.230	1.410
	Antimony (Sb)	mg/L	0.0055	0.0060
	Arsenic (As)	mg/L	0.075	0.098
	Cadmium (Cd)	mg/L	0.00010	0.00013
	Calcium (Ca)	mg/L	52	52
	Chromium (Cr)	mg/L	0.00294	0.00276
	Cobalt (Co)	mg/L	0.00135	0.00197
	Copper (Cu)	mg/L	0.00618	0.00839
	Iron (Fe)	mg/L	2.4	3.6
	Lead (Pb)	mg/L	0.00607	0.01110
	Magnesium (Mg)	mg/L	23	23
	Manganese (Mn)	mg/L	0.118	0.160
	Mercury (Hg)	mg/L	0.000008	0.000025
	Molybdenum (Mo)	mg/L	0.0012	0.0012
	Nickel (Ni)	mg/L	0.0045	0.0059
	Potassium (K)	mg/L	4.64	4.09
	Selenium (Se)	mg/L	0.00057	0.00043
	Silver (Ag)	mg/L	0.00006	0.00006
	Sodium (Na)	mg/L	12.7	12.1
	Thallium (Tl)	mg/L	0.000038	0.000041
	Uranium (U)	mg/L	0.0059	0.0059
	Vanadium (V)	mg/L	0.0038	0.0034
	Zinc (Zn)	mg/L	0.010	0.015

sampled during each field survey. The water chemistry samples will be shipped to an accredited laboratory for analysis of electrical conductivity, hardness, alkalinity, total suspended solids (TSS), nutrients (ammonia, nitrate, phosphorus), chloride, sulphate, and total metals (including aluminum, arsenic, cadmium, chromium, cobalt, copper, iron, lead, manganese, mercury, molybdenum, nickel, selenium, thallium, uranium, and zinc) as required for EEM, using standard analytical procedures. The QA/QC for water sampling will include the collection and analysis of field duplicates (on 10% of samples), as well as assessment of laboratory duplicates, spike recoveries and blank analyses. Water chemistry data from the effluent-exposed area will be compared to data collected at the reference area, to applicable water quality guidelines, and to data collected historically to potentially identify changes in water chemistry over time.

3.6 Effluent and Receiving Environment Water Quality Monitoring

Effluent and receiving environment water quality monitoring studies consist of effluent characterization, effluent sublethal toxicity testing, and routine collection and analysis of receiving environment water quality samples. In accordance with recent promulgation of the MDMER, effluent characterization will be conducted once per calendar quarter or, in instances in which effluent is released for only a short portion of the year, at a minimum frequency of not less than 30 days apart, at the final effluent discharge point over the duration of the Phase 1 EEM period (i.e., April 2019 to April 2022). The effluent characterization samples will be shipped to an accredited laboratory for analysis of the EEM parameters stipulated by the MDMER using appropriate method detection limits and quality assurance protocols (Government of Canada 2019). Effluent characterization data will be reported electronically to ECCC on an annual basis by VGC, and these data will also be summarized in the Phase 1 EEM Interpretive Report.

Effluent sublethal toxicity testing will be conducted on LPSD Outlet effluent two times per calendar year in accordance with the MDMER. The sublethal toxicity tests will be conducted using fathead minnow (7-day survival and growth test; Environment Canada 2011), the invertebrate *Ceriodaphnia dubia* (7-day survival and reproduction test; Environment Canada 2007a), the alga *Pseudokirchneriella subcapitata* (3-day growth inhibition test; Environment Canada 2007b) and the aquatic plant *Lemna minor* (7-day growth inhibition test; Environment Canada 2007c). Effluent samples for sublethal toxicity sampling will be collected using methods consistent with Environment Canada (2001, 2012). The sublethal toxicity tests will be performed by a laboratory accredited by the Canadian Association for Laboratory Accreditation Inc. (CALA). The sublethal toxicity data will be reported annually to ECCC by VGC, and these data will be summarized in the Phase 1 EEM Interpretive Report.

Water quality monitoring will be conducted at applicable EEM effluent-exposed and reference stations (i.e., W4 and W22, respectively) four times per calendar year, not less than one month apart, during periods of effluent deposit from LPSD Outlet over the duration of the Phase 1 EEM (April 2019 to April 2022 in conjunction with routine water quality monitoring conducted for the territorial WUL). Water samples will also be collected from areas of biological sampling, at the same time that biological sampling is being conducted, for EEM as described above in Section 3.5.2. The water quality samples will be shipped to an accredited laboratory for analysis of the EEM parameters stipulated by the MDMER using appropriate method detection limits and quality assurance protocols (as per Government of Canada 2019). These water quality monitoring data will be reported electronically to ECCC on an annual basis by VGC, and these data together with data collected during the biological monitoring described in this report, will be summarized in the Phase 1 EEM Interpretive Report.

3.7 Schedule and Reporting

The Phase 1 EEM biological study will require two field events to separately collect benthic invertebrate community samples in September and fish population samples in May (along with supporting information applicable to each of these components), followed by the preparation and submission of an interpretative report to ECCC. The chronological schedule for completion of these tasks is as follows:

- Study Design Submission to ECCC — April 2020
- Fish Population Survey Fieldwork — May 2021
- Benthic Survey Fieldwork — September 2021
- Interpretive Report Submission to ECCC — April 20th, 2022.

The Study Design must be submitted to ECCC (for review and approvals) within one year of becoming subject to the MDMER (Government of Canada 2019) which, for the Project, was April 20th, 2019. The proposed timing for the biological monitoring studies is May and September 2021. With the submission of all applicable water chemistry, benthic invertebrate community, and fish ovary (fecundity) and aging samples to relevant laboratories for analysis shortly after completion of applicable fieldwork, all laboratory results should be available by early2022. This will provide adequate time for data analysis and completion of a final Interpretive Report for submission to ECCC on or before the regulatory deadline of April 20th, 2022.

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APPENDIX A

ENVIRONMENTAL PROTECTION PRACTICES INFORMATION

Table A.1: Surveillance Requirements for the Heap Leach Facility (HLF)

Surveillance	Frequency	Responsibility
Embankment	Weekly by staff (Annually by Engineer)	Process General Foreman or alternate
Embankment Geotechnical Instrumentation (piezometers and inclinometer)	Continuous using wireless relays to office	Process General Foreman Process General Foreman
Pad Liner	Weekly	Process General Foreman or alternate
Stacked leach ore for stability	Weekly	Process General Foreman or alternate
In-Heap Pond Piezometers	Continuous using wireless relays to office	Process General Foreman
Solution collection and recovery system	Weekly	Process General Foreman or alternate
Leak Detection and Recovery System Monitoring Ports	Daily	Environmental Superintendent
Heap leach pad vibrating wire piezometers	Daily during freshet or when solution inflow and outflow rates are not equalized (i.e., application and withdrawal rates altered for operational purposes or equipment malfunction/upset event), weekly during the remainder of the year.	Environmental Superintendent
Monitoring Vault	Weekly	Environmental Superintendent
Events Pond fluid levels	Daily if the desired available storage has been reached and weekly otherwise.	Environmental Superintendent
Events Pond liners	Weekly	Environmental Superintendent
Conveyors and radial stacker	Monthly	Crushing & Conveying Supervisor
Geochemical sampling of pregnant and barren process solution	Quarterly	Metallurgist

Table A.1: Surveillance Requirements for the Heap Leach Facility (HLF)

Surveillance	Frequency	Responsibility
HLF and Dam Inspection by Engineer	Annually	Engineer of Record
Independent third-party physical stability inspection	Annually	Engineering Consultant
Event Driven Inspection	Following unusual event (e.g., heavy precipitation, freshet, earthquake)	Managers - Process, Maintenance, Health & Safety and Environmental
Comprehensive Review (Dam Safety Review)	No later than 5 years after construction and prior to decommissioning	Engineering Consultant
Instrumentation	Monthly and per Manufacturer Guidelines	Instrumentation Technician
General Visual Inspection of HLF Components and the Events Pond	Daily during the completion of standard work procedures	Environmental Superintendent and Coordinators and Health, Safety and Security Manager and Coordinator

Table A.2: ADR Facility Surveillance and Inspection Focus Areas

Facilities	Inspection Focus Area
Cyanide unloading and storage area	• maintenance of general housekeeping practices, presence of water or debris
	• proper segregated storage of incompatible materials
	• integrity and proper positioning and stacking of stored intermodal containers and IBCs
	• presence of properly rated fire extinguishers
	• functionality of fixed HCN alarms and video monitors
	• legibility of hazard warning signage
	• availability of Material Safety Data Sheets (MSDSs) for cyanide briquettes
	• cordoning of container unloading area during unloading operations, and restriction of access by unauthorized personnel
	• use of appropriate operator PPE during unloading operations
	• functionality of eyewashes/emergency showers and water supply line pressure
	• condition of emergency response equipment and first aid storage cabinets
Cyanide bag cutter arrangement, mixing and storage tanks, and secondary containments	• structural integrity, signs of corrosion, buildup of cyanide salts, or leakage (tanks, valves, pumps, and other piping system components)
	• structural integrity, cracks, spalling, or deterioration of concrete impoundments
	• functionality of fixed HCN alarms and video monitors
	• functionality of tank level indicators
	• condition of chain hoist and bag lifting bridle
	• functionality of eyewashes/emergency showers and water supply line pressure
	• temperature, cleanliness, and condition of cyanide antidote kits and first aid storage cabinets
	• condition of emergency response equipment and PPE
	• use of appropriate operator PPE during mixing operations
	• legibility of hazard warning and direction flow signage
	• integrity of lockout/tag-out mechanisms on major solution or containment drain valves
	• maintenance of physical separation from chemically incompatible materials
	• maintenance of general housekeeping practices, presence of spilled solution or debris

Table A.2: ADR Facility Surveillance and Inspection Focus Areas

Facilities	Inspection Focus Area
Incineration of cyanide packaging materials	• legibility of hazard warning signage
	• adequacy and integrity of security fencing, gate, and lock
	• completeness of combustion of packaging residues
	• control of windblown debris outside of fenced area
	• evidence of animal intrusion
ADR plant and secondary containments	• structural integrity, signs of corrosion, buildup of cyanide salts, or leakage involving process solution storage tanks, valves, pumps, and other piping system components
	• structural integrity, cracks, spalling, or deterioration of concrete impoundments
	• management of fluids in impoundments
	• functionality of fixed HCN alarms and video monitors
	• functionality of tank level indicators
	• functionality of eyewashes/emergency showers and water supply line pressure
	• temperature and condition of cyanide antidote kits
	• condition of emergency response equipment and PPE
	• legibility of hazard warning and direction flow signage
	• integrity of lockout/tag-out mechanisms on major solution or containment drain valves
	• maintenance of physical separation from chemically incompatible materials
	• maintenance of good general housekeeping practices, including routine cleanup of spilled or leaked solution or debris
Pregnant and barren solution pipelines and pumping stations/ containments	• structural integrity, signs of corrosion, buildup of cyanide salts, or leakage (pipelines, valves, pumps, and other components)
	• structural integrity, cracks, spalling, or deterioration of concrete impoundments
	• functionality of eyewashes/emergency showers
	• temperature and condition of cyanide antidote kits
	• condition of emergency response equipment and PPE
	• legibility of hazard warning and direction flow signage
	• integrity of lockout/tag-out mechanisms on major solution or containment drain valves

Table A.2: ADR Facility Surveillance and Inspection Focus Areas

Facilities	Inspection Focus Area
HLF earthworks, risers, distribution lines, emitters, internal pond(s), and leak detection system	• signs of erosion, slumps, or cracks in earthworks or the ore pile
	• signs of pipeline/flange leakage, and associated ponding
	• signs of ponding on HLF surface; if present, adequacy of screening or other appropriate avian exclusion devices
	• signs of animal trails or intrusion
	• management of fluids in impoundments
	• functionality of leak detection system and maintenance of associated detection logs
	• legibility of hazard warning and direction flow signage
External Events Pond and leak detection systems	• adequacy of available freeboard (comparison to surveyed markers)
	• tears or holes in liner material or signs of erosion or slumps in underlying earthworks
	• signs of pipeline/flange leakage, and associated ponding
	• adequacy of wildlife fencing and avian exclusion devices
	• signs of animal trails or intrusion
	• functionality of leak detection system and maintenance of associated detection logs
	• legibility of hazard warning and direction flow signage
Surface water interceptor ditches	• tears or holes in liner material (if lined) or signs of erosion, slumps, or cracks in earthworks
	• signs of animal trails or intrusion
	• signs of blockage or other surface runoff impediments

APPENDIX B

GENERAL SUPPORTING INFORMATION

Table B.1: Baseline Monthly Average Water Chemistry at Haggart Creek Upstream of Dublin Gulch (Station W22), 2007 to 2016

Parameters		Units	Water Quality Guideline	Month												
				January (n=2)	February (n=3)	March (n=5)	April (n=4)	May (n=6)	June (n=3)	July (n=5)	August (n=8)	September (n=7)	October (n=8)	November (n=3)	December (n=2)	Annual Average
Conventionals	Conductivity (lab)	umho/cm	-	379	377	394	389	116	229	278	284	280	289	346	348	309
	pH (lab)	pH	6.5 - 9.0[a,b]	7.90	8.00	7.80	7.70	7.30	7.90	8.00	8.00	7.70	7.90	8.00	8.00	7.85
	Hardness (as $CaCO_3$)	mg/L	-	213	216	215	214	63	123	150	150	151	159	180	190	169
	Total Suspended Solids (TSS)	mg/L	-	5.8	3	3.1	3.4	25	3.2	3	5.2	3	3	3	3.0	5.3
	Total Dissolved Solids (TDS)	mg/L	-	250	242	253	248	104	149	186	186	179	187	208	224	201
	Alkalinity (as $CaCO_3$)	mg/L	-	120	119	120	117	36	72	88	88	86	91	102	109	96
Nutrients and Organics	Total Ammonia	mg/L	-	0.005	0.02	0.0226	0.0054	0.0054	0.005	0.0051	0.011	0.0077	0.0075	0.005	0.005	0.009
	Nitrate	mg/L	3[b]	0.140	0.150	0.140	0.140	0.030	0.077	0.052	0.049	0.067	0.120	0.150	0.160	0.106
	Nitrite	mg/L	0.02[a,c]	0.001	0.001	0.0011	0.001	0.003	0.001	0.001	0.0013	0.001	0.0021	0.001	0.001	0.001
	Dissolved Organic Carbon	mg/L	-	1.2	1.0	1.1	1.3	20.0	3.4	2.1	3.0	3.9	2.1	1.3	1.5	3.5
	Total Organic Carbon	mg/L	-		1.0	1.6	1.3	24.0		2.8	4.3	2.1	2.2	1.7	1.2	4.2
	Orthophosphorus	mg/L	-	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001
Anions	Chloride (Cl)	mg/L	120[b]	0.5	0.5	0.5	0.5	1.5	0.5	0.5	0.5	0.5	0.64	0.5	0.5	0.6
	Fluoride (Fl)	mg/L	0.3[c]	0.11	0.11	0.11	0.12	0.08	0.07	0.08	0.09	0.08	0.09	0.10	0.11	0.10
	Sulphate (SO_4)	mg/L	309[a]	89	89	93	92	21	48	60	62	56	64	72	79	69
	Cyanide, WAD	mg/L	0.005[a,c]	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005
	Cyanide, Total	mg/L	-	0.005	0.005	0.005	0.005	0.009	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005
Total Metals	Aluminum (Al)	mg/L	0.100[b]	0.128	0.018	0.018	0.024	0.460	0.036	0.027	0.056	0.017	0.017	0.010	0.016	0.069
	Antimony (Sb)	mg/L	0.020[b,c]	0.00025	0.00023	0.00022	0.00024	0.00024	0.00024	0.00026	0.00026	0.00025	0.00025	0.00026	0.00021	0.00024
	Arsenic (As)	mg/L	0.005[a,b,c]	0.00111	0.00077	0.00077	0.00089	0.0019	0.00078	0.00087	0.00091	0.00077	0.00074	0.00069	0.00076	0.00091
	Cadmium (Cd)	mg/L	0.00031[a,d]	0.000025	0.000018	0.000018	0.00002	0.00006	0.000017	0.000014	0.00002	0.000021	0.000017	0.000016	0.000027	0.000023
	Calcium (Ca)	mg/L	-	51	49	50	51	15	33	38	38	39	40	43	45	41
	Chromium (Cr)	mg/L	0.009[c]	0.00054	0.00024	0.00034	0.00031	0.0009	0.00067	0.00038	0.00044	0.00053	0.00035	0.00053	0.00026	0.00046
	Cobalt (Co)	mg/L	0.004[a]	0.0003	0.00023	0.00018	0.00026	0.00085	0.00017	0.00013	0.00014	0.00015	0.00014	0.00018	0.00017	0.00024
	Copper (Cu)	mg/L	0.0039[b]	0.00075	0.00110	0.00045	0.00043	0.00270	0.00078	0.00066	0.00061	0.00072	0.00056	0.00071	0.00050	0.00083
	Iron (Fe)	mg/L	1.0[a,d]	0.331	0.122	0.100	0.130	1.150	0.110	0.110	0.150	0.081	0.072	0.058	0.086	0.208
	Lead (Pb)	mg/L	0.0095	0.00018	0.00011	0.00008	0.00007	0.00067	0.00009	0.00006	0.00009	0.00007	0.00007	0.00011	0.00005	0.00014
	Magnesium (Mg)	mg/L	-	21	21	21	22	6	10	13	13	13	14	17	18	16
	Manganese (Mn)	mg/L	1.39[a]	0.065	0.055	0.063	0.069	0.110	0.028	0.040	0.029	0.036	0.029	0.035	0.055	0.051
	Mercury (Hg)	mg/L	0.000026[b]	0.00001	0.00001	0.00001	0.00001	0.000011	0.00001	0.00001	0.00001	0.00001	0.000010	0.00001	0.00001	0.00001
	Molybdenum (Mo)	mg/L	0.073[b]	0.000054	0.000065	0.000060	0.000068	0.000058	0.000390	0.000076	0.000069	0.000200	0.000200	0.000380	0.000067	0.000141
	Nickel (Ni)	mg/L	0.15[b]	0.00159	0.0015	0.0014	0.0017	0.0034	0.00088	0.00098	0.00096	0.00099	0.00086	0.001	0.0011	0.0014
	Potassium (K)	mg/L	-	1.70	1.50	1.70	1.60	1.40	2.00	1.60	1.70	1.80	1.30	1.70	1.06	1.59
	Selenium (Se)	mg/L	0.002[a,d]	0.00021	0.00017	0.00018	0.00018	0.00014	0.00018	0.00016	0.00017	0.00017	0.00016	0.00018	0.00017	0.00017
	Silver (Ag)	mg/L	0.0015[a,c,d]	0.00001	0.00001	0.00001	0.00001	0.000017	0.00001	0.00001	0.00001	0.00001	0.00001	0.00001	0.00001	0.00001
	Sodium (Na)	mg/L	-	2.30	2.20	2.30	2.30	1.30	1.90	1.80	1.80	1.90	1.80	1.90	1.95	1.95
	Thallium (Tl)	mg/L	0.0008[b]	0.00001	0.00001	0.00001	0.00001	0.00001	0.00001	0.00001	0.00001	0.00001	0.00001	0.00001	0.00001	0.00001
	Uranium (U)	mg/L	0.015[b]	0.00130	0.00130	0.00140	0.00140	0.00034	0.00064	0.00078	0.00077	0.00074	0.00094	0.00110	0.00120	0.00099
	Vanadium (V)	mg/L	0.006[b]	0.001	0.001	0.001	0.001	0.0013	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001
	Zinc (Zn)	mg/L	0.074[a,d]	0.0055	0.0047	0.0033	0.0046	0.0080	0.003	0.0023	0.0019	0.0023	0.0028	0.0056	0.006	0.004

Indicates parameter concentration above applicable Water Quality Guideline.

[a] British Columbia Water Quality Guideline (BCMOE 2020).

[b] Canadian Water Quality Guideline for the protection of aquatic life (CCME 1999, 2020).

[c] Yukon Contaminated Sites Regulation (Yukon Government 2012).

[d] Indicates instance in which selected water quality guideline may not have been the lowest, most stringent, criteria, but rather reflected the most recent update.

Table B.2: Baseline Monthly Average Water Chemistry at Haggart Creek Downstream of Dublin Gulch (Station W4), 2007 to 2016

Parameters		Units	Water Quality Guideline	Month												
				January	February	March	April	May	June	July	August	September	October	November	December	Annual
				(n=2)	(n=3)	(n=5)	(n=3)	(n=6)	(n=3)	(n=4)	(n=6)	(n=5)	(n=5)	(n=3)	(n=2)	Average
Conventionals	Conductivity (lab)	umho/cm	-	373	378	389	380	107	222	273	263	267	278	336	340	301
	pH (lab)	pH	6.5 - 9.0[a,b]	7.90	8.00	7.90	7.80	7.30	8.00	8.00	8.40	7.70	8.00	7.90	7.90	7.90
	Hardness (as $CaCO_3$)	mg/L	-	208	209	209	206	56	119	145	138	143	152	173	184	162
	Total Suspended Solids (TSS)	mg/L	-	5.4	3	3	3.3	32	4.2	3.6	5.1	3	3.1	3.1	3.1	6.0
	Total Dissolved Solids (TDS)	mg/L	-	244	239	248	248	101	141	178	168	177	177	192	220	194
	Alkalinity (as $CaCO_3$)	mg/L	-	121	117	119	116	34	69	86	82	82	88	100	111	94
Nutrients and Organics	Total Ammonia	mg/L	-	0.005	0.02	0.0051	0.005	0.0055	0.005	0.005	0.01	0.005	0.005	0.005	0.005	0.007
	Nitrate	mg/L	3[b]	0.140	0.150	0.150	0.130	0.031	0.070	0.046	0.047	0.065	0.130	0.140	0.160	0.105
	Nitrite	mg/L	0.02[a,c]	0.001	0.001	0.001	0.001	0.003	0.001	0.001	0.001	0.001	0.0049	0.001	0.001	0.001
	Dissolved Organic Carbon	mg/L	-	1.0	1.0	1.0	1.3	19.0	3.4	2.1	3.3	3.7	2.3	1.4	1.5	3.4
	Total Organic Carbon	mg/L	-		0.9	1.3	1.5	24.0		2.8	4.1	2.0	2.2	3.0	1.2	4.3
	Orthophosphorus	mg/L	-	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001
Anions	Chloride (Cl)	mg/L	120[b]	0.5	2.09	1.79	0.5	1.5	0.5	0.5	0.5	0.5	1.21	0.5	0.5	0.9
	Fluoride (Fl)	mg/L	0.3[c]	0.10	0.11	0.11	0.12	0.08	0.07	0.08	0.08	0.09	0.11	0.10	0.11	0.10
	Sulphate (SO_4)	mg/L	309[a]	87	86	91	88	19	46	59	54	57	61	69	77	66
	Cyanide, WAD	mg/L	0.005[a,c]	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005
	Cyanide, Total	mg/L	-	0.005	0.005	0.005	0.005	0.009	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005
Total Metals	Aluminum (Al)	mg/L	0.100[b]	0.0633	0.0189	0.0140	0.0350	0.6000	0.0380	0.0310	0.066	0.0180	0.026	0.0085	0.0190	0.078
	Antimony (Sb)	mg/L	0.020[b,c]	0.00027	0.00028	0.00026	0.00026	0.00045	0.00039	0.00036	0.00039	0.0004	0.00038	0.00039	0.00029	0.00034
	Arsenic (As)	mg/L	0.005[a,b,c]	0.00146	0.00142	0.00128	0.00181	0.0091	0.00292	0.00342	0.00423	0.00417	0.00412	0.00305	0.00188	0.00324
	Cadmium (Cd)	mg/L	0.00031[a,d]	0.00002	0.000019	0.000016	0.000017	0.00006	0.000017	0.000014	0.000021	0.000022	0.000011	0.000015	0.000015	0.000021
	Calcium (Ca)	mg/L	-	49	48	50	49	14	30	36	36	37	39	43	44	40
	Chromium (Cr)	mg/L	0.009[c]	0.00036	0.00024	0.00034	0.0004	0.0011	0.00067	0.00035	0.00042	0.00054	0.00033	0.00053	0.00022	0.00046
	Cobalt (Co)	mg/L	0.004[a]	0.00023	0.00021	0.00015	0.00018	0.00094	0.00013	0.00011	0.00014	0.00013	0.00012	0.00014	0.00015	0.00022
	Copper (Cu)	mg/L	0.0039[b]	0.00059	0.00200	0.00041	0.00041	0.00290	0.00069	0.00057	0.00072	0.00064	0.00071	0.00076	0.00050	0.00091
	Iron (Fe)	mg/L	1.0[a,d]	0.169	0.119	0.09	0.12	1.34	0.11	0.09	0.16	0.081	0.086	0.057	0.082	0.209
	Lead (Pb)	mg/L	0.0092	0.000112	0.00006	0.000051	0.000108	0.001	0.000084	0.000054	0.000097	0.00005	0.000059	0.00006	0.000085	0.00015
	Magnesium (Mg)	mg/L	-	20	21	21	21	5	10	13	12	12	13	16	18	15
	Manganese (Mn)	mg/L	1.39[a]	0.050	0.053	0.044	0.049	0.110	0.018	0.023	0.028	0.030	0.027	0.034	0.039	0.042
	Mercury (Hg)	mg/L	0.000026[b]	0.00001	0.00001	0.00001	0.00001	0.000012	0.00001	0.00001	0.00001	0.00001	0.000010	0.00001	0.00001	0.00001
	Molybdenum (Mo)	mg/L	0.073[b]	0.000109	0.000110	0.000098	0.000096	0.000231	0.000540	0.000227	0.000240	0.000390	0.000400	0.000480	0.000133	0.000255
	Nickel (Ni)	mg/L	0.15[b]	0.00127	0.0014	0.0012	0.0013	0.0036	0.00089	0.00091	0.00098	0.00094	0.00086	0.001	0.001	0.0013
	Potassium (K)	mg/L	-	1.60	1.50	1.70	1.70	1.50	2.00	1.50	1.60	1.80	1.10	1.70	1.08	1.57
	Selenium (Se)	mg/L	0.002[a,d]	0.00023	0.00022	0.0002	0.0002	0.00016	0.00021	0.00017	0.00019	0.0002	0.00015	0.0002	0.00018	0.00019
	Silver (Ag)	mg/L	0.0015[a,c,d]	0.00001	0.00001	0.00001	0.00001	0.000016	0.00001	0.00001	0.00001	0.00001	0.00001	0.00001	0.00001	0.00001
	Sodium (Na)	mg/L	-	2.30	3.30	3.20	2.20	1.40	2.00	1.80	1.90	1.90	1.70	1.90	2.01	2.13
	Thallium (Tl)	mg/L	0.0008[b]	0.00001	0.00001	0.00001	0.00001	0.00001	0.00001	0.00001	0.00001	0.00001	0.00001	0.00001	0.00001	0.00001
	Uranium (U)	mg/L	0.015[b]	0.00140	0.00150	0.00150	0.00140	0.00042	0.00060	0.00081	0.00074	0.00074	0.00096	0.00110	0.00120	0.00103
	Vanadium (V)	mg/L	0.006[b]	0.001	0.001	0.001	0.001	0.0013	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001
	Zinc (Zn)	mg/L	0.074[a,d]	0.0042	0.0045	0.0031	0.0036	0.0082	0.0025	0.0025	0.0023	0.002	0.0031	0.0033	0.0037	0.004

Indicates parameter concentration above applicable Water Quality Guideline.

[a] British Columbia Water Quality Guideline (BCMOE 2020).

[b] Canadian Water Quality Guideline for the protection of aquatic life (CCME 1999, 2020).

[c] Yukon Contaminated Sites Regulation (Yukon Government 2012).

[d] Indicates instance in which selected water quality guideline may not have been the lowest, most stringent, criteria, but rather reflected the most recent update.

Table B.3: Baseline Monthly Average Water Chemistry at Haggart Creek Downstream of Platinum Gulch (Station W29), 2007 to 2016

Parameters		Units	Water Quality Guideline	Month												
				January (n=2)	February (n=3)	March (n=3)	April (n=4)	May (n=6)	June (n=2)	July (n=3)	August (n=8)	September (n=4)	October (n=8)	November (n=3)	December (n=2)	Annual Average
Conventionals	Conductivity (lab)	umho/cm	-	403	401	420	406	128	232	283	290	306	307	384	367	327
	pH (lab)	pH	6.5 - 9.0[a,b]	8.10	8.10	7.90	8.10	7.40	8.00	8.10	8.10	7.70	8.00	8.00	8.00	7.96
	Hardness (as $CaCO_3$)	mg/L	-	227	219	232	225	67	128	153	156	171	172	195	202	179
	Total Suspended Solids (TSS)	mg/L	-	3	3	3.1	5.2	72	3	3	7.1	3	3.5	3	3.0	9.3
	Total Dissolved Solids (TDS)	mg/L	-	265	255	272	269	110	149	189	189	200	197	225	237	213
	Alkalinity (as $CaCO_3$)	mg/L	-	133	129	133	125	41	74	93	96	97	99	115	120	105
Nutrients and Organics	Total Ammonia	mg/L	-	0.005	0.02	0.0054	0.005	0.0065	0.0073	0.005	0.0076	0.0088	0.009	0.005	0.005	0.007
	Nitrate	mg/L	3[b]	0.140	0.150	0.140	0.130	0.029	0.072	0.045	0.044	0.072	0.110	0.140	0.150	0.102
	Nitrite	mg/L	0.02[a,c]	0.001	0.001	0.001	0.001	0.003	0.001	0.001	0.0011	0.001	0.001	0.001	0.001	0.001
	Dissolved Organic Carbon	mg/L	-	1.3	1.1	1.3	1.2	19.0	2.9	2.3	3.8	3.1	2.0	2.0	1.6	3.5
	Total Organic Carbon	mg/L	-		1.1	1.3	1.5	18.8		2.8	4.2	2.3	2.1	1.7	1.3	3.7
	Orthophosphorus	mg/L	-	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001
Anions	Chloride (Cl)	mg/L	120[b]	0.5	0.57	0.62	0.9	1.5	0.5	0.5	0.5	0.5	0.5	1.2	0.5	0.7
	Fluoride (Fl)	mg/L	0.3[c]	0.11	0.12	0.12	0.12	0.09	0.07	0.09	0.10	0.10	0.10	0.11	0.11	0.10
	Sulphate (SO_4)	mg/L	309[a]	94	92	98	94	23	48	59	59	64	66	78	83	72
	Cyanide, WAD	mg/L	0.005[a,c]	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005
	Cyanide, Total	mg/L	-	0.005	0.005	0.005	0.005	0.010	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005
Total Metals	Aluminum (Al)	mg/L	0.100[b]	0.0259	0.0092	0.0112	0.1700	1.4000	0.0450	0.0380	0.100	0.0160	0.039	0.0100	0.0150	0.157
	Antimony (Sb)	mg/L	0.020[b,c]	0.00058	0.00057	0.00061	0.00064	0.0011	0.0006	0.00069	0.00082	0.00058	0.00064	0.0006	0.00053	0.00066
	Arsenic (As)	mg/L	0.005[a,b,c]	0.0021	0.0022	0.0023	0.0045	0.016	0.0045	0.0055	0.0061	0.0053	0.0047	0.0033	0.0025	0.00492
	Cadmium (Cd)	mg/L	0.00031[a,d]	0.00002	0.000017	0.000015	0.000019	0.00008	0.000017	0.000014	0.000017	0.000014	0.000022	0.000015	0.000013	0.000022
	Calcium (Ca)	mg/L	-	55	52	57	54	17	33	39	39	44	42	48	48	44
	Chromium (Cr)	mg/L	0.009[c]	0.00029	0.00016	0.00016	0.0004	0.0022	0.00027	0.00022	0.00036	0.00024	0.00021	0.00016	0.00018	0.00040
	Cobalt (Co)	mg/L	0.004[a]	0.00016	0.00014	0.00011	0.00019	0.0014	0.00011	0.00011	0.00017	0.0001	0.00012	0.00011	0.00012	0.00024
	Copper (Cu)	mg/L	0.0039[b]	0.00061	0.00050	0.00069	0.00075	0.00520	0.00075	0.00068	0.00084	0.00086	0.00059	0.00051	0.00050	0.00104
	Iron (Fe)	mg/L	1.0[a,d]	0.078	0.057	0.05	0.28	2.6	0.095	0.11	0.22	0.062	0.111	0.041	0.051	0.313
	Lead (Pb)	mg/L	0.0100	0.00013	0.000056	0.000097	0.00041	0.0034	0.00014	0.00012	0.00032	0.00015	0.00017	0.000062	0.000061	0.00043
	Magnesium (Mg)	mg/L	-	22	22	24	22	6	11	13	14	14	15	19	19	17
	Manganese (Mn)	mg/L	1.39[a]	0.051	0.052	0.047	0.052	0.120	0.015	0.029	0.029	0.033	0.034	0.042	0.045	0.046
	Mercury (Hg)	mg/L	0.000026[b]	0.00001	0.00001	0.00001	0.00001	0.000011	0.00001	0.00001	0.00001	0.00001	0.000010	0.00001	0.00001	0.00001
	Molybdenum (Mo)	mg/L	0.073[b]	0.000170	0.000130	0.000140	0.000180	0.000200	0.000240	0.000280	0.000280	0.000380	0.000270	0.000220	0.000170	0.000222
	Nickel (Ni)	mg/L	0.15[b]	0.00122	0.00124	0.0012	0.0019	0.0048	0.00087	0.00089	0.001	0.00099	0.00086	0.00095	0.001	0.0014
	Potassium (K)	mg/L	-	1.70	1.50	1.60	1.70	1.50	2.00	1.30	1.60	1.50	1.40	1.50	1.20	1.54
	Selenium (Se)	mg/L	0.002[a,d]	0.00023	0.00021	0.00022	0.00022	0.00018	0.00024	0.00018	0.00021	0.00022	0.0002	0.00021	0.00019	0.00021
	Silver (Ag)	mg/L	0.0015[a,c,d]	0.00001	0.00001	0.00001	0.00001	0.000036	0.00001	0.00001	0.00001	0.00001	0.00001	0.00001	0.00001	0.00001
	Sodium (Na)	mg/L	-	2.60	2.50	2.60	2.90	1.40	2.00	1.90	1.90	1.90	1.90	2.60	2.10	2.19
	Thallium (Tl)	mg/L	0.0008[b]	0.00001	0.00001	0.00001	0.00001	0.000015	0.00001	0.00001	0.00001	0.00001	0.00001	0.00001	0.00001	0.00001
	Uranium (U)	mg/L	0.015[b]	0.00190	0.00190	0.00190	0.00190	0.00061	0.00079	0.00110	0.00110	0.00110	0.00130	0.00160	0.00160	0.00140
	Vanadium (V)	mg/L	0.006[b]	0.001	0.001	0.001	0.001	0.0025	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001
	Zinc (Zn)	mg/L	0.074[a,d]	0.0049	0.0038	0.0031	0.0044	0.0116	0.002	0.0024	0.0025	0.0026	0.0027	0.003	0.004	0.004

Indicates parameter concentration above applicable Water Quality Guideline.

[a] British Columbia Water Quality Guideline (BCMOE 2020).

[b] Canadian Water Quality Guideline for the protection of aquatic life (CCME 1999, 2020).

[c] Yukon Contaminated Sites Regulation (Yukon Government 2012).

[d] Indicates instance in which selected water quality guideline may not have been the lowest, most stringent, criteria, but rather reflected the most recent update.

Table B.4: Baseline Monthly Average Water Chemistry at Lower Lynx Creek (Station W6), 2007 to 2016

Parameters		Units	Water Quality Guideline	Month												
				January	February	March	April	May	June	July	August	September	October	November	December	Annual
				(n=1)	(n=1)	(n=1)	(n=1)	(n=4)	(n=2)	(n=4)	(n=5)	(n=5)	(n=5)	(n=2)	(n=1)	Average
Conventionals	Conductivity (lab)	umho/cm	-	361	367	395	384	105	258	285	1092	275	277	358	368	377
	pH (lab)	pH	6.5 - 9.0[a,b]	8.10	8.00	7.50	7.40	7.40	8.10	8.00	6.70	8.00	8.00	7.80	7.90	7.74
	Hardness (as $CaCO_3$)	mg/L	-	194	201	215	202	56	137	154	160	151	169	191	195	169
	Total Suspended Solids (TSS)	mg/L	-	3	3	3	3	32.1	3	4.1	3.1	3.3	3	3	3.0	5.6
	Total Dissolved Solids (TDS)	mg/L	-	242	238	272	243	95	165	189	197	182	195	226	242	207
	Alkalinity (as $CaCO_3$)	mg/L	-	121	124	118		35	82	98	101	93	102	109	124	101
Nutrients and Organics	Total Ammonia	mg/L	-	0.005	0.005	0.005	0.005	0.0077	0.0057	0.005	0.0082	0.005	0.0054	0.0056	0.007	0.006
	Nitrate	mg/L	3[b]	0.260	0.270	0.300	0.240	0.029	0.048	0.062	0.071	0.110	0.170	0.210	0.250	0.168
	Nitrite	mg/L	0.02[a,c]	0.001	0.001	0.001	0.001	0.002	0.001	0.0015	0.0018	0.001	0.001	0.001	0.001	0.001
	Dissolved Organic Carbon	mg/L	-	1.7	1.9	2.0		18.0	6.7	3.3	4.0	6.4	4.4			5.4
	Total Organic Carbon	mg/L	-			2.0		26.0		5.8	3.9	3.4	2.9	2.8	2.2	6.1
	Orthophosphorus	mg/L	-	0.003	0.003	0.003	0.004	0.001	0.001	0.001	0.001	0.001	0.002	0.003	0.005	0.002
Anions	Chloride (Cl)	mg/L	120[b]	0.5	0.5	0.5		1	0.5	0.5	0.9	0.5	0.5	0.5	0.5	0.6
	Fluoride (Fl)	mg/L	0.3[c]	0.09	0.09	0.10		0.07	0.08	0.08	0.11	0.09	0.10	0.09	0.10	0.09
	Sulphate (SO_4)	mg/L	309[a]	83	83	87		17	46	55	55	51	61	72	83	63
	Cyanide, WAD	mg/L	0.005[a,c]	0.005	0.005		0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005
	Cyanide, Total	mg/L	-	0.005	0.005		0.005	0.005	0.006	0.005	0.005	0.006	0.005	0.005	0.005	0.005
Total Metals	Aluminum (Al)	mg/L	0.100[b]	0.0127	0.0093	0.0090	0.0032	0.6100	0.0360	0.0670	0.037	0.0460	0.018	0.0150	0.0190	0.074
	Antimony (Sb)	mg/L	0.020[b,c]	0.00034	0.0003	0.00039	0.00025	0.00043	0.00044	0.00043	0.00044	0.00046	0.00042	0.00042	0.00045	0.00040
	Arsenic (As)	mg/L	0.005[a,b,c]	0.0064	0.0063	0.0055	0.0058	0.0086	0.0055	0.0059	0.0067	0.0065	0.0063	0.0060	0.0065	0.0063
	Cadmium (Cd)	mg/L	0.00031[a,d]	0.000017	0.000013	0.000015	0.000017	0.000068	0.000017	0.000018	0.00002	0.000019	0.000016	0.000015	0.000026	0.000022
	Calcium (Ca)	mg/L	-	66	61	69	64	17	44	48	51	47	54	62	63	54
	Chromium (Cr)	mg/L	0.009[c]	0.00023	0.0001	0.0001	0.0005	0.00115	0.00075	0.0004	0.0013	0.00053	0.0005	0.00055	0.00093	0.00059
	Cobalt (Co)	mg/L	0.004[a]	0.0001	0.0001	0.0001	0.0001	0.00059	0.00015	0.00012	0.00014	0.00012	0.00014	0.00015	0.0001	0.00016
	Copper (Cu)	mg/L	0.0039[b]	0.00078	0.00060	0.00051	0.00035	0.00320	0.00096	0.00120	0.00110	0.00130	0.00082	0.00074	0.00120	0.00106
	Iron (Fe)	mg/L	1.0[a,d]	0.047	0.023	0.02	0.03	0.98	0.073	0.15	0.071	0.1	0.048	0.035	0.043	0.135
	Lead (Pb)	mg/L	0.0095	0.000125	0.00005	0.00005	0.00005	0.00084	0.0002	0.00011	0.00012	0.00014	0.00017	0.00019	0.00034	0.00020
	Magnesium (Mg)	mg/L	-	10	10	11	11	3	6	7	8	7	8	9	10	8
	Manganese (Mn)	mg/L	1.39[a]	0.015	0.013	0.011	0.014	0.068	0.006	0.011	0.010	0.013	0.010	0.011	0.015	0.016
	Mercury (Hg)	mg/L	0.000026[b]	0.00001	0.00001	0.00001		0.00001	0.00001	0.00001	0.00001	0.00001	0.000010	0.00001	0.00001	0.00001
	Molybdenum (Mo)	mg/L	0.073[b]	0.000931	0.000881	0.000878	0.000700	0.000350	0.000900	0.000900	0.000860	0.000890	0.000900	0.000940	0.000870	0.000833
	Nickel (Ni)	mg/L	0.15[b]	0.0005	0.0005	0.0005	0.0005	0.0025	0.00083	0.00077	0.00072	0.00089	0.00081	0.00073	0.0005	0.0008
	Potassium (K)	mg/L	-	1.40	1.30	1.40	2.00	1.50	2.00	1.50	1.70	1.80	1.50	1.60	1.40	1.59
	Selenium (Se)	mg/L	0.002[a,d]	0.00051	0.00052	0.00055	0.00046	0.00035	0.00046	0.00041	0.00042	0.00043	0.00042	0.00046	0.00045	0.00045
	Silver (Ag)	mg/L	0.0015[a,c,d]	0.00001	0.00001	0.00001	0.00001	0.000016	0.00001	0.00001	0.00001	0.000011	0.00001	0.00001	0.00001	0.00001
	Sodium (Na)	mg/L	-	2.60	2.50	2.50	2.30	1.30	1.90	1.90	1.90	2.00	2.00	2.20	2.50	2.13
	Thallium (Tl)	mg/L	0.0008[b]	0.00001	0.00001	0.00001	0.00001	0.000011	0.00001	0.00001	0.00001	0.00001	0.00001	0.00001	0.00001	0.00001
	Uranium (U)	mg/L	0.015[b]	0.00110	0.00110	0.00120	0.00097	0.00028	0.00056	0.00066	0.00069	0.00062	0.00080	0.00093	0.00100	0.00083
	Vanadium (V)	mg/L	0.006[b]	0.001	0.001	0.001	0.001	0.0015	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001
	Zinc (Zn)	mg/L	0.074[a,d]	0.003	0.003	0.003	0.001	0.0071	0.0024	0.0027	0.0031	0.0023	0.0033	0.012	0.005	0.004

Indicates parameter concentration above applicable Water Quality Guideline.

[a] British Columbia Water Quality Guideline (BCMOE 2020).

[b] Canadian Water Quality Guideline for the protection of aquatic life (CCME 1999, 2020).

[c] Yukon Contaminated Sites Regulation (Yukon Government 2012).

[d] Indicates instance in which selected water quality guideline may not have been the lowest, most stringent, criteria, but rather reflected the most recent update.

Table B.5: Sediment Total Organic Carbon and Metal Concentrations at Haggart Creek and Lynx Creek Sediment Stations, 2007 to 2019

Parameter	Units	Sediment Quality Guideline	W22 Upstream			W4 Downstream of Dublin Gulch			W29 Downstream of Platinum Gulch		
			2007 to 2010	2017	2019	2007 to 2010	2017	2019	2007 to 2010	2017	2019
pH	%	-	-	7.6	7.7	-	7.7	7.8	-	7.8	7.8
Total Organic Carbon	%	10		2.09	0.31		0.92	0.25		0.45	1.58
Aluminum (Al)	mg/kg	-	-	9,013	11,257	-	9,950	10,120	-	9,523	8,657
Antimony (Sb)	mg/kg	-	<10	2.93	5.91	<10	4.49	10.6	10	10.74	7.32
Arsenic (As)	mg/kg	17	85	56	106	127	110	303	113	127	71
Barium (Ba)	mg/kg	-	158	163	224.0	154	161	168	63	157.7	173
Beryllium (Be)	mg/kg	-	<0.50	0.34	0.44	<0.50	0.41	0.59	<0.50	0.38	0.3
Bismuth (Bi)	mg/kg	-	-	0.59	0.66	-	0.55	0.70	-	0.65	0.53
Cadmium (Cd)	mg/kg	3.5	<0.50	0.610	0.921	<0.50	0.410	0.443	<0.50	0.5400	0.432
Calcium (Ca)	mg/kg	-	-	3,957	3,857	-	3,953	3,820	-	4,080	4,093
Chromium (Cr)	mg/kg	90	14.5	20.1	30.7	17.1	20	27.6	14.3	21.8	22.1
Cobalt (Co)	mg/kg	-	13.6	15.1	21.9	14.9	12.7	16.7	12.5	15.3	10
Copper (Cu)	mg/kg	197	21.7	20.0	29.3	24	21.4	32.2	23.8	26.5	24
Iron (Fe)	mg/kg	43,776		27,800	41,567		25,033	32,233		29,600	23,467
Lead (Pb)	mg/kg	91	<30	15.9	26.4	<30	20.5	34.1	33.0	40.3	25.2
Lithium (Li)	mg/kg	-	-	14.8	16.6	-	16.6	18.5	-	15.7	11
Magnesium (Mg)	mg/kg	-	-	3,260	4,170	-	3,490	4,153	-	3,780	3,730
Manganese (Mn)	mg/kg	1,100		1,014	2,417		836	1,374		1,393	495
Mercury (Hg)	mg/kg	0.486	0.0721	0.1100	0.0844	0.0486	0.0700	0.0489	0.0284	0.0700	0.0459
Molybdenum (Mo)	mg/kg	-	<4	0.70	1.38	<4	0.86	2.23	<4	0.86	0.97
Nickel (Ni)	mg/kg	75	26.2	31.3	50.0	29.2	28.0	39.6	25.6	31.7	26.3
Phosphorus (P)	mg/kg	2,000		685	616		668	647		673	719
Potassium (K)	mg/kg	-	-	787	1,170	-	1,093	1,710	-	1,027	740
Selenium (Se)	mg/kg	-	<2.0	0.37	0.53	<2.0	0.35	0.42	<2.0	0.39	0.32
Silver (Ag)	mg/kg	-	<2.0	0.15	0.18	<2.0	0.23	-	<2.0	0.25	-
Sodium (Na)	mg/kg	-	-	-	96	-	105	99	-	-	83
Strontium (Sr)	mg/kg	-	-	30.1	37.0	-	31.6	33.9	-	33.3	33.9
Thallium (Tl)	mg/kg	-	<1.0	0.14	0.181	<1.0	0.150	0.226	<1.0	0.130	0.082
Tin (Sn)	mg/kg	-	<5.0	0.7	1.07	<5.0	0.69	0.81	<5.0	0.86	0.6
Titanium (Ti)	mg/kg	-	-	245	238	-	312	323	-	276	240
Uranium (U)	mg/kg	-	-	1.21	1.57	-	1.40	1.90	-	1.53	1.38
Vanadium (V)	mg/kg	-	22.8	26.9	28.1	24.8	28.6	27.4	13.6	27.7	27.1
Zinc (Zn)	mg/kg	315	88.0	89.7	137.7	94.5	88.0	116.9	102.0	106.4	89.1

Indicates parameter concentration above Sediment Quality Guideline (SQG).

[a] British Columbia Working Sediment Quality Guideline (BCSQG) probable effects level (PEL; BCMOE 2015).

Table B.5: Sediment Total Organic Carbon and Metal Concentrations at Haggart Creek and Lynx Creek Sediment Stations, 2007 to 2019

Parameter	Units	Sediment Quality Guideline	W5 Upstream of Lynx Creek			W23 Downstream of Lynx Creek			W6 Lower Lynx Creek		
			2007 to 2010	2017	2019	2007 to 2010	2017	2019	2007 to 2010	2017	2019
pH	%	-	-	7.9	8.2	-	7.3	7.9	-	7.8	7.5
Total Organic Carbon	%	10		0.84	0.32		1.35	0.39		0.92	0.67
Aluminum (Al)	mg/kg	-	-	8,770	11,030	-	9,153	10,563		11,267	13,767
Antimony (Sb)	mg/kg	-	<10	6.26	10.82	<10	6	7.75	<10	2.3	3.05
Arsenic (As)	mg/kg	17	106	77	161	96	89	128	66	86	96
Barium (Ba)	mg/kg	-	139	149	209.0	219	165	217	194	188.0	240
Beryllium (Be)	mg/kg	-	<0.50	0.33	0.48	<0.50	0.33	0.39	<0.50	0.38	0.46
Bismuth (Bi)	mg/kg	-	-	0.47	0.69	-	0.40	0.64	-	0.28	0.28
Cadmium (Cd)	mg/kg	3.5	<0.50	0.320	0.554	<0.50	0.410	0.747	<0.50	0.9400	1.094
Calcium (Ca)	mg/kg	-	-	4,907	4,727	-	4,600	4,860	-	5,817	6,763
Chromium (Cr)	mg/kg	90	19.7	20.8	34.3	23.0	21	31.4	20.2	21.2	37.3
Cobalt (Co)	mg/kg	-	11.6	11.1	14.3	12.7	11.6	13.6	10.1	10.8	12.4
Copper (Cu)	mg/kg	197	26.1	23.3	30.6	29	23.3	27.4	22.8	22.0	27.4
Iron (Fe)	mg/kg	43,776		25,467	30,167		24,933	26,300		22,667	25,600
Lead (Pb)	mg/kg	91	<30	24.3	36.1	<30	23.3	27.8	<30	15.4	17.8
Lithium (Li)	mg/kg	-	-	13.9	16.1	-	14.5	14.6	-	17.5	18.2
Magnesium (Mg)	mg/kg	-	-	4,380	4,977	-	4,230	4,570	-	4,477	5,803
Manganese (Mn)	mg/kg	1,100		715	1,533		512	1,358		955	799
Mercury (Hg)	mg/kg	0.486	0.0507	0.0500	0.0652	0.0574	0.0500	0.0580	0.0388	0.0400	0.0742
Molybdenum (Mo)	mg/kg	-	<4	0.66	1.89	<4	0.69	1.68	<4	0.96	2.22
Nickel (Ni)	mg/kg	75	26.2	26.9	42.4	28.8	25.9	39.7	23.6	27.5	39.6
Phosphorus (P)	mg/kg	2,000		843	655		825	763		805	839
Potassium (K)	mg/kg	-	-	960	1,337	-	873	1,090	-	880	1,063
Selenium (Se)	mg/kg	-	<2.0	0.27	0.53	<2.0	0.34	0.54	<2.0	0.74	0.95
Silver (Ag)	mg/kg	-	<2.0	0.18		<2.0	0.19		<2.0	0.14	
Sodium (Na)	mg/kg	-	-	110	99	-	117	113	-	167	192
Strontium (Sr)	mg/kg	-	-	33.9	43.1	-	32.2	40.0	-	36.1	47.7
Thallium (Tl)	mg/kg	-	<1.0	0.10	0.150	<1.0	0.100	0.129	<1.0	0.130	0.14
Tin (Sn)	mg/kg	-	<5.0	0.6	0.96	<5.0	0.43	0.78	<5.0	0.52	0.52
Titanium (Ti)	mg/kg	-	-	303	289	-	332	284	-	312	376
Uranium (U)	mg/kg	-	-	1.21	1.48	-	1.12	1.45	-	1.05	1.48
Vanadium (V)	mg/kg	-	23.9	26.6	29.2	36.0	27.3	28.5	33.4	30.9	35.5
Zinc (Zn)	mg/kg	315	90.9	80.0	119.5	112.0	89.6	107.2	103.0	102.7	121.7

Indicates parameter concentration above Sediment Quality Guideline (SQG).

[a] British Columbia Working Sediment Quality Guideline (BCSQG) probable effects level (PEL; BCMOE 2015).

Table B.6: Summary of Benthic Invertebrate Community Data Collected at Haggart Creek and Lynx Creek, 2007 to 2019

Benthic Endpoint	Year	Haggart Creek					Lynx Creek
		W22 reference	W4 near-field	W29 near-field	W5 near-field	W23 far-field	W6 reference
Density (no. organisms/m^2)	2007	2,071	2,062	ns	1,699	2,376	3,701
	2009	3,144	ns	3,174	5,568	ns	ns
	2010	1,839	ns	1,892	970	2,234	ns
	2017	4,313	5,404	3,592	2,339	4,223	11,704
	2018	2,623	1,206	3,348	1,862	3,728	8,715
	2019	11,324	9,971	18,500	13,670	18,550	14,535
Richness (no. of family level taxa)	2007	15.2	15.4	ns	13.8	15.8	14.0
	2009	16.8	ns	15.2	17.0	ns	ns
	2010	14.8	ns	16.4	15.4	18.4	ns
	2017	18.0	19.3	18.3	14.0	17.7	16.0
	2018	21.7	19.7	21.3	22.0	22.0	17.3
	2019	15.7	19.0	17.3	19.3	16.7	15.7
Simpson's Diversity	2007	0.81	0.85	ns	0.85	0.84	0.74
	2009	0.85	ns	0.74	0.78	ns	ns
	2010	0.71	ns	0.57	0.86	0.87	ns
	2017	0.88	0.84	0.86	0.89	0.86	0.82
	2018	0.93	0.94	0.91	0.91	0.91	0.88
	2019	0.80	0.81	0.85	0.89	0.88	0.81
EPT (% of community)	2007	42	45	ns	61	56	37
	2009	59	ns	43	87	ns	ns
	2010	36	ns	26	75	58	ns
	2017	68	83	61	79	78	72
	2018	74	64	46	66	62	80
	2019	79	77	84	84	83	86
Ephemeroptera (% of community)	2007	16	16	ns	29	37	20
	2009	25	ns	18	23	ns	ns
	2010	16	ns	17	48	41	ns
	2017	44	51	31	40	46	36
	2018	39	30	18	29	28	47
	2019	57	58	54	50	55	56
Plecoptera (% of community)	2007	23	26	ns	30	15	16
	2009	32	ns	24	62	ns	ns
	2010	10	ns	6	23	14	ns
	2017	17	28	25	38	31	35
	2018	27	28	23	36	33	33
	2019	18	19	26	33	26	30
Trichoptera (% of community)	2007	3	3	ns	2	4	1
	2009	2	ns	1	2	ns	ns
	2010	10	ns	3	4	3	ns
	2017	7	4	5	1	1	0.3
	2018	8	6	5	1	1	1
	2019	4	1	4	2	2	1
Diptera (% of community)	2007	6	14	ns	27	23	8
	2009	5	ns	3	9	ns	ns
	2010	2	ns	3	12	22	ns
	2017	14	6	9	17	18	12
	2018	21	20	15	27	29	9
	2019	6	9	9	12	15	5
Oligochaeta (% of community)	2007	38	31	ns	4	14	52
	2009	30	ns	47	2	ns	ns
	2010	50	ns	64	3	6	ns
	2017	16	9	26	1	1	16
	2018	2	9	34	1	1	8
	2019	14	12	5	0.2	0.2	7

Note: ns - indicates no sampling conducted at station for indicated year.

Table B.7: Average Length and Weight of Slimy Sculpin and Arctic Grayling Captured at Haggart Creek and Lynx Creek Stations from Pooled Baseline Data Collected Prior to 2008[a]

Fish Species	Creek	Area Type	Station ID	Sample Size (n)	Length (mm)		Weight (g)	
					Average	Standard Deviation	Average	Standard Deviation
Slimy Sculpin	Haggart	Reference	HC3	46	62.9	19.3	3.2	3.8
		Near-Field	HC2	34	68.7	22.1	4.1	4.1
		Near-Field	HC1	64	61.5	13.4	2.3	1.5
	Lynx	Reference	L1	45	63.0	16.0	2.8	2.0
			L4	10	101.6	19.7	14.3	8.2
Arctic Grayling	Haggart	Reference	HC3	7	255	112	278	263
		Near-Field	HC2	4	192	116	166	265
		Near-Field	HC1	41	74	16	4	5
	Lynx	Reference	L1	7	121	115	101	255
			L4	7	322	77	427	217

[a] Data reproduced from Jacques Whitford 2008.

Table B.8: Number of Fish Captured Using Electrofishing, Minnow Trapping, and Angling Sampling Methods at Haggart and Lynx Creek Fish and Fish Habitat Monitoring Stations, 2017 to 2019[a]

Creek	Station	Sampling Method	Units	2017					2018					2019				
				Effort	arctic grayling	burbot	Chinook salmon	slimy sculpin	Effort	arctic grayling	burbot	Chinook salmon	slimy sculpin	Effort	arctic grayling	burbot	Chinook salmon	slimy sculpin
Haggart Creek	HC3	Electrofishing	seconds	537	1	0	4	5	691	0	0	0	1	626	2	0	3	13
	HC3	Minnow Trapping	trap hours	18	0	0	1	4	20.5	0	0	0	0	23	0	0	0	2
	HC2	Electrofishing	seconds	519	1	0	0	10	635	2	0	0	2	748	3	0	0	1
	HC2	Minnow Trapping	trap hours	20.3	0	0	0	1	24.5	0	0	0	1	25.5	0	0	0	0
	HC1	Angling	minutes	35	0	0	0	0	30	0	0	0	0	35	0	0	0	0
	HC1	Electrofishing	seconds	613	10	0	1	7	602	4	0	0	3	637	9	0	3	12
	HC1	Minnow Trapping	trap hours	16	3	0	1	3	24	4	0	0	1	24.5	8	1	3	1
Lynx Creek	L1	Angling	minutes	30	0	0	0	0	30	0	0	0	0	35	1	0	0	0
	L1	Electrofishing	seconds	547	2	0	0	22	596	1	0	0	9	596	1	0	0	5
	L1	Minnow Trapping	trap hours	20	3	0	0	4	25.5	0	1	0	3	22.5	0	0	0	0

[a] Data reproduced from de Graffe 2017, 2019, and 2020.

Table B.9: Catch-per-unit-effort (CPUE) for Fish Captured by Electrofishing, Minnow Trapping, and Angling Sampling Methods at Haggart and Lynx Creek Fish and Fish Habitat Monitoring Stations, 2017 to 2019[a]

Creek	Station	Sampling Method	Units	2017				2018				2019			
				arctic grayling	burbot	Chinook salmon	slimy sculpin	arctic grayling	burbot	Chinook salmon	slimy sculpin	arctic grayling	burbot	Chinook salmon	slimy sculpin
Haggart Creek	HC3	Electrofishing	fish per electrofishing minute	0.11	0	0.45	0.56	0	0	0	0.09	0.19	0	0.29	1.25
	HC3	Minnow Trapping	fish per trap per 24 hours	0	0	1.3	5.3	0	0	0	0	0	0	0	2.1
	HC2	Electrofishing	fish per electrofishing minute	0.12	0	0	1.16	0.19	0	0	0.19	0.24	0	0	0.08
	HC2	Minnow Trapping	fish per trap per 24 hours	0	0	0	1.2	0	0	0	1.0	0	0	0	0
	HC1	Angling	fish per hour	0	0	0	0	0	0	0	0	0	0	0	0
	HC1	Electrofishing	fish per electrofishing minute	0.98	0	0.10	0.69	0.40	0	0	0.30	0.85	0	0.28	1.13
	HC1	Minnow Trapping	fish per trap per 24 hours	4.5	0	1.5	4.5	4	0	0	1	7.8	1.0	2.9	1.0
Lynx Creek	L1	Angling	fish per hour	0	0	0	0	0	0	0	0	1.7	0	0	0
	L1	Electrofishing	fish per electrofishing minute	0.22	0	0	2.41	0.10	0	0	0.91	0.10	0	0	0.50
	L1	Minnow Trapping	fish per trap per 24 hours	3.6	0	0	4.8	0	0.9	0	2.8	0	0	0	0

[a] Calculations completed using data from de Graffe 2017, 2019, and 2020.

Table B.10: Slimy Sculpin Measurements from Fish Captured at Haggart and Lynx Creeks in August 2007

Station ID	Fork Length (mm)	Body Weight (g)	Age (years)	Fulton's Condition Factor (K)
HC3	72	3.6	3+	0.965
HC3	66	2.8	3+	0.974
HC3	67	2.8	3+	0.931
HC3	96	9.6	4+	1.085
HC3	92	8.1	4+	1.040
HC3	67	2.9	4+	0.964
HC3	105	11.6	4+	1.002
HC3	98	8.6	4+	0.914
HC2	65	2.7	3+	0.983
HC2	69	2.7	3+	0.822
HC2	66	2.6	3+	0.904
HC2	82	5.1	3+	0.925
HC2	82	4.1	4+	0.744
HC2	72	3.0	4+	0.804
HC2	80	5.1	4+	0.996
HC2	100	9.9	5+	0.990
HC2	111	12.1	5+	0.885
HC2	98	9.3	5+	0.988
HC1	72	3.2	6+	0.857
HC1	90	5.4	6+	0.741
HC1	85	5.0	7+	0.814
HC1	70	3.5	3+	1.020
HC1	72	2.9	4+	0.777
HC1	70	3.1	4+	0.904
HC1	80	4.9	4+	0.957
HC1	87	5.5	5+	0.835
HC1	82	4.9	5+	0.889
HC1	76	3.0	6+	0.683
L1	80	4.7	4+	0.918
L1	78	4.9	4+	1.033
L1	74	3.3	4+	0.814
L1	95	6.3	4+	0.735
L1	84	5.1	4+	0.860
L1	84	4.9	4+	0.827
L1	88	6.3	5+	0.924
L1	84	5.3	7+	0.894
L1	96	8.2	8+	0.927
L1	103	8.7	8+	0.796
L4	65	3.3	3+	1.202
L4	80	4.8	3+	0.938
L4	85	6.5	4+	1.058
L4	90	8.5	4+	1.166
L4	118	18.3	6+	1.114
L4	115	16.5	6+	1.085
L4	112	16.7	7+	1.189
L4	120	27.0	8+	1.563
L4	130	27.0	8+	1.229
L4	120	24.0	9+	1.389

Table B.11: Arctic Grayling Measurements from Fish Captured at Haggart and Lynx Creeks in August 2007

Station ID	Fork Length (mm)	Body Weight (g)	Age (years)	Fulton's Condition Factor (K)
HC3	291	285	4+	1.157
HC3	113	14.5	1+	1.005
HC3	169	58.2	2+	1.206
HC3	145	31.6	2+	1.037
HC3	310	319	4+	1.071
HC3	363	590	6+	1.233
HC3	395	648	6+	1.051
HC2	358	560	8+	1.221
HC2	112	13.0	1+	0.925
HC2	111	12.8	1+	0.936
HC2	188	76.8	3+	1.156
HC1	71	3.5	0+	0.978
HC1	67	2.9	0+	0.964
HC1	68	3.3	0+	1.050
HC1	78	3.2	0+	0.674
HC1	69	2.9	0+	0.883
HC1	67	2.5	0+	0.831
HC1	73	3.8	0+	0.977
HC1	82	5.2	0+	0.943
HC1	108	14.0	1+	1.111
HC1	143	27.3	1+	0.934
L1	66	3.0	0+	1.043
L1	69	3.5	0+	1.065
L1	86	6.0	0+	0.943
L1	102	11.2	1+	1.055
L1	380	679	5+	1.237
L1	354	492	5+	1.109
L1	320	408	5+	1.245
L4	160	40.1	1+	0.979
L4	330	384	3+	1.069
L4	345	436	4+	1.062
L4	355	550	4+	1.229
L4	350	497	5+	1.159
L4	310	334	5+	1.121
L4	400	746	5+	1.166

Table B.12: Slimy Sculpin Measurements from Fish Captured at the Haggart Creek Upstream Area (H3), 2017 to 2019

Fish ID	Fork Length (mm)	Body Weight (g)	Fulton's Condition Factor (K)
SS HC3 2017-01	68	3.1	0.986
SS HC3 2017-02	75	5.0	1.185
SS HC3 2017-03	76	4.9	1.116
SS HC3 2017-04	76	4.7	1.071
SS HC3 2017-05	83	5.6	0.979
SS HC3 2017-06	85	5.5	0.896
SS HC3 2017-07	85	5.9	0.961
SS HC3 2017-08	95	7.9	0.921
SS HC3 2017-09	110	13.0	0.977
SS HC3 2018-01	61	2.3	1.013
SS HC3 2019-01	50	1.2	0.960
SS HC3 2019-02	57	1.9	1.026
SS HC3 2019-03	67	2.5	0.831
SS HC3 2019-04	72	3.5	0.938
SS HC3 2019-05	72	3.4	0.911
SS HC3 2019-06	73	3.5	0.900
SS HC3 2019-07	73	3.6	0.925
SS HC3 2019-08	74	3.6	0.888
SS HC3 2019-09	79	6.0	1.217
SS HC3 2019-10	82	6.2	1.124
SS HC3 2019-11	87	7.4	1.124
SS HC3 2019-12	104	11.1	0.987
SS HC3 2019-13	109	13.8	1.066
SS HC3 2019-14	120	16.3	0.943
SS HC3 2019-15	125	17.5	0.896
Sample Size	25	25	25
Average	82	6.4	0.994
Standard Deviation	19	4.5	0.100
Standard Error	4	0.9	0.020
Minimum	50	1.2	0.831
Median	76	5.0	0.977
Maximum	125	17.5	1.217

Table B.13: Slimy Sculpin Measurements from Fish Captured at Lower Haggart Creek Stations (H1 and H2), 2017 to 2019

Fish ID	Fork Length (mm)	Body Weight (g)	Fulton's Condition Factor (K)
SS HC1 2017-01	51	1.3	0.980
SS HC1 2017-02	61	2.0	0.881
SS HC1 2017-03	67	2.3	0.765
SS HC1 2017-04	69	3.3	1.005
SS HC1 2017-05	72	2.7	0.723
SS HC1 2017-06	78	4.6	0.969
SS HC1 2017-07	79	4.3	0.872
SS HC1 2017-08	80	5.0	0.977
SS HC1 2017-09	82	4.2	0.762
SS HC1 2017-10	84	5.7	0.962
SS HC1 2018-01	63	2.4	0.960
SS HC1 2018-02	63	2.4	0.960
SS HC1 2018-03	73	3.6	0.925
SS HC1 2018-04	83	5.8	1.014
SS HC1 2019-01	62	2.0	0.839
SS HC1 2019-02	62	2.4	1.007
SS HC1 2019-03	66	3.0	1.043
SS HC1 2019-04	74	3.4	0.839
SS HC1 2019-05	75	3.6	0.853
SS HC1 2019-06	77	4.0	0.876
SS HC1 2019-07	77	4.5	0.986
SS HC1 2019-08	78	3.9	0.822
SS HC1 2019-09	81	4.5	0.847
SS HC1 2019-10	83	5.0	0.874
SS HC1 2019-11	89	7.2	1.021
SS HC1 2019-12	90	8.2	1.125
SS HC1 2019-13	91	9.2	1.221
SS HC2 2007-11	98	9.3	0.988
SS HC2 2017-01	33	0.5	1.391
SS HC2 2017-02	41	0.7	1.016
SS HC2 2017-03	42	0.7	0.945
SS HC2 2017-04	77	5.1	1.117
SS HC2 2017-05	80	5.6	1.094
SS HC2 2017-06	82	5.6	1.016
SS HC2 2017-07	84	5.3	0.894
SS HC2 2017-08	90	7.7	1.056
SS HC2 2017-09	92	8.6	1.104
SS HC2 2017-10	93	7.1	0.883
SS HC2 2017-11	98	11.5	1.222
SS HC2 2018-01	100	10.0	1.000
SS HC2 2018-02	102	10.9	1.027

Table B.13: Slimy Sculpin Measurements from Fish Captured at Lower Haggart Creek Stations (H1 and H2), 2017 to 2019

Fish ID	Fork Length (mm)	Body Weight (g)	Fulton's Condition Factor (K)
SS HC2 2018-03	120	23.0	1.331
SS HC2 2019-01	77	4.0	0.876
Sample Size	43	43	43
Average	77	5.3	0.978
Standard Deviation	17	3.9	0.141
Standard Error	3	0.6	0.021
Minimum	33	0.5	0.723
Median	78	4.5	0.977
Maximum	120	23.0	1.391

Table B.14: Slimy Sculpin Measurements from Fish Captured at the Lower Lynx Creek Station (L1), 2017 to 2019

Fish ID	Fork Length (mm)	Body Weight (g)	Fulton's Condition Factor (K)
SS L1 2017-01	37	0.7	1.382
SS L1 2017-02	48	0.9	0.814
SS L1 2017-03	53	1.5	1.008
SS L1 2017-04	58	2.0	1.025
SS L1 2017-05	58	2.1	1.076
SS L1 2017-06	62	2.2	0.923
SS L1 2017-07	63	2.5	1.000
SS L1 2017-08	64	2.7	1.030
SS L1 2017-09	65	2.3	0.838
SS L1 2017-10	65	2.6	0.947
SS L1 2017-11	65	3.0	1.092
SS L1 2017-12	66	2.5	0.870
SS L1 2017-13	67	3.7	1.230
SS L1 2017-14	68	3.0	0.954
SS L1 2017-15	69	3.0	0.913
SS L1 2017-16	71	3.6	1.006
SS L1 2017-17	72	3.7	0.991
SS L1 2017-18	72	3.7	0.991
SS L1 2017-19	75	4.2	0.996
SS L1 2017-20	78	4.9	1.033
SS L1 2017-21	82	5.7	1.034
SS L1 2017-22	84	6.4	1.080
SS L1 2017-23	85	6.3	1.026
SS L1 2017-24	86	7.1	1.116
SS L1 2017-25	90	7.0	0.960
SS L1 2017-26	91	8.4	1.115
SS L1 2018-01	45	1.0	1.097
SS L1 2018-02	63	2.7	1.080
SS L1 2018-03	68	3.2	1.018
SS L1 2018-04	68	3.4	1.081
SS L1 2018-05	70	3.9	1.137
SS L1 2018-06	71	3.1	0.866
SS L1 2018-07	72	3.3	0.884
SS L1 2018-08	72	3.9	1.045
SS L1 2018-09	78	4.8	1.011
SS L1 2018-10	85	6.6	1.075
SS L1 2018-11	92	6.9	0.886
SS L1 2018-12	92	9.2	1.181
SS L1 2019-01	68	3.0	0.954
SS L1 2019-02	68	3.0	0.954
SS L1 2019-03	74	5.4	1.333

Table B.14: Slimy Sculpin Measurements from Fish Captured at the Lower Lynx Creek Station (L1), 2017 to 2019

Fish ID	Fork Length (mm)	Body Weight (g)	Fulton's Condition Factor (K)
SS L1 2019-04	82	5.9	1.070
SS L1 2019-05	83	6.4	1.119
SS L1 2019-06	83	6.3	1.102
Sample Size	44	44	44
Average	71	4.0	1.031
Standard Deviation	12	2.0	0.116
Standard Error	2	0.3	0.017
Minimum	37	0.7	0.814
Median	71	3.5	1.025
Maximum	92	9.2	1.382

Table B.15: Arctic Grayling Measurements from Fish Captured at Haggart Creek (H3) and Lower Lynx Creek (L1) Reference Stations, 2017 to 2019

Fish ID	Fork Length (mm)	Body Weight (g)	Fulton's Condition Factor (K)
AG HC3 2017-01	83	7.7	1.347
AG HC3 2019-01	77	5.0	1.095
AG HC3 2019-02	79	4.8	0.974
L1 AG 2017-01	66	2.4	0.835
L1 AG 2017-02	68	2.9	0.922
L1 AG 2017-03	69	3.0	0.913
L1 AG 2017-04	72	3.8	1.018
L1 AG 2017-05	73	3.3	0.848
L1 AG 2018-01	77	4.3	0.942
L1 AG 2019-01	78	6.0	1.264
Sample Size	10	10	10
Average	74	4.3	1.016
Standard Deviation	5	1.6	0.172
Standard Error	2	0.5	0.054
Minimum	66	2.4	0.835
Median	75	4.1	0.958
Maximum	83	7.7	1.347

Table B.16: Arctic Grayling Measurements from Fish Captured at Lower Haggart Creek Stations (H1 and H2), 2017 to 2019

Fish ID	Fork Length (mm)	Body Weight (g)	Fulton's Condition Factor (K)
AG HC1 2017-01	64	2.6	0.992
AG HC1 2017-02	64	2.6	0.992
AG HC1 2017-03	64	2.0	0.763
AG HC1 2017-04	66	2.8	0.974
AG HC1 2017-05	66	3.3	1.148
AG HC1 2017-06	66	3.1	1.078
AG HC1 2017-07	66	2.3	0.800
AG HC1 2017-08	67	2.8	0.931
AG HC1 2017-09	68	2.7	0.859
AG HC1 2017-10	68	2.8	0.890
AG HC1 2017-11	71	2.8	0.782
AG HC1 2017-12	72	3.1	0.831
AG HC1 2017-13	73	3.3	0.848
AG HC1 2018-01	67	2.7	0.898
AG HC1 2018-02	68	3.0	0.954
AG HC1 2018-03	72	3.1	0.831
AG HC1 2018-04	73	3.1	0.797
AG HC1 2018-05	75	3.4	0.806
AG HC1 2018-06	75	3.9	0.924
AG HC1 2018-07	78	4.5	0.948
AG HC1 2018-08	94	9.4	1.132
AG HC1 2019-01	67	2.9	0.964
AG HC1 2019-02	68	2.7	0.859
AG HC1 2019-03	69	2.7	0.822
AG HC1 2019-04	70	3.0	0.875
AG HC1 2019-05	70	2.9	0.845
AG HC1 2019-06	73	3.9	1.003
AG HC1 2019-07	73	3.3	0.848
AG HC1 2019-08	73	3.9	1.003
AG HC1 2019-09	73	3.4	0.874
AG HC1 2019-10	73	2.9	0.745
AG HC1 2019-11	74	4.3	1.061
AG HC1 2019-12	74	3.0	0.740
AG HC1 2019-13	74	3.3	0.814
AG HC1 2019-14	77	3.8	0.832
AG HC1 2019-15	78	4.6	0.969
AG HC1 2019-16	80	5.2	1.016
AG HC1 2019-17	85	4.8	0.782
AG HC2 2018-01	87	6.6	1.002
AG HC2 2018-02	89	6.3	0.894
AG HC2 2019-01	72	3.9	1.045

Table B.16: Arctic Grayling Measurements from Fish Captured at Lower Haggart Creek Stations (H1 and H2), 2017 to 2019

Fish ID	Fork Length (mm)	Body Weight (g)	Fulton's Condition Factor (K)
AG HC2 2019-02	74	4.2	1.036
AG HC2 2019-03	77	4.7	1.029
Sample Size	43	43	43
Average	73	3.6	0.912
Standard Deviation	7	1.3	0.106
Standard Error	1	0.2	0.016
Minimum	64	2.0	0.740
Median	73	3.1	0.894
Maximum	94	9.4	1.148

APPENDIX J2

Eagle Gold Mine – Annual Effluent Monitoring Report – Version 1 - 2020

Government of Canada Gouvernement du Canada

Canada

Eagle Gold Mine - Annual effluent monitoring report - Version 1 - 2020

Report details

Facility name	Eagle Gold Mine
Reporting period	2020
Version	1
Status	Completed
Last modified	2021/03/29 22:41 (PDT)
Submission date	

Parent company

Parent company	Physical address
StrataGold Corporation	1000, 1050 West Pender, Street, Vancouver, British Columbia, V6E 3S7, Canada

History

Status	Version	Last modified	Submission date
Completed	1	2021/03/29 22:41 (PDT)	

Identifying information

Reporting period	**2020**
Facility name	**Eagle Gold Mine**
Facility physical address	
Operator name (required)	StrataGold Corporation
Operator telephone number	
Operator extension	
Operator e-mail address	

Note	Date	User name
No data available		

Test results

Final discharge point **LDSP**

Final discharge point latitude **64.15639**

Final discharge point longitude **-135.50460**

Monthly mean concentrations, pH and volume of effluent

Month	As (mg/L)	Cu (mg/L)	CN (mg/L)	Pb (mg/L)	Ni (mg/L)	Zn (mg/L)	TSS (mg/L)	Ra-226 (Bq/L)	Lowest pH	Highest pH	Effluent volume (m^3)
Jan	NDEP	NDEP	NDEP	NDEP	NDEP	NDEP	NDEP	NDEP	NDEP	NDEP	NDEP
Feb	NDEP	NDEP	NDEP	NDEP	NDEP	NDEP	NDEP	NDEP	NDEP	NDEP	NDEP
Mar	NDEP	NDEP	NDEP	NDEP	NDEP	NDEP	NDEP	NDEP	NDEP	NDEP	NDEP
Apr	NDEP	NDEP	NDEP	NDEP	NDEP	NDEP	NDEP	NDEP	NDEP	NDEP	NDEP
May	NDEP	NDEP	NDEP	NDEP	NDEP	NDEP	NDEP	NDEP	NDEP	NDEP	NDEP
Jun	NDEP	NDEP	NDEP	NDEP	NDEP	NDEP	NDEP	NDEP	NDEP	NDEP	NDEP
Jul	0.0291	0.0034	0.0025	0.0025	0.0016	0.0037	1.5	0.0035	8.04	8.04	7693
Aug	0.0311	0.0027	0.0025	0.001	0.002	0.0024	3.475	0.0158	7.58	8.19	107903
Sep	0.033	0.0024	0.0038	0.0006	0.0018	0.0023	3.05	0.0034	7.83	7.93	71209
Oct	NDEP	NDEP	NDEP	NDEP	NDEP	NDEP	NDEP	NDEP	NDEP	NDEP	NDEP
Nov	NDEP	NDEP	NDEP	NDEP	NDEP	NDEP	NDEP	NDEP	NDEP	NDEP	NDEP
Dec	NDEP	NDEP	NDEP	NDEP	NDEP	NDEP	NDEP	NDEP	NDEP	NDEP	NDEP

Results of acute lethality tests

Date sample collected	Results for rainbow trout acute lethality tests (mean percentage mortality in 100% effluent test concentration)	Results for *Daphnia magna* monitoring / acute lethality tests (mean percentage mortality in 100% effluent test concentration)	Results for threespine stickleback acute lethality tests (mean percentage mortality in 100% effluent test concentration)
2020/07/29 16:10	0%	0%	
2020/08/03 15:59	0%	0%	
2020/09/14 18:00	0%	0%	

If effluent was non-compliant with the authorized limits set out in Schedule 4, or if the pH was less than 6.0 or greater than 9.5, or if effluent

was determined to be acutely lethal, indicate the cause(s) of non-compliance and remedial measures that are planned or have been implemented.

Non-compliance information N/A

Test results

Final discharge point **FDP5**

Final discharge point latitude **64.03333**

Final discharge point longitude **-135.83583**

Monthly mean concentrations, pH and volume of effluent

Month	As (mg/L)	Cu (mg/L)	CN (mg/L)	Pb (mg/L)	Ni (mg/L)	Zn (mg/L)	TSS (mg/L)	Ra-226 (Bq/L)	Lowest pH	Highest pH	Effluent volume (m^3)
Jan	-	-	-	-	-	-	-	-	-	-	-
Feb	-	-	-	-	-	-	-	-	-	-	-
Mar	-	-	-	-	-	-	-	-	-	-	-
Apr	0.1783	0.0138	0.0025	0.0216	0.0083	0.0359	55.8667	0.004	7.53	7.78	43130
May	NDEP	NDEP	NDEP	NDEP	NDEP	NDEP	NDEP	NDEP	NDEP	NDEP	NDEP
Jun	NDEP	NDEP	NDEP	NDEP	NDEP	NDEP	NDEP	NDEP	NDEP	NDEP	NDEP
Jul	NDEP	NDEP	NDEP	NDEP	NDEP	NDEP	NDEP	NDEP	NDEP	NDEP	NDEP
Aug	NDEP	NDEP	NDEP	NDEP	NDEP	NDEP	NDEP	NDEP	NDEP	NDEP	NDEP
Sep	NDEP	NDEP	NDEP	NDEP	NDEP	NDEP	NDEP	NDEP	NDEP	NDEP	NDEP
Oct	NDEP	NDEP	NDEP	NDEP	NDEP	NDEP	NDEP	NDEP	NDEP	NDEP	NDEP
Nov	NDEP	NDEP	NDEP	NDEP	NDEP	NDEP	NDEP	NDEP	NDEP	NDEP	NDEP
Dec	NDEP	NDEP	NDEP	NDEP	NDEP	NDEP	NDEP	NDEP	NDEP	NDEP	NDEP

Results of acute lethality tests

Date sample collected	Results for rainbow trout acute lethality tests (mean percentage mortality in 100% effluent test concentration)	Results for *Daphnia magna* monitoring / acute lethality tests (mean percentage mortality in 100% effluent test concentration)	Results for threespine stickleback acute lethality tests (mean percentage mortality in 100% effluent test concentration)
2020/04/21 13:40	0%	0%	

If effluent was non-compliant with the authorized limits set out in Schedule 4, or if the pH was less than 6.0 or greater than 9.5, or if effluent was determined to be acutely lethal, indicate the cause(s) of non-compliance and remedial measures that are planned or have been implemented.

Non-compliance information An FDP#5 follow up exceedance report was submitted to Travis Teel on June 18 2020.

The discharge exceedance report summarized the implementation of water management strategies that were necessary to address rapid snowmelt, which led to a reduction of the Lower Dublin South Pond available capacity, and the decision to discharge water from the Lower Dublin South Pond to FDP#5 during the period of April 20-28, 2020. All schedule 4 parameters were compliant with criteria with the exception of grab and mean TSS values. FDP#5 is an exfiltration sump and is located in an area occupied by a thick sequence of placer deposits and alluvium that overlies bedrock. Thus, exfiltrating the water to ground at FDP#5 was ascertained to have the lowest potential for an adverse response in potential receiving environments as it allows for natural mitigation of total suspended solids (TSS), the main parameter of concern, through natural filtration, as opposed to direct discharge via FDP#3 to receiving waters. On April 30, 2020, and within 24 hours of receiving the analytical laboratory results, notification was provided to the Yukon Spill Reporting hotline of the discharge of water to FDP#5 with TSS concentrations exceeding MDMER criteria for TSS. VGCX prioritized multiple corrective actions in 2020 to mitigate the potential for a reoccurrence of the exceedance reported sourcing from the Lower Dublin South Pond. Ditch A, the current primary water conveyance structure directing contact water to the Lower Dublin South Pond was lined and rip rapped with clean aggregate. The forebay of the Lower Dublin South Pond was cleaned of deposited sediments from the 2020 open water season and lined to improve passive settling capabilities. Silt fencing, check dams, collection sumps and water diversion structures were also strategically placed around the Project to mitigate sediment transport into Ditch A and ultimately the Lower Dublin South Pond. Supporting the construction works undertaken in 2020, three high powered diesel pumps were procured for 2021 Freshet to improve resident pumping and water transfer capacities to the Events Pond used to store excess water from the Lower Dublin South Pond and settle waters prior to potential discharges on the Project.

Victoria GOLD CORP

Eagle Gold
Climate Data Report 2020



Project No. A610-1
16 March 2021

LORAX ENVIRONMENTAL

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1 Introduction

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1 Introduction

1.1 Scope of Report

This report presents a summary of all climate data collected for the Eagle Gold Project (Project) since August 2007[1]. Monitoring data from two Project climate stations and four local snow courses are presented to characterize local conditions for the following variables:

- Air temperature;
- Rainfall;
- Snow depth and snow water equivalent (SWE);
- Barometric pressure;
- Relative humidity;
- Wind speed and direction, and;
- Solar radiation.

Measured data are also used to estimate potential evaporation for the Project site.

1.2 Previous Reports

The climate data collected at the Eagle Gold Project site from 2007, up to and including December 2019, have been previously summarized in the following reports:

- *Dublin Gulch Project - Climate and Hydrology Environmental Baseline Report* (2008), prepared by Jacques Whitford AXYS (Burnaby, BC) for StrataGold Corp. (Vancouver, BC), December 2008.
- *Snow Survey Environmental Baseline Report* (2009), prepared by Jacques Whitford Stantec AXYS (Burnaby, BC) for StrataGold Corp. (Vancouver, BC).
- *Eagle Gold Project, Environmental Baseline Report: Climate* (2010), prepared by Stantec (Burnaby, BC) for Victoria Gold Corp., February 2010.
- *Eagle Gold Project, Surface Water Balance Model Report* (2011), prepared by Stantec (Burnaby, BC) for Victoria Gold Corp., June 2011.

[1] Historic climate data collected during 1993 to 1996 for the Project area is summarized in *Eagle Gold Project, Environmental Baseline Report: Climate*, prepared by Stantec (Burnaby, BC) for Victoria Gold Corp., March 2012

- *Eagle Gold Project, Environmental Data Summary Report: Climate 2011 Update* (2011), prepared by Stantec (Burnaby, BC) for Victoria Gold Corp., June 2011.
- *Eagle Gold Project, Environmental Baseline Report: Climate* (2012), prepared by Stantec (Burnaby, BC) for Victoria Gold Corp., March 2012.
- *Victoria Gold Corp., Eagle Gold Project – Climate Baseline Data Summary. VA101-290/6-9* (2013), prepared by Knight Piesold Ltd. (Vancouver, BC) for Victoria Gold Corp., August 2013.
- *Victoria Gold Corp., Eagle Gold – Climate Baseline Report* (2016). Prepared by Lorax Environmental Services Ltd., October 2016. 34 pp.
- *Victoria Gold Corp. Eagle Gold Project – Hydrometeorology Report* (2017). A413-3, prepared by Lorax Environmental Services Ltd. (Vancouver, BC) for Victoria Gold Corp., March 2017.
- *Victoria Gold Corp., Eagle Gold – Climate Baseline Report* (2018). Prepared by Lorax Environmental Services Ltd., March 2018. 35 pp.
- *Victoria Gold Corp., Eagle Gold – Climate Data Report* (2019). Prepared by Lorax Environmental Services Ltd., March 2019. 34 pp.
- *Victoria Gold Corp., Eagle Gold – Climate Data Report*. Prepared by Lorax Environmental Services Ltd., February 2020. 35 pp.

2 Climate Monitoring Locations

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2 Climate Monitoring Locations

2.1 Meteorological Stations

Climatic parameters are measured at the Project site by two weather stations that were originally installed by Stantec (formerly Jacques Whitford AXYS). The Potato Hills station is situated near the eastern basin divide (1,420 m) and was installed in August 2007. The second station was originally installed near the camp at 823 m in August 2009, and subsequently was moved to its current location in September 2010 (782 m) following construction of new camp facilities.

The Potato Hills station installed by Stantec used an ONSET Hobo datalogger to measure air temperature, rainfall, wind speed and direction, barometric pressure, relative humidity, snow depth and solar radiation at 15-minute intervals. The recording interval was initially set to record at 60-minute intervals from August 14, 2007 to August 13, 2008 and then was switched to record at 15-minute intervals as of August 13, 2008.

A snow sensor was added to the Potato Hills station in April 2011. However, since snow sensor installation, the continuous snow depth data have not been reliable and therefore are not presented in this report. The Potato Hills station experienced repeated failures in 2019 and was decommissioned in October 2019. A replacement all weather station was installed at Potato Hills in March 2020. The new station includes a Campbell Scientific CS1000 datalogger measuring air temperature, precipitation, wind speed and direction, barometric pressure, snow depth, solar radiation and relative humidity at 15-minute intervals.

The Camp station consists of a Campbell Scientific CR800 datalogger and sensors measuring air temperature, precipitation, wind speed and direction, barometric pressure, snow depth, solar radiation and relative humidity. All data are recorded at a 15-minute interval at this location. The snow sensor and pyranometer (measuring solar radiation) were added in April and October 2011, respectively. Continuous snow depth data are provided herein for the Camp station, as are records of snow survey measurements for actively measured stations through spring 2020. The Camp station was serviced and calibrated in March 2020 and a new Geonor precipitation gauge was installed.

The Project climate stations and snow survey locations are presented in Table 2-1 and Figure 2-1.

Table 2-1:
Climate station and snow survey locations.

Station	Elevation (m asl)	UTM E	UTM N	Record Period
Climate Stations				
Camp Station	782	458,164	7,101,036	2009-present
Potato Hills Station	1420	463,544	7,100,833	2007-present
Snow Surveys				
Camp Snow Survey	782	458,164	7,101,036	2009-present
Ann Gulch Snow Survey	875	458,945	7,101,185	2012-2017
Stewart (Snow Survey #2)	995	460,570	7,101,490	Mar. 2012 only
HLF Snow Survey	1078	459,859	7,102,319	2019-present
Potato Hills Snow Survey	1420	463,290	7,100,568	2009-present

460,000

465,000

7,100,000

N

Dromrust Creek

Fisher Gulch

Haggart Creek

Eagle Pup

Dublin Gulch

HLF Snow Survey

Stewart (Snow Survey #2)

Ann Gulch Snow Survey

Camp Station

Camp Snow Survey

Potato Hills Station

Potato Hills Snow Survey

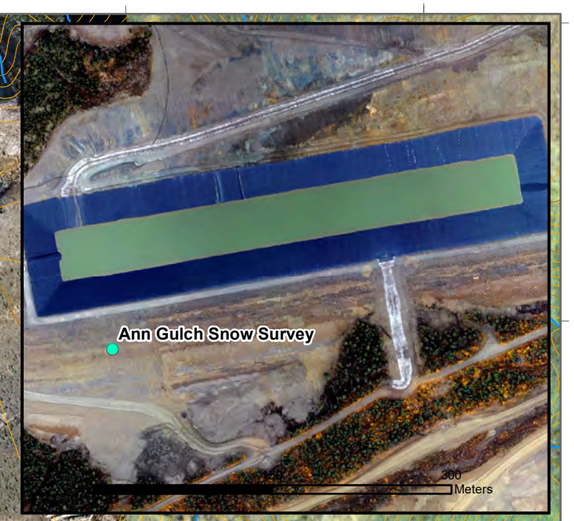
1000

900

1100

1200

1400





LEGEND

- Climate Station
- Snow Survey Station
- Watercourse
- Waterbody
- Contour (100m)
- Contour (20m)

Notes:
1. Imagery around mine site taken September 16, 2019
2. Imagery near Potato Hills taken in 2010

DATE SAVED:	Feb 11, 2020
DRAWN BY:	GM
REVIEWED:	LF
VERSION:	1

Coordinate System: *NAD 1983 UTM Zone 8N*
Projection: *Transverse Mercator*
Datum: *North American 1983*
Units: *Meter*

1:20,000

0 200 400 Meters

CLIENT: Victoria GOLD CORP

LORAX ENVIRONMENTAL

PROJECT: **Eagle Gold Climate Data Report**

TITLE: Project Site Climate Station and Snow Survey Locations

PROJECT #: A562-1

FIGURE: 1

P:\@Drafting\Eagle Gold\Drafting Figures\MXD\2020 Hydrology Report\Climate-Snow Survery Stations.mxd

2.1.1 Data Gaps for 2020

This section of the report summarizes data gaps in the climate record for the Potato Hills and Camp climate stations during the period January 2020 to December 2020. Data gaps prior to January 2020 are discussed in previous reports.

Potato Hills Station – The available data spans the period March 14 to December 31. Several data gaps greater than 24 hours exist in the Potato Hills climate station record:

- Data loss occurred from May 1 to June 4 as a result of a malfunction during a software update and install.
- Air temperature and barometric pressure during January and February were recorded using a standalone HOBO sensor.
- The barometric pressure sensor malfunctioned for the remainder of the year, and no data was collected from March through December.

Camp Station – The data record for the Camp climate station spans January 2020 to December 2020. The main data gaps for the Camp climate station are as follows:

- Data was not recorded from May 14 to May 27 due to a possible data logger malfunction.
- Precipitation data were not recorded from March 9 to May 27.
- Erratic snow depth data was recorded beginning on March 9 and continuing for the remainder of the snowmelt season. The onset of the questionable data coincided with station servicing.

2.2 Snow Surveys

Snow surveys were completed in 2020 at the Camp (Lower) snow course and Potato Hills (Upper) snow course. The location established in Ann Gulch upgradient from HLF Phase 1 construction activities for the 2019 (HLF) snow survey season was revisited in 2020. All snow surveys were generally conducted at, or near to the date that Water Resources Branch of Environment Yukon conducted their monthly surveys, which included the annual maximum snowpack. This peak in terms of SWE measurement typically occurs between late-March to mid-April in the Yukon.

Snow surveys are conducted following the guidelines set out in the *Snow Survey Sampling Guide* (BC Ministry of Environment, 1981). At each site, 10 sampling locations along a transect were sampled for depth and snow water equivalent [SWE] using a Federal snow sampler, and then averaged. As summarized in previous annual reports, snow courses were established at the Project site to discern effects of aspect and elevation gain on local snow accumulation (Table 2-1 and Figure 2-1).

3 Climate Data Summary

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3 Climate Data Summary

3.1 Temperature

Air temperatures at the Project site are consistent with those throughout the Yukon interior. Mean annual air temperature at site is -3.7°C at the Camp station (782 m) and -3.6°C at the Potato Hills station (1,420 m) over their respective periods of record.

Mean, maximum and minimum monthly (based on the daily average) temperatures are presented in Table 3-1 for both stations. At the Camp station, monthly average temperature ranges from -20.0°C in January to 13.3°C in July, and -15.3°C to 10.9°C at the Potato Hills station, for the same months. The minimum (maximum) recorded daily average temperatures were -43.8°C (22.0°C) and -36.6°C (22.9°C) at the Camp and Potato Hills stations, respectively. The minimum (maximum) recorded 15-minute temperatures were -46.4°C (31.6°C) and -37.6°C (31.7°C) at the Camp and Potato Hills stations, respectively.

The monthly mean temperature signatures for both climate stations are shown in Figure 3-1, and the pattern is consistent with the larger regional picture. During the months of March to October inclusive, the standard lapse rate applies, with temperatures decreasing with rising elevation, and are approximately 3°C cooler at the upper station, on average. However, during the winter months of November to February, temperature inversions are common at the Project site, with temperatures approximately 2.5°C cooler on average in the valley bottom than at the height of land.

The spring/summer lapse rate of -3.7°C/1000 m is consistent with the saturated adiabatic lapse rate (SALR) of -5.0°C/1000 m. Minor deviation from the SALR is likely due to the increased frequency of precipitation during the summer months, when a larger portion of the annual precipitation falls, resulting in warmer and wetter air masses at the Project site. The winter lapse rate of +4.3°C/1000 m is consistent with that reported by Wahl *et al.* (1987), which states that during a temperature inversion, lapse rates can range from 3-5°C/1000 m of elevation gain.

Table 3-1:
Project site monthly air temperature record.

Climate Station	Elevation (m asl)	Temperature (°C)													
		Year		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
Camp Station	782	2009	Mean	-	-	-	-	-	-	-	10.5	6.2	-2.6	-13.6	-17.3	-
			Maximum	-	-	-	-	-	-	-	14.0	11.2	2.3	-2.2	-2.8	-
			Minimum	-	-	-	-	-	-	-	6.6	-4.8	-9.7	-22.6	-31.3	-
		2010	Mean	-17.1	-10.8	-6.9	1.1	8.3	12.1	13.6	12.1	4.4	-3.4	-13.5	-24.1	-2.0
			Maximum	-6.7	1.0	1.4	9.4	16.9	15.7	18.0	20.5	11.8	7.1	4.0	-11.2	20.5
			Minimum	-33.4	-25.0	-17.7	-6.8	1.8	7.2	10.3	6.2	-6.1	-10.5	-28.4	-37.7	-37.7
		2011	Mean	-22.9	-21.3	-15.9	-3.2	7.7	11.5	12.8	9.2	5.1	-2.8	-20.7	M	-
			Maximum	-1.3	-1.4	2.1	2.7	16.1	16.1	18.2	14.3	9.7	0.3	-6.4	M	18.2
			Minimum	-38.5	-37.8	-30.3	-11.6	-2.2	7.0	9.5	5.7	0.9	-6.8	-39.1	M	-
		2012	Mean	-25.2	-12.2	-13.4	0.4	5.9	13.3	12.6	10.5	5.0	M	-24.1	-25.9	-
			Maximum	-7.2	0.7	-1.4	4.4	12.6	19.4	16.7	15.6	13.6	M	-10.3	-8.5	19.4
			Minimum	-40.4	-24.2	-24.4	-7.6	-0.4	8.7	8.7	4.5	-0.6	M	-37.1	-41.0	-41.0
		2013	Mean	-21.6	-13.3	-15.5	-8.6	5.0	14.2	14.0	11.9	5.5	-2.5	-18.7	-26.7	-4.7
			Maximum	-9.3	-4.4	0.3	2.9	14.1	22.0	18.5	18.0	14.5	4.9	-4.0	-11.6	22.0
			Minimum	-43.8	-20.9	-26.8	-16.6	-2.6	6.0	9.5	4.9	0.9	-9.9	-39.5	-40.7	-43.8
		2014	Mean	-14.9	-23.4	-13.8	-1.8	7.0	11.0	13.4	10.6	3.7	-3.5	-15.8	-15.2	-3.6
			Maximum	-1.8	-6.4	-3.8	4.5	12.9	16.5	18.6	15.1	9.4	3.4	-3.3	-4.6	18.6
			Minimum	-34.1	-36.8	-24.4	-12.4	2.5	5.4	8.7	4.5	-3.8	-11.9	-33.8	-26.4	-36.8
		2015	Mean	-19.4	-18.1	-11.5	-0.1	10.1	11.2	12.2	9.0	2.9	-1.5	-15.1	-15.2	-3.0
			Maximum	-2.9	-1.7	-1.0	4.4	17.5	15.5	16.8	15.4	7.3	3.4	-4.4	-6.0	17.5
			Minimum	-39.1	-38.3	-26.8	-4.8	-0.9	5.6	7.9	1.6	-4.3	-9.3	-33.1	-34.3	-39.1
		2016	Mean	-13.1	-13.5	-5.1	2.3	8.2	12.4	13.6	11.5	4.1	-8.3	-13.7	-21.9	-1.9
			Maximum	-2.0	-2.6	3.9	7.3	13.7	16.7	17.0	16.6	11.4	-0.7	0.8	-5.4	17.0
			Minimum	-25.4	-29.3	-10.3	-3.3	2.6	8.2	6.1	6.3	-2.5	-20.8	-31.3	-37.9	-37.9
		2017	Mean	-19.6	-18.8	-17.2	-1.4	7.3	M	M	11.8	6.3	-4.1	-22.9	-16.6	-
			Maximum	-3.3	0.1	0.5	5.2	14.3	M	M	16.9	12.5	6.3	-11.6	-0.8	-
			Minimum	-37.1	-28.3	-30.6	-8.6	1.9	M	M	6.6	0.1	-12.8	-36.1	-37.1	-37.1
		2018	Mean	-19.4	-24.3	-11.9	-3.7	5.9	11.8	13.8	9.9	1.9	-3.8	-12.8	-16.0	-3.9
			Maximum	3.0	-14.0	0.3	4.4	11.6	19.2	17.7	17.0	7.2	2.8	-0.3	1.2	19.2
			Minimum	-38.6	-35.8	-26.7	-15.0	-2.3	7.8	9.1	2.9	-2.9	-12.1	-26.4	-28.8	-38.6
		2019	Mean	-20.4	-23.1	-6.2	-0.9	8.7	13.0	15.2	8.6	5.3	-4.6	-14.4	-18.7	-3.1
			Maximum	-8.2	-15.0	4.7	4.0	16.6	19.6	18.9	17.5	10.5	4.9	-4.3	-4.3	19.6
			Minimum	-37.7	-36.3	-20.9	-11.8	-2.0	8.2	11.4	2.8	-3.8	-15.3	-29.7	-38.0	-38.0
		2020	Mean	-26.8	-20.2	-15.7	-3.4	M	10.9	11.9	11.1	4.8	-7.9	-19.7	-16.8	-5.4
			Maximum	-4.7	-6.2	-1.6	5.9	M	14.9	17.6	16.3	8.5	8.5	-7.4	1.6	17.6
			Minimum	-41.0	-37.8	-30.7	-14.9	M	6.9	9.3	7.0	1.6	-21.3	-32.3	-30.4	-41.0
		All Years	Mean	-20.0	-18.1	-12.1	-1.8	7.4	12.1	13.3	10.6	4.6	-4.1	-17.1	-19.5	-3.7
			Maximum	3.0	1.0	4.7	9.4	17.5	22.0	18.9	20.5	14.5	8.5	4.0	1.6	22.0
			Minimum	-43.8	-38.3	-30.7	-16.6	-2.6	5.4	6.1	1.6	-6.1	-21.3	-39.5	-41.0	-43.8
Potato Hills Station	1420	2007	Mean	-	-	-	-	-	-	-	-	1.0	-6.9	-12.0	-15.2	-
			Maximum	-	-	-	-	-	-	-	-	8.0	-1.5	-5.5	-9.4	-
			Minimum	-	-	-	-	-	-	-	-	-6.2	-13.8	-27.7	-24.2	-
		2008	Mean	-17.7	-17.2	-11.3	-4.8	3.3	8.7	8.1	5.3	1.9	-7.7	-10.8	-18.6	-5.1

Climate Station	Elevation (m asl)	Temperature (°C)												
		Year		**Jan**	**Feb**	**Mar**	**Apr**	**May**	**Jun**	**Jul**	**Aug**	**Sep**	**Oct**	**Nov**	**Dec**	**Annual**
			Maximum	-9.2	-3.4	-2.8	2.7	12.5	14.3	13.4	9.2	6.7	2.4	-5.4	-8.4	14.3
			Minimum	-33.1	-31.9	-29.6	-16.8	-0.6	4.6	2.8	1.7	-7.7	-21.3	-19.6	-27.2	-33.1
		2009	Mean	-19.3	-17.2	-16.7	-4.4	M	M	12.6	7.4	3.3	-5.3	-12.8	-11.9	-
			Maximum	-0.5	-10.4	-7.0	9.4	M	M	22.8	16.2	10.4	-1.9	-4.9	-3.8	-
			Minimum	-34.8	-30.3	-25.2	-13.0	M	M	6.6	3.1	-6.3	-14.2	-19.1	-21.2	-34.8
		2010	Mean	-14.5	-9.7	-9.4	-1.8	5.2	8.8	10.5	9.7	2.3	-5.3	-11.7	-18.2	-2.9
			Maximum	-5.1	-1.8	-2.9	6.3	15.1	13.4	15.2	19.5	8.8	3.1	-1.4	-8.8	19.5
			Minimum	-30.9	-26.4	-16.5	-8.3	-4.0	2.7	6.2	3.4	-9.3	-10.4	-23.1	-25.6	-30.9
		2011	Mean	-15.5	-18.3	-13.9	-5.6	4.8	8.8	10.3	7.0	4.1	-5.7	-18.0	-13.0	-4.6
			Maximum	-5.6	-3.6	-1.4	1.3	15.3	13.9	15.7	11.4	20.4	-1.2	-9.1	-8.8	20.4
			Minimum	-28.0	-30.2	-23.2	-13.0	-7.2	2.2	5.9	5.3	-5.5	-12.1	-29.0	-20.0	-30.2
		2012	Mean	-19.8	-11.1	-13.4	-1.9	3.1	11.3	10.9	-	-	-8.4	-18.8	-19.4	-
			Maximum	-6.8	-5.1	-1.7	1.8	9.5	18.5	17.9	-	-	3.3	-8.0	-6.5	-
			Minimum	-30.3	-19.5	-22.6	-8.0	-2.5	5.5	5.5	-	-	-16.8	-24.0	-29.2	-
		2013	Mean	-17.6	-11.3	-14.2	*-10.4*	*2.8*	12.1	11.6	11.0	3.0	-2.9	-16.0	-19.5	-4.3
			Maximum	-5.5	-4.9	-5.1	*-2.5*	*13.5*	22.2	17.4	19.9	10.2	1.3	-4.7	-3.4	22.2
			Minimum	-36.6	-15.5	-24.8	*-18.4*	*-6.2*	2.0	5.3	1.7	-1.8	-8.5	-28.9	-29.1	-36.6
		2014	Mean	-10.0	-15.9	-11.5	-3.4	*5.6*	8.7	11.8	8.7	2.1	-5.6	-11.6	-11.4	-2.7
			Maximum	0.6	-7.8	-5.1	3.2	*11.5*	17.6	15.6	13.9	8.5	0.9	-5.0	-5.4	17.6
			Minimum	-27.3	-26.3	-19.9	-13.5	*0.4*	1.7	7.4	1.7	-5.2	-12.1	-22.5	-19.2	-27.3
		2015	Mean	-14.4	-13.8	-9.6	*-2.3*	*8.6*	*8.6*	*9.5*	7.1	0.1	-3.7	-13.5	-13.6	-3.1
			Maximum	-3.9	-2.3	-0.5	*1.4*	*16.5*	*13.6*	*14.9*	17.0	4.9	2.0	-4.3	-5.6	17.0
			Minimum	-31.7	-32.7	-24.3	*-6.5*	*-3.2*	*1.9*	*4.4*	-2.0	-6.1	-10.7	-28.3	-25.3	-32.7
		2016	Mean	-9.2	-10.4	-6.2	-	7.2	12.0	12.2	9.3	2.8	-6.8	-10.1	-16.2	-
			Maximum	-4.4	-5.2	3.4	-	15.4	19.4	17.7	13.9	8.5	-0.7	-2.0	-8.8	-
			Minimum	-14.0	-20.4	-12.4	-	0.5	5.0	5.3	3.6	-3.4	-15.6	-18.2	-25.1	-
		2017	Mean	-13.0	-13.3	-16.7	-3.2	4.5	9.7	-	-	-	-	-17.4	-10.2	-
			Maximum	-3.4	-1.1	-3.6	3.9	11.9	16.7	-	-	-	-	-9.4	-1.6	-
			Minimum	-27.2	-21.5	-28.0	-12.4	-0.5	0.3	-	-	-	-	-26.5	-22.8	-
		2018	Mean	-14.4	-16.9	-12.0	-6.1	M	M	M	M	M	-3.3	-9.9	M	-
			Maximum	0.9	-10.8	0.6	1.5	M	M	M	M	M	1.3	-2.0	M	-
			Minimum	-26.0	-26.4	-22.9	-18.1	M	M	M	M	M	-13.4	-17.3	M	-
		2019	Mean	-16.0	M	-5.1	-3.5	M	11.1	13.6	8.9	M	M	-10.8	M	-
			Maximum	-6.9	M	3.8	2.4	M	17.1	18.0	22.9	M	M	-3.5	M	-
			Minimum	-28.0	M	-14.5	-16.8	M	2.1	7.7	4.6	M	M	-17.3	M	-
		2020	Mean	-17.4	-16.1	M	-6.0	M	8.3	8.9	8.6	2.8	-8.4	-14.9	-13.4	-
			Maximum	-5.5	-6.1	M	2.3	M	13.9	17.7	17.3	7.4	5.7	-8.3	-1.0	-
			Minimum	-27.8	-27.8	M	-15.2	M	3.5	4.6	3.0	-1.4	-20.3	-22.2	-29.6	-
		All Years	Mean	-15.3	-14.3	-11.7	-4.5	5.0	9.8	10.9	8.3	2.3	-5.8	-13.4	-15.1	-3.6
			Maximum	0.9	-1.1	3.8	9.4	16.5	22.2	22.8	22.9	20.4	5.7	-1.4	-1.0	22.9
			Minimum	-36.6	-32.7	-29.6	-18.4	-7.2	0.3	2.8	-2.0	-9.3	-21.3	-29.0	-29.6	-36.6

Notes:
1. Values are calculated from average daily temperatures.
2. Data is considered missing for a month when there are less than 25 days of data available for that month (beginning of data record until end of 2020).
3. Monthly values in italics for the Potato Hills station, for the period of 2013 through 2015 have been infilled using monthly regression relationships with temperature data from the Camp station.
4. Monthly values in gray for the period of June 2014 to March 2015, May through July 2016, November 2019 and January to February 2020 were recorded by a standalone HOBO temperature sensor.
5. 'M' denotes data missing due to a sensor/datalogger malfunction.
6. Monthly temperature lapse rates presented in Section 3.1 are based on a comparison of monthly average temperature data from the Camp and Potato Hills stations.

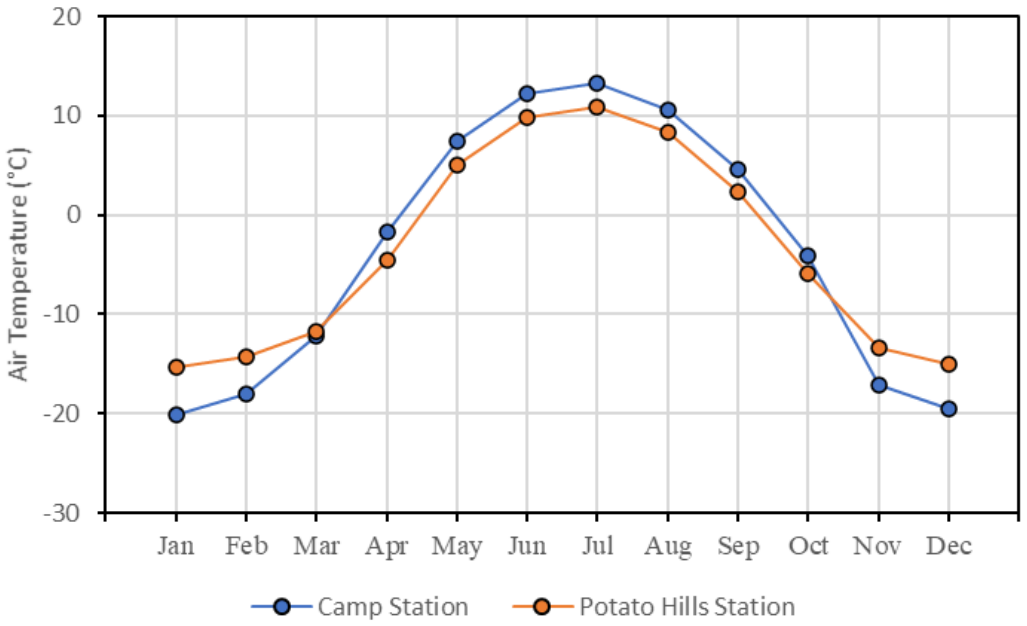

Figure 3-1: Monthly mean air temperature for the Project climate stations for the available period of record.

3.2 Rainfall

Historically, gauge precipitation data was collected at the Project site using tipping bucket rain gauges, which were not adapted to measure snowfall. Therefore, the precipitation data presented in Table 3-2 is for rainfall only, collected between the months of March and October, inclusive. The precipitation gauges were replaced with all-season instruments in 2020, and thus these data accurately represent total solid phase precipitation. Generally, precipitation falls as snow from November through March, with precipitation falling as a mix of rain and snow in April and October. Rainfall data for March is included in the table below, where the temperature record indicates that precipitation would have fallen as rain (*i.e.*, daily average air temperature was above zero). June to October monthly precipitation values for 2020 at the Camp Station were highest on record and measured at two to three times the mean monthly values from 2011 to 2019. Similar but less pronounced patterns were observed at Potato Hills station with the exception of August 2020 where monthly precipitation was only slightly elevated above historical average.

Table 3-2:
Project site monthly rainfall data.

Climate Station	Elevation (m asl)	Rainfall (mm)														
		Year		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual	Apr-Sept.
Camp Station	782	2009		-	-	-	-	-	-	-	-	35.0	*8.0*	S	S	-	
		2010		S	S	5.0	9.0	20.0	62.0	34.0	28.0	25.0	*12.0*	S	S	195.0	178.0
		2011		S	S	11.0	10.0	16.0	31.0	75.0	44.0	40.0	*9.0*	S	S	236.0	216.0
		2012		S	S	13.0	1.0	22.0	18.0	74.6	29.8	24.0	*4.8*	S	S	187.2	169.4
		2013		S	S	8.6	10.4	34.6	25.6	28.4	35.2	58.6	*25.2*	S	S	226.6	192.8
		2014		S	S	5.4	8.8	9.2	52.8	43.2	70.4	28.8	*23.2*	S	S	241.8	213.2
		2015		S	S	20.8	13.0	8.2	28.8	64.0	62.0	38.6	*13.4*	S	S	248.8	214.6
		2016		S	S	6.2	4.4	14.0	32.6	55.0	31.0	25.6	*2.6*	S	S	171.4	162.6
		2017		S	S	S	2.2	24.4	M	M	12.8	20.4	*6.0*	S	S	-	-
		2018		S	S	12.0	1.4	63.2	49.4	1.6	34.4	4.6	*12.4*	S	S	179.0	154.6
		2019		S	S	M	M	M	M	M	M	M	M	S	S	-	-
		2020		S	S	M	M	M	156.2	165.7	89.7	71.0	60.9	46.3	28.5	-	-
		All Years	Mean	S	S	10.3	6.7	23.5	50.7	60.2	43.7	33.8	*16.1*	S	S	210.7	187.7
			Maximum	S	S	20.8	13.0	63.2	156.2	165.7	89.7	71.0	*60.9*	S	S	248.8	216.0
			Minimum	S	S	5.0	1.0	8.2	18.0	1.6	12.8	4.6	*2.6*	S	S	171.4	154.6
Potato Hills Station	1420	2007		S	S	S	M	M	M	M	24.0	100.8	*2.0*	S	S	-	-
		2008		S	S	3.4	4.8	58.4	52.0	201.2	130.0	11.2	*1.2*	S	S	462.2	457.6
		2009		S	S	S	3.0	M	50.8	12.6	75.4	44.4	*1.2*	S	S	-	-
		2010		S	S	1.0	6.2	16.4	77.2	45.8	39.4	4.2	*5.4*	S	S	195.6	189.2
		2011		S	S	0.2	7.2	21.2	38.0	92.8	83.8	34.4	*0.4*	S	S	278.0	277.4
		2012		S	S	S	0.6	9.6	24.2	64.8	37.8	21.0	*4.6*	S	S	162.6	158.0
		2013		S	S	2.2	0.2	29.6	33.2	18.0	18.2	63.8	*10.0*	S	S	175.2	163.0
		2014		S	S	S	M	M	M	M	M	M	*M*	S	S	-	-
		2015		S	S	S	M	M	M	M	48.5	27.1	*10.0*	S	S	-	-
		2016		S	S	D	D	14.5	23.0	38.3	42.6	24.6	*0.6*	S	S	-	-
		2017		S	S	D	D	16.2	25.8	46.3	21.8	53.0	*6.1*	S	S	-	-
		2018		S	S	D	D	D	46.5	13.5	77.0	4.0	*3.8*	S	S	-	-
		2019		S	S	D	D	D	D	18.5	D	D	D	S	S	-	-
		2020		S	S	M	M	M	101.22	103.48	68.5	63.7	44.2	18.3	19.0	-	-
		All Years	Mean	S	S	1.7	3.7	23.7	47.2	63.7	55.6	37.7	*7.5*	S	S	254.7	249.0
			Maximum	S	S	3.4	7.2	58.4	101.2	201.2	130.0	100.8	*44.2*	S	S	462.2	457.6
			Minimum	S	S	0.2	0.2	9.6	23.0	12.6	18.2	4.0	*0.4*	S	S	162.6	158.0

Notes:
1. Winter precipitation data (October through April in many years) are unreliable due to the majority falling as snow. The months where no rainfall was recorded due to freezing conditions are denoted by an 'S'. The exception is October through December of 2020, following the installation of an all-season Geonor precipitation gauge at both climate stations.
2. Data for the month of October are in italics, as rainfall is not measured for the entire month.
3. 'M' denotes when there are less than 25 days of data available for that month.
4. In August 2015, the primary rain gauge at the Potato Hills Station was replaced by a standalone tipping bucket rain gauge. The replacement gauge is deployed each spring (i.e., in April or May) then decommissioned in the autumn (October). Missing data at Potato Hills Station denoted by 'D' indicate time periods during which the standalone tipping bucket rain gauge was not functioning.

3.3 Snow Water Equivalent and Continuous Snow Depth Data

As discussed in Section 2.2, snow data have been collected at three snow courses[2] at the Project site since 2009. Furthermore, the annual maximum snow water equivalent (SWE) value generally occurs in late-March or early-April at the Project site. Field measurements from site show that snow density is generally lower earlier in the season, corresponding to colder temperatures, but increases through winter as the snowpack deepens, consolidates and as snow melt progresses.

Project site snow survey data is summarized in Table 3-3 for period of record 2009 to 2020. Annual maximum SWE values range from 72 mm to 199 mm at the Camp snow course, 98 mm to 117 mm (shorter record) at the Ann Gulch snow course and from 190 mm to 431 mm at the Potato Hills snow course.

The Potato Hills snow survey was conducted in the immediate vicinity of the weather station from 2009 to 2011. However, due to the exposed location, snow redistribution resulted in variable measurements, and therefore the survey was moved to its current and more sheltered location in 2012, several hundred metres to the south-east (Figure 2-1). Note that high snowpacks did not allow access to the Potato Hills snow course in March 2012, and therefore the survey was conducted at Stewart Gulch (Snow Survey #2; see Figure 2-1). Snow surveys conducted at the Heap Leach facility in 2019 were primarily above or below the diversion ditch as indicated in Table 3-3. All 2020 snow surveys exhibited historical maximums with SWE for each survey greater than any measurement collected at their respective sites between 2011 to 2019.

[2] See Note 1 in Table 3-3.

Table 3-3:
Project site snow survey data.

Year	Camp Station (782 m)				Ann Gulch (Snow Survey #2; 995 m)				HLF Station (1,078 m)				Potato Hills Station (1,420 m)			
	Survey Date	Depth (cm)	SWE (mm)	Density (%)	Survey Date	Depth (cm)	SWE (mm)	Density (%)	Survey Date	Depth (cm)	SWE (mm)	Density (%)	Survey Date	Depth (cm)	SWE (mm)	Density (%)
2009	2009-04-21	69	112	16%	-	-	-	-	-	-	-	-	2009-04-21	126	410	33%
2010	2010-03-31	50	99	20%	-	-	-	-	-	-	-	-	2010-03-31	103	278	27%
	2010-04-21	69	112	16%	-	-	-	-	-	-	-	-	2010-04-21	126	405	32%
2011	2011-03-28	55	93	17%	-	-	-	-	-	-	-	-	2011-03-28	105	251	24%
2012	2012-03-20	78	161	21%	-	-	-	-	-	-	-	-	2012-03-20	99	237	24%
	2012-04-20	56.4	79	14%	-	-	-	-	-	-	-	-	2012-04-22	117	262	22%
2013	-	-	-	-	2013-02-20	69.6	97.1	14%	-	-	-	-	2013-02-28	95.6	184.9	19%
	2013-03-02	60.9	108.3	18%	2013-03-02	66.9	115	17%	-	-	-	-	-	-	-	-
	2013-04-02	59.3	108.4	18%	2013-04-02	61.8	117.2	19%	-	-	-	-	2013-04-03	90	189.7	21%
	2013-05-05	57.6	106	18%	2013-04-16	62.2	85.1	14%	-	-	-	-	-	-	-	-
	-	-	-	-	2013-05-03	58	105.3	18%	-	-	-	-	2013-05-05	116.8	166.5	14%
2014	2014-03-12	56.8	126	22%	2014-03-12	51	94	18%	-	-	-	-	2014-03-11	97.5	276	28%
	2014-04-02	54.6	100	18%	2014-04-02	46	98	21%	-	-	-	-	2014-04-02	96.2	275	29%
	-	-	-	-	-	-	-	-	-	-	-	-	2014-05-08	69.6	258	37%
2016	2016-03-02	53	118	22%	2016-03-02	52.6	117	22%	-	-	-	-	2016-03-02	95.4	214	22%
	2016-04-09	38	140	37%	2016-04-09	22.2	115	52%	-	-	-	-	2016-04-10	107.4	257	24%
	-	-	-	-	-	-	-	-	-	-	-	-	2016-05-03	95	226	24%
2017	2017-03-17	50.9	89	17%	2017-03-17	50.3	100	20%	-	-	-	-	2017-03-17	84	206	25%
	2017-04-13	46	117	25%	2017-04-13	30.1	82	27%	-	-	-	-	2017-04-13	98	244	25%
	2017-05-04	7	28	40%	2017-05-04	0	0	NA	-	-	-	-	2017-05-03	89	236	27%
2018	2018-02-28	53	100	19%	-	-	-	-	-	-	-	-	2018-02-28	85.1	203	24%
	2018-04-04	53.9	109	20%	-	-	-	-	-	-	-	-	2018-04-04	90.5	219	24%
	2018-05-16	-	-	-	-	-	-	-	-	-	-	-	2018-05-16	80.7	226	28%
2019	2019-03-02	48.3	94.0	20%	-	-	-	-	2019-03-02	56.2	119	21%	2019-03-02	78.7	205	26%
	2019-04-01	25.3	72.0	31%	-	-	-	-	2019-04-02	37.2	93	25%	2019-04-01	79.3	171	22%
	2019-04-30	0.0	0.0	-	-	-	-	-	2019-04-30	31.7	71	18%	2019-04-30	91	200	22%
	2019-05-16	0.0	0.0	-	-	-	-	-	-	-	-	-	2019-05-16	48.3	111	23%
	2019-06-01	0.0	0.0	-	-	-	-	-	-	-	-	-	2019-06-01	0.0	0	-
2020	2020-03-07	89.8	157	18%	-	-	-	-	2020-03-07	108.7	229	21%	2020-03-13	188.5	431	23%
	2020-04-05	93.9	199	22%	-	-	-	-	2020-04-10	108.1	262.0	24%	2020-04-10	140.5	297	21%
	2020-05-02	40.1	142	35%	-	-	-	-	2020-05-02				2020-05-02	130.3	384	29%

Notes:
1. Snow survey data for Potato Hills collected on 2012-03-20 is from the Stewart Gulch survey (Snow Survey #2) at 995 m asl (see Figure 2-1).
2. No snow surveys were conducted at site in 2015.
3. Snow survey data for Heap Leach Facility collected on 2019-04-02 from above and below the diversion ditch.
4. Snow survey data for Heap Leach Facility collected on 2019-04-30 from above the diversion ditch.
5. The Potato Hills Station SWE value for 2020-03-13 was estimated from the average March snow density value (22%) and the measured snow depth on this date, to correct for an error in the SWE measurements.

3.3-1 Continuous Snow Depth Data

Continuous snow depth data is summarized for the Camp climate station in Figure 3-2.

The upper panel of Figure 3-2 shows the evolution of the snowpack for the 2012 to 2020 time-period, with pack depth showing initial and appreciable accumulation through the months of November and December, typically reaching maximum depth by mid-March each year. These data then show that snowpack depth remains deep and relatively stable to April. As with the historical maximum SWE observed in snow surveys, spring 2020 snow depth at Camp Station also exceeded all other years.

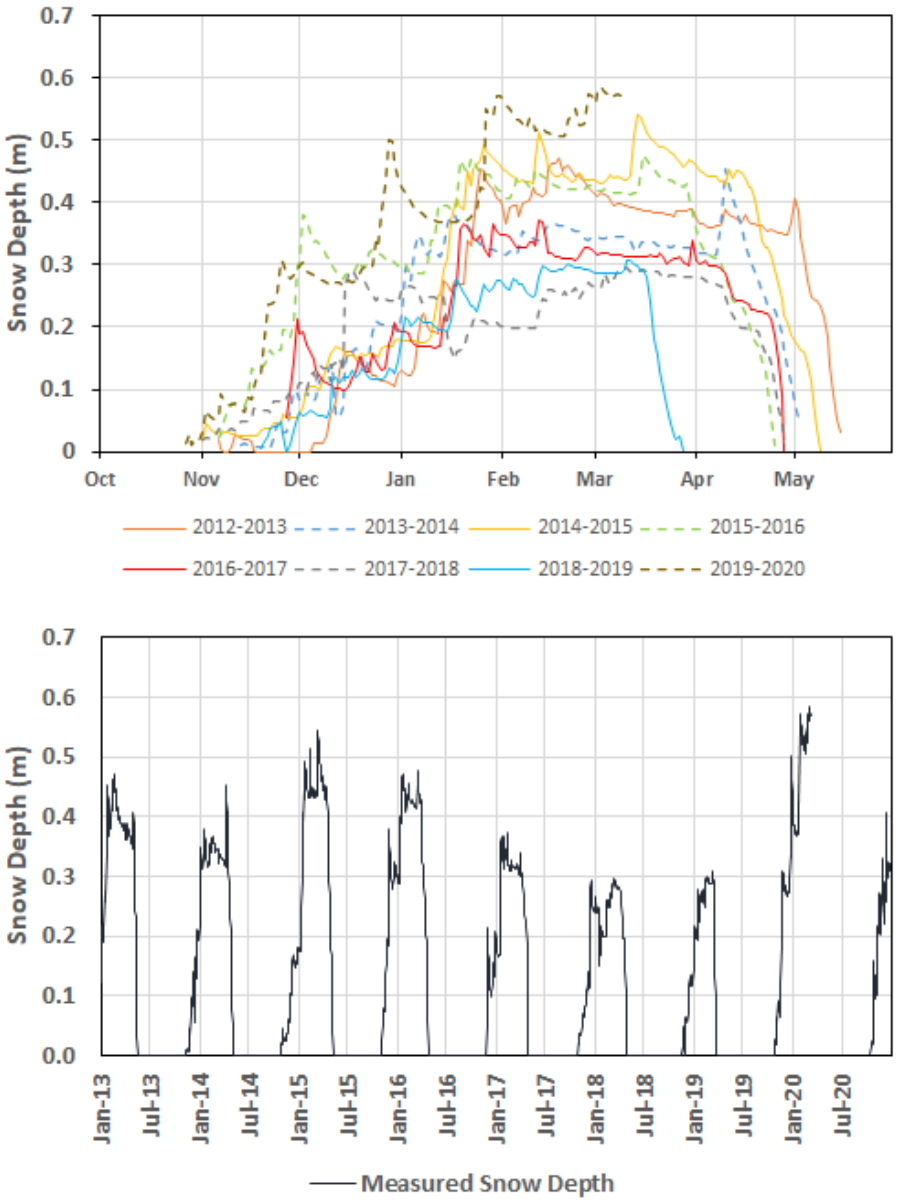

Figure 3-2: Summary of recent (2012-2020) continuous snow depth data for the Camp climate station.

The lower panel of Figure 3-2, illustrates the timing and rate of snowpack loss for the Camp climate station. While variable from year to year, these data show snowpack losses typically begin in earnest by mid- to late-April, with the duration of melt lasting 15-20 days. Although the duration of melt in 2019 was fairly typical, the timing of melt was roughly early by a month compared to prior years of observation. Due to unreliable data beginning March 9, melt timing and rate for 2020 snowpack could not be established.

3.4 Barometric Pressure

Barometric pressure provides a measure of the weight exerted by the atmosphere on the earth's surface at a point and provides a direct indication of changes in the synoptic weather pattern (*e.g.*, dropping barometric pressure can indicate the approach of a warm front). As expected, barometric pressure decreases with elevation at site, and is generally elevated during the summer months in comparison to the winter season (Table 3-4). When the Potato Hills climate station experienced a malfunction between May 2014 and July 2015, Table 3-4 was populated with data recorded by a standalone HOBO temperature/pressure logger for this time period. Similarly, a standalone HOBO sensor measured barometric pressure at the Potato Hills station in January and February 2020, but malfunctioned thereafter, resulting in no further usable data collected in 2020. Annual average barometric pressure is 91.9 kPa at the Camp station, and 84.9 kPa at the Potato Hills station.

Table 3-4:
Project site monthly average barometric pressure data.

Climate Station	Elevation (m asl)	Barometric Pressure (kPa)												
		Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
Camp Station	782	2009	-	-	-	-	-	-	-	91.6	91.3	91.7	90.1	91.9	-
		2010	91.2	91.2	90.5	91.2	91.9	91.5	91.8	91.8	91.8	91.2	91.7	91.9	91.5
		2011	91.8	92.2	91.9	91.6	92.1	91.9	91.8	91.8	91.4	91.3	91.1	91.2	91.7
		2012	91.2	91.5	90.9	91.9	91.8	91.3	92.2	92.2	91.8	92.5	92.1	91.5	91.7
		2013	91.9	91.2	92.3	92.2	92.2	92.4	92.5	92.0	91.4	91.9	92.1	92.5	92.1
		2014	91.7	92.3	92.0	91.6	92.4	92.0	92.2	92.1	92.0	91.3	92.3	91.6	92.0
		2015	92.2	92.5	91.9	91.4	92.5	92.2	92.1	92.0	91.6	91.7	91.3	91.0	91.9
		2016	91.3	91.6	91.5	91.8	92.4	92.1	92.2	92.5	92.0	92.1	91.1	92.0	91.9
		2017	91.8	91.7	92.0	92.0	91.9	M	M	91.9	91.9	91.7	92.1	92.3	-
		2018	91.9	92.6	92.3	91.9	91.9	91.9	92.7	92.0	92.9	91.9	91.9	91.2	92.1
		2019	91.9	92.9	92.3	91.8	92.1	92.3	92.3	92.5	91.9	91.9	91.9	91.0	92.1
		2020	91.5	91.6	92.3	92.0	92.6	91.9	92.1	91.8	92.1	92.2	91.4	91.2	91.9
		Average	91.7	91.9	91.8	91.8	92.2	91.9	92.2	92.0	91.8	91.8	91.6	91.6	91.9
Potato Hills Station	1420	2007	-	-	-	-	-	-	-	85.5	85.1	84.1	84.7	84.0	-
		2008	84.1	84.3	84.6	84.9	85.4	85.4	85.2	85.4	85.3	84.4	84.3	85.0	84.9
		2009	84.7	84.8	84.5	85.3	85.4	86.0	85.8	85.4	85.0	85.1	83.4	85.1	85.0
		2010	84.4	84.5	83.9	84.7	85.5	85.2	85.5	85.5	85.3	84.3	84.6	84.4	84.8
		2011	84.9	84.8	84.6	84.6	85.3	85.2	85.2	85.2	84.6	84.5	83.7	84.4	84.8
		2012	83.8	83.3	84.0	84.9	84.5	84.8	85.3	85.5	85.0	85.4	84.8	84.1	84.6
		2013	84.6	84.1	85.1	84.9	85.4	85.8	85.8	85.4	84.7	85.0	84.8	85.0	85.1
		2014	84.6	85.0	84.8	84.7	85.8	85.1	85.6	85.4	85.2	84.5	85.4	84.8	85.1
		2015	85.2	85.6	85.0	85.6	M	M	85.9	85.3	84.8	84.8	84.2	83.9	-
		2016	84.3	84.5	84.5	M	M	M	M	85.9	85.2	85.1	84.0	84.7	-
		2017	84.6	84.6	84.7	85.1	85.1	85.3	M	M	M	M	84.7	85.2	-
		2018	84.7	85.2	85.2	84.9	M	M	M	M	M	85.0	84.7	M	-
		2019	84.6	M	85.3	84.9	M	85.7	85.8	M	M	M	84.8	M	-
		2020	84.3	84.4	M	M	M	M	M	M	M	M	M	M	-
		Average	84.5	84.6	84.7	85.0	85.3	85.4	85.6	85.4	85.0	84.7	84.5	84.6	84.9

Notes:
1. Monthly values in gray for the period of June 2014 to March 2015, November 2019 and January to February 2020 were recorded by a standalone HOBO barometric pressure sensor.
2. 'M' denotes data missing when there are less than 25 days per month due to a sensor malfunction.

3.5 Relative Humidity

Relative humidity is a measure of the water vapour content of an air parcel, expressed as a percentage of the total water vapour required for the air to be fully saturated at a given temperature. Therefore, at colder temperatures, less water vapour is required to achieve a high relative humidity, and conversely at higher temperatures, more water vapour is required to obtain the same relative humidity value.

Given that air temperatures are well below zero during the winter, relative humidity values are elevated throughout the winter, and lower during the summer. With respect to monthly patterns for relative humidity, the annual minimum is expected to occur in the month of May. All monthly average relative humidity values from both climate stations are provided in Figure 3-3 and Table 3-5. Annual average relative humidity is 70% at the Camp station, and 77% at the Potato Hills station.

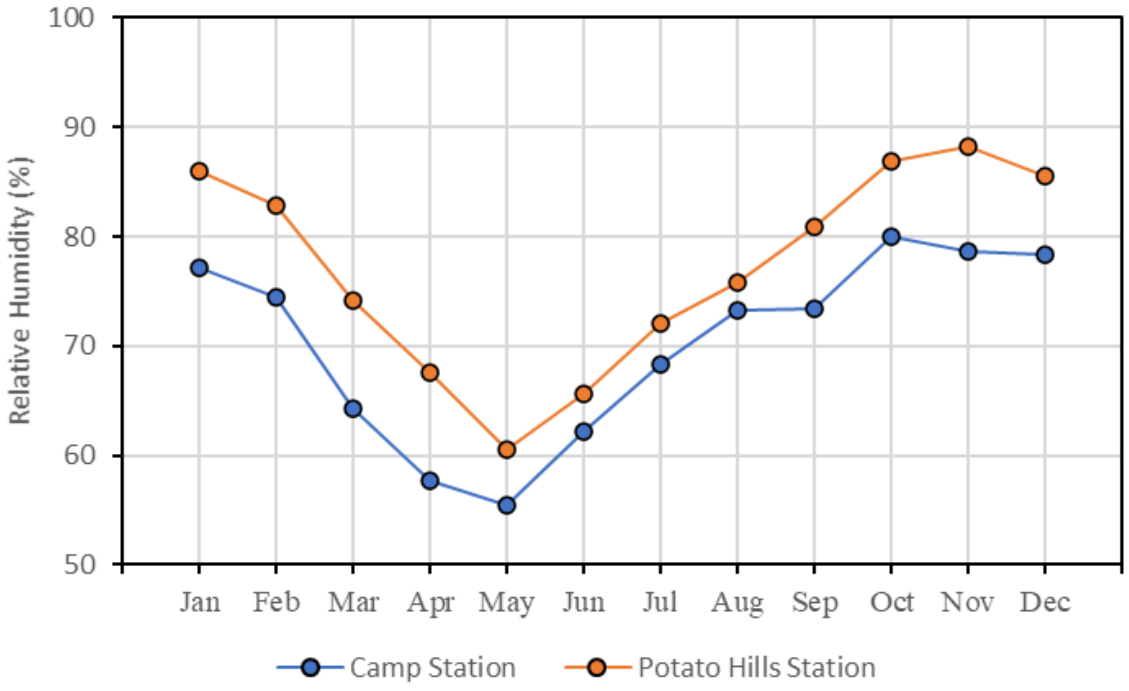

Figure 3-3: Project site average monthly relative humidity for the period of record.

Table 3-5:
Project site monthly average relative humidity measurements.

Climate Station	Elevation (m asl)	Relative Humidity (%)												
		Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
Camp Station	782	2009	-	-	-	-	-	-	-	82	76	73	80	79	-
		2010	77	76	60	54	49	66	68	66	65	79	80	73	68
		2011	76	71	62	61	56	64	74	77	73	81	75	81	71
		2012	73	75	66	59	57	59	70	70	71	75	70	73	68
		2013	75	80	64	52	61	60	63	70	76	84	77	71	69
		2014	83	71	59	58	53	59	67	76	71	82	78	82	70
		2015	80	78	68	62	49	62	71	75	75	84	80	82	72
		2016	82	79	71	62	55	59	72	73	72	75	82	75	71
		2017	78	73	59	56	58	M	M	70	79	83	75	81	-
		2018	76	72	64	51	64	65	61	77	64	76	82	79	69
		2019	77	72	67	55	52	54	62	64	73	83	78	77	68
		2020	72	74	67	63	M	74	74	79	84	84	86	87	75
		Average	77	75	64	58	55	62	68	73	73	80	79	78	70
Potato Hills Station	1420	2007	-	-	-	-	-	-	-	63	83	88	81	88	-
		2008	82	79	74	69	67	60	77	82	83	91	90	74	77
		2009	76	80	81	70	37	68	53	85	85	82	91	86	75
		2010	86	83	75	65	55	72	75	71	72	90	89	86	76
		2011	85	80	64	75	63	67	77	82	79	90	90	89	78
		2012	93	90	87	73	73	69	74	71	73	84	82	86	80
		2013	87	94	73	65	63	62	67	70	86	92	87	85	78
		2014	91	72	59	66	59	M	M	M	M	M	M	M	-
		2015	M	M	M	M	M	M	85	80	88	96	95	94	-
		2016	88	90	86	M	M	M	M	78	77	81	92	86	-
		2017	86	83	73	66	67	61	M	M	M	M	89	84	-
		2018	84	77	73	61	M	M	M	M	M	80	89	M	-
		2019	89	M	72	67	M	59	67	73	M	M	M	M	-
		2020	M	M	M	66	M	73	75	79	81	84	84	83	-
		Average	86	83	74	68	60	66	72	76	81	87	88	85	77

Notes: 1'M' denotes data missing for at least 14 days in the month due to a sensor malfunction.

3.6 Wind Speed and Direction

The predominant wind direction at the climate stations is north, and west-northwest, for the Camp and Potato Hills stations, respectively. No wind direction data was collected at the Potato Hills station in 2019 and early 2020. Wind speeds averaged 1.2 m/s at the Camp station, and 2.4 m/s at the Potato Hills station, on an annual basis (Table 3-6; Figure 3-4). The maximum recorded gust speed at the Camp station was 23.5 m/s over a 15-minute interval (August 15, 2016). At the Potato Hills station, wind speeds averaged 23.5 m/s over a 1-hour period (November 3, 2010; 15-min maximum gust of 23.9 m/s), and during the same event, wind speeds in excess of 20 m/s were recorded for a 4.5-hour period. As shown in Table 3-6, the mean monthly wind speeds for both stations are higher in the spring, summer, and autumn months, and lower in the winter, with annual average monthly minimums occurring in December, and annual maximum winds in April and May.

Table 3-6:
Project site monthly average wind speed data.

Climate Station	Elevation (m asl)	Wind Speed (m/s)												
		Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
Camp Station	782	2009	-	-	-	-	-	-	-	1.4	1.2	1.2	1.1	0.7	-
		2010	1.2	1.1	2.2	2.0	1.9	1.5	1.4	1.3	1.5	1.2	0.7	1.0	1.4
		2011	0.6	1.2	1.3	1.8	1.7	1.5	1.3	1.2	1.4	0.9	0.9	0.2	1.2
		2012	0.9	1.2	1.6	1.4	1.9	1.3	1.4	1.3	1.5	1.1	1.3	0.7	1.3
		2013	0.8	0.9	1.2	2.2	1.5	1.7	1.5	1.3	1.6	0.8	0.7	0.7	1.2
		2014	0.1	0.8	1.3	1.5	1.8	1.6	1.5	1.2	1.2	1.3	0.9	0.5	1.2
		2015	0.2	0.3	1.1	1.4	1.6	1.6	1.2	1.2	1.3	1.1	0.7	0.0	1.0
		2016	0.7	0.7	1.4	1.5	1.7	1.5	1.2	1.3	1.2	1.2	0.5	0.5	1.1
		2017	R	R	1.6	1.7	1.6	2.1	1.3	1.2	1.0	0.8	0.5	R	-
		2018	0.5	0.7	1.3	1.7	1.5	1.5	1.5	1.4	1.4	1.1	0.7	0.8	1.2
		2019	0.3	0.8	1.3	1.8	1.7	1.8	1.5	1.5	1.2	1.0	1.0	1.1	1.3
		2020	1.1	1.0	1.4	1.6	M	1.4	1.4	1.3	1.0	1.1	0.8	1.0	1.2
		Average	0.6	0.9	1.4	1.7	1.7	1.6	1.4	1.3	1.3	1.1	0.8	0.6	1.2
Potato Hills Station	1420	2007	-	-	-	-	-	-	-	2.3	2.3	3.0	3.0	0.8	-
		2008	2.8	3.7	3.6	3.6	3.6	3.1	3.1	2.8	1.7	1.3	2.6	3.1	2.9
		2009	3.2	2.5	3.2	3.0	3.1	2.7	2.9	2.0	2.0	3.4	2.3	2.1	2.7
		2010	2.1	2.1	3.9	3.6	2.7	2.0	2.6	2.7	3.0	2.8	1.5	1.0	2.5
		2011	2.0	3.2	3.4	3.2	3.4	2.0	1.8	2.3	1.2	0.4	2.0	1.4	2.2
		2012	0.0	0.2	1.4	2.0	2.9	1.8	1.9	2.0	2.9	2.5	2.6	0.7	1.7
		2013	1.7	0.7	2.9	4.8	2.6	2.3	2.5	1.8	2.9	2.2	2.1	2.2	2.4
		2014	1.6	2.6	2.5	3.0	2.7	M	M	M	M	M	M	M	-
		2015	M	M	M	M	M	M	0.9	1.8	2.5	1.4	0.0	0.0	-
		2016	1.3	2.7	2.8	M	M	M	M	2.1	2.1	1.6	1.3	0.6	-
		2017	2.2	2.8	2.5	3.1	2.6	2.5	M	M	M	M	1.6	1.0	-
		2018	2.8	2.7	2.7	3.2	M	M	M	M	M	2.5	0.7	M	-
		2019	0.7	M	3.0	3.1	M	2.8	2.0	M	M	M	M	M	-
		2020	M	M	M	2.7	M	2.3	2.5	2.4	2.6	2.2	2.5	2.7	-
		Average	1.9	2.3	2.9	3.2	3.0	2.4	2.2	2.2	2.3	2.1	1.9	1.4	2.4

Notes:
1. Zero value for the Potato Hills Station in January 2012 is likely due to icing of the wind sensor.
2. 'M' denotes data missing when there are less than 25 days per month due to a sensor malfunction and R an indicator the wind sensor affected by rime.

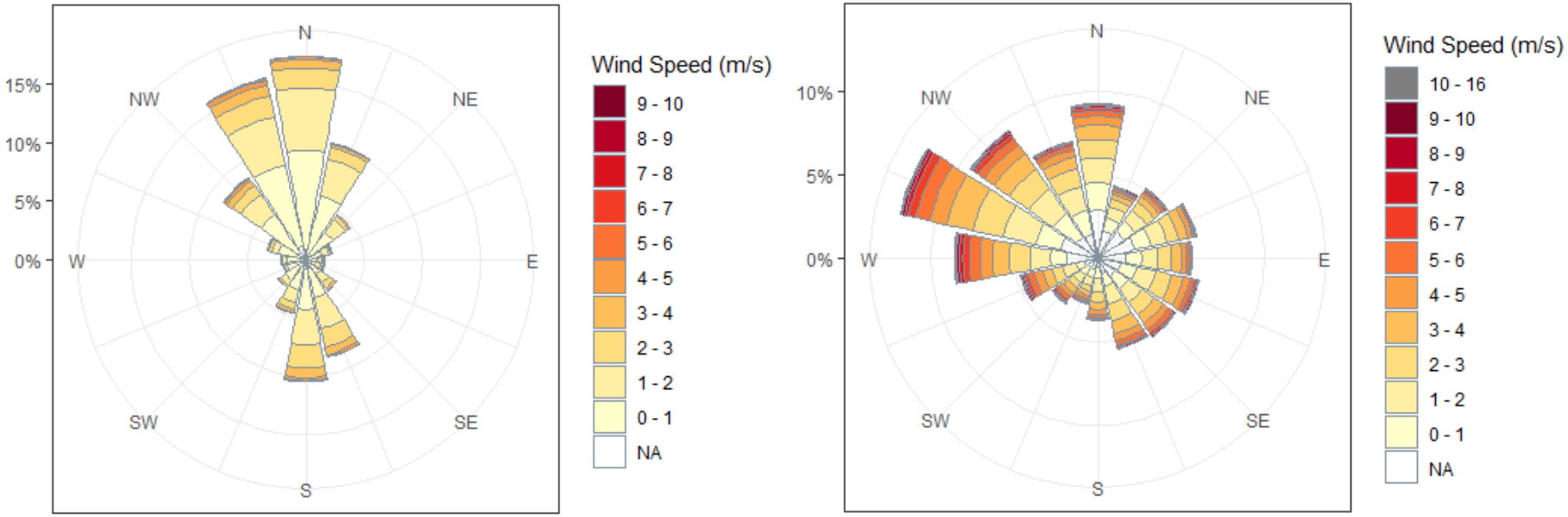

Figure 3-4: Project site wind roses for the Camp station (a) and the Potato Hills station (b). Wind roses are based on hourly averages of 15-minute readings of wind speed and direction.

3.7 Solar Radiation

Solar radiation (or solar irradiance) is a measure of the power per unit area provided by the Sun, in watts per square meter (W/m^2). Given the high-latitude location of the Project site, day length, and therefore solar radiation, fluctuate greatly on a seasonal basis. The average annual minimum of 2 W/m^2 (Camp station) and 3 W/m^2 (Potato Hills station) occur in the month of December, while the average annual maximum of 223 W/m^2 and 224 W/m^2 occur in May at the Camp station and Potato Hills stations, respectively. The Camp station location in the valley bottom results in slightly lower incident solar radiation, presumably due to the shading effect of the surrounding terrain. The monthly average and maximum solar radiation values for both stations are presented in Table 3-7 for their periods of record. Monthly maximum and average solar radiation values at Camp Station from March 2020 to October 2020 were considerably greater than the maximum and average values, respectively, for all other years on record. The deviation from the historical average coincides with servicing and calibration of the station, indicating a possible change introduced during this maintenance.

Table 3-7:
Project site monthly maximum and average incoming solar radiation data.

Climate Station	Elevation (m asl)	Maximum Solar Radiation (W/m^2)												
		Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
Camp Station	782	2011	-	-	-	-	-	-	-	-	-	194	214	28	-
		2012	28	272	716	917	951	801	1022	832	708	423	172	119	1022
		2013	181	291	718	748	951	920	1005	810	741	461	191	38	1005
		2014	35	123	579	838	937	954	913	791	731	403	203	29	954
		2015	39	398	629	845	950	991	965	867	634	470	215	8	991
		2016	142	358	628	852	951	999	951	826	659	391	158	78	999
		2017	28	388	563	904	961	M	M	859	688	381	129	34	-
		2018	224	238	561	833	969	1008	926	885	684	382	84	36	1008
		2019	31	589	617	815	944	954	873	891	644	438	70	73	954
		2020	136	333	827	1087	M	1224	1239	1094	986	530	190	44	1239
		Maximum	224	589	827	1087	1150	1224	1239	1094	986	530	215	119	1239
Potato Hills Station	1420	2007	-	-	-	-	-	-	-	954	714	517	206	67	-
		2008	148	484	564	988	1047	1159	1162	1117	863	344	197	51	1162
		2009	179	302	856	976	979	1118	1086	908	768	488	188	69	1118
		2010	109	396	704	971	1069	1112	1079	944	838	472	247	77	1112
		2011	184	377	802	957	1136	1174	1124	1037	767	441	201	131	1174
		2012	31	34	126	1042	1126	1216	1251	934	897	483	163	78	1251
		2013	124	252	938	787	1071	1199	1233	1026	838	564	243	103	1233
		2014	162	356	667	1127	1021	M	M	M	M	M	M	M	-
		2015	M	M	M	M	M	M	662	1096	766	536	101	71	-
		2016	177	344	823	M	M	M	M	M	M	M	M	M	-
		2017	M	M	M	M	M	M	M	M	M	M	M	M	-
		2018	M	M	M	M	M	M	M	M	M	M	M	M	-
		2019	M	M	M	M	M	M	M	M	M	M	M	M	-
		2020	M	M	M	645	M	758	791	731	545	275	173	74	-
		Maximum	184	484	938	1127	1136	1216	1251	1117	897	564	247	131	1251

Climate Station	Elevation (m asl)	Average Solar Radiation (W/m²)												
		Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
Camp Station	782	2011	-	-	-	-	-	-	-	-	-	40	12	2	-
		2012	3	44	165	263	237	174	184	153	84	42	10	2	113
		2013	4	18	108	181	201	225	198	154	77	36	9	1	101
		2014	2	10	106	162	204	208	183	128	96	23	11	1	95
		2015	2	14	86	155	242	210	176	144	80	32	5	1	96
		2016	4	27	76	150	200	228	170	148	102	49	7	2	97
		2017	2	25	97	173	192	M	M	147	82	28	6	1	-
		2018	6	21	93	178	178	195	204	128	117	44	4	1	98
		2019	2	24	89	162	208	224	203	152	91	30	5	2	99
		2020	5	23	119	245	M	250	264	196	120	53	7	2	136
		Average	3	23	104	185	223	214	198	150	94	38	8	1	100
Potato Hills Station	1420	2007	-	-	-	-	-	-	-	162	87	37	11	2	-
		2008	9	38	98	163	193	222	180	132	83	22	10	3	96
		2009	7	35	95	184	250	228	244	116	81	42	8	3	108
		2010	6	34	96	183	233	210	191	178	115	35	10	3	108
		2011	8	35	106	187	250	221	199	152	100	46	13	7	110
		2012	1	2	6	110	163	189	203	168	93	46	11	3	83
		2013	7	16	112	171	246	245	218	169	82	36	11	3	110
		2014	7	43	122	178	234	M	M	M	M	M	M	M	-
		2015	M	M	M	M	M	M	185	163	89	35	5	1	-
		2016	5	34	94	M	M	M	M	M	M	M	M	M	-
		2017	M	M	M	M	M	M	M	M	M	M	M	M	-
		2018	M	M	M	M	M	M	M	M	M	M	M	M	-
		2019	M	M	M	M	M	M	M	M	M	M	M	M	-
		2020	M	M	M	M	M	180	176	134	78	29	11	2	
		Average	6	30	91	168	224	219	203	155	91	37	10	3	102

Notes:

1. Solar radiation is zero at night.
2. Maximum values are based on an hourly/sub-hourly recording interval, and are calculated based on all available data, including months with fewer than 25 days of data.
3. Zero values are included in the calculation of averages.
4. 'M' denotes data missing when there are less than 25 days per month due to a sensor malfunction

3.8 Potential Evaporation

15-minute potential evaporation rates were computed for the Camp station using available climate and the Ref-ET calculator – a compiled, stand-alone computer program that calculates reference evapotranspiration (ASCE, 2005). For the period of available record (January 2013 to December 2020), a 15-minute climate input file was prepared for the Eagle Gold site. The input variables required by Ref-ET are: maximum air temperature, minimum air temperature, relative humidity, incoming solar radiation, atmospheric pressure and wind speed. Albedo values were estimated to be 0.6 during winter and 0.18 for snow-free months.

From the assembled climate inputs, Ref-ET returned potential evaporation (PE) computations at daily time-step based on an array of evaporation models (*e.g.,* Penman-Monteith model, Priestley-Taylor formulation). Presented in Table 3-8 (monthly tabulations) are resulting outputs from Ref-ET for months March to October. May to end-September PE for the Camp station is estimated to range from 367-448 mm with the Priestley-Taylor equation resulting in average PE estimates similar to values calculated using the Penman-Monteith equation. 2020 PE estimates using the Priestley-Taylor equation substantially exceeded the historical average from April – September. A potential reason for this increase is the abnormally high solar radiation measured at Camp station during this period and the considerable influence exerted by solar radiation in the Priestley-Taylor equation. The highest monthly rates of PE are expected in May, June, July and August of each year.

Table 3-8:
Potential evaporation (PE) estimates for the Camp station.

	Potential Evaporation (mm)										
Period	**Method**	**2012**	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**	**2019**	**2020**	**Average (2012-2020)**
Mar	PM	---	17	21	17	24	18	20	24	17	20
	P-T	---	16	19	16	16	13	25	19	19	18
Apr	PM	---	40	47	47	57	56	51	50	59	51
	P-T	---	40	46	46	48	50	59	47	70	51
May	PM	---	78	91	113	106	97	78	96	76	92
	P-T	---	82	85	108	86	80	83	92	89	88
Jun	PM	---	114	98	97	126	---	94	113	95	105
	P-T	---	116	96	97	109	---	99	109	116	106
Jul	PM	87	102	91	80	91	---	108	106	108	98
	P-T	93	102	90	86	86	---	113	107	130	102
Aug	PM	69	74	55	61	79	83	60	69	75	70
	P-T	70	73	56	63	67	68	67	65	90	69
Sep	PM	36	30	33	27	45	34	44	34	32	35
	P-T	26	24	28	23	30	25	49	30	38	31
Oct	PM	6	3	10	10	12	5	14	4	7	8
	P-T	4	3	4	5	5	4	17	4	6	6
Total (Mar-Oct)	PM	---	461	441	455	541	---	470	496	468	476
	P-T	---	453	419	440	447	---	511	473	559	472
Total (May-Sep)	PM	---	397	367	378	448	---	384	418	386	397
	P-T	---	397	354	378	378	---	410	403	464	398

Notes:

1. PM and P-T Indicate potential evaporation (PE) estimates based on Penman–Monteith and Priestley–Taylor approaches respectively.
2. PE Estimates computed using Eagle Camp/Lower 15-min climate data (*i.e.*, air temperature, relative humidity, wind speed, precipitation, solar radiation and atmospheric pressure measurements) and Ref-Et software

4 Closure

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4 Closure

We trust that this report meets your expectations at this time. Please contact the undersigned with any questions or comments.

Sincerely,

LORAX ENVIRONMENTAL SERVICES LTD.

Prepared by:



Amrit Lally, B.Sc.
Project Hydrologist

Reviewed by:

Scott Jackson, M.Sc., P.Geo.
Senior Hydrologist

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APPENDIX L

Project Annual Air Quality Monitoring Results 2019 and 2020

Table 1.1-3: Project Annual Air Quality Monitoring Results, Jan-Dec 2019

Contaminant	Annual Ambient Air Quality Objectives ($\mu g/m^3$)	Results			No. of Exceedances
		Min	Max	Mean	
PM10	*	0.4	196.2	12.4	0
PM25	8.80	-0.7	172.3	5.1	0
TSP	60.00	-0.7	172.3	5.0	0

Note: * no Annual Ambient Air Quality Objectives outlined in the Yukon Standard

Table 1.1-4: Project Air Quality Monitoring Results, Jan-Dec 2019

Contaminant	24hr Ambient Air ($\mu g/m^3$)	Results			No. of Exceedances
		Min	Max	Mean	
PM10	50.00	0.4	196.2	11.3	10
PM25	27.00	-0.7	172.3	4.6	16
TSP	120.00	-0.7	172.3	4.7	2

Table 1.1-3: Project Annual Air Quality Monitoring Results, Jan-Dec 2020

Contaminant	Annual Ambient Air Quality Objectives ($\mu g/m^3$)	Results			No. of Exceedances
		Min	Max	Mean	
PM10	*	-0.6	30.2	6.1	0
PM25	8.80	-0.6	17.0	1.6	0
TSP	60.00	-0.6	17.6	2.1	0

Note: * no Annual Ambient Air Quality Objectives outlined in the Yukon Standard

Table 1.1-4: Project Air Quality Monitoring Results, Jan-Dec 2020

Contaminant	24hr Ambient Air ($\mu g/m^3$)	Results			No. of Exceedances
		Min	Max	Mean	
PM10	50.00	-0.6	30.2	5.1	0
PM25	27.00	-0.6	17.0	1.3	0
TSP	120.00	-0.6	17.6	1.7	0

APPENDIX M

Vegetation and Soil Monitoring at the Eagle Gold Project 2020

VEGETATION AND SOIL MONITORING AT THE EAGLE GOLD PROJECT 2020

(Sections 12 and 13 of the EMSAMP, Version 2020-01)

For

Victoria GOLD CORP

Submitted by

Laberge Environmental Services

November 2020

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3 Graphical Representation of the Range of Metals in Vegetation Tissues 12

1.0 INTRODUCTION

The vegetation monitoring program has been designed to evaluate changes to vegetation during the life of the Eagle Gold Project. Specifically, metal burden in and on plant tissues is measured annually during the growing season of each year to help identify whether any trends may be attributed to the Project. The 2020 survey is the third year of the program.

The soils monitoring program was designed to provide data to determine changes to metal and nutrient levels in soils adjacent to the mine and to identify whether any changes could be attributable to Project activities.

The Environmental Monitoring, Surveillance and Adaptive Management Plan (EMSAMP), Version 2020-01, identifies four areas located within the Project area for the establishment of permanent vegetation and soil plots. These sites are also the locations of dust fall monitoring installations.

An additional dust fall station was established during 2020 as contemplated in the Air Quality Monitoring Plan (dated August 2019). A vegetation plot was also established at this site during 2020.

2.0 METHODS

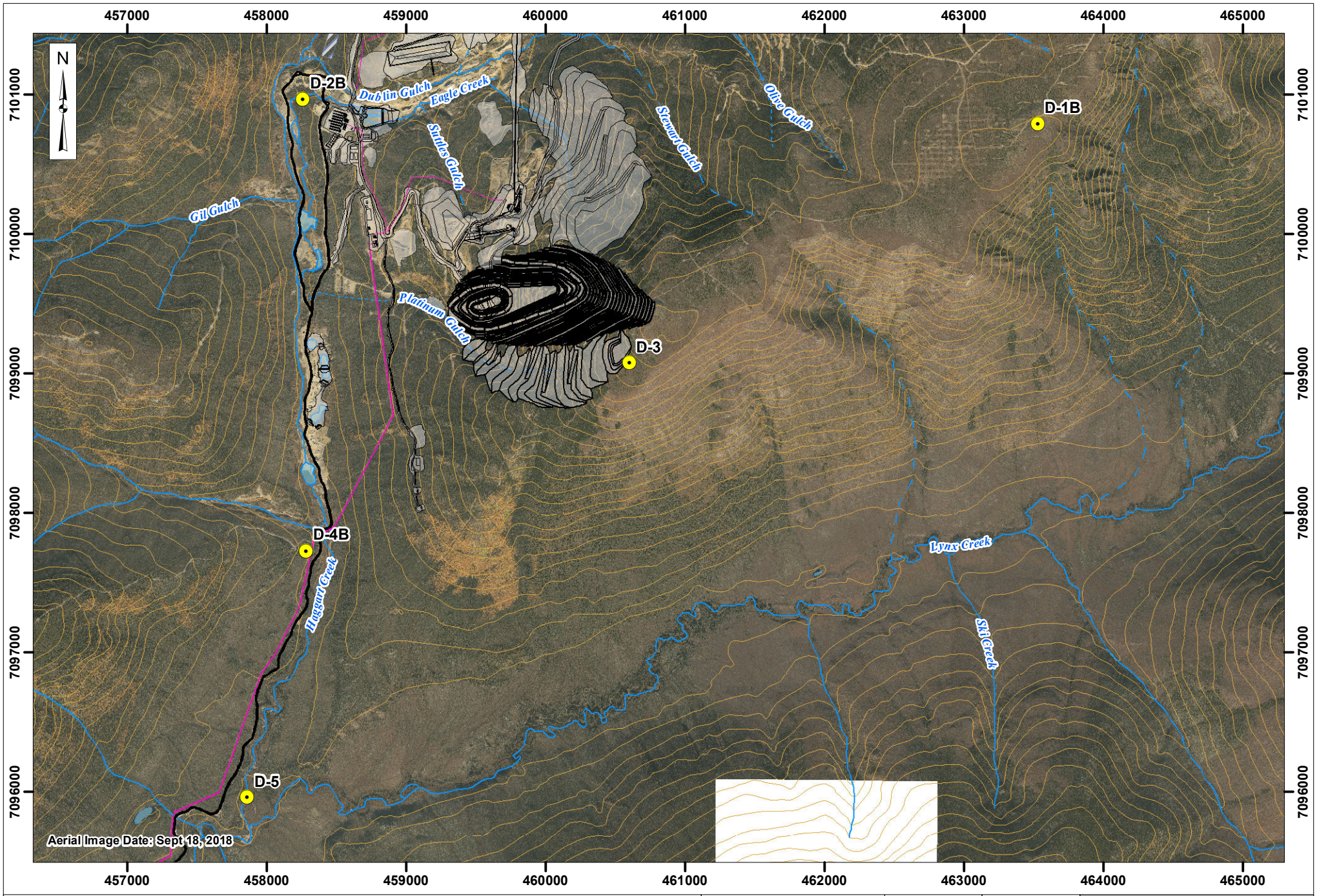
The original four sites were established in each of the identified quadrants with initial assessments and collections completed in early August 2018 (Laberge, 2018a). Two of these original sites (D-1 and D-3) were assessed and sampled again on July 11, 2019. Due to construction requirements, alternate sites for D-2 (approximately 70 m from original site) and D-4 (approximately 300 m south of the original site) were established and sampled as D-2B on July 10, 2019 and D-4B on July 12, 2019.

During late spring of 2020 part of site D-1 was impacted by a snowplow as it was clearing site roads. This site was re-located 40 m south of the original site and assessed and renamed D-1B. A new site (D-5) was established in 2020 by the dust fall station that had been launched near the confluence of Haggart Creek and Lynx Creek. In early August 2020, sites D-1B, D-2B, D-3, D-4B and D-5 were assessed.

Descriptions and locations are detailed in Table 1 and displayed on Figure 1. The coordinates of each site represent the centre point for that site. Four corner points were then established in cardinal directions 10 metres from the centre. The plot layout is represented in Figure 2. For each plot the five points were identified with fluorescent painted half-inch diameter rebar, 50 cm long.

TABLE 1 LOCATION AND DESCRIPTION OF VEGETATION AND SOIL SITES

Site #	NAD 83 Zone 8W		Aspect	Elevation (m)	Site Description
	Easting	Northing			
D-1B	463530	7100794	level	1437	Potato Hills near climate station, 40 m south of the original site D-1.
D-2B	458256	7100972	west	791	Upslope of the air quality station and the camp climate station, south side of Eagle Cr. Within influence.
D-3	460598	7099079	south west	1356	Top of Eagle Pup near the over-the-top road. Within influence.
D-4B	458279	7097731	east	751	On the west side of the access road south of the Haggart Cr culverts and the power line, downwind of influence.
D-5	457857	7095962	level	720	Near surface water quality site W5, Haggart Creek upstream of Lynx Creek, downwind of influence.



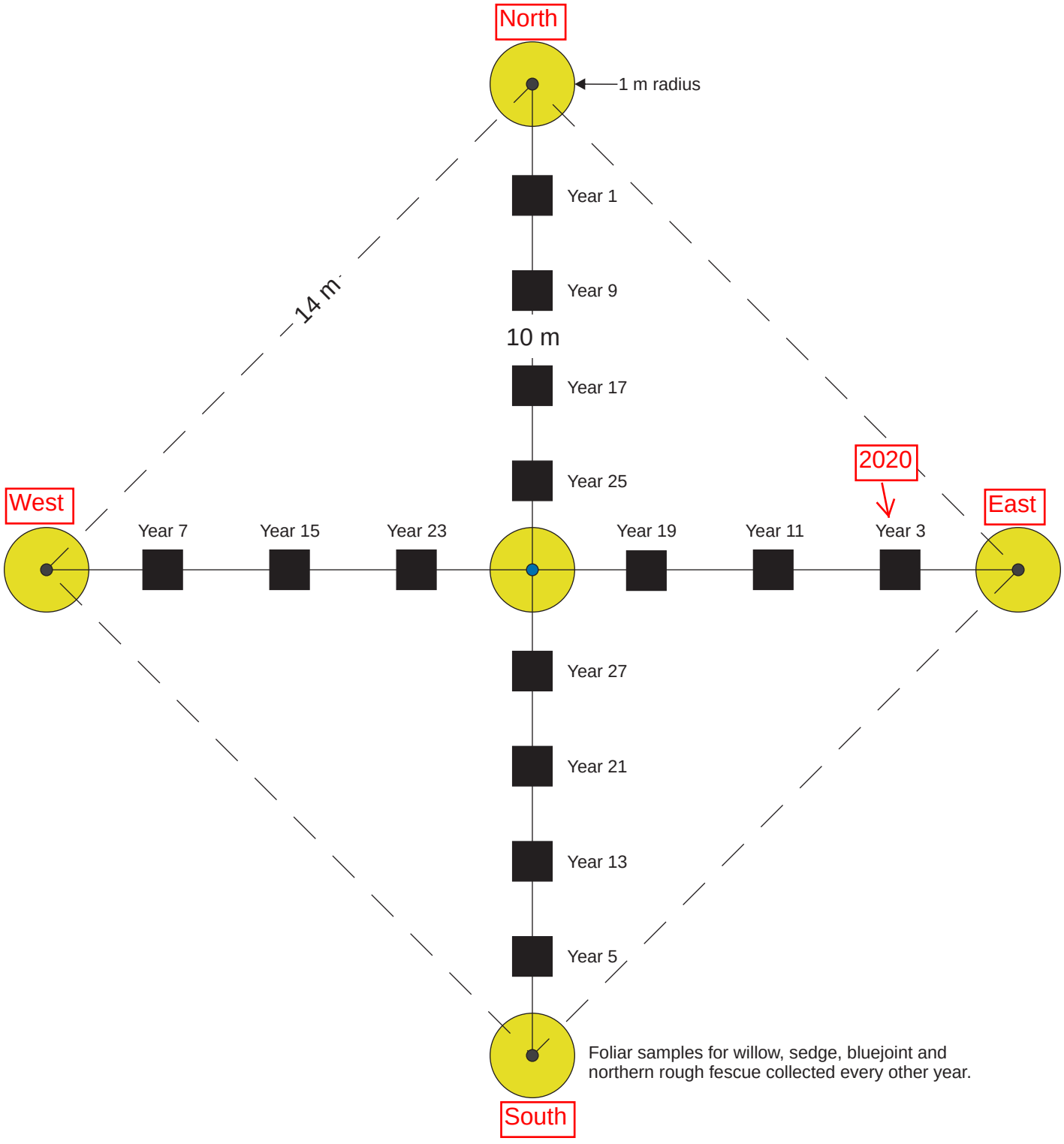
Legend:

- Vegetation & Soils Monitoring Locations
- Major Facility
- Site Power
- Contour (100ft)
- Reserved Area
- Watercourse - Perennial
- Watercourse - Ephemeral
- Watercourse - Intermittent

VICTORIA GOLD CORP

0 250 500 1,000
Metres

Projection:	Drawn By:	EAGLE GOLD MINE YUKON TERRITORY
NAD 83 UTM Zone 8N	HC	
Date:	Figure:	Vegetation and Soil Monitoring Locations
2020/10/19		



Legend:

1 m radius

Vegetation sample plot locations; painted ½ inch rebar to locate centre and corner plots; foliar samples collected every other year.

Soil sampling locations, surface horizon between 0 and 0.5 m depths; one sample every other year.

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YUKON TERRITORY

Vegetation and Soil Monitoring Plot Layout

Projection:	Drawn By:	Date:	Figure:
N/A	SS	2014/07/02	2

2.1 Vegetation Assessments

At each site, circle plots of one-meter radius, were flagged around each of the rebars that were located at the centre, north, south, east and west points. The EMSAMP states that foliar samples of willow (*Salix* spp.), sedge (*Carex* spp.), bluejoint (*Calamagrostis canadensis*) and northern rough fescue (*Festuca alpaca*) are to be collected within these five two-meter diameter plots. As each of these five vegetation sites are located in different ecosystem units, not all species were present at each site and substitutions were made where applicable. Duplicates were not collected during this field sampling program. Duplicate collection of selected vegetation samples is attempted for the purpose of QA/QC of laboratory analytical techniques if sufficient vegetation is available.

New disposable nitrile gloves were worn for each collection and tissues were placed in new resealable plastic bags. Where possible, separate samples were collected for willow leaves and the current season's growth of twigs. Due to their presence at most of the plots, and the fact they also have reasonable surface area for dust deposits, dwarf birch (*Betula glandulosa*) leaves were also sampled. As in previous years (except for the original location of D-4 in 2018) sedge and bluejoint were not present in collectable quantities at any of the sites. Fescue biomass was sufficient for collection at D-1B only. Other species were substituted that were present at the plots. Table 2 lists the foliar samples that were collected and analyzed per plot.

TABLE 2 FOLIAR SAMPLES COLLECTED PER PLOT, 2020

SITE #	PLOT #	WILLOW LEAVES	WILLOW TWIGS	DWARF BIRCH LEAVES	EQUISETUM	FESCUE	PAPER BIRCH LEAVES	PAPER BIRCH TWIGS	BLUE-BERRIES	POPLAR LEAVES	POPLAR TWIGS
D-1B	Centre	√		√		Composite, gathered throughout site					
	North	√		√							
	East	√									
	South	√		√							
	West	√		√							
D-2B	Centre	√	√								
	North	√	√		√						
	East						√	√			
	South	√	√	√							
	West	√	√		√						
D-3	Centre	√		√							
	North	√		√							
	East			√							
	South	√		√							
	West	√	√	√							
D-4B	Centre			√	√						
	North	√	√		√						
	East	√		√					√		
	South	√	√								
	West	√	√	√							
D-5	Centre	√	√		√						
	North	√	√								
	East									√	√
	South				√					√	√
	West	√	√								
# of individual samples:		20	11	13	6	1	1	1	1	2	2

A total of 58 foliar samples were collected and kept cool until delivered to the ALS depot in Whitehorse, Yukon. After they were logged in, the samples were frozen and shipped to the ALS laboratory in Burnaby, BC for analysis. Analysis was performed on unrinsed tissues as in the past

surveys, and thus data includes dust deposition as well as metal uptake from the soil.

The foliar samples were homogenized and sub-sampled prior to hot-block digestion with nitric and hydrochloric acids, in combination with the addition of hydrogen peroxide. Metals were analyzed using collision cell inductively coupled plasma-mass spectrometry. Analysis for mercury was done by atomic fluorescence or atomic absorption spectrophotometry.

2.2 Soil Characterization

Soil samples were collected as per the protocols detailed in the EMSAMP (2020-01). Specifically, one soil sample was collected from each site, 2.5 m in from the east plot as indicated by "Year 3" on Figure 2. Samples were collected with a stainless steel trowel from a depth of 0 to 0.5 m below the litter layer. Samples were transferred into clean glass jars for metal analysis. New nitrile gloves were worn prior to sampling to prevent cross-contamination between sites. Samples were kept cool until delivered to the ALS lab/depot in Whitehorse, Yukon. Samples were analyzed for pH, metals, texture, and available nitrite, nitrate, phosphate and potassium.

3.0 RESULTS

3.1 Description of the Vegetation Sites

The five 200 m^2 established sites lie within two ecological zones; the Subalpine Zone where the elevation is greater than 1225 masl and the Forested Zone which includes the treed areas on the mountain slopes and the valley bottoms (Stantec, 2011b). D-1B and D-3 are located in the Subalpine Zone and D-2B, D-4B and D-5 are in the Forested Zone. Selected photographs of the sites are presented in Appendix A.

D-1
D-1B was re-established to approximately 40 meters west of the Potato Hills Climate station upgradient of significant Project infrastructure. Stantec (2011b) conducted ecosystem mapping throughout the Eagle Gold Project area in 2009. The polygon that contains D-1B is classified as 50% Dwarf Birch and Lichen, 40% Dwarf Birch and Northern Rough Fescue and 10% Subalpine Fir, Dwarf Birch, Crowberry and Lichens (Stantec, 2011b, Appendix 11, Part 1).

Within the boundary of D-1B, as observed in 2019, dwarf birch was the dominant species followed by willow. Tree species were solitary sporadic subalpine fir. There was exposed rock and talus throughout the site with the majority encrusted with lichen. A diversity of forbs was noted. The following plants were identified within D-1B:

Common Name	Scientific Name
Subalpine Fir	*Abies lasiocarpa*
White Spruce	*Picea glauca*
Dwarf Birch	*Betula glandulosa*
Willow	*Salix* sp.
Diamond Leaf Willow	*Salix pulcha*
Willow	*Salix richardsonii*
Northern Labrador Tea	*Rhododendron tomentosum*
Low Bush Cranberry	*Vaccinium vitis-idaea*
Blueberry	*Vaccinium uliginosum*
Arctic White Heather	*Cassiope tetragona*

Common Name	Scientific Name
Crowberry	*Empetrum nigrum*
Colt's Foot	*Petasites frigidus* var. *sagittatus*
Lupine	*Lupinus arcticus*
Mountain Sagewort	*Artemisia norvegica*
Anemone	*Anemone narcissiflora*
Richardson's Anemone	*Anemone richardsonii*
Labrador lousewort	*Pedicularis labradorica*
Spike Trisetum	*Trisetum spicatum*
Altai fescue	*Festuca altaica*
Heron bill moss	*Dicranum sp. – D. acutifolium?*
Red-stemmed feather moss	*Pleurozium schreberi*
Haircap moss	*Polytrichum sp.*
Arctic butterfingers lichen	*Dactylina arctica*
Star reindeer lichen	*Cladina stellaris*
Grey reindeer lichen	*Cladina rangiferina*
Club lichen	*Cladonia* spp.
Arctic kidney lichen	*Nephroma arcticum*
Alpine foam lichen	*Stereocaulon alpinum*
Rockstripe lichen	*Umbilicaria torrefacta*
Green crusticose lichen	*Aspicilia caesiocinerea*
Common freckle pelt lichen	*Peltigera aphthosa*
Caribou horn tumbleweed lichen	*Masonhalea richardsonii*

D-2B

D-2B is located east of the camp weather station on the south side of Eagle Creek, approximately 70 m south of the original D-2. Stantec (2011b) classified the polygon where D-2B is located as 80% Black spruce, Labrador Tea and Feathermoss and 20% Subalpine Fir, Crowberry and Lichen.

Tree species found within the boundary of site D-2B consisted of white spruce, trembling aspen, balsam poplar and paper birch, which is consistent with the D-2 site located approximately 70 m north that was sampled in 2018. Willows were the dominant shrub species. Equisetum (horsetail) and grasses were the dominant ground cover. Forbs and other shrubs were also present. Moose scat was observed throughout the plot.

The following plants were identified at D-2B:

Common Name	Scientific Name
Balsam poplar	*Populus balsamifera*
Trembling aspen	*Populus tremuloides*
White spruce	*Picea glauca*
Alaska paper birch	*Betula neoalaskana*
Green alder	*Alnus viridis* subsp. *crispa*
Kinnikinnick	*Arctostaphylos uva-ursi*
Black crowberry	*Empetrum nigrum*
Diamond Leaf Willow	*Salix pulchra*
Scouler's Willow	*Salix scouleriana*
Felt-leaf willow	*Salix alaxensis*
Little-tree willow	*Salix arbusculoides*

Common Name	Scientific Name
Grey-leaved willow	*Salix glauca*
Blueberry willow	*Salix myrtillifolia*
Dwarf Birch	*Betula glandulosa*
Labrador Tea	*Rhododendron groenlandicum*
Low Bush Cranberry	*Vaccinium vitis-idaea*
Bog blueberry	*Vaccinium uliginosum*
Prickly rose	*Rosa acicularis*
Soapberry	*Shepherdia canadensis*
Alpine milk-vetch	*Astragalus alpinus*
Fireweed	*Chamerion angustifolium*
Alpine sweet-vetch	*Hedysarum alpinum*
Arctic sweet coltsfoot	*Petasites frigidus*
Wintergreen	*Pyrola sp.*
Grass-of-Parnassus	*Parnassia palustris*
Northern green bog orchid	*Habenaria hyperborea*
Small tofieldia	*Tofieldia pulsilla*
Hedysarum	*Hedysarum alpina*
Common horsetail	*Equisetum arvense*
Dwarf scouring-rush	*Equisetum scirpoides*
Small sedge	*Carex* sp.
Altai fescue	*Festuca altaica*
Fire moss	*Ceratadon purpureus*
Step moss	*Hylocomium splendens*
Red-stemmed feather moss	*Pleurozium schreberi*
Star reindeer lichen	*Cladina stellaris*
Grey reindeer lichen	*Cladina rangiferina*
Club lichen	*Cladonia* spp.
Crinkled snow lichen	*Flavocetraria nivalis*
Common freckle pelt lichen	*Peltigera apthosa*
Alpine foam lichen	*Stereocaulon alpinum*

D-3

D-3 is located in a subalpine setting above Platinum Gulch. The site itself has not been disturbed however the waste rock dump has encroached closer to the site. The ecosystem classification in the polygon where D-3 is situated is 50% Dwarf Birch and Northern Rough Fescue, 40% Dwarf birch and Lichen, and 10% Subalpine Fir, Dwarf Birch, Crowberry and lichens (Stantec, 2011b).

As observed in 2018 and 2019, within the boundaries of D-3 dwarf birch was the dominant species with scattered subalpine fir and white spruce. Willows, berry bushes, lichens and moss were also present.

The following plants were identified at D-3:

Common Name	Scientific Name
Subalpine Fir	*Abies lasiocarpa*
White Spruce	*Picea glauca*
Grey-leaved Willow	*Salix glauca*
Diamond Leaf Willow	*Salix pulchra*

Common Name	Scientific Name
Dwarf Birch	*Betula glandulosa*
Low Bush Cranberry	*Vaccinium vitis-idaea*
Blueberry	*Vaccinium uliginosum*
Crowberry	*Empetrum nigrum*
Labrador tea	*Rhododendron groelandicum*
Labrador Lousewort	*Pedicularis labradorica*
Anemone	*Anemone narcissiflora*
Mountain sagewort	*Artemisia norvegica*
Caespitose fleabane	*Erigeron caespitosus*
Labrador lousewort	*Pedicularis labradorica*
Altai fescue	*Festuca altaica*
Alpine bluegrass	*Poa alpina*
Woodrush	*Luzula parviflora*
Glow moss	*Aulacomnium palustre*
Broom moss	*Dicranum* sp. *– D. acutifolium?*
Haircap moss	*Polytricum* sp.
Red-stemmed feather moss	*Pleurozium schreberi*
True Iceland lichen	*Cetraria islandica*
Club lichens	*Cladonia* spp.
Crinkled snow lichen	*Flavocetraria nivalis*
Arctic kidney lichen	*Nephroma arcticum*
Star reindeer lichen	*Cladina stellaris*
Caribou horn	*Masonhalea richardsonii*
Common freckle pelt lichen	*Peltigera aphthosa*

D-4B

D-4B is located in the Forested Zone downstream of the Haggart Creek culverts on the west side of the road just past the power line in an undisturbed area of the natural forest. The ecosystem classification in the polygon in which D-4B is situated is 60% subalpine fir, crowberry and lichens, 30% black spruce, Labrador tea and feathermoss and 10% Alaska paper birch, white spruce and willow (Stantec 2011b). This is somewhat different to the classification of D-4, sampled in 2018, which was located in the Haggart Creek floodplain, and classified as river/creek system with gravel bars and 20% as an ecosystem type of White Spruce and Horsetail.

Alaska paper birch, white spruce, black spruce and trembling aspen were the tree species identified within the boundaries of plot D-4B. Many species of shrubs dominated the site notably willows and dwarf birch. Moss and lichens were common. Berries were prolific on the bog blueberry, cranberry, crowberry and bearberry shrubs.

The following plants were identified at D-4B:

Common Name	Scientific Name
Alaska paper birch	*Betula neoalaskana*
White spruce	*Picea glauca*
Black spruce	*Picea mariana*
Trembling aspen	*Populus tremuloides*
Green alder	*Alnus viridis* subsp. *crispa*
Red bearberry	*Arctos rubra*

Common Name	Scientific Name
Glandular scrub birch	*Betula glandulosa*
Water birch	*Betula occidentalis*
Shrubby cinquefoil	*Dasiphora fruticosa*
Black crowberry	*Empetrum nigrum*
Labrador tea	*Rhododendron groenlandicum*
Prickly rose	*Rosa acicularis*
Arctic willow	*Salix arctica*
Barclay's willow	*Salix barclayi*
Bebb's willow	*Salix bebbiana*
Grey-leaved willow	*Salix glauca*
Blueberry willow	*Salix myrtillifolia*
Diamond leaved willow	*Salix pulchra*
Small cranberry	*Vaccinium oxycoccos*
Bog blueberry	*Vaccinium uliginosum*
Lowbush cranberry	*Vaccinium vitis-idaea*
Twinflower	*Linnaea borealis*
Arctic lupine	*Lupinus arcticus*
Tall bluebells	*Mertensia paniculata*
Labrador lousewort	*Pedicularis labradorica*
Arctic sweet coltsfoot	*Petasites frigidus*
Hooded ladies' tresses	*Spiranthes romanzoffiana*
Small tofieldia	*Tofieldia pulsilla*
Common horsetail	*Equisetum arvense*
Dwarf scouring rush	*Equisetum scirpoides*
Woodland horsetail	*Equisetum sylvaticum*
Bristly club-moss	*Lycopodium annotinum*
Polar grass	*Arctagrostis latifolia*
Bigelow sedge	*Carex consimilis*
Glow moss	*Aulacomnium palustre*
Bryum family moss	*Bryacease* sp. – *Pohlia nutans?*
Broom mosses	*Dicranum* spp.
Red-stemmed feather moss	*Pleurozium schreberi*
Haircap moss	*Polytricum* sp.
Narrow-leaved peat moss	*Sphagnum angustifolium?*
Warnstorf's peat moss	*Sphagnum warnstorfii?*
Golden fuzzy fen moss	*Tomenthypnum nitens*
True Iceland lichen	*Cetraria islandica*
Grey reindeer lichen	*Cladina rangiferina*
Star reindeer lichen	*Cladina stellaris*
Club lichens	*Cladonia* spp.
Crinkled snow lichen	*Flavocetraria nivalis*
Candy lichen	*Icmadophila ericetorum*
Reindeer tumbleweed lichen	*Masonhalea richardsonii*
Arctic kidney lichen	*Nephroma arcticum*
Common freckle pelt lichen	*Peltigera apthosa*
Undulating pelt lichen	*Peltigera neopolydactyla*

D-5

D-5 is located in the Forested Zone near Haggart Creek and water quality station W-5. According to Stantec's ecosystem mapping (2011) site D-5 lies in the 100% White Spruce Horsetail unit within the active floodplain. D-5 was set up so that one of the plots was located in the riparian zone. Balsam poplar saplings were common. Shrubs and forbs were common in the forested section and horsetail was the dominant ground cover.

The following plants were identified at D-5:

Common Name	Scientific Name
White spruce	*Picea glauca*
Balsam poplar	*Populus balsamifera*
River alder	*Alnus incanna*
Grey-leafed willow	*Salix glauca*
Shrubby cinquefoil	*Potentilla fruticosa*
Soapberry	*Shepherdia canadensis*
Kinnikinnick	*Arctostaphylos uva-ursi*
Crowberry	*Empetrum nigrum*
Blueberry	*Vaccinium uliginosum*
Hedysarum	*Hedysarum alpinum*
Pussytoes	*Antennaria microphylla*
Fireweed	*Chamerion angustifolium*
Jacob's ladder	*Polemonium pulcherrimum*
Bearberry	*Arctos rubra*
Bastard toad-flax	*Geocaulon lividum*
Green kidney lichen	*Nephroma arcticum*
Common freckle pelt lichen	*Peltigera aphthosa*
Tree lichen	*Parmelia sulcata*
Common horsetail	*Equisetum arvense*
Feather moss	*Pleurozium schreberi*
Numerous species of mushrooms	

It should be noted that no invasive plant species were identified at any of the plots nor on route to the plots during the 2020 survey.

3.2 2020 Metals Data in Vegetation

Foliar samples were collected from each site and where possible from each of the five plots at each site (Table 2). Willows were collected from all of the sites and most of the individual plots, followed by dwarf birch. The majority of the willows were *Salix pulchra*, diamond leaf willow, and this species was present at all of the sites. There was insufficient biomass for the collection of fescue (*Festuca altaica*) except at site D-1B where the grass sample was gathered throughout the site. With the addition of site D-5 an additional species was collected for foliar analysis, balsam poplar. Since it was such a good berry year, a sample of blueberries was collected at D-4B for analysis.

The analytical tissue reports for monitored vegetation species and plots are presented in Appendix B. Samples were analyzed for a suite of 34 metals including mercury.

The range of concentrations of each parameter for all vegetation types per site is summarized in Table B-1 (in Appendix B). There are no territorial or federal guidelines regarding metal concentrations in vegetation with respect to wildlife consumption (e.g., moose, caribou and/or bear). For reference, Stantec (2011b) compared the 2009 Eagle Gold foliar data to the dietary tolerances for beef cattle (Puls, 1994). These toxic values have also been included in Table B-1. For the majority of the metals compared against these same dietary tolerances, concentrations in the 2020 foliar samples were well below these levels. The exception to this was selenium. The toxic threshold for selenium was exceeded in one Equisetum tissue sample (29.2 mg/kg) collected from the north plot of D-2B, however all other selenium samples within D-2B were well below the selenium guideline. This reflects the 2019 data where a concentration of 26.7 mg/kg was documented in equisetum tissues at the same plot. Barium does not have a toxic threshold however a concentration of 20 mg/kg was considered high by Puls (1994). This value was exceeded in many of the foliar samples collected from all of the sites in 2018, 2019 and 2020.

Potential emissions related to the gold recovery process include the metals arsenic, cadmium, chromium, mercury and lead (EMSAMP, 2020-01). These metals were averaged per vegetation type for the five collection plots at each site. These data were sorted from lowest concentration to highest and charted on Figure 3 to help assess potential relationships between tissue type and location. Mercury was not charted due to the high number of non-detections and any detected concentrations were very low.

Overall, blueberries collected from D-4B had the lowest arsenic levels (0.106 mg/kg), followed by all tissue types collected from D-1. The greatest average concentration of arsenic was documented in willow leaves (n=4) collected from D-3. The single highest concentration of arsenic, 7.18 mg/kg, was found in the willow leaves sampled from the centre plot at D-3 (Appendix B). Although there is not a toxic threshold for arsenic, the value given in Table B-1 indicates a normal or adequate concentration; all concentrations were less than this.

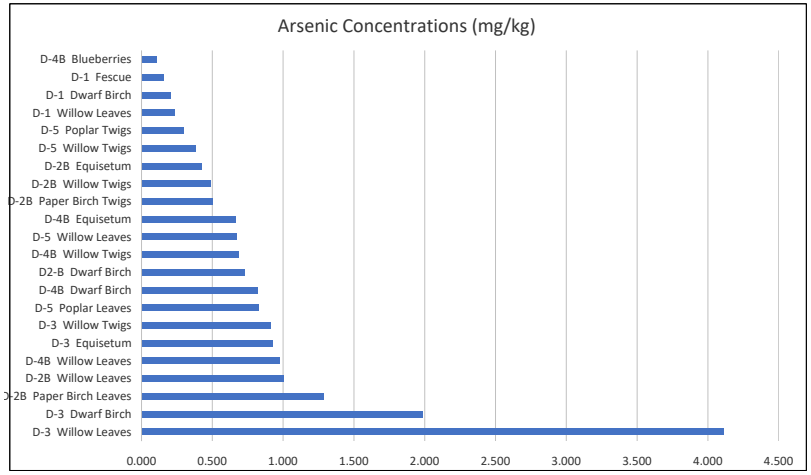
Cadmium concentrations were very low in the fescue and dwarf birch tissues unrelated to the site they were collected from and were similar to values reported in 2018 and 2019. The highest average concentrations of cadmium were documented in the willow leaves collected from D-1, then followed by willow leaves from D-2B, which had the highest concentration in 2019. Willow leaves and twigs from the other sites also had higher levels than were documented in 2019. However, these values are consistent with the findings from 2018 and are very low and well below the referenced toxic level (Table B-1).

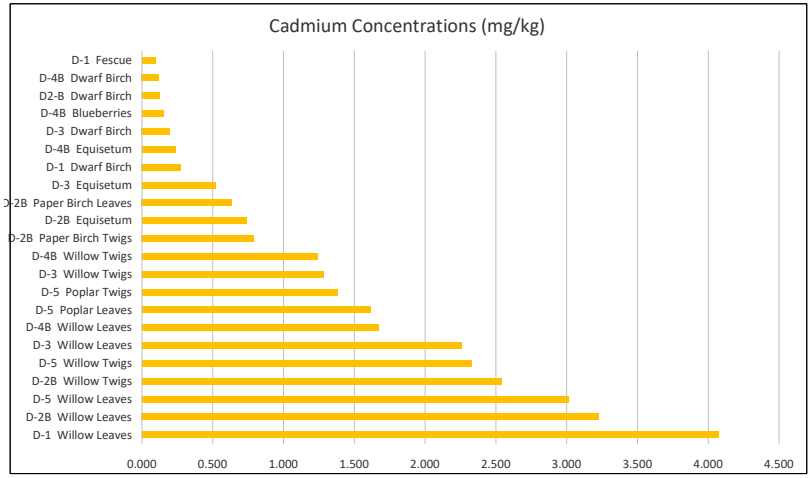
Chromium concentrations were low at most of the sites and in most of the tissues. The highest concentration was documented in the willow twigs (n=1) at D-3 with a value of 0.828 mg/kg. Levels were also quite high in the willow leaves from D-2B and D-3 and in the paper birch twigs compared to the other tissue types. However all concentrations were well below the toxicity threshold.

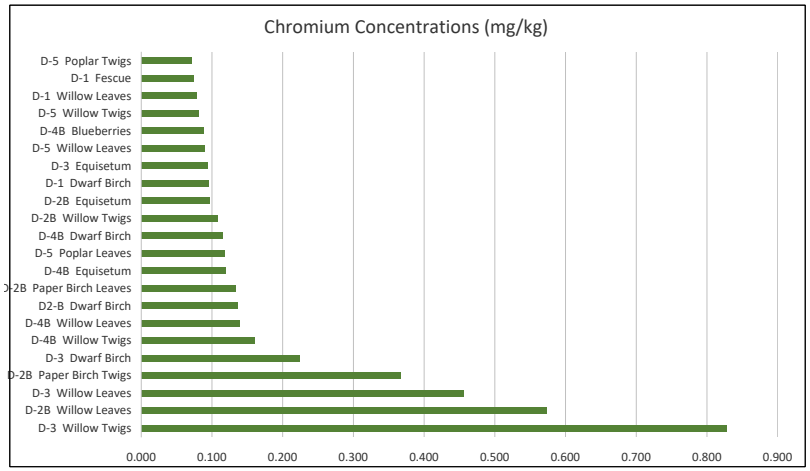
Lead levels were low in the blueberry and Equisetum tissues. The highest concentration was reported in the willow leaves at D-3 (n=4) with an average of 0.989 mg/kg, an almost tripling of the concentration in 2019. This concentration is well below the toxicity threshold of 100 mg/kg.

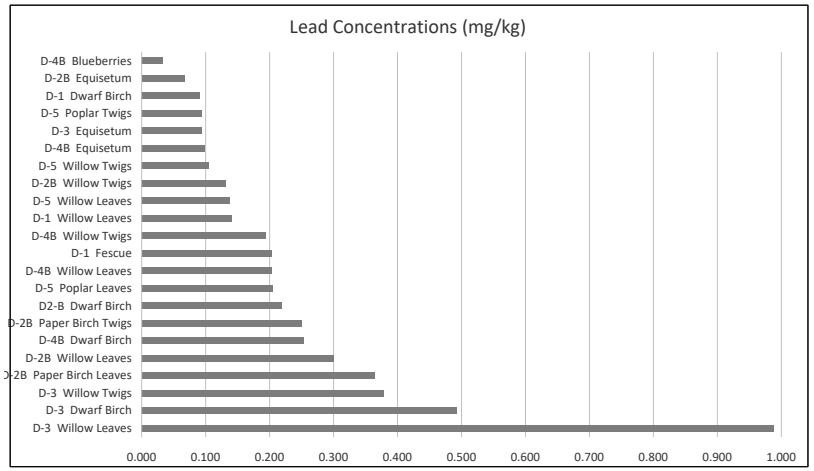
Mercury levels were very low in the tissues at all of the sites (no exceedances) and were not detected in any of the willow or paper birch twigs or in the fescue tissues.

FIGURE 3 **GRAPHICAL REPRESENTATION OF METALS IN VEGETATION TISSUES, 2020**









3.3 Previous Vegetation Data

Foliar samples for tissue analysis have been collected in 2018, 2019 and 2020. The selected metal concentrations in the tissue samples have been tabulated per site, per year, per tissue type, in Table B-2 in Appendix B. Foliar samples have been collected for three years, however not all sites have been in consistent locations. Site D-3 is the only site where vegetation tissue samples have been collected every year. Data from all three years for site D-1B have also been included since the location was only shifted by approximately 40 m in 2020 and therefore should be relatively representative of conditions. Site D-5 has only one set of data and has not been included below or in Table B-2. General observations of the data with some discussion are listed below:

- Arsenic, cadmium and lead concentrations were higher in 2020 in all tissue types at D-1. This site was moved slightly in 2020 which may attribute to the increase.

- Site D-2B has only 2 sets of data as it was relocated in 2019. Concentrations are fairly similar between the two years with some minor fluctuations.

- Three consecutive years of data exist for D-3. There has been an increase each year of all of the selected metals in the willow leaves. Average concentrations of arsenic, chromium, lead and mercury in the dwarf birch tissue leaves have increased over time. Arsenic, lead and notably chromium have increased in the willow twigs over the course of the three years. The Platinum Gulch waste rock storage area (WRSA) has encroached closer to D-3 during the time period. It is likely that dust generated from the off loading of waste rock to the storage area has possible lead to the increase in tissue concentrations. The summer season's dust fall data on metal concentrations don't support this (unpublished data), however an analysis of the data over the monitoring period has not been done for this report. The 2020 precipitation data from the Potato Hills Climate station shows that 103.0 mm and 9.2 mm of rain fell during the month of July and the first days of August prior to sampling, respectively, and may have created a rinsing effect of the foliage. Conversely, during rainy periods, the stomatal openings and cuticles expansion favour high level of metal leaf penetration from atmospheric deposition (Shahida, 2017). No dust accumulations were observed on the vegetation during the collection process. Little is known about heavy metal uptake by plant leaves from the atmosphere however studies have shown that non-essential metals such as lead, cadmium, chromium and arsenic can enter plant leaves via foliar transfer (Shahida, 2017). Plants also uptake metals from the soil. The soil data are presented and discussed in Section 3.4.

- Site D-4B has two sets of data due to relocation of the site in 2019. Data were generally similar each year although it appears that chromium concentrations decreased in all tissue types, and lead levels slightly increased in 2020.

3.4 Soil Analyses

Soil samples were collected from all five sites 2.5 m in from the east plot and represent Year 3 (see Figure 2). Note that this is the first year that soil has been collected at Site D-5. Permafrost was encountered at 20 cm beneath the moss layer at D-4B.

The soil samples were analyzed for a range of parameters. The analytical report is presented in Appendix C.

The soil samples were sieved and based on the distribution of grain size less than 2mm, texture was determined (Table 3). The texture of the soil was generally either sandy or silty loam.

TABLE 3 PARTICLE SIZE AND TEXTURE, AUGUST 2020					
Site	**D-1B**	**D-2B**	**D-3**	**D-4B**	**D-5**
% Sand (2.0mm - 0.05mm)	21.92	53.62	44.35	45.87	84.69
% Silt (0.05mm - 0.002mm)	68.51	41.13	48.91	45.7	14.36
% Clay (<0.002mm)	9.57	5.24	6.74	8.43	0.95
Texture Class	Silt Loam	Sandy Loam	Loam /Sandy Loam	Loam	Loamy Sand

Nutrients and available plant nutrients were analyzed and summarized in Table 4. The soil at D-3 D-4B had greater total nitrogen content than the other three sites. Available Nitrate + Nitrite and Nitrite were not detected in any of the samples. Available Phosphate was just over the detection limit at D-1B, D-2B and D-3. Available potassium ranged from 31 mg/kg at D-1B to 134 mg/kg at D-3. Potassium is a primary nutrient used in large quantities by plants. The range of 80 to 250 ppm is where plant growth is optimal (Legg, n.d.). The soil at D-2B and D-3 fell within this range.

TABLE 4 PLANT NUTRIENTS, AUGUST 2020					
Site	**D-1B**	**D-2B**	**D-3**	**D-4B**	**D-5**
Nutrients					
Total Nitrogen %	0.091	0.086	0.188	0.165	0.049
Plant Available Nutrients					
Nitrate + Nitrite (mg/kg)	<1.0	<1.0	<1.0	<1.0	<1.0
Phosphate P (mg/kg)	2.5	2.5	2.7	<2.0	<2.0
Potassium K (mg/kg)	31	104	134	62	34
Nitrite N (mg/kg)	<0.40	<0.40	<0.40	<0.40	<0.40

The soil samples were also analyzed for pH (Table 5) and a suite of 36 metals (Appendix C). The soil at all sites was slightly acidic ranging from a pH of 4.59 at D-3 to 6.6 at D-5. Of the 36 elements analyzed, boron, sulphur and tin were not detected.

The most recent Canadian Council of Ministers of the Environment (CCME) guidelines, which include new guidelines from 2018, and the Yukon Contaminated Sites Regulations for agriculture and parklands were tabulated and compared to the concentrations found in the soils (Table 5).

Arsenic exceeded the recommended guidelines at all of the sites. This is most likely attributed to the naturally high arsenic found in the mineralized zones throughout the region as documented during previous studies (Stantec 2011a). Chromium concentrations at D-3 exceeded the CSR guideline for agriculture but met the other guidelines. All of the recommended guidelines for chromium were exceeded in the soil collected from D-4B. The CSR and CCME agriculture guidelines for molybdenum was exceeded at D-4B. The CCME guideline for nickel was slightly exceeded at D-3 and D-4B. The remaining concentrations at all sites were well below the referenced guidelines.

TABLE 5 RESULTS COMPARED TO CCME AND YUKON AGRICULTURE AND PARKLAND GUIDELINES FOR METALS IN SOILS, 2020

Element	D-1	D-2B	D-3	D-4B	D-5	CCME (mg/kg)		Yukon CSR (mg/kg)	
						Agriculture	Parkland	Agriculture	Parkland
pH	5.28	5.07	4.59	5.71	6.6	--	--	--	--
Antimony (Sb)	9.57	3.01	5.13	7.41	16.4	20	20	20	20
Arsenic (As)	20.4	95.7	83.5	33.4	92.7	12	12	15	15
Barium (Ba)	180	156	153	139	71.7	750	500	750	500
Beryllium (Be)	0.57	0.38	0.41	0.28	0.23	4	4	4	4
Cadmium (Cd)	0.185	0.214	0.33	0.34	0.302	1.4	10	1.5	1.5
Chromium (Cr)	32.2	19.1	52.7	121	13.5	64	64	50	60
Cobalt (Co)	8.18	8.25	9.89	10.8	10.4	40	50	40	50
Copper (Cu)	27.5	19.7	28.2	22.1	23.9	63	63	90	90
Lead (Pb)	45.2	17.6	21.5	29.5	32.9	70	140	100	100
Mercury (Hg)	0.0403	0.0373	0.0287	0.0663	0.0229	6.6	6.6	0.6	15
Molybdenum (Mo)	1.41	0.85	1.92	7.51	0.59	5	10	5	10
Nickel (Ni)	25.6	20.3	46.4	68.5	22.6	45	45	150	150
Selenium (Se)	0.45	0.23	0.24	0.31	<0.20	1	1	2	1
Silver (Ag)	0.11	0.19	0.13	0.22	0.22	20	20	20	20
Thallium (Tl)	0.203	0.141	0.18	0.088	0.094	1	1	2	--
Tin (Sn)	<2.0	<2.0	<2.0	<2.0	<2.0	5	50	5	50
Uranium	1.34	0.966	0.877	0.955	0.926	23	23		
Vanadium (V)	53.1	29.3	41.6	29.3	13.9	130	130	200	200
Zinc (Zn)	111	52.3	77.6	75	84.1	250	250	150	150

Note: Exceedance of any guideline is shaded in orange

3.5 Previous Soil Data

Soil samples have been collected on two occasions at all sites except for D-5. The results have been tabulated in Table C-1 in Appendix C. Soil samples are to be collected in different locations of the 200 m^2 area of each site throughout the duration of the sample period (25 years) as indicated in Figure 2. Changes in concentrations in the soil may not necessarily reflect effects from Project emissions as the differences could be attributable to localized mineralization at a particular place or other contributing factors. This seems to be the situation at D-4B where the concentrations of many of the parameters are very different between the two years. Several metals had much higher concentrations near the east plot, notably aluminum, antimony, arsenic, chromium, cobalt, iron, lead, lithium, mercury, molybdenum, vanadium and zinc. Conversely, concentrations of calcium, phosphorus, selenium, silver, sodium and strontium were higher near the north plot.

There were anomalies at D-2B as well. The soil near the east plot was acidic (pH 5.07) and near the north plot was alkaline (pH 8.23). Concentrations of arsenic and tungsten were significantly greater near the east plot.

4.0 DISCUSSION

The levels of metals found in the foliar samples collected in 2020 represent the third year of assessment for sites D-1 and D-3, second year for sites D-2B and D-4B and first year for D-5. The data gives a general idea of the metal burden (uptake from soil in tissues as well as through dust deposition) in various species in different ecological zones.

Arsenic is potentially a parameter of concern in the Eagle Gold Project area. The soil samples collected to date indicate high naturally occurring levels of arsenic in the area. Arsenic is associated with the gold bearing anomalies in the district and these initial concentrations reflect the natural mineralization of the Project area. Arsenic soil concentrations exceeded the CCME and CSR guidelines in the samples collected in 2018 (Laberge, 2018), 2019 (Laberge, 2019) and 2020 (Appendix C). However, these relatively high soil concentrations are not overly reflected in the plant tissues. This incongruity may be related to the bioavailability associated with arsenic speciation.

It is a general consensus that arsenic is not essential for plants. The concentration of arsenic in plants is usually less than 1.0 mg/kg (Abbas, 2018). Arsenic concentrations ranged from 0.106 to 7.18 mg/kg in the 58 individual tissue samples analyzed in 2020 with 17 of those having concentrations of 1.0 mg/kg or greater.

The toxicity of arsenic to biota depends upon the speciation with inorganic forms generally thought to be more toxic than organic forms. Arsenate [As(V)] is the dominant form of arsenic in aerobic soils (Meharg et al, 2002). It is similar to the macronutrient phosphate and creates toxicity in plants by competing with phosphate. Processes within the plant convert arsenate to the more toxic arsenite [As(III)]. Trivalent arsenic (arsenite) is 5 to 10 times more toxic than pentavalent arsenic (arsenate). Elemental arsenic is non-toxic. There was no visible sign of stress in any of the vegetation in the plots. It is not known what species of arsenic are present in the Project's soils or the species present in the plant tissues. Investigations into the speciation of arsenic in plant tissues have shown more than one species present (Meharg et al, 2002). Therefore, the arsenic present in the soil may not be bioavailable to plants or the availability may be limited by the mycelium associated with the vegetation types, which effectively screen out toxins at the root hairs.

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APPENDIX A

PHOTOGRAPHS - AUGUST 2020



Photo #1: Collecting foliar samples at the Centre Plot of D-1B.



Photo #2: D-1B, looking from Centre Plot to dustfall station and Potato Hills Climate Station.



Photo #3 Collecting foliar samples at the West Plot of D-2B.



Photo #4: D-2B, northern green bog orchid.



Photo #5 D-3, West Plot.



Photo #6 Overview of site D-3 and dustfall station. Centre Plot of D-3.



Photo #7 Centre Plot at D-4B.



Photo #8 Hooded ladies' tresses, *Spiranthes romanzoffiana*



Photo #9 D-5, North Plot.



Photo #10 Looking to dustfall station from near East Plot at D-5.

APPENDIX B

VEGETATION TISSUES DATA

- **TABLE B-1**
- **TABLE B-2**
- **ANALYTICAL REPORT, AUGUST 2020**

Table B-1 Range of Detected Metals (mg/kg) in all Tissue Types, 2020

Parameter	LDL	units	D-1B (n=10)	D-2B (n=13)	D-3 (n=10)	D-4B (n=13)	D-5 (n=12)	Toxic
Moisture Content	0.5	%	58.9 to 64.1	43.8 to 76.6	55.4 to 67.6	54.1 to 85.3	46.9 to 77.7	
Aluminum (Al)	2	mg/kg	12 to 56.7	14 to 66.4	102 to 452	7.9 to 61.8	11.4 to 50.3	>1200
Antimony (Sb)	0.01	mg/kg	0.014 to 0.087	0.012 to 0.105	0.084 to 0.38	0.019 to 0.108	0.017 to 0.101	
Arsenic (As)	0.02	mg/kg	0.155 to 0.274	0.307 to 1.29	0.915 to 7.18	0.106 to 1.16	0.282 to 1.29	>10*
Barium (Ba)	0.05	mg/kg	22.4 to 73	28.8 to 143	25 to 200	9.59 to 69.6	7.84 to 42.9	>20**
Beryllium (Be)	0.01	mg/kg	0.015 to 0.035	not detected	0.011 to 0.041	not detected	not detected	
Bismuth (Bi)	0.01	mg/kg	0.01 to 0.022	not detected to 0.047	0.024 to 0.179	0.011 to 0.072	0.013 to 0.077	
Boron (B)	1	mg/kg	1.8 to 5.7	2.2 to 20.3	1.4 to 6	2.5 to 13.6	6 to 19.4	>200
Cadmium (Cd)	0.005	mg/kg	0.0948 to 8.16	0.125 to 4.75	0.155 to 3.04	0.0452 to 3.82	0.386 to 5.05	50 - 500
Calcium (Ca)	20	mg/kg	2570 to 11900	3770 to 28300	3910 to 14500	1540 to 18700	4700 to 21000	
Cesium (Cs)	0.005	mg/kg	0.0107 to 0.179	0.0107 to 0.0715	0.0576 to 0.266	0.0085 to 0.271	0.0069 to 0.253	
Chromium (Cr)	0.05	mg/kg	0.053 to 0.157	0.055 to 1.22	0.191 to 0.828	0.084 to 0.217	0.055 to 0.14	>40
Cobalt (Co)	0.02	mg/kg	0.106 to 8.2	0.035 to 2.89	0.529 to 11.2	0.072 to 0.902	0.101 to 1.45	>30
Copper (Cu)	0.1	mg/kg	2.84 to 5.89	3.51 to 7.22	3.24 to 5.94	1.93 to 7.44	2.38 to 6.59	>100
Iron (Fe)	3	mg/kg	46.6 to 92.3	47.6 to 154	113 to 665	20 to 137	34.5 to 126	>4000
Lead (Pb)	0.02	mg/kg	0.06 to 0.203	0.064 to 0.425	0.379 to 1.41	0.033 to 0.338	0.058 to 0.238	>100
Lithium (Li)	0.5	mg/kg	not detected	not detected	not detected to 0.64	not detected	not detected to 1.6	
Magnesium (Mg)	2	mg/kg	878 to 2980	778 to 7100	1380 to 3950	648 to 4870	936 to 5680	
Manganese (Mn)	0.05	mg/kg	1260 to 3510	23.1 to 1630	303 to 2440	29.2 to 1170	28.4 to 517	2000 - 4000
Mercury (Hg)	0.005	mg/kg	0.0058 to 0.0073	0.0053 to 0.0076	not detected to 0.0109	not detected to 0.0072	not detected to 0.0074	
Molybdenum (Mo)	0.02	mg/kg	0.023 to 0.186	0.022 to 1.28	0.042 to 0.407	0.025 to 0.352	0.037 to 0.395	10 - 20
Nickel (Ni)	0.2	mg/kg	0.91 to 10.3	0.77 to 7.63	4.69 to 16.9	0.39 to 4.07	0.45 to 5.98	>1500
Phosphorus (P)	10	mg/kg	1710 to 3310	1070 to 3030	1810 to 4940	901 to 3440	803 to 3640	
Potassium (K)	20	mg/kg	6750 to 17400	3310 to 33000	4800 to 14500	5230 to 22200	3720 to 55100	
Rubidium (Rb)	0.05	mg/kg	5.38 to 43.5	1.07 to 26.1	6.62 to 25.6	2.09 to 37.9	3.36 to 79.7	
Selenium (Se)	0.05	mg/kg	not detected to 0.05	0.083 to 29.2	not detected to 0.095	not detected to 0.236	not detected to 0.082	5 - 20
Sodium (Na)	20	mg/kg	not detected	22 to 30	not detected to 49	not detected to 26	not detected to 72	
Strontium (Sr)	0.05	mg/kg	10.2 to 68.8	18.3 to 88.9	9.71 to 130	5.1 to 67.2	23.5 to 94.8	>2000
Tellurium (Te)	0.02	mg/kg	not detected	not detected	not detected	not detected	0 to 0	
Thallium (Tl)	0.002	mg/kg	0.002 to 0.0024	not detected to 0.007	not detected	0.0033 to 0.0091	0.0021 to 0.0138	
Tin (Sn)	0.1	mg/kg	not detected	0.39 to 0.39	not detected	not detected	not detected	
Uranium (U)	0.002	mg/kg	0.0022 to 0.0031	0.0023 to 0.0098	0.0076 to 0.045	0.0028 to 0.0133	0.0021 to 0.0188	
Vanadium (V)	0.1	mg/kg	not detected	not detected to 0.1	0.1 to 0.77	not detected to 0.11	not detected to 0.1	
Zinc (Zn)	0.5	mg/kg	26.6 to 242	26.1 to 150	86.7 to 171	20 to 259	43.2 to 327	>5000
Zirconium (Zr)	0.2	mg/kg	not detected	not detected	not detected	not detected	not detected	

* There is no actual toxic value, only what is considered normal or adequate in the referenced table. Toxicity of As depends on its form.

** There is no actual toxic value, only what is considered high in the referenced table.

TABLE B-2 COMPARISONS OF METAL CONCENTRATIONS (mg/kg) 2018, 2019 & 2020 WHERE APPLICABLE								
Plot #		**Tissue**	**N**	**Arsenic**	**Cadmium**	**Chromium**	**Lead**	**Mercury**
D-1	2020	Dwarf Birch	4	0.206	0.277	0.095	0.091	0.0065
	2019		5	0.136	0.174	0.101	0.070	0.0053
	2018		5	0.187	0.187	ND	0.055	0.0054
	2020	Fescue	1	0.157	0.095	0.074	0.203	ND
	2019		1	0.104	0.0770	0.173	0.143	ND
	2018		5	0.113	0.055	0.073	0.108	ND
	2020	Willow leaves	5	0.236	4.074	0.079	0.141	0.0069
	2019		5	0.167	2.066	0.105	0.113	0.0067
	2018		5	0.187	1.758	ND	0.082	ND
D-2B	2020	Dwarf Birch	1	0.730	0.125	0.136	0.220	0.0076
	2019		1	1.28	0.123	0.200	0.262	0.0055
	2020	Equisetum	2	0.430	0.737	0.098	0.067	0.0068
	2019		1	0.583	1.03	0.135	0.107	0.0053
	2020	Paper Birch Leaves	1	1.290	0.636	0.133	0.364	0.0067
	2019		1	1.88	0.464	0.394	0.464	0.0058
	2020	Paper Birch Twigs	1	0.502	0.791	0.367	0.250	ND
	2019		1	0.514	0.771	0.155	0.174	ND
	2020	Willow Leaves	4	1.004	3.228	0.574	0.300	0.0058
	2019		4	1.65	3.56	0.208	0.324	0.0064
	2020	Willow Twigs	4	0.491	2.538	0.108	0.132	ND
	2019		3	1.00	2.74	0.393	0.213	ND
D-3	2020	Dwarf Birch	5	1.990	0.198	0.224	0.494	0.0069
	2019		5	0.835	0.149	0.178	0.297	0.0056
	2018		5	0.410	0.188	ND	0.066	0.005
	2020	Willow leaves	4	4.113	2.260	0.456	0.989	0.0078
	2019		5	1.267	1.761	0.259	0.377	0.0071
	2018		1	0.551	1.05	ND	0.132	0.0055
	2020	Willow twigs	1	0.915	1.280	0.828	0.379	ND
	2019		3	1.03	1.05	0.392	0.347	ND
	2018		1	0.311	1.03	0.068	0.102	ND
D-4B	2020	Dwarf Birch	3	0.821	0.120	0.115	0.254	0.0062
	2019		3	1.035	0.137	0.182	0.234	0.0061
	2020	Equisetum	2	0.669	0.237	0.119	0.099	0.0068
	2019		2	0.545	0.803	0.147	0.086	0.0070
	2020	Willow Leaves	4	0.981	1.669	0.140	0.204	0.0063
	2019		4	1.00	1.61	0.173	0.171	0.0058
	2020	Willow Twigs	3	0.686	1.242	0.161	0.194	ND
	2019		2	0.876	0.852	0.242	0.155	ND
Toxicity thresholds for beef cattle (Puls, 1994):				>10	50 - 500	>40	>100	N/A
ND = not detected N/A = not applicable								

ALS Environmental

CERTIFICATE OF ANALYSIS

Work Order	: **WR2000652**	Page	: 1 of 28
Client	: **Victoria Gold (Yukon) Corp.**	Laboratory	: Whitehorse - Environmental
Contact	: Bill Bowden	Account Manager	: Hilary Woods
Address	: Suite 1000 - 1050 W. Pender St Vancouver BC Canada V6E 3S7	Address	: #12 151 Industrial Road Whitehorse YT Canada Y1A 2V3
Telephone	: 867.456.7700 ext. 6381	Telephone	: +1 867 668 6689
Project	: Eagle Gold	Date Samples Received	: 10-Aug-2020 14:07
PO	: 16965	Date Analysis Commenced	: 14-Aug-2020
C-O-C number	: 1 of 5	Issue Date	: 28-Sep-2020 08:36
Sampler	: Bonnie Burns & Crystal Beaudry		
Site	: Victoria Gold Corp.		
Quote number	: Q68199		
No. of samples received	: 63		
No. of samples analysed	: 63		

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QC Interpretive report to assist with Quality Review and Sample Receipt Notification (SRN).

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is conducted in accordance with US FDA 21 CFR Part 11.

Signatories	*Position*	*Laboratory Department*
Angela Ren	Team Leader - Metals	Metals, Burnaby, British Columbia
Dwayne Bennett	Technical Specialist	Metals, Saskatoon, Saskatchewan
Evan Ben-Oliel	Metal Analyst	Metals, Burnaby, British Columbia
Hedy Lai	Team Leader - Inorganics	Inorganics, Saskatoon, Saskatchewan
Kinny Wu	Lab Analyst	Metals, Burnaby, British Columbia
Melissa Shaw	Team Leader - Inorganics	Inorganics, Saskatoon, Saskatchewan
Nancy Cruse	Laboratory _ Supervisor	Inorganics, Saskatoon, Saskatchewan
Rebecca Merilees	Team Leader - Soil Preparation	Inorganics, Saskatoon, Saskatchewan
Robin Weeks	Team Leader - Metals	Metals, Burnaby, British Columbia
Xihua Yao	Laboratory Analyst	Inorganics, Saskatoon, Saskatchewan

General Comments

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Refer to the ALS Quality Control Interpretive report (QCI) for applicable references and methodology summaries. Reference methods may incorporate modifications to improve performance.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

Please refer to Quality Control Interpretive report (QCI) for information regarding Holding Time compliance.

Key : CAS Number: Chemical Abstracts Services number is a unique identifier assigned to discrete substances
LOR: Limit of Reporting (detection limit).

Unit	*Description*
-	No Unit
%	percent
mg/kg	milligrams per kilogram
pH units	pH units

<: less than.

>: greater than.

Surrogate: An analyte that is similar in behavior to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.

Test results reported relate only to the samples as received by the laboratory.

UNLESS OTHERWISE STATED on SRN or QCI Report, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

Analytical results in reports identified as "Preliminary Report" are considered authorized for use.

Workorder Comments

RRR: Due to RM failure, Thallium LOR has been raised within 5 LOR.

Qualifiers

Qualifier	*Description*
DLIS	*Detection Limit Adjusted due to insufficient sample.*
RRR	*Refer to report remarks for issues regarding this analysis.*

Analytical Results

Sub-Matrix: **Plant**
(Matrix: **Biota**)

Analyte	CAS Number	Method	LOR	Unit	Client sample ID	D1 - Centre, willow leaves	D1 - Centre, dwarf birch	D1 - East, willow leaves	D1 - West, willow leaves	D1 - West, dwarf birch
					Client sampling date / time	09-Aug-2020	09-Aug-2020	09-Aug-2020	09-Aug-2020	09-Aug-2020
						WR2000652-006	WR2000652-007	WR2000652-008	WR2000652-009	WR2000652-010
						Result	Result	Result	Result	Result
Physical Tests										
moisture	----	E144	0.50	%		62.0	60.9	60.6	61.2	63.4
Metals										
aluminum	7429-90-5	E440	2.0	mg/kg		40.1	12.0	35.3	42.8	18.4
antimony	7440-36-0	E440	0.010	mg/kg		0.031	0.014	0.030	0.018	0.017
arsenic	7440-38-2	E440	0.020	mg/kg		0.231	0.155	0.236	0.258	0.170
barium	7440-39-3	E440	0.050	mg/kg		37.1	49.5	54.0	56.5	31.1
beryllium	7440-41-7	E440	0.010	mg/kg		0.015	<0.010	0.021	0.035	<0.010
bismuth	7440-69-9	E440	0.010	mg/kg		0.012	0.011	<0.010	0.011	0.013
boron	7440-42-8	E440	1.0	mg/kg		2.2	4.0	4.5	3.7	5.7
cadmium	7440-43-9	E440	0.0050	mg/kg		3.45	0.331	8.16	2.99	0.258
calcium	7440-70-2	E440	20	mg/kg		6950	4830	11900	8920	5290
cesium	7440-46-2	E440	0.0050	mg/kg		0.0980	0.0387	0.142	0.0769	0.0107
chromium	7440-47-3	E440	0.050	mg/kg		0.093	0.061	0.089	0.083	0.091
cobalt	7440-48-4	E440	0.020	mg/kg		5.04	0.322	6.62	6.50	0.504
copper	7440-50-8	E440	0.10	mg/kg		2.84	4.72	3.94	3.52	4.82
iron	7439-89-6	E440	3.0	mg/kg		86.1	46.6	75.7	68.4	67.8
lead	7439-92-1	E440	0.020	mg/kg		0.126	0.060	0.160	0.114	0.072
lithium	7439-93-2	E440	0.50	mg/kg		<0.50	<0.50	<0.50	<0.50	<0.50
magnesium	7439-95-4	E440	2.0	mg/kg		1370	1540	2980	1490	1210
manganese	7439-96-5	E440	0.050	mg/kg		1560	2110	1730	1490	2940
mercury	7439-97-6	E510	0.0050	mg/kg		0.0064	0.0058	0.0070	0.0072	0.0064
molybdenum	7439-98-7	E440	0.020	mg/kg		0.104	<0.020	0.186	0.135	<0.020
nickel	7440-02-0	E440	0.20	mg/kg		5.86	3.37	8.40	10.3	4.17
phosphorus	7723-14-0	E440	10	mg/kg		2480	2210	2920	3070	3060
potassium	7440-09-7	E440	20	mg/kg		11000	6750	9560	11200	7440
rubidium	7440-17-7	E440	0.050	mg/kg		18.8	16.4	23.8	17.1	5.38
selenium	7782-49-2	E440	0.050	mg/kg		<0.050	<0.050	0.050	<0.050	<0.050
sodium	7440-23-5	E440	20	mg/kg		<20	<20	<20	<20	<20
strontium	7440-24-6	E440	0.050	mg/kg		39.4	14.0	68.8	60.7	10.2
tellurium	13494-80-9	E440	0.020	mg/kg		<0.020	<0.020	<0.020	<0.020	<0.020
thallium	7440-28-0	E440	0.0020	mg/kg		0.0024	<0.0020	0.0024	<0.0020	<0.0020

Analytical Results

Sub-Matrix: **Plant**
(Matrix: **Biota**)

Analyte	CAS Number	Method	LOR	Unit	Client sample ID	D1 - Centre, willow leaves	D1 - Centre, dwarf birch	D1 - East, willow leaves	D1 - West, willow leaves	D1 - West, dwarf birch
					Client sampling date / time	09-Aug-2020	09-Aug-2020	09-Aug-2020	09-Aug-2020	09-Aug-2020
						WR2000652-006	WR2000652-007	WR2000652-008	WR2000652-009	WR2000652-010
						Result	Result	Result	Result	Result
Metals										
tin	7440-31-5	E440	0.10	mg/kg		<0.10	<0.10	<0.10	<0.10	<0.10
uranium	7440-61-1	E440	0.0020	mg/kg		0.0031	0.0023	<0.0020	<0.0020	0.0023
vanadium	7440-62-2	E440	0.10	mg/kg		<0.10	<0.10	<0.10	<0.10	<0.10
zinc	7440-66-6	E440	0.50	mg/kg		143	242	186	114	237
zirconium	7440-67-7	E440	0.20	mg/kg		<0.20	<0.20	<0.20	<0.20	<0.20

Please refer to the General Comments section for an explanation of any qualifiers detected.

Analytical Results

Sub-Matrix: **Plant**
(Matrix: **Biota**)

Analyte	CAS Number	Method	LOR	Unit	Client sample ID	D1 - South, willow leaves	D1 - South, dwarf birch	D1 - North, willow leaves	D1 - North, dwarf birch	D1 - all plots, fescue
					Client sampling date / time	09-Aug-2020	09-Aug-2020	09-Aug-2020	09-Aug-2020	09-Aug-2020
						WR2000652-011	WR2000652-012	WR2000652-013	WR2000652-014	WR2000652-015
						Result	Result	Result	Result	Result
Physical Tests										
moisture	----	E144	0.50	%		58.9	62.6	62.7	64.1	61.5
Metals										
aluminum	7429-90-5	E440	2.0	mg/kg		36.0	16.7	56.7	21.5	16.4
antimony	7440-36-0	E440	0.010	mg/kg		0.026	0.087	0.022	0.027	0.014
arsenic	7440-38-2	E440	0.020	mg/kg		0.259	0.274	0.195	0.226	0.157
barium	7440-39-3	E440	0.050	mg/kg		27.9	22.4	35.5	73.0	44.0
beryllium	7440-41-7	E440	0.010	mg/kg		0.024	<0.010	0.035	<0.010	<0.010
bismuth	7440-69-9	E440	0.010	mg/kg		0.022	<0.010	0.010	0.011	<0.010
boron	7440-42-8	E440	1.0	mg/kg		3.9	5.6	3.8	4.2	1.8
cadmium	7440-43-9	E440	0.0050	mg/kg		3.54	0.240	2.23	0.279	0.0948
calcium	7440-70-2	E440	20	mg/kg		7170	4880	7170	5490	2570
cesium	7440-46-2	E440	0.0050	mg/kg		0.0532	0.0234	0.150	0.0365	0.179
chromium	7440-47-3	E440	0.050	mg/kg		0.053	0.072	0.075	0.157	0.074
cobalt	7440-48-4	E440	0.020	mg/kg		8.20	0.510	6.07	0.758	0.106
copper	7440-50-8	E440	0.10	mg/kg		3.41	4.74	5.21	5.89	2.93
iron	7439-89-6	E440	3.0	mg/kg		69.2	63.8	92.3	70.7	54.4
lead	7439-92-1	E440	0.020	mg/kg		0.117	0.150	0.190	0.081	0.203
lithium	7439-93-2	E440	0.50	mg/kg		<0.50	<0.50	<0.50	<0.50	<0.50
magnesium	7439-95-4	E440	2.0	mg/kg		1400	1880	1340	1560	878
manganese	7439-96-5	E440	0.050	mg/kg		1570	2980	1530	3510	1260
mercury	7439-97-6	E510	0.0050	mg/kg		0.0066	0.0072	0.0073	0.0065	<0.0050
molybdenum	7439-98-7	E440	0.020	mg/kg		0.072	<0.020	0.142	0.023	0.156
nickel	7440-02-0	E440	0.20	mg/kg		6.35	4.42	9.74	5.82	0.91
phosphorus	7723-14-0	E440	10	mg/kg		2200	3310	2480	3030	1710
potassium	7440-09-7	E440	20	mg/kg		11200	7110	11900	8160	17400
rubidium	7440-17-7	E440	0.050	mg/kg		14.9	8.53	18.0	11.1	43.5
selenium	7782-49-2	E440	0.050	mg/kg		<0.050	<0.050	<0.050	<0.050	<0.050
sodium	7440-23-5	E440	20	mg/kg		<20	<20	<20	<20	<20
strontium	7440-24-6	E440	0.050	mg/kg		42.8	11.7	45.6	18.0	13.2
tellurium	13494-80-9	E440	0.020	mg/kg		<0.020	<0.020	<0.020	<0.020	<0.020
thallium	7440-28-0	E440	0.0020	mg/kg		<0.0020	<0.0020	<0.0020	0.0020	0.0023
tin	7440-31-5	E440	0.10	mg/kg		<0.10	<0.10	<0.10	<0.10	<0.10

Analytical Results

Sub-Matrix: **Plant**
(Matrix: **Biota**)

Analyte	CAS Number	Method	LOR	Unit	Client sample ID	D1 - South, willow leaves	D1 - South, dwarf birch	D1 - North, willow leaves	D1 - North, dwarf birch	D1 - all plots, fescue
					Client sampling date / time	09-Aug-2020	09-Aug-2020	09-Aug-2020	09-Aug-2020	09-Aug-2020
						WR2000652-011	**WR2000652-012**	**WR2000652-013**	**WR2000652-014**	**WR2000652-015**
						Result	Result	Result	Result	Result
Metals										
uranium	7440-61-1	E440	0.0020	mg/kg		0.0024	0.0028	<0.0020	0.0022	<0.0020
vanadium	7440-62-2	E440	0.10	mg/kg		<0.10	<0.10	<0.10	<0.10	<0.10
zinc	7440-66-6	E440	0.50	mg/kg		127	194	134	196	26.6
zirconium	7440-67-7	E440	0.20	mg/kg		<0.20	<0.20	<0.20	<0.20	<0.20

Please refer to the General Comments section for an explanation of any qualifiers detected.

Analytical Results

Sub-Matrix: **Plant**
(Matrix: **Biota**)

Analyte	CAS Number	Method	LOR	Unit	Client sample ID	D2-B - South, willow leaves	D2-B - South, dwarf birch	D2-B - South, willow twigs	D2-B - West, willow leaves	D2-B - West, willow twigs
					Client sampling date / time	08-Aug-2020	08-Aug-2020	08-Aug-2020	08-Aug-2020	08-Aug-2020
						WR2000652-016	WR2000652-017	WR2000652-018	WR2000652-019	WR2000652-020
						Result	Result	Result	Result	Result
Physical Tests										
moisture	----	E144	0.50	%		60.5	64.6	51.2	68.4	55.2
Metals										
aluminum	7429-90-5	E440	2.0	mg/kg		47.1	33.6	33.6	50.2	22.9
antimony	7440-36-0	E440	0.010	mg/kg		0.087	0.061	0.043	0.100	0.039
arsenic	7440-38-2	E440	0.020	mg/kg		0.920	0.730	0.621	1.06	0.454
barium	7440-39-3	E440	0.050	mg/kg		28.8	64.9	48.6	55.2	60.8
beryllium	7440-41-7	E440	0.010	mg/kg		<0.010	<0.010	<0.010	<0.010	<0.010
bismuth	7440-69-9	E440	0.010	mg/kg		0.035	0.044	0.028	0.035	<0.010
boron	7440-42-8	E440	1.0	mg/kg		5.3	10.7	7.5	2.7	4.6
cadmium	7440-43-9	E440	0.0050	mg/kg		4.44	0.125	4.75	3.33	2.20
calcium	7440-70-2	E440	20	mg/kg		7550	5430	4290	10700	3870
cesium	7440-46-2	E440	0.0050	mg/kg		0.0410	0.0185	0.0222	0.0322	0.0124
chromium	7440-47-3	E440	0.050	mg/kg		1.22	0.136	0.071	0.108	0.069
cobalt	7440-48-4	E440	0.020	mg/kg		2.89	0.276	0.668	0.761	0.172
copper	7440-50-8	E440	0.10	mg/kg		5.24	3.51	6.10	4.99	6.23
iron	7439-89-6	E440	3.0	mg/kg		140	150	81.5	126	55.0
lead	7439-92-1	E440	0.020	mg/kg		0.425	0.220	0.163	0.315	0.116
lithium	7439-93-2	E440	0.50	mg/kg		<0.50	<0.50	<0.50	<0.50	<0.50
magnesium	7439-95-4	E440	2.0	mg/kg		2350	2490	778	4430	1220
manganese	7439-96-5	E440	0.050	mg/kg		1080	796	322	275	61.4
mercury	7439-97-6	E510	0.0050	mg/kg		0.0066	0.0076	<0.0050	0.0056	<0.0050
molybdenum	7439-98-7	E440	0.020	mg/kg		0.136	0.052	0.046	0.573	0.090
nickel	7440-02-0	E440	0.20	mg/kg		7.63	5.12	2.76	6.63	2.90
phosphorus	7723-14-0	E440	10	mg/kg		2530	2420	1070	2960	1290
potassium	7440-09-7	E440	20	mg/kg		10800	6140	3930	20000	5050
rubidium	7440-17-7	E440	0.050	mg/kg		10.3	2.41	5.19	9.78	4.16
selenium	7782-49-2	E440	0.050	mg/kg		<0.050	<0.050	<0.050	0.083	<0.050
sodium	7440-23-5	E440	20	mg/kg		<20	<20	<20	<20	<20
strontium	7440-24-6	E440	0.050	mg/kg		35.8	18.3	25.8	46.5	20.4
tellurium	13494-80-9	E440	0.020	mg/kg		<0.020	<0.020	<0.020	<0.020	<0.020
thallium	7440-28-0	E440	0.0020	mg/kg		0.0041	<0.0020	<0.0020	0.0027	<0.0020
tin	7440-31-5	E440	0.10	mg/kg		<0.10	<0.10	<0.10	<0.10	<0.10

Analytical Results

Sub-Matrix: **Plant**
(Matrix: **Biota**)

Analyte	CAS Number	Method	LOR	Unit	Client sample ID	D2-B - South, willow leaves	D2-B - South, dwarf birch	D2-B - South, willow twigs	D2-B - West, willow leaves	D2-B - West, willow twigs
					Client sampling date / time	08-Aug-2020	08-Aug-2020	08-Aug-2020	08-Aug-2020	08-Aug-2020
						WR2000652-016	WR2000652-017	WR2000652-018	WR2000652-019	WR2000652-020
						Result	Result	Result	Result	Result
Metals										
uranium	7440-61-1	E440	0.0020	mg/kg		0.0061	0.0074	0.0052	0.0066	0.0030
vanadium	7440-62-2	E440	0.10	mg/kg		<0.10	<0.10	<0.10	<0.10	<0.10
zinc	7440-66-6	E440	0.50	mg/kg		136	140	150	88.4	84.7
zirconium	7440-67-7	E440	0.20	mg/kg		<0.20	<0.20	<0.20	<0.20	<0.20

Please refer to the General Comments section for an explanation of any qualifiers detected.

Analytical Results

Sub-Matrix: **Plant**
(Matrix: **Biota**)

Analyte	CAS Number	Method	LOR	Unit	Client sample ID	D2-B - West, Equisetum	D2-B - East, paper birch leaves	D2-B- East, paper birch twigs	D2-B - Centre, willow leaves	D2-B - Centre, willow twigs
					Client sampling date / time	08-Aug-2020	08-Aug-2020	08-Aug-2020	08-Aug-2020	10-Aug-2020
						WR2000652-021	WR2000652-022	WR2000652-023	WR2000652-024	WR2000652-025
						Result	Result	Result	Result	Result
Physical Tests										
moisture	----	E144	0.50	%		76.6	67.2	43.8	71.6	59.1
Metals										
aluminum	7429-90-5	E440	2.0	mg/kg		19.3	66.4	48.4	49.0	22.4
antimony	7440-36-0	E440	0.010	mg/kg		0.012	0.105	0.058	0.081	0.031
arsenic	7440-38-2	E440	0.020	mg/kg		0.553	1.29	0.502	0.925	0.413
barium	7440-39-3	E440	0.050	mg/kg		90.0	143	133	73.0	65.5
beryllium	7440-41-7	E440	0.010	mg/kg		<0.010	<0.010	<0.010	<0.010	<0.010
bismuth	7440-69-9	E440	0.010	mg/kg		<0.010	0.047	0.018	0.036	0.012
boron	7440-42-8	E440	1.0	mg/kg		15.5	2.2	4.8	7.4	10.4
cadmium	7440-43-9	E440	0.0050	mg/kg		0.679	0.636	0.791	2.54	1.44
calcium	7440-70-2	E440	20	mg/kg		23400	6670	3770	12700	4030
cesium	7440-46-2	E440	0.0050	mg/kg		0.0715	0.0267	0.0184	0.0426	0.0173
chromium	7440-47-3	E440	0.050	mg/kg		0.076	0.133	0.367	0.153	0.055
cobalt	7440-48-4	E440	0.020	mg/kg		0.240	0.370	0.295	2.02	0.350
copper	7440-50-8	E440	0.10	mg/kg		4.81	4.38	6.21	5.67	7.22
iron	7439-89-6	E440	3.0	mg/kg		47.6	154	79.6	108	51.9
lead	7439-92-1	E440	0.020	mg/kg		0.070	0.364	0.250	0.199	0.115
lithium	7439-93-2	E440	0.50	mg/kg		<0.50	<0.50	<0.50	<0.50	<0.50
magnesium	7439-95-4	E440	2.0	mg/kg		7100	2670	980	4090	1170
manganese	7439-96-5	E440	0.050	mg/kg		252	1630	379	556	203
mercury	7439-97-6	E510	0.0050	mg/kg		0.0075	0.0067	<0.0050	0.0053	<0.0050
molybdenum	7439-98-7	E440	0.020	mg/kg		0.792	0.047	0.022	0.298	0.043
nickel	7440-02-0	E440	0.20	mg/kg		0.77	3.12	6.27	7.15	2.01
phosphorus	7723-14-0	E440	10	mg/kg		1370	2930	1210	3030	1320
potassium	7440-09-7	E440	20	mg/kg		33000	12300	3310	18800	6970
rubidium	7440-17-7	E440	0.050	mg/kg		18.2	4.44	2.44	10.6	5.50
selenium	7782-49-2	E440	0.050	mg/kg		0.581	0.103	<0.050	<0.050	<0.050
sodium	7440-23-5	E440	20	mg/kg		24	<20	30	<20	<20
strontium	7440-24-6	E440	0.050	mg/kg		88.9	29.1	21.1	57.2	24.5
tellurium	13494-80-9	E440	0.020	mg/kg		<0.020	<0.020	<0.020	<0.020	<0.020
thallium	7440-28-0	E440	0.0020	mg/kg		<0.0020	0.0027	<0.0020	0.0070	0.0049

Analytical Results

Sub-Matrix: **Plant**
(Matrix: **Biota**)

Analyte	CAS Number	Method	LOR	Unit	Client sample ID	D2-B - West, Equisetum	D2-B - East, paper birch leaves	D2-B- East, paper birch twigs	D2-B - Centre, willow leaves	D2-B - Centre, willow twigs
					Client sampling date / time	08-Aug-2020	08-Aug-2020	08-Aug-2020	08-Aug-2020	10-Aug-2020
						WR2000652-021	WR2000652-022	WR2000652-023	WR2000652-024	WR2000652-025
						Result	Result	Result	Result	Result
Metals										
tin	7440-31-5	E440	0.10	mg/kg		<0.10	<0.10	<0.10	<0.10	<0.10
uranium	7440-61-1	E440	0.0020	mg/kg		0.0023	0.0098	0.0047	0.0075	0.0029
vanadium	7440-62-2	E440	0.10	mg/kg		<0.10	0.10	<0.10	<0.10	<0.10
zinc	7440-66-6	E440	0.50	mg/kg		47.7	122	87.0	142	84.4
zirconium	7440-67-7	E440	0.20	mg/kg		<0.20	<0.20	<0.20	<0.20	<0.20

Please refer to the General Comments section for an explanation of any qualifiers detected.

Analytical Results

Sub-Matrix: **Plant**
(Matrix: **Biota**)

Analyte	CAS Number	Method	LOR	Unit	Client sample ID	D2-B - North, willow leaves	D2-B - North, willow twigs	D2-B - North, equisetum	D3 - South, willow leaves	D3 - South, dwarf birch
					Client sampling date / time	10-Aug-2020	10-Aug-2020	10-Aug-2020	10-Aug-2020	10-Aug-2020
						WR2000652-026	WR2000652-027	WR2000652-028	WR2000652-029	WR2000652-030
						Result	Result	Result	Result	Result
Physical Tests										
moisture	----	E144	0.50	%		66.9	56.8	76.1	64.8	66.8
Metals										
aluminum	7429-90-5	E440	2.0	mg/kg		47.4	31.8	14.0	268	102
antimony	7440-36-0	E440	0.010	mg/kg		0.099	0.039	0.013	0.278	0.134
arsenic	7440-38-2	E440	0.020	mg/kg		1.11	0.477	0.307	3.94	1.80
barium	7440-39-3	E440	0.050	mg/kg		50.2	41.8	57.9	135	39.7
beryllium	7440-41-7	E440	0.010	mg/kg		<0.010	<0.010	<0.010	0.035	<0.010
bismuth	7440-69-9	E440	0.010	mg/kg		0.042	0.012	<0.010	0.127	0.057
boron	7440-42-8	E440	1.0	mg/kg		7.9	13.7	20.3	5.2	3.5
cadmium	7440-43-9	E440	0.0050	mg/kg		2.60	1.76	0.795	3.04	0.262
calcium	7440-70-2	E440	20	mg/kg		16500	6140	28300	8530	5200
cesium	7440-46-2	E440	0.0050	mg/kg		0.0196	0.0107	0.0695	0.266	0.171
chromium	7440-47-3	E440	0.050	mg/kg		0.813	0.238	0.119	0.409	0.191
cobalt	7440-48-4	E440	0.020	mg/kg		0.345	0.094	0.035	8.41	0.781
copper	7440-50-8	E440	0.10	mg/kg		3.77	5.81	4.56	4.27	4.82
iron	7439-89-6	E440	3.0	mg/kg		113	64.9	47.6	454	171
lead	7439-92-1	E440	0.020	mg/kg		0.262	0.133	0.064	0.990	0.430
lithium	7439-93-2	E440	0.50	mg/kg		<0.50	<0.50	<0.50	<0.50	<0.50
magnesium	7439-95-4	E440	2.0	mg/kg		4280	982	7020	3060	1960
manganese	7439-96-5	E440	0.050	mg/kg		90.2	23.1	25.6	1580	1660
mercury	7439-97-6	E510	0.0050	mg/kg		<0.0050	<0.0050	0.0060	0.0073	0.0069
molybdenum	7439-98-7	E440	0.020	mg/kg		0.517	0.121	1.28	0.407	0.048
nickel	7440-02-0	E440	0.20	mg/kg		6.30	2.32	0.81	9.48	6.03
phosphorus	7723-14-0	E440	10	mg/kg		3010	1220	1950	4910	3310
potassium	7440-09-7	E440	20	mg/kg		10400	4160	30700	13400	8340
rubidium	7440-17-7	E440	0.050	mg/kg		2.04	1.07	26.1	25.6	15.2
selenium	7782-49-2	E440	0.050	mg/kg		5.68	2.23	29.2	0.075	<0.050
sodium	7440-23-5	E440	20	mg/kg		<20	<20	22	<20	<20
strontium	7440-24-6	E440	0.050	mg/kg		47.7	21.9	84.8	87.7	15.0
tellurium	13494-80-9	E440	0.020	mg/kg		<0.020	<0.020	<0.020	<0.020	<0.020
thallium	7440-28-0	E440	0.0020	mg/kg		<0.0020	<0.0020	<0.0040 RRR	<0.0060 RRR	<0.0040 RRR
tin	7440-31-5	E440	0.10	mg/kg		<0.10	<0.10	0.39	<0.10	<0.10

Analytical Results

Sub-Matrix: **Plant**
(Matrix: **Biota**)

Analyte	CAS Number	Method	LOR	Unit	Client sample ID	D2-B - North, willow leaves	D2-B - North, willow twigs	D2-B - North, equisetum	D3 - South, willow leaves	D3 - South, dwarf birch
					Client sampling date / time	10-Aug-2020	10-Aug-2020	10-Aug-2020	10-Aug-2020	10-Aug-2020
						WR2000652-026	**WR2000652-027**	**WR2000652-028**	**WR2000652-029**	**WR2000652-030**
						Result	Result	Result	Result	Result
Metals										
uranium	7440-61-1	E440	0.0020	mg/kg		0.0084	0.0043	0.0046	0.0243	0.0128
vanadium	7440-62-2	E440	0.10	mg/kg		<0.10	<0.10	<0.10	0.38	0.14
zinc	7440-66-6	E440	0.50	mg/kg		133	104	26.1	170	170
zirconium	7440-67-7	E440	0.20	mg/kg		<0.20	<0.20	<0.20	<0.20	<0.20

Please refer to the General Comments section for an explanation of any qualifiers detected.

Analytical Results

Sub-Matrix: **Plant**
(Matrix: **Biota**)

Analyte	CAS Number	Method	LOR	Unit	Client sample ID	D3 - Centre, willow leaves	D3 - Centre, dwarf birch	D3 - North, willow leaves	D3 - North, dwarf birch	D3 - West, dwarf birch
					Client sampling date / time	10-Aug-2020	10-Aug-2020	10-Aug-2020	10-Aug-2020	10-Aug-2020
						WR2000652-031	WR2000652-032	WR2000652-033	WR2000652-034	WR2000652-035
						Result	Result	Result	Result	Result
Physical Tests										
moisture	----	E144	0.50	%		67.6	64.2	65.3	63.8	64.0
Metals										
aluminum	7429-90-5	E440	2.0	mg/kg		452	136	163	114	122
antimony	7440-36-0	E440	0.010	mg/kg		0.380	0.149	0.182	0.147	0.137
arsenic	7440-38-2	E440	0.020	mg/kg		7.18	2.36	2.44	1.99	1.88
barium	7440-39-3	E440	0.050	mg/kg		200	50.2	130	25.0	30.4
beryllium	7440-41-7	E440	0.010	mg/kg		0.034	0.011	0.028	<0.010	0.013
bismuth	7440-69-9	E440	0.010	mg/kg		0.179	0.071	0.083	0.054	0.061
boron	7440-42-8	E440	1.0	mg/kg		4.6	4.9	2.6	4.8	2.6
cadmium	7440-43-9	E440	0.0050	mg/kg		2.48	0.210	1.54	0.195	0.155
calcium	7440-70-2	E440	20	mg/kg		14500	5420	7650	4480	4550
cesium	7440-46-2	E440	0.0050	mg/kg		0.226	0.0802	0.0929	0.0576	0.0795
chromium	7440-47-3	E440	0.050	mg/kg		0.808	0.244	0.276	0.257	0.205
cobalt	7440-48-4	E440	0.020	mg/kg		6.85	0.659	6.72	0.608	0.797
copper	7440-50-8	E440	0.10	mg/kg		4.27	4.34	3.75	5.11	5.94
iron	7439-89-6	E440	3.0	mg/kg		665	221	234	191	197
lead	7439-92-1	E440	0.020	mg/kg		1.41	0.558	0.670	0.494	0.492
lithium	7439-93-2	E440	0.50	mg/kg		0.64	<0.50	<0.50	<0.50	<0.50
magnesium	7439-95-4	E440	2.0	mg/kg		3950	1920	2430	1440	1810
manganese	7439-96-5	E440	0.050	mg/kg		667	2370	710	2050	2390
mercury	7439-97-6	E510	0.0050	mg/kg		0.0109	0.0059	0.0065	0.0070	0.0081
molybdenum	7439-98-7	E440	0.020	mg/kg		0.240	0.056	0.138	0.042	0.055
nickel	7440-02-0	E440	0.20	mg/kg		16.9	6.20	13.2	4.69	6.85
phosphorus	7723-14-0	E440	10	mg/kg		4940	3860	3360	3910	4040
potassium	7440-09-7	E440	20	mg/kg		14500	6620	12300	8540	9660
rubidium	7440-17-7	E440	0.050	mg/kg		15.1	8.70	12.9	8.69	12.8
selenium	7782-49-2	E440	0.050	mg/kg		0.094	<0.050	<0.050	<0.050	<0.050
sodium	7440-23-5	E440	20	mg/kg		<20	<20	<20	<20	<20
strontium	7440-24-6	E440	0.050	mg/kg		130	16.2	77.4	9.71	12.7
tellurium	13494-80-9	E440	0.020	mg/kg		<0.020	<0.020	<0.020	<0.020	<0.020
thallium	7440-28-0	E440	0.0020	mg/kg		<0.0100 RRR	<0.0040 RRR	<0.0040 RRR	<0.0020	<0.0040 RRR
tin	7440-31-5	E440	0.10	mg/kg		<0.10	<0.10	<0.10	<0.10	<0.10

Analytical Results

Sub-Matrix: **Plant**
(Matrix: **Biota**)

Analyte	CAS Number	Method	LOR	Unit	Client sample ID	D3 - Centre, willow leaves	D3 - Centre, dwarf birch	D3 - North, willow leaves	D3 - North, dwarf birch	D3 - West, dwarf birch
					Client sampling date / time	10-Aug-2020	10-Aug-2020	10-Aug-2020	10-Aug-2020	10-Aug-2020
						WR2000652-031	WR2000652-032	WR2000652-033	WR2000652-034	WR2000652-035
						Result	Result	Result	Result	Result
Metals										
uranium	7440-61-1	E440	0.0020	mg/kg		0.0450	0.0176	0.0184	0.0152	0.0141
vanadium	7440-62-2	E440	0.10	mg/kg		0.77	0.21	0.21	0.18	0.18
zinc	7440-66-6	E440	0.50	mg/kg		115	160	86.7	164	171
zirconium	7440-67-7	E440	0.20	mg/kg		<0.20	<0.20	<0.20	<0.20	<0.20

Please refer to the General Comments section for an explanation of any qualifiers detected.

Analytical Results

Sub-Matrix: **Plant**
(Matrix: **Biota**)

Analyte	CAS Number	Method	LOR	Unit	Client sample ID	D3 - West, willow twigs	D3 - West, willow leaves	D3 - East, dwarf birch	D4B - Centre, dwarf birch	D4B - Centre, equisetum
					Client sampling date / time	10-Aug-2020	10-Aug-2020	10-Aug-2020	10-Aug-2020	10-Aug-2020
						WR2000652-036	WR2000652-037	WR2000652-038	WR2000652-039	WR2000652-040
						Result	Result	Result	Result	Result
Physical Tests										
moisture	----	E144	0.50	%		55.4	61.8	64.1	64.5	75.9
Metals										
aluminum	7429-90-5	E440	2.0	mg/kg		151	246	115	41.3	23.2
antimony	7440-36-0	E440	0.010	mg/kg		0.084	0.223	0.138	0.071	0.041
arsenic	7440-38-2	E440	0.020	mg/kg		0.915	2.89	1.92	0.802	0.800
barium	7440-39-3	E440	0.050	mg/kg		113	137	38.1	55.0	62.3
beryllium	7440-41-7	E440	0.010	mg/kg		<0.010	0.041	<0.010	<0.010	<0.010
bismuth	7440-69-9	E440	0.010	mg/kg		0.024	0.105	0.056	0.069	0.035
boron	7440-42-8	E440	1.0	mg/kg		3.0	1.4	6.0	13.6	7.5
cadmium	7440-43-9	E440	0.0050	mg/kg		1.28	1.98	0.169	0.0880	0.275
calcium	7440-70-2	E440	20	mg/kg		3910	9200	5400	6160	18700
cesium	7440-46-2	E440	0.0050	mg/kg		0.0834	0.160	0.0591	0.0226	0.249
chromium	7440-47-3	E440	0.050	mg/kg		0.828	0.330	0.224	0.100	0.154
cobalt	7440-48-4	E440	0.020	mg/kg		2.31	11.2	0.529	0.184	0.181
copper	7440-50-8	E440	0.10	mg/kg		5.16	3.24	4.08	3.29	4.48
iron	7439-89-6	E440	3.0	mg/kg		113	350	186	116	61.9
lead	7439-92-1	E440	0.020	mg/kg		0.379	0.886	0.494	0.252	0.135
lithium	7439-93-2	E440	0.50	mg/kg		<0.50	<0.50	<0.50	<0.50	<0.50
magnesium	7439-95-4	E440	2.0	mg/kg		1380	3130	1530	3410	4390
manganese	7439-96-5	E440	0.050	mg/kg		303	946	2440	799	55.2
mercury	7439-97-6	E510	0.0050	mg/kg		<0.0065 DLIS	0.0065	0.0065	0.0060	0.0072
molybdenum	7439-98-7	E440	0.020	mg/kg		0.106	0.210	0.055	0.079	0.352
nickel	7440-02-0	E440	0.20	mg/kg		5.99	14.7	6.00	1.49	0.52
phosphorus	7723-14-0	E440	10	mg/kg		1810	3940	4000	1720	1340
potassium	7440-09-7	E440	20	mg/kg		4800	9510	7690	6290	22200
rubidium	7440-17-7	E440	0.050	mg/kg		11.6	15.3	6.62	3.14	37.9
selenium	7782-49-2	E440	0.050	mg/kg		<0.050	0.095	<0.050	<0.050	0.077
sodium	7440-23-5	E440	20	mg/kg		49	<20	<20	<20	<20
strontium	7440-24-6	E440	0.050	mg/kg		40.4	98.8	14.2	14.8	54.4
tellurium	13494-80-9	E440	0.020	mg/kg		<0.020	<0.020	<0.020	<0.020	<0.020
thallium	7440-28-0	E440	0.0020	mg/kg		<0.0040 RRR	<0.0040 RRR	<0.0020	<0.0020	<0.0020
tin	7440-31-5	E440	0.10	mg/kg		<0.10	<0.10	<0.10	<0.10	<0.10

Analytical Results

Sub-Matrix: **Plant**
(Matrix: **Biota**)

Analyte	CAS Number	Method	LOR	Unit	Client sample ID	D3 - West, willow twigs	D3 - West, willow leaves	D3 - East, dwarf birch	D4B - Centre, dwarf birch	D4B - Centre, equisetum
					Client sampling date / time	10-Aug-2020	10-Aug-2020	10-Aug-2020	10-Aug-2020	10-Aug-2020
						WR2000652-036	WR2000652-037	WR2000652-038	WR2000652-039	WR2000652-040
						Result	Result	Result	Result	Result
Metals										
uranium	7440-61-1	E440	0.0020	mg/kg		0.0076	0.0184	0.0159	0.0124	0.0133
vanadium	7440-62-2	E440	0.10	mg/kg		0.10	0.25	0.18	<0.10	<0.10
zinc	7440-66-6	E440	0.50	mg/kg		106	120	168	179	24.3
zirconium	7440-67-7	E440	0.20	mg/kg		<0.20	<0.20	<0.20	<0.20	<0.20

Please refer to the General Comments section for an explanation of any qualifiers detected.

Analytical Results

Sub-Matrix: **Plant**
(Matrix: **Biota**)

Analyte	CAS Number	Method	LOR	Unit	Client sample ID	D4B - West, dwarf birch	D4B - West, willow leaves	D4B - West, willow twigs	D4B - South, willow leaves	D4B - South, willow twigs
					Client sampling date / time	10-Aug-2020	10-Aug-2020	10-Aug-2020	10-Aug-2020	10-Aug-2020
						WR2000652-041	WR2000652-042	WR2000652-043	WR2000652-044	WR2000652-045
						Result	Result	Result	Result	Result
Physical Tests										
moisture	----	E144	0.50	%		69.5	73.7	60.0	64.3	54.3
Metals										
aluminum	7429-90-5	E440	2.0	mg/kg		48.7	50.1	12.5	48.1	61.8
antimony	7440-36-0	E440	0.010	mg/kg		0.099	0.087	0.019	0.101	0.108
arsenic	7440-38-2	E440	0.020	mg/kg		1.06	1.04	0.195	1.16	1.10
barium	7440-39-3	E440	0.050	mg/kg		67.4	29.4	45.6	9.59	18.4
beryllium	7440-41-7	E440	0.010	mg/kg		<0.010	<0.010	<0.010	<0.010	<0.010
bismuth	7440-69-9	E440	0.010	mg/kg		0.070	0.049	0.012	0.066	0.072
boron	7440-42-8	E440	1.0	mg/kg		10.8	6.8	5.4	2.5	7.2
cadmium	7440-43-9	E440	0.0050	mg/kg		0.228	3.82	2.12	0.392	0.505
calcium	7440-70-2	E440	20	mg/kg		7110	15300	5220	8440	5870
cesium	7440-46-2	E440	0.0050	mg/kg		0.0255	0.0410	0.0085	0.0311	0.0258
chromium	7440-47-3	E440	0.050	mg/kg		0.138	0.177	0.105	0.127	0.217
cobalt	7440-48-4	E440	0.020	mg/kg		0.199	0.902	0.116	0.695	0.306
copper	7440-50-8	E440	0.10	mg/kg		4.08	5.37	7.09	1.93	2.64
iron	7439-89-6	E440	3.0	mg/kg		123	137	33.0	110	135
lead	7439-92-1	E440	0.020	mg/kg		0.293	0.202	0.067	0.226	0.338
lithium	7439-93-2	E440	0.50	mg/kg		<0.50	<0.50	<0.50	<0.50	<0.50
magnesium	7439-95-4	E440	2.0	mg/kg		2520	4550	1070	3100	1260
manganese	7439-96-5	E440	0.050	mg/kg		1170	102	29.2	63.2	102
mercury	7439-97-6	E510	0.0050	mg/kg		0.0072	0.0069	<0.0050	<0.0050	<0.0050
molybdenum	7439-98-7	E440	0.020	mg/kg		0.069	0.079	0.030	0.196	0.062
nickel	7440-02-0	E440	0.20	mg/kg		4.07	3.39	1.47	0.45	0.82
phosphorus	7723-14-0	E440	10	mg/kg		2310	3440	1160	1360	980
potassium	7440-09-7	E440	20	mg/kg		7810	20300	6310	12900	5230
rubidium	7440-17-7	E440	0.050	mg/kg		4.39	20.7	6.39	5.92	2.96
selenium	7782-49-2	E440	0.050	mg/kg		<0.050	0.138	<0.050	0.236	0.184
sodium	7440-23-5	E440	20	mg/kg		<20	<20	26	<20	<20
strontium	7440-24-6	E440	0.050	mg/kg		20.8	55.0	22.6	30.0	23.2
tellurium	13494-80-9	E440	0.020	mg/kg		<0.020	<0.020	<0.020	<0.020	<0.020
thallium	7440-28-0	E440	0.0020	mg/kg		<0.0040 RRR	<0.0020	<0.0040 RRR	<0.0020	<0.0020
tin	7440-31-5	E440	0.10	mg/kg		<0.10	<0.10	<0.10	<0.10	<0.10

Analytical Results

Sub-Matrix: **Plant**
(Matrix: **Biota**)

Analyte	CAS Number	Method	LOR	Unit	Client sample ID	D4B - West, dwarf birch	D4B - West, willow leaves	D4B - West, willow twigs	D4B - South, willow leaves	D4B - South, willow twigs
					Client sampling date / time	10-Aug-2020	10-Aug-2020	10-Aug-2020	10-Aug-2020	10-Aug-2020
						WR2000652-041	WR2000652-042	WR2000652-043	WR2000652-044	WR2000652-045
						Result	Result	Result	Result	Result
Metals										
uranium	7440-61-1	E440	0.0020	mg/kg		0.0090	0.0067	<0.0020	0.0080	0.0109
vanadium	7440-62-2	E440	0.10	mg/kg		<0.10	<0.10	<0.10	<0.10	0.11
zinc	7440-66-6	E440	0.50	mg/kg		259	194	82.6	45.2	124
zirconium	7440-67-7	E440	0.20	mg/kg		<0.20	<0.20	<0.20	<0.20	<0.20

Please refer to the General Comments section for an explanation of any qualifiers detected.

Analytical Results

Sub-Matrix: **Plant**
(Matrix: **Biota**)

Analyte	CAS Number	Method	LOR	Unit	Client sample ID	D4B - East, willow leaves	D4B - East, blueberries	D4B - East, dwarf birch	D4B - North, willow leaves	D4B - North, willow twigs
					Client sampling date / time	10-Aug-2020	10-Aug-2020	10-Aug-2020	10-Aug-2020	10-Aug-2020
						WR2000652-046	WR2000652-047	WR2000652-048	WR2000652-049	WR2000652-050
						Result	Result	Result	Result	Result
Physical Tests										
moisture	----	E144	0.50	%		65.2	85.3	62.9	71.4	54.1
Metals										
aluminum	7429-90-5	E440	2.0	mg/kg		26.6	7.9	34.3	55.4	46.9
antimony	7440-36-0	E440	0.010	mg/kg		0.070	0.019	0.068	0.104	0.069
arsenic	7440-38-2	E440	0.020	mg/kg		0.613	0.106	0.601	1.11	0.764
barium	7440-39-3	E440	0.050	mg/kg		20.1	14.2	69.6	15.8	16.1
beryllium	7440-41-7	E440	0.010	mg/kg		<0.010	<0.010	<0.010	<0.010	<0.010
bismuth	7440-69-9	E440	0.010	mg/kg		0.022	0.011	0.046	0.068	0.054
boron	7440-42-8	E440	1.0	mg/kg		7.9	11.4	11.6	9.1	10.6
cadmium	7440-43-9	E440	0.0050	mg/kg		0.585	0.151	0.0452	1.88	1.10
calcium	7440-70-2	E440	20	mg/kg		14300	1540	8390	10300	4760
cesium	7440-46-2	E440	0.0050	mg/kg		0.0118	0.0087	0.0124	0.105	0.0400
chromium	7440-47-3	E440	0.050	mg/kg		0.116	0.088	0.108	0.140	0.160
cobalt	7440-48-4	E440	0.020	mg/kg		0.545	<0.020	0.072	0.350	0.103
copper	7440-50-8	E440	0.10	mg/kg		2.25	4.19	3.57	4.00	7.44
iron	7439-89-6	E440	3.0	mg/kg		79.9	20.0	101	117	91.6
lead	7439-92-1	E440	0.020	mg/kg		0.152	0.033	0.216	0.234	0.177
lithium	7439-93-2	E440	0.50	mg/kg		<0.50	<0.50	<0.50	<0.50	<0.50
magnesium	7439-95-4	E440	2.0	mg/kg		3580	648	3120	4100	1230
manganese	7439-96-5	E440	0.050	mg/kg		350	110	508	322	154
mercury	7439-97-6	E510	0.0050	mg/kg		<0.0050	<0.0050	0.0055	0.0056	<0.0050
molybdenum	7439-98-7	E440	0.020	mg/kg		0.187	0.025	0.046	0.240	0.074
nickel	7440-02-0	E440	0.20	mg/kg		0.39	0.57	1.79	2.44	0.80
phosphorus	7723-14-0	E440	10	mg/kg		901	1340	1420	1520	1040
potassium	7440-09-7	E440	20	mg/kg		9650	7500	5970	18100	5250
rubidium	7440-17-7	E440	0.050	mg/kg		2.43	6.77	2.09	24.5	9.31
selenium	7782-49-2	E440	0.050	mg/kg		0.152	<0.050	<0.050	<0.050	<0.050
sodium	7440-23-5	E440	20	mg/kg		<20	<20	<20	<20	<20
strontium	7440-24-6	E440	0.050	mg/kg		53.7	5.10	25.2	34.5	19.0
tellurium	13494-80-9	E440	0.020	mg/kg		<0.020	<0.020	<0.020	<0.020	<0.020
thallium	7440-28-0	E440	0.0020	mg/kg		<0.0020	0.0045	0.0091	0.0047	0.0047
tin	7440-31-5	E440	0.10	mg/kg		<0.10	<0.10	<0.10	<0.10	<0.10

Analytical Results

Sub-Matrix: **Plant**
(Matrix: **Biota**)

Analyte	CAS Number	Method	LOR	Unit	Client sample ID	D4B - East, willow leaves	D4B - East, blueberries	D4B - East, dwarf birch	D4B - North, willow leaves	D4B - North, willow twigs
					Client sampling date / time	10-Aug-2020	10-Aug-2020	10-Aug-2020	10-Aug-2020	10-Aug-2020
						WR2000652-046	**WR2000652-047**	**WR2000652-048**	**WR2000652-049**	**WR2000652-050**
						Result	Result	Result	Result	Result
Metals										
uranium	7440-61-1	E440	0.0020	mg/kg		0.0073	<0.0020	0.0078	0.0084	0.0053
vanadium	7440-62-2	E440	0.10	mg/kg		<0.10	<0.10	<0.10	0.10	<0.10
zinc	7440-66-6	E440	0.50	mg/kg		124	20.0	180	134	133
zirconium	7440-67-7	E440	0.20	mg/kg		<0.20	<0.20	<0.20	<0.20	<0.20

Please refer to the General Comments section for an explanation of any qualifiers detected.

Analytical Results

Sub-Matrix: **Plant**
(Matrix: **Biota**)

Analyte	CAS Number	Method	LOR	Unit	Client sample ID	D4B - North, Equisetum	D5, East, poplar leaves	D5, East, poplar twigs	D5, Centre, willow leaves	D5, Centre, willow twigs
					Client sampling date / time	10-Aug-2020	10-Aug-2020	10-Aug-2020	10-Aug-2020	10-Aug-2020
						WR2000652-051	WR2000652-052	WR2000652-053	WR2000652-054	WR2000652-055
						Result	Result	Result	Result	Result
Physical Tests										
moisture	----	E144	0.50	%		71.0	62.6	49.0	60.3	46.9
Metals										
aluminum	7429-90-5	E440	2.0	mg/kg		11.7	19.7	16.3	26.4	11.4
antimony	7440-36-0	E440	0.010	mg/kg		0.027	0.050	0.028	0.056	0.020
arsenic	7440-38-2	E440	0.020	mg/kg		0.537	0.505	0.324	0.641	0.295
barium	7440-39-3	E440	0.050	mg/kg		67.3	25.4	42.9	15.2	13.0
beryllium	7440-41-7	E440	0.010	mg/kg		<0.010	<0.010	<0.010	<0.010	<0.010
bismuth	7440-69-9	E440	0.010	mg/kg		0.013	0.024	0.020	0.051	0.013
boron	7440-42-8	E440	1.0	mg/kg		8.6	8.9	11.9	8.2	9.8
cadmium	7440-43-9	E440	0.0050	mg/kg		0.199	0.809	0.844	5.05	2.30
calcium	7440-70-2	E440	20	mg/kg		18600	9760	7240	12800	4700
cesium	7440-46-2	E440	0.0050	mg/kg		0.271	0.0255	0.0144	0.0179	0.0069
chromium	7440-47-3	E440	0.050	mg/kg		0.084	0.097	0.071	0.121	0.055
cobalt	7440-48-4	E440	0.020	mg/kg		0.075	0.739	0.106	0.811	0.143
copper	7440-50-8	E440	0.10	mg/kg		3.81	2.38	3.82	4.73	4.79
iron	7439-89-6	E440	3.0	mg/kg		52.4	36.2	34.5	98.5	36.1
lead	7439-92-1	E440	0.020	mg/kg		0.063	0.172	0.130	0.125	0.069
lithium	7439-93-2	E440	0.50	mg/kg		<0.50	<0.50	<0.50	<0.50	<0.50
magnesium	7439-95-4	E440	2.0	mg/kg		4870	2720	1460	4580	936
manganese	7439-96-5	E440	0.050	mg/kg		73.0	74.1	28.4	340	104
mercury	7439-97-6	E510	0.0050	mg/kg		0.0064	<0.0050	<0.0050	0.0061	<0.0050
molybdenum	7439-98-7	E440	0.020	mg/kg		0.283	0.044	<0.020	0.212	0.086
nickel	7440-02-0	E440	0.20	mg/kg		0.96	1.12	0.45	5.98	1.24
phosphorus	7723-14-0	E440	10	mg/kg		1370	1720	803	2090	1040
potassium	7440-09-7	E440	20	mg/kg		18400	13200	6090	12200	3720
rubidium	7440-17-7	E440	0.050	mg/kg		35.8	5.86	3.94	10.4	4.09
selenium	7782-49-2	E440	0.050	mg/kg		<0.050	0.082	<0.050	<0.050	<0.050
sodium	7440-23-5	E440	20	mg/kg		<20	<20	<20	<20	<20
strontium	7440-24-6	E440	0.050	mg/kg		67.2	53.6	47.8	54.7	24.8
tellurium	13494-80-9	E440	0.020	mg/kg		<0.020	<0.020	<0.020	<0.020	<0.020
thallium	7440-28-0	E440	0.0020	mg/kg		0.0033	<0.0020	0.0084	0.0034	0.0045
tin	7440-31-5	E440	0.10	mg/kg		<0.10	<0.10	<0.10	<0.10	<0.10

Analytical Results

Sub-Matrix: **Plant**
(Matrix: **Biota**)

Analyte	CAS Number	Method	LOR	Unit	Client sample ID	D4B - North, Equisetum	D5, East, poplar leaves	D5, East, poplar twigs	D5, Centre, willow leaves	D5, Centre, willow twigs
					Client sampling date / time	10-Aug-2020	10-Aug-2020	10-Aug-2020	10-Aug-2020	10-Aug-2020
						WR2000652-051	WR2000652-052	WR2000652-053	WR2000652-054	WR2000652-055
						Result	Result	Result	Result	Result
Metals										
uranium	7440-61-1	E440	0.0020	mg/kg		0.0028	0.0061	0.0026	0.0065	0.0027
vanadium	7440-62-2	E440	0.10	mg/kg		<0.10	<0.10	<0.10	<0.10	<0.10
zinc	7440-66-6	E440	0.50	mg/kg		37.2	207	122	327	240
zirconium	7440-67-7	E440	0.20	mg/kg		<0.20	<0.20	<0.20	<0.20	<0.20

Please refer to the General Comments section for an explanation of any qualifiers detected.

Analytical Results

Sub-Matrix: **Plant**
(Matrix: **Biota**)

Analyte	CAS Number	Method	LOR	Unit	Client sample ID	D5, Centre, Equisetum	D5, South, poplar leaves	D5, South, poplar twigs	D5, South, Equisetum	D5, West, willow leaves
					Client sampling date / time	10-Aug-2020	10-Aug-2020	10-Aug-2020	10-Aug-2020	10-Aug-2020
						WR2000652-056	WR2000652-057	WR2000652-058	WR2000652-059	WR2000652-060
						Result	Result	Result	Result	Result
Physical Tests										
moisture	----	E144	0.50	%		77.7	68.4	54.9	75.5	56.4
Metals										
aluminum	7429-90-5	E440	2.0	mg/kg		15.8	50.3	11.9	17.2	24.5
antimony	7440-36-0	E440	0.010	mg/kg		0.017	0.101	0.018	0.019	0.070
arsenic	7440-38-2	E440	0.020	mg/kg		0.562	1.15	0.282	1.29	0.710
barium	7440-39-3	E440	0.050	mg/kg		30.9	8.69	11.2	39.4	7.84
beryllium	7440-41-7	E440	0.010	mg/kg		<0.010	<0.010	<0.010	<0.010	<0.010
bismuth	7440-69-9	E440	0.010	mg/kg		0.017	0.077	0.052	0.021	0.032
boron	7440-42-8	E440	1.0	mg/kg		19.4	6.0	9.2	15.8	6.0
cadmium	7440-43-9	E440	0.0050	mg/kg		0.572	2.42	1.92	0.473	3.60
calcium	7440-70-2	E440	20	mg/kg		18300	11700	5090	21000	7590
cesium	7440-46-2	E440	0.0050	mg/kg		0.253	0.0403	0.0099	0.241	0.0126
chromium	7440-47-3	E440	0.050	mg/kg		0.092	0.140	<0.050	0.096	0.068
cobalt	7440-48-4	E440	0.020	mg/kg		1.16	1.45	0.209	1.29	1.35
copper	7440-50-8	E440	0.10	mg/kg		4.55	5.39	6.59	3.70	3.66
iron	7439-89-6	E440	3.0	mg/kg		59.3	126	39.6	53.4	93.2
lead	7439-92-1	E440	0.020	mg/kg		0.078	0.238	0.058	0.110	0.148
lithium	7439-93-2	E440	0.50	mg/kg		<0.50	1.60	<0.50	<0.50	<0.50
magnesium	7439-95-4	E440	2.0	mg/kg		5600	4060	1350	5680	2400
manganese	7439-96-5	E440	0.050	mg/kg		94.3	121	33.8	61.1	517
mercury	7439-97-6	E510	0.0050	mg/kg		0.0070	<0.0050	<0.0050	0.0061	0.0057
molybdenum	7439-98-7	E440	0.020	mg/kg		0.278	0.146	0.037	0.233	0.395
nickel	7440-02-0	E440	0.20	mg/kg		1.54	4.19	1.55	1.25	4.78
phosphorus	7723-14-0	E440	10	mg/kg		1230	3580	1350	1110	2090
potassium	7440-09-7	E440	20	mg/kg		55100	22800	5760	44000	12200
rubidium	7440-17-7	E440	0.050	mg/kg		79.7	12.7	5.63	66.6	4.95
selenium	7782-49-2	E440	0.050	mg/kg		<0.050	0.056	<0.050	<0.050	0.052
sodium	7440-23-5	E440	20	mg/kg		72	<20	<20	55	<20
strontium	7440-24-6	E440	0.050	mg/kg		86.0	44.9	26.4	94.8	27.7
tellurium	13494-80-9	E440	0.020	mg/kg		<0.020	<0.020	<0.020	<0.020	<0.020
thallium	7440-28-0	E440	0.0020	mg/kg		0.0075	0.0138	0.0021	0.0051	0.0024
tin	7440-31-5	E440	0.10	mg/kg		<0.10	<0.10	<0.10	<0.10	<0.10

Analytical Results

Sub-Matrix: **Plant**
(Matrix: **Biota**)

Analyte	CAS Number	Method	LOR	Unit	Client sample ID	D5, Centre, Equisetum	D5, South, poplar leaves	D5, South, poplar twigs	D5, South, Equisetum	D5, West, willow leaves
					Client sampling date / time	10-Aug-2020	10-Aug-2020	10-Aug-2020	10-Aug-2020	10-Aug-2020
						WR2000652-056	WR2000652-057	WR2000652-058	WR2000652-059	WR2000652-060
						Result	Result	Result	Result	Result
Metals										
uranium	7440-61-1	E440	0.0020	mg/kg		0.0021	0.0088	0.0022	0.0043	0.0092
vanadium	7440-62-2	E440	0.10	mg/kg		<0.10	0.10	<0.10	<0.10	<0.10
zinc	7440-66-6	E440	0.50	mg/kg		44.7	309	176	43.2	207
zirconium	7440-67-7	E440	0.20	mg/kg		<0.20	<0.20	<0.20	<0.20	<0.20

Please refer to the General Comments section for an explanation of any qualifiers detected.

Analytical Results

Sub-Matrix: **Plant**
(Matrix: **Biota**)

Analyte	CAS Number	Method	LOR	Unit	Client sample ID	D5, West, willow twigs	D5, North, willow leaves	D5, North, willow twigs	----	----
					Client sampling date / time	10-Aug-2020	10-Aug-2020	10-Aug-2020	----	----
						WR2000652-061	WR2000652-062	WR2000652-063	--------	--------
						Result	Result	Result	----	----
Physical Tests										
moisture	----	E144	0.50	%		49.8	63.9	54.0	----	----
Metals										
aluminum	7429-90-5	E440	2.0	mg/kg		26.2	30.3	16.9	----	----
antimony	7440-36-0	E440	0.010	mg/kg		0.042	0.068	0.058	----	----
arsenic	7440-38-2	E440	0.020	mg/kg		0.463	0.672	0.389	----	----
barium	7440-39-3	E440	0.050	mg/kg		15.5	10.0	10.9	----	----
beryllium	7440-41-7	E440	0.010	mg/kg		<0.010	<0.010	<0.010	----	----
bismuth	7440-69-9	E440	0.010	mg/kg		0.033	0.034	0.024	----	----
boron	7440-42-8	E440	1.0	mg/kg		9.3	16.8	12.0	----	----
cadmium	7440-43-9	E440	0.0050	mg/kg		4.11	0.386	0.579	----	----
calcium	7440-70-2	E440	20	mg/kg		4740	13400	5590	----	----
cesium	7440-46-2	E440	0.0050	mg/kg		0.0115	0.0291	0.0131	----	----
chromium	7440-47-3	E440	0.050	mg/kg		0.115	0.082	0.074	----	----
cobalt	7440-48-4	E440	0.020	mg/kg		0.388	0.401	0.101	----	----
copper	7440-50-8	E440	0.10	mg/kg		4.11	4.05	5.35	----	----
iron	7439-89-6	E440	3.0	mg/kg		63.3	95.7	43.8	----	----
lead	7439-92-1	E440	0.020	mg/kg		0.141	0.143	0.105	----	----
lithium	7439-93-2	E440	0.50	mg/kg		<0.50	<0.50	<0.50	----	----
magnesium	7439-95-4	E440	2.0	mg/kg		974	3820	1240	----	----
manganese	7439-96-5	E440	0.050	mg/kg		185	96.8	37.4	----	----
mercury	7439-97-6	E510	0.0050	mg/kg		<0.0050	0.0074	<0.0050	----	----
molybdenum	7439-98-7	E440	0.020	mg/kg		0.144	0.154	0.049	----	----
nickel	7440-02-0	E440	0.20	mg/kg		1.84	5.18	2.10	----	----
phosphorus	7723-14-0	E440	10	mg/kg		1220	3640	1420	----	----
potassium	7440-09-7	E440	20	mg/kg		4890	21600	5640	----	----
rubidium	7440-17-7	E440	0.050	mg/kg		3.36	20.9	8.34	----	----
selenium	7782-49-2	E440	0.050	mg/kg		<0.050	<0.050	<0.050	----	----
sodium	7440-23-5	E440	20	mg/kg		21	<20	<20	----	----
strontium	7440-24-6	E440	0.050	mg/kg		23.5	50.2	28.5	----	----
tellurium	13494-80-9	E440	0.020	mg/kg		<0.020	<0.020	<0.020	----	----
thallium	7440-28-0	E440	0.0020	mg/kg		0.0032	0.0053	<0.0020	----	----
tin	7440-31-5	E440	0.10	mg/kg		<0.10	<0.10	<0.10	----	----

Analytical Results

Sub-Matrix: **Plant**
(Matrix: **Biota**)

Analyte	CAS Number	Method	LOR	Unit	Client sample ID	D5, West, willow twigs	D5, North, willow leaves	D5, North, willow twigs	----	----
					Client sampling date / time	10-Aug-2020	10-Aug-2020	10-Aug-2020	----	----
						WR2000652-061	WR2000652-062	WR2000652-063	--------	--------
						Result	Result	Result	----	----
Metals										
uranium	7440-61-1	E440	0.0020	mg/kg		0.0043	0.0188	0.0046	----	----
vanadium	7440-62-2	E440	0.10	mg/kg		<0.10	<0.10	<0.10	----	----
zinc	7440-66-6	E440	0.50	mg/kg		193	180	114	----	----
zirconium	7440-67-7	E440	0.20	mg/kg		<0.20	<0.20	<0.20	----	----

Please refer to the General Comments section for an explanation of any qualifiers detected.

APPENDIX C

SOILS DATA

- **TABLE C-1**
- **ANALYTICAL REPORT, AUGUST 2020**

TABLE C-1			COMPARISONS OF SOIL SAMPLES COLLECTED 2.5 METERS FROM THE NORTH AND EAST PLOTS							
Site			**D-1B**		**D-2B**		**D-3**		**D-4B**	
Location of sample; 2.5 m from			**East Plot**	**North Plot**	**East Plot**	**North Plot**	**East Plot**	**North Plot**	**East Plot**	**North Plot**
Year Sampled			**2020**	**2018**	**2020**	**2019**	**2020**	**2018**	**2020**	**2019**
Physical Tests (Matrix: Soil/Solid)										
pH (1:2 soil:water)	0.10	pH units	5.28	4.62	5.07	8.23	4.59	4.85	5.71	6.00
Particle Size (Matrix: Soil/Solid)										
sand (2.0mm - 0.05mm)	1	%	21.92	50.0	53.62	41.2	44.35	38.4	45.87	20.2
silt (0.05mm - 0.002mm)	1	%	68.51	45.7	41.13	54.7	48.91	57.4	45.7	58.9
clay (<0.002mm)	1	%	9.57	4.3	5.24	4.1	6.74	4.2	8.43	20.9
texture class			Silt Loam	Sandy loam	Sandy Loam	Silt loam	Loam /Sandy Loam	Silt loam	Loam	Silt loam
Anions and Nutrients (Matrix: Soil/Solid)										
nitrogen, total	0.020	%	0.091	0.710	0.086	0.025	0.188	0.066	0.165	1.12
Plant Available Nutrients (Matrix: Soil/Solid)										
nitrate + nitrite, available (as N)	1.0	mg/kg	<1.0	<3.0	<1.0	<2.0	<1.0	<2.0	<1.0	<5.0
phosphate, available (as P)	2.0	mg/kg	2.5	<3.0	2.5	<2.0	2.7	<2.0	<2.0	<5.0
potassium, available	20	mg/kg	31	<1.2	104	<0.80	134	<0.40	62	<2.0
nitrite, available (as N)	0.40	mg/kg	<0.40	<2.0	<0.40	<2.0	<0.40	2.0	<0.40	<4.0
Metals (Matrix: Soil/Solid)										
aluminum	50	mg/kg	17200	15200	9970	8340	14000	15500	11000	5200
antimony	0.10	mg/kg	9.57	2.00	3.01	2.32	5.13	6.21	7.41	3.44
arsenic	0.10	mg/kg	20.4	15.1	95.7	32.8	83.5	115	33.4	5.17
barium	0.50	mg/kg	180	134	156	348	153	205	139	327
beryllium	0.10	mg/kg	0.57	0.47	0.38	0.31	0.41	0.55	0.28	0.30
bismuth	0.20	mg/kg	<0.20	<0.20	0.31	0.24	0.66	0.64	0.33	<0.20
boron	5.0	mg/kg	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
cadmium	0.020	mg/kg	0.185	0.123	0.214	0.380	0.33	0.258	0.34	0.418
calcium	50	mg/kg	1930	1300	1610	11600	1440	1930	4220	38600
chromium	0.50	mg/kg	32.2	26.2	19.1	18.8	52.7	42.2	121	6.18
cobalt	0.10	mg/kg	8.18	5.94	8.25	8.81	9.89	11.0	10.8	3.86
copper	0.50	mg/kg	27.5	18.0	19.7	27.9	28.2	28.9	22.1	25.9
iron	50	mg/kg	25800	21200	20500	22000	26100	28800	27200	5920
lead	0.50	mg/kg	45.2	19.8	17.6	12.6	21.5	40.6	29.5	8.43
lithium	2.0	mg/kg	18.6	13.4	14.4	10.2	15.7	19.7	14.5	<2.0
magnesium	20	mg/kg	5120	3880	3560	5760	5440	6050	4370	2330
manganese	1.0	mg/kg	190	195	302	425	305	346	499	510
mercury	0.0050	mg/kg	0.0403	0.0543	0.0373	0.0329	0.0287	0.0239	0.0663	0.146
molybdenum	0.10	mg/kg	1.41	1.19	0.85	1.01	1.92	0.83	7.51	0.66
nickel	0.50	mg/kg	25.6	17.7	20.3	24.3	46.4	35.3	68.5	12.8
phosphorus	50	mg/kg	517	531	407	808	402	483	453	1080
potassium	100	mg/kg	980	850	1130	840	1500	1840	650	220
selenium	0.20	mg/kg	0.45	0.37	0.23	0.32	0.24	0.25	0.31	0.86
silver	0.10	mg/kg	0.11	0.11	0.19	0.15	0.13	<0.10	0.22	0.58
sodium	50	mg/kg	71	86	64	119	74	91	<50	107
strontium	0.50	mg/kg	14.5	13.2	14.2	35.0	13.2	17.0	23	156
sulfur	1000	mg/kg	<1000	<1000	<1000	<1000	<1000	<1000	<1000	1600
thallium	0.050	mg/kg	0.203	0.220	0.141	0.088	0.18	0.234	0.088	0.054
tin	2.0	mg/kg	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
titanium	1.0	mg/kg	472	514	405	425	385	727	129	109
tungsten	0.50	mg/kg	9.09	4.35	10.2	1.73	<0.50	<0.50	0.53	<0.50
uranium	0.050	mg/kg	1.34	1.75	0.966	0.600	0.877	1.12	0.955	0.998
vanadium	0.20	mg/kg	53.1	55.1	29.3	33.8	41.6	47.3	29.3	8.55
zinc	2.0	mg/kg	111	56.6	52.3	66.8	77.6	73.5	75	20.3
zirconium	1.0	mg/kg	<1.0	<1.0	1.3	3.2	<1.0	<1.0	1.5	3.2

ALS Environmental

CERTIFICATE OF ANALYSIS

Work Order	: **WR2000652**	Page	: 1 of 28
Client	: **Victoria Gold (Yukon) Corp.**	Laboratory	: Whitehorse - Environmental
Contact	: Bill Bowden	Account Manager	: Hilary Woods
Address	: Suite 1000 - 1050 W. Pender St Vancouver BC Canada V6E 3S7	Address	: #12 151 Industrial Road Whitehorse YT Canada Y1A 2V3
Telephone	: 867.456.7700 ext. 6381	Telephone	: +1 867 668 6689
Project	: Eagle Gold	Date Samples Received	: 10-Aug-2020 14:07
PO	: 16965	Date Analysis Commenced	: 14-Aug-2020
C-O-C number	: 1 of 5	Issue Date	: 28-Sep-2020 08:36
Sampler	: Bonnie Burns & Crystal Beaudry		
Site	: Victoria Gold Corp.		
Quote number	: Q68199		
No. of samples received	: 63		
No. of samples analysed	: 63		

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QC Interpretive report to assist with Quality Review and Sample Receipt Notification (SRN).

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is conducted in accordance with US FDA 21 CFR Part 11.

Signatories	*Position*	*Laboratory Department*
Angela Ren	Team Leader - Metals	Metals, Burnaby, British Columbia
Dwayne Bennett	Technical Specialist	Metals, Saskatoon, Saskatchewan
Evan Ben-Oliel	Metal Analyst	Metals, Burnaby, British Columbia
Hedy Lai	Team Leader - Inorganics	Inorganics, Saskatoon, Saskatchewan
Kinny Wu	Lab Analyst	Metals, Burnaby, British Columbia
Melissa Shaw	Team Leader - Inorganics	Inorganics, Saskatoon, Saskatchewan
Nancy Cruse	Laboratory _ Supervisor	Inorganics, Saskatoon, Saskatchewan
Rebecca Merilees	Team Leader - Soil Preparation	Inorganics, Saskatoon, Saskatchewan
Robin Weeks	Team Leader - Metals	Metals, Burnaby, British Columbia
Xihua Yao	Laboratory Analyst	Inorganics, Saskatoon, Saskatchewan

General Comments

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Refer to the ALS Quality Control Interpretive report (QCI) for applicable references and methodology summaries. Reference methods may incorporate modifications to improve performance.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

Please refer to Quality Control Interpretive report (QCI) for information regarding Holding Time compliance.

Key : CAS Number: Chemical Abstracts Services number is a unique identifier assigned to discrete substances
LOR: Limit of Reporting (detection limit).

Unit	*Description*
-	No Unit
%	percent
mg/kg	milligrams per kilogram
pH units	pH units

<: less than.

>: greater than.

Surrogate: An analyte that is similar in behavior to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.

Test results reported relate only to the samples as received by the laboratory.

UNLESS OTHERWISE STATED on SRN or QCI Report, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

Analytical results in reports identified as "Preliminary Report" are considered authorized for use.

Workorder Comments

RRR: Due to RM failure, Thallium LOR has been raised within 5 LOR.

Qualifiers

Qualifier	*Description*
DLIS	*Detection Limit Adjusted due to insufficient sample.*
RRR	*Refer to report remarks for issues regarding this analysis.*

Analytical Results

Sub-Matrix: **Soil/Solid**
(Matrix: **Soil/Solid**)

Analyte	CAS Number	Method	LOR	Unit	Client sample ID	D-1B	D-2B	D-3	D-4B	D-5
					Client sampling date / time	09-Aug-2020	08-Aug-2020	09-Aug-2020	08-Aug-2020	08-Aug-2020
						WR2000652-001	WR2000652-002	WR2000652-003	WR2000652-004	WR2000652-005
						Result	Result	Result	Result	Result
Physical Tests										
pH (1:2 soil:water)	----	E108	0.10	pH units		5.28	5.07	4.59	5.71	6.60
Particle Size										
texture class	----	E180A	-	-		Silt Loam	Sandy Loam	Loam /Sandy Loam	Loam	Loamy Sand
silt (0.05mm - 0.002mm)	----	E180A	1	%		68.51	41.13	48.91	45.70	14.36
sand (2.0mm - 0.05mm)	----	E180A	1	%		21.92	53.62	44.35	45.87	84.69
clay (<0.002mm)	----	E180A	1	%		9.57	5.24	6.74	8.43	0.95
Anions and Nutrients										
nitrogen, total	7727-37-9	E366	0.020	%		0.091	0.086	0.188	0.165	0.049
Inorganic Parameters										
sulfur, total	7704-34-9	E399	500	mg/kg		950	790	860	850	900
Plant Available Nutrients										
nitrate + nitrite, available (as N)	----	E269.N+N	1.0	mg/kg		<1.0	<1.0	<1.0	<1.0	<1.0
nitrite, available (as N)	14797-65-0	E269.NO2	0.40	mg/kg		<0.40	<0.40	<0.40	<0.40	<0.40
phosphate, available (as P)	14265-44-2	E384	2.0	mg/kg		2.5	2.5	2.7	<2.0	<2.0
potassium, available	7440-09-7	E390	20	mg/kg		31	104	134	62	34
Metals										
aluminum	7429-90-5	E440	50	mg/kg		17200	9970	14000	11000	5580
antimony	7440-36-0	E440	0.10	mg/kg		9.57	3.01	5.13	7.41	16.4
arsenic	7440-38-2	E440	0.10	mg/kg		20.4	95.7	83.5	33.4	92.7
barium	7440-39-3	E440	0.50	mg/kg		180	156	153	139	71.7
beryllium	7440-41-7	E440	0.10	mg/kg		0.57	0.38	0.41	0.28	0.23
bismuth	7440-69-9	E440	0.20	mg/kg		<0.20	0.31	0.66	0.33	0.36
boron	7440-42-8	E440	5.0	mg/kg		<5.0	<5.0	<5.0	<5.0	<5.0
cadmium	7440-43-9	E440	0.020	mg/kg		0.185	0.214	0.330	0.340	0.302
calcium	7440-70-2	E440	50	mg/kg		1930	1610	1440	4220	1460
chromium	7440-47-3	E440	0.50	mg/kg		32.2	19.1	52.7	121	13.5
cobalt	7440-48-4	E440	0.10	mg/kg		8.18	8.25	9.89	10.8	10.4
copper	7440-50-8	E440	0.50	mg/kg		27.5	19.7	28.2	22.1	23.9
iron	7439-89-6	E440	50	mg/kg		25800	20500	26100	27200	21300
lead	7439-92-1	E440	0.50	mg/kg		45.2	17.6	21.5	29.5	32.9
lithium	7439-93-2	E440	2.0	mg/kg		18.6	14.4	15.7	14.5	10.4

Analytical Results

Sub-Matrix: **Soil/Solid**
(Matrix: **Soil/Solid**)

Analyte	CAS Number	Method	LOR	Unit	Client sample ID	D-1B	D-2B	D-3	D-4B	D-5
					Client sampling date / time	09-Aug-2020	08-Aug-2020	09-Aug-2020	08-Aug-2020	08-Aug-2020
						WR2000652-001	WR2000652-002	WR2000652-003	WR2000652-004	WR2000652-005
						Result	Result	Result	Result	Result
Metals										
magnesium	7439-95-4	E440	20	mg/kg		5120	3560	5440	4370	2900
manganese	7439-96-5	E440	1.0	mg/kg		190	302	305	499	470
mercury	7439-97-6	E510	0.0050	mg/kg		0.0403	0.0373	0.0287	0.0663	0.0229
molybdenum	7439-98-7	E440	0.10	mg/kg		1.41	0.85	1.92	7.51	0.59
nickel	7440-02-0	E440	0.50	mg/kg		25.6	20.3	46.4	68.5	22.6
phosphorus	7723-14-0	E440	50	mg/kg		517	407	402	453	334
potassium	7440-09-7	E440	100	mg/kg		980	1130	1500	650	750
selenium	7782-49-2	E440	0.20	mg/kg		0.45	0.23	0.24	0.31	<0.20
silver	7440-22-4	E440	0.10	mg/kg		0.11	0.19	0.13	0.22	0.22
sodium	7440-23-5	E440	50	mg/kg		71	64	74	<50	<50
strontium	7440-24-6	E440	0.50	mg/kg		14.5	14.2	13.2	23.0	15.5
sulfur	7704-34-9	E440	1000	mg/kg		<1000	<1000	<1000	<1000	<1000
thallium	7440-28-0	E440	0.050	mg/kg		0.203	0.141	0.180	0.088	0.094
tin	7440-31-5	E440	2.0	mg/kg		<2.0	<2.0	<2.0	<2.0	<2.0
titanium	7440-32-6	E440	1.0	mg/kg		472	405	385	129	150
tungsten	7440-33-7	E440	0.50	mg/kg		9.09	10.2	<0.50	0.53	2.86
uranium	7440-61-1	E440	0.050	mg/kg		1.34	0.966	0.877	0.955	0.926
vanadium	7440-62-2	E440	0.20	mg/kg		53.1	29.3	41.6	29.3	13.9
zinc	7440-66-6	E440	2.0	mg/kg		111	52.3	77.6	75.0	84.1
zirconium	7440-67-7	E440	1.0	mg/kg		<1.0	1.3	<1.0	1.5	3.0

Please refer to the General Comments section for an explanation of any qualifiers detected.

APPENDIX N

Seeding and Erosion Control Installations at Specific Sites, Eagle Gold Project 2020

#4 – 25 Pilgrim Place
Whitehorse, Y.T.
Y1A 0M7
867-668-6838

TECHNICAL MEMO

To: Bill Bowden
Victoria Gold

Date: October 23, 2020

From: Bonnie Burns
Laberge Environmental Services

Re: **SEEDING AND EROSION CONTROL INSTALLATIONS AT SPECIFIC SITES, EAGLE GOLD PROJECT, 2020**

Bonnie Burns and Alex Therriault of Laberge Environmental Services conducted the fall seeding program and installed some bioengineering structures at several sites from Sept 18 to 30, 2020. The purpose of the revegetation program was to prevent and control erosion on the newly exposed slopes created during the construction of several operational structures at the Eagle Gold mining site at the Dublin Gulch property. On-site staff who participated in the seeding programs as their other duties allowed, included Kate Titterington, Faith Ladue, and Muhammad Yasirkhan. Photographs of the activities are provided in Appendix A.

A custom reclamation seed mix was ordered from BrettYoung of Calmar, Alberta. Due to their small size, fowl bluegrass, Rocky Mountain fescue and tufted hairgrass seeds were shipped in bags comprised of 10%, 19% and 41% of the total mix respectively. Slender wheatgrass seeds were shipped in individual bags and applied separately due to their much larger size. The composition of the mix that was applied to the seeded areas is summarized below in Table 1.

TABLE 1 SEED MIX FOR EROSION CONTROL AT EAGLE GOLD PROJECT

Common Name	Scientific Name	Percent Composition
Fowl bluegrass	*Poa palustris*	10
Rocky Mountain Fescue	*Festuca saximontana*	19
Tufted hairgrass	*Deschampsia caespitosa*	41
Slender wheatgrass	*Elymus trachycaulus*	30

Fall Seeding Program

Several steep slopes were identified as requiring seeding this fall. These are identified on Figure 1 and details are presented in Table 2. All areas were seeded at a rate of 30.5 kg/ha of pure live seed. Not all sites displayed on Figure 1 were seeded for a variety of reasons: the ground of the chosen areas was not prepped in time; insufficient small seed; and lack of time and personnel resources.

TABLE 2 AREAS SEEDED IN 2020

Area	Size (ha)	Estimated Slope (%)	Aspect
G	1.13	0 to 20	Mostly west facing with a level area
E	1.31	50	South and east facing
D	0.13	55	West facing
A	2.91	46 to 51	South facing
J	0.87	40	West and north facing



Area G
Area G was the first site prepared by cross-ripping. Seeding conditions were great and the soil was loose and moist. Alex, Faith and Bonnie hand spread 11 kg of the small seed mix and 30.1 kg of wheatgrass.

Area E
Due to the steep slope of Area E it could not be cross-ripped but was tracked and roughened using a bulldozer. Not all of Area E could be prepared due to the extreme steepness at the eastern end, however the complete seed mixture 12.8 kg of small seed and 34.8 kg of wheatgrass was applied by Alex and Kate.

Area D
The same preparation procedure as was used for Area E was used again at Area D due to the steepness of the slope. The small area of D was seeded with 1.3 kg of the small seed mix and 3.5 kg of wheatgrass by Alex and Kate.

Area A
It took several days for the large area of A to be prepared and it was seeded gradually over time

with a total of 28.3 kg of the small seed mix and 77.4 kg of wheatgrass by Alex, Kate and Muhammad.

Area J
Area J was seeded by Kate and Alex with 8.5 kg of the small seed mix and 23.1 kg of wheatgrass.

In total, it took 49 person hours to seed 6.35 ha in 2020. The number of hectares seeded in 2019 and in 2020 totals 11.4 representing the broadcasting of a combined total of 480 kg of seeds.

Soil Characterization

Composite soil samples were collected from each of the areas and submitted to ALS for a variety of analyses. Selected characteristics are summarized in tables below and the complete report is included as Appendix B.

TABLE 3 PHYSICAL AND NUTRIENT CHARACTERISTICS

Parameter	LDL	Units	Area A	Area D	Area E	Area G	Area J
pH (1:2 soil:water)	0.1	pH units	8.13	8.18	7.54	8.17	8.01
Texture class			Coarse	Coarse	Coarse	Coarse	Fine
Available phosphate (as P)	2	mg/kg	<2.0	3.5	3.8	<2.0	<2.0
Available nitrate + nitrite (as N)	1	mg/kg	<1.0	<1.0	<1.0	<1.0	<1.0
Available nitrite (as N)	0.4	mg/kg	<0.40	0.49	<0.40	0.54	0.41
Available nitrate (as N)	2	mg/kg	<2.0	<2.0	<2.0	<2.0	<2.0
Available potassium	20	mg/kg	41	88	75	78	56
Total carbon	0.05	%	0.274	0.142	0.169	0.153	0.397
Inorganic carbon (as CaCO3 equivalent)	0.4	%	0.6	0.45	0.45	0.57	0.8
Inorganic carbon	0.05	%	0.072	0.054	0.054	0.068	0.096
Total organic carbon	0.05	%	0.202	0.088	0.115	0.085	0.301
Organic matter	0.1	%	0.35	0.15	0.2	0.15	0.52

The soil at all areas was near neutral or slightly alkaline with pH ranging from 7.54 to 8.18 (Table 3). All soils were coarse with the exception of fine soils located at Area J. The soil at Areas D and E contained available phosphate but was not detected at the other areas. Except for available nitrite at Areas D and G, there was no nitrogen, documented in any form, in the other soil samples. Available potassium was documented at all areas and ranged from 41 mg/kg to 88 mg/kg. Carbon, organic and inorganic, and organic matter were present at all areas with the greatest concentrations occurring at Area J.

The soil samples were also analyzed for a suite of 35 metals (Appendix B). Of these, boron and tin were not detected in any samples. Concentrations of applicable metals were compared to the most recent Canadian Council of Ministers of the Environment (CCME) guidelines and the Yukon Contaminated Sites Regulations (CSR) for agriculture and parklands (Table 4). Arsenic was the only parameter that exceeded all of these guidelines in all of the samples. Concentrations ranged from 85.4 mg/kg at Area A to 1480 mg/kg at Area D. There were a few other exceedances; antimony at Areas D, E and J, lead at Area E, the CCME guideline for copper and nickel at Area E.

As a measure of quality assurance and quality control (QA/QC) a duplicate composite soil sample was collected from Area A. The relative percent difference (RPD) for all parameters was calculated to determine the representativeness of sample collection and thus the validity of the data (Table B-1, Appendix B). CCME (2016) has suggested that the RPD for soils should be ≤30%. Based on this, the representativeness of antimony, arsenic, mercury and strontium may be questionable. However, the vast majority of RPD for the remaining parameters were well below 30% and would indicate that the soil samples are representative of the locations sampled and that data integrity is intact.

In summary, the characteristics documented in the soil at the five sites appear suitable for revegetation with native species. The high concentrations of arsenic do not appear to be inhibiting growth as evidenced by the healthy forest surrounding the site as well as the healthy growth of grasses on the 2019 seeded areas (Laberge Environmental Services, 2020a). Soil samples were collected from these sites in 2019 and analysis reported high levels of arsenic throughout (Laberge Environmental Services, 2019a). Arsenic is associated with the gold bearing anomalies in the district. Stantec (2011) states in their baseline report that the soil and overburden of the local study area are highly enriched with arsenic and most baseline samples collected have concentrations well above the CCME and Yukon CSR guidelines for Agriculture and Parkland soils. The mean concentration of arsenic in soils (0 – 50 cm depth) was 193 mg/kg, with a range of 2.4 to 880 mg/kg. In overburden, the mean arsenic concentration was 320 mg/kg, ranging from 23.7 to 1350 mg/kg (Stantec 2011).

Although present in the foliar tissues, the vegetation monitoring programs conducted in 2018, 2019 and 2020 indicated that arsenic was not readily taken up by the plants, although concentrations could be quite high in the corresponding soil (Laberge Environmental Services, 2018 a and b, Laberge Environmental Services, 2019b and Laberge Environmental Services, 2020b). It is assumed that arsenic is tightly bound up in the soil and rocks and/or is not in a bioavailable form for plant uptake.

TABLE 4 SELECTED METAL RESULTS COMPARED TO CCME AND YUKON AGRICULTURE AND PARKLAND GUIDELINES FOR SOILS

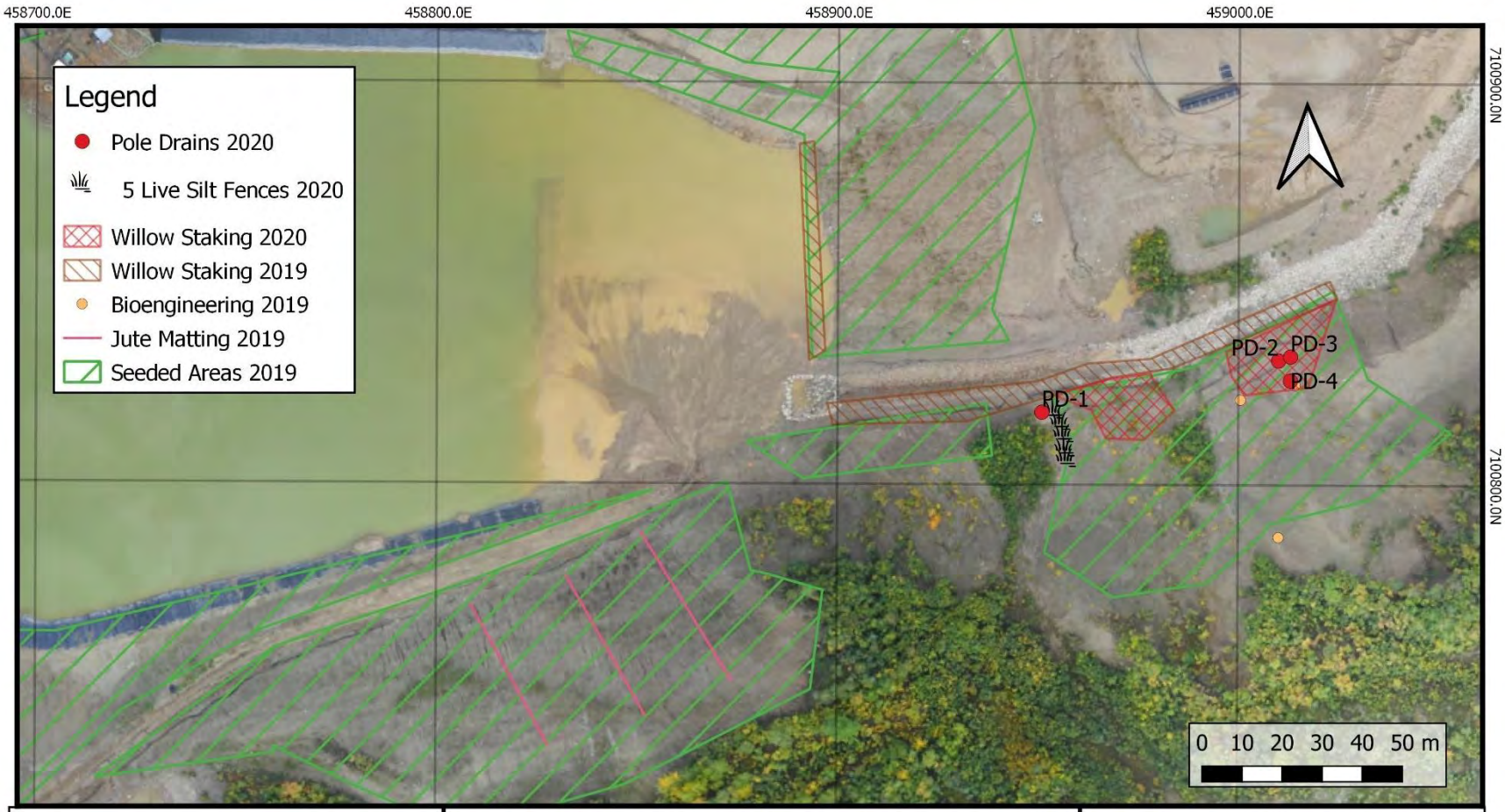
Parameter	Site-A	Site-D	Site-E	Site-G	Site-J	CCME (mg/kg)		Yukon CSR (mg/kg)	
						Agriculture	Parkland	Agriculture	Parkland
Antimony (Sb)	7.22	**48.9**	**69.4**	17.5	**21.4**	20	20	20	20
Arsenic (As)	**85.4**	**1480**	**1140**	**497**	**204**	12	12	15	15
Barium (Ba)	47.5	112	110	100	113	750	500	750	500
Beryllium (Be)	0.3	0.76	1.05	0.97	0.39	4	4	4	4
Cadmium (Cd)	0.147	0.506	0.901	0.339	0.406	1.4	10	1.5	1.5
Chromium (Cr)	16	18.6	21.9	20.9	17.6	64	64	50	60
Cobalt (Co)	15.4	17.1	21.3	16.9	12.8	40	50	40	50
Copper (Cu)	49.7	50.3	**65.2**	45.1	35.2	63	63	90	90
Lead (Pb)	22	64.5	**153**	51.2	**81.3**	70	140	100	100
Mercury (Hg)	0.0232	0.0869	0.0479	0.0488	0.0541	6.6	6.6	0.6	15
Molybdenum (Mo)	0.43	1.48	1.88	1.75	0.77	5	10	5	10
Nickel (Ni)	28.3	38.1	**50.3**	36.7	29.3	45	45	150	150
Selenium (Se)	<0.20	0.25	0.27	0.24	0.29	1	1	2	1
Silver (Ag)	0.4	1.55	1.92	0.32	1.51	20	20	20	20
Thallium (Tl)	0.109	0.491	0.552	0.412	0.184	1	1	2	--
Tin (Sn)	<2.0	<2.0	<2.0	<2.0	<2.0	5	50	5	50
Uranium	1.04	2.45	2.65	2.48	1.52	23	23		
Vanadium (V)	17.2	22	25.5	25.2	21.1	130	130	200	200
Zinc (Zn)	65.4	122	127	105	99.7	250	250	150	150

Note: Exceedances of the guideline(s) are highlighted in orange.

Bioengineering Program

Willows were harvested from the donor area near W29 on September 20th for additional installations of pole drains and further staking near the Lower Dublin Settling Pond (LDSP) (Figure 2) and at the stream crossings by the conveyor belt (Figure 3), to complement work completed in the fall of 2019. Donor plants from the 2019 harvesting were recovering, and sprouting on the stems was observed (see Photo in Appendix A).

Precipitation was high during the summer season of 2020 resulting in the creation of a few gullies near the silt fences at LDSP. The smaller ones were backfilled and then staked. Pole drains were constructed and placed within the larger gullies and then backfilled. Willow staking was applied throughout in moist areas or where future gullying was anticipated at a density of one to three stakes per square meter. Details of the pole drain installations are tabulated below (Table 5).



Notes:
2019 Seed mix: slender wheatgrass, fowl bluegrass, ticklegrass, tufted hairgrass
Application rate: 18.5 kg/ha (around pond)
30.5 kg/ha (cutbank)

Bioengineering species: feltleaf willow, little tree willow

Figure 2: Seeding and Bioengineering at Lower Dublin Settling Pond 2019 & 2020

Prepared by: Krystal Isbister
FloraTek Consulting

Coordinate System: NAD 83/Yukon Albers

Image: Orthophoto VG 2020-09-02

Mapping Software: QGIS 3.2.2

Date: October 30th, 2020



Legend

Willow Staking 2019 & 2020

Figure 3. Locations of bioengineering installations near the conveyor belt, 2019 and 2020

Prepared by: Krystal Isbister
FloraTek Consulting

Coordinate System: NAD 83/Yukon Albers

Imagery: Orthophoto VG 2020-09-02

Mapping Software: QGIS 3.2.2

Date: November 1, 2020

TABLE 5 POLE DRAIN LOCATIONS, SEPT 2020			
Pole Drain #	NAD 83 Zone 8W		Elevation (m)
	Easting	Northing	
PD-1	458951	7100818	825.1
PD-2	459010	7100831	828.3
PD-3	459013	7100826	829.7
PD-4	459013	7100823	831.4

A large gully, approximately 60 cm deep and 7 m long had formed near the first series of silt fences at the weir pond. Water was still trickling down the slope and through the gully. A series of small live silt fences was installed across this minimal flow to decrease the velocity and also allow sediment to settle out. A large pole drain (PD-1) was constructed and installed in the gully between the two rows of silt fencing.

Three shorter pole drains were installed in a gully that was eroding beside the pole drain installed in 2019 at the far eastern edge of the second series of silt fences. Some erosion was occurring along the "Y" pole drain that was installed in 2019 and this was backfilled. Photographs are presented in Appendix A.

Recommendations for 2021

- Prepare the remaining areas (B, G, H, I, L) and apply the mixed seed and the wheatgrass seed at the 30.5 kg/ha rate in May or June – timing to be determined by weather and spring conditions. If this cannot be accomplished in the spring, conduct a fall seeding program. Fall seeding is preferable as it allows insitu scarification and/or stratification of the seeds over the winter, and moisture is already present in the soil after snowmelt for germination in the following spring.

- Conduct an assessment of all seeded sites (including the 2019 sites) in mid summer (mid July to early August) to identify any areas missed or newly eroded. Include these areas in the fall seeding program.

- Inspect the bioengineered structures and upgrade or repair as necessary in the fall.

- Only use the annual rye grass from late July onwards to ensure that they do not produce seed and thus remain an annual grass.

As an adaptive management approach regarding erosion control at the site, a Trigger and Response Plan (TARP) has been suggested below.

TABLE 6 TRIGGER AND RESPONSE PLAN FOR EROSION CONTROL			
	Yellow Trigger Level	Orange Trigger Level	Red Trigger Level
Trigger	Minor localized gullying on slopes	Significant erosion of slope which could impact water quality in the receiving environment	Imminent failure of an embankment that may release mine waste offsite.
Action	Backfilling, revegetation, bioengineering	Resloping, revegetation and/or armouring	To be determined based on the specific conditions

REFERENCES

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Laberge Environmental Services. 2018a. Vegetation Monitoring at the Eagle Gold Project 2018. Submitted to Victoria Gold.

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Laberge Environmental Services. 2019a. Technical Memo: Soil Sample Results for Assessing Erosion Control Measures. Submitted to Victoria Gold July 3rd, 2019.

Laberge Environmental Services. 2019b. Vegetation Monitoring at the Eagle Gold Project including Soil Sampling at D-2B and D-4B. Submitted to Victoria Gold.

Laberge Environmental Services. 2020a. Technical Memo: Inspection of Erosion Control Measures Installed in September 2019. Submitted to Victoria Gold, August 24, 2020.

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Yukon Government. Environment Act - Yukon Contaminated Sites Regulations, OIC2002/171.

APPENDIX A

PHOTOGRAPHS, SEPTEMBER 19TH TO 30TH, 2020

APPENDIX A – PHOTOGRAPHS



Looking at the eastern end of Area A.



Prepared mid section of Slope A. (Photo credit; A. Therriault).



Looking from the top of Area A toward the east.



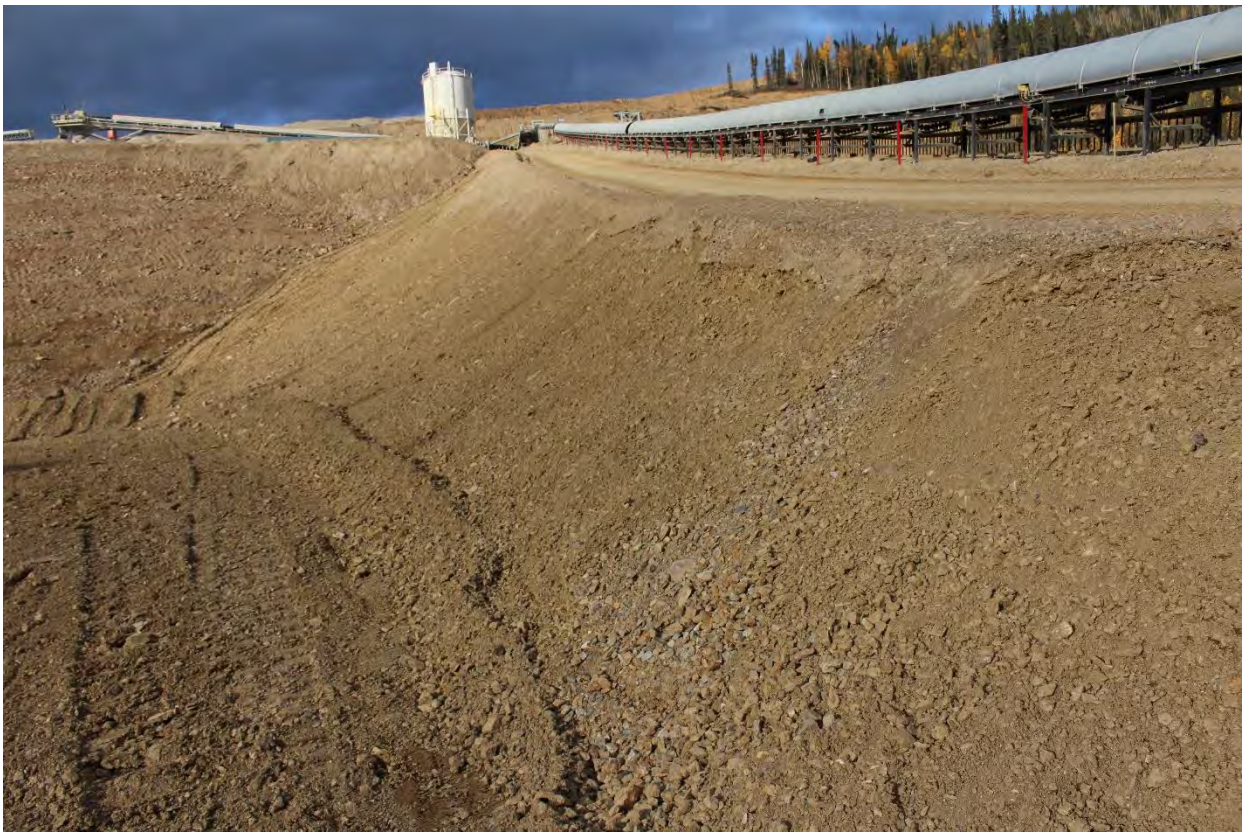
Dozer prepping the western section of Area A.



Dozer prepping Area A. (Photo credit; A. Therriault).



Seeding Area A. (Photo credit; A. Therriault).



Area D is prepped and seeded.



Area D.



Prepping and seeding Area E.



Prepared section of Area E. (Photo credit; A. Therriault).



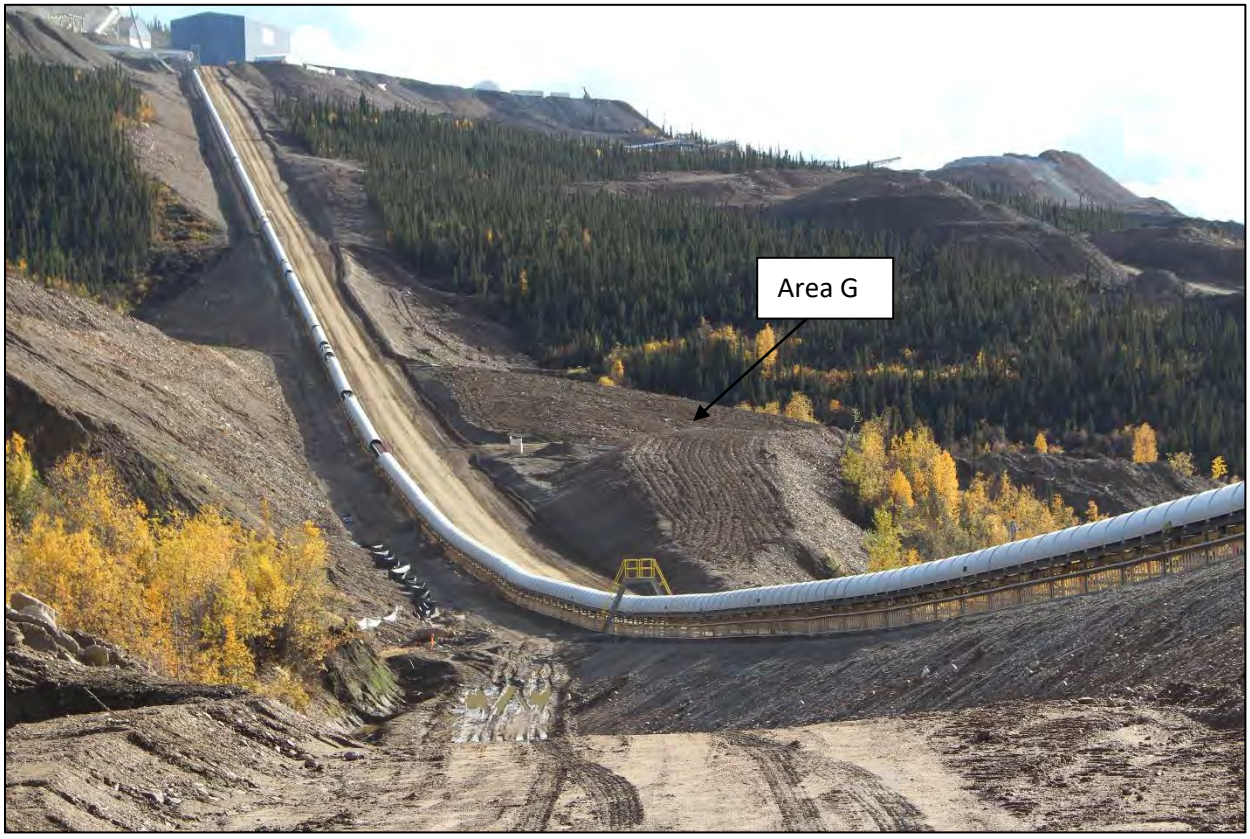
Section of Area E that could not be prepped and therefore not seeded.



Seeding Area E.



Seeding the north end of Area G.



Prepped and seeded Area G.



Prepared and seeded Area G. (Photo credit; A. Therriault).



Area J. (Photo credit; A. Therriault).



Pole drain PD-1 installed into the eroded gully at the first silt fences.



PD-1 backfilled.



Live silt fences above PD-1.



Kate backfilling PD-2, PD-3 in place ready to be backfilled.



Eroded gully by the 2019 live pole drain, which has sprouted.



PD-4 placed in prepared gully beside 2019 pole drain.



Willows harvested in 2019 re-sprouting at donor site.



Live willow staking in moist area by silt fences near Lower Dublin South Pond (LDSP).



Overview of live staking areas near LDSP.



Overview of willow staking near LDSP. (Photo credit; A. Therriault).



Overview of willow staking near conveyor belt at Dublin Gulch creek crossing. (Photo credit; A. Therriault).

Note: All photographs taken by B. Burns unless otherwise indicated.

APPENDIX B

SOILS DATA

- **TABLE B-1**
- **ANALYTICAL REPORT, SEPTEMBER, 2020**

TABLE B-1 RPD VALUES FOR THE DUPLICATE SOIL SAMPLE, SEPTEMBER 2020				
Analyte	**Units**	**Site-A**	**Duplicate**	**RPD Value**
Physical Tests (Matrix: Soil/Solid)				
pH (1:2 soil:water)	pH units	8.13	8.24	1.3
Particle Size (Matrix: Soil/Solid)				
texture class		Coarse	Coarse	--
Anions and Nutrients (Matrix: Soil/Solid)				
phosphate, available (as P)	mg/kg	<2.0	<2.0	ND
Organic / Inorganic Carbon (Matrix: Soil/Solid)				
carbon, inorganic [IC]	%	0.072	0.094	26.5
carbon, total [TC]	%	0.274	0.316	14.2
carbon, total organic [TOC]	%	0.202	0.222	9.4
carbon, inorganic [IC], (as CaCO3 equivalent)	%	0.6	0.79	27.3
organic matter	%	0.35	0.38	8.2
Plant Available Nutrients (Matrix: Soil/Solid)				
nitrate + nitrite, available (as N)	mg/kg	<1.0	<1.0	ND
nitrate, available (as N)	mg/kg	<2.0	<2.0	ND
potassium, available	mg/kg	41	50	19.8
nitrite, available (as N)	mg/kg	<0.40	0.42	--
Metals (Matrix: Soil/Solid)				
aluminum	mg/kg	11400	12400	8.4
antimony	mg/kg	7.22	10.7	**38.8**
arsenic	mg/kg	85.4	126	**38.4**
barium	mg/kg	47.5	48.8	2.7
beryllium	mg/kg	0.3	0.31	3.3
bismuth	mg/kg	1.1	1.08	1.8
boron	mg/kg	<5.0	<5.0	ND
cadmium	mg/kg	0.147	0.159	7.8
calcium	mg/kg	3530	2650	28.5
chromium	mg/kg	16	17.3	7.8
cobalt	mg/kg	15.4	15.8	2.6
copper	mg/kg	49.7	42.5	15.6
iron	mg/kg	29000	31900	9.5
lead	mg/kg	22	22.9	4.0
lithium	mg/kg	13.5	14.3	5.8
magnesium	mg/kg	5060	5560	9.4
manganese	mg/kg	520	488	6.3
mercury	mg/kg	0.0232	0.0134	**53.6**
molybdenum	mg/kg	0.43	0.48	11.0
nickel	mg/kg	28.3	30.8	8.5
phosphorus	mg/kg	238	268	11.9
potassium	mg/kg	1240	1520	20.3
selenium	mg/kg	<0.20	<0.20	ND
silver	mg/kg	0.4	0.32	22.2
sodium	mg/kg	<50	<50	ND
strontium	mg/kg	38	26.3	36.4
sulfur	mg/kg	<1000	<1000	ND
thallium	mg/kg	0.109	0.125	13.7
tin	mg/kg	<2.0	<2.0	ND
titanium	mg/kg	65.5	76	14.8
tungsten	mg/kg	<0.50	<0.50	ND
uranium	mg/kg	1.04	1.2	14.3
vanadium	mg/kg	17.2	19.2	11.0
zinc	mg/kg	65.4	69.9	6.7
zirconium	mg/kg	8.5	9.5	11.1
Note: RFD values that are greater than 30% are highlighted. ND = not detected therefore RFP could not be calculated.				

ALS Environmental

CERTIFICATE OF ANALYSIS

Work Order	: **VA20B6536**	Page	: 1 of 6
Client	: **Victoria Gold (Yukon) Corp.**	Laboratory	: Vancouver - Environmental
Contact	: Bill Bowden	Account Manager	: Hilary Woods
Address	: Suite 1000 - 1050 W. Pender St Vancouver BC Canada V6E 3S7	Address	: 8081 Lougheed Highway Burnaby BC Canada V5A 1W9
Telephone	: 867.456.7700 ext. 6381	Telephone	: +1 604 253 4188
Project	: Veg Plot Soil - September	Date Samples Received	: 26-Sep-2020 14:20
PO	: 14043	Date Analysis Commenced	: 30-Sep-2020
C-O-C number	: 20200924e	Issue Date	: 13-Oct-2020 10:36
Sampler	: AT, BB, K T		
Site	: Victroria Gold Corp.		
Quote number	: Q68199		
No. of samples received	: 8		
No. of samples analysed	: 8		

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QC Interpretive report to assist with Quality Review and Sample Receipt Notification (SRN).

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is conducted in accordance with US FDA 21 CFR Part 11.

Signatories	*Position*	*Laboratory Department*
Brieanna Allen	Department Manager - Organics	Organics, Burnaby, British Columbia
Colby Bingham	Quality Systems Coordinator	Inorganics, Saskatoon, Saskatchewan
Hedy Lai	Team Leader - Inorganics	Inorganics, Saskatoon, Saskatchewan
Mae Soropia	Laboratory Analyst	Metals, Burnaby, British Columbia
Nancy Cruse	Laboratory _ Supervisor	Inorganics, Saskatoon, Saskatchewan
Shaneel Dayal	Analyst	Metals, Burnaby, British Columbia
Xihua Yao	Laboratory Analyst	Inorganics, Saskatoon, Saskatchewan

General Comments

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Refer to the ALS Quality Control Interpretive report (QCI) for applicable references and methodology summaries. Reference methods may incorporate modifications to improve performance.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

Please refer to Quality Control Interpretive report (QCI) for information regarding Holding Time compliance.

Key : CAS Number: Chemical Abstracts Services number is a unique identifier assigned to discrete substances
LOR: Limit of Reporting (detection limit).

Unit	*Description*
-	No Unit
%	percent
mg/kg	milligrams per kilogram
pH units	pH units

<: less than.

>: greater than.

Surrogate: An analyte that is similar in behavior to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.

Test results reported relate only to the samples as received by the laboratory.

UNLESS OTHERWISE STATED on SRN or QCI Report, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

Analytical results in reports identified as "Preliminary Report" are considered authorized for use.

Analytical Results

Sub-Matrix: **Soil**
(Matrix: **Soil/Solid**)

Analyte	CAS Number	Method	LOR	Unit	Client sample ID	TP-1	TP-2	Site-A	Site-D	Site-E
					Client sampling date / time	22-Sep-2020	22-Sep-2020	22-Sep-2020 07:30	22-Sep-2020 08:00	22-Sep-2020 08:45
						VA20B6536-001	VA20B6536-002	VA20B6536-003	VA20B6536-004	VA20B6536-005
						Result	Result	Result	Result	Result
Physical Tests										
pH (1:2 soil:water)	----	E108	0.10	pH units		7.90	7.36	8.13	8.18	7.54
Particle Size										
texture class	----	E178	-	-		Coarse	Coarse	Coarse	Coarse	Coarse
Anions and Nutrients										
phosphate, available (as P)	14265-44-2	E384	2.0	mg/kg		<2.0	<2.0	<2.0	3.5	3.8
Organic / Inorganic Carbon										
carbon, total [TC]	----	E351	0.050	%		0.575	0.299	0.274	0.142	0.169
carbon, inorganic [IC]	----	E354	0.050	%		0.191	<0.050	0.072	0.054	0.054
carbon, inorganic [IC], (as CaCO3 equivalent)	----	E354	0.40	%		1.59	<0.40	0.60	0.45	0.45
carbon, total organic [TOC]	----	EC356	0.050	%		0.384	0.299	0.202	0.088	0.115
organic matter	----	EC356	0.10	%		0.66	0.52	0.35	0.15	0.20
Plant Available Nutrients										
nitrate + nitrite, available (as N)	----	E269.N+N	1.0	mg/kg		<1.0	<1.0	<1.0	<1.0	<1.0
nitrate, available (as N)	14797-55-8	EC269.NO3	2.0	mg/kg		<2.0	<2.0	<2.0	<2.0	<2.0
nitrite, available (as N)	14797-65-0	E269.NO2	0.40	mg/kg		<0.40	<0.40	<0.40	0.49	<0.40
potassium, available	7440-09-7	E390	20	mg/kg		43	34	41	88	75
Metals										
aluminum	7429-90-5	E440	50	mg/kg		7170	5500	11400	8370	10800
antimony	7440-36-0	E440	0.10	mg/kg		9.95	8.01	7.22	48.9	69.4
arsenic	7440-38-2	E440	0.10	mg/kg		224	159	85.4	1480	1140
barium	7440-39-3	E440	0.50	mg/kg		144	74.2	47.5	112	110
beryllium	7440-41-7	E440	0.10	mg/kg		0.30	0.29	0.30	0.76	1.05
bismuth	7440-69-9	E440	0.20	mg/kg		1.07	1.15	1.10	3.23	1.80
boron	7440-42-8	E440	5.0	mg/kg		<5.0	<5.0	<5.0	<5.0	<5.0
cadmium	7440-43-9	E440	0.020	mg/kg		0.325	0.333	0.147	0.506	0.901
calcium	7440-70-2	E440	50	mg/kg		3660	1340	3530	2030	3380
chromium	7440-47-3	E440	0.50	mg/kg		14.2	12.9	16.0	18.6	21.9
cobalt	7440-48-4	E440	0.10	mg/kg		10.4	9.64	15.4	17.1	21.3
copper	7440-50-8	E440	0.50	mg/kg		35.7	23.6	49.7	50.3	65.2
iron	7439-89-6	E440	50	mg/kg		24800	23800	29000	36600	46500

Analytical Results

Sub-Matrix: **Soil**
(Matrix: **Soil/Solid**)

Analyte	CAS Number	Method	LOR	Unit	Client sample ID	TP-1	TP-2	Site-A	Site-D	Site-E
					Client sampling date / time	22-Sep-2020	22-Sep-2020	22-Sep-2020 07:30	22-Sep-2020 08:00	22-Sep-2020 08:45
						VA20B6536-001	VA20B6536-002	VA20B6536-003	VA20B6536-004	VA20B6536-005
						Result	Result	Result	Result	Result
Metals										
lead	7439-92-1	E440	0.50	mg/kg		31.0	28.2	22.0	64.5	153
lithium	7439-93-2	E440	2.0	mg/kg		9.4	7.8	13.5	11.6	18.4
magnesium	7439-95-4	E440	20	mg/kg		3850	2380	5060	2810	4010
manganese	7439-96-5	E440	1.0	mg/kg		392	607	520	589	1070
mercury	7439-97-6	E510	0.0050	mg/kg		0.0478	0.0429	0.0232	0.0869	0.0479
molybdenum	7439-98-7	E440	0.10	mg/kg		0.76	0.76	0.43	1.48	1.88
nickel	7440-02-0	E440	0.50	mg/kg		24.7	21.3	28.3	38.1	50.3
phosphorus	7723-14-0	E440	50	mg/kg		384	300	238	394	415
potassium	7440-09-7	E440	100	mg/kg		1120	900	1240	3270	4650
selenium	7782-49-2	E440	0.20	mg/kg		0.33	0.24	<0.20	0.25	0.27
silver	7440-22-4	E440	0.10	mg/kg		0.24	0.13	0.40	1.55	1.92
sodium	7440-23-5	E440	50	mg/kg		88	58	<50	78	86
strontium	7440-24-6	E440	0.50	mg/kg		25.6	14.1	38.0	33.0	29.7
sulfur	7704-34-9	E440	1000	mg/kg		<1000	<1000	<1000	<1000	<1000
thallium	7440-28-0	E440	0.050	mg/kg		0.134	0.100	0.109	0.491	0.552
tin	7440-31-5	E440	2.0	mg/kg		<2.0	<2.0	<2.0	<2.0	<2.0
titanium	7440-32-6	E440	1.0	mg/kg		218	140	65.5	343	455
tungsten	7440-33-7	E440	0.50	mg/kg		1.58	2.20	<0.50	5.21	0.80
uranium	7440-61-1	E440	0.050	mg/kg		1.20	1.36	1.04	2.45	2.65
vanadium	7440-62-2	E440	0.20	mg/kg		19.4	14.8	17.2	22.0	25.5
zinc	7440-66-6	E440	2.0	mg/kg		72.7	70.4	65.4	122	127
zirconium	7440-67-7	E440	1.0	mg/kg		5.3	3.7	8.5	10.8	13.6

Please refer to the General Comments section for an explanation of any qualifiers detected.

Analytical Results

Sub-Matrix: **Soil**
(Matrix: **Soil/Solid**)

Analyte	CAS Number	Method	LOR	Unit	Client sample ID	Site-G	Site-J	Dup	----	----
					Client sampling date / time	22-Sep-2020 08:14	22-Sep-2020 09:20	22-Sep-2020 07:00	----	----
						VA20B6536-006	VA20B6536-007	VA20B6536-008	--------	--------
						Result	Result	Result	----	----
Physical Tests										
pH (1:2 soil:water)	----	E108	0.10	pH units		8.17	8.01	8.24	----	----
Particle Size										
texture class	----	E178	-	-		Coarse	Fine	Coarse	----	----
Anions and Nutrients										
phosphate, available (as P)	14265-44-2	E384	2.0	mg/kg		<2.0	<2.0	<2.0	----	----
Organic / Inorganic Carbon										
carbon, total [TC]	----	E351	0.050	%		0.153	0.397	0.316	----	----
carbon, inorganic [IC]	----	E354	0.050	%		0.068	0.096	0.094	----	----
carbon, inorganic [IC], (as CaCO3 equivalent)	----	E354	0.40	%		0.57	0.80	0.79	----	----
carbon, total organic [TOC]	----	EC356	0.050	%		0.085	0.301	0.222	----	----
organic matter	----	EC356	0.10	%		0.15	0.52	0.38	----	----
Plant Available Nutrients										
nitrate + nitrite, available (as N)	----	E269.N+N	1.0	mg/kg		<1.0	<1.0	<1.0	----	----
nitrate, available (as N)	14797-55-8	EC269.NO3	2.0	mg/kg		<2.0	<2.0	<2.0	----	----
nitrite, available (as N)	14797-65-0	E269.NO2	0.40	mg/kg		0.54	0.41	0.42	----	----
potassium, available	7440-09-7	E390	20	mg/kg		78	56	50	----	----
Metals										
aluminum	7429-90-5	E440	50	mg/kg		9180	9330	12400	----	----
antimony	7440-36-0	E440	0.10	mg/kg		17.5	21.4	10.7	----	----
arsenic	7440-38-2	E440	0.10	mg/kg		497	204	126	----	----
barium	7440-39-3	E440	0.50	mg/kg		100	113	48.8	----	----
beryllium	7440-41-7	E440	0.10	mg/kg		0.97	0.39	0.31	----	----
bismuth	7440-69-9	E440	0.20	mg/kg		4.58	0.98	1.08	----	----
boron	7440-42-8	E440	5.0	mg/kg		<5.0	<5.0	<5.0	----	----
cadmium	7440-43-9	E440	0.020	mg/kg		0.339	0.406	0.159	----	----
calcium	7440-70-2	E440	50	mg/kg		2330	4180	2650	----	----
chromium	7440-47-3	E440	0.50	mg/kg		20.9	17.6	17.3	----	----
cobalt	7440-48-4	E440	0.10	mg/kg		16.9	12.8	15.8	----	----
copper	7440-50-8	E440	0.50	mg/kg		45.1	35.2	42.5	----	----
iron	7439-89-6	E440	50	mg/kg		36400	28700	31900	----	----

Analytical Results

Sub-Matrix: **Soil**
(Matrix: **Soil/Solid**)

Analyte	CAS Number	Method	LOR	Unit	Client sample ID	Site-G	Site-J	Dup	----	----
					Client sampling date / time	22-Sep-2020 08:14	22-Sep-2020 09:20	22-Sep-2020 07:00	----	----
						VA20B6536-006	VA20B6536-007	VA20B6536-008	--------	--------
						Result	Result	Result	----	----
Metals										
lead	7439-92-1	E440	0.50	mg/kg		51.2	81.3	22.9	----	----
lithium	7439-93-2	E440	2.0	mg/kg		13.0	12.4	14.3	----	----
magnesium	7439-95-4	E440	20	mg/kg		3570	4210	5560	----	----
manganese	7439-96-5	E440	1.0	mg/kg		386	481	488	----	----
mercury	7439-97-6	E510	0.0050	mg/kg		0.0488	0.0541	0.0134	----	----
molybdenum	7439-98-7	E440	0.10	mg/kg		1.75	0.77	0.48	----	----
nickel	7440-02-0	E440	0.50	mg/kg		36.7	29.3	30.8	----	----
phosphorus	7723-14-0	E440	50	mg/kg		390	395	268	----	----
potassium	7440-09-7	E440	100	mg/kg		3400	1920	1520	----	----
selenium	7782-49-2	E440	0.20	mg/kg		0.24	0.29	<0.20	----	----
silver	7440-22-4	E440	0.10	mg/kg		0.32	1.51	0.32	----	----
sodium	7440-23-5	E440	50	mg/kg		101	115	<50	----	----
strontium	7440-24-6	E440	0.50	mg/kg		30.9	31.6	26.3	----	----
sulfur	7704-34-9	E440	1000	mg/kg		<1000	<1000	<1000	----	----
thallium	7440-28-0	E440	0.050	mg/kg		0.412	0.184	0.125	----	----
tin	7440-31-5	E440	2.0	mg/kg		<2.0	<2.0	<2.0	----	----
titanium	7440-32-6	E440	1.0	mg/kg		378	259	76.0	----	----
tungsten	7440-33-7	E440	0.50	mg/kg		1.84	3.11	<0.50	----	----
uranium	7440-61-1	E440	0.050	mg/kg		2.48	1.52	1.20	----	----
vanadium	7440-62-2	E440	0.20	mg/kg		25.2	21.1	19.2	----	----
zinc	7440-66-6	E440	2.0	mg/kg		105	99.7	69.9	----	----
zirconium	7440-67-7	E440	1.0	mg/kg		16.6	11.5	9.5	----	----

Please refer to the General Comments section for an explanation of any qualifiers detected.

APPENDIX O

2020 Late-Winter Moose Distribution Survey

Eagle Gold Project: 2020 Late-Winter Moose Distribution Survey

Prepared For
Victoria Gold (Yukon) Corp.
1050 West Pender Street, Suite 1000
Vancouver, BC, V6E 3S7

Prepared By
EDI Environmental Dynamics Inc.
2195 – 2nd Avenue
Whitehorse, YT Y1A 3T8

EDI Contact
Alain Fontaine, M.Sc.
Wildlife Biologist and Project Manager

EDI Project
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EDI
ENVIRONMENTAL DYNAMICS INC.
Down to Earth Biology

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EXECUTIVE SUMMARY

Following advanced exploration activities and obtention of regulatory approvals, Victoria Gold (Yukon) Corp.'s Eagle Gold Mine (the Project) is currently in its first year of operation. As part of their operating licence terms and conditions, Victoria Gold is required to conduct annual winter moose surveys within 10 km of the Project footprint.

The primary objective of this study was to document the distribution and abundance of moose during the late-winter season to inform adaptive management strategies for mitigating Project effects on moose. The 2020 survey is the first operation phase survey completed at the Eagle Gold Mine and builds on the construction phase surveys conducted in 2018 and 2019 and on the baseline/pre-construction surveys conducted from 2011 to 2013.

The 2020 aerial survey was conducted in late winter from March 5 to 6, 2020. A total of 10.4 hours of flight time was required to complete the moose survey resulting in a survey intensity of 0.47 min/km^2 which is consistent with standard intensive stratification survey protocols required for adequate coverage. A total of 91 moose were observed during the survey of which 82 were observed within the study area boundary. Most moose were observed as individuals or pairs.

The number of moose observed within the survey area in 2020 was similar to 2018 and 2019; however, the number of moose observed in the study area between 2018 and 2020 was considerably higher than in previous surveys. Potential factors for the variation in moose numbers typically include observer bias and seasonal variability in the regional distribution of moose. The latter can be influenced by annual and regional variations in snow characteristics such as depth and hardness. Variability could also be the result of high wolf activity preceding surveys within or near habitats seasonally important to moose.

Moose distribution varied in each year of the study. In 2018 and 2019, moose were predominantly observed in moderate elevation burns, mid-slope mixed shrub and spruce, and subalpine mixed shrub and subalpine fir. Higher densities of moose were observed in low elevation valleys in 2012, 2013, and 2020 than in 2018 and 2019. These patterns may be attributed to annual snow loads, with moose using the mid and high elevation areas more in years with lower snow loads (i.e., 2018 and 2019) and using the valleys more in deeper snow years (i.e., 2012, 2013, 2020). Regional moose distribution appears to be influenced by snow depth in late-winter more so than by sensory disturbance in proximity to Project infrastructure.

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AUTHORSHIP

This report was prepared by EDI Environmental Dynamics Inc. Staff who contributed to this project include:

Alain Fontaine, M.Sc. ..... Author and Project Manager

Matt Power, A.Sc.T. ..... GIS and data analysis

Todd Mahon, M.Sc., R.P.Bio. ..... Senior Review

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ACRONYMS AND ABBREVIATIONS

EDI ..... EDI Environmental Dynamics Inc.

FNNND ..... First Nation of Na-Cho Nyäk Dun

the Project ..... the Eagle Gold Project

VGC ..... Victoria Gold (Yukon) Corp.

YESAA ..... Yukon Environmental and Socio-economic Assessment Act

YG ..... Yukon Government

ZOI ..... Zone of Influence

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1 BACKGROUND

Following advanced exploration activities and obtention of regulatory approvals, Victoria Gold (Yukon) Corp.'s (VGC) Eagle Gold Mine (the Project) is currently in its first year of operation. The Eagle Gold Mine produces ore from a conventional open pit operation and gold recovery plant. The Project is located approximately 85 km by road from the village of Mayo and has year-round road access to the site via the Haggart Creek Access Road. The access road and mine site are within the traditional territory of the First Nation of Na-Cho Nyäk Dun. The Eagle Gold Project has received all major permits required for construction and operations following the Environmental Assessment process.

As part of the environmental assessment completed under *YESAA*, VGC committed to conducting annual winter moose distribution surveys. Commitment #35 from Appendix A of the YESAB Screening Report and Recommendation (YOR 2010-0267-358-2) states:

> *VIT* (now VGC) *will implement annual aerial mapping of winter moose distribution within 5 km of the access road and mine site and in adjacent control areas. This will be conducted before construction (in 2011 and 2012), during construction, and during mine operations, to allow assessment of displacement and population reduction resulting from mine activities, and adaptive management measures if negative effects occur.*

Commitment #35 is re-iterated in the Final Screening Report and Recommendation issued by YESAB February 13, 2013. However, the YESAB recommendation specifies that the survey area be extended to 10 km from Project infrastructure. This recommendation was initially proposed on August 24, 2011, by Environment Yukon's Environmental Programs Branch (YOR 2010-0267-197-1). It was recommended that the study design change to delineate a zone of influence (ZOI) extending 5 km from the Project area and access road and that a survey area extending from 5 km to 10 km beyond the ZOI be treated as the "control" area. Environment Yukon intended this study design, referred to as before-after control-impact (BACI), to detect changes in moose distribution near Project infrastructure due to unanticipated Project effects. It should be noted here that moose winter habitat distribution is not homogenous across the study area and that key factors that affect late-winter habitat use, notably browse availability and snow depth, differ between the 5 km and 10 km buffer areas.

In their Screening Report and Recommendation issued on February 19, 2013, YESAB recommended to the Yukon Government that this commitment become a Term and Condition which was supported by the Yukon Government in their Decision Document (YOR 2010-0267-361-1). Term and Condition #99 states:

> *The Proponent shall, in cooperation with Government of Yukon, Department of Environment, design and conduct annual winter moose surveys consistent with methodology and study area (ten kilometres from infrastructure) used in 2011.*

Moose are the most common ungulate species in the region and occur in the Project area during all seasons. The most critical season for moose is late-winter (January–April) when browse availability and access is most limited. The Project area was identified as important moose habitat by local residents and contains some high quality early successional and lower elevation winter habitat. According to the Terrestrial Wildlife

Environmental Baseline Report (Stantec Consulting Ltd. 2011a) and the Yukon Government regional biologist (personal communication with M. O'Donoghue), the South McQuesten River and Haggart Creek valleys contain winter habitats of particular importance to the local moose population.

Studies examining the effects of disturbance on the distribution and behaviour of moose along access corridors found that these effects were limited to within 1000 m of the corridors (Colescott and Gillingham 1998, Yost and Wright 2001, Laurian et al. 2008, 2012, Shanley and Pyare 2011). If avoidance of habitat due to mining-related activities was observed, this data would be useful in understanding moose distribution near the access road in order to implement additional mitigation measures to reduce traffic/moose interactions and potential of vehicle collisions.

In consultation with Environment Yukon, VGC agreed to conduct late-winter moose distribution monitoring relative to the Project infrastructure for a total of five years including 2 years pre-construction, 2 years of the construction phase, and the first year of operations (email communication with Mark O'Donoghue, Northern Tutchone Regional Biologist, on 5 August 2010). The study was designed with input from Environment Yukon to monitor moose distribution within the ZOI of the proposed mine site (0 to 1 km), and to include a control area well outside of the ZOI (5 to 10 km). If no effects were observed after five years of monitoring, the parties agreed that the frequency of this monitoring could be reduced during subsequent years of the operations phase (email communication with Mark O'Donoghue, Northern Tutchone Regional Biologist, on 5 August 2010). The 2020 moose survey represents the sixth year of monitoring.

Prior to 2020, moose surveys were conducted in early-March of 2011, 2012, 2013, 2018, and 2019. The 2011 baseline moose distribution survey was conducted by Stantec (Stantec Consulting Ltd. 2011b) using a 10 km buffer from the Project and access road footprints. The 2012, 2013, 2018, and 2019 surveys were conducted by EDI Environmental Dynamics Inc. (EDI) using the 2011 survey methodology and study area as per Term and Condition #99 (EDI Environmental Dynamics Inc. 2012, 2013, 2018). However, in consultation with the Environment Yukon Regional Biologist for the Northern Tutchone Region, EDI made some slight modifications to the survey methodology to improve efficiency, moose detection rates, and crew safety while maintaining the same survey intensity.

This report presents and compares the results of the 2020 late-winter moose distribution survey with those of previous surveys. The 2020 survey is the first operation phase survey following the pre-construction (2011-2013) and construction (2018-2019) phase surveys against which it will be compared to evaluate potential changes in moose distribution and abundance in the survey area.

2 METHODS

2.1 SURVEY AREA

The Project is located approximately 45 km north of Mayo. In 2011, a 1,130 km² survey area was generated by applying a 10 km buffer to the proposed mine site and the access road footprints. In 2012, the size of the survey area was increased by 10 km² to accommodate a modified Project footprint. In 2013, a survey grid comprised of 5 minutes longitude by 2 minutes latitude blocks (approximately 4 x 4 km at this latitude) was developed to guide survey intensity. This method also aligns with the methods used by the Yukon Government for moose stratification (distribution) surveys (Environment Yukon 2010, O'Donoghue et al. 2014). The addition of blocks at the edge of the survey area increased the size of the survey area from 1,140 km² to 1,320 km². The 2018-2020 surveys followed the same survey design as the 2013 survey (Map 1).

Most of the survey area is suitable moose winter habitat except for small portions of rock cliffs and scree on Mount Haldane and other hilltops as well as a few small lakes. The Silver Trail Highway, which extends from Mayo to Keno City, cuts across the southeast corner of the study area. Major geographic features of the area include the valley and riparian flats of the South McQuesten River as well as Mount Haldane, a prominent mountain in the region.

The survey area lies entirely within the Yukon Plateau North ecoregion (Yukon Ecoregions Working Group 2004). The survey area consists of rolling highlands with a generally northeast-southwest orientation dissected by numerous small creeks. Vegetation cover is predominantly boreal but ranges from boreal to alpine. Alpine environments are characterized by low ericaceous shrubs, small willows (*Salix sp.*), and lichens. Subalpine environments are typically vegetated with willow and shrub birch (*Betula glandulosa*) with scattered white spruce (*Picea glauca*) and subalpine fir (*Abies lasiocarpa*). At lower elevations, black spruce (*P. mariana*) and white spruce forests grow over moist sites. Trembling aspen (*Populus tremuloides*), lodgepole pine (*Pinus contorta*), and white spruce stands grow in warmer and better-drained sites. Some nearly pure deciduous stands comprised primarily of birch and aspen can be found on south aspect slopes in southeastern portions of the study area. A riparian flat approximately 3 km wide dominated by a mix of shrub lands, grasslands, and black spruce occurs along the South McQuesten River.

The study area has a complex and diverse forest fire history contributing to the high diversity of forest covers. These burned areas have variable habitat suitability for moose depending on their age, elevation, and intensity of the burn. Three large fires have occurred recently in the study area. The most recent is a 2019 fire that burned 69 km² of shrub and sparse forest along the South McQuesten River and Flat Creek lowlands north of the Silver Trail and west of Elsa. Most of a 2005 fire that burned 55 km² of forest in the headwaters of Shanghai Creek north of the South McQuesten River occurred within the study area and extended as far west as the Project footprint. A 1998 fire that burned 71 km² of forest from Hanson Lake to Skate Creek only partially overlaps with the study area. Other smaller fires, mainly from the mid-1990s, are scattered throughout the area.

Air temperatures at the Project site are consistent with those throughout the Yukon interior. Mean annual air temperature is -3.2°C at the Camp (782 m) weather station and -3.8°C at the Potato Hills (1420 m) weather station (Lorax Environmental Services Ltd. 2019). The temperature gradient usually shifts at low elevation and high elevation between winter and summer (i.e., temperature inversion). In December, monthly average temperature is -19.9°C at the Camp station and -15.2°C at the Potato Hill station (i.e., warmer at higher elevation). In July, monthly average temperature is 13.2°C at the Camp station and 10.8°C at the Potato Hill station (i.e., warmer at lower elevation) (Lorax Environmental Services Ltd. 2019). Rain and snowfall is moderate in the region and annual precipitation amounts range from 93 to 161 mm at the Camp station and 190 to 410 mm a the Potato Hills station (snow water equivalent) (Lorax Environmental Services Ltd. 2019). Mean monthly wind speeds are higher in spring, summer, and fall months and lower in the winter with annual minimums occurring in December and maximums occurring in April and May (Lorax Environmental Services Ltd. 2019).

2.2 SURVEY DETAILS

The survey took place March 5 to 6, 2020. The survey crew included Andrew Swenson (pilot, Alpine Aviation), Alain Fontaine (navigator, EDI), Helaina Moses (observer, Victoria Gold Corp.), and Felix Plouffe (observer, FNNND). The survey was completed with a Cessna 206 (C-FBVA) flown at 120–150 km/hr and an elevation of 100–200 m above ground level.

The design of the 2011 moose survey included forty east-west transects spaced at 1 km intervals (Stantec Consulting Ltd. 2011b). Flight lines followed the planned transects to the extent possible based on flight and terrain conditions. In 2012, EDI adjusted the survey methods used in the 2011 survey to increase their efficiency, moose sightability, and safety in mountainous terrain while maintaining the same survey intensity. The method used the same transect spacing (1 km) but did not restrict the survey crew to predetermined east-west transect lines. Instead, the survey crew flew linear transects (generally east-west) when flying over terrain with moderate topography but adjusted transects to follow contour lines over terrain with more relief and topography. This allowed the aircraft to fly at a more consistent height and speed and minimized crew discomfort which generally improves ungulate detection rates.

In 2013, 2018, 2019, and 2020, survey blocks were used to guide survey intensity while providing flexibility to fly according to the terrain. This alteration in methodology improves comparability among years and with other moose surveys conducted by Environment Yukon (Environment Yukon 2010). Blocks were used to confirm that a minimum of four passes were flown through each block, which is equivalent to 1 km transect spacing and similar to previous surveys. As per the 2012 survey, linear north-south and east-west transects were flown over terrain with moderate topography while terrain guided transects in areas with more relief. A limitation of moose distribution surveys conducted following intensive stratifications methods using fixed-wing aircraft is a sightability bias towards open habitats. Moose are more easily observed in open habitats compared to dense cover and open habitats are often composed of early seral stage vegetation (i.e., burns) that contain higher browse quality (i.e., shrubs). Furthermore, monitoring of moose distribution via annual

aerial surveys provides a snapshot in time of moose abundance and distribution that can be influenced by weather, snow conditions, and predation risk.

During the survey, observers recorded all moose observations as well as any incidental wildlife sightings. All moose and wildlife observations were recorded as waypoints using a handheld GPS (Garmin GPSMAP 64). Wildlife observations documented the species and number of animals in the group and, when possible, the age class (adult/calf) and sex of the animals. However, it is generally difficult to classify animals by age and sex during moose distribution surveys using fixed-wing aircraft, due to their minimum speed and height above ground requirements. Therefore, most moose were unclassified. We estimated the distance and direction of animals relative to the position of the plane and direction of the flight path when the waypoint was recorded to correct moose spatial locations.

We also recorded moose tracks using methods consistent with the intensive stratification survey track recording protocol developed by Environment Yukon (Environment Yukon 2011). Recording tracks is meant to supplement moose observations to better delineate moose distribution at the time of the survey. As specified in the protocol, only fresh moose tracks that crossed directly beneath the aircraft flight path were recorded. Consequently, tracks did not require spatial correction. In 2020, fresh snowfall in the days preceding the survey improved moose detectability and our ability to differentiate between old and fresh tracks. Tracks were categorized as one, two, several (three to five), or many (more than five) track sets to indicate the relative number of animals.

2.3 SURVEY CONDITIONS

Weather conditions in 2020 were ideal for aerial wildlife surveys (Table 1). Weather conditions were consistent throughout the survey; winds were calm to light, skies were clear resulting in bright light conditions which helped to detect and assess the relative age of moose tracks (i.e., fresh vs old), and temperatures ranged from −35°C to −29°C. The survey crew could not survey after the mid-day refuel on 5 March as a result of an aircraft malfunction that required that the aircraft be sent back to Whitehorse for certified maintenance. Previous survey conditions were ideal for aerial wildlife surveys in 2012, 2013, 2018, and 2019, but old snow and flat light during afternoons in 2011 made it more difficult to sight moose (Table 1).

Table 1. Survey conditions during the 2011-2013 and 2018-2020 late-winter moose distribution surveys at the Eagle Gold Project.

Survey Conditions	2011	2012	2013	2018	2019	2020
Date	March 7-9	March 7-8	March 4-6	March 5-6	March 5-7	March 5-6
Snow Condition	Old (> 2 weeks)	Lots of fresh snow prior to the survey	~10 days old	Some fresh snow prior to the survey and on the morning of 6 March	Old (> 3 weeks)	Lots of fresh snow prior to the survey
Cloud Cover	Clear in the morning changing to overcast by late afternoon on all days	Clear to slightly overcast on 8 March	Clear	Clear on 5 March; clear in the morning changing to slightly overcast by mid-afternoon on 6 March	Clear; light high-altitude haze on 7 March	Clear
Light	Bright in the morning to flat by late afternoon	Bright	Bright	Bright	Bright	Bright
Wind	Light to moderate	Calm	Calm	Calm	Calm to light	Calm to light
Temperature	−35°C to −17°C	−30°C to −10°C	−27°C to −10°C	−20°C to −10°C	−31°C to −25°C	−35°C to −29°C
Comment	Old snow and flat afternoon light made it difficult to sight moose	Considerable snow fall in days prior to the survey	Delayed both mornings due to low fog	Light snow and low ceiling delayed the start of the survey on the second day	Very old snow made recording fresh tracks unfeasible	Deep and fresh snow improved track detection and ageing (old vs. fresh tracks)

3 RESULTS AND DISCUSSION

A total of 10.4 hours were spent surveying moose and 0.6 hours were needed to ferry between the survey area and Mayo. In addition, 3.0 hours of ferry time was required to mobilize (March 4) and demobilize (March 7) the aircraft between Whitehorse and Mayo.

Survey intensity was 0.47 min/km² and comparable to the survey intensity of previous years which ranged from 0.49 min/km² in 2018 to 0.53 min/km² in 2011 (Table 2). A survey intensity of 0.4 to 0.5 min/km² is required for adequate coverage of the study area and for consistency in comparing survey results between years and with other surveys across Yukon (Environment Yukon 2010).

3.1 ABUNDANCE

In total, we observed 91 moose during the 2020 survey of which 82 were observed within the study area (Table 2). Most moose were observed as individuals or pairs with few observations of groups of three to five moose.

The number of moose observed within the survey area from 2018 to 2020 was much larger than in previous surveys (Table 2). However, 28 moose were observed just outside the study area boundary in the 1998 Hanson Lake burn in 2013. Potential factors for the variation in annual moose numbers include a methodology change in 2012 that increased detection rates (however, methods were consistent from 2012 forward), observer bias (i.e., observer experience and variability in survey crews), and changes in the regional distribution of moose. The latter can be influenced by annual and regional variations in snow characteristics such as depth and hardness as well as high wolf activity preceding the survey within or near habitats seasonally important to moose (wolves are the only predator of moose in Yukon over the winter). Survey results from 2011 are not covered in detail in the following discussion due to the low sample size and the change in survey method starting in 2012 making direct comparisons to other survey years inadequate.

Table 2. Survey intensity and moose observations within the survey area for 2011-2013 and 2018-2020 late-winter moose distribution surveys at the Eagle Gold Project.

Year	Survey Intensity (min/km²)	Total Moose in Study Area (10 km buffer)	Total Moose Observed[1]
2011	0.53	26	31
2012	0.52	48	61
2013	0.50	39	74
2018	0.49	75	100
2019	0.52	82	100
2020	0.47	82	91

[1]Inlcudes moose observed just outside the study area, within and outside the survey grid (2013, 2018-2020), and incidental moose observations in transit to and from Mayo.

3.2 GENERAL DISTRIBUTION

In 2020, approximately 75% of the moose we observed were distributed within the Haggart Creek and South McQuesten River valleys; both valleys are reported to be important for moose in late-winter (Stantec Consulting Ltd. 2011a) and overlap part of a moose late-winter Wildlife Key Area (Environment Yukon 2014) (Map 1). Most of the remaining moose observations were located within mid-elevation burns and in small valley bottoms where shrub browse was available. The abundance of fresh moose tracks observed in the southern half of the 2005 Shanghai Creek burn (survey blocks 43 and 44; Map 1 and 2), but relatively low number of moose observed in this area compared to previous surveys, suggest that moose were making foraging forays into the burn but otherwise retreated to the forests on the south facing slopes of the mountain block between Shanghai Creek and the South McQuesten River where snow depth was presumably shallower under the forest cover but where they were difficult to detect during the survey.

The distribution of moose within the survey area varied throughout survey years (Map 2). However, some areas received consistent use across most survey years such as the 2005 Shanghai Creek and Lynx Creek burn, the 1998 Hanson Lake burn, the high elevation ridges between Red Mountain and Haggart Creek, and small burns along the southern edge of the study area. Moose made greater use of low elevation habitats during the 2012, 2013, and 2020 surveys; fewer moose were observed at low elevations during the 2018 and 2019 surveys.

During the 2012 survey, moose used habitats at mid to low elevations, but were primarily observed in old burns, and west of the Haggart Creek Access Road and the existing advanced exploration camp operated by VGC (Map 2). In 2013, moose were again observed in mid to low elevation areas; however, most observations were located east of the Haggart Creek Access Road and the camp in the moderate elevation burns. In 2018 and 2019, moose were predominantly observed in high-density clusters within moderate and higher elevation burned plateaus on the eastern side of the survey area, namely within the 2005 burn of the Shanghai Creek and Lynx Creek drainages. High densities of moose were also observed in subalpine mixed shrub and subalpine fir habitats in 2018, whereas in 2019 they appeared to occupy mid-slope mixed shrub and spruce habitats. Fewer moose were observed in the high elevation ridges between Red Mountain and Haggart Creek in 2019 than in 2018. This may be a result of the old snow age in 2019 and corresponding difficulty in detecting fresh tracks that would have otherwise alerted observers to the presence of moose and increased detection rates in subalpine fir habitats. Furthermore, moose detectability may have been lower in more heavily vegetated habitats mid-slope.

Yearly variation in the distribution of large ungulates is common. Food availability, snow depth, and risk of predation affect late-winter moose distribution (Dussault et al. 2005). Food availability is assumed to be constant in the study area year over year because there have not been major changes to moose habitat in the survey area during the survey years with the exception of the large 2019 fire in the South McQuesten lowlands to the west Elsa. However, the Shanghai Creek burn may be entering a successional stage of high-quality moose winter habitat (i.e., a greater abundance of winter browse) where the local moose population is becoming increasingly concentrated over the winter months in some years.

3.3 DISTRIBUTION RELATIVE TO DISTURBANCE

To examine the potential effects of Project disturbance on moose distribution, moose abundance was stratified in 1 km buffer increments from the Project footprint (Figure 1) as well as in 5 km buffer increments (Figure 2), the latter as per Environment Yukon's recommendation (YOR 2010-0267-197-1). Moose density is presented rather than the total number of moose observed within each distance buffer. This provides a better relative basis for comparison because the area of each buffer increases in size as the distance from the Project footprint increases.

A moose density of 32 moose per 100 km² was calculated within 1 km of the Project footprint along the Haggart Creek Access Road and infrastructure in 2020 during mining operations. Five moose were observed within the infrastructure footprint. In comparison, moose densities of 5.2 moose per 100 km² were calculated within 1 km of the Project footprint along the Haggart Creek Access Road and other infrastructure in 2019, 0 moose per 100 km² in 2018, and 11.2 moose per 100 km² in both 2012 and 2013 (Figure 1). Human activity along the access road and at the Project site during the winter 2018 survey was similar to that of the 2012 and 2013 pre-construction surveys; construction activity occurred from August to October 2017, ceased over the winter months from November 2017 to March 2018, and resumed in April 2018. The road was not accessible other than by snowmobile over the winter months. Therefore, construction activities could not have influenced moose distribution in early-March 2018. More moose were observed within 1 km of project infrastructure in 2019 and 2020, during construction and operation activities respectively, than in 2018 when no construction was occurring at the time of the survey (Figure 1). Moose densities in the distance buffers located 7 to 10 km from infrastructure were higher on average than other distance buffers with the exception of the 0 to 1 km buffer. These buffers overlap clusters of moose observations within mid-elevation burns where browse is abundant. Moose density in the 0 to 5 km buffer was higher than in the 5 to 10 km buffer in 2012 and 2013 during pre-construction and in 2020 during mining operations and lower in 2018 and 2019 during the winter halt in construction and during construction, respectively (Figure 2).

The study design developed with Environment Yukon has inherent limitations in its ability to detect changes in moose distribution related to disturbance from industrial activity near the mine and road infrastructure because it does not account for the distribution of winter habitat across the study area (i.e., habitat heterogeneity), browse availability, and for the effects of snow depth on moose distribution. Examining moose density in increments of 1 and 5 km buffers from Project infrastructure, we did not detect a consistent pattern of declining moose density in proximity to infrastructure relative to an increase in Project activity levels through the phases of project development as expected if increasing disturbance through phases of development influenced moose distribution. In fact, the intensity of use of habitats near the Project infrastructure appears to be highly variable between years and, to date, unrelated to anthropogenic disturbance effects.

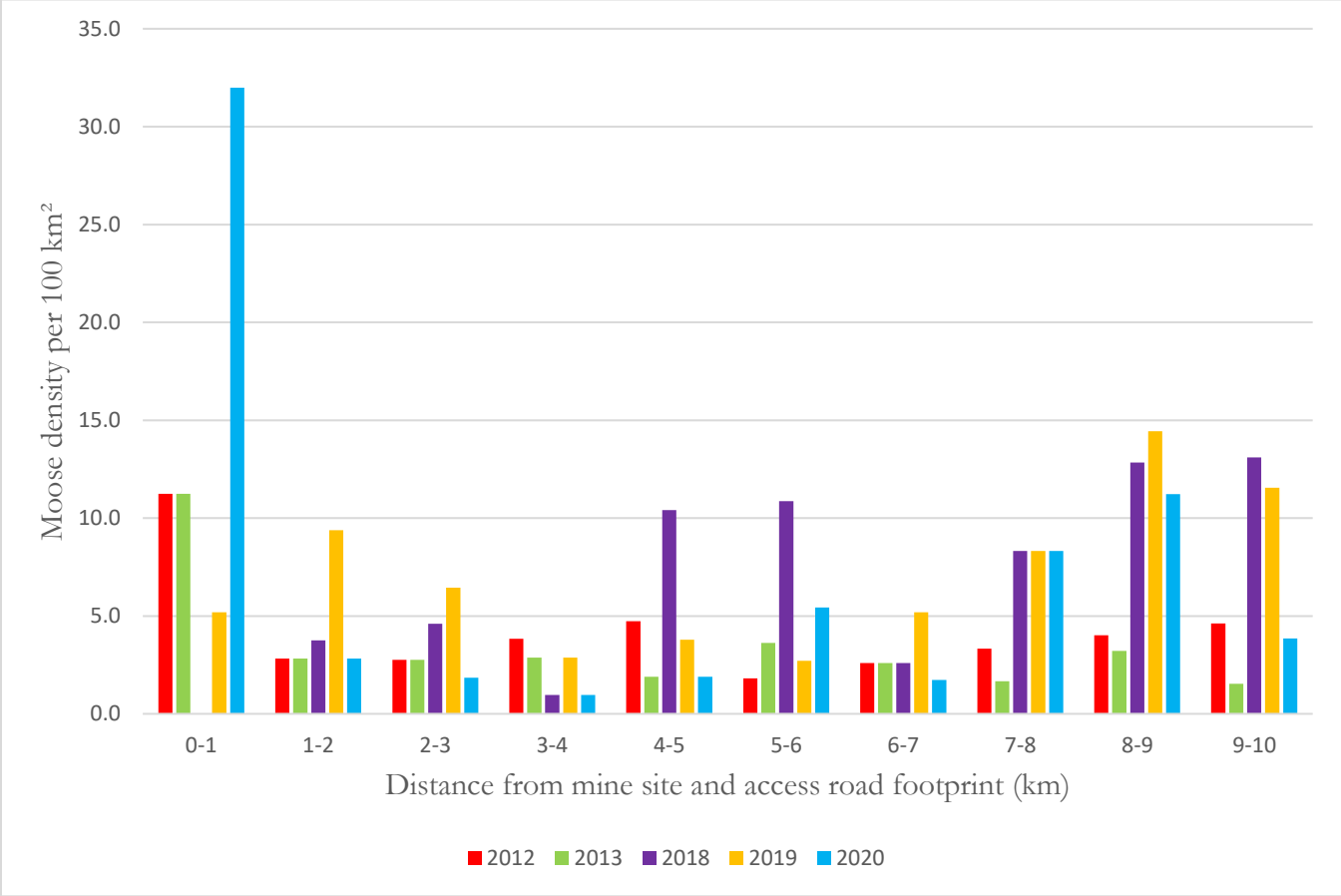

Figure 1. Moose density per 100 km² at 1 km intervals within 10 km of the Eagle Gold Project infrastructure during the late-winter 2012-2013 and 2018-2020 moose surveys.

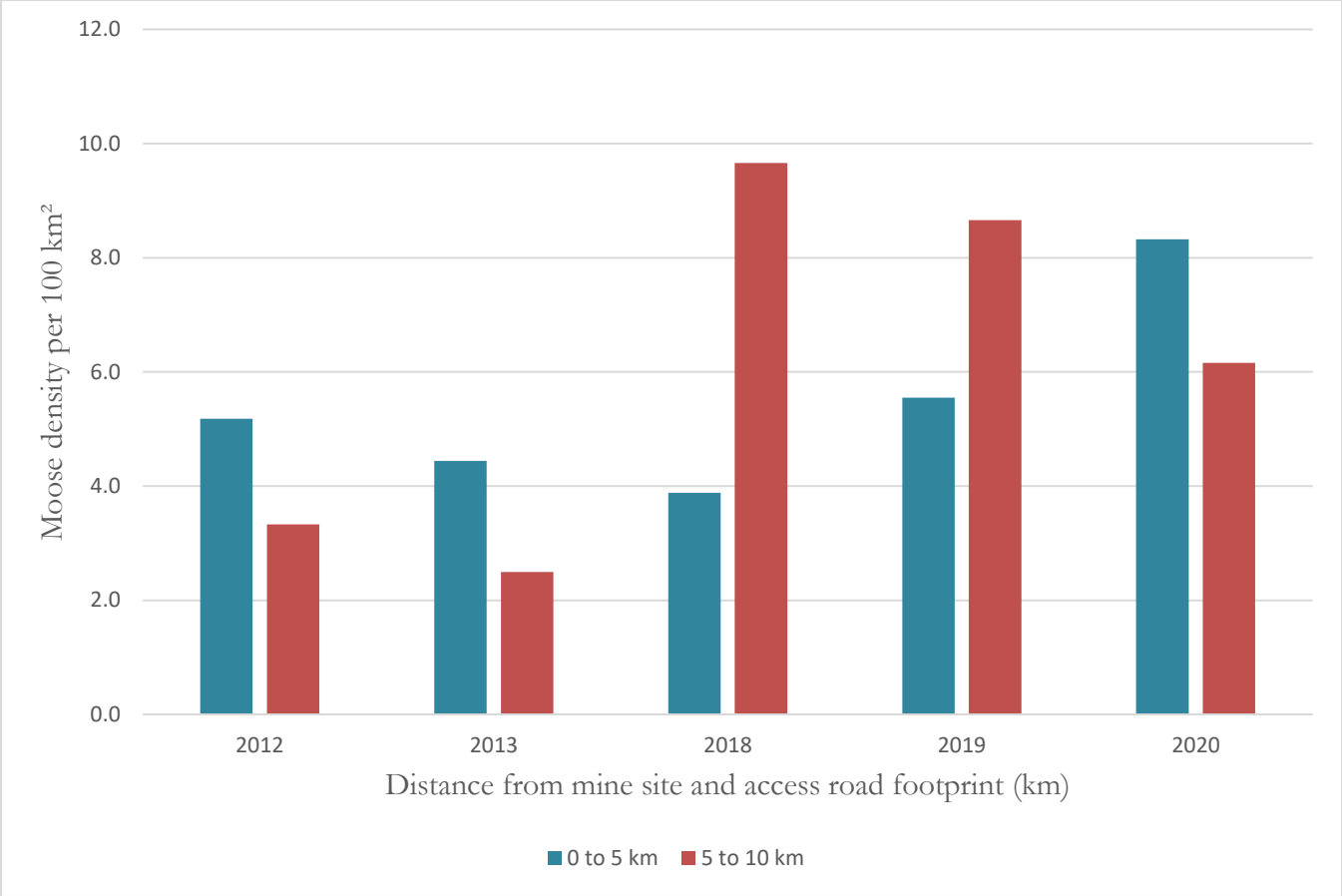

Figure 2. Moose density per 100 km² at 0 to 5 km and 5 to 10 km intervals from the Eagle Gold Project infrastructure during the late-winter 2012-2013 and 2018-2020 moose surveys.

3.4 DISTRIBUTION RELATIVE TO SNOW DEPTH

Although moose are well adapted to snow environments, characteristics of snow such as temperature, density, hardness, and depth, influence moose movement, distribution, and habitat use (Peek 2007). Snow depth is the most frequently studied variable and depths of >70 to >99 cm have been shown to restrict moose movement (Kelsall 1969, Telfer 1970, Peek 2007). In mountainous terrain, some moose populations make an altitudinal migration within their winter range in response to increasing snow depth (O'Donoghue 2005, Gillingham and Parker 2008, O'Donoghue et al. 2014, McCulley et al. 2017). During early winter, moose are generally found at higher elevations in open habitats with extensive deciduous shrub cover, such as subalpine shrublands and mid-elevation early-succession forests following wildfires. As winter progresses, increasing snow depth and hardness at higher elevation habitats cause a seasonal movement to lower elevation habitats where snow conditions are shallower and softer through late-winter. When snow loads are low, some moose may remain in higher elevation habitats through the winter. Thus, late winter habitats may not be used to the same degree or by as many moose every year, but in deep snow years, these areas are critical to moose over-winter survival. Local knowledge and results from Environment Yukon surveys confirm that moose in the

Project region exhibit this typical seasonal movement from higher to lower elevation as winter advances (Stantec Consulting Ltd. 2011a, O'Donoghue et al. 2014).

We obtained snow depth data from the Water Resources Branch, Environment Yukon, for the snow course survey stations nearest to the Project (Mayo A, Mayo B, and Calumet) from 1987 to present. The Calumet snow station (1310 m) is generally more representative of snow conditions in the Project area than the Mayo A and B snow stations. The latter are located near the Mayo airport at lower elevations and are subject to wind scour and human disturbance related to airport activities (Email communication on 27 April 2018 with Steve Therriault, Energy, Mines and Resources, and Jonathan Kollot, Environment Yukon). Snow depth was also measured at two climate stations within the Project area: Potato Hills (alpine, 1420 m) and Camp (valley bottom, 782 m) (Lorax Environmental Services Ltd. 2019).

2020 is the deepest snow year on record since 1987 for the late February to early March snow surveys. Snow depth in 2020 was 54% to 74% deeper than regional long term averages and contributed to a substantial increase in the average snow depth for the past 10 years. Regionally, snow depth was substantially above average in 2020, above average in 2012 and 2013, and below average in 2018 and 2019 (Table 3). Snow depth at stations located at higher elevations (Potato Hill, Calumet) was much deeper and denser than those recorded at stations located at lower elevations (Camp, Mayo A and B; Table 3).

Table 3. Snow depth for 2012-2013 and 2018-2020 at weather stations within or near the Eagle Gold Project during the snow sampling event closest to survey dates.

Year	VGC Camp (cm)[1]	VGC Potato Hills (cm)[1]	YG Mayo Airport A (cm)[2]	YG Mayo Airport B (cm)[2]	YG Calumet (cm)[2]
2012	78	99	51	64	94
2013	61	96	62	60	87
2018	53	85	40	46	83
2019	48	79	41	36	63
2020	90	189	88	92	133
2011-2020 Average	61	103	53	55	87
1987-2020 Average	n/a	n/a	51	53	86

[1](Lorax Environmental Services Ltd. 2019)
[2]Snow depth data for the Mayo A, Mayo B, and Calumet snow course stations were obtained from the Water Resources Branch, Environment Yukon.

Much of the Project infrastructure, and correspondingly the shorter distance increment buffers (Figures 1 and 2), is located at lower elevations. The higher than average snow depth in 2012, 2013, and 2020, especially at higher elevations, appears to correlate with the greater use of moderate to low elevation habitats by moose during those surveys relative to 2018 and 2019. The Haggart Creek valley, which follows the access road for over 50% of its length, contains abundant browse and cover that is suitable late-winter moose habitat. Land clearing associated with placer mining operations adjacent to the Haggart Creek Access Road has also created early-successional habitats favoured by moose. Regional moose distribution appears to be influenced by snow depth in late-winter more so than by sensory disturbance in proximity to Project infrastructure. Moose are

likely to continue to use areas adjacent to Project infrastructure as late-winter habitat, especially in deep snow years.

3.5 INCIDENTAL OBSERVATIONS

Caribou or caribou tracks were not observed during the 2011, 2012, 2019, and 2020 late-winter surveys. However, a group of five woodland caribou was observed in 2013 in an alpine area on Red Mountain, which is located on the western edge of the survey area approximately 10 km from the Haggart Creek Access Road. In 2018, caribou cratering (i.e., digging in snow for forage and mineral-rich water) was observed in a wetland complex along the South McQuesten River approximately 14 km southeast of the Project, and an east-west oriented trail from around the same time period and thought to be from a group of caribou was observed on the ridgeline between the South McQuesten River and the Project. In the Terrestrial Wildlife Environmental Baseline Report, local knowledge indicated that caribou were known to occur in the Red Mountain area (Stantec Consulting Ltd. 2011a). However, based on the distribution of herd ranges in the region, caribou are expected to be an uncommon occurrence in the study area. The closest woodland caribou range to the survey area is that of the Clear Creek caribou herd and its range does not overlap with the study area. A 2001 survey estimated the herd to be composed of 900 caribou (Environment Canada 2012).

Three wolf packs were observed in 2013, two of which were in the vicinity of the South McQuesten River area (EDI Environmental Dynamics Inc. 2013) and one wolf was observed between the eastern foothills of Mount Haldane and Haldane Creek during the 2019 survey. No wolves were observed in 2011, 2012, 2018, and 2020 surveys. However, high densities of wolf tracks were detected in most annual surveys within the flats of the South McQuesten River, especially in the blocks west of the access road crossing but also north of Mount Haldane.

4 CONCLUSIONS

The data collected as part of the 2011–2013 moose surveys were intended to reflect the baseline pre-construction distribution of moose in the study area, while those of the 2018 and 2019 survey were collected near the end of a 5-month halt during the construction phase and through construction, respectively, and those of the 2020 survey were collected during mine operation. The survey schedule was designed to detect the potential effects of mine construction and operation activities on moose sensory disturbance and subsequent avoidance of habitat within a zone of influence (ZOI) around the mine site and access road.

Variability in distribution and density of moose were expected among years as a result of annual snow loads, dynamic habitat variables and predation risk. Although some areas appear to hold higher moose densities across years, overall moose distribution to date has been variable among years. Some areas received consistent use across most survey years such as moderate elevation burns, particularly the Shanghai Creek and Lynx Creek burn, and mixed shrub and subalpine fir habitats on high elevation ridges between Red Mountain and Haggart Creek.

Moose made greater use of low elevation habitats in years with higher than average snow depth (2012, 2013, and 2020) than in years with lower than average snow depth (2018 and 2019), irrespective of Project development phase. No moose were observed within 1 km of the Project footprint in 2018 that coincided with a 5-month halt in construction activities and unmaintained road access conditions. Moose densities were moderate within 1 km of the Project footprint in 2019 when construction was in earnest and very high in 2020 during mine operation. No evidence of moose harvest was documented along the access road in 2020 or previous surveys.

There is little evidence that moose distribution is being affected by the Project. The weight of evidence from surveys to date suggests that variation in the distribution of moose likely has more to do with annual snow depth and winter habitat distribution than project activities at the mine and along the road. Furthermore, survey results also reflect the variance expected given the survey methods (i.e., fixed-wing aircraft at high elevation and speed) and intensity (i.e., wide transect spacing).

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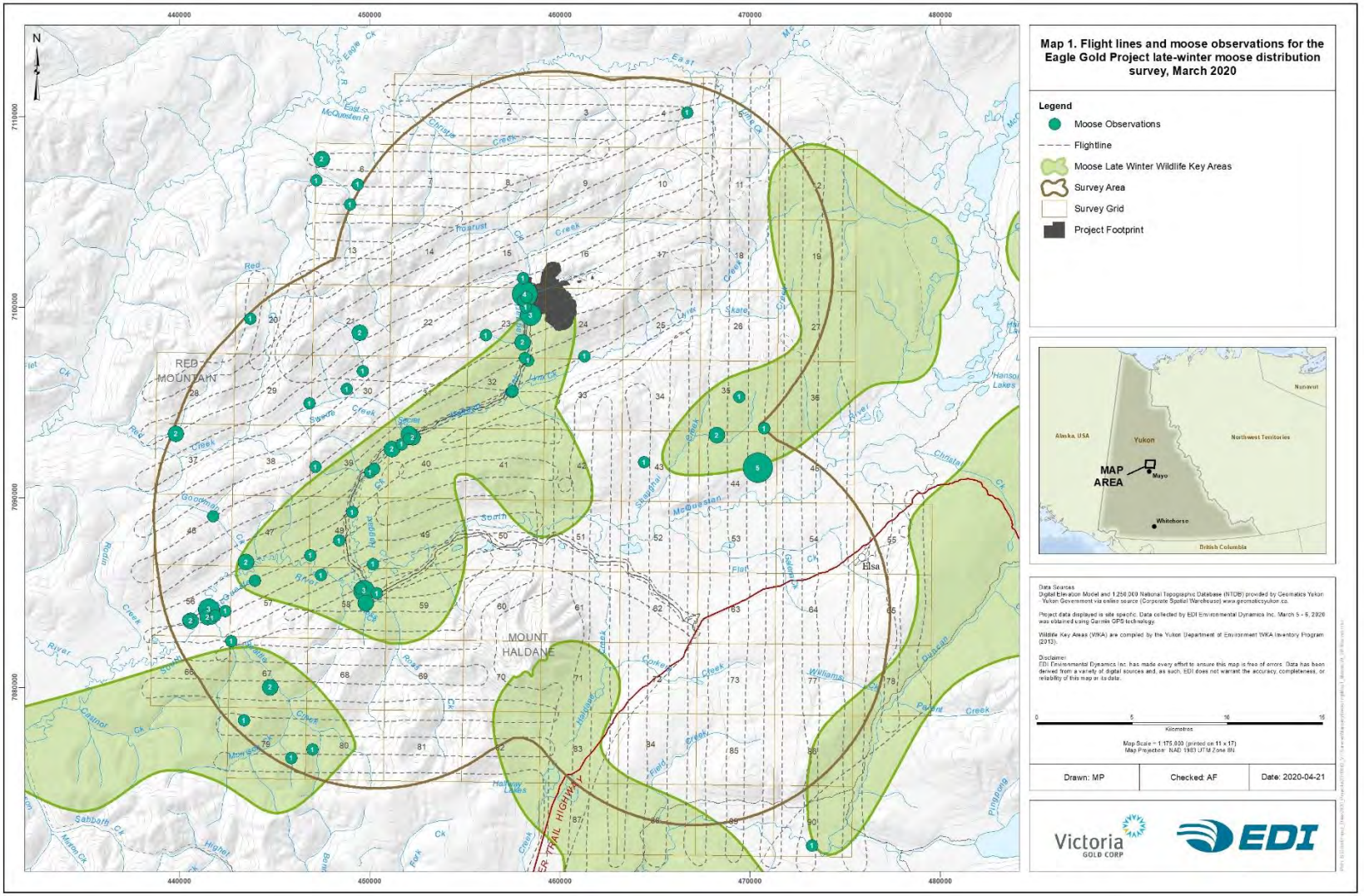
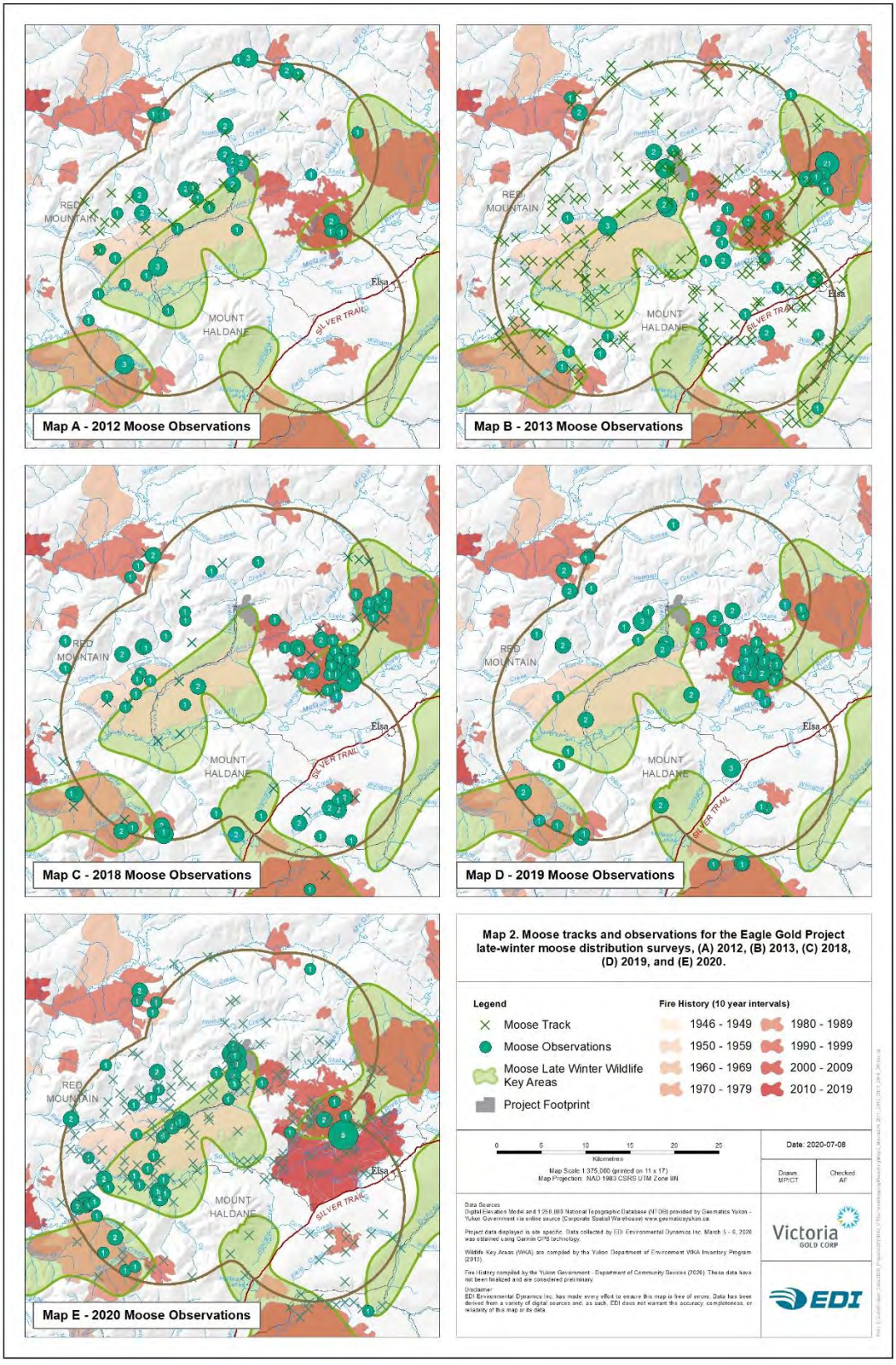

Map 1. Flight lines and moose observations for the Eagle Gold Project late-winter moose distribution survey, March 2020
Legend
Moose Observations
Flightline
Moose Late Winter Wildlife Key Areas
Survey Area
Survey Grid
Project Footprint
MAP AREA
Alaska, USA
Yukon
Northwest Territories
Nunavut
British Columbia
Mayo
Whitehorse
RED MOUNTAIN
MOUNT HALDANE
Elsa
SR TRAIL HIGHWAY
Drawn: MP
Checked: AF
Date: 2020-04-21
Victoria GOLD CORP
EDI


Map A - 2012 Moose Observations
Map B - 2013 Moose Observations
Map C - 2018 Moose Observations
Map D - 2019 Moose Observations
Map E - 2020 Moose Observations
RED MOUNTAIN
MOUNT HALDANE
SILVER TRAIL
Elsa
Map 2. Moose tracks and observations for the Eagle Gold Project late-winter moose distribution surveys, (A) 2012, (B) 2013, (C) 2018, (D) 2019, and (E) 2020.
Legend
Moose Track
Moose Observations
Moose Late Winter Wildlife Key Areas
Project Footprint
Fire History (10 year intervals)
1946 - 1949
1950 - 1959
1960 - 1969
1970 - 1979
1980 - 1989
1990 - 1999
2000 - 2009
2010 - 2019
Kilometres
Map Scale: 1:375,000 (printed on 11 x 17)
Map Projection: NAD 1983 CSRS UTM Zone 8N
Date: 2020-07-08
Drawn: MP/GT
Checked: AF
Victoria GOLD CORP
EDI

APPENDIX P1

Spill Response Plan V 2021-01

VICTORIA GOLD CORP

EAGLE GOLD MINE

SPILL RESPONSE PLAN

Version 2021-01

APRIL 2021

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DOCUMENT CONTROL

Submission History

Version Number	Version Date	Document Description and Revisions Made
2013-01	Apr 2013 (draft)	Submission of preliminary draft
2013-01	Sep 2013	Original submission to the Department of Energy, Mines and Resources in support of an application for a Quartz Mining Licence allowing for preliminary construction activities and submitted to the Yukon Water Board in support of the application to amend Type B Water Use License QZ11-013. The amendment application considered the use of water and deposit of waste associated with preliminary construction activities and included the construction and operation of the Dublin Gulch Diversion Channel.
2014-01	Jun 2014	Revisions made in support of an application to the Yukon Water Board for a Type A Water Use License for the full Construction, Operation and Closure of the Project. Version 2014-01 was also submitted to the Department of Energy, Mines and Resources in support of an application for a Quartz Mining Licence allowing the full Construction, Operation and Closure of the Project.
2016-01	Feb 2016	Revisions made in support of an application to the Yukon Water Board for a renewal of the Type B Water Use Licence.
2017-01	Mar 2017	Revisions made to address comments received during the adequacy review of the application to the Yukon Water Board for a Type A Water Use Licence and to address the conditions of the Quartz Mining Licence QML-0011. Version 2017-01 was submitted to the Department of Energy, Mines and Resources and the Yukon Water Board to satisfy VGC's annual reporting requirements.
2017-02	Jul 2017	Revisions made to reflect the current site general arrangement and submitted as part of a consolidated application for *Environment Act* permits.
2019-01	Mar 2019	Revisions made in accordance with Clause 8 of QZ14-041 and with Paragraph 2.5 of Schedule C, Part 2 of QML-0011, which require an annual review of the Spill Response Plan.
2021-01	Mar 2021	Revisions made in accordance with Clause 8 of QZ14-041-1 and with Paragraph 2.5 of Schedule C, Part 2 of QML-0011, which require an annual review of the Spill Response Plan. Primary revision is to clarify soil sampling protocols as per the Yukon Contaminated Sites Regulations and discussions with relevant regulatory agency representatives.

Version 2017-02 of the Spill Response Plan (the Plan) for the Project has been revised in March 2019 to update Version 2017-02 submitted in July 2017. The table below is intended to identify modifications to the Plan and provide the rationale for such modifications

Version 2021-01 Revisions

Section	Revision/Rationale
Title Page	▪ Updated to reflect company name change.

Section	Revision/Rationale
Table 3.1-1	▪ Updates to available spill response equipment based on actual site purchases and availability.
Table 3.4-1	▪ Updated contacts.
Section 3.6 Contaminated Soil	▪ Updated to include details regarding confirmatory and characterization sampling.

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Appendix B Eagle Gold Spill Report Form
Appendix C Reportable Spill Thresholds
Appendix D Safety Data Sheets

1 INTRODUCTION

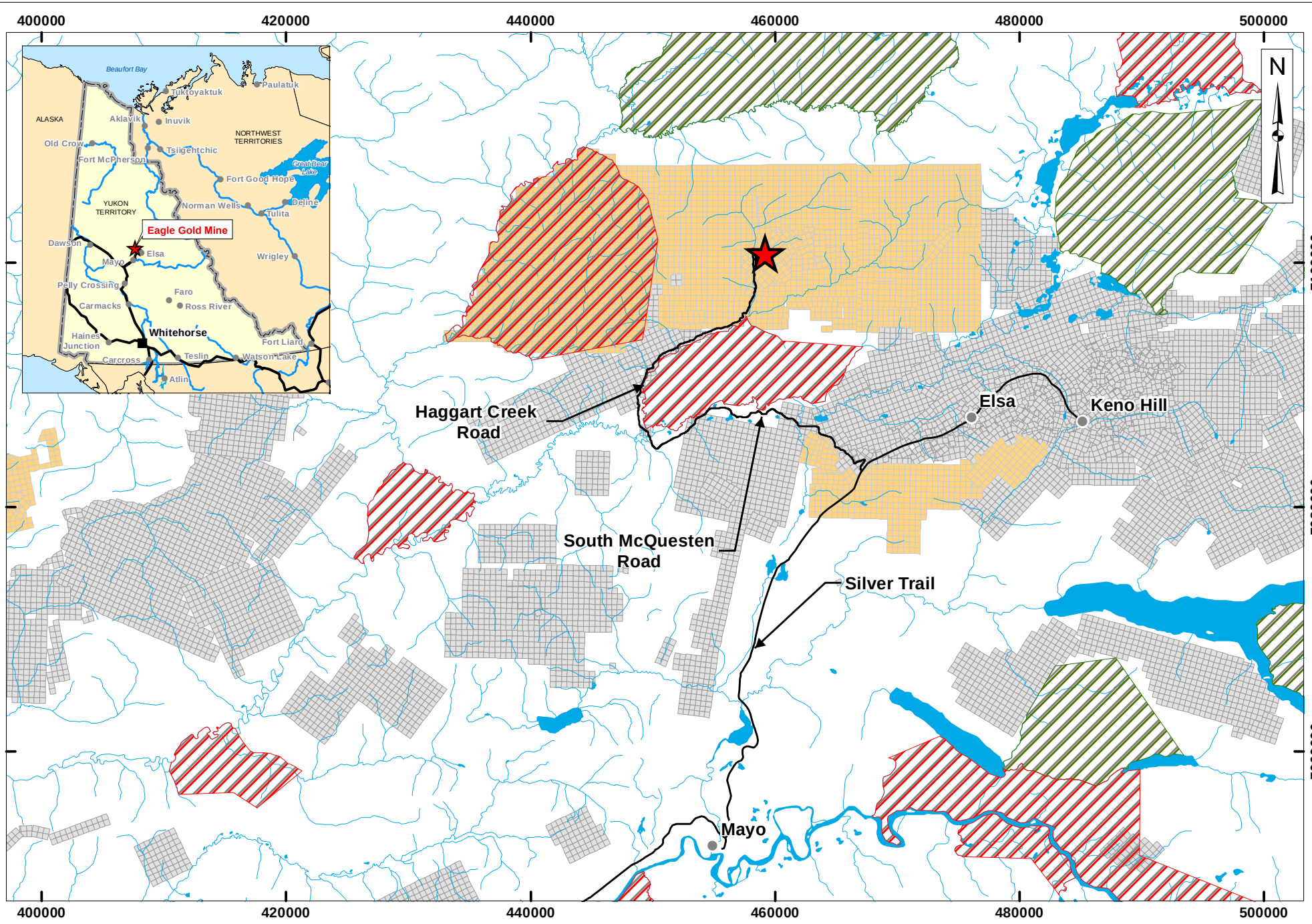
Victoria Gold (Yukon) Corp. (VGC), a directly held-wholly owned subsidiary of Victoria Gold Corp., has constructed, is currently operating, and proposes to close and reclaim a gold mine in central Yukon. The Eagle Gold Project ('the Project') is located 85 km from Mayo Yukon using existing highway and access roads (Figure 1.1-1). The Project will involve open pit mining and gold extraction using a three stage crushing process, heap leaching, and a carbon adsorption, desorption, and recovery system over the mine life.

VGC is committed to exploring for, building, operating and closing mines in an environmentally, socially and financially responsible manner. VGC will endeavor to protect the environment in which it operates by providing a safe, responsible and efficient operating atmosphere through the development, and implementation of corporate policies as well as development and operational plans.

The purpose of this Spill Response Plan (the Plan) is to enable timely and effective responses to spills throughout the life of the Project. The Plan provides measures to prevent spills from occurring, and response measures to be implemented in the event of a spill.

This plan was informed by the guidelines provided by Government of Yukon's Department of Energy, Mines and Resources and the Yukon Water Board in the Plan Requirement Guidance for Quartz Mining Projects (August 2013), the Terms and Conditions of Recommendation, Proponent Commitments and Proponent Mitigations specified in the Final Screening Report and Recommendation (Yukon Environmental and Socio-economic Assessment Board Project Assessment 2010-0267), and the regulatory approvals issued for the Project.

Appendix A summarizes the requirements pertaining to spill prevention and response outlined in the Final Screening Report and Recommendation and other licenses and permits issued to date.



Legend:

- Eagle Gold Mine
- Victoria Gold Claims
- Other Claims
- Town / Village
- Road
- Watercourse
- Category A Settlement Land
- Category B Settlement Land

VICTORIA GOLD CORP

0 3 6 12
Kilometres

Projection:	Drawn By:	EAGLE GOLD MINE YUKON TERRITORY
NAD 83 Zone 8N	HC	
Date:	Figure:	Mine Location
2020/01/27	1.1-1	

2 SPILL DEFINITION AND CATEGORIES

2.1 SPILL DEFINITION

A spill is defined under Section 132 of the *Yukon Environment Act* ("the Act") as a "release of a substance into the natural environment; from or out of a structure, vehicle or other container; and that is abnormal in quantity or quality in light of all the circumstances of the release; or in excess of an amount specified in the regulations". For the purposes of the *Act*, a "substance" means a hazardous substance, pesticide, contaminant or special waste.

2.2 REPORTABLE SPILLS

Schedule A of the *Yukon Spills Regulations* defines reportable spill quantities in reference to hazardous material classes defined under the *Transportation of Dangerous Goods Regulations*. The release into the environment of a hazardous material above the reportable quantities or any release into a watercourse is a reportable spill under the *Yukon Spills Regulations* and VGC is required immediately notify the 24-hour Yukon Spill Report line at:

867-667-7244

All reportable spills must be reported as soon as possible, within 24 hours. The reporting should be performed by the Environmental Coordinator or their designate. If the Environmental Coordinator is not on site, the Site Services Manager should perform the reporting. If there is uncertainty regarding the volume or type of material that has been spilled, it is advised that a report be made to the Spill Hotline.

Spill Reporting Forms will be completed for all spills (Appendix B).

Reporting thresholds for all substances including hazardous materials, pesticide, contaminant or special waste used or stored at the Project are provided in Table 2.2-1, Table 2.2-2 and Appendix C.

Safety Data Sheets (SDS) for all hazardous substances used for the Project at risk of spills are provided in Appendix D.

Table 2.2-1: Reportable Spill Thresholds

Substance Name	Type	TDGA Class	Reportable Threshold
Propane	Petroleum product	2	Any amount of gas from a container larger than 100 L, or where the spill results from equipment failure, error, or deliberate action or inaction
Acetylene	Petroleum product	2	Any amount of gas from a container larger than 100 L, or where the spill results from equipment failure, error, or deliberate action or inaction
Oxygen	Gas	2	Any amount of gas from a container larger than 100 L, or where the spill results from equipment failure, error, or deliberate action or inaction
Gasoline	Petroleum product	3	200 L (any amount if spilled into a watercourse)

Substance Name	Type	TDGA Class	Reportable Threshold
Diesel	Petroleum product	3	200 L (any amount if spilled into a watercourse)
Jet A & B Aviation Fuel	Petroleum Product	3	200 L (any amount if spilled into a watercourse)
Antifreeze	Solvent	9	5 L (any amount it spilled into a watercourse)
Lubricating and Hydraulic Oils	Lubricating oil	n/a	200 L (any amount if spilled into a watercourse)

Table 2.2-2: Reportable Spill Thresholds for Special Waste

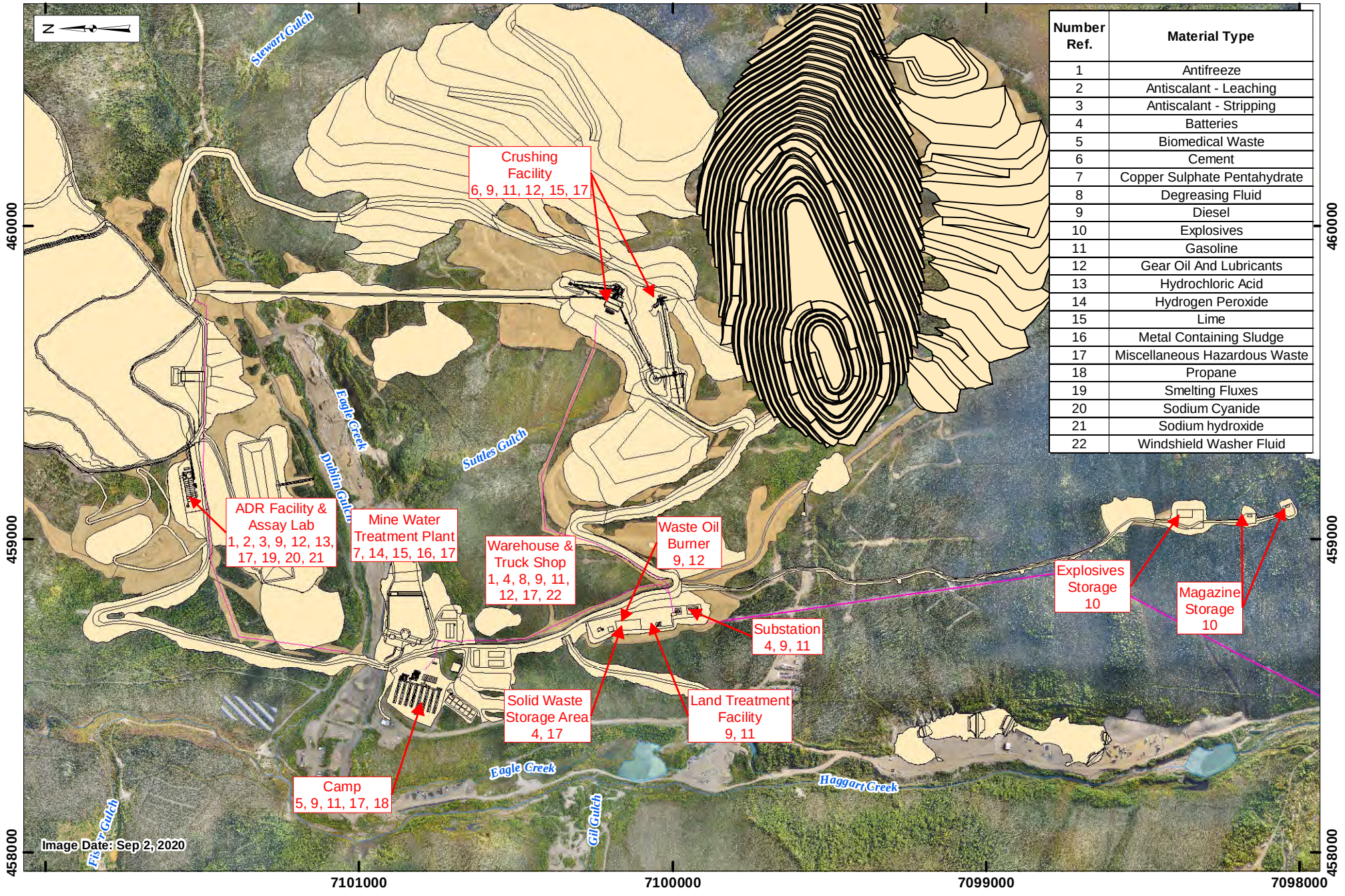
Substance Type	Time period	Reportable Threshold
Special Waste that may cause an adverse effect	N/A	Any amount
Solid Special Waste	24 hours	500 g
	30 days	5 kg
Liquid Special Waste	24 hours	500 ml
	30 days	5 L
Mixture of Solid and Liquid Waste	24 hours	500 g or 500 ml whichever is less
	30 days	5 kg or 5 L whichever is less

2.3 NON-REPORTABLE SPILLS

Spilled materials which are below the reporting thresholds are not required to be reported externally; however, all spills (whether reportable externally or not) must be reported internally to the VGC Environmental Department, and the VGC Environmental Department will maintain a record of all spills. The VGC Spill Report Form (Appendix B) is to be used by all contractors and Victoria Gold employees who first observe a spill. Non-reportable spills will be handled according to the Spill Response Procedure described in Section 3 of this Plan. After any non-reportable spill is controlled and cleaned up, the Environmental Department will complete the Spill Response Form and perform an inspection of the area as required. Spill cleanup supplies used for the response must be replenished by area supervisors.

2.4 STORAGE LOCATIONS AND USE OF HAZARDOUS MATERIALS

Hazardous materials used on site and storage locations are described in the Solid Waste and Hazardous Materials Management Plan and shown on Figure 2.4-1. VGC will ensure that spill kits compatible with the type and volume of material stored and used are available at sites where hazardous materials are stored and used.



Number Ref.	Material Type
1	Antifreeze
2	Antiscalant - Leaching
3	Antiscalant - Stripping
4	Batteries
5	Biomedical Waste
6	Cement
7	Copper Sulphate Pentahydrate
8	Degreasing Fluid
9	Diesel
10	Explosives
11	Gasoline
12	Gear Oil And Lubricants
13	Hydrochloric Acid
14	Hydrogen Peroxide
15	Lime
16	Metal Containing Sludge
17	Miscellaneous Hazardous Waste
18	Propane
19	Smelting Fluxes
20	Sodium Cyanide
21	Sodium hydroxide
22	Windshield Washer Fluid

Legend:

- Facility
- Site Power
- Mine Feature
- Construction Areas
- Reserved Area
- Watercourse - Perennial
- Watercourse - Ephemeral
- Watercourse - Intermittent

VICTORIA GOLD CORP

0 125 250 500
Meters

Projection:	Drawn By:
NAD 83 Zone 8N	HC
Date:	Figure:
2021/04/04	2.4-1

EAGLE GOLD MINE
YUKON TERRITORY

Storage Areas for Hazardous Materials

3 SPILL RESPONSE PROCEDURE

The immediate priority in the event of a spill is to ensure the safety of any personnel in the immediate vicinity and to minimize the potential impact to the environment due to a sustained release of hazardous material. The implementation of spill containment measures and site cleanup and remediation will only be undertaken when safety is assured and the source of the release has been controlled.

In the case of a small spill, for example an overturned drip tray or a small coolant leak noticed under equipment, the first observer should immediately try to contain the spill. This can be done by using a drip tray, or placing absorbent pads under the leak.

Before responding to any large spill, it is important to first STOP and THINK:

- Identify hazards
- Assess Risks
- Control Risks

The priority sequence for spill response is as follows:

1. **ENSURE SAFETY**
    - Identify the spilled material (if not possible, assume dangerous)
    - Use Personal Protective Equipment (PPE)
    - Ensure the safety of nearby personnel
    - Remove all ignition sources – no smoking
2. **FIRST AID**
    - Call for assistance if necessary
    - Attend to the injured
    - Begin first aid immediately as required by following the guidelines from SDS for the substance released
3. **STOP THE FLOW (IF POSSIBLE)**
    - Close valves, shut off pumps and plug holes or leaks (if safe to do so)
4. **NOTIFY YOUR SUPERVISOR AND/OR SPILL RESPONSE TEAM**
    - Provide basic information of spill – What, Who, Where, When and How
    - Activate Spill Response Team
5. **SECURE THE AREA**
    - Limit access to the spill area and prevent unauthorized entry

6. CONTAIN THE RELEASE

- Block off and protect drains, culverts, and other drainage structures which are not designated for spill management
- Use dykes, berms, trenches, ditches or sorbent material from spill kits to control the spilled substances

7. CLEAN-UP

- Under the direction of the Spill Response Team or Environmental Personnel, begin clean-up activities

8. REPORT THE SPILL

- The Environmental Manager, or designate, will report the spill to the appropriate agencies.

9. CONDUCT INCIDENT INVESTIGATION

- Undertake appropriate corrective and preventative action and document all activities on the Spill Report Form

3.1 SPILL RESPONSE EQUIPMENT

Spill kits will be available at all hazardous materials storage sites and transfer areas shown in Figure 2.4-1. Spill kits will also be available in hazardous material transporters, heavy equipment and light trucks. Spill kits will contain booms, sorbent materials, shovels and PPE, and fire extinguishers will be located in close proximity to assist in responding to a possible spill incident involving flammable materials. Spill kits will also contain a kit inventory sheet to assist with monthly inspections and the replenishment of spent supplies and equipment. The VGC Environmental Department will be responsible for monthly spill kit inspections. The area supervisors will be responsible for the replenishment of spent supplies and equipment, and ensuring that their worksite is equipped with a fully stocked 50 Gallon Spill Response Kit. Spare spill response supplies will be maintained on site to replenish spill kits and to be deployed to other locations in the event of a spill requiring additional equipment or as a replacement until spent, location specific, kits can be replenished.

If there is a risk of spills on open water, surface booms will be available for deployment.

All spill kits will include the 2016 Emergency Response Guidebook which has been developed jointly by Transport Canada (TC), the U.S. Department of Transportation (DOT), the Secretariat of Transport and Communications of Mexico (SCT) and with the collaboration of CIQUIME (Centro de Informaciòn Quìmica para Emergencias) of Argentina, for use by fire fighters, police, and other emergency services personnel who may be the first to arrive at the scene of a transportation incident involving dangerous goods.

The Emergency Response Guidebook is a guide to aid first responders in quickly identifying the specific or generic hazards of the material(s) involved in the incident, and protecting themselves and the general public during the initial response phase of the incident.

Figures 3.1-1 and 3.1-2 provide the location of Spill Response Equipment and Table 3.1-1 provides an inventory of anticipated Spill Response Equipment located around the Project Site. Area

supervisors are responsible for ensuring spill response equipment is sufficient for the substances and tasks being performed at their respective locations.

Table 3.1-1: Inventory of Spill Response Equipment Planned for the Project

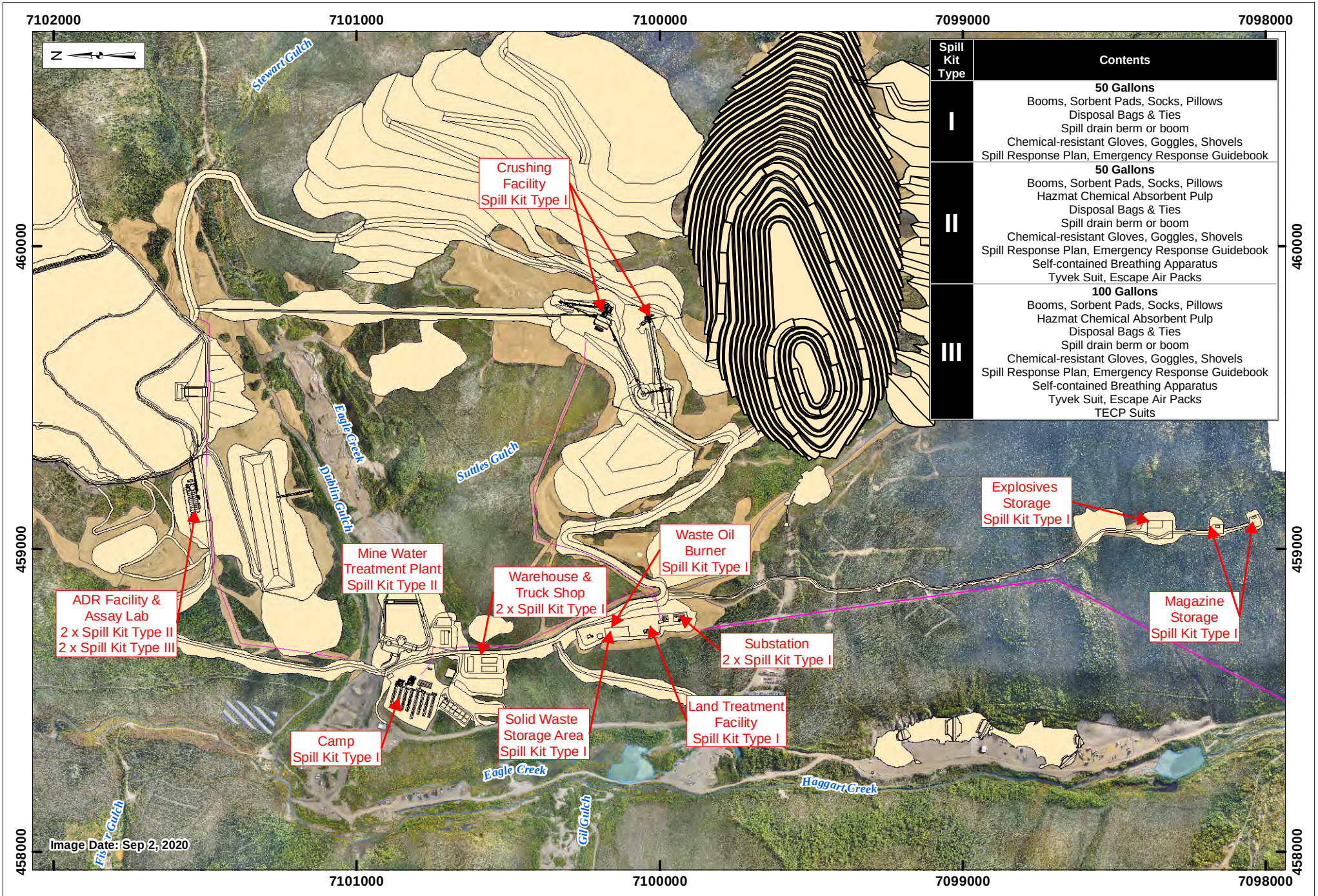
Location	Type of Equipment
ADR Facility and Assay Lab – Reagent Storage area	2X100 Gallon Spill response carts containing: ▪ Booms, sorbent pads, socks, dikes, pillows ▪ Hazmat Chemical Absorbent Pulp ▪ Disposal bags and Ties ▪ Spill drain berm or boom ▪ Spill Response Plan ▪ Emergency Response Guidebook ▪ Chemical-resistant gloves ▪ Goggles This location will also be equipped with the following: ▪ Self-contained breathing apparatus ▪ Tyvek suit ▪ Totally-Encapsulating Chemical Protective (TECP) suits ▪ Escape air packs (10 minute)
ADR Facility and Assay Lab – At each reagent handling area	2X50 Gallon Spill kits containing: ▪ Sorbent Pads, Socks, Pillows ▪ Disposal Bags and Ties ▪ Hazmat Chemical Absorbent Pulp ▪ Spill drain berm or boom ▪ Chemical-resistant Gloves ▪ Tyvek suit ▪ Goggles ▪ Spill Response Plan ▪ Emergency Response Guidebook This location will also be equipped with the following: ▪ Self-contained breathing apparatus ▪ Escape air packs (10 minute)
Mine water treatment plant (to be built)	1X100 Gallon Spill response carts containing: ▪ Booms, sorbent pads, socks, dikes, pillows ▪ Hazmat Chemical Absorbent Pulp ▪ Disposal bags and Ties ▪ Chemical-resistant Gloves ▪ Goggles ▪ Spill drain berm or boom ▪ Spill Response Plan ▪ Emergency Response Guidebook This location will also be equipped with the following: ▪ Self-contained breathing apparatus ▪ Escape air packs (10 minute)

Location	Type of Equipment
Truck shop (permanent shop to be built)	2 X 50 Gallon Spill kits containing: ▪ Booms, Sorbent Pads, Socks, Pillows ▪ Disposal Bags and Ties ▪ Granular Absorbent ▪ Spill drain berm or boom ▪ Chemical-resistant Gloves ▪ Goggles ▪ Spill Response Plan ▪ Emergency Response Guidebook
Crushing and screening plants	1 X 50 Gallon Spill kits containing: ▪ Sorbent Pads, Socks, Pillows ▪ Disposal Bags and Ties ▪ Granular Absorbent ▪ Spill drain berm or boom ▪ Chemical-resistant Gloves ▪ Goggles ▪ Spill Response Plan ▪ Emergency Response Guidebook This location will also be equipped with the following: ▪ Respirators (requires fit testing)
Fuel storage areas	1 X 50 Gallon Spill kits containing: ▪ Sorbent Pads, Socks, Pillows ▪ Disposal Bags and Ties ▪ Granular Absorbent ▪ Spill drain berm or boom ▪ Chemical-resistant Gloves ▪ Goggles ▪ Spill Response Plan ▪ Emergency Response Guidebook
Explosives storage facility	1 X 50 Gallon Spill kits containing: ▪ Sorbent Pads, Socks, Pillows ▪ Disposal Bags and Ties ▪ Granular Absorbent ▪ Spill drain berm or boom ▪ Chemical-resistant Gloves ▪ Goggles ▪ Spill Response Plan ▪ Emergency Response Guidebook
Explosives magazine	1 X 50 Gallon Spill kits containing: ▪ Sorbent Pads, Socks, Pillows ▪ Disposal Bags and Ties ▪ Granular Absorbent ▪ Spill drain berm or boom

Location	Type of Equipment
	▪ Chemical-resistant Gloves ▪ Goggles ▪ Spill Response Plan ▪ Emergency Response Guidebook
Camp	1 X 50 Gallon Spill kits containing: ▪ Booms, Sorbent Pads, Socks, Pillows ▪ Disposal Bags and Ties ▪ Granular Absorbent ▪ Spill drain berm or boom ▪ Chemical-resistant Gloves ▪ Goggles ▪ Spill Response Plan ▪ Emergency Response Guidebook
Solid Waste Storage Area	1 X 50 Gallon Spill kits containing: ▪ Sorbent Pads, Socks, Pillows ▪ Disposal Bags and Ties ▪ Granular Absorbent ▪ Spill drain berm or boom ▪ Chemical-resistant Gloves ▪ Goggles ▪ Spill Response Plan ▪ Emergency Response Guidebook
Substation	2 X 50 Gallon Spill kits containing: ▪ Sorbent Pads, Socks, Pillows ▪ Disposal Bags and Ties ▪ Granular Absorbent ▪ Spill drain berm or boom ▪ Chemical-resistant Gloves ▪ Goggles ▪ Spill Response Plan ▪ Emergency Response Guidebook
Inside mine vehicles: Fuel carts Utility vehicles Explosive transport vehicles Emergency response vehicles	Vehicle spill kits containing: ▪ Sorbent Pads, Socks and Pillows ▪ Disposable Bags and Ties ▪ Granular Absorbent ▪ Neoprene Drain Cover ▪ Chemical-resistant Gloves ▪ Goggles ▪ Shovels ▪ Spill Response Plan ▪ Emergency Response Guidebook
Strategic locations along access road	1 X 50 Gallon Spill kits containing: ▪ Booms, Sorbent Pads, Socks, Pillows

Location	Type of Equipment
	▪ Disposal Bags and Ties ▪ Granular Absorbent ▪ Chemical-resistant Gloves ▪ Goggles ▪ Spill Response Plan ▪ Emergency Response Guidebook

An inventory of spill kits will be maintained and routine inspections will be carried out to ensure that they are suitably stocked. SDS will be available for the substances used in the area serviced by the kit.



Spill Kit Type	Contents
I	**50 Gallons** Booms, Sorbent Pads, Socks, Pillows Disposal Bags & Ties Spill drain berm or boom Chemical-resistant Gloves, Goggles, Shovels Spill Response Plan, Emergency Response Guidebook
II	**50 Gallons** Booms, Sorbent Pads, Socks, Pillows Hazmat Chemical Absorbent Pulp Disposal Bags & Ties Spill drain berm or boom Chemical-resistant Gloves, Goggles, Shovels Spill Response Plan, Emergency Response Guidebook Self-contained Breathing Apparatus Tyvek Suit, Escape Air Packs
III	**100 Gallons** Booms, Sorbent Pads, Socks, Pillows Hazmat Chemical Absorbent Pulp Disposal Bags & Ties Spill drain berm or boom Chemical-resistant Gloves, Goggles, Shovels Spill Response Plan, Emergency Response Guidebook Self-contained Breathing Apparatus Tyvek Suit, Escape Air Packs TECP Suits

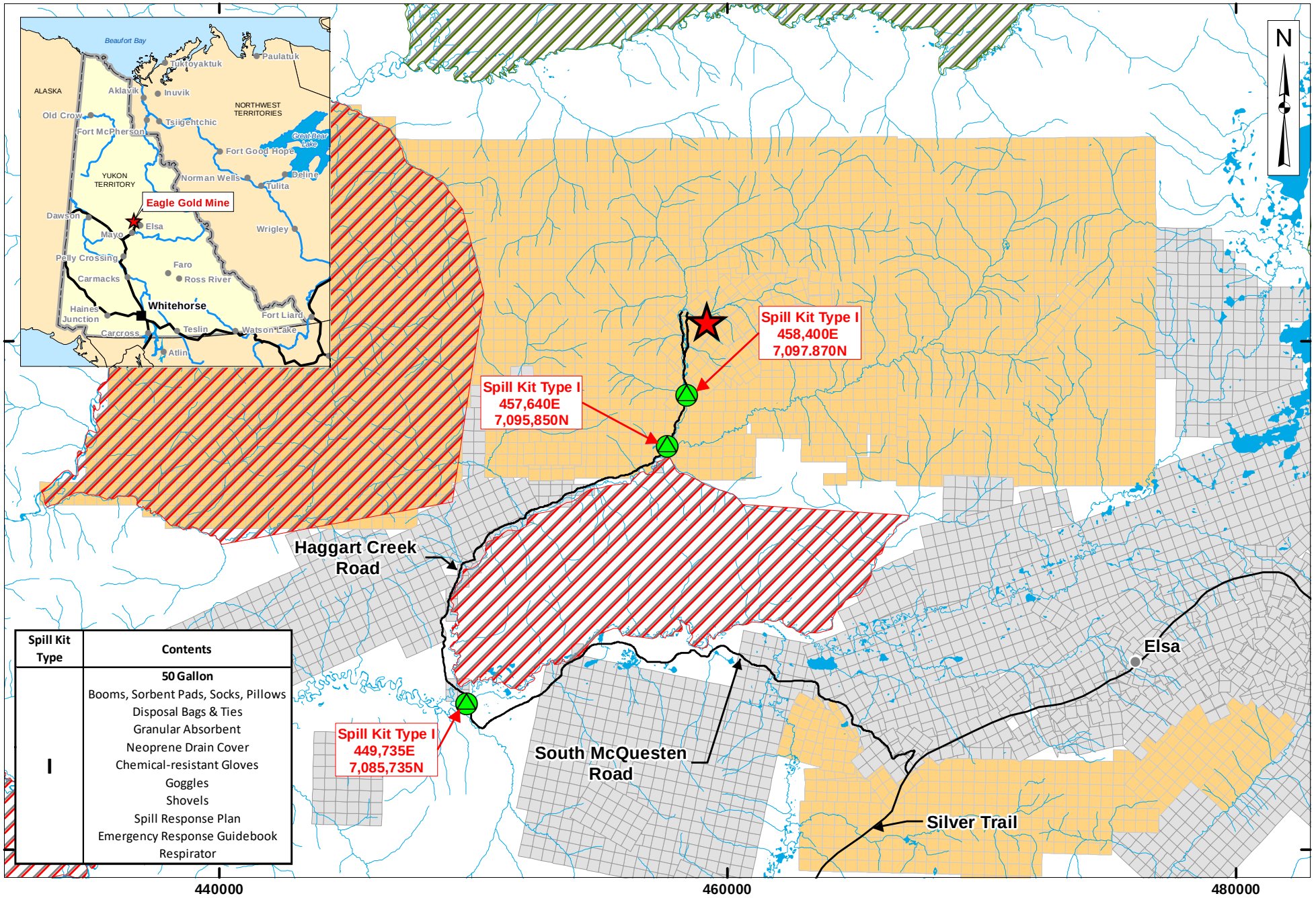
Legend:

- Facility
- Site Power
- Mine Feature
- Construction Areas
- Reserved Area
- Watercourse - Perennial
- Watercourse - Ephemeral
- Watercourse - Intermittent

VICTORIA GOLD CORP

0 125 250 500
Meters

Projection:	Drawn By:	EAGLE GOLD MINE YUKON TERRITORY
NAD 83 Zone 8N	HC	
Date:	Figure:	Locations of Spill Response Equipment
2021/04/04	3.1-1	



Spill Kit Type	Contents
I	**50 Gallon** Booms, Sorbent Pads, Socks, Pillows Disposal Bags & Ties Granular Absorbent Neoprene Drain Cover Chemical-resistant Gloves Goggles Shovels Spill Response Plan Emergency Response Guidebook Respirator

Legend:

- Spill Kit Location
- Town / Village
- Category A Settlement Land
- Victoria Gold Claims
- Eagle Gold Mine
- Category B Settlement Land
- Other Claims
- Road
- Watercourse

VICTORIA GOLD CORP

0 1.25 2.5 5
Kilometres

Projection:	Drawn By:
NAD 83 Zone 8N	HC
Date:	Figure:
2021/04/05	3.1-2

EAGLE GOLD MINE
YUKON TERRITORY

Additional Spill Response Resource Locations

3.2 DUTIES AND RESPONSIBILITIES

To ensure human safety and limit potential environmental effects resulting from a spill, all site personnel will have specific responsibilities when responding to a spill. The responsibilities for spill response are summarized in Table 3.2-1 and depicted in Figure 3.2-1.

Table 3.2-1: Position and Responsibilities of Personnel Involved in Spill Response

Position	Responsibilities
All Personnel (Discoverer)	▪ Assess the initial severity of the spill and safety concerns ▪ Identify the source of the spill ▪ Ensure the safety of nearby personnel ▪ Begin first aid immediately as required ▪ Report all spills to Supervisor and Environmental Coordinator as soon as possible ▪ Determine the size of the spill and, if safe to do so, stop or contain it ▪ Remove all ignition sources if safe to do so ▪ Participate in spill response as a member of cleanup crew under the direction of the Spill Response Team
Supervisors	▪ Contact the Mine Manager ▪ Report to the site of the spill ▪ Gather information on the spill (substance, location, approximate area/quantity, in water, etc.) ▪ Participate in spill response as a member of cleanup crew under the direction of the Spill Response Team
Emergency Response/Spill Response Team	▪ Report to the site of the spill ▪ Assume primary role for first aid (Emergency Response Team) ▪ Stop or contain the spill ▪ Remove all ignition sources ▪ Take appropriate response measures – deploy booms, absorbents, and other equipment and materials as required ▪ Continue cleanup as directed by Mine Manager or Environmental Coordinator
Mine Manager	▪ Report to the site of the spill or Incident Command Centre (if Emergency Response Team has been deployed) ▪ Coordinate initial and ongoing response efforts ▪ Ensure source of spill has stopped and contain spill ▪ Record spill information ▪ Ensure a log book of all spill or unauthorized discharge occurrences is maintained ▪ Ensure coordination of equipment and personnel as needed ▪ Oversee the cleanup operation until it is satisfactorily completed ▪ Decide with the Environmental Coordinator if mobilization of additional equipment, resources or personnel is warranted
Environmental Manager / Designate	▪ Report to the site of the spill ▪ Report the spill to the Yukon 24-Hour Spill Report Line and Energy Mines and Resources - Client Services and Inspections ▪ Ensure timely response and cleanup of spill site and impacted areas

Position	Responsibilities
	▪ With the Mine Manager, decide if additional equipment, resources or personnel is required for containment and remedial activities ▪ Notify senior management ▪ With the Mine Manager and senior management, discuss and implement additional external reporting if it is required ▪ Oversee completion and distribution of Spill Report ▪ Ensure investigation identifies measures to prevent similar spills
Chief Operations Officer / Designate	▪ Communicate with the media for large spills when required. ▪ Ensure that all press releases are accurate and in accordance with policy ▪ Make financial decisions on major expenses during large spill response ▪ Oversee preventative measures to ensure risk of a similar incident is mitigated

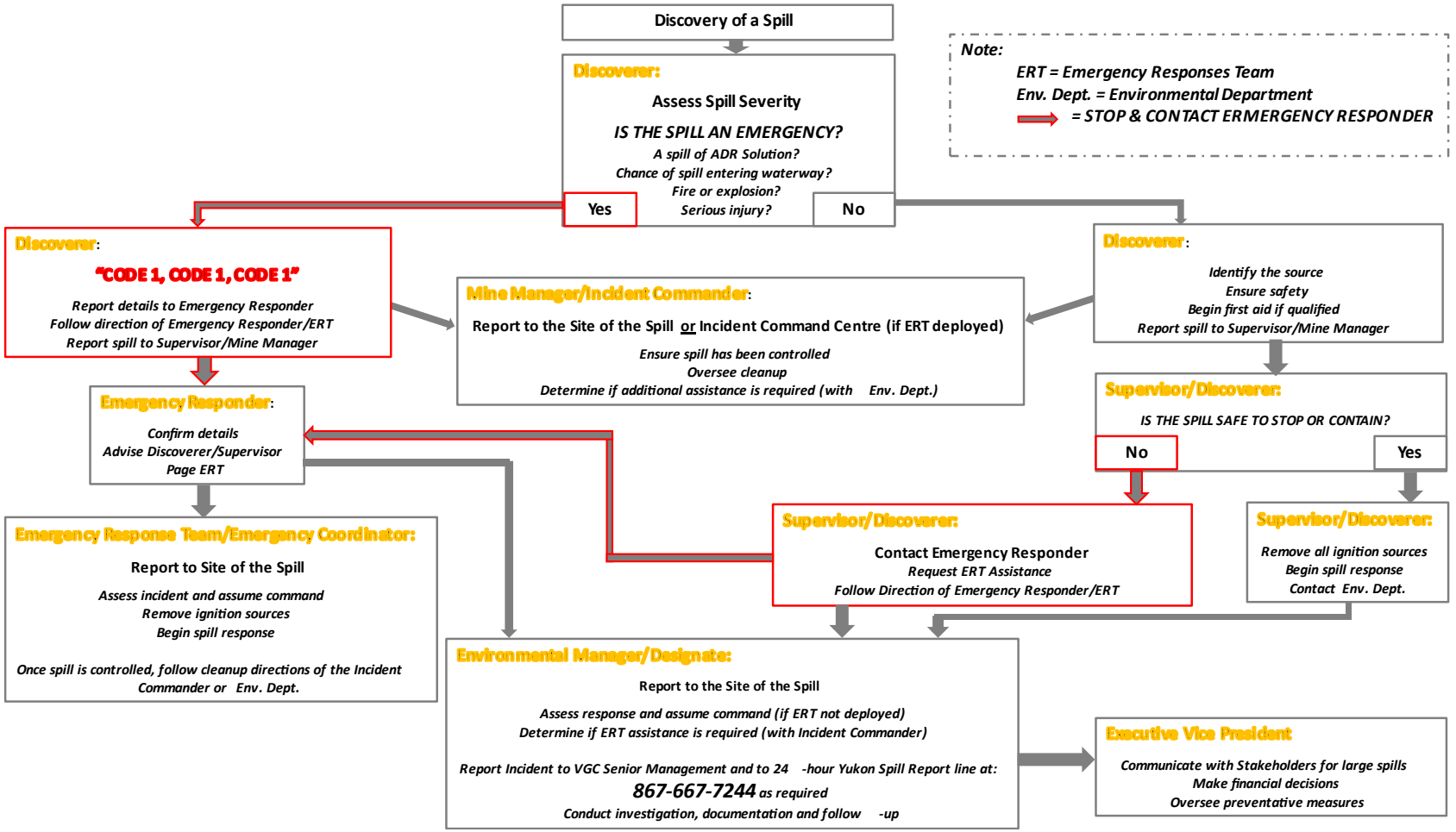


Figure 3.2-1: Spill Response Procedure

3.3 CONTAINMENT AND CLEANUP PROCEDURES

Containment methods for spills vary depending on the substance, size of the spill, location (inside buildings or outside), terrain and soil type, proximity to watercourses, climatic conditions and the availability of equipment and personnel.

Spill containment and response steps for each substance that could be spilled are summarized in Table 3.3-1 and Appendix C.

Table 3.3-1: Spill Containment Procedures by Substance

Substance Name	Type	TDGA Class	PPE required for Spill Response	Cleanup or disposal method
Propane	Petroleum product	2	Insulated gloves, safety glasses, respirator if there is a possible of oxygen reduction (confined spaces with poor ventilation)	Shut off flow and remove ignition sources if safe to do so and evacuate area. Consult supplier if container needs disposal.
Acetylene	Petroleum product	2	Insulated gloves, safety glasses, respirator	Shut off flow and remove ignition sources if safe to do so and evacuate area. Consult supplier if container needs disposal.
Oxygen	Gas	2	Insulated gloves, safety glasses	Allow gas to dissipate. Consult supplier if container needs disposal.
Gasoline	Petroleum product	3	Chemical-resistant impervious gloves, safety glasses, respirator if ventilation is inadequate	Approach from upwind, contain and collect spillage with sorbents from spill kits and/or sand and gravel. Pump free liquid into containment. Arrange for transport of material to an approved facility.
Diesel	Petroleum product	3	Chemical-resistant impervious gloves, safety glasses	Approach from upwind and contain and collect spillage with sorbents from spill kits and/or sand and gravel. Pump free liquid into containment. Arrange for transport of material to an approved facility.
Jet A & B Aviation Fuel	Petroleum Product	3	Chemical resistant gloves, safety glasses	Use sorbents, pump free liquid into containment. Arrange for transport of material to an approved facility.
Antifreeze	Solvent	9	Chemical-resistant impervious gloves, safety glasses	Approach from upwind, contain and collect spillage with sorbents from spill kits and/or sand and gravel. Pump free liquid into containment. Arrange for transport of material to an approved facility.
Lubricating and Hydraulic Oils	Lubricating oil	n/a	Chemical-resistant gloves, safety glasses.	Approach from upwind, contain and collect spillage with sorbents from spill kits and/or sand and gravel. Pump free liquid into containment. Arrange for transport of material to an approved facility.

Various practical methods of containment and recovery have been proven and effective for use in northern climates on land, snow ice or in open water. These methods are summarized in Table 3.3-2.

Table 3.3-2: Spill Containment Procedures by Location

Spill location	Response Actions	Containment Methods	Limitations	Required resources
Snow and Ice	▪ Stop spill source ▪ Eliminate ignition sources ▪ Block entry to waterways with snow dyke or other barrier ▪ Trench or ditch to intercept or contain spill ▪ Compact snow around spill to increase retention ▪ Contain or collect contaminated snow	Snow or Ice dykes	▪ Best suited for flat areas in winter ▪ Requires sufficient snow or ice	▪ Shovels ▪ Heavy equipment
		Snow or Ice trench	▪ Requires sufficient snow or ice ▪ Only applicable when ice is >1m thick ▪ Generally requires mechanical equipment for construction on ice	▪ Shovels ▪ Heavy equipment ▪ Ice chain saws
		Sorbent berm	▪ Requires sufficient, readily available sorbent material ▪ Impractical for larger spills	▪ Sorbents
Land	▪ Stop spill source ▪ Eliminate ignition sources ▪ Block entry to waterways with sand or gravel dyke ▪ Trench or ditch to intercept or contain spill ▪ Deploy sorbents ▪ Recover liquids with pumps or vacuum equipment	Sand or gravel dykes	▪ Best suited for flat areas ▪ Requires sufficient, easily excavated material if hand tools are being used	▪ Shovels ▪ Heavy equipment ▪ Sandbags or liner material if available ▪ Pump out equipment
		Land trench	▪ Can be difficult to excavated if soil is frozen ▪ Not conducive to areas with shallow bedrock	▪ Shovels ▪ Heavy equipment ▪ Pump out equipment
		Sorbent berm	▪ Requires sufficient, readily available sorbent material ▪ Impractical for larger spills	▪ Sorbents
Open Water	▪ Stop spill source ▪ Eliminate ignition sources ▪ Deploy sorbent booms or containment booms to control spread of substance	Sorbent boom	▪ Requires sufficient, readily available sorbent material ▪ No suitable for fast moving watercourses	▪ Sorbents
		Containment boom	▪ Requires sufficient, readily available sorbent material	▪ Sorbents

An effective way of controlling spills on land is through the construction of trenches or berms using sand and gravel. Small spills may be contained manually using shovels. More substantial spills may require the use of heavy equipment to dig trenches or place berm material.

Since snow has absorbent and containment properties, snow can be very effective for containing spills. Liquid spills typically become immobile within the snow pack and can be easily removed for transport

and disposal. Snow will be used to its advantage in the construction of snow dykes, and whenever possible, the snow pack will be left in place to avoid contaminating the underlying substrate. For spills on ice, the methods of containment are similar to those used on land.

Spills occurring on open water (e.g. water retention ponds) will spread very rapidly, and therefore, initial preventative measures such as those described in Table 3.3-1 will be taken to minimize the potential for spills to enter open water. In the event of a petroleum product spills on open water, booms will be deployed immediately to limit the spread of the product and to facilitate recovery, by absorbents or by pumping.

3.4 OFF-SITE RESOURCES

With the exception of medical aid incidents, external resources will be authorized only by the Mine Manager or designate, or those with a higher level of responsibility. Key municipal, territorial and federal services and contact numbers are provided in Table 3.4-1.

Table 3.4-1: Municipal, Territorial and Federal Services and Contact Numbers

Name	Office	Location
Canutec – Emergency Response for TDG spill	**613-996-6666** or ***666 on a cellular phone**	Ottawa
Mayo Nursing Station	867-996-4444	Mayo
Mayo Fire & Rescue	867-996-2222	Mayo (Volunteer Responders)
Mayo RCMP	Emergency: 867-996-5555 Admin: 867-996-2677	Mayo
Whitehorse Regional Hospital - Emergency and Admissions	867-393-8700	Whitehorse
Environment Yukon Conservation Officer – Sean Cox	867-996-2202	Mayo
Environment Yukon Conservation Officer Services Branch	867-667-8005	Whitehorse
First Nation of Na-cho Nyäk Dun	867-996-2265	Mayo
Environment Yukon Fish and Wildlife Branch	867-667-5715	Whitehorse
Fisheries and Oceans Canada	867-393-6722	Whitehorse
Yukon Energy Corporation	867-996-2387	Mayo

Name	Office	Location
Yukon Energy Corporation	1-800-676-2843	After hours Whitehorse
Yukon Workers' Compensation Health and Safety Board, Chief Mines Safety Officer, Occupational Health & Safety Branch - Michael Henney	867-667-8739	Whitehorse
Yukon Workers' Compensation Health and Safety Board 24-Hour Emergency Line for Reporting Serious Workplace Incidents and Injuries	867-667-5450	Whitehorse
Canadian Wildlife Services (CWS) Pacific and Yukon Region	1-800-668-6767	Delta, BC
TIPP (Turn in Poachers and Polluters)	1-800-661-0525	Whitehorse, YT

3.5 FIRE SUPPRESSION

The Fire Response Procedure in the Emergency Response Plan must be implemented in the event of a fire.

Fire suppression equipment will be located at all hazardous materials storage, transfer and dispensing areas. If a spill of a flammable substance occurs and is ignited, firefighting efforts may be required prior to spill containment and cleanup. Personnel will be made aware of substance specific dangers prior to conducting fire suppression activities.

Any individual discovering a fire is responsible for attempting to control it and notifying his or her supervisor (Note: Any attempt to control the fire should be made without exposing oneself to risk or injury).

An individual should never enter a smoke-filled environment without self-contained breathing apparatus, appropriate protective clothing and proper training. If a fire is not immediately extinguished and poses an active threat to human health or the environment, then a 'Code 1' call that describes the size and location of the fire must be activated. Immediately notify the Mine Manager in such an event.

In the event that the Mine Manager deems that site wide evacuation is necessary, all personnel must gather at the appropriate muster station so that transport from the site can be arranged, and all mine personnel can be accounted for.

The Mine Manager or designate must:

- Take and remain in charge of firefighting activities until the fire is extinguished
- Ensure all personnel not involved are evacuated to a safe zone and instructed to be on standby for deployment on firefighting duties

- Identify all fire extinguishers used in the firefighting effort and ensure they are serviced, tested, re-charged, and returned for re-use.

3.6 CONTAMINATED SOIL

Sampling procedures for material potentially contaminated by a spill and analytical methods for contamination locations and clean-up areas will adhere to the requirements of the Yukon Environment Protocol for the Contaminated Sites Regulation (CSR) under the *Environmental Act*, specifically Protocol No. 3: Soil Sampling Procedures at Contaminated Sites and Protocol No. 5: Petroleum Hydrocarbon Analytical Methods and Standards.

Hazardous materials that cannot be re-used or recycled locally will be handled in accordance with VGC's Solid Waste and Hazardous Materials Management Plan.

VGC operates and maintains a land treatment facility authorized under Yukon Environment Permit No: 24-047. The facility is utilized for the progressive treatment and remediation of potentially hydrocarbon and coolant contaminated soils. The land treatment facility is located adjacent to the waste management and incinerator area and consists of a bermed, geo-membrane lined cell with access apron and is sloped such that run-off from the area is contained and treated prior to release to the receiving environment as required.

Hydrocarbon and coolant contaminated soils are stored within the land treatment facility and remediated by regular tilling (aeration) and standard northern bioremediation practices. Runoff from the facility will be collected in a sump and treated via an oil water separator in the sump prior to discharge to ground. Remediation treatment will occur in summer months only.

Soils are tested for contaminant concentrations prior to treatment in accordance with the characterization sampling protocols of the CSR.

3.6.1 Confirmatory Soil Sampling

For spills to ground that require removal of potentially contaminated materials, confirmatory soil sampling is conducted according to Protocol No. 3: Soil Sampling Procedures at Contaminated Sites of the CSR.

Following excavation of contaminated material, the floor and walls of the excavation must be sampled and analyzed to confirm that no contaminated material remains at that location or to identify any contaminated material remaining at the removal location. A minimum of 5 samples must be taken from the faces of the excavation: one from each wall and one from the excavation floor. Depending on the extent of excavation, additional samples are required as follows: one sample per 10 metres (m) running length and one sample per 3 m depth. If any of the characterization samples demonstrate that the excavated material is highly contaminated, one sample must be taken for each 5 m running length and for each 3 m running depth. In the case of the excavation floor, one sample must be collected for each 10 m running length and for each 10 m running width.

For shallow excavations not exceeding 0.20 m in depth, step out samples are to be collected adjacent to each excavation boundary in lieu of wall samples at a frequency of one sample for each 10 m

running length or for each 5 m running length if any of the characterization samples demonstrate that the excavated material is highly contaminated. Floor samples are to be collected as outlined above.

When conducting confirmatory sampling at large sites, at least the first five confirmatory samples for each contaminant plume at any site must be analyzed for VPH, LEPH, HEPH, BTEX + Styrene, and all regulated PAHs. After that, only every tenth confirmatory sample needs this analysis; the remainder can be analyzed for VHS6-10, EPHS10-19, and EPHS19-32.

Full protocol sampling as described above is not always applicable. Although the Yukon CSR policy does not always default to no sampling, discussions between Yukon Environment, CMI-Major Mines, and VGC Environmental Manager and Superintendent (November 20, 2020) confirmed that minor spills resulting in less than 1 m^3 of excavated materials do not require confirmatory samples. The excavation volume of 1 m^3 will trigger the full protocol sampling as described above. The CMI Inspector will be informed on a regular basis of non-reportable spills exceeding 1 m^3 with details and results of the confirmatory sampling.

3.6.2 Characterization Sampling

Characterization sampling is required for all potentially contaminated materials prior to deposit and treatment in the site LTF. Ex-situ sampling of materials may be conducted for initial characterization purposes in situations where emergency response is required (i.e., immediate excavation of recent spills). Ex-situ sampling for characterization purposes will be the standard at the site based on protocols for immediate spill response and contaminant removal, in-situ will not occur unless historical spills are identified.

When characterizing contaminated material, at least the first five samples for each contaminant plume must be analyzed for BTEX + Styrene and PAHs. If more than five samples are taken from a single plume, the remainder can be analyzed only for VHS6-10, EPHS10-19, and EPHS19-32. The samples analyzed for BTEX + Styrene and PAHs should be taken from the area thought to be the most contaminated.

In addition, and in accordance with the LTF permit, characterization sampling will occur at a rate of one sample per 50 m^3 for material intended to be placed in the LTF. These sample may represent combined contaminated materials from different spills at the site, as typically spills on site generate much less than 50 m^3 of material requiring treatment. Hydrocarbon and glycol contaminated materials will continue to remain separated within the LTF.

4 INTERNAL AND EXTERNAL REPORTING

Any spill for which external reporting is required, as described in Section 2.2, will be reported to the 24-hour Yukon Spill Report Line. The reporting sequence below will be followed to allow for an efficient and effective response, completion of an accurate spill report, and timely notification of VGC management, government agencies, and First Nations.

- The First Observer (the person who discovers the spill) will identify the source and report to his/her direct supervisor.
- The supervisor will gather spill information and provide to the Mine Manager and Environmental Manager or designate.
- The Environmental Manager or designate will record the information regarding the spill and forward it to the Mine Manager.
- The Environmental Manager or designate will report the spill to VGC senior management and the 24-hour Spill Report Line and the Department of Energy, Mines and Resources - Client Services and Inspections, and to the Yukon Water Board Waterline online registry, as well as overseeing the completion and distribution of spill-related information.
- The Environmental Manager and senior management will determine responsibility for reporting to the FNNND within 24 hours as required.

5 TRAINING REQUIREMENTS

All personnel on site involved with the handling, use, storage and transportation of hazardous substances will be trained in the procedures for responding to and reporting of spills. Training topics will include:

- Workplace Hazardous Materials Information System (WHMIS) – renewed every 3 years and mandatory for all new hires
- Transportation of Dangerous Goods
- Hazmat training will be delivered to Emergency Response Team members

The following spill related topics will be covered during site orientation for all relevant personnel:

- Responsibilities of personnel
- Causes of spills and preventative measures
- Control, containment and cleanup methods for various spill locations
- Emergency contact information and location
- Storage and disposal of materials used on site
- Reporting requirement and procedure
- Overview of Spill Response Plan
- PPE requirements for handling potential spill materials

6 BEST MANAGEMENT PRACTICES

VGC will incorporate best management practices (BMPs) into all work procedures and plans. BMPs relating to spills are outlined below.

6.1 HEALTH AND SAFETY

VGC will implement a system of workplace inspections to ensure that procedures put in place to prevent incidents and accidents relating to hazardous materials are followed. This system will identify levels of hazard, which will trigger immediate work stoppages, and levels of hazards, which will trigger notification of management. This system will ensure that work does not continue with inadequate provisions for health and safety and those personnel are empowered to address unsafe or potentially unsafe scenarios.

Specifically, in relation to hazardous materials, the following will be provided:

- Engineering controls and engineered hazardous material handling mechanisms to ensure that manual handling and ergonomic issues do not exacerbate the risk associated with working with hazardous materials.
- Monitoring systems for detection of hazardous solution and gaseous leaks.
- PPE designed for use in handling the various types of hazardous materials.
- Communication systems with emergency response capabilities.
- SDS for all hazardous materials will be readily available anywhere these products are stored or used.
- A copy of the SDSs will be accessible in the site offices.
- Emergency contact information will be posted and kept current.

6.2 SPILL PREVENTION

All relevant personnel that will use or handle hazardous materials will receive WHMIS training and will be trained in proper handling, spill response, and PPE use specific to their job tasks.

No lubrication, refueling or maintenance of equipment is permitted to occur within 30 m of watercourses or wetlands. All fueling and lubrication of equipment will be conducted in a manner that minimizes the possibility of spills with containers, hoses and nozzles kept free of leaks and all fuel nozzles equipped with functional automatic shutoffs.

Sodium cyanide will be mixed with water in a well-ventilated area and maintained at a high pH to prevent the evolution of hydrogen cyanide gas.

The following mitigation measures will be implemented to minimize the potential for transportation incidents that could result in a hazardous substance spill:

- VGC will work with the Department of Highways and Public Works to ensure the access road is properly maintained.
- Speed limits will be strictly enforced for all Project vehicles.
- VGC will ensure trucking and hauling contractors have appropriate driver training, radio contact capabilities, properly maintained vehicles, and spill response capabilities.
- VGC will ensure all hazardous materials are transported and handled in accordance with the *Transportation of Dangerous Goods Act.*
- Signage will be posted along the access road to the Project to ensure non-Project traffic is aware of radio protocols.
- Wildlife migration corridors and crossings along the access road will be identified and signage provided in high-risk areas.
- Wildlife crossing and escape points will be plowed in the access road snow banks.
- VGC will have on-site personnel with emergency first aid training to provide primary care in the event of an accident, and will implement the appropriate components of the Emergency Response Plan for the Project.

6.3 SPILL RESPONSE

All site personnel will be familiar with VGC's Spill Response Plan, and their duties and responsibilities. Storage sites will be well labeled, and SDS are accessible in storage areas. This Spill Response Plan will be kept current, and made available to all personnel. VGC will ensure that suitable spill kits are used for spill response and that personnel are trained in using the spill response equipment.

6.4 STORAGE OF HAZARDOUS MATERIALS

The Solid Waste and Hazardous Materials Management Plan, describes the method of storage of hazardous materials for the Project. VGC will ensure that all hazardous materials are stored with secondary containment structures, either in the form of concrete foundations with curbed sides or double walling of the primary container. Hazardous material storage areas will be well labeled and access to the storage areas will be restricted.

Spill response equipment will be available at hazardous materials storage locations and will be inventoried, maintained and inspected monthly. Signage will be clearly visible in storage, dispensing and transfer areas. Fire extinguishers and/or fire suppression systems will be located at all hazardous material storage locations. Fuel and lubrication materials will be stored a minimum of 30 m from natural watercourses.

6.5 FUEL TRANSFER PROCEDURES

All personnel responsible for transfer, storage, transportation or handling of fuel will be trained in safe work practices for fuel and lubricants.

Caches of spill response materials will be placed along the South McQuesten Road and the Haggart Creek Road, including at the Haggart Creek crossing. Project personnel will have appropriate emergency response and spill contingency training and knowledge; equipment, materials and procedures will be maintained to limit consequences of releases of fuel or oil to the terrestrial or aquatic environment through prompt containment and clean-up.

6.5.1 Spill Protection and Prevention

Spill prevention will be undertaken through ensuring that accepted standard operating procedures are employed for the safe and secure transfer of hazardous materials from product transporters and within the Project site. Hazardous materials will be stored in areas that have containment structures such as concrete foundations with curbed sides. Hazardous material handling will be undertaken within the concrete foundations. Equipment handling hazardous materials will be inspected regularly and any inadequacies will be reported to maintenance personnel and repaired prior to continuation with work.

Spills will be responded to using the methods described in this Plan, according to what type of substance and what surface they occur on, as described in Section 3.3 and Appendix C. Routine inspections and maintenance will be conducted at hazardous material storage and transfer areas. Storage areas will be kept clean through good housekeeping practices.

6.5.2 Dispensing

Storage containers will be stored properly, and will not be over filled. Operating procedures will be established to minimize the potential for fuel spills during dispensing. All personnel handling fuel will be trained on these procedures.

6.6 ROUTINE MONITORING

Monitoring and maintenance is essential in the prevention of spills, and the effective handling of potential spills.

6.6.1 Maintenance

Maintenance procedures will be posted in applicable service areas. Maintenance personnel will be trained and familiar with the procedures. Regular checks will be performed on storage and dispensing equipment to identify any potential problems. If the regular checks identify issues, repairs are to be made prior to continued use of the piece of equipment. Spill response equipment will be kept stocked and maintained, and maintenance logs will be kept.

6.6.2 Perimeter Assessment

The following outlines items that will be identified during inspection:

- Signs of leakage from storage containers, loss of material, cracks, holes etc.
- Signs of inadequacy of secondary containment structures

- Unexpected solution or gaseous emissions will be thoroughly investigated to determine the source and nature of the emissions.
- Discoloration, oily discharges or any unusual odours.

6.6.3 Hazardous Material Storage and Transfer Areas

The following outlines items that will be identified during inspection:

- Spills or stains on the ground.
- Losses of material from storage containers.
- Cracks or damage to storage containers.
- Emergency shut off systems in place, functioning and clearly marked.
- Spill kits are available, adequate and accessible.
- Procedures posted for reference, SDS are available

APPENDIX A

Assessment, Licence and Permit Requirements for Spill Prevention and Response

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Assessment, Licence and Permit Requirements for Spill Prevention and Response

Document, License or Permit	Section Number	Requirement
Final Screening Report and Recommendation: Terms and Condition of Recommendation	11	As proposed, the Proponent shall ensure a certified cyanide transporter is used and appropriate driver training, radio contact capabilities, vehicle maintenance, and emergency clean-up kits will be on trucks carrying NaCN. Furthermore, the Proponent shall ensure that emergency clean-up kits include equipment to contain NaCN as well and material to protect from, and respond to, cyanide toxicity in spill responders.
Final Screening Report and Recommendation: Terms and Condition of Recommendation	23	The proponent shall ensure that the following communication elements are in the ERP: a) Notification to management, regulatory agencies, outside response providers and medical facilities of the cyanide emergency. b) Notification to potentially affected communities of the cyanide related incident and any necessary response measures. c) Communication protocols with the media.
Final Screening Report and Recommendation: Proponent Commitments	97	SGC will implement the following to maximize road and transport safety: a) Ensure trucking/hauling contractors have appropriate driver training, radio contact capabilities, vehicle maintenance requirements, and spill response capabilities b) Ensure all hazardous materials are transported and handled in accordance with the Transport of Dangerous Goods Act and Regulations
Final Screening Report and Recommendation: Proponent Commitments	98	SGC commits to the following spill prevention and response measures: a) If there is any doubt regarding the size of a spill, material involved, and whether it is reportable, SGC will err on the side of caution and report the spill. b) Caches of spill response materials will be placed along the access road as required by the Spill Contingency Plan, including the Haggart Creek Crossing. c) Project staff will have appropriate emergency response and spill contingency training and knowledge. Equipment, materials, and procedures will be maintained to limit the consequences of releases to the environment through prompt containment and clean-up. d) Fuels, hydrogen peroxide, and other hazardous liquids will be transferred from tanker trucks to storage tanks by enclosed lines, hoses, and pumps equipped with pressure transducers and volume counters to ensure tanks cannot be overfilled. e) No lubrication, refuelling or maintenance of equipment will occur within 30 m of wetlands or watercourses. f) All fuelling and lubrication of construction equipment will be carried out in a manner that minimizes the possibility of spills. All containers, hoses, and nozzles will be free of leaks and all fuel nozzles equipped with functional automatic shut-offs. g) Where stationary equipment cannot be relocated more than 30 m from a watercourse, it will be situated in a designated area that has been bermed and lined with an impermeable barrier with a holding capacity equal to 125% of the largest tank within the berm. h) Equipment operators will be appropriately trained in spill response procedures and carry spill kits capable of handling spills on land and water.

Assessment, Licence and Permit Requirements for Spill Prevention and Response

Document, License or Permit	Section Number	Requirement
Final Screening Report and Recommendation: Proponent Commitments	110	SGC is committed to developing and implementing Environmental Management Plans with the following components: a) Spill Contingency Plan
Final Screening Report and Recommendation: Proponent Commitments	112	The ERP will include the following commitments: a) Resource inventories of personnel, equipment, first aid kits, spill kits, and clean-up materials will be maintained on-site and updated regularly. These inventories will also contain information on external resources available off-site (e.g., RCMP, fire department, other mining establishments in the vicinity). b) All staff on site will receive basic training, including environmental awareness, general emergency response, spill contingency measures, and communication procedures. Truck drivers transporting hazardous materials will also receive additional training on spill response, hazardous material handling, and emergency driving techniques. All security personnel will be trained in first aid.
Final Screening Report and Recommendation: Proponent Mitigations	26	Prevent and respond to all potential spills.
Final Screening Report and Recommendation: Proponent Mitigations	59	Fuel, hazardous material and explosives will be managed according to industry standards including; storage in appropriate containers; containment areas sized to hold the larger of 110% of the largest tank or 10% of the total maximum volume of all tanks in the facility; and storage of explosives in separate buildings away from the rest of the mine activities.
Quartz Mining License QML-0011	9.1	The Licensee must immediately implement the relevant component of the environmental management system if a spill or release of dangerous or hazardous substances or materials occurs at site.
Class 4 Mining Lands Approval LQ00303b	6	All spills must be reported immediately to the 24-Hour Yukon Spill Reporting Line (867) 667-7244 and to the Mining Inspections Division (867) 456-3882.
Class 4 Mining Lands Approval LQ00303b	37	A spill contingency plan for petroleum products and other hazardous waste must be prepared and posted in the camp and at all fuel handling locations used in carrying out the exploration program. The spill plan shall include reporting to EMR-CSI Mining Inspections and the Chief to ensure compliance with spill reporting requirements.
Class 4 Mining Lands Approval LQ00303b	38	All spill clean-up equipment and material must be maintained in a state of readiness sufficient at all times to contain and clean-up any hazardous material spills.
Class 4 Mining Lands Approval LQ00303b	39	If a spill occurs, the spill contingency plan must be immediately implemented and notice given to the 24-hour Yukon Spill Report Line. As soon as practicable, an inspector must be contacted. Whatever remedial action is required to clean-up the spill and reclaim the affected land and water must be taken.
Class 4 Mining Lands Approval LQ00303b	40	Routine maintenance areas where heavy equipment is serviced or repaired should be inspected regularly for minor spills and stored waste hydrocarbons.
Class 4 Mining Lands Approval LQ00303b	41	Any contaminated soils should be excavated and contained for eventual land farm treatment at an approved facility.

Assessment, Licence and Permit Requirements for Spill Prevention and Response

Document, License or Permit	Section Number	Requirement
Type B Water Use Licence QZ16-006	19	Where a spill or an unauthorized discharge occurs, that is of a reportable quantity under the Yukon Spills Regulations, the Licensee shall immediately contact the 24-hour Yukon Spill Report number, (867) 667-7244 and implement the Spill Contingency Plan. A detailed written report on any such event including, but not limited to, dates, quantities, parameters, causes and other relevant details and explanations, shall be submitted to the Board not later than 10 days after the occurrence.
Type B Water Use Licence QZ16-006	20	The Licensee shall apply the relevant procedures in the Spill Contingency Plan. The Licensee shall review the Spill Contingency Plan annually and shall provide a summary of that review, including any revisions to the plan, as a component of the annual report.
Type B Water Use Licence QZ16-006	21	The Licensee shall maintain a log book of all spill or unauthorized discharge occurrences, including spills that are less than the reportable quantities under the Yukon Spills Regulations. The log book shall be made available at the request of an Inspector. The log book shall include, but not necessarily be limited to the: a) date and time of the spill or unauthorized discharge occurrence; b) substance spilt or discharged; c) approximate amount spilt or discharged; d) location of the spill; e) distance between the spill or discharge and the nearest Watercourse; and f) remedial measures taken to contain and clean-up the spill area or to cease the unauthorized discharge.
Type B Water Use Licence QZ16-006	22	The Licensee shall include a summary of all spills or unauthorized discharges that occurred during the year reported, as part of the annual report.
Type B Water Use Licence QZ16-006	23	All personnel shall be trained in procedures to be followed and the equipment to be used in the containment of a spill.
Type B Water Use Licence QZ16-006	24	Prior to the commencement of construction. the Licensee shall update the Spill Contingency Plan and provide the updated plan to the Board.
Type B Water Use Licence QZ16-006	25	The Spill Contingency Plan shall be posted on site for the duration of the works.
Type B Water Use Licence QZ16-006	26	Ten days prior to construction, the Licensee shall submit material safety data sheets to the Board for all petroleum products and/or hazardous materials that are to be present during this undertaking.
Type B Water Use Licence QZ16-006	27	Fuel, lubricants, hydraulic fluids, coolants and similar substances shall be stored and/or transferred a minimum of 30 metres from the Natural Boundary of any Watercourse, in such a way that said substances are not deposited in or allowed to be deposited in waters.
Type A Water Use Licence QZ14-041-1	127	Where a spill or an unauthorized discharge occurs, that is of a reportable quantity under the Yukon Spills Regulations, the Licensee must immediately contact the 24-hour Yukon Spill Report number, (867) 667-7244 and implement the Spill Contingency Plan. A detailed written report on any such event including, but not limited

Assessment, Licence and Permit Requirements for Spill Prevention and Response

Document, License or Permit	Section Number	Requirement
		to, dates, quantities, parameters, causes and other relevant details and explanations, must be submitted to the Board not later than 10 days after the occurrence.
Type A Water Use Licence QZ14-041-1	128	The Licensee must apply the relevant procedures in the Spill Contingency Plan. The Licensee must review the Spill Contingency Plan annually and must provide a summary of that review, including any revisions to the plan, as a component of the annual report.
Type A Water Use Licence QZ14-041-1	129	The Licensee must maintain a log book of all spill or unauthorized discharge occurrences, including spills that are less than the reportable quantities under the Yukon Spills Regulations. The log book must be made available at the request of an Inspector. The log book must include: a) Date and time of the spill; b) Substance spilt or discharged; c) Approximate amount spilt or discharged; d) Location of the spill; e) Distance between the spill or discharge and the nearest Watercourse; and f) Remedial measures taken to contain and clean-up the spill area or to cease the unauthorized discharge.
Type A Water Use Licence QZ14-041-1	130	The Licensee must include a summary of all spills or unauthorized discharges that occurred during the year reported, as part of the annual report.
Type A Water Use Licence QZ14-041-1	131	All relevant personnel must be trained in procedures to be followed and the equipment to be used in the containment of a spill.
Type A Water Use Licence QZ14-041-1	132	The Spill Contingency Plan must be posted on site for the duration of the Project.
Type A Water Use Licence QZ14-041-1	133	Fuel, lubricants, hydraulic fluids, coolants and similar substances must be stored and/or transferred a minimum of 30 meters from the Natural Boundary of any Watercourse, in such a way that said substances are not deposited in waters.

APPENDIX B

Eagle Gold Spill Report Form

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EAGLE GOLD PROJECT
SPILL RESPONSE FORM

VICTORIA GOLD CORP

FIRST OBSERVER			
Name & Company:			
Date Observed:		**Time Observed:**	
Location of Spill:	**VGC Tracking Number:**		
Distance to Waterbody:		**Photos Taken?**	☐ Yes ☐ No
Estimated Spill Volume:		**Reported to:**	
PERSON/DEPT. RESPONSIBLE FOR SPILL			
Supervisor/Investigator:			
Date of Spill:			
Substance Spilled:			
Equipment Involved:			
Volume of Contaminated Material:			
Personnel Contacted for Disposal (Name):			
Cause of Spill: (Equipment Failure, vehicle accident, foreign object, etc.)			
Spill Response Actions Taken: (Containment and/or absorbent materials used, equipment required for clean-up, Pre-trip attached, etc.)			
ENVIRONMENTAL DEPARTMENT USE ONLY			
Spill Line Tracking Number		**Reportable to Spill Hotline?**	☑ Yes ☐ No
Info Re. Spill Hotline:			
Disposal Container Labelled?	☐ Yes ☐ No	**Samples taken?**	☐ Yes ☑ No
Environmental areas affected: (Watercourse, soil, etc.):			
Method of Disposal & Further Remediation Required:			
Follow Up Required?	☐ Yes ☐ No	**Follow Up Date:**	
SIGNATURES REQUIRED FOR ALL REPORTABLE SPILLS			
Employee:		**Signature:**	
Supervisor:		**Signature:**	
Safety:		**Signature:**	
Environment:		**Signature:**	

APPENDIX C

Reportable Spill Thresholds

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Reportable Spill Thresholds, Personal Protective Equipment and Clean-up Method by Substance FOR UNUSED PRODUCTS

Substance Name	Type	TDGA Class	Reportable Threshold	PPE required for Spill Response	Cleanup or disposal method
Propane	Petroleum product	2	Any amount of gas from a container larger than 100 L, or where the spill results from equipment failure, error, or deliberate action or inaction	Insulated gloves, safety glasses, respirator if there is a possible of oxygen reduction (confined spaces with poor ventilation)	Shut off flow and remove ignition sources if safe to do so and evacuate area. Consult supplier if container needs disposal.
Acetylene	Petroleum product	2	Any amount of gas from a container larger than 100 L, or where the spill results from equipment failure, error, or deliberate action or inaction	Insulated gloves, safety glasses, respirator	Shut off flow and remove ignition sources if safe to do so and evacuate area. Consult supplier if container needs disposal.
Oxygen	Gas	2	Any amount of gas from a container larger than 100 L, or where the spill results from equipment failure, error, or deliberate action or inaction	Insulated gloves, safety glasses	Allow gas to dissipate. Consult supplier if container needs disposal.
Gasoline	Petroleum product	3	200 L (any amount if spilled into a watercourse	Chemical-resistant impervious gloves, safety glasses, respirator if ventilation is inadequate	Approach from upwind, contain and collect spillage with sorbents from spill kits and/or sand and gravel. Pump free liquid into containment. Arrange for transport of material to an approved facility.
Diesel	Petroleum product	3	200 L (any amount if spilled into a watercourse)	Chemical-resistant impervious gloves, safety glasses	Approach from upwind and contain and collect spillage with sorbents from spill kits and/or sand and gravel. Pump free liquid into containment. Arrange for transport of material to an approved facility.
Jet A & B Aviation Fuel	Petroleum Product	3	200 L (any amount if spilled into a watercourse)	Chemical resistant gloves, safety glasses	Use sorbents, pump free liquid into containment. Arrange for transport of material to an approved facility.
Antifreeze	Solvent	9	5 L	Chemical-resistant impervious gloves, safety glasses	Approach from upwind, contain and collect spillage with sorbents from spill kits and/or sand and gravel. Pump free liquid into containment. Arrange for transport of material to an approved facility.
Lubricating and Hydraulic Oils	Lubricating oil	n/a	200 L (any amount if spilled into a watercourse)	Chemical-resistant gloves, safety glasses.	Approach from upwind, contain and collect spillage with sorbents from spill kits and/or sand and gravel. Pump free liquid into containment. Arrange for transport of material to an approved facility.

Reportable Spill Thresholds, Personal Protective Equipment and Clean-up Method by Substance
FOR USED/WASTE PRODUCTS

Substance Type	Time period	Reportable Threshold
Special Waste that may cause an adverse effect	N/A	Any amount
Solid Special Waste	24 hours	500 g
	30 days	5 kg
Liquid Special Waste	24 hours	500 ml
	30 days	5 L
Mixture of Solid and Liquid Waste	24 hours	500 g or 500 ml whichever is less
	30 days	5 kg or 5 L whichever is less

APPENDIX D

Safety Data Sheets

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APPENDIX P2

2020 Spill Reports

EAGLE GOLD PROJECT

FINAL SPILL REPORT

FEBRUARY 21, 2020 REPORTABLE DIESEL SPILL

YUKON GOVERNMENT SPILL #20-006

MAY 28, 2020

Prepared By:
Victoria Gold (Yukon) Corp.
Eagle Gold Project

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Appendix B Interim Spill Report

Appendix C Soil Sampling Analytical Results

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1 INTRODUCTION

On February 21, 2020 at approximately 10:30 pm, a reportable diesel spill occurred on Victoria Gold (Yukon) Corp's (VGC) Eagle Gold Mine Heap Leach Facility (HLF) Phase 1B area. The spill occurred at approximate UTM coordinates 0459419 E, 7102263 N, elevation 1044 meters above sea level (masl) (Figure 1.1-1). A fuel and lube maintenance truck was performing service on a dozer that required the PTO pump to be engaged in order to operate the maintenance truck compressor. While the fuel pump was not actively fueling machinery during this service, the fuel pump discharge line separated from the engaged, pressurized fuel pump, releasing diesel contained within the fuel tank rapidly onto the adjacent frozen ground and snow. The volume of diesel was conservatively estimated based on the volume of fuel that was missing from the fuel tank after the release occurred. The fuel pump was immediately shut off when the spill was identified and absorbent spill pads were deployed onto the ground. Site characterisation and material excavation followed spill response efforts.

Soil sampling and excavation of potentially impacted materials was undertaken on three separate occasions between the date of the spill occurrence to mid-April when remediation efforts were completed. Materials recovered from the site of the spill were transported to a lined, bermed temporary storage area adjacent to the current inert waste landfill site (0458977 E, 7101651 N). Communication with a Yukon Government Department of Energy, Mines and Resources (EMR) Senior Natural Resource Officer (SNRO) was ongoing during the spill response and remediation. Approximately 314 m^3 of potentially impacted soils was excavated from the spill location and relocated to the lined temporary storage area. Results of the analysis of soil samples taken of the exposed area upon completion of the third round of excavation displayed concentrations below Yukon Contaminated Sites Regulations (CSR) standards for hydrocarbons related to diesel product. The final excavated area was covered with clean fill from the surrounding area and compacted.

Remediation efforts at the spill site are now considered complete. The VGC Environment department will continue to monitor the contaminated material within the temporary holding cell for water management issues.



Legend:

Spill Location
Facility
Site Power
Reserved Area

Victoria GOLD CORP

0 100 200 400
Metres

Projection:	Drawn By:	EAGLE GOLD PROJECT YUKON TERRITORY
NAD 83 UTM Zone 8N	HC	
Date:	Figure:	Spill Location and Temporary Excavated Material Stockpile Location
2020/03/03	1.1-1	

2 RELEASE DETAILS

The below description of events and sampling efforts provides an overview of all notification, sampling and remedial efforts undertaken to address this spill. This information has been previously provided to the EMR Senior Natural Resource Officer and the Manager of Lands and Resources for the First Nation of Na-Cho Nyak Dun (FNNND). Photo documentation during the spill remediation process are provided in Appendix A, and referred to in the event descriptions in Section 2.1.

2.1 EVENT TIMELINE AND DESCRIPTION

Date	Description
February 21, 2020	• Spill of diesel from the fuel and lube maintenance truck occurs at 22:30 (Photo 1). The spill was identified by the presence of a diesel odour (Photo 2). Once identified, the fuel truck pump was immediately shut down; the spill was contained to the flat laydown area below the fuel truck. Spill volume was estimated at 4000 L based on reconciling the fuel tank quantity before and after the spill. The spill was contained in the immediate spill area, impacting snow and soils. Spill location is approximately 1 kilometer away from all watercourses.
February 22, 2020	• Spill reported to Spill Reporting Hotline at 13:00 and logged as Spill #20-006 under the Yukon Government tracking system. • EMR SNRO was called directly to report the spill the morning of February 22nd. • Spill notification email sent to EMR SNRO and the FNNND Lands and Resources Manager at 2:00pm. • Spill limits delineated based on visual staining and presence of diesel odour; marked with stakes and flagging; impacted area delineated of approximately 20 m x 25 m. • Soil samples taken at the four corners of the staked spill limits. • 1st round of excavation removes the top layer of material within the staked spill limits and stockpiles adjacent to spill area.
February 23, 2020	• Ongoing 1st round of excavation initiated on February 22, 2020 (Photo 3). Excavated material was stored adjacent to the spill site on flat ground. Frozen conditions at the time ensured that spill migration resultant of potential melt would not occur.
February 24, 2020	• Composite samples were taken from aggregated spill material piles resultant of the excavation.

Date	Description
February 25, 2020	• Additional details related to spill volume, location and site characteristics provided to EMR SNRO in order for SNRO to assess risk level, spill is subsequently classed at Risk Level 2, not requiring a follow up Spill Order.
February 27, 2020	• Local Mayo based EMR Natural Resource Officer visits site to photo document spill location on behalf of SNRO.
March 3, 2020	• Interim Spill Report submitted to EMR SNRO, FNNND Lands and Resources Manager, and uploaded to Yukon Water Board Waterline website in accordance with the Type A Water Use Licence for the Project (Appendix B). • Due to the volume of material from the 1st round of excavation and potential additional material to be removed, preparation was initiated of a lined, bermed area adjacent to the Inert Waste Landfill on flat ground for temporary storage of contaminated soils.
March 4, 2020	• 2nd round of excavation to remove additional materials commences, based on visual staining and presence of diesel odour. Excavation efforts are focused to the north and eastern corners of the delineated spill area based on laydown topography, visual staining and odour.
March 10, 2020	• Analytical results for soil samples taken February 22 and 24 received. • Evaluation of the second round of excavation for next steps (Photo 4).
March 11, 2020	• Soil confirmatory samples taken from floor and walls of area exposed by 2nd round of excavation.
March 19, 2020	• Construction of the temporary, lined containment berm completed adjacent to the Inert Waste Landfill (Photo 5).
April 6 – 7, 2020	• 3rd round of excavation was conducted between April 6 – 7, 2020 (Photo 6). Excavation efforts are focused to the areas exhibiting visual staining and presence of diesel odour.
April 15, 2020	• By April 15, 2020 excavated contaminated material has been moved into the completed lined, bermed temporary storage area (Photo 7).
April 18, 2020	• Soil confirmatory soil samples taken from floor and walls of area exposed by 3rd round of excavation.
April 24, 2020	• Analytical results for soil samples taken April 18 received. • Impacted area determined to be remediated based on consideration of analytical results and Yukon CSR standards.

Date	Description
April 27, 2020	• Excavated area backfilled with clean material sourced from the surrounding unimpacted area and compacted.

2.2 SAMPLE RESULTS

Soil sampling was conducted throughout the remediation efforts in accordance with the Yukon Contaminated Sites Regulation (CSR) Protocols, specifically Protocols 2, 3 and 5 and compared to the limits detailed in Schedules 1 and 2 for commercial and industrial sites. Samples were obtained by compositing material from the floor and walls of areas exposed by excavation (Figure 2.2-1). Table 2.2-1 summarizes the compound groups that were analyzed and includes the maximum values determined through laboratory analysis pertinent to the Yukon CSR analytes. Laboratory results are provided in Appendix C.

Soil samples were collected on February 22, 2020 outside of the assumed lateral extent of the spill limits (four corners around the impacted ground), based on visual staining and diesel odour. These four samples had non-detectable concentrations of Light Extractable Petroleum Hydrocarbons (LEPH) and low concentrations (i.e., below Yukon CSR standards) of Polycyclic aromatic hydrocarbons (PAHs) in two corners (north and east), indicating that the assumed spill limits were accurate. The top layer of material was excavated from within these spill limits.

The second round of excavation in early March targeted an area based on site topography, visual staining, and presence of diesel odour within the previously identified spill perimeter. Soil samples were collected on March 11, 2020 after the completion of the second round of excavation. The results indicated LEPH and some PAH compounds above CSR standards for commercial and industrial properties, within the south wall of the excavation and along the southwest and northwest floor of the excavation. VOCs and ethylbenzene were detected in the samples but were below the CSR standards.

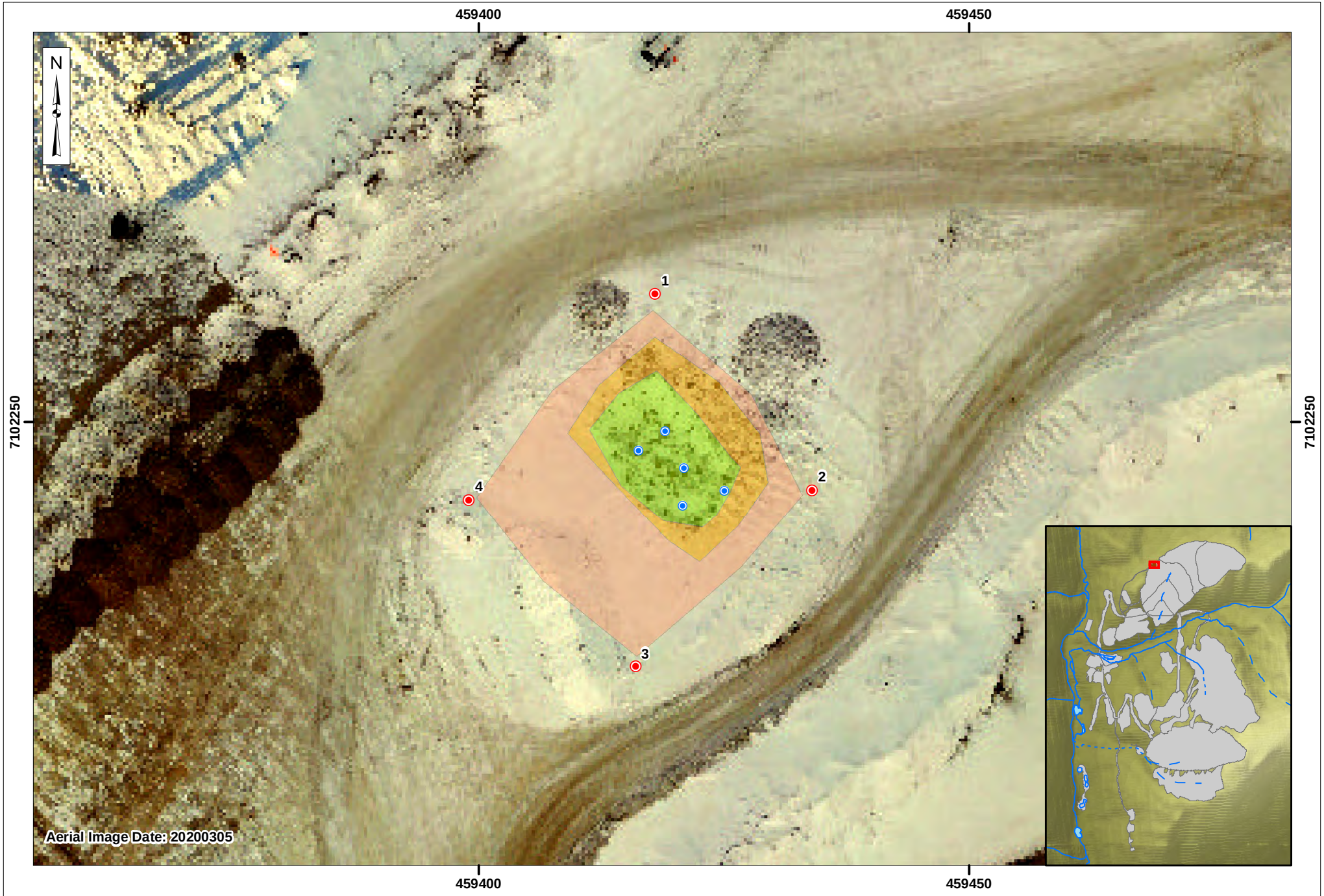
The third and final round of excavation was performed in April to further remove potentially impacted material within the area that March samples had confirmed concentrations of LEPH, VOCs, and PAHs. Subsequent confirmatory samples taken on April 18, 2020, following the third round of excavation, showed no exceedance of the Yukon CSR standards for commercial and industrial criteria.

Table 2.2-1 Soil Samples Summary Results February, March, April 2020*

Sample Date	Sample Location	Compound Groups**			
		Ethylbenzene (mg/kg)	VOCs (mg/kg)	LEPH (mg/kg)	PAH (mg/kg)
		Yukon CSR Commercial / Industrial Standard			
		20	200	2000	10
February 22	Original ground at extent of spill	N/S	N/S	N/D (north)	0.025 (north)
				N/D (east)	0.035 (east)
				N/D (south)	N/D (south)
				N/D (west)	N/D (west)
March 11	Wall(s)	0.221 (east)	3.05 (east)	1180 (east)	2.96 (east)
		1.23 (south)	12.4 (south)	**4120** (south)	9.96 (south)
		N/D (west)	N/D (west)	430 (west)	1.10 (west)

Sample Date	Sample Location	Compound Groups**			
		Ethylbenzene (mg/kg)	VOCs (mg/kg)	LEPH (mg/kg)	PAH (mg/kg)
		Yukon CSR Commercial / Industrial Standard			
		20	200	2000	10
		N/D (north)	N/D (north)	N/D (north)	0.063 (north)
	Floor	0.829 (northeast)	8.13 (northeast)	3220 (northeast)	7.83 (northeast)
		0.830 (southeast)	7.33 (southeast)	1930 (southeast)	4.88 (southeast)
		1.07 (southwest)	10.5 (southwest)	**4760** (southwest)	**12.1** (southwest)
		1.88 (northwest)	18.7 (northwest)	**4620** (northwest)	**11.7** (northwest)
April 18	Wall(s)	N/D	N/D	370 (east)	0.579 (east)
				N/D (south)	0.033 (south)
				N/D (west)	N/D (west)
				N/D (north)	0.029 (north)
	Floor	0.031	0.423	800	1.93

*Results shown are the maximum values detected within the compound groups
**Multiple individual compounds are included in hydrocarbon groups, see Appendix for detailed results
Bold – Above CSR Commercial/ Industrial Criteria
N/S – Not sampled
N/D – Not detected



Legend:

- 1st Excavation - Feb 22, 2020 - Unsurveyed
- 2nd Excavation - Mar 24, 2020 - Surveyed
- 3rd Excavation - Apr 9, 2020 - Surveyed
- Feb 22, 2020 Samples
- Apr 18, 2020 Samples

VICTORIA GOLD CORP

0 3.75 7.5 15
Metres

Projection:	Drawn By:
NAD 83 UTM Zone 8N	HC
Date:	Figure:
2020/05/15	2.2-1

EAGLE GOLD PROJECT
YUKON TERRITORY

Spill Soil Sample Locations and Excavations

3 SPILL REPORTING AND MITIGATION

3.1 REPORTING YUKON GOVERNMENT AND FNNND

Notification was submitted to the Yukon Spill Reporting Hotline on February 22, 2020 at 13:00 pm (14.5 hours after the event). Email notification was then sent directly to the EMR SNRO and the FNNND Lands and Resources Manager on February 22, 2020.

Updates and responses to inquiries from both the EMR SNRO and FNNND Lands and Resources Manager were ongoing throughout March, April, and May.

3.2 MITIGATIONS

After the event, the truck fuel system was immediately inspected by the VGC Maintenance Department and was subsequently scheduled for a mechanical upgrade. The mechanical upgrade included the installation of punch lock clamps on the fuel discharge line to ensure a secure connection between the discharge line and the fuel pump for future operations.

The excavation area was covered and compacted with clean backfill sourced from the surrounding unimpacted area. Additionally, HDPE liner required for the continued construction of the HLF will ultimately key into a trench that will cover the current spill area. The installation of the HDPE liner will mitigate future infiltration of precipitation coming into contact with any potential residual contaminants.

4 CLOSURE

Remediation efforts at the spill site are now considered complete. The excavated material relocated to the temporary lined containment berm will continue to be monitored for water management issues throughout 2020. Timing for relocation of this material to the permitted LTF (Permit #24-047) has not yet been determined and will depend on remediation of materials currently within the LTF to allow for their removal. As space allows the temporarily stored material will be relocated into the LTF.

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APPENDIX A

Photo Documentation



Photo 1: February 21, 2020. Failed fitting and hose on fuel pump.



Photo 2: February 21, 2020. Initial diesel release upon discovery.



Photo 3: Feb 23, 2020. First excavation of contaminated material on the following morning of the release.



Photo 4: March 10, 2020. Evaluating the second round of contaminated material excavation.



Photo 5: March 19, 2020. Temporary lined containment berm constructed across from the Inert Waste Landfill.



Photo 6: April 15, 2020. Following the third and final round of excavation. No sheen visible on melt water in the spill area.

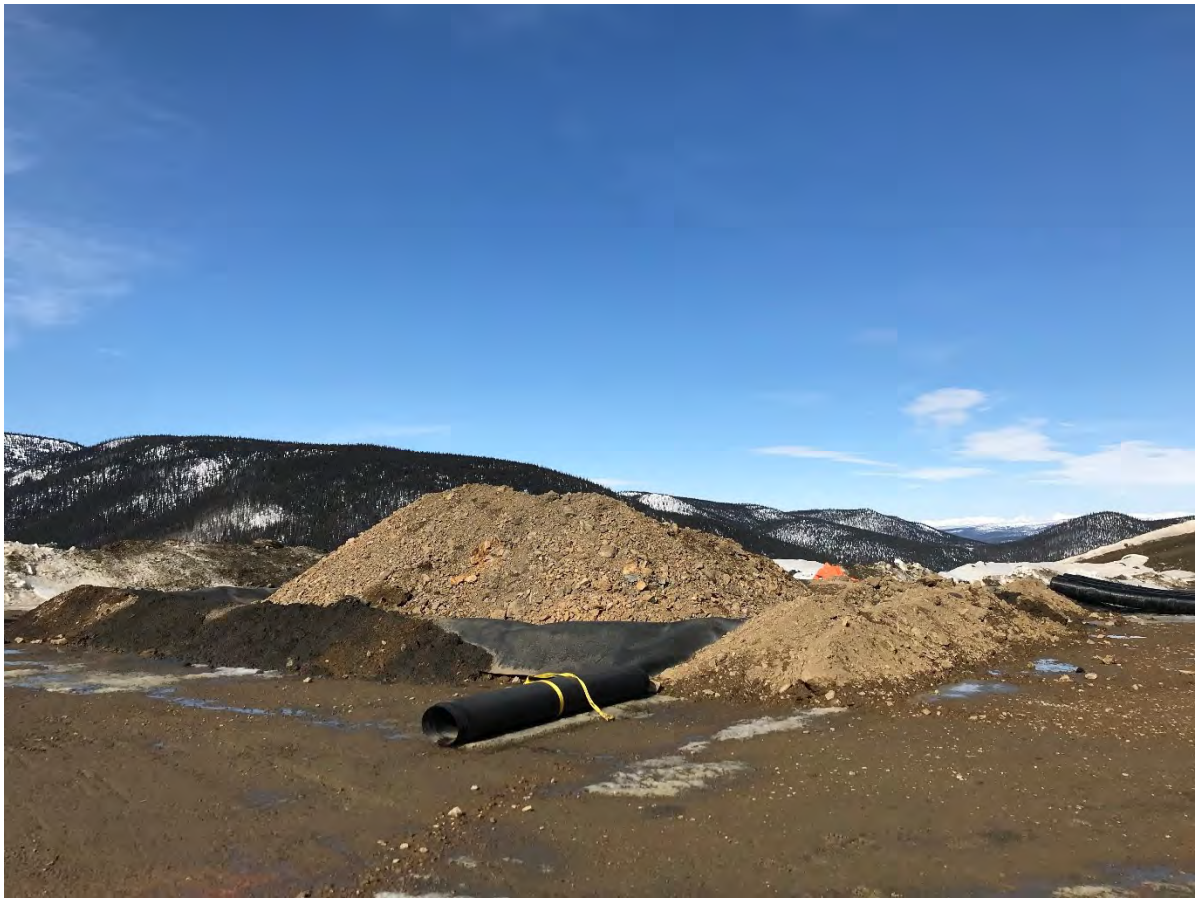


Photo 7: April 15, 2020. Following the third and final round of excavation contaminated material is relocated to the temporary lined containment berm. Non-contaminated soil was used to ballast the liner edges.



Photo 8: April 18, 2020. Third, final round of soil samples taken following all excavations, yielding results below CSR criteria.

APPENDIX B

Interim Spill Report

EAGLE GOLD PROJECT
SPILL RESPONSE FORM

StrataGold Corporation

FIRST OBSERVER			
Name & Company:	Victoria Gold Corp.		
Date Observed:	February 21, 2020	**Time Observed:** 10:30 PM	
Location of Spill:	HLF Phase 1B Laydown	**VGC Tracking Number:** VGC20-007	
Distance to Waterbody:	1KM	**Photos Taken?**	☑ Yes ☐ No
Estimated Spill Volume:	4000 L	**Reported to:** ENV	
PERSON/DEPT. RESPONSIBLE FOR SPILL			
Supervisor/Investigator:	Chad Erb, Process Nightshift Supervisor/Trevor Dunn Maintenance		
Date of Spill:	February 21, 2020		
Substance Spilled:	Diesel		
Equipment Involved:	Fuel/Lube Truck 6930-SV-037		
Volume of Contaminated Material:	TBD - Currently excavated 300 m3 soil/rock material		
Personnel Contacted for Disposal (Name):	Environment Dept coordinating with Site Services		
Cause of Spill: (Equipment Failure, vehicle accident, foreign object, etc.)	Fuel/Lube truck was performing service on 403 Dozer. PTO pump on fuel truck was engaged to operate compressor. Hose clamps on the main fuel supply line failed allowing the line to separate from the pump, releasing the diesel into the truck housing and overflowing onto the frozen ground.		
Spill Response Actions Taken: (Containment and/or absorbent materials used, equipment required for clean-up, Pre-trip attached, etc.)	Pump shut off when spill noticed, supervisor was notified and pads laid down. Contaminated material to be excavated and stored on lined, bermed area adjacent to Inert Waste Landfill. Fuel truck discharge line to be upgraded with punch lock clamps. Truck inspections to include complete fuel system inspection. See additional information for detail.		
ENVIRONMENTAL DEPARTMENT USE ONLY			
Spill Line Tracking Number	20-006	**Reportable to Spill Hotline?**	☑ Yes ☐ No
Info Re. Spill Hotline:	Reported to Hotline Feb 22, 2020 at 1300pm and NND & EMR Feb 22		
Disposal Container Labelled?	☐ Yes ☐ No	**Samples taken?**	☑ Yes ☐ No
Environmental areas affected: (Watercourse, soil, etc.):	Soil and rock area ~20x25m, survey stakes delineating excavation samples. (soil samples)		
Method of Disposal & Further Remediation Required:	Excavation of material, to be placed on lined, bermed separate areas for soil and rock.		
Follow Up Required?	☑ Yes ☐ No	**Follow Up Date:** Mar 3/20	
SIGNATURES REQUIRED FOR ALL REPORTABLE SPILLS			
Employee:		**Signature:**	
Supervisor:	Trevor Dunn, Maintenanc	**Signature:**	Trevor Dunn
Safety:		**Signature:**	
Environment:	~~Bill Bowden, ENV Super~~ LREAR, ENV Manager	**Signature:**	

Initial Report
Remediation Ongoing

Victoria GOLD CORP	Additional Spill Information		
	Additional Information		
Spill Date:	Feb 21, 2020	VGC Spill #	VGC20-007
Volume (L):	4000.0	Yukon Government #	Spill 20-006
Substance	Diesel	Location	HLF Phase 1B laydown

1 Additional Info

1.1 An area of approximately 20m x 25m was delineated as impacted ground (Figure 1).

1.2 A soil sample (4 total) was taken at each corner to delineate the extent of the spill, plus 3 composite samples of the excavated affected material (Figure 2).

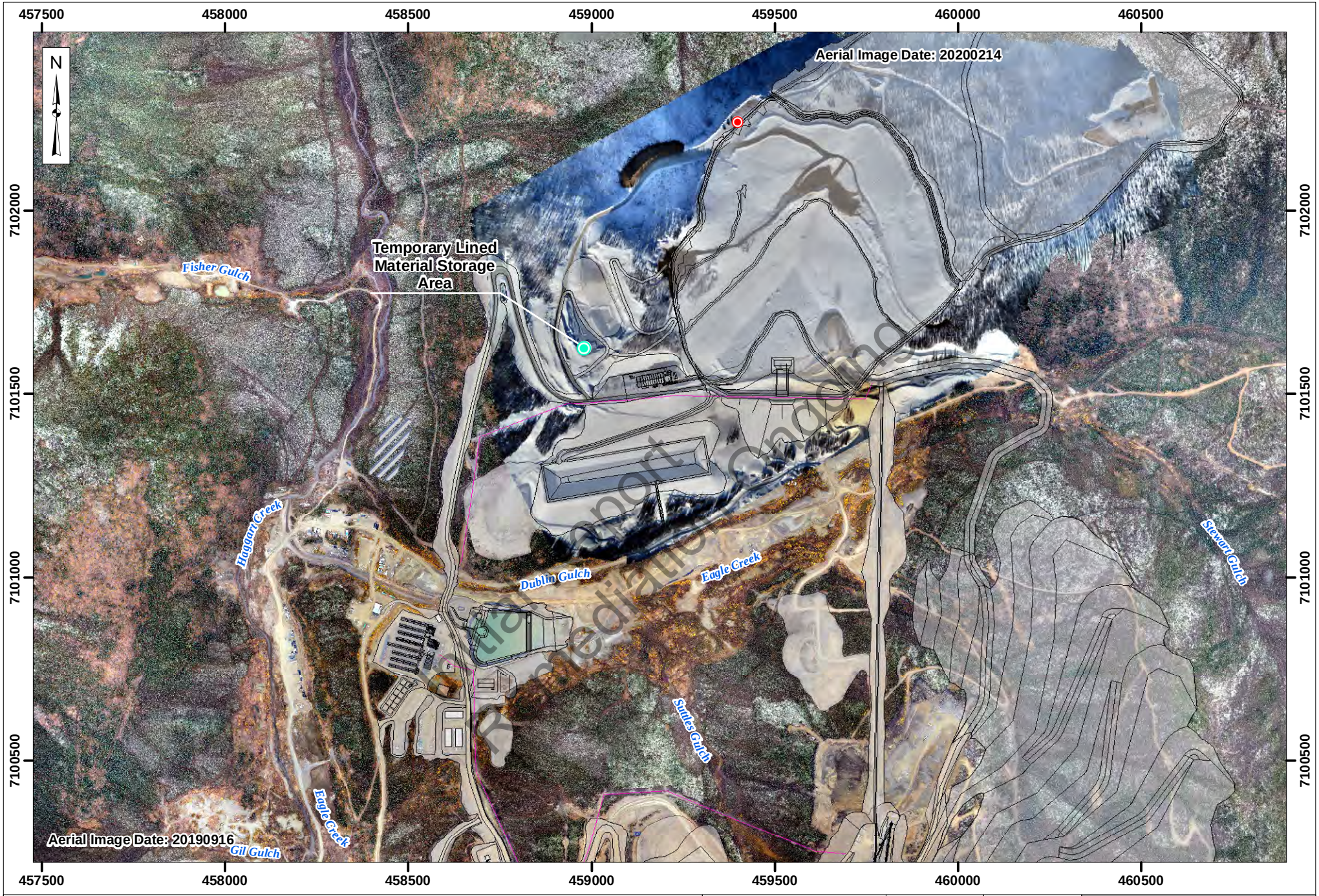
1.3 The estimated volume of contaminated material was determined too large to feasibly place in the current half-filled Land Treatment Facility (LTF).

1.4 An alternate plan was developed for temporary storage of the material on a lined, bermed area until current LTF material is tested and removed from the LTF later in 2020.

1.5 Preparation was initiated on two separate lined, bermed areas adjacent to the Inert Waste Landfill on flat ground for temporary storage of contaminated soils and contaminated rock material.

1.6 Excavation of impacted material will continue to the extent possible, based on visual staining, presence of diesel odour, the use of a Petroflag sampling kit, and final confirmatory sampling.

Initial Report - Remediation Ongoing



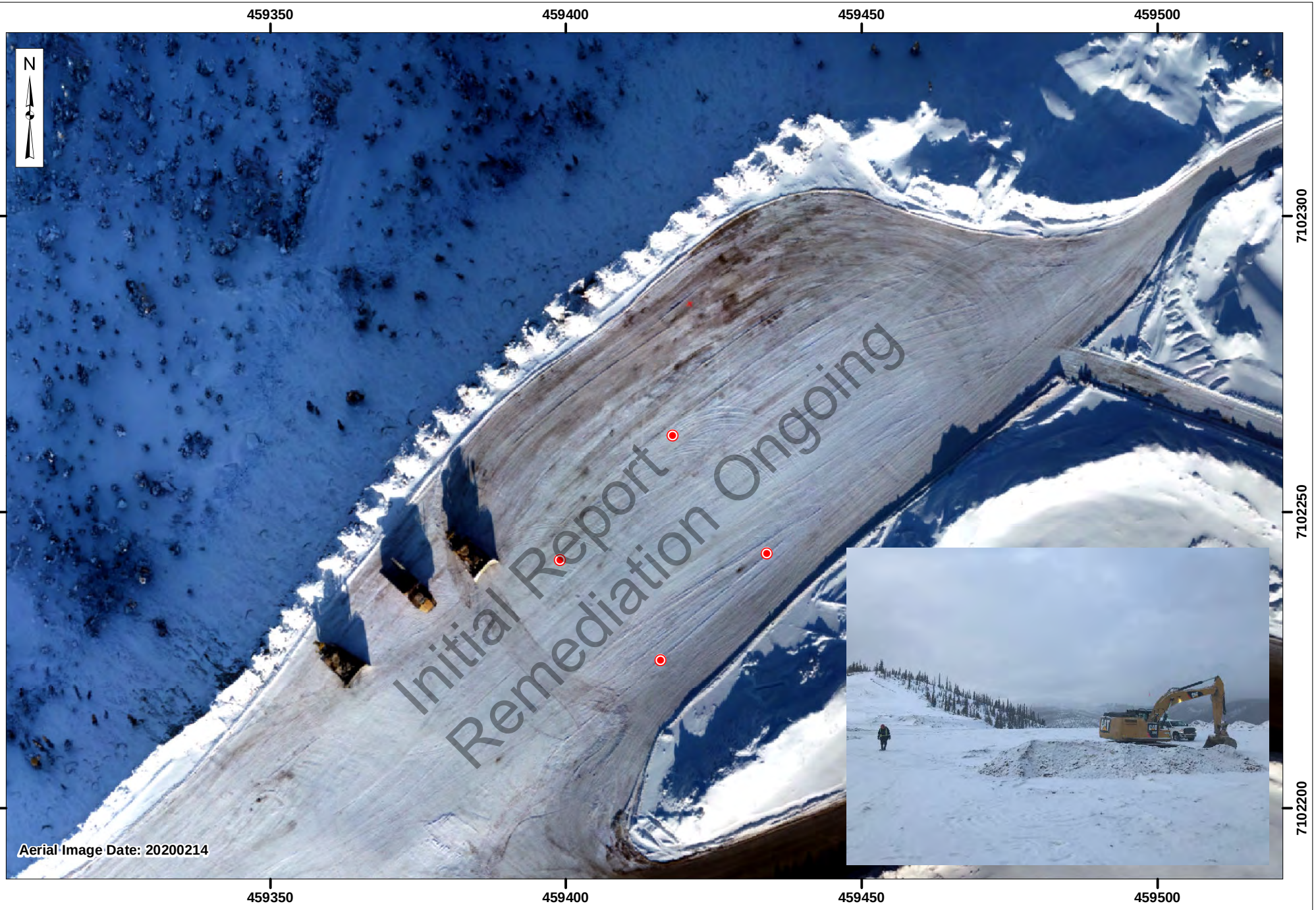
Legend:

- Spill Location
- Facility
- Site Power
- Reserved Area

Victoria GOLD CORP

0 100 200 400
Metres

Projection:	Drawn By:	EAGLE GOLD PROJECT YUKON TERRITORY
NAD 83 UTM Zone 8N	HC	
Date:	Figure:	February 21, 2020 Diesel Spill
2020/03/03	1	



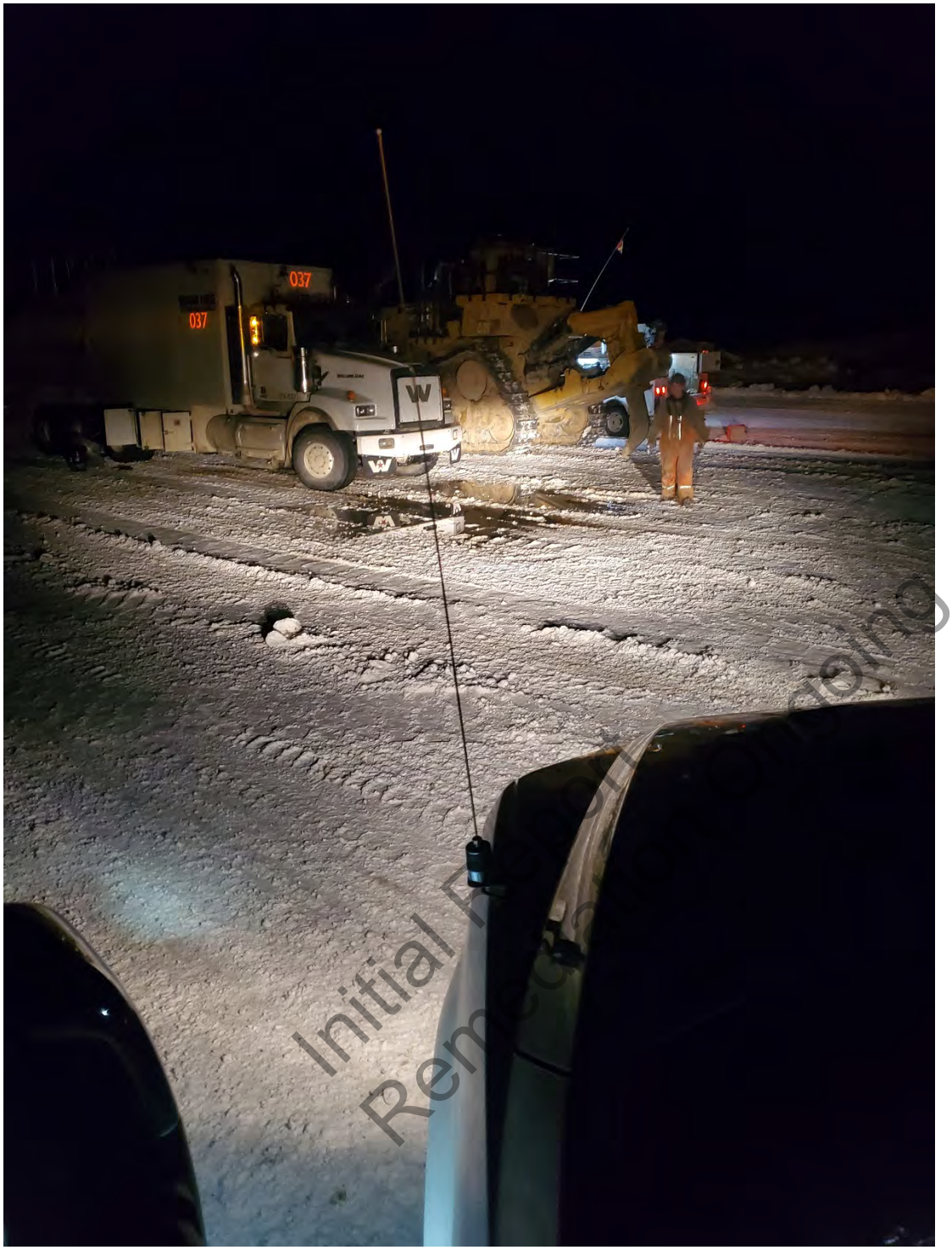
Legend:

Spill Boundary / Sample Location

Victoria GOLD CORP

0 5 10 20
Metres

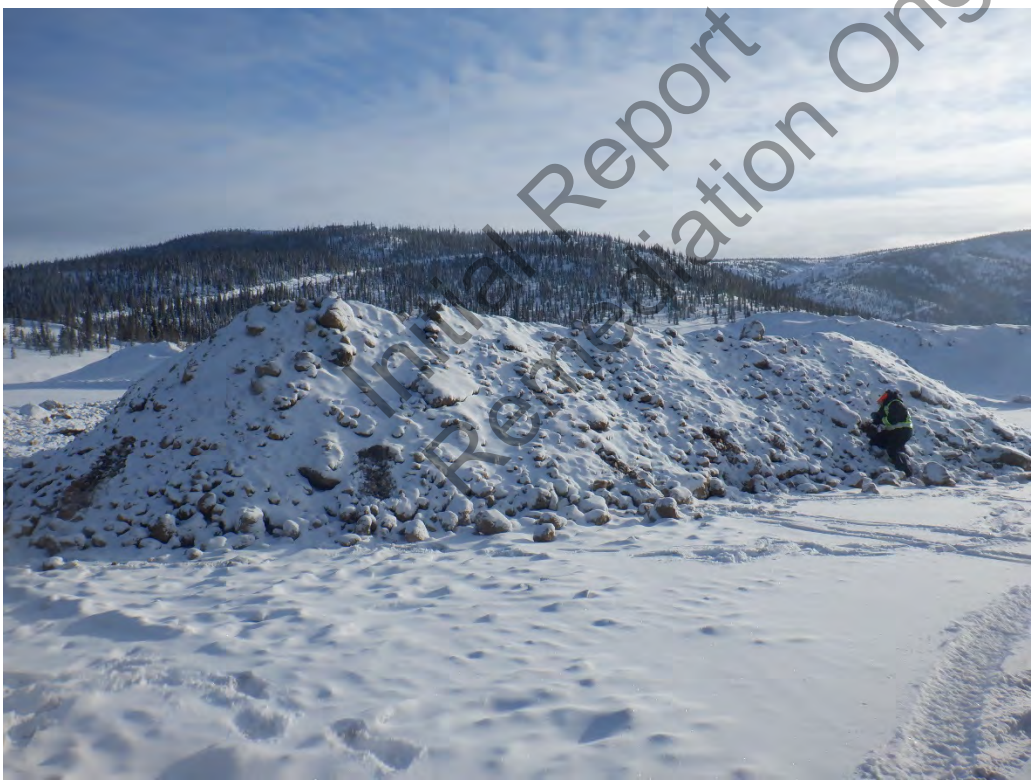
Projection:	Drawn By:	EAGLE GOLD PROJECT YUKON TERRITORY
NAD 83 UTM Zone 8N	HC	
Date:	Figure:	**February 21, 2020** **Diesel Spill**
2020/02/25	2	



February 21, 2020



February 23, 2020



February 24, 2020

Initial Report
Remediation Ongoing

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APPENDIX C

Soil Sample Analytical Results

ALS Environmental

CERTIFICATE OF ANALYSIS

Work Order	: **WR2000066**	Page	: 1 of 6
Client	: **StrataGold Corporation**	Laboratory	: Whitehorse - Environmental
Contact	: Hugh Coyle	Account Manager	: Hilary Woods
Address	: Suite 1000 - 1050 W. Pender St Vancouver BC Canada V6E 3S7	Address	: #12 151 Industrial Road Whitehorse YT Canada Y1A 2V3
Telephone	: 604 682 5122	Telephone	: +1 867 668 6689
Project	: HLF1B Spill	Date Samples Received	: 27-Feb-2020 13:50
PO	: ----	Date Analysis Commenced	: 02-Mar-2020
C-O-C number	: 20200226	Issue Date	: 10-Mar-2020 13:12
Sampler	: KB		
Site	: Victoria Gold Corp.		
Quote number	: Q68199		
No. of samples received	: 7		
No. of samples analysed	: 7		

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Surrogate Control Limits

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QC Interpretive report to assist with Quality Review and Sample Receipt Notification (SRN).

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is conducted in accordance with US FDA 21 CFR Part 11.

Signatories	*Position*	*Laboratory Department*
Ophelia Chiu	Supervisor - Organics Instrumentation	Organics, Burnaby, British Columbia

General Comments

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Refer to the ALS Quality Control Interpretive report (QCI) for applicable references and methodology summaries. Reference methods may incorporate modifications to improve performance.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

Please refer to Quality Control Interpretive report (QCI) for information regarding Holding Time compliance.

Key : CAS Number: Chemical Abstracts Services number is a unique identifier assigned to discrete substances
LOR: Limit of Reporting (detection limit).

Unit	*Description*
%	percent
mg/kg	milligrams per kilogram

<: less than.

>: greater than.

Surrogate: An analyte that is similar in behavior to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.

Test results reported relate only to the samples as received by the laboratory.

UNLESS OTHERWISE STATED on SRN or QCI Report, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

Analytical results in reports identified as "Preliminary Report" are considered authorized for use.

Qualifiers

Qualifier	*Description*
DLCI	*Detection Limit Raised: Chromatographic interference due to co-elution.*
DLQ	*Detection Limit raised due to co-eluting interference. GCMS qualifier ion ratio did not meet acceptance criteria.*
SUR-ND	*Surrogate recovery marginally exceeded ALS DQO. Reported non-detect results for associated samples were deemed to be unaffected.*

Analytical Results

Sub-Matrix: **Soil**
(Matrix: **Soil**)

Analyte	CAS Number	Method	LOR	Unit	Client sample ID	HLF1B 01	HLF1B 02	HLF1B 03	HLF1B 04	HLF1B COMP
					Client sampling date / time	22-Feb-2020 14:00	22-Feb-2020 14:00	22-Feb-2020 14:00	22-Feb-2020 14:00	24-Feb-2020 12:00
						WR2000066-001	WR2000066-002	WR2000066-003	WR2000066-004	WR2000066-005
						Result	Result	Result	Result	Result
Physical Tests										
moisture	----	E144	0.25	%		14.2	12.7	6.36	8.42	11.1
Aggregate Organics										
oil & grease (gravimetric)	----	E567	500	mg/kg		<500	<500	<500	<500	540
Hydrocarbons										
EPH (C10-C19)	----	E601A	200	mg/kg		<200	<200	<200	<200	2670
EPH (C19-C32)	----	E601A	200	mg/kg		<200	<200	<200	<200	<200
HEPHs	----	EC600A	200	mg/kg		<200	<200	<200	<200	<200
LEPHs	----	EC600A	200	mg/kg		<200	<200	<200	<200	2670
Hydrocarbons Surrogates										
bromobenzotrifluoride, 2- (EPH surr)	392-83-6	E601A	5.0	%		84.7	85.2	85.4	80.4	118
Polycyclic Aromatic Hydrocarbons										
acenaphthene	83-32-9	E641A-L	0.0050	mg/kg		<0.0050	<0.0050	<0.0050	<0.0050	<0.300 DLCI
acenaphthylene	208-96-8	E641A-L	0.0050	mg/kg		<0.0050	<0.0050	<0.0050	<0.0050	<0.0600 DLCI
acridine	260-94-6	E641A-L	0.010	mg/kg		<0.010	<0.010	<0.010	<0.010	<0.060 DLCI
anthracene	120-12-7	E641A-L	0.0040	mg/kg		<0.0040	<0.0040	<0.0040	<0.0040	<0.0060 DLQ
benz(a)anthracene	56-55-3	E641A-L	0.010	mg/kg		<0.010	<0.010	<0.010	<0.010	<0.010
benzo(a)pyrene	50-32-8	E641A-L	0.010	mg/kg		<0.010	<0.010	<0.010	<0.010	<0.010
benzo(b+j)fluoranthene	----	E641A-L	0.010	mg/kg		<0.010	<0.010	<0.010	<0.010	<0.010
benzo(b+j+k)fluoranthene	----	E641A-L	0.015	mg/kg		<0.015	<0.015	<0.015	<0.015	<0.015
benzo(g,h,i)perylene	191-24-2	E641A-L	0.010	mg/kg		<0.010	<0.010	<0.010	<0.010	<0.010
benzo(k)fluoranthene	207-08-9	E641A-L	0.010	mg/kg		<0.010	<0.010	<0.010	<0.010	<0.010
chrysene	218-01-9	E641A-L	0.010	mg/kg		<0.010	<0.010	<0.010	<0.010	<0.010
dibenz(a,h)anthracene	53-70-3	E641A-L	0.0050	mg/kg		<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
fluoranthene	206-44-0	E641A-L	0.010	mg/kg		<0.010	<0.010	<0.010	<0.010	<0.010
fluorene	86-73-7	E641A-L	0.010	mg/kg		<0.010	<0.010	<0.010	<0.010	0.321
indeno(1,2,3-c,d)pyrene	193-39-5	E641A-L	0.010	mg/kg		<0.010	<0.010	<0.010	<0.010	<0.010
methylnaphthalene, 1-	90-12-0	E641A-L	0.010	mg/kg		0.019	0.026	<0.010	<0.010	4.64
methylnaphthalene, 2-	91-57-6	E641A-L	0.010	mg/kg		0.025	0.035	<0.010	<0.010	6.30
naphthalene	91-20-3	E641A-L	0.010	mg/kg		0.013	<0.020 DLQ	<0.010	<0.010	<3.00 DLQ
phenanthrene	85-01-8	E641A-L	0.010	mg/kg		0.019	<0.010	<0.010	<0.010	0.129

Analytical Results

Sub-Matrix: **Soil**
(Matrix: **Soil**)

Analyte	CAS Number	Method	LOR	Unit	Client sample ID	HLF1B 01	HLF1B 02	HLF1B 03	HLF1B 04	HLF1B COMP
					Client sampling date / time	22-Feb-2020 14:00	22-Feb-2020 14:00	22-Feb-2020 14:00	22-Feb-2020 14:00	24-Feb-2020 12:00
						WR2000066-001	WR2000066-002	WR2000066-003	WR2000066-004	WR2000066-005
						Result	Result	Result	Result	Result
Polycyclic Aromatic Hydrocarbons										
pyrene	129-00-0	E641A-L	0.010	mg/kg		<0.010	<0.010	<0.010	<0.010	<0.010
quinoline	6027-02-7	E641A-L	0.010	mg/kg		<0.010	<0.010	<0.010	<0.010	<0.300 DLCI
B(a)P total potency equivalents [B(a)P TPE]	----	E641A-L	0.020	mg/kg		<0.010	<0.010	<0.010	<0.010	<0.010
IACR (CCME)	----	E641A-L	0.15	mg/kg		<0.11	<0.11	<0.11	<0.11	<0.11
Polycyclic Aromatic Hydrocarbons Surrogates										
acridine-d9	34749-75-2	E641A-L	0.010	%		72.4	89.3	70.1	81.6	78.9
chrysene-d12	1719-03-5	E641A-L	0.010	%		99.6	97.6	51.2 SUR-ND	86.0	82.8
naphthalene-d8	1146-65-2	E641A-L	0.010	%		92.0	94.2	87.7	88.3	94.7
phenanthrene-d10	1517-22-2	E641A-L	0.010	%		90.8	93.0	84.4	85.0	84.2

Please refer to the General Comments section for an explanation of any qualifiers detected.

Analytical Results

Sub-Matrix: **Soil**
(Matrix: **Soil**)

Analyte	CAS Number	Method	LOR	Unit	Client sample ID	HLF1B COMP2	HLF1B COMP3	----	----	----
					Client sampling date / time	24-Feb-2020 12:00	28-Feb-2020	----	----	----
						WR2000066-006	WR2000066-007	--------	--------	--------
						Result	Result	----	----	----
Physical Tests										
moisture	----	E144	0.25	%		23.1	18.1	----	----	----
Aggregate Organics										
oil & grease (gravimetric)	----	E567	500	mg/kg		<500	<500	----	----	----
Hydrocarbons										
EPH (C10-C19)	----	E601A	200	mg/kg		<200	2700	----	----	----
EPH (C19-C32)	----	E601A	200	mg/kg		<200	<200	----	----	----
HEPHs	----	EC600A	200	mg/kg		<200	<200	----	----	----
LEPHs	----	EC600A	200	mg/kg		<200	2700	----	----	----
Hydrocarbons Surrogates										
bromobenzotrifluoride, 2- (EPH surr)	392-83-6	E601A	5.0	%		80.9	125	----	----	----
Polycyclic Aromatic Hydrocarbons										
acenaphthene	83-32-9	E641A-L	0.0050	mg/kg		<0.0050	<0.300 DLCI	----	----	----
acenaphthylene	208-96-8	E641A-L	0.0050	mg/kg		<0.0050	<0.0600 DLCI	----	----	----
acridine	260-94-6	E641A-L	0.010	mg/kg		<0.010	<0.050 DLCI	----	----	----
anthracene	120-12-7	E641A-L	0.0040	mg/kg		<0.0040	<0.0080 DLCI	----	----	----
benz(a)anthracene	56-55-3	E641A-L	0.010	mg/kg		<0.010	<0.010	----	----	----
benzo(a)pyrene	50-32-8	E641A-L	0.010	mg/kg		<0.010	<0.010	----	----	----
benzo(b+j)fluoranthene	----	E641A-L	0.010	mg/kg		<0.010	<0.010	----	----	----
benzo(b+j+k)fluoranthene	----	E641A-L	0.015	mg/kg		<0.015	<0.015	----	----	----
benzo(g,h,i)perylene	191-24-2	E641A-L	0.010	mg/kg		<0.010	<0.010	----	----	----
benzo(k)fluoranthene	207-08-9	E641A-L	0.010	mg/kg		<0.010	<0.010	----	----	----
chrysene	218-01-9	E641A-L	0.010	mg/kg		<0.010	<0.010	----	----	----
dibenz(a,h)anthracene	53-70-3	E641A-L	0.0050	mg/kg		<0.0050	<0.0050	----	----	----
fluoranthene	206-44-0	E641A-L	0.010	mg/kg		<0.010	<0.010	----	----	----
fluorene	86-73-7	E641A-L	0.010	mg/kg		<0.010	0.327	----	----	----
indeno(1,2,3-c,d)pyrene	193-39-5	E641A-L	0.010	mg/kg		<0.010	<0.010	----	----	----
methylnaphthalene, 1-	90-12-0	E641A-L	0.010	mg/kg		0.039	5.00	----	----	----
methylnaphthalene, 2-	91-57-6	E641A-L	0.010	mg/kg		0.053	6.94	----	----	----
naphthalene	91-20-3	E641A-L	0.010	mg/kg		<0.020 DLQ	3.10	----	----	----
phenanthrene	85-01-8	E641A-L	0.010	mg/kg		<0.010	0.130	----	----	----
pyrene	129-00-0	E641A-L	0.010	mg/kg		<0.010	<0.010	----	----	----

Analytical Results

Sub-Matrix: **Soil**
(Matrix: **Soil**)

Analyte	CAS Number	Method	LOR	Unit	Client sample ID	HLF1B COMP2	HLF1B COMP3	----	----	----
					Client sampling date / time	24-Feb-2020 12:00	28-Feb-2020	----	----	----
						WR2000066-006	WR2000066-007	--------	--------	--------
						Result	Result	----	----	----
Polycyclic Aromatic Hydrocarbons										
quinoline	6027-02-7	E641A-L	0.010	mg/kg		<0.010	<0.300 DLQ	----	----	----
B(a)P total potency equivalents [B(a)P TPE]	----	E641A-L	0.020	mg/kg		<0.010	<0.010	----	----	----
IACR (CCME)	----	E641A-L	0.15	mg/kg		<0.11	<0.11	----	----	----
Polycyclic Aromatic Hydrocarbons Surrogates										
acridine-d9	34749-75-2	E641A-L	0.010	%		83.2	93.6	----	----	----
chrysene-d12	1719-03-5	E641A-L	0.010	%		94.9	89.2	----	----	----
naphthalene-d8	1146-65-2	E641A-L	0.010	%		91.2	105	----	----	----
phenanthrene-d10	1517-22-2	E641A-L	0.010	%		88.4	91.2	----	----	----

Please refer to the General Comments section for an explanation of any qualifiers detected.

ALS Environmental

CERTIFICATE OF ANALYSIS

Work Order	: **WR2000097**	Page	: 1 of 8
Amendment	: **1**		
Client	: **Victoria Gold (Yukon) Corp.**	Laboratory	: Whitehorse - Environmental
Contact	: Hugh Coyle	Account Manager	: Hilary Woods
Address	: Suite 1000 - 1050 W. Pender St Vancouver BC Canada V6E 3S7	Address	: #12 151 Industrial Road Whitehorse YT Canada Y1A 2V3
Telephone	: 604 682 5122	Telephone	: +1 867 668 6689
Project	: ----	Date Samples Received	: 16-Mar-2020 09:47
PO	: 14043	Date Analysis Commenced	: 18-Mar-2020
C-O-C number	: 20200313	Issue Date	: 06-Apr-2020 10:50
Sampler	: ----		
Site	: ----		
Quote number	: Q68199		
No. of samples received	: 8		
No. of samples analysed	: 8		

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Surrogate Control Limits

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QC Interpretive report to assist with Quality Review and Sample Receipt Notification (SRN).

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is conducted in accordance with US FDA 21 CFR Part 11.

Signatories	*Position*	*Laboratory Department*
Ophelia Chiu	Supervisor - Organics Instrumentation	Organics, Burnaby, British Columbia

General Comments

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Refer to the ALS Quality Control Interpretive report (QCI) for applicable references and methodology summaries. Reference methods may incorporate modifications to improve performance.

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Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

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Key : CAS Number: Chemical Abstracts Services number is a unique identifier assigned to discrete substances
LOR: Limit of Reporting (detection limit).

Unit	*Description*
%	percent
mg/kg	milligrams per kilogram

<: less than.

>: greater than.

Surrogate: An analyte that is similar in behavior to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.

Test results reported relate only to the samples as received by the laboratory.

UNLESS OTHERWISE STATED on SRN or QCI Report, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

Analytical results in reports identified as "Preliminary Report" are considered authorized for use.

Qualifiers

Qualifier	*Description*
DLCI	*Detection Limit Raised: Chromatographic interference due to co-elution.*
DLQ	*Detection Limit raised due to co-eluting interference. GCMS qualifier ion ratio did not meet acceptance criteria.*

Analytical Results

Sub-Matrix: **Soil**
(Matrix: **Soil/Solid**)

Analyte	CAS Number	Method	LOR	Unit	Client sample ID: HLF1B-EX-N	HLF1B-EX-E	HLF1B-EX-S	HLF1B-EX-W	HLF1B-BNE
				Client sampling date / time	11-Mar-2020 09:30	11-Mar-2020 09:40	11-Mar-2020 10:45	11-Mar-2020 11:00	11-Mar-2020 11:15
					WR2000097-001	WR2000097-002	WR2000097-003	WR2000097-004	WR2000097-005
					Result	Result	Result	Result	Result
Physical Tests									
moisture	----	E144	0.25	%	14.3	8.87	10.4	8.14	6.70
Aggregate Organics									
oil & grease (gravimetric)	----	E567	500	mg/kg	<500	<500	1770	<500	1550
Volatile Organic Compounds									
benzene	71-43-2	E611C	0.0050	mg/kg	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
bromodichloromethane	75-27-4	E611C	0.050	mg/kg	<0.050	<0.050	<0.050	<0.050	<0.050
bromoform	75-25-2	E611C	0.050	mg/kg	<0.050	<0.050	<0.050	<0.050	<0.050
carbon tetrachloride	56-23-5	E611C	0.050	mg/kg	<0.050	<0.050	<0.050	<0.050	<0.050
chlorobenzene	108-90-7	E611C	0.050	mg/kg	<0.050	<0.050	<0.050	<0.050	<0.050
chloroethane	75-00-3	E611C	0.050	mg/kg	<0.050	<0.050	<0.050	<0.050	<0.050
chloroform	67-66-3	E611C	0.050	mg/kg	<0.050	<0.050	<0.050	<0.050	<0.050
chloromethane	74-87-3	E611C	0.050	mg/kg	<0.050	<0.050	<0.050	<0.050	<0.050
dibromochloromethane	124-48-1	E611C	0.050	mg/kg	<0.050	<0.050	0.893	<0.050	0.500
dichlorobenzene, 1,2-	95-50-1	E611C	0.050	mg/kg	<0.050	<0.050	<0.050	<0.050	<0.050
dichlorobenzene, 1,3-	541-73-1	E611C	0.050	mg/kg	<0.050	<0.050	<0.050	<0.050	<0.050
dichlorobenzene, 1,4-	106-46-7	E611C	0.050	mg/kg	<0.050	<0.050	<0.050	<0.050	<0.050
dichloroethane, 1,1-	75-34-3	E611C	0.050	mg/kg	<0.050	<0.050	<0.050	<0.050	<0.050
dichloroethane, 1,2-	107-06-2	E611C	0.050	mg/kg	<0.050	<0.050	<0.050	<0.050	<0.050
dichloroethylene, 1,1-	75-35-4	E611C	0.050	mg/kg	<0.050	<0.050	<0.050	<0.050	<0.050
dichloroethylene, cis-1,2-	156-59-4	E611C	0.050	mg/kg	<0.050	<0.050	<0.050	<0.050	<0.050
dichloroethylene, trans-1,2-	156-60-5	E611C	0.050	mg/kg	<0.050	<0.050	<0.050	<0.050	<0.050
dichloromethane	75-09-2	E611C	0.050	mg/kg	<0.050	<0.050	<0.050	<0.050	<0.050
dichloropropane, 1,2-	78-87-5	E611C	0.050	mg/kg	<0.050	<0.050	<0.050	<0.050	<0.050
dichloropropylene, cis+trans-1,3-	542-75-6	E611C	0.075	mg/kg	<0.075	<0.075	<0.075	<0.075	<0.075
dichloropropylene, cis-1,3-	10061-01-5	E611C	0.050	mg/kg	<0.050	<0.050	<0.050	<0.050	<0.050
dichloropropylene, trans-1,3-	10061-02-6	E611C	0.050	mg/kg	<0.050	<0.050	<0.050	<0.050	<0.055 DLQ
ethylbenzene	100-41-4	E611C	0.015	mg/kg	<0.015	0.221	1.23	<0.015	0.829
methyl-tert-butyl ether [MTBE]	1634-04-4	E611C	0.050	mg/kg	<0.050	<0.050	<0.050	<0.050	<0.050
styrene	100-42-5	E611C	0.050	mg/kg	<0.050	<0.050	<0.050	<0.050	<0.050
tetrachloroethane, 1,1,1,2-	630-20-6	E611C	0.050	mg/kg	<0.050	<0.050	<0.050	<0.050	<0.050

Analytical Results

Sub-Matrix: **Soil**
(Matrix: **Soil/Solid**)

Analyte	CAS Number	Method	LOR	Unit	Client sample ID	HLF1B-EX-N	HLF1B-EX-E	HLF1B-EX-S	HLF1B-EX-W	HLF1B-BNE
					Client sampling date / time	11-Mar-2020 09:30	11-Mar-2020 09:40	11-Mar-2020 10:45	11-Mar-2020 11:00	11-Mar-2020 11:15
						WR2000097-001	WR2000097-002	WR2000097-003	WR2000097-004	WR2000097-005
						Result	Result	Result	Result	Result
Volatile Organic Compounds										
tetrachloroethane, 1,1,2,2-	79-34-5	E611C	0.050	mg/kg		<0.050 DLCI	<0.050	<2.25 DLCI	<0.060 DLCI	<0.800 DLCI
tetrachloroethylene	127-18-4	E611C	0.050	mg/kg		<0.050	<0.050	<0.050	<0.050	<0.050
toluene	108-88-3	E611C	0.050	mg/kg		<0.050	<0.050	0.058	<0.050	0.050
trichloroethane, 1,1,1-	71-55-6	E611C	0.050	mg/kg		<0.050	<0.050	<0.050	<0.050	<0.050
trichloroethane, 1,1,2-	79-00-5	E611C	0.050	mg/kg		<0.050	<0.050	<0.400 DLQ	<0.050	<0.225 DLQ
trichloroethylene	79-01-6	E611C	0.010	mg/kg		<0.010	<0.010	<0.010	<0.010	<0.010
trichlorofluoromethane	75-69-4	E611C	0.050	mg/kg		<0.050	<0.050	<0.050	<0.050	<0.050
vinyl chloride	75-01-4	E611C	0.050	mg/kg		<0.050	<0.050	<0.050	<0.050	<0.050
xylene, m+p-	179601-23-1	E611C	0.050	mg/kg		<0.050	1.98	7.82	<0.050	5.05
xylene, o-	95-47-6	E611C	0.050	mg/kg		<0.050	1.06	4.64	<0.050	3.08
xylenes, total	1330-20-7	E611C	0.075	mg/kg		<0.075	3.05	12.4	<0.075	8.13
Volatile Organic Compounds Surrogates										
bromofluorobenzene, 4-	460-00-4	E611C	0.050	%		107	126	90.1	110	92.4
difluorobenzene, 1,4-	540-36-3	E611C	0.050	%		90.8	129	79.7	128	122
Hydrocarbons										
EPH (C10-C19)	----	E601A	200	mg/kg		<200	1180	4120	430	3220
EPH (C19-C32)	----	E601A	200	mg/kg		<200	<200	<200	<200	<200
HEPHs	----	EC600A	200	mg/kg		<200	<200	<200	<200	<200
LEPHs	----	EC600A	200	mg/kg		<200	1180	4120	430	3220
Hydrocarbons Surrogates										
bromobenzotrifluoride, 2- (EPH surr)	392-83-6	E601A	5.0	%		94.4	105	139	98.4	127
Polycyclic Aromatic Hydrocarbons										
acenaphthene	83-32-9	E641A-L	0.0050	mg/kg		<0.0050	<0.200 DLCI	<0.400 DLCI	<0.0600 DLCI	<0.400 DLCI
acenaphthylene	208-96-8	E641A-L	0.0050	mg/kg		<0.0050	<0.0300 DLCI	<0.0900 DLCI	<0.0200 DLCI	<0.0600 DLCI
acridine	260-94-6	E641A-L	0.010	mg/kg		<0.010	<0.040 DLCI	<0.100 DLCI	<0.010	<0.010
anthracene	120-12-7	E641A-L	0.0040	mg/kg		<0.0040	<0.0040	<0.0200 DLCI	<0.0040	<0.0200 DLQ
benz(a)anthracene	56-55-3	E641A-L	0.010	mg/kg		<0.010	<0.010	<0.010	<0.010	<0.010
benzo(a)pyrene	50-32-8	E641A-L	0.010	mg/kg		<0.010	<0.010	<0.010	<0.010	<0.010
benzo(b+j)fluoranthene	----	E641A-L	0.010	mg/kg		<0.010	<0.010	<0.010	<0.010	<0.010
benzo(b+j+k)fluoranthene	----	E641A-L	0.015	mg/kg		<0.015	<0.015	<0.015	<0.015	<0.015
benzo(g,h,i)perylene	191-24-2	E641A-L	0.010	mg/kg		<0.010	<0.010	<0.010	<0.010	<0.010

Analytical Results

Sub-Matrix: **Soil**
(Matrix: **Soil/Solid**)

Analyte	CAS Number	Method	LOR	Unit	Client sample ID	HLF1B-EX-N	HLF1B-EX-E	HLF1B-EX-S	HLF1B-EX-W	HLF1B-BNE
					Client sampling date / time	11-Mar-2020 09:30	11-Mar-2020 09:40	11-Mar-2020 10:45	11-Mar-2020 11:00	11-Mar-2020 11:15
						WR2000097-001	WR2000097-002	WR2000097-003	WR2000097-004	WR2000097-005
						Result	Result	Result	Result	Result
Polycyclic Aromatic Hydrocarbons										
benzo(k)fluoranthene	207-08-9	E641A-L	0.010	mg/kg		<0.010	<0.010	<0.010	<0.010	<0.010
chrysene	218-01-9	E641A-L	0.010	mg/kg		<0.010	<0.010	<0.010	<0.010	<0.010
dibenz(a,h)anthracene	53-70-3	E641A-L	0.0050	mg/kg		<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
fluoranthene	206-44-0	E641A-L	0.010	mg/kg		<0.010	<0.010	<0.010	<0.010	<0.010
fluorene	86-73-7	E641A-L	0.010	mg/kg		<0.010	0.187	0.560	0.061	0.405
indeno(1,2,3-c,d)pyrene	193-39-5	E641A-L	0.010	mg/kg		<0.010	<0.010	<0.010	<0.010	<0.010
methylnaphthalene, 1-	90-12-0	E641A-L	0.010	mg/kg		0.049	2.19	7.06	0.818	5.83
methylnaphthalene, 2-	91-57-6	E641A-L	0.010	mg/kg		0.063	2.96	9.96	1.10	7.83
naphthalene	91-20-3	E641A-L	0.010	mg/kg		<0.010	<1.00 DLQ	4.22	<0.400 DLQ	<4.00 DLQ
phenanthrene	85-01-8	E641A-L	0.010	mg/kg		<0.010	0.069	0.206	0.024	0.161
pyrene	129-00-0	E641A-L	0.010	mg/kg		<0.010	<0.010	<0.010	<0.010	<0.010
quinoline	6027-02-7	E641A-L	0.010	mg/kg		<0.010	<0.200 DLCI	<0.500 DLCI	<0.050 DLCI	<0.400 DLCI
B(a)P total potency equivalents [B(a)P TPE]	----	E641A-L	0.020	mg/kg		<0.010	<0.010	<0.010	<0.010	<0.010
IACR (CCME)	----	E641A-L	0.15	mg/kg		<0.11	<0.11	<0.11	<0.11	<0.11
Polycyclic Aromatic Hydrocarbons Surrogates										
acridine-d9	34749-75-2	E641A-L	0.010	%		102	106	78.7	98.4	98.5
chrysene-d12	1719-03-5	E641A-L	0.010	%		97.5	100	60.7	88.8	90.9
naphthalene-d8	1146-65-2	E641A-L	0.010	%		93.4	98.3	104	97.6	104
phenanthrene-d10	1517-22-2	E641A-L	0.010	%		99.6	104	92.0	100	96.3

Please refer to the General Comments section for an explanation of any qualifiers detected.

Analytical Results

Sub-Matrix: **Soil**
(Matrix: **Soil/Solid**)

Analyte	CAS Number	Method	LOR	Unit	Client sample ID	HLF1B-BSE	HLF1B-BSW	HLF1B-BNW	----	----
					Client sampling date / time	11-Mar-2020 11:30	11-Mar-2020 11:40	11-Mar-2020 11:50	----	----
						WR2000097-006	WR2000097-007	WR2000097-008	--------	--------
						Result	Result	Result	----	----
Physical Tests										
moisture	----	E144	0.25	%		5.74	11.0	7.09	----	----
Aggregate Organics										
oil & grease (gravimetric)	----	E567	500	mg/kg		1340	3510	1800	----	----
Volatile Organic Compounds										
benzene	71-43-2	E611C	0.0050	mg/kg		<0.0050	<0.0050	<0.0050	----	----
bromodichloromethane	75-27-4	E611C	0.050	mg/kg		<0.050	<0.050	<0.050	----	----
bromoform	75-25-2	E611C	0.050	mg/kg		<0.050	<0.050	<0.050	----	----
carbon tetrachloride	56-23-5	E611C	0.050	mg/kg		<0.050	<0.050	<0.050	----	----
chlorobenzene	108-90-7	E611C	0.050	mg/kg		<0.050	<0.050	<0.050	----	----
chloroethane	75-00-3	E611C	0.050	mg/kg		<0.050	<0.050	<0.050	----	----
chloroform	67-66-3	E611C	0.050	mg/kg		<0.050	<0.050	<0.050	----	----
chloromethane	74-87-3	E611C	0.050	mg/kg		<0.050	<0.050	<0.050	----	----
dibromochloromethane	124-48-1	E611C	0.050	mg/kg		0.251	0.842	1.13	----	----
dichlorobenzene, 1,2-	95-50-1	E611C	0.050	mg/kg		<0.050	<0.050	<0.050	----	----
dichlorobenzene, 1,3-	541-73-1	E611C	0.050	mg/kg		<0.050	<0.050	<0.050	----	----
dichlorobenzene, 1,4-	106-46-7	E611C	0.050	mg/kg		<0.050	<0.050	<0.050	----	----
dichloroethane, 1,1-	75-34-3	E611C	0.050	mg/kg		<0.050	<0.050	<0.050	----	----
dichloroethane, 1,2-	107-06-2	E611C	0.050	mg/kg		<0.050	<0.050	<0.050	----	----
dichloroethylene, 1,1-	75-35-4	E611C	0.050	mg/kg		<0.050	<0.050	<0.050	----	----
dichloroethylene, cis-1,2-	156-59-4	E611C	0.050	mg/kg		<0.050	<0.050	<0.050	----	----
dichloroethylene, trans-1,2-	156-60-5	E611C	0.050	mg/kg		<0.050	<0.050	<0.050	----	----
dichloromethane	75-09-2	E611C	0.050	mg/kg		<0.050	<0.050	<0.050	----	----
dichloropropane, 1,2-	78-87-5	E611C	0.050	mg/kg		<0.050	<0.050	<0.050	----	----
dichloropropylene, cis+trans-1,3-	542-75-6	E611C	0.075	mg/kg		<0.112	<0.078	<0.112	----	----
dichloropropylene, cis-1,3-	10061-01-5	E611C	0.050	mg/kg		<0.050	<0.050	<0.050	----	----
dichloropropylene, trans-1,3-	10061-02-6	E611C	0.050	mg/kg		<0.100 DLCI	<0.060 DLQ	<0.100 DLCI	----	----
ethylbenzene	100-41-4	E611C	0.015	mg/kg		0.830	1.07	1.88	----	----
methyl-tert-butyl ether [MTBE]	1634-04-4	E611C	0.050	mg/kg		<0.050	<0.050	<0.050	----	----
styrene	100-42-5	E611C	0.050	mg/kg		<0.050	<0.050	<0.050	----	----
tetrachloroethane, 1,1,1,2-	630-20-6	E611C	0.050	mg/kg		<0.050	<0.050	<0.050	----	----
tetrachloroethane, 1,1,2,2-	79-34-5	E611C	0.050	mg/kg		<0.250 DLCI	<1.65 DLCI	<0.250 DLCI	----	----

Analytical Results

Sub-Matrix: Soil (Matrix: Soil/Solid)					Client sample ID	HLF1B-BSE	HLF1B-BSW	HLF1B-BNW	----	----
					Client sampling date / time	11-Mar-2020 11:30	11-Mar-2020 11:40	11-Mar-2020 11:50	----	----
Analyte	CAS Number	Method	LOR	Unit		WR2000097-006	WR2000097-007	WR2000097-008	--------	--------
						Result	Result	Result	----	----
Volatile Organic Compounds										
tetrachloroethylene	127-18-4	E611C	0.050	mg/kg		<0.050	<0.050	<0.050	----	----
toluene	108-88-3	E611C	0.050	mg/kg		0.066	0.052	0.149	----	----
trichloroethane, 1,1,1-	71-55-6	E611C	0.050	mg/kg		<0.050	<0.050	<0.050	----	----
trichloroethane, 1,1,2-	79-00-5	E611C	0.050	mg/kg		<0.200 DLQ	<0.400 DLQ	<0.600 DLQ	----	----
trichloroethylene	79-01-6	E611C	0.010	mg/kg		<0.010	<0.010	<0.010	----	----
trichlorofluoromethane	75-69-4	E611C	0.050	mg/kg		<0.050	<0.050	<0.050	----	----
vinyl chloride	75-01-4	E611C	0.050	mg/kg		<0.050	<0.050	<0.050	----	----
xylene, m+p-	179601-23-1	E611C	0.050	mg/kg		4.75	6.60	12.1	----	----
xylene, o-	95-47-6	E611C	0.050	mg/kg		2.57	3.90	6.60	----	----
xylenes, total	1330-20-7	E611C	0.075	mg/kg		7.33	10.5	18.7	----	----
Volatile Organic Compounds Surrogates										
bromofluorobenzene, 4-	460-00-4	E611C	0.050	%		103	94.5	104	----	----
difluorobenzene, 1,4-	540-36-3	E611C	0.050	%		96.7	92.1	102	----	----
Hydrocarbons										
EPH (C10-C19)	----	E601A	200	mg/kg		1930	4760	4630	----	----
EPH (C19-C32)	----	E601A	200	mg/kg		<200	<200	<200	----	----
HEPHs	----	EC600A	200	mg/kg		<200	<200	<200	----	----
LEPHs	----	EC600A	200	mg/kg		1930	4760	4620	----	----
Hydrocarbons Surrogates										
bromobenzotrifluoride, 2- (EPH surr)	392-83-6	E601A	5.0	%		114	137	138	----	----
Polycyclic Aromatic Hydrocarbons										
acenaphthene	83-32-9	E641A-L	0.0050	mg/kg		<0.200 DLCI	<0.500 DLCI	<0.500 DLCI	----	----
acenaphthylene	208-96-8	E641A-L	0.0050	mg/kg		<0.0500 DLCI	<0.100 DLCI	<0.100 DLCI	----	----
acridine	260-94-6	E641A-L	0.010	mg/kg		<0.010	<0.010	<0.010	----	----
anthracene	120-12-7	E641A-L	0.0040	mg/kg		<0.0072 DLQ	<0.0200 DLQ	<0.0200 DLQ	----	----
benz(a)anthracene	56-55-3	E641A-L	0.010	mg/kg		<0.010	<0.010	<0.010	----	----
benzo(a)pyrene	50-32-8	E641A-L	0.010	mg/kg		<0.010	<0.010	<0.010	----	----
benzo(b+j)fluoranthene	----	E641A-L	0.010	mg/kg		<0.010	<0.010	<0.010	----	----
benzo(b+j+k)fluoranthene	----	E641A-L	0.015	mg/kg		<0.015	<0.015	<0.015	----	----
benzo(g,h,i)perylene	191-24-2	E641A-L	0.010	mg/kg		<0.010	<0.010	<0.010	----	----
benzo(k)fluoranthene	207-08-9	E641A-L	0.010	mg/kg		<0.010	<0.010	<0.010	----	----

Analytical Results

Sub-Matrix: **Soil**
(Matrix: **Soil/Solid**)

Analyte	CAS Number	Method	LOR	Unit	Client sample ID	HLF1B-BSE	HLF1B-BSW	HLF1B-BNW	----	----
					Client sampling date / time	11-Mar-2020 11:30	11-Mar-2020 11:40	11-Mar-2020 11:50	----	----
						WR2000097-006	WR2000097-007	WR2000097-008	--------	--------
						Result	Result	Result	----	----
Polycyclic Aromatic Hydrocarbons										
chrysene	218-01-9	E641A-L	0.010	mg/kg		<0.010	<0.010	<0.010	----	----
dibenz(a,h)anthracene	53-70-3	E641A-L	0.0050	mg/kg		<0.0050	<0.0050	<0.0050	----	----
fluoranthene	206-44-0	E641A-L	0.010	mg/kg		<0.010	<0.010	<0.010	----	----
fluorene	86-73-7	E641A-L	0.010	mg/kg		0.244	0.713	0.597	----	----
indeno(1,2,3-c,d)pyrene	193-39-5	E641A-L	0.010	mg/kg		<0.010	<0.010	<0.010	----	----
methylnaphthalene, 1-	90-12-0	E641A-L	0.010	mg/kg		3.56	9.06	8.62	----	----
methylnaphthalene, 2-	91-57-6	E641A-L	0.010	mg/kg		4.88	12.1	11.7	----	----
naphthalene	91-20-3	E641A-L	0.010	mg/kg		<2.00 DLQ	<5.00 DLQ	<5.00 DLQ	----	----
phenanthrene	85-01-8	E641A-L	0.010	mg/kg		0.103	0.252	0.232	----	----
pyrene	129-00-0	E641A-L	0.010	mg/kg		<0.010	<0.010	<0.010	----	----
quinoline	6027-02-7	E641A-L	0.010	mg/kg		<0.300 DLCI	<0.500 DLCI	<0.500 DLCI	----	----
B(a)P total potency equivalents [B(a)P TPE]	----	E641A-L	0.020	mg/kg		<0.010	<0.010	<0.010	----	----
IACR (CCME)	----	E641A-L	0.15	mg/kg		<0.11	<0.11	<0.11	----	----
Polycyclic Aromatic Hydrocarbons Surrogates										
acridine-d9	34749-75-2	E641A-L	0.010	%		96.7	96.5	93.0	----	----
chrysene-d12	1719-03-5	E641A-L	0.010	%		91.5	85.9	82.7	----	----
naphthalene-d8	1146-65-2	E641A-L	0.010	%		93.8	104	107	----	----
phenanthrene-d10	1517-22-2	E641A-L	0.010	%		98.7	95.3	93.0	----	----

Please refer to the General Comments section for an explanation of any qualifiers detected.

ALS Environmental

CERTIFICATE OF ANALYSIS

Work Order	: **VA20A5169**	Page	: 1 of 5
Client	: **Victoria Gold (Yukon) Corp.**	Laboratory	: Vancouver - Environmental
Contact	: Hugh Coyle	Account Manager	: Hilary Woods
Address	: Suite 1000 - 1050 W. Pender St Vancouver BC Canada V6E 3S7	Address	: 8081 Lougheed Highway Burnaby BC Canada V5A 1W9
Telephone	: 604 682 5122	Telephone	: +1 604 253 4188
Project	: HLF1B Spill	Date Samples Received	: 22-Apr-2020 14:15
PO	: 14043	Date Analysis Commenced	: 22-Apr-2020
C-O-C number	: 20200418	Issue Date	: 24-Apr-2020 15:11
Sampler	: KB		
Site	: Victoria Gold		
Quote number	: Q68199		
No. of samples received	: 5		
No. of samples analysed	: 5		

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Surrogate Control Limits

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QC Interpretive report to assist with Quality Review and Sample Receipt Notification (SRN).

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is conducted in accordance with US FDA 21 CFR Part 11.

Signatories	*Position*	*Laboratory Department*
Brieanna Allen	Department Manager - Organics	Organics, Burnaby, British Columbia

General Comments

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Refer to the ALS Quality Control Interpretive report (QCI) for applicable references and methodology summaries. Reference methods may incorporate modifications to improve performance.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

Please refer to Quality Control Interpretive report (QCI) for information regarding Holding Time compliance.

Key : CAS Number: Chemical Abstracts Services number is a unique identifier assigned to discrete substances
LOR: Limit of Reporting (detection limit).

Unit	*Description*
%	percent
mg/kg	milligrams per kilogram

<: less than.

>: greater than.

Surrogate: An analyte that is similar in behavior to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.

Test results reported relate only to the samples as received by the laboratory.

UNLESS OTHERWISE STATED on SRN or QCI Report, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

Analytical results in reports identified as "Preliminary Report" are considered authorized for use.

Qualifiers

Qualifier	*Description*
DLCI	*Detection Limit Raised: Chromatographic interference due to co-elution.*
DLQ	*Detection Limit raised due to co-eluting interference. GCMS qualifier ion ratio did not meet acceptance criteria.*

Analytical Results

Sub-Matrix: **Soil**
(Matrix: **Soil/Solid**)

Analyte	CAS Number	Method	LOR	Unit	Client sample ID	HLF 1B-EX-N	HLF 1B-Floor	HLF 1B-EX-S	HLF 1B-EX-E	HLF 1B-EX-W
					Client sampling date / time	18-Apr-2020 13:56	18-Apr-2020 14:00	18-Apr-2020 14:20	18-Apr-2020 14:10	18-Apr-2020 14:15
						VA20A5169-001	VA20A5169-002	VA20A5169-003	VA20A5169-004	VA20A5169-005
						Result	Result	Result	Result	Result
Physical Tests										
moisture	----	E144	0.25	%		14.2	8.50	7.06	7.44	7.33
Aggregate Organics										
oil & grease (gravimetric)	----	E567	500	mg/kg		<500	<500	<500	<500	<500
Volatile Organic Compounds										
benzene	71-43-2	E611C	0.0050	mg/kg		<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
bromodichloromethane	75-27-4	E611C	0.050	mg/kg		<0.050	<0.050	<0.050	<0.050	<0.050
bromoform	75-25-2	E611C	0.050	mg/kg		<0.050	<0.050	<0.050	<0.050	<0.050
carbon tetrachloride	56-23-5	E611C	0.050	mg/kg		<0.050	<0.050	<0.050	<0.050	<0.050
chlorobenzene	108-90-7	E611C	0.050	mg/kg		<0.050	<0.050	<0.050	<0.050	<0.050
chloroethane	75-00-3	E611C	0.050	mg/kg		<0.050	<0.050	<0.050	<0.050	<0.050
chloroform	67-66-3	E611C	0.050	mg/kg		<0.050	<0.050	<0.050	<0.050	<0.050
chloromethane	74-87-3	E611C	0.050	mg/kg		<0.050	<0.050	<0.050	<0.050	<0.050
dibromochloromethane	124-48-1	E611C	0.050	mg/kg		<0.050	<0.050	<0.050	<0.050	<0.050
dichlorobenzene, 1,2-	95-50-1	E611C	0.050	mg/kg		<0.050	<0.050	<0.050	<0.050	<0.050
dichlorobenzene, 1,3-	541-73-1	E611C	0.050	mg/kg		<0.050	<0.050	<0.050	<0.050	<0.050
dichlorobenzene, 1,4-	106-46-7	E611C	0.050	mg/kg		<0.050	<0.050	<0.050	<0.050	<0.050
dichloroethane, 1,1-	75-34-3	E611C	0.050	mg/kg		<0.050	<0.050	<0.050	<0.050	<0.050
dichloroethane, 1,2-	107-06-2	E611C	0.050	mg/kg		<0.050	<0.050	<0.050	<0.050	<0.050
dichloroethylene, 1,1-	75-35-4	E611C	0.050	mg/kg		<0.050	<0.050	<0.050	<0.050	<0.050
dichloroethylene, cis-1,2-	156-59-4	E611C	0.050	mg/kg		<0.050	<0.050	<0.050	<0.050	<0.050
dichloroethylene, trans-1,2-	156-60-5	E611C	0.050	mg/kg		<0.050	<0.050	<0.050	<0.050	<0.050
dichloromethane	75-09-2	E611C	0.050	mg/kg		<0.050	<0.050	<0.050	<0.050	<0.050
dichloropropane, 1,2-	78-87-5	E611C	0.050	mg/kg		<0.050	<0.050	<0.050	<0.050	<0.050
dichloropropylene, cis+trans-1,3-	542-75-6	E611C	0.075	mg/kg		<0.075	<0.075	<0.075	<0.075	<0.075
dichloropropylene, cis-1,3-	10061-01-5	E611C	0.050	mg/kg		<0.050	<0.050	<0.050	<0.050	<0.050
dichloropropylene, trans-1,3-	10061-02-6	E611C	0.050	mg/kg		<0.050	<0.050	<0.050	<0.050	<0.050
ethylbenzene	100-41-4	E611C	0.015	mg/kg		<0.015	0.031	<0.015	<0.015	<0.015
methyl-tert-butyl ether [MTBE]	1634-04-4	E611C	0.050	mg/kg		<0.050	<0.050	<0.050	<0.050	<0.050
styrene	100-42-5	E611C	0.050	mg/kg		<0.050	<0.050	<0.050	<0.050	<0.050
tetrachloroethane, 1,1,1,2-	630-20-6	E611C	0.050	mg/kg		<0.050	<0.050	<0.050	<0.050	<0.050

Analytical Results

Sub-Matrix: **Soil**
(Matrix: **Soil/Solid**)

Analyte	CAS Number	Method	LOR	Unit	Client sample ID	HLF 1B-EX-N	HLF 1B-Floor	HLF 1B-EX-S	HLF 1B-EX-E	HLF 1B-EX-W
					Client sampling date / time	18-Apr-2020 13:56	18-Apr-2020 14:00	18-Apr-2020 14:20	18-Apr-2020 14:10	18-Apr-2020 14:15
						VA20A5169-001	VA20A5169-002	VA20A5169-003	VA20A5169-004	VA20A5169-005
						Result	Result	Result	Result	Result
Volatile Organic Compounds										
tetrachloroethane, 1,1,2,2-	79-34-5	E611C	0.050	mg/kg		<0.050	<0.232 DLCI	<0.050	<0.055 DLCI	<0.050
tetrachloroethylene	127-18-4	E611C	0.050	mg/kg		<0.050	<0.050	<0.050	<0.050	<0.050
toluene	108-88-3	E611C	0.050	mg/kg		<0.050	<0.050	<0.050	<0.050	<0.050
trichloroethane, 1,1,1-	71-55-6	E611C	0.050	mg/kg		<0.050	<0.050	<0.050	<0.050	<0.050
trichloroethane, 1,1,2-	79-00-5	E611C	0.050	mg/kg		<0.050	<0.062 DLQ	<0.050	<0.050	<0.050
trichloroethylene	79-01-6	E611C	0.010	mg/kg		<0.010	<0.010	<0.010	<0.010	<0.010
trichlorofluoromethane	75-69-4	E611C	0.050	mg/kg		<0.050	<0.050	<0.050	<0.050	<0.050
vinyl chloride	75-01-4	E611C	0.050	mg/kg		<0.050	<0.050	<0.050	<0.050	<0.050
xylene, m+p-	179601-23-1	E611C	0.050	mg/kg		<0.050	0.245	<0.050	<0.050	<0.050
xylene, o-	95-47-6	E611C	0.050	mg/kg		<0.050	0.177	<0.050	<0.050	<0.050
xylenes, total	1330-20-7	E611C	0.075	mg/kg		<0.075	0.423	<0.075	<0.075	<0.075
Volatile Organic Compounds Surrogates										
bromofluorobenzene, 4-	460-00-4	E611C	0.050	%		83.6	94.5	92.9	92.5	94.1
difluorobenzene, 1,4-	540-36-3	E611C	0.050	%		78.8	95.0	93.6	87.2	94.5
Hydrocarbons										
EPH (C10-C19)	----	E601A	200	mg/kg		<200	800	<200	370	<200
EPH (C19-C32)	----	E601A	200	mg/kg		<200	<200	<200	<200	<200
HEPHs	----	EC600A	200	mg/kg		<200	<200	<200	<200	<200
LEPHs	----	EC600A	200	mg/kg		<200	800	<200	370	<200
Hydrocarbons Surrogates										
bromobenzotrifluoride, 2- (EPH surr)	392-83-6	E601A	5.0	%		91.2	96.6	91.9	91.6	91.0
Polycyclic Aromatic Hydrocarbons										
acenaphthene	83-32-9	E641A-L	0.0050	mg/kg		<0.0080 DLCI	<0.0900 DLCI	<0.0050	<0.0500 DLCI	<0.0050
acenaphthylene	208-96-8	E641A-L	0.0050	mg/kg		<0.0050	<0.0300 DLCI	<0.0050	<0.0250 DLCI	<0.0050
acridine	260-94-6	E641A-L	0.010	mg/kg		<0.010	<0.020 DLCI	<0.010	<0.020 DLCI	<0.010
anthracene	120-12-7	E641A-L	0.0040	mg/kg		<0.0040	<0.0040	<0.0040	<0.0040	<0.0040
benz(a)anthracene	56-55-3	E641A-L	0.010	mg/kg		<0.010	<0.010	<0.010	<0.010	<0.010
benzo(a)pyrene	50-32-8	E641A-L	0.010	mg/kg		<0.010	<0.010	<0.010	<0.010	<0.010
benzo(b+j)fluoranthene	----	E641A-L	0.010	mg/kg		<0.010	<0.010	<0.010	<0.010	<0.010
benzo(b+j+k)fluoranthene	----	E641A-L	0.015	mg/kg		<0.015	<0.015	<0.015	<0.015	<0.015
benzo(g,h,i)perylene	191-24-2	E641A-L	0.010	mg/kg		<0.010	<0.010	<0.010	<0.010	<0.010

Analytical Results

Sub-Matrix: **Soil**
(Matrix: **Soil/Solid**)

Analyte	CAS Number	Method	LOR	Unit	Client sample ID	HLF 1B-EX-N	HLF 1B-Floor	HLF 1B-EX-S	HLF 1B-EX-E	HLF 1B-EX-W
					Client sampling date / time	18-Apr-2020 13:56	18-Apr-2020 14:00	18-Apr-2020 14:20	18-Apr-2020 14:10	18-Apr-2020 14:15
						VA20A5169-001	VA20A5169-002	VA20A5169-003	VA20A5169-004	VA20A5169-005
						Result	Result	Result	Result	Result
Polycyclic Aromatic Hydrocarbons										
benzo(k)fluoranthene	207-08-9	E641A-L	0.010	mg/kg		<0.010	<0.010	<0.010	<0.010	<0.010
chrysene	218-01-9	E641A-L	0.010	mg/kg		<0.010	<0.010	<0.010	<0.010	<0.010
dibenz(a,h)anthracene	53-70-3	E641A-L	0.0050	mg/kg		<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
fluoranthene	206-44-0	E641A-L	0.010	mg/kg		<0.010	<0.010	<0.010	<0.010	<0.010
fluorene	86-73-7	E641A-L	0.010	mg/kg		0.014	<0.200 DLQ	<0.010	0.057	<0.010
indeno(1,2,3-c,d)pyrene	193-39-5	E641A-L	0.010	mg/kg		<0.010	<0.010	<0.010	<0.010	<0.010
methylnaphthalene, 1-	90-12-0	E641A-L	0.010	mg/kg		0.026	1.45	0.032	0.490	<0.010
methylnaphthalene, 2-	91-57-6	E641A-L	0.010	mg/kg		0.029	1.93	0.033	0.579	<0.010
naphthalene	91-20-3	E641A-L	0.010	mg/kg		<0.010	<0.700 DLQ	<0.010	<0.070 DLCI	<0.010
phenanthrene	85-01-8	E641A-L	0.010	mg/kg		<0.010	0.049	0.013	0.032	<0.010
pyrene	129-00-0	E641A-L	0.010	mg/kg		<0.010	<0.010	<0.010	<0.010	<0.010
quinoline	6027-02-7	E641A-L	0.010	mg/kg		<0.010	<0.080 DLCI	<0.010	<0.030 DLCI	<0.010
B(a)P total potency equivalents [B(a)P TPE]	----	E641A-L	0.020	mg/kg		<0.010	<0.010	<0.010	<0.010	<0.010
IACR (CCME)	----	E641A-L	0.15	mg/kg		<0.11	<0.11	<0.11	<0.11	<0.11
Polycyclic Aromatic Hydrocarbons Surrogates										
acridine-d9	34749-75-2	E641A-L	0.010	%		101	101	94.9	96.7	100
chrysene-d12	1719-03-5	E641A-L	0.010	%		97.0	96.0	89.3	77.5	99.2
naphthalene-d8	1146-65-2	E641A-L	0.010	%		97.4	106	90.5	92.6	104
phenanthrene-d10	1517-22-2	E641A-L	0.010	%		99.8	102	86.3	87.6	102

Please refer to the General Comments section for an explanation of any qualifiers detected.

EAGLE GOLD PROJECT
SPILL RESPONSE FORM

FIRST OBSERVER			
Name & Company:	Victoria Gold Corp.		
Date & Time Observed:	February 28, 2020		
Location of Spill:	Primary Crusher - Rock Breaker VGC Tracking #VGC20-009		
Distance to Waterbody:	1000 m	**Photos Taken?**	☐ Yes ☐ No
Estimated Spill Volume:	378 L	**Reported to:**	Process Supervisor
COMPANY RESPONSIBLE			
Supervisor/Investigator:	Corey Hancock, Process		
Date of Spill:	Majority of release around February 24, 2020, estimated volume.		
Substance Spilled:	Hydraulic Oil		
Equipment Involved:	Primary Crusher - hydraulic line on the Rock Breaker		
Volume of Contaminated Material:	~5 tons soil material collected in supersacks.		
Personnel Contacted for Disposal (Name):	Phil Emerson, Environmental Department		
Cause of Spill: (Equipment Failure, vehicle accident, foreign object, etc.)	A hydraulic line of the rock breaker leaked oil near the swing gear (area situated on a concrete pad adjacent to rock breaker), through multiple leaks over time, resulting in a spill from the concrete pad to ground. The inspection area was covered by excessive quantities of snow so visual inspections could not identify the spill; volume of spill was estimated based on hydraulic line capacity.		
Spill Response Actions Taken: (Containment and/or absorbent materials used, equipment required for clean-up, Pre-trip attached, etc.)	The contaminated soils were collected and placed in poly Super Sacks and stored at the Land Treatment Facility (LTF); the repairs on the Rock breaker hydraulic line are currently underway. Future spill prevention and mitigation includes maintaining good housekeeping around the hydraulics to ensure accuracy of the visual inspections, the hydraulic lines were added to departmental area daily inspections, a spill sock was installed around the edge of the concrete pad supporting the hydraulics system to contain potential leaks, and preventative maintenance is scheduled monthly for rock breaker hydraulics.		
ENVIRONMENTAL DEPARTMENT USE ONLY			
IR#:	Spill Hotline #20-007	**Reportable to Spill Hotline?**	☐ Yes ☐ No
Info Re. Spill Hotline:	Spill reported to Hotline Feb 29, 2020.		
Disposal Container Labelled?	☐ Yes ☐ No	**Samples taken?**	☐ Yes ☐ No
Environmental areas affected: (Watercourse, soil, etc.):	Contaminate snow and soils in immediate vicinity.		
Method of Disposal & Further Remediation Required:	Soils taken to the LTF. No further action required.		
Follow Up Required?	☐ Yes ☐ No	**Follow Up Date:**	N/A
SIGNATURES REQUIRED FOR ALL REPORTABLE SPILLS			
Employee:		**Signature:**	
Supervisor:	Clint Willis, Process Superintendent	**Signature:**	
Safety:		**Signature:**	
Environment:	Lindsay Rear, ENV Manager	**Signature:**	

EAGLE GOLD PROJECT
SPILL RESPONSE FORM

FIRST OBSERVER			
Name & Company:	Victoria Gold		
Date Observed:	March 16, 2020	**Time Observed:** 1:00 PM	
Location of Spill:	1315 bench	**VGC Tracking Number:** VGC20-011	
Distance to Waterbody:	>500 m	**Photos Taken?**	☑ Yes ☐ No
Estimated Spill Volume:	9 L	**Reported to:** Environment	
PERSON/DEPT. RESPONSIBLE FOR SPILL			
Supervisor/Investigator:	Ryan Hogue		
Date of Spill:	March 16, 2020		
Substance Spilled:	Glycol (coolant)		
Equipment Involved:	601 shovel (Cat 6040)		
Volume of Contaminated Material:	9 liters of glycol mixed with rock and dirt (Approximately 500 pounds)		
Personnel Contacted for Disposal (Name):	Katie Babin, ENV dept		
Cause of Spill: (Equipment Failure, vehicle accident, foreign object, etc.)	Equipment Failure: A heater hose in the 601 shovel engine room ruptured spilling approximately 9 liters of coolant to the ground.		
Spill Response Actions Taken: (Containment and/or absorbent materials used, equipment required for clean-up, Pre-trip attached, etc.)	Spill response was immediately initiated and a barrel placed under the leak. Spill pads were put down to absorb most of the coolant on the ground. The contaminated material was placed in the LTF.		
ENVIRONMENTAL DEPARTMENT USE ONLY			
Spill Line Tracking Number	20-010	**Reportable to Spill Hotline?**	☑ Yes ☐ No
Info Re. Spill Hotline:	Reported to Yukon Spill Reporting Hotline		
Disposal Container Labelled?	☐ Yes ☐ No	**Samples taken?**	☐ Yes ☑ No
Environmental areas affected: (Watercourse, soil, etc.):	n/a		
Method of Disposal & Further Remediation Required:	Impacted material placed in LTF, no further remediation required.		
Follow Up Required?	☐ Yes ☑ No	**Follow Up Date:**	
SIGNATURES REQUIRED FOR ALL REPORTABLE SPILLS			
Employee:		**Signature:**	
Supervisor:	Kelly Parker	**Signature:**	April 14, 2020
Safety:		**Signature:**	
Environment:	Bill Bowden	**Signature:**	April 13th/2020

Final Report
Remediation Complete

Victoria GOLD CORP	Additional Spill Information		
	Additional Information		
Spill Date:	March 16, 2020	VGC Spill #	VGC20-011
Volume (L):	9	Yukon Government #	20-010
Substance	Coolant (glycol)	Location	1315 Bench

1 Photos

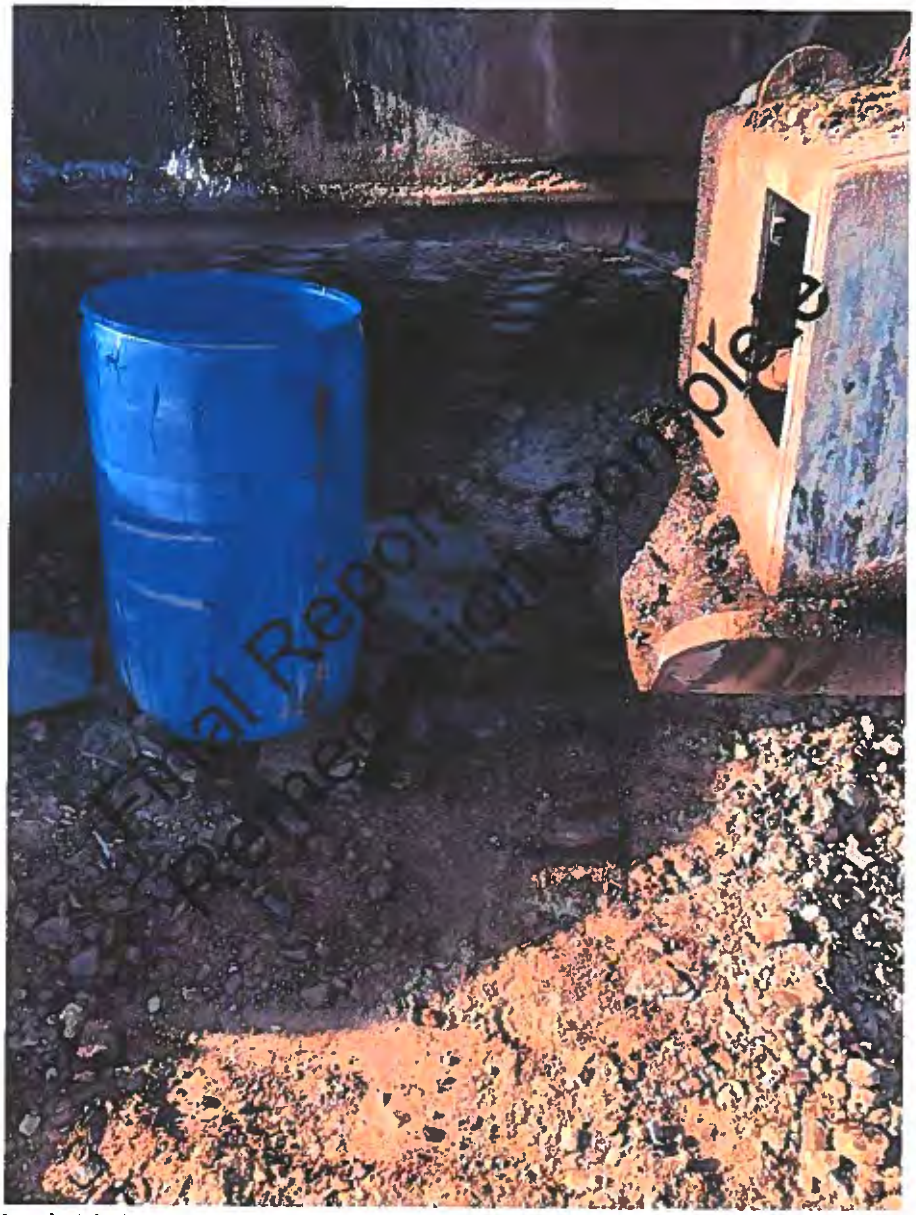

Photo 1 – March 16, 2020

Victoria GOLD CORP	Additional Spill Information		
	Additional Information		
Spill Date:	March 16, 2020	VGC Spill #	VGC20-011
Volume (L):	9	Yukon Government #	20-010
Substance	Coolant (glycol)	Location	1315 Bench



Photo 2 – March 16, 2020

Victoria GOLD CORP	Additional Spill Information		
	Additional Information		
Spill Date:	March 16, 2020	VGC Spill #	VGC20-011
Volume (L):	9	Yukon Government #	20-010
Substance	Coolant (glycol)	Location	1315 Bench



Photo 2 – March 16, 2020

EAGLE GOLD PROJECT
SPILL RESPONSE FORM

FIRST OBSERVER			
Name & Company:	Victoria Gold Corp		
Date Observed:	April 3 2020	**Time Observed:** 10:30am	
Location of Spill:	1365 Bench	**VGC Tracking Number:** VGC20-012	
Distance to Waterbody:	N/A	**Photos Taken?**	☑ Yes ☐ No
Estimated Spill Volume:	400L	**Reported to:** Environment	
PERSON/DEPT. RESPONSIBLE FOR SPILL			
Supervisor/Investigator:	Chad Erb		
Date of Spill:	April 3 2020		
Substance Spilled:	Hydraulic Oil		
Equipment Involved:	601 Shovel		
Volume of Contaminated Material:	40m3		
Personnel Contacted for Disposal (Name):	Site Service		
Cause of Spill: (Equipment Failure, vehicle accident, foreign object, etc.)	Mechanical Failure: Upon further investigation, it was determined that two manufacturer stock bolts on the hydraulic manifold of the 601 shovel boom came loose and failed resulting in the release of hydraulic oil to the adjacent ground on the 1365 Phase 2 bench. The bolts were determined to be improperly specified for the hydraulic manifold fittings and the cause of mechanical failure.		
Spill Response Actions Taken: (Containment and/or absorbent materials used, equipment required for clean-up, Pre-trip attached, etc.)	Spill tray and spill pads were used to contain the spill and clean up. Excavator was used to load out contaminated soil into a 740 rock truck and then hauled and deposited into the Land Treatment Facility for remediation.		
ENVIRONMENTAL DEPARTMENT USE ONLY			
Spill Line Tracking Number	20-015	**Reportable to Spill Hotline?**	☑ Yes ☐ No
Info Re. Spill Hotline:	Reported to the Spill Line at 19:00 April 3, 2020.		
Disposal Container Labelled?	☐ Yes ☐ No	**Samples taken?**	☐ Yes ☑ No
Environmental areas affected: (Watercourse, soil, etc.):	Occurred on the 1365 bench with no potential migration. Soaked up with spill pads and captured with spill trays. Watercourses 2km away.		
Method of Disposal & Further Remediation Required:	Contaminated material moved to the Land Treatment Facility		
Follow Up Required?	☑ Yes ☐ No	**Follow Up Date:** April 13,	
SIGNATURES REQUIRED FOR ALL REPORTABLE SPILLS			
Employee:		**Signature:**	
Supervisor:	Kelly Parker	**Signature:** K Parker	April 13, 2020
Safety:		**Signature:**	
Environment:	Bill Bowden	**Signature:** B Bowden	April 13th / 2020

Final Report
Remediation Complete

Victoria GOLD CORP	Additional Spill Information		
	Additional Information		
Spill Date:	April 3, 2020	VGC Spill #	VGC20-012
Volume (L):	400	Yukon Government #	20-015
Substance	Hydraulic Fluid	Location	1365 Bench

1 Additional Info

1.1 An area of approximately 10m x 3m was determined to be impacted by the hydraulic fluid release.

1.2 The estimated volume of contaminated material was determined to be approximately 40m3 or one 740 rock truck load (photo 2). The contaminated material was deposited in the Land Treatment Facility (LTF) for subsequent remediation.

1.3 Majority of the release was captured with spill trays and spill kit containment barrels. The remainder of free product that reached the ground surface was soaked up with spill pads and booms (photo 1).

1.4 601 Shovel hydraulic release corrective actions:

1.4.1 After further investigation, it was determined that the root cause of the mechanical failure, which resulted in the release, was improper stock bolts that hold the hydraulic manifold to the 601 shovel boom. The bolts failed due to continued operation and wear on the shovel. The bolts that hold the hydraulic manifold to the shovel boom and the hydraulic lines were evaluated by Finning maintenance technicians on site and subsequently replaced with proper bolts for the fittings. The bolts for the hydraulic manifold of the 602 shovel were proactively changed, upon determining this manufacturer stock defect.

1.4.2 Preventative Maintenance programs: Inspections of the hydraulic manifold and identifying hydraulic lines that have potential for failure from prolonged use and wear have been added to the regular Preventative Maintenance programs of both Shovels operating within the Pit.

1.4.3 Spill Supplies will be posted in work areas of active shovels within the pit and on the machine to ensure rapid response for potential future releases.

Final Report
Remediation Complete

Victoria GOLD CORP	Additional Spill Information		
	Additional Information		
Spill Date:	April 3, 2020	VGC Spill #	VGC20-012
Volume (L):	400	Yukon Government #	20-015
Substance	Hydraulic Fluid	Location	1365 Bench

2 Photos



Photo 1 – April 3rd- Spill response initiated to arrest and contain released hydaulic fluid



Photo 2 – April 3rd- Contaminated material removal to LTF, following clean-up of free product

Final Report
Remediation Complete

EAGLE GOLD PROJECT
SPILL RESPONSE FORM

FIRST OBSERVER			
Name & Company:			
Date Observed:		**Time Observed:**	
Location of Spill:	**VGC Tracking Number:**		
Distance to Waterbody:		**Photos Taken?**	☐ Yes ☐ No
Estimated Spill Volume:		**Reported to:**	
PERSON/DEPT. RESPONSIBLE FOR SPILL			
Supervisor/Investigator:			
Date of Spill:			
Substance Spilled:			
Equipment Involved:			
Volume of Contaminated Material:			
Personnel Contacted for Disposal (Name):			
Cause of Spill: (Equipment Failure, vehicle accident, foreign object, etc.)			
Spill Response Actions Taken: (Containment and/or absorbent materials used, equipment required for clean-up, Pre-trip attached, etc.)			
ENVIRONMENTAL DEPARTMENT USE ONLY			
Spill Line Tracking Number		**Reportable to Spill Hotline?**	☐ Yes ☐ No
Info Re. Spill Hotline:			
Disposal Container Labelled?	☐ Yes ☐ No	**Samples taken?**	☐ Yes ☐ No
Environmental areas affected: (Watercourse, soil, etc.):			
Method of Disposal & Further Remediation Required:			
Follow Up Required?	☐ Yes ☐ No	**Follow Up Date:**	
SIGNATURES REQUIRED FOR ALL REPORTABLE SPILLS			
Employee:		**Signature:**	
Supervisor:		**Signature:**	
Safety:		**Signature:**	
Environment:		**Signature:**	

EAGLE GOLD PROJECT
SPILL RESPONSE FORM

StrataGold Corporation

FIRST OBSERVER			
Name & Company:	Victoria Gold Corp.		
Date Observed:	April 27, 2020	**Time Observed:** 10:15	
Location of Spill:	Eagle Pit 1 #2 Switchback		
Distance to Waterbody:	1km	**Photos Taken?**	☑ Yes ☐ No
Estimated Spill Volume:	20 L	**Reported to:** Enviro	VGC Spill #VGC20-013
PERSON/DEPT. RESPONSIBLE FOR SPILL			
Supervisor/Investigator:	Andrew Ballance		
Date of Spill:	April 27 /2020		
Substance Spilled:	Coolant		
Equipment Involved:	107 Truck		
Volume of Contaminated Material:	N/A		
Personnel Contacted for Disposal (Name):	N/A		
Cause of Spill: (Equipment Failure, vehicle accident, foreign object, etc.)	Top radiator hose came loose while haul truck was travelling down the ramp. Truck was immediately shut down when leak was identified.		
Spill Response Actions Taken: (Containment and/or absorbent materials used, equipment required for clean-up, Pre-trip attached, etc.)	Cleaned up with spill pads. Spill pads were brought to the waste management area for off-site disposal. Minimal residue product remained on the road after spill pads were used. A grader was used to mix the remaining residual product into the surrounding road surface.		
ENVIRONMENTAL DEPARTMENT USE ONLY			
Tracking Number	20-027	**Reportable to Spill Hotline?**	☑ Yes ☐ No
Info Re. Spill Hotline:	Reported to Troy Searson April 28, 2020		
Disposal Container Labelled?	☐ Yes ☐ No	**Samples taken?**	☐ Yes ☑ No
Environmental areas affected: (Watercourse, soil, etc.):	Mining roadway		
Method of Disposal & Further Remediation Required:	No further action required		
Follow Up Required?	☐ Yes ☑ No	**Follow Up Date:**	
SIGNATURES REQUIRED FOR ALL REPORTABLE SPILLS			
Employee:		**Signature:**	
Supervisor:	Andrew Ballance, Mining	**Signature:**	
Safety:		**Signature:**	
Environment:	Lindsay Rear, ENV Mger	**Signature:**	

Final Report
Remediation Complete

Victoria GOLD CORP	Additional Spill Information		
	Additional Information		
Spill Date:	April 27, 2020	VGC Spill #	VGC20-013
Volume (L):	20	Yukon Government #	20-027
Substance	Coolant	Location	Eagle Pit Road (switchback #2)

1 Photos



Final Report
Remediation Complete

Photo 1 – April 27, 2020 Haul truck stationary and spill response initiated to contain coolant fluid.



Photo 2 – April 29, 2020 Coolant soaked spill pads removal to waste management area.

EAGLE GOLD PROJECT
SPILL RESPONSE FORM

StrataGold Corporation

FIRST OBSERVER			
Name & Company:	Victoria Gold Corp		
Date Observed:	May 23/20	**Time Observed:** 2:45am	
Location of Spill:	1215 Bench Phase 1		
Distance to Waterbody:	1 km	**Photos Taken?**	☑ Yes ☐ No
Estimated Spill Volume:	104 l	**Reported to:** Environment	
PERSON/DEPT. RESPONSIBLE FOR SPILL			
Supervisor/Investigator:	Chad Erb		
Date of Spill:	May.23/20		
Substance Spilled:	Coolant		
Equipment Involved:	601 Shovel		
Volume of Contaminated Material:	1 m3 of material		
Personnel Contacted for Disposal (Name):	Christian Brown		
Cause of Spill: (Equipment Failure, vehicle accident, foreign object, etc.)	Coolant line failed due to improper installation. Clamp came loose and caused hose to detach from equipment.		
Spill Response Actions Taken: (Containment and/or absorbent materials used, equipment required for clean-up, Pre-trip attached, etc.)	Spill pads and a barrel used to catch and contain the leak. Coolant in barrel was pumped back to fuel and lube truck. Contaminated material placed in mega bag and stored at LTF for future treatment. Spill Pads brought down to hazardous waste area for back haul off-site. Hose on 601 shovel has been repaired.		
ENVIRONMENTAL DEPARTMENT USE ONLY			
Tracking Number	20-041	**Reportable to Spill Hotline?**	☑ Yes ☐ No
Info Re. Spill Hotline:	Reported on May 23 @17:40 to Yukon Spill Line		
Disposal Container Labelled?	☑ Yes ☐ No	**Samples taken?**	☐ Yes ☑ No
Environmental areas affected: (Watercourse, soil, etc.):	Ground - Pit		
Method of Disposal & Further Remediation Required:	Contaminated ground material was placed in mega bag and removed to apron of LTF.		
Follow Up Required?	☑ Yes ☐ No	**Follow Up Date:** June 31	
SIGNATURES REQUIRED FOR ALL REPORTABLE SPILLS			
Employee:		**Signature:**	
Supervisor:	Kelly Parker	**Signature:**	K Parker
Safety:		**Signature:**	
Environment:	William Bowden	**Signature:**	Bill Bowden

Final Report
Remediation Complete

Victoria GOLD CORP	Additional Spill Information		
	Photos		
Spill Date:	May 23, 2020	VGC Spill #	VGC20-014
Volume (L):	104L	Yukon Government #	20-041
Substance	Coolant	Location	Eagle Pit

1 Photos



Photo 1 – May 23rd- Failed Coolant Line on the 601 Shovel.



Photo 2 – May 23rd- Spill pads deployed to effectively soak up free product.

Victoria GOLD CORP	Additional Spill Information		
	Photos		
Spill Date:	May 23, 2020	VGC Spill #	VGC20-014
Volume (L):	104L	Yukon Government #	20-041
Substance	Coolant	Location	Eagle Pit

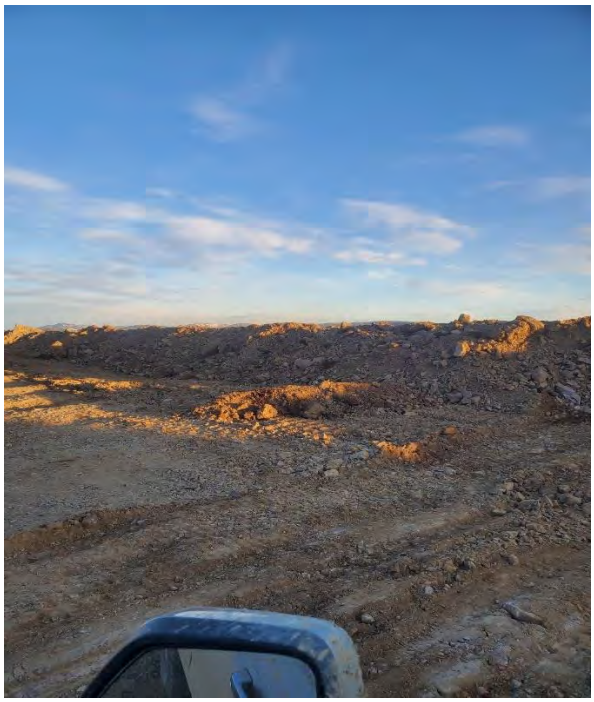

Photo 3 – May 23rd- Partially contaminated material scraped up for disposal



Photo 4 – June 1st- Partially contaminated material mega bag at LTF awaiting treatment

EAGLE GOLD PROJECT
SPILL RESPONSE FORM

VICTORIA GOLD CORP

FIRST OBSERVER			
Name & Company:	Ewing Transportation		
Date Observed:	20200529	**Time Observed:** 11:00 am	
Location of Spill:	Mine road - SW2-3	**VGC Tracking Number:** VGC20-015	
Distance to Waterbody:	>800 m	**Photos Taken?**	☑ Yes ☐ No
Estimated Spill Volume:	15 l	**Reported to:** K.Babin	

PERSON/DEPT. RESPONSIBLE FOR SPILL	
Supervisor/Investigator:	Marshall Ewing, Harrison Ewing
Date of Spill:	May 29, 2020
Substance Spilled:	Coolant
Equipment Involved:	Tractor (water tanker) ET025
Volume of Contaminated Material:	1 m3
Personnel Contacted for Disposal (Name):	Site Services
Cause of Spill: (Equipment Failure, vehicle accident, foreign object, etc.)	Failed coolant line. Line separated from truck.
Spill Response Actions Taken: (Containment and/or absorbent materials used, equipment required for clean-up, Pre-trip attached, etc.)	The water truck was watering the road while the line failed. Mine ops supervisor directed truck to stop and deployed spill pads to soak up any free product. Site services removed 1 m3 of partially contaminated road material to the LTF for storage and future remediation.

Final Report
Remediation Complete

ENVIRONMENTAL DEPARTMENT USE ONLY			
Spill Line Tracking Number	20-046	**Reportable to Spill Hotline?**	☑ Yes ☐ No
Info Re. Spill Hotline:	Reported May 30, 8:15 by KB Phil Leduc		
Disposal Container Labelled?	☑ Yes ☑ No	**Samples taken?**	☐ Yes ☑ No
Environmental areas affected: (Watercourse, soil, etc.):	Ground - mine road		
Method of Disposal & Further Remediation Required:	Removed to LTF Apron for storage and future treatment		
Follow Up Required?	☑ Yes ☐ No	**Follow Up Date:** June 30	

SIGNATURES REQUIRED FOR ALL REPORTABLE SPILLS			
Employee:		**Signature:**	
Supervisor:	Mike Gunn	**Signature:**	
Safety:		**Signature:**	
Environment:	William Bowden	**Signature:**	

Victoria GOLD CORP	Additional Spill Information		
	Photos		
Spill Date:	May 29, 2020	VGC Spill #	VGC20-015
Volume (L):	15L	Yukon Government #	20-045
Substance	Coolant	Location	Mine Haul Road- SW2

1 Photos



Photo 1 – May 29th- Released coolant, mixed with moisture on the Mine Haul Road.



Photo 2 – May 29th- Loader scraping up partially contaminated road material.

Victoria GOLD CORP	Additional Spill Information		
	Photos		
Spill Date:	May 29, 2020	VGC Spill #	VGC20-015
Volume (L):	15L	Yukon Government #	20-045
Substance	Coolant	Location	Mine Haul Road- SW2



Photo 3 – May 29th- Road surface after partially contaminated material was removed



Photo 4 – June 1st- Partially contaminated material staked on lined apron for further treatment at the LTF

EAGLE GOLD PROJECT
SPILL RESPONSE FORM

VICTORIA GOLD CORP

FIRST OBSERVER			
Name & Company:			
Date Observed:		**Time Observed:**	
Location of Spill:	**VGC Tracking Number:**		
Distance to Waterbody:		**Photos Taken?**	☐ Yes ☐ No
Estimated Spill Volume:		**Reported to:**	
PERSON/DEPT. RESPONSIBLE FOR SPILL			
Supervisor/Investigator:			
Date of Spill:			
Substance Spilled:			
Equipment Involved:			
Volume of Contaminated Material:			
Personnel Contacted for Disposal (Name):			
Cause of Spill: (Equipment Failure, vehicle accident, foreign object, etc.)			
Spill Response Actions Taken: (Containment and/or absorbent materials used, equipment required for clean-up, Pre-trip attached, etc.)			
ENVIRONMENTAL DEPARTMENT USE ONLY			
Spill Line Tracking Number		**Reportable to Spill Hotline?**	☐ Yes ☐ No
Info Re. Spill Hotline:			
Disposal Container Labelled?	☐ Yes ☐ No	**Samples taken?**	☐ Yes ☐ No
Environmental areas affected: (Watercourse, soil, etc.):			
Method of Disposal & Further Remediation Required:			
Follow Up Required?	☐ Yes ☐ No	**Follow Up Date:**	
SIGNATURES REQUIRED FOR ALL REPORTABLE SPILLS			
Employee:		**Signature:**	
Supervisor:		**Signature:**	
Safety:		**Signature:**	
Environment:		**Signature:**	

EAGLE GOLD PROJECT
SPILL RESPONSE FORM

StrataGold Corporation

FIRST OBSERVER			
Name & Company:	Victoria Gold Corp VGC spill #VGC20-017		
Date Observed:	June.4.2020	**Time Observed:** 11:00 pm	
Location of Spill:	Eagle Pit - Switchback 2		
Distance to Waterbody:	1000 m	**Photos Taken?**	☑ Yes ☐ No
Estimated Spill Volume:	140 L	**Reported to:** Enviro	
PERSON/DEPT. RESPONSIBLE FOR SPILL			
Supervisor/Investigator:	Chad Erb		
Date of Spill:	June.4.2020		
Substance Spilled:	Coolant		
Equipment Involved:	103 Haul Truck		
Volume of Contaminated Material:	2 bags of spill pads.		
Personnel Contacted for Disposal (Name):	n/a - spill pads placed in mega bag		
Cause of Spill: (Equipment Failure, vehicle accident, foreign object, etc.)	Hose clamp failed on the main coolant return line. Hose come off at the radiator location.		
Spill Response Actions Taken: (Containment and/or absorbent materials used, equipment required for clean-up, Pre-trip attached, etc.)	Two bags of spill pads used to contain the spill and clean up. Hard packed ground allowed for pooling of coolant that was readily absorbed by spill pads. The contaminated pads were brought to the hazardous waste storage area for back haul to off-site waste management contractor KBL Environmental.		
ENVIRONMENTAL DEPARTMENT USE ONLY			
Tracking Number	20-049	**Reportable to Spill Hotline?**	☑ Yes ☐ No
Info Re. Spill Hotline:	Reported to Spill line June 5, 2020 - 9:00		
Disposal Container Labelled?	☐ Yes ☐ No	**Samples taken?**	☐ Yes ☑ No
Environmental areas affected: (Watercourse, soil, etc.):	None - Road surface		
Method of Disposal & Further Remediation Required:	Contaminated pads will be transported to off-site waste management facility - KBL.		
Follow Up Required?	☐ Yes ☑ No	**Follow Up Date:**	
SIGNATURES REQUIRED FOR ALL REPORTABLE SPILLS			
Employee:		**Signature:**	
Supervisor:	Andrew Ballance	**Signature:**	
Safety:		**Signature:**	
Environment:	Lindsay Rear	**Signature:**	

Victoria GOLD CORP	**Additional Spill Information**		
	Photos		
Spill Date:	2020-06-04	VGC Spill #	VGC20-017
Volume (L):	140 l	Yukon Government #	20-049
Substance	Coolant	Location	Eagle Pit – Switchback 2



Photo 1 – Switchback 2 after free product has been absorbed

EAGLE GOLD PROJECT
SPILL RESPONSE FORM

VICTORIA GOLD CORP

FIRST OBSERVER			
Name & Company:	Ewing Transport		
Date Observed:	June 30, 2020	**Time Observed:** 16:15	
Location of Spill:	HLF 1B East Slope	**VGC Tracking Number:** VGC20-018	
Distance to Waterbody:	1000m	**Photos Taken?**	☑ Yes ☐ No
Estimated Spill Volume:	8L	**Reported to:** Environment	

PERSON/DEPT. RESPONSIBLE FOR SPILL	
Supervisor/Investigator:	Russell Noksana, Harrison Ewing
Date of Spill:	June 30, 2020
Substance Spilled:	Coolant
Equipment Involved:	730C Rock Truck (Unit 016)
Volume of Contaminated Material:	One 20L bucket of material (soil)
Personnel Contacted for Disposal (Name):	Jessica Wilkinson
Cause of Spill: (Equipment Failure, vehicle accident, foreign object, etc.)	Coolant hose for the DEF pump failed and caused a spill
Spill Response Actions Taken: (Containment and/or absorbent materials used, equipment required for clean-up, Pre-trip attached, etc.)	Absorbent socks socks were used to prevent coolant from running down the slope. Universal absorbent pads were used to soak up excess coolant. Contaminated material was collected in a 20L bucket and all absorbent pads and socks were collected in an additional 20L bucket for disposal.

ENVIRONMENTAL DEPARTMENT USE ONLY			
Spill Line Tracking Number	20-062	**Reportable to Spill Hotline?**	☑ Yes ☐ No
Info Re. Spill Hotline:	Reported to Colin Remillard on July 1st at 9:00am		
Disposal Container Labelled?	☑ Yes ☐ No	**Samples taken?**	☐ Yes ☑ No
Environmental areas affected: (Watercourse, soil, etc.):	No water course was affected, contaminated soil was removed, future site will be covered with liner as part of phase 1B HLF.		
Method of Disposal & Further Remediation Required:	Soil will be remediated in the on site LTF.		
Follow Up Required?	☐ Yes ☑ No	**Follow Up Date:**	

SIGNATURES REQUIRED FOR ALL REPORTABLE SPILLS			
Employee:		**Signature:**	
Supervisor:	Harrison Ewing	**Signature:**	
Safety:		**Signature:**	
Environment:	Phil Emerson	**Signature:**	

Victoria GOLD CORP	Additional Spill Information		
	Photos		
Spill Date:	July 10, 2020	VGC Spill #	VGC20-020
Volume (L):	15	Yukon Government #	20-066
Substance	Coolant	Location	1050 Bench



Photo 1 – July 10, Coolant in pooling water adjacent to lube skid lined area.



Photo 2 – July 19, 1050 area clean and free of residual coolant

EAGLE GOLD PROJECT
SPILL RESPONSE FORM

VICTORIA GOLD CORP

FIRST OBSERVER			
Name & Company:	Ewing Transport		
Date Observed:	July 20, 2020	**Time Observed:** 10:00AM	
Location of Spill:	1B Access Road	**VGC Tracking Number:** VGC20-022	
Distance to Waterbody:	1KM	**Photos Taken?**	☑ Yes ☐ No
Estimated Spill Volume:	12L	**Reported to:** K.Babin	

PERSON/DEPT. RESPONSIBLE FOR SPILL	
Supervisor/Investigator:	Marshall Ewing, Harrison Ewing
Date of Spill:	July 20, 2020
Substance Spilled:	Coolant
Equipment Involved:	730 Rock Truck (UNIT 018)
Volume of Contaminated Material:	Two 5g pales of material (Soil)
Personnel Contacted for Disposal (Name):	Site Services
Cause of Spill: (Equipment Failure, vehicle accident, foreign object, etc.)	Failed coolant line from 730 rock truck came loose resulting in the release of coolant onto the road surface.
Spill Response Actions Taken: (Containment and/or absorbent materials used, equipment required for clean-up, Pre-trip attached, etc.)	Spill tray was used to collect leaking fluid, sorbent pads were used to soak up any excess coolant. Contaminated material was collected in a 5G pale and all soaker pads were put into a 5G pale and disposed of at the hazardous waste management building.

ENVIRONMENTAL DEPARTMENT USE ONLY			
Spill Line Tracking Number	YG20-069	**Reportable to Spill Hotline?**	☑ Yes ☐ No
Info Re. Spill Hotline:	Reported July 22 9:00 am		
Disposal Container Labelled?	☐ Yes ☐ No	**Samples taken?**	☐ Yes ☑ No
Environmental areas affected: (Watercourse, soil, etc.):	None - road surface		
Method of Disposal & Further Remediation Required:	Disposed of in LTF		
Follow Up Required?	☐ Yes ☑ No	**Follow Up Date:**	

SIGNATURES REQUIRED FOR ALL REPORTABLE SPILLS			
Employee:		**Signature:**	
Supervisor:	Marshall Ewing	**Signature:**	
Safety:		**Signature:**	
Environment:	Bill Bowden	**Signature:**	

FINAL

EAGLE GOLD PROJECT

SPILL REPORT

PROCESS SOLUTION SPILL TO GROUND – JULY 11, 2020

JULY 21, 2020

Prepared By:
Victoria Gold (Yukon) Corp.
Eagle Gold Project

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1 INTRODUCTION

This report summarizes the events that occurred during the early hours of July 11, 2020 that resulted in a release of process solution from the lined footprint for the Heap Leach Facility (HLF) to soils outside of containment. This report also summarizes the subsequent responses implemented to mitigate this release and to prevent possible reoccurrence. **At the time of this report there has been no detection of total or WAD cyanide in monitored surface water or groundwater downgradient of the HLF.** A low-level detection of total cyanide was received for one soil sample downgradient of the CV-022 road access road. The total cyanide (which includes free cyanide) concentration detected is below all soil quality guidelines for free cyanide provided in the Canadian Soil Quality Guidelines for the Protection of Environmental and Human Health (Canadian Council of Ministers of the Environment, 1999).

On July 11, 2020, at 01:30, during heavy rains, pooling water was reported on the HLF loadout area. At 04:00, inspections of the HLF area identified a channelized flow of rainwater mixed with process solution seeping from the base of the loadout pile adjacent to the Heap Transfer Tower (CV-023) pad. The seep was located about 2 metres above the main east-west access roadway (the HLF Perimeter Road) just to the west of the transformer and E house area, which are situated below the conveyors. The seep emerged outside of the lined containment of the HLF and was observed to commingle with the roadway runoff; however, due to the very low flow of the seep, it was not distinguishable on the roadway.

Investigations during and since the incident indicate a combination of a damaged solution distribution pipe on an upper ore lift of the HLF, heavy rainfall and the extension of the loadout pile beyond lined containment were the primary root causes of the release.

The damaged solution distribution pipeline was isolated and flow shutoff upon discovery. Earthworks (berm construction and ditching) was initiated to contain and stop the source of the seep, as well as contain the release of the seep. The seep was fully contained by 09:00 that morning, and directed back into the lined containment of the HLF. The estimated volume of fluid (i.e., comingled rainfall and process solution) released outside of containment is approximately 4.5m^3. Based on both surface and ground water samples taken, there is no evidence that any potential receiving water bodies or groundwater were affected by process solution. Onsite analyses for free cyanide concentrations in samples collected on the morning of the release from streams downgradient of the seep and HLF showed values below the onsite method detection limit. External laboratory analysis was also actioned on samples collected, and yielded non-detect results for Total or WAD cyanide.

On July 12, 2020, notification was provided to regulators and the First Nation of Nacho Nyak Dun (FNNND) regarding the incident. The following were notified:

- Natural Resource Officer, Inspector Major Mines - Compliance Monitoring and Inspection, Department of Energy, Mines and Resources (EMR)
- Director - Minerals Resource Branch, EMR,
- Enforcement Officer - Enforcement Branch, Environment and Climate Change Canada (ECCC), and
- FNNND Lands and Resources Manager.

Section 1: Introduction

This report provides a detailed chronological event summary, release details, important environmental and site factors that led to the incident, concurrent and post-incident responses, and reporting.

2 CHRONOLOGICAL EVENT SUMMARY

2.1 RELEASE RECOGNITION AND IMMEDIATE RESPONSES

Features relevant to this event summary are provided in Figure 2-1 and Figure 2-2.

July 10, 2020

Heavy rains commenced just prior to midnight on July 10. Approximately 43.5 mm of precipitation fell at the Camp Climate Station (located approximately 1,500 metres from the seepage location) between 21:00 July 10 and 21:00 July 11. The highest intensity of rain recorded during the incident time frame was between 23:00 July 10 and 02:00 July 11, at one point reaching an intensity of approximately 7.2 mm/hr. Prior to the incident and earlier that same day, rainfall intensity peaked at 10 mm/hr between 20:00 and 21:00 on July 10. The weather data indicate that the HLF and Eagle Site sustained high intensity microbursts of rainfall throughout July 10 and July 11, leading up to and throughout the incident timeline.

July 11, 2020

01:30 Pooling water was reported on the heap leach pad CV-023 loadout area (on the 950 lift) from a loader operator and was investigated by the Process foreman. Water was observed cascading down from the 975 lift, accumulating on the 950 bench in the stockpile-loadout. It was believed at that time that the pooling water was sourced from the precipitation event. A berm was constructed from the crushed ore within the HLF across the loadout area to contain the pooling water up against the toe of the 965 lift, and keep water away from the stockpile and the loadout operations.

03:45 The heavy rain had stopped, however pooling water on the loadout area continued to increase in volume and depth, so a berm across the loadout was raised. The Process General Foreman was called out to help investigate. It was determined that solution flow from the 8” process solution distribution line on the 975 lift directly uphill from the stockpile-loadout area was leaking and contributing to the flow of water to the pooled area on the 950 lift. The leaking distribution line was immediately turned off.

03:45 to 04:30 Investigation was turned to areas downgradient of the stockpile-loadout area. The HLF perimeter road was wet and muddy throughout. A small channelized flow (or rivulet) was noticed seeping about 2 metres above the driving surface of the road from the base of the crushed ore pile below the stockpile-loadout area. The rivulet was observed to distribute down to the roadway into a small ponded area which had formed in a low area west of, and immediately adjacent to, the westernmost transformer of the E-House. Once the rivulet reached the roadway it could not be discerned in the mud and rainwater that covered the roadway. An excavator was mobilized and dispatched to this area to commence immediate remedial earthworks.

04:30 – 05:30 Remedial earthworks outside of the lined containment area commenced; over the next hour, three berms were constructed. One berm was built adjacent to the transformer area across the rivulet to contain water upgradient of the roadway. A second berm was built across the junction of the

Dublin Gulch access road and the HLF perimeter road, and a third berm was built across the junction of the HLF perimeter road and the CV-022 Road.

Additionally, the Process Manager designate and Site General Manager were informed of the incident and the remedial measures being taken. As a precaution, all ADR processes feeding all the distribution lines were shutdown.

07:00 to 09:00 Inspections of the incident area were undertaken by the General Manager, and managers/superintendents from the Environment, Process, and Health and Safety Departments. During the inspection:

- Water was observed to continue to emerge from the seep.
- Water was pooling behind the bermed area west of the transformer. The berm was observed to be containing the pool and deemed to be providing appropriate containment thereof.
- A suction pumping system was established to collect all pooling water and pump it back into the HLF containment area.
- Additional earthworks were undertaken and a liner was installed in the seep area to direct the pooling water back to lined containment.
- Visual assessment of other areas of HLF was undertaken and no concerns were noted.
- Offsite Senior Management was notified.
- Emergency Operations Centre (EOC) was activated and the Emergency Response Plan and Cyanide Management Plan was initiated.
- Incident management team meeting was conducted to coordinate, release response, further remediation and sampling efforts.



Photo 2-1: Seep Location Looking North - July 11, 2020 @ 07:00



Photo 2-2: Containment Berm Construction Adjacent to HLF Perimeter Road Looking West - July 11, 2020 @ 07:00

09:00 Berms, ditches, liners and pumping set-ups were completed, directing all fluid back to lined containment. The seep was still flowing but was fully contained.

09:00 to 15:00 The seep was sampled and on-site analysis for cyanide confirmed that the water was diluted solution (approximately 175 parts per million {ppm} free cyanide was detected compared to the 250 ppm in the process solution as it is distributed to the HLF). Flow was estimated at seepage location at approximately 10 L/min. Based on initial observations from when the seep was suspected to begin flowing (01:30) and when the flow from the seep was fully contained (09:00), the estimated volume of potential infiltrated rainwater and process solution released outside of containment is 4.5 m^3. This equates to a release of less than 1kg of free cyanide.

Further, as part of the Cyanide Management Plan (specifically the Environmental (Soil/Water Quality) Monitoring Procedures SOP), water quality samples were collected at standard Environmental Monitoring, Surveillance and Adaptive Management Plan locations (see Figure 2-3) and other locations above and downgradient of the incident area including:

- Two stations on Dublin Gulch
- One station on Eagle Creek, and
- Three stations on Haggart Creek.

2.2 FOLLOW-UP REMEDIAL MEASURES

Work continued on July 12, 2020 to mitigate the condition. Surveys were conducted to confirm the perimeter of the liner. Ground and overhead drone photos were taken and compared to construction period photos to establish

the critical components of the work zone (i.e., the liner perimeter, the liner base elevations, and the CV-023 foundation).

On July 13, 2020, using a surveyed line as a guide, an excavator was utilized to pull the crushed ore pile from the conveyor away from the edge of the lined HLF containment facility with the material cast to the north (fully within the HLF) and then loaded and trucked to another portion of the HLF for more even distribution. When the crushed ore pile had been excavated closer to the liner edge, a smaller excavator was utilized to prevent any damage to the liner.

By July 19, 2020, the edge of the HLF liner perimeter was exposed (see Photo 2-3 to 2-5) from the roadway to approximately 5 metres below the CV-023 tower supports. The excavation cannot move further until the stacker can be moved as part of the full grasshopper HLF move project (scheduled to commence within three weeks of the date of this report); otherwise the stacker would be undermined and unstable. More specifically, if the liner trench is excavated all the way up to the stacker elevation there will be insufficient material to establish a safe slope grade/area for workers to perform final clean on the liner in the trench. Also, in excavating the trench up to the stacker, the stability of the stacker would be compromised. Currently, there is sufficient containment to capture any leakage from the pile and convey it towards the In-heap Pond. Prior to the stacker and grasshopper move, the area will be continually monitored for seepage.



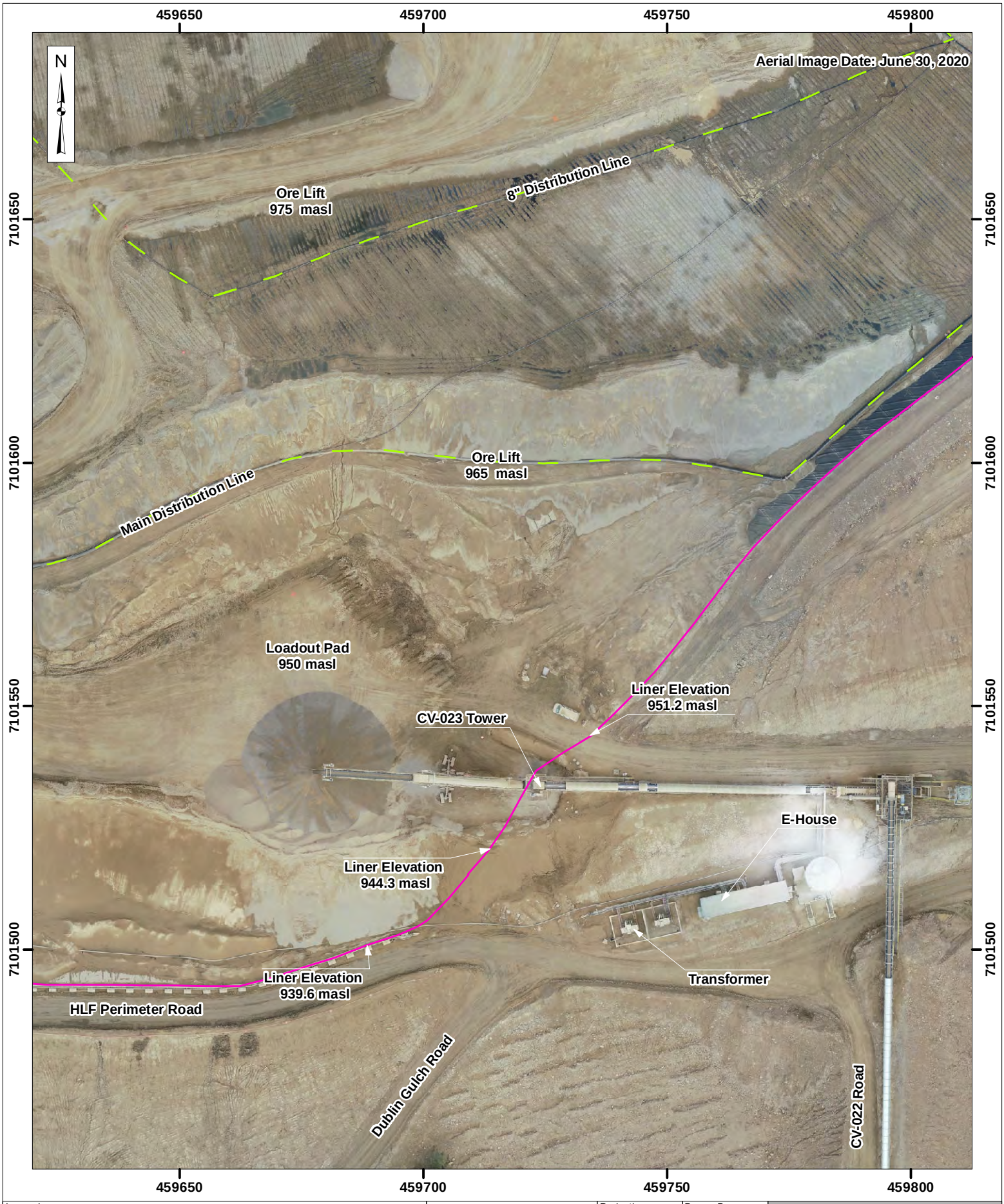
Photo 2-3: Excavation Area to Expose Eastern Edge Liner Perimeter Looking East- July 19, 2020



Photo 2-4: Extent of Excavated Trench (Along HLF Perimeter Road) Looking West - July 19, 2020



Photo 2-5: Extent of Remedial Measures to Pull Back Ore Stockpile Looking West - July 19, 2020



Legend:

- Liner Perimeter
- PLS Line

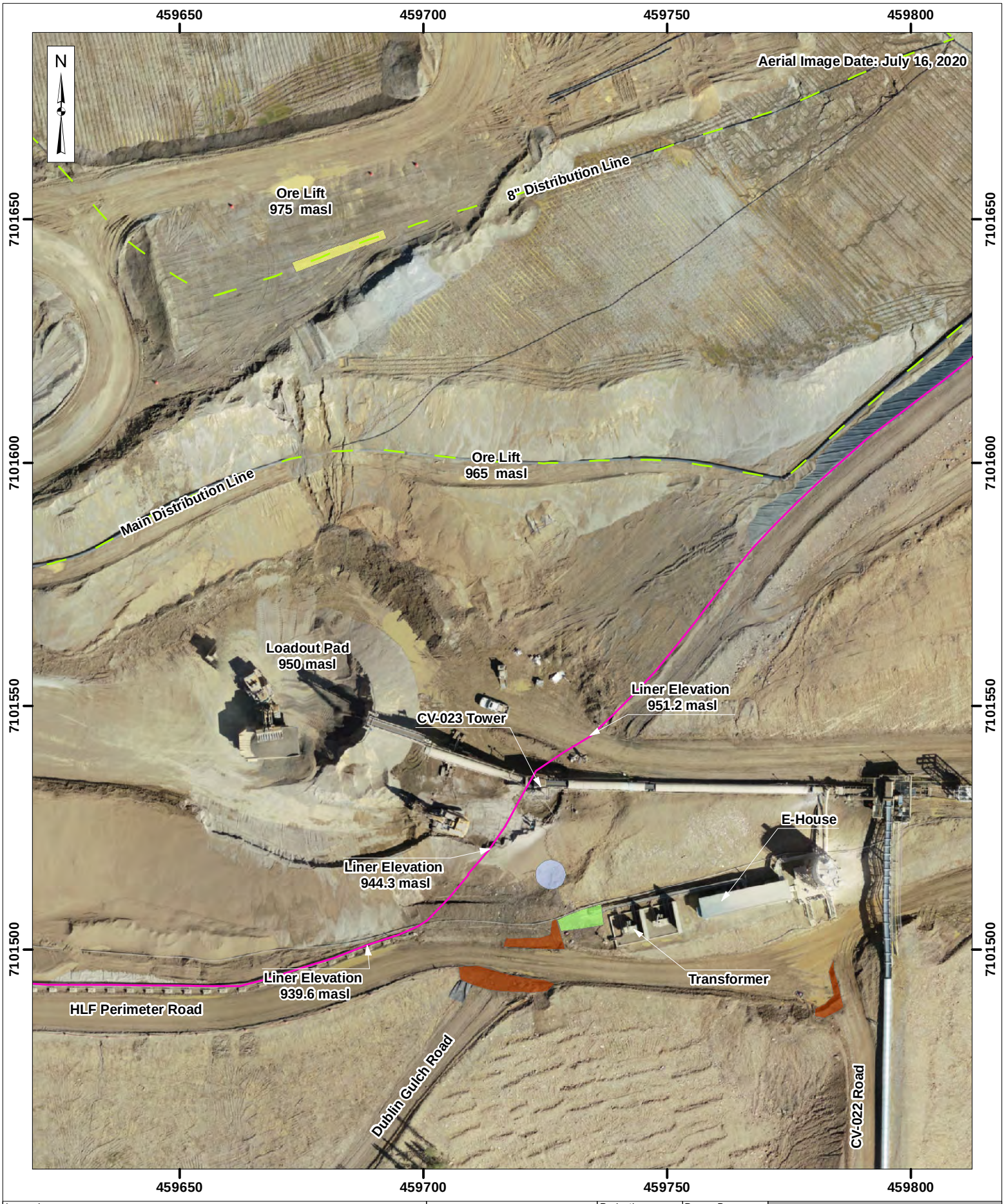
VICTORIA GOLD CORP

0 5 10 20
Metres

Projection:	Drawn By:
NAD 83 UTM Zone 8N	HC
Date:	Figure:
2020/07/22	2-1

EAGLE GOLD PROJECT
YUKON TERRITORY

Event Summary Map
Pre-Incident
June 30, 2020



Legend:

- Liner Perimeter
- PLS Line
- Seep Zone
- Containment Berm
- Spinlock Decoupling Area
- Pooling Area

VICTORIA GOLD CORP

0 5 10 20
Metres

Projection:	Drawn By:
NAD 83 UTM Zone 8N	HC
Date:	Figure:
2020/07/22	2-2

EAGLE GOLD PROJECT
YUKON TERRITORY

Event Summary Map
Post-Incident
July 16, 2020



Legend:

- Liner Perimeter
- Seep Zone
- Surface Water Sample
- Groundwater Sample
- Climate Station

VICTORIA GOLD CORP

0 150 300
Meters

Projection:	Drawn By:
NAD 83 UTM Zone 8N	HC
Date:	Figure:
2020/07/22	2-3

EAGLE GOLD PROJECT
YUKON TERRITORY

Monitoring Locations

3 RELEASE DETAILS

3.1 FLOW ESTIMATE

Flow from the seep was estimated using the bucket method as the flow was too low for any alternate accurate measurements. Two separate measurements were conducted. Each measurement was conducted by filling up a 1 liter wide-mouth bottle five times from the seep flow that was dribbling over rocks in the pile. The two measurements were conducted at 10:00 and 10:10 on July 11, 2020. The overall flow rate was approximated to be 10 liters/minute based on an average of the two measurements.

The seep is estimated to have begun around 01:30 (based on when the pool began to form on the loadout). The seep was fully contained and flowing back into the pad by 09:00 on the same day. Thus, the seep was flowing for 7.5 hours, which resulted in approximately 4.5 m^3 of diluted process solution leaving containment.

Photo 3-1 shows the seep around 07:00 July 11. Based on when the seep was first observed at 04:00 and when the seep flow was contained at 09:00, there was little variability observed in the rate of flow.



Photo 3-1: Seep Flow Looking North - July 11, 2020

3.2 SEEP SAMPLING

A sample was collected from the seep on the morning of July 11 at 08:17. Onsite analyses was performed on the sample for free cyanide using a silver nitrate test, which yielded a concentration of 175 ppm. External (off-site third party) analyses were also actioned with ALS Burnaby where a sample was analyzed for total cyanide, weak acid dissociable (WAD) cyanide, cyanate, and thiocyanate. Preliminary results yielded a concentration of 199 ppm total Cyanide.

Based on the quantity of solution released (4.5 m^3 or 4,500 kg) and a seep concentration of 195 g/kg yields a total of ~880 g of cyanide released outside of containment. Converting to NaCN (sodium cyanide) and assuming the molecular masses of NaCN and CN yields approximately 1.6 kg of NaCN in solution released outside of containment.

3.3 RECEIVING ENVIRONMENT MONITORING

3.3.1 Surface Water Quality Sampling

The receiving water body related to the Project is Haggart Creek. The Type A Water Use Licence (WUL), and VGC monitoring programs under the EMSAMP has established monitoring locations and water quality objectives on Haggart Creek. The following locations considered in the WUL and the EMSAMP as shown on Figure 2-3 were sampled on July 11:

- Upstream of the seep on Dublin Gulch at W1;
- On Haggart Creek upstream of Dublin Gulch at W22;
- Downstream on Dublin Gulch at W21;
- On Haggart Creek downstream of Dublin Gulch at W4; and,
- On Haggart Creek further downstream at W29.

In addition, water samples were collected at two additional sites:

- Downstream of the seep on Dublin Gulch at DG1 (referred to as HLFDG1 in the chain-of-custody and laboratory report)
- On Eagle Creek at W61 and upstream of the confluence with Dublin Gulch (referred to as HLFEP1).

There was no detection of total or WAD cyanide in surface water quality samples. The preliminary reports from ALS are provided as Appendix A.

3.3.2 Groundwater Quality Sampling

On July 13, water quality samples were taken from two groundwater wells immediately downgradient of the HLF (MW19 HLF-1b and MW10-AG6 as shown on Figure 2-3). There was no detection of Total or WAD cyanide in either groundwater quality sample. The preliminary report from ALS is provided as Appendix B.

3.3.3 Soil Sampling

On July 16, 2020, in order to determine if cyanide was present in the surrounding soils, soil samples were collected at three locations downgradient of the seep (in potential depositional areas) as shown in Figure 3-1. The samples were analyzed for the presence of total and WAD cyanide. Preliminary laboratory results indicate the presence of cyanide in one of the sampled locations; however, the concentration shown in the preliminary report for total cyanide is below all soil quality guidelines for free cyanide (which is consider in total cyanide results) provided in the Canadian Soil Quality Guidelines for the Protection of Environmental and Human Health (Canadian Council of Ministers of the Environment, 1999). The preliminary report from ALS is provided as Appendix C.

3.3.4 Acute Lethality Testing

In the absence of receipt of the laboratory results confirming that no process solution was detected in surface waters, VGC undertook sampling for acute lethality single concentration tests for 96 hr rainbow trout and 48 hr Daphnia magna in addition to full suite water chemistry on July 11, 2020 at W1, W21, W4, W22 and W29.

The results for acute toxicity tests are included in Appendix D. The results for these tests show that water quality in the receiving environment was not acutely lethal, (Table 3-4).

Table 3-1: Acute Lethality Testing Results

Sample Location on July 11, 2020	Percent survival in 100% (v/v) sample	
	Rainbow Trout	*Daphnia magna*
W21	100	100
W4	90	100
W1	100	100
W29	100	100
W22	100	100



Legend:

- Soil Sample Locations
- Liner Perimeter
- Seep Zone
- Containment Berm

VICTORIA GOLD CORP

0 15 30
Meters

Projection:	Drawn By:
NAD 83 UTM Zone 8N	HC
Date:	Figure:
2020/07/22	3-1

EAGLE GOLD PROJECT
YUKON TERRITORY

Soil Sample Locations

4 IMPORTANT ENVIRONMENTAL AND SITE FACTORS (ROOT CAUSES)

4.1 ROOT CAUSE

The primary root cause of the release was the stockpile of crushed ore material in the loadout area building up such that the pile went beyond liner containment. While active leaching does not occur on the ore discharge pile it created a potential flow path during rainfall events that have the potential to overwhelm the infiltration rate of the material.

Figure 4-1 provides a cross section which depicts the area of concern on July 17, and indicates that the stockpile had been pushed southward towards the HLF Perimeter Road, towards the E-House and passed the edge of the liner.

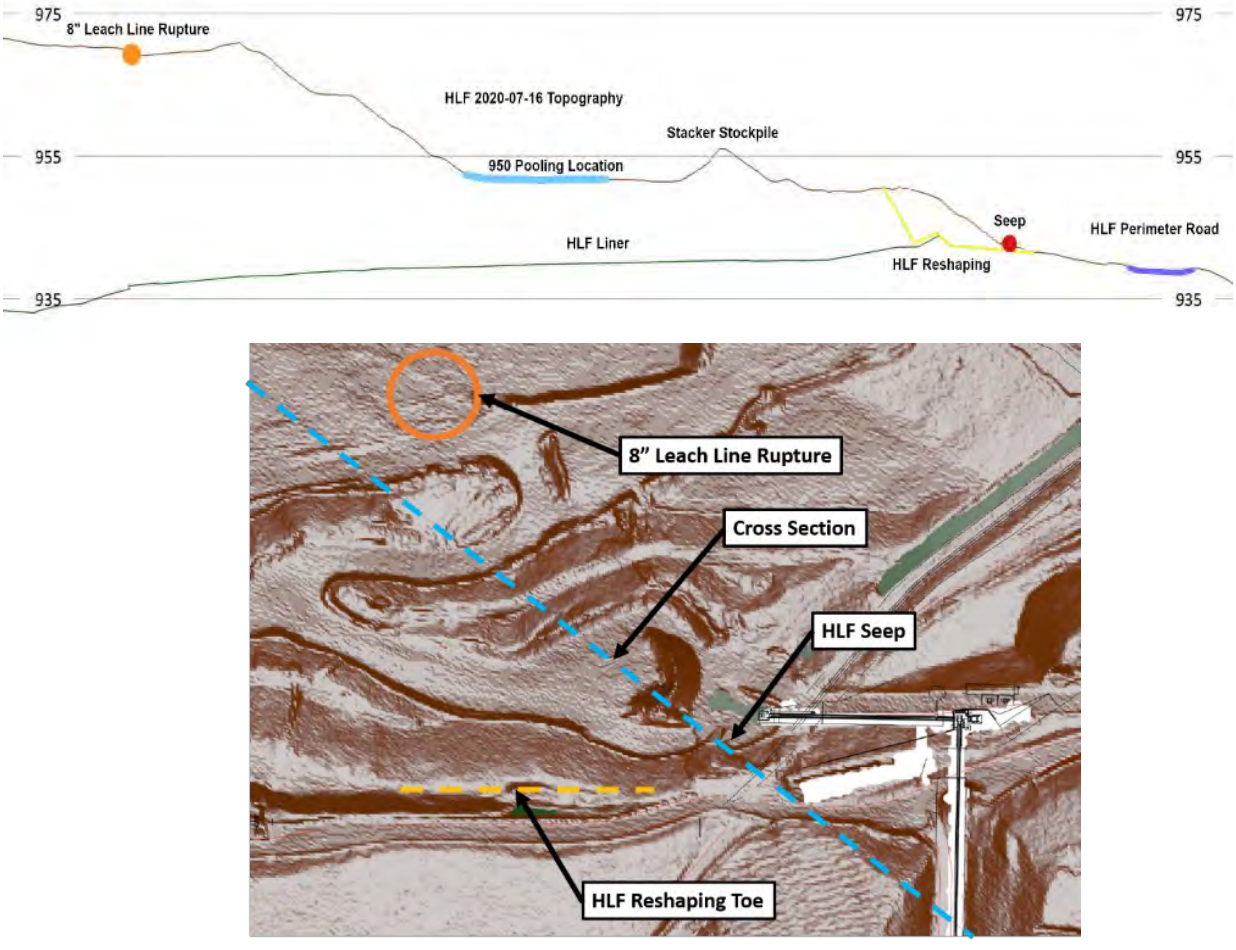


Figure 4-1: HLF South West Corner Cross Section and Plan View Map

Photo 4-1 depicts the location of liner with respect to the July 11 pile location, and illustrates the pile was extended beyond liner containment. The southern edge of the crushed ore pile from the conveyor discharge was pushed approximately 20 metres to south, where there was no lined ditch between the roadway and ore pile.

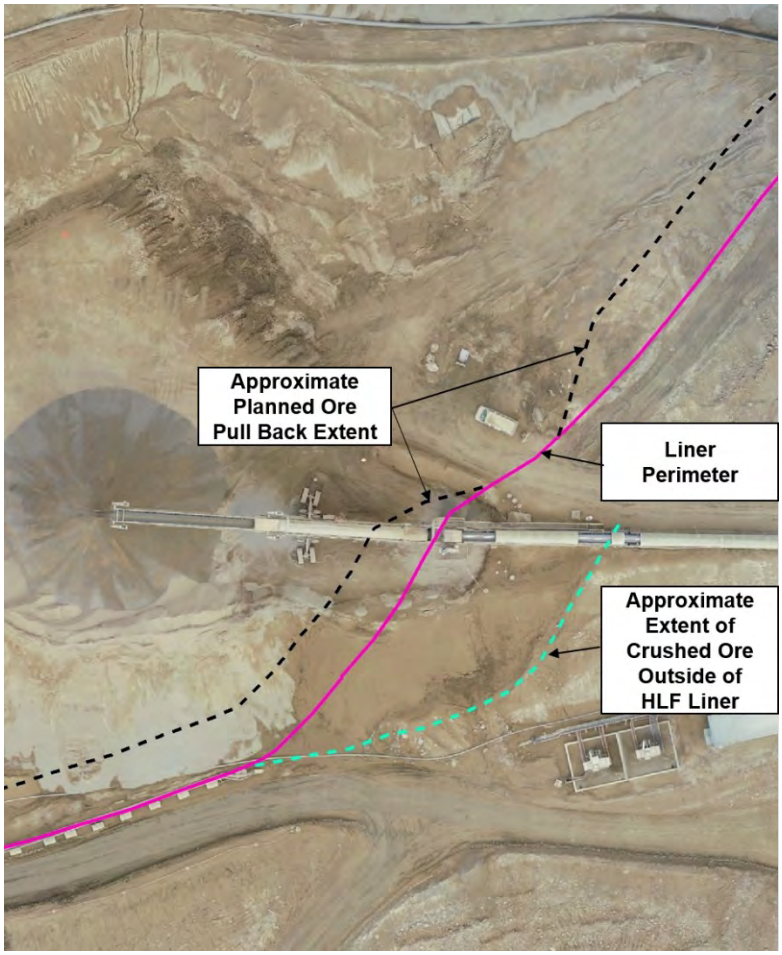


Photo 4-1: Crushed Ore Configuration Relative to HLF Liner - June 30, 2020

The ore pile extended southwards during winter operations in an effort to manage snow on the loadout area, and had not been pulled back fully after freshet. Although the loadout area is not in an active leaching zone, the volume of leakage from the damaged distribution line on the 975 lift and the heavy rainfall resulted in pooling water in a low spot on the 950 lift (shown north of the stockpile on the figure). A temporary berm was constructed to prevent the pool from flowing into the stockpile. While the depth of the pool grew behind the berm, the head in the pool first pushed water into the pad and vertically down to the liner and ultimately to the In-Heap Pond. However, the head also likely created a subsurface water mounding effect leading to sub-horizontal flow in all directions including to the south. As the volume of solution built up behind the liner edge, the solution began to leak over the liner berm wall following preferential pathways until eventual emergence at the seep location.

4.2 CONTRIBUTING FACTORS

A number of contributing environmental and site factors occurred that led to the incident. These included:

- Heavy rains from 23:00 to around 02:00 (~17.6 mm and ~7.2 mm/hr through peak intensity) resulting in additional water pooling on the 950 bench (Table 4-1). Further, substantial rain fell during the previous week that led to wet antecedent moisture conditions and low percolation rates. The Camp Climate Station has recorded ~91.3 mm of precipitation from July 3 to July 21 (Table 4-1) and, examining hourly data, recorded approximately ~43.5 mm of precipitation between 20:00 July 10 and 20:00 July 11, contributing to the onset of the incident. Comparison of Camp and Potato Hills hourly precipitation data supports that the Camp and HLF area received localized microbursts of severe precipitation leading up to and during the incident.

Table 4-1: Climate Station Rainfall Records

Date	Camp Station		Potato Hills	
	Daily Rainfall[1] (mm)	Cumulative Rainfall (mm)	Daily Rainfall[1] (mm)	Cumulative Rainfall (mm)
3-Jul-20	0.00	n/a	0.02	n/a
4-Jul-20	1.05	1.05	0.84	0.86
5-Jul-20	0.27	1.32	0.16	1.02
6-Jul-20	0.72	2.04	0.41	1.43
7-Jul-20	0.00	2.04	0.10	1.53
8-Jul-20	1.49	3.52	1.12	2.65
9-Jul-20	6.45	9.97	0.42	3.07
10-Jul-20	18.23	28.20	9.87	12.94
11-Jul-20	26.68	54.88	14.98	27.93
12-Jul-20	0.00	54.88	0.10	28.03
13-Jul-20	0.04	54.92	0.99	29.02
14-Jul-20	0.00	54.92	0.00	29.02
15-Jul-20	18.07	72.99	6.93	35.96
16-Jul-20	0.00	72.99	0.00	35.96
17-Jul-20	15.56	88.55	10.62	46.57
18-Jul-20	2.75	91.30	3.76	50.33
19-Jul-20	0.00	91.30	0.18	50.52

NOTES
1 - Daily rainfall values are calculated by Geonor Precipitation Gauge. Negative values have been replaced by "zeros". Negative values are reported by Geonor from interference with wind or vibrations.

- 28 spin locks were crushed during road and pad development and distribution line deployment on the 975 lift (Photo 4-2). While the leaked solution originated from the 8-inch distribution line, if the damage to the lines was recognized earlier, or if it occurred on a different location of the pad, the leak from containment likely would not have occurred.



Photo 4-2: Damaged Spin Locks Decoupled from 8" Distribution Line - July 12, 2020

- Extended periods of loadout area use resulted in layers of compacted ore and possibly snow lensing, resulting in lateral preferential pathways of infiltrating water.
- Pooling of loadout area (held behind berm). The berm was built to ~1.5 m high while the pool was at least 1.0 deep; this constant head boundary formed a groundwater mound which resulted in vertical and lateral migration (using preferential pathways) rather than primarily downward migration of solution (see Figure 4-1)

5 SPILL REPORTING

5.1 YUKON GOVERNMENT AND FNNND

On July 12, 2020, the day following the solution release, notification was provided to regulators and the FNNND of the release of HLF solution outside of primary containment. The following people and/or agencies were included in these notifications:

- Yukon Spill Reporting hotline
- Natural Resource Officer, Inspector Major Mines - Compliance Monitoring and Inspection, Department of Energy, Mines and Resources (EMR)
- Director - Minerals Resource Branch, EMR,
- Enforcement Officer - Enforcement Branch, Environment and Climate Change Canada (ECCC), and
- FNNND Lands and Resources Manager.

A copy of this report will be provided to all parties contacted during the preliminary event.

6 FINAL REMEDIATION MEASURES

To ensure that there is no recurrence of this issue, the ore stack discharge from the CV-023 conveyor will continue to be pulled back from the HLF lined footprint to negate the ability for a flow path to be formed. The extent of the push back is depicted in Photo 6-1. This work is currently ongoing. In the meantime, berms and trenches have been constructed to prevent the potential for a future release of process solution and rainwater outside of containment. A Standard Operating Procedure will be developed to ensure that potential ore stack creep is captured in routine surveillance of the HLF.

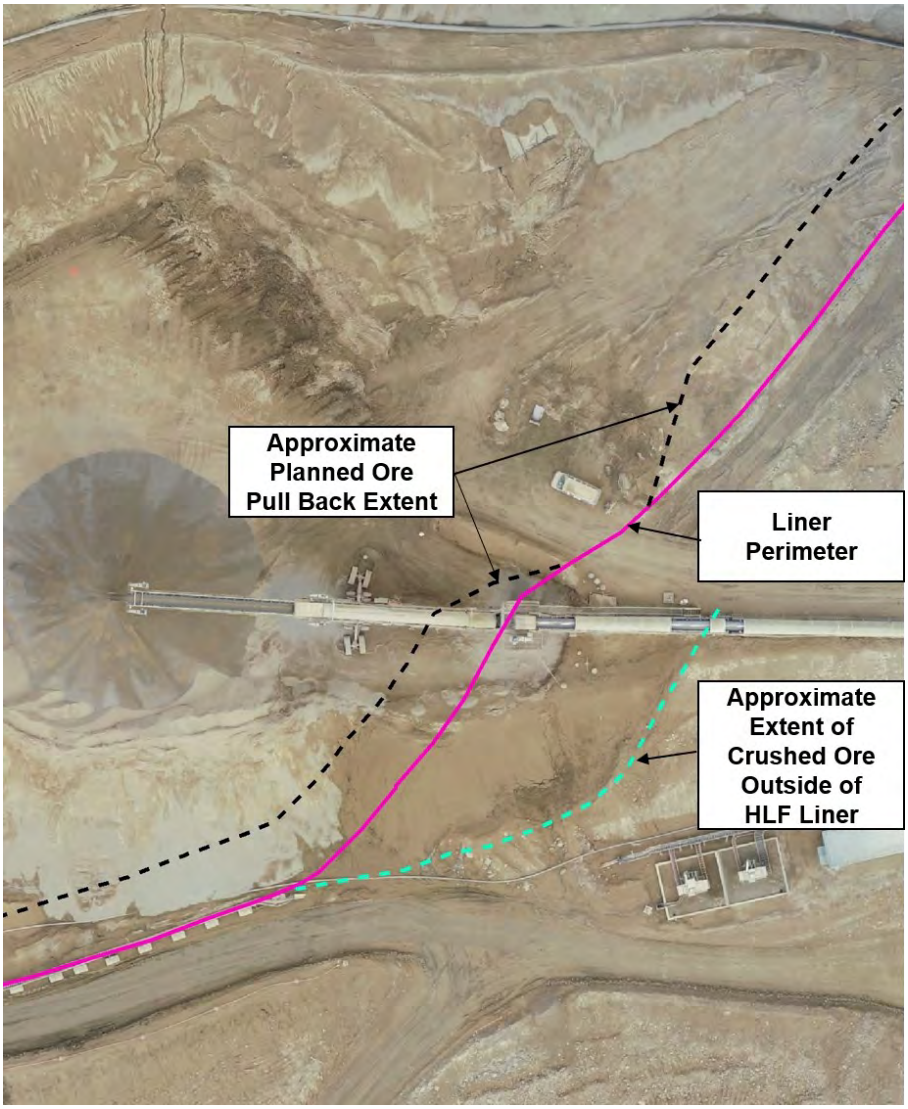


Photo 6-1: Approximate Ore Pull Back Extent Relative to Liner

APPENDIX A

External Laboratory Surface Water Quality Results

ALS Environmental

CERTIFICATE OF ANALYSIS

Work Order	: **VA20B0240**	Page	: 1 of 6
Amendment	: **(Preliminary Report)**		
Client	: **Victoria Gold (Yukon) Corp.**	Laboratory	: Vancouver - Environmental
Contact	: Bill Bowden	Account Manager	: Hilary Woods
Address	: Suite 1000 - 1050 W. Pender St Vancouver BC Canada V6E 3S7	Address	: 8081 Lougheed Highway Burnaby BC Canada V5A 1W9
Telephone	: 867.456.7700 ext. 6381	Telephone	: +1 604 253 4188
Project	: HLF DG-EP - Jul 11	Date Samples Received	: 13-Jul-2020 11:10
PO	: 15673	Date Analysis Commenced	: 13-Jul-2020
C-O-C number	: 20200711d	Issue Date	: 16-Jul-2020 11:26
Sampler	: KB/KT		
Site	: ----		
Quote number	: Q68199		
No. of samples received	: 2		
No. of samples analysed	: 2		

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QC Interpretive report to assist with Quality Review and Sample Receipt Notification (SRN).

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is conducted in accordance with US FDA 21 CFR Part 11.

Signatories	*Position*	*Laboratory Department*
Angelo Salandanan	Lab Assistant	Metals, Burnaby, British Columbia
Annabelle Prasad	Analyst	Metals, Burnaby, British Columbia
Bruna Botti	Analyst	Inorganics - Water Quality, Burnaby, British Columbia
Dee Lee	Analyst	Metals, Burnaby, British Columbia
Jon Fisher	Department Manager - Inorganics	Inorganics, Waterloo, Ontario
Kevin Duarte	Team Leader - Inorganics	Inorganics - Water Quality, Burnaby, British Columbia
Lindsay Gung	Supervisor - Water Chemistry	Inorganics - Water Quality, Burnaby, British Columbia
Muneeb Alam	Analyst	Metals, Burnaby, British Columbia
Owen Cheng		Metals, Burnaby, British Columbia
Robin Weeks	Team Leader - Metals	Metals, Burnaby, British Columbia
Tracy Harley	Supervisor - Water Quality Instrumentation	Inorganics - Water Quality, Burnaby, British Columbia

General Comments

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Refer to the ALS Quality Control Interpretive report (QCI) for applicable references and methodology summaries. Reference methods may incorporate modifications to improve performance.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

Please refer to Quality Control Interpretive report (QCI) for information regarding Holding Time compliance.

Key : CAS Number: Chemical Abstracts Services number is a unique identifier assigned to discrete substances
LOR: Limit of Reporting (detection limit).

Unit	*Description*
-	No Unit
%	percent
µS/cm	Microsiemens per centimetre
meq/L	milliequivalents per litre
mg/L	milligrams per litre
NTU	nephelometric turbidity units
pH units	pH units

<: less than.

>: greater than.

Surrogate: An analyte that is similar in behavior to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.

Test results reported relate only to the samples as received by the laboratory.

UNLESS OTHERWISE STATED on SRN or QCI Report, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

Analytical results in reports identified as "Preliminary Report" are considered authorized for use.

Sample Comments

Sample	Client Id	*Comment*
VA20B0240-001	HLFDG1	Sample HLFDG1: Water sample(s) for dissolved mercury analysis was not submitted in glass or PTFE container with HCl preservative. Results may be biased low.

Qualifiers

Qualifier	*Description*
DLM	*Detection Limit Adjusted due to sample matrix effects (e.g. chemical interference, colour, turbidity).*
RRV	*Reported result verified by repeat analysis.*

Analytical Results

Sub-Matrix: **Water**
(Matrix: **Water**)

Analyte	CAS Number	Method	LOR	Unit	Client sample ID	HLFDG1	HLFEP1	----	----	----
					Client sampling date / time	11-Jul-2020 09:00	11-Jul-2020 10:00	----	----	----
						VA20B0240-001	VA20B0240-002	--------	--------	--------
						Result	Result	----	----	----
Physical Tests										
alkalinity, total (as CaCO3)	----	E290	1.0	mg/L		39.6	155	----	----	----
conductivity	----	E100	2.0	µS/cm		105	372	----	----	----
hardness (as CaCO3), dissolved	----	EC100	0.60	mg/L		47.1	197	----	----	----
hardness (as CaCO3), from total Ca/Mg	----	EC100A	0.60	mg/L		56.3	189	----	----	----
pH	----	E108	0.10	pH units		7.55	8.21	----	----	----
solids, total dissolved [TDS], calculated	----	EC103	1.0	mg/L		72.6	225	----	----	----
solids, total suspended [TSS]	----	E160-H	3.0	mg/L		223	22.0	----	----	----
turbidity	----	E121	0.10	NTU		183	23.7	----	----	----
Anions and Nutrients										
ammonia, total (as N)	7664-41-7	E298	0.0050	mg/L		<0.0050	<0.0050	----	----	----
bromide	24959-67-9	E235.Br-L	0.050	mg/L		<0.050	<0.050	----	----	----
chloride	16887-00-6	E235.Cl	0.50	mg/L		<0.50	0.54	----	----	----
cyanate	88402-73-7	E343	0.20	mg/L		<0.20	<0.20	----	----	----
fluoride	16984-48-8	E235.F	0.020	mg/L		0.086	0.177	----	----	----
Kjeldahl nitrogen, total [TKN]	----	E318	0.050	mg/L		0.356	0.213	----	----	----
nitrate (as N)	14797-55-8	E235.NO3-L	0.0050	mg/L		0.0450	0.215	----	----	----
nitrite (as N)	14797-65-0	E235.NO2-L	0.0010	mg/L		<0.0010	<0.0010	----	----	----
nitrogen, total	7727-37-9	E366	0.030	mg/L		0.292 RRV	0.370	----	----	----
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0010	mg/L		0.0035	0.0017	----	----	----
phosphorus, total	7723-14-0	E372-U	0.0020	mg/L		0.155	0.0296	----	----	----
phosphorus, total dissolved	7723-14-0	E375-T	0.0020	mg/L		0.0056	0.0061	----	----	----
sulfate (as SO4)	14808-79-8	E235.SO4	0.30	mg/L		12.1	45.7	----	----	----
Cyanides										
cyanide, total	----	E333	0.0050	mg/L		<0.0050	<0.0050	----	----	----
cyanide, weak acid dissociable	----	E336	0.0050	mg/L		<0.0050	<0.0050	----	----	----
thiocyanate	302-04-5	E344	0.50	mg/L		<0.50	<0.50	----	----	----
Organic / Inorganic Carbon										
carbon, dissolved organic [DOC]	----	E358-L	0.50	mg/L		3.89	3.54	----	----	----
carbon, total organic [TOC]	----	E355-L	0.50	mg/L		6.42	4.84	----	----	----
Ion Balance										
anion sum	----	EC101	0.10	meq/L		1.05	4.09	----	----	----

Analytical Results

Sub-Matrix: **Water**
(Matrix: **Water**)

Analyte	CAS Number	Method	LOR	Unit	Client sample ID	HLFDG1	HLFEP1	----	----	----
					Client sampling date / time	11-Jul-2020 09:00	11-Jul-2020 10:00	----	----	----
						VA20B0240-001	VA20B0240-002	--------	--------	--------
						Result	Result	----	----	----
Ion Balance										
cation sum	----	EC101	0.10	meq/L		1.04	4.10	----	----	----
ion balance (cation-anion difference)	----	EC101	0.010	%		0.478	0.122	----	----	----
Total Metals										
aluminum, total	7429-90-5	E420	0.0030	mg/L		5.00	1.05	----	----	----
antimony, total	7440-36-0	E420	0.00010	mg/L		0.00210	0.00323	----	----	----
arsenic, total	7440-38-2	E420	0.00010	mg/L		0.0763	0.0978	----	----	----
barium, total	7440-39-3	E420	0.00010	mg/L		0.128	0.0807	----	----	----
beryllium, total	7440-41-7	E420	0.000020	mg/L		0.000318	0.000064	----	----	----
bismuth, total	7440-69-9	E420	0.000050	mg/L		0.000205	0.000108	----	----	----
boron, total	7440-42-8	E420	0.010	mg/L		<0.010	<0.010	----	----	----
cadmium, total	7440-43-9	E420	0.0000050	mg/L		0.0000650	0.0000369	----	----	----
calcium, total	7440-70-2	E420	0.050	mg/L		13.8	38.9	----	----	----
chromium, total	7440-47-3	E420.Cr-L	0.00010	mg/L		0.00834	0.00138	----	----	----
cobalt, total	7440-48-4	E420	0.00010	mg/L		0.00329	0.00068	----	----	----
copper, total	7440-50-8	E420	0.00050	mg/L		0.0108	0.00271	----	----	----
iron, total	7439-89-6	E420	0.010	mg/L		8.83	1.53	----	----	----
lead, total	7439-92-1	E420	0.000050	mg/L		0.00591	0.00251	----	----	----
lithium, total	7439-93-2	E420	0.0010	mg/L		0.0080	0.0111	----	----	----
magnesium, total	7439-95-4	E420	0.100	mg/L		5.29	22.4	----	----	----
manganese, total	7439-96-5	E420	0.00010	mg/L		0.117	0.0491	----	----	----
mercury, total	7439-97-6	E508	0.0000050	mg/L		0.0000139 DLM	<0.0000050	----	----	----
molybdenum, total	7439-98-7	E420	0.000050	mg/L		0.00184	0.00137	----	----	----
nickel, total	7440-02-0	E420	0.00050	mg/L		0.00793	0.00219	----	----	----
phosphorus, total	7723-14-0	E420	0.050	mg/L		0.153	<0.050	----	----	----
potassium, total	7440-09-7	E420	0.100	mg/L		1.61	1.80	----	----	----
selenium, total	7782-49-2	E420	0.000050	mg/L		0.000220	0.000585	----	----	----
silicon, total	7440-21-3	E420	0.10	mg/L		11.7	6.25	----	----	----
silver, total	7440-22-4	E420	0.000010	mg/L		0.000064	0.000022	----	----	----
sodium, total	7440-23-5	E420	0.050	mg/L		1.61	2.87	----	----	----
strontium, total	7440-24-6	E420	0.00020	mg/L		0.0901	0.345	----	----	----
sulfur, total	7704-34-9	E420	0.50	mg/L		4.01	15.5	----	----	----
thallium, total	7440-28-0	E420	0.000010	mg/L		0.000136	0.000022	----	----	----

Analytical Results

Sub-Matrix: **Water**
(Matrix: **Water**)

Analyte	CAS Number	Method	LOR	Unit	Client sample ID	HLFDG1	HLFEP1	----	----	----
					Client sampling date / time	11-Jul-2020 09:00	11-Jul-2020 10:00	----	----	----
						VA20B0240-001	VA20B0240-002	--------	--------	--------
						Result	Result	----	----	----
Total Metals										
tin, total	7440-31-5	E420	0.00010	mg/L		0.00013	<0.00010	----	----	----
titanium, total	7440-32-6	E420	0.00030	mg/L		0.225	0.0479	----	----	----
uranium, total	7440-61-1	E420	0.000010	mg/L		0.00136	0.0107	----	----	----
vanadium, total	7440-62-2	E420	0.00050	mg/L		0.0117	0.00208	----	----	----
zinc, total	7440-66-6	E420	0.0030	mg/L		0.0216	0.0076	----	----	----
zirconium, total	7440-67-7	E420	0.00030	mg/L		0.00037	0.00069	----	----	----
Dissolved Metals										
aluminum, dissolved	7429-90-5	E421	0.0010	mg/L		0.0733	0.0158	----	----	----
antimony, dissolved	7440-36-0	E421	0.00010	mg/L		0.00097	0.00248	----	----	----
arsenic, dissolved	7440-38-2	E421	0.00010	mg/L		0.0262	0.0656	----	----	----
barium, dissolved	7440-39-3	E421	0.00010	mg/L		0.0397	0.0684	----	----	----
beryllium, dissolved	7440-41-7	E421	0.000020	mg/L		<0.000020	<0.000020	----	----	----
bismuth, dissolved	7440-69-9	E421	0.000050	mg/L		<0.000050	<0.000050	----	----	----
boron, dissolved	7440-42-8	E421	0.010	mg/L		<0.010	<0.010	----	----	----
cadmium, dissolved	7440-43-9	E421	0.0000050	mg/L		0.0000052	0.0000151	----	----	----
calcium, dissolved	7440-70-2	E421	0.050	mg/L		12.7	40.4	----	----	----
chromium, dissolved	7440-47-3	E421.Cr-L	0.00010	mg/L		0.00013	<0.00010	----	----	----
cobalt, dissolved	7440-48-4	E421	0.00010	mg/L		0.00017	0.00014	----	----	----
copper, dissolved	7440-50-8	E421	0.00020	mg/L		0.00073	0.00111	----	----	----
iron, dissolved	7439-89-6	E421	0.010	mg/L		0.107	0.082	----	----	----
lead, dissolved	7439-92-1	E421	0.000050	mg/L		0.000057	0.000082	----	----	----
lithium, dissolved	7439-93-2	E421	0.0010	mg/L		0.0017	0.0102	----	----	----
magnesium, dissolved	7439-95-4	E421	0.100	mg/L		3.72	23.2	----	----	----
manganese, dissolved	7439-96-5	E421	0.00010	mg/L		0.0137	0.0307	----	----	----
mercury, dissolved	7439-97-6	E509	0.0000050	mg/L		<0.0000050	<0.0000050	----	----	----
molybdenum, dissolved	7439-98-7	E421	0.000050	mg/L		0.00196	0.00133	----	----	----
nickel, dissolved	7440-02-0	E421	0.00050	mg/L		0.00054	0.00076	----	----	----
phosphorus, dissolved	7723-14-0	E421	0.050	mg/L		<0.050	<0.050	----	----	----
potassium, dissolved	7440-09-7	E421	0.100	mg/L		0.650	1.53	----	----	----
selenium, dissolved	7782-49-2	E421	0.000050	mg/L		0.000160	0.000685	----	----	----
silicon, dissolved	7440-21-3	E421	0.050	mg/L		5.07	4.81	----	----	----
silver, dissolved	7440-22-4	E421	0.000010	mg/L		<0.000010	<0.000010	----	----	----

Analytical Results

Sub-Matrix: **Water**
(Matrix: **Water**)

Analyte	CAS Number	Method	LOR	Unit	Client sample ID	HLFDG1	HLFEP1	----	----	----
					Client sampling date / time	11-Jul-2020 09:00	11-Jul-2020 10:00	----	----	----
						VA20B0240-001	VA20B0240-002	--------	--------	--------
						Result	Result	----	----	----
Dissolved Metals										
sodium, dissolved	7440-23-5	E421	0.050	mg/L		1.52	2.88	----	----	----
strontium, dissolved	7440-24-6	E421	0.00020	mg/L		0.0808	0.343	----	----	----
sulfur, dissolved	7704-34-9	E421	0.50	mg/L		3.94	15.0	----	----	----
thallium, dissolved	7440-28-0	E421	0.000010	mg/L		<0.000010	<0.000010	----	----	----
tin, dissolved	7440-31-5	E421	0.00010	mg/L		<0.00010	<0.00010	----	----	----
titanium, dissolved	7440-32-6	E421	0.00030	mg/L		0.00270	<0.00030	----	----	----
uranium, dissolved	7440-61-1	E421	0.000010	mg/L		0.000510	0.0106	----	----	----
vanadium, dissolved	7440-62-2	E421	0.00050	mg/L		<0.00050	<0.00050	----	----	----
zinc, dissolved	7440-66-6	E421	0.0010	mg/L		<0.0010	0.0018	----	----	----
zirconium, dissolved	7440-67-7	E421	0.00030	mg/L		<0.00030	<0.00030	----	----	----
dissolved mercury filtration location	----	EP509	-	-		Laboratory	Field	----	----	----
dissolved metals filtration location	----	EP421	-	-		Laboratory	Field	----	----	----

Please refer to the General Comments section for an explanation of any qualifiers detected.

ALS Environmental

CERTIFICATE OF ANALYSIS

Work Order	: **VA20B0234**	Page	: 1 of 6
Amendment	: **(Preliminary Report)**		
Client	: **Victoria Gold (Yukon) Corp.**	Laboratory	: Vancouver - Environmental
Contact	: Bill Bowden	Account Manager	: Hilary Woods
Address	: Suite 1000 - 1050 W. Pender St Vancouver BC Canada V6E 3S7	Address	: 8081 Lougheed Highway Burnaby BC Canada V5A 1W9
Telephone	: 867.456.7700 ext. 6381	Telephone	: +1 604 253 4188
Project	: HLF Dublin Haggart - Jul 11	Date Samples Received	: 13-Jul-2020 11:10
PO	: 15673	Date Analysis Commenced	: 13-Jul-2020
C-O-C number	: 20200711e	Issue Date	: 20-Jul-2020 10:46
Sampler	: KB/KT		
Site	: ----		
Quote number	: Q68199		
No. of samples received	: 5		
No. of samples analysed	: 5		

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QC Interpretive report to assist with Quality Review and Sample Receipt Notification (SRN).

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is conducted in accordance with US FDA 21 CFR Part 11.

Signatories	*Position*	*Laboratory Department*
Angelo Salandanan	Lab Assistant	Metals, Burnaby, British Columbia
Annabelle Prasad	Analyst	Metals, Burnaby, British Columbia
Bruna Botti	Analyst	Inorganics - Water Quality, Burnaby, British Columbia
Dee Lee	Analyst	Metals, Burnaby, British Columbia
Jon Fisher	Department Manager - Inorganics	Inorganics, Waterloo, Ontario
Kevin Duarte	Team Leader - Inorganics	Inorganics - Water Quality, Burnaby, British Columbia
Lindsay Gung	Supervisor - Water Chemistry	Inorganics - Water Quality, Burnaby, British Columbia
Muneeb Alam	Analyst	Metals, Burnaby, British Columbia
Owen Cheng		Metals, Burnaby, British Columbia
Robin Weeks	Team Leader - Metals	Inorganics - Water Quality, Burnaby, British Columbia
Robin Weeks	Team Leader - Metals	Metals, Burnaby, British Columbia

General Comments

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Refer to the ALS Quality Control Interpretive report (QCI) for applicable references and methodology summaries. Reference methods may incorporate modifications to improve performance.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

Please refer to Quality Control Interpretive report (QCI) for information regarding Holding Time compliance.

Key : CAS Number: Chemical Abstracts Services number is a unique identifier assigned to discrete substances
LOR: Limit of Reporting (detection limit).

Unit	*Description*
-	No Unit
%	percent
µS/cm	Microsiemens per centimetre
meq/L	milliequivalents per litre
mg/L	milligrams per litre
NTU	nephelometric turbidity units
pH units	pH units

<: less than.

>: greater than.

Surrogate: An analyte that is similar in behavior to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.

Test results reported relate only to the samples as received by the laboratory.

UNLESS OTHERWISE STATED on SRN or QCI Report, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

Analytical results in reports identified as "Preliminary Report" are considered authorized for use.

Sample Comments

Sample	Client Id	*Comment*
VA20B0234-001	W4	Sample(s) W4, W21, W29 and W22: Water sample(s) for dissolved mercury analysis was not submitted in glass or PTFE container with HCl preservative. Results may be biased low.

Qualifiers

Qualifier	*Description*
DTC	*Dissolved concentration exceeds total. Results were confirmed by re-analysis.*

Analytical Results

Sub-Matrix: **Water**
(Matrix: **Water**)

Analyte	CAS Number	Method	LOR	Unit	Client sample ID	W4	W21	W1	W29	W22
					Client sampling date / time	11-Jul-2020 11:20	11-Jul-2020 11:40	11-Jul-2020 14:00	11-Jul-2020 14:40	11-Jul-2020 15:00
						VA20B0234-001	VA20B0234-002	VA20B0234-003	VA20B0234-004	VA20B0234-005
						Result	Result	Result	Result	Result
Physical Tests										
alkalinity, total (as CaCO3)	----	E290	1.0	mg/L		50.2	51.0	30.2	57.1	53.2
conductivity	----	E100	2.0	µS/cm		191	142	82.0	204	195
hardness (as CaCO3), dissolved	----	EC100	0.60	mg/L		88.0	63.6	35.5	94.7	91.1
hardness (as CaCO3), from total Ca/Mg	----	EC100A	0.60	mg/L		89.8	72.1	37.3	97.6	95.3
pH	----	E108	0.10	pH units		7.68	7.74	7.65	7.84	7.77
solids, total dissolved [TDS], calculated	----	EC103	1.0	mg/L		120	90.6	60.5	129	125
solids, total suspended [TSS]	----	E160-H	3.0	mg/L		95.6	181	21.0	53.4	50.4
turbidity	----	E121	0.10	NTU		81.9	196	1.87	26.8	27.0
Anions and Nutrients										
ammonia, total (as N)	7664-41-7	E298	0.0050	mg/L		0.0051	0.0070	<0.0050	0.0811	0.0122
bromide	24959-67-9	E235.Br-L	0.050	mg/L		<0.050	<0.050	<0.050	<0.050	<0.050
chloride	16887-00-6	E235.Cl	0.50	mg/L		1.21	0.55	<0.50	<0.50	<0.50
cyanate	88402-73-7	E343	0.20	mg/L		<0.20	<0.20	<0.20	<0.20	<0.20
fluoride	16984-48-8	E235.F	0.020	mg/L		0.087	0.096	0.080	0.093	0.088
Kjeldahl nitrogen, total [TKN]	----	E318	0.050	mg/L		0.315	0.347	0.094	0.314	0.360
nitrate (as N)	14797-55-8	E235.NO3-L	0.0050	mg/L		0.0573	0.0522	0.0204	0.0490	0.0520
nitrite (as N)	14797-65-0	E235.NO2-L	0.0010	mg/L		<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
nitrogen, total	7727-37-9	E366	0.030	mg/L		0.350	0.292	0.107	0.353	0.306
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0010	mg/L		0.0010	0.0038	0.0015	<0.0010	<0.0010
phosphorus, total	7723-14-0	E372-U	0.0020	mg/L		0.0725	0.141	0.0134	0.0284	0.0305
phosphorus, total dissolved	7723-14-0	E375-T	0.0020	mg/L		0.0042	0.0065	0.0027	0.0033	0.0035
sulfate (as SO4)	14808-79-8	E235.SO4	0.30	mg/L		37.9	17.5	9.26	41.9	41.1
Cyanides										
cyanide, total	----	E333	0.0050	mg/L		<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
cyanide, weak acid dissociable	----	E336	0.0050	mg/L		<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
thiocyanate	302-04-5	E344	0.50	mg/L		0.94	<0.50	<0.50	<0.50	<0.50
Organic / Inorganic Carbon										
carbon, dissolved organic [DOC]	----	E358-L	0.50	mg/L		8.21	3.68	2.90	8.27	9.16
carbon, total organic [TOC]	----	E355-L	0.50	mg/L		10.0	6.44	3.36	9.06	9.60
Ion Balance										
anion sum	----	EC101	0.10	meq/L		1.84	1.41	0.80	2.03	1.93

Analytical Results

Sub-Matrix: **Water**
(Matrix: **Water**)

Analyte	CAS Number	Method	LOR	Unit	Client sample ID	W4	W21	W1	W29	W22
					Client sampling date / time	11-Jul-2020 11:20	11-Jul-2020 11:40	11-Jul-2020 14:00	11-Jul-2020 14:40	11-Jul-2020 15:00
						VA20B0234-001	VA20B0234-002	VA20B0234-003	VA20B0234-004	VA20B0234-005
						Result	Result	Result	Result	Result
Ion Balance										
cation sum	----	EC101	0.10	meq/L		1.85	1.38	0.80	1.98	1.90
ion balance (cation-anion difference)	----	EC101	0.010	%		0.271	1.08	<0.010	1.25	0.783
Total Metals										
aluminum, total	7429-90-5	E420	0.0030	mg/L		2.06	5.32	0.472	0.805	0.818
antimony, total	7440-36-0	E420	0.00010	mg/L		0.00245	0.00398	0.00132	0.00077	0.00052
arsenic, total	7440-38-2	E420	0.00010	mg/L		0.0448	0.117	0.0456	0.0114	0.00638
barium, total	7440-39-3	E420	0.00010	mg/L		0.0642	0.136	0.0444	0.0459	0.0451
beryllium, total	7440-41-7	E420	0.000020	mg/L		0.000130	0.000347	0.000034	0.000048	0.000047
bismuth, total	7440-69-9	E420	0.000050	mg/L		0.000421	0.000895	<0.000050	0.000059	<0.000050
boron, total	7440-42-8	E420	0.010	mg/L		<0.010	<0.010	<0.010	<0.010	<0.010
cadmium, total	7440-43-9	E420	0.0000050	mg/L		0.0000884	0.0000868	0.0000170	0.0000437	0.0000458
calcium, total	7440-70-2	E420	0.050	mg/L		23.0	16.8	11.3	24.9	24.4
chromium, total	7440-47-3	E420.Cr-L	0.00010	mg/L		0.00362	0.00895	0.00078	0.00137	0.00135
cobalt, total	7440-48-4	E420	0.00010	mg/L		0.00199	0.00377	0.00029	0.00083	0.00085
copper, total	7440-50-8	E420	0.00050	mg/L		0.00677	0.0130	0.00087	0.00319	0.00325
iron, total	7439-89-6	E420	0.010	mg/L		4.36	9.89	0.598	1.62	1.65
lead, total	7439-92-1	E420	0.000050	mg/L		0.00789	0.00961	0.000864	0.00214	0.00187
lithium, total	7439-93-2	E420	0.0010	mg/L		0.0065	0.0093	0.0021	0.0050	0.0050
magnesium, total	7439-95-4	E420	0.100	mg/L		7.86	7.30	2.21	8.60	8.37
manganese, total	7439-96-5	E420	0.00010	mg/L		0.0969	0.138	0.0182	0.0557	0.0573
mercury, total	7439-97-6	E508	0.0000050	mg/L		0.0000139	0.0000168	<0.0000050	0.0000079	0.0000086
molybdenum, total	7439-98-7	E420	0.000050	mg/L		0.000563	0.00174	0.00200	0.000302	0.000090
nickel, total	7440-02-0	E420	0.00050	mg/L		0.00561	0.00945	0.00091	0.00305	0.00332
phosphorus, total	7723-14-0	E420	0.050	mg/L		0.055	0.165	<0.050	<0.050	<0.050
potassium, total	7440-09-7	E420	0.100	mg/L		1.35	2.04	0.685	0.831	0.765
selenium, total	7782-49-2	E420	0.000050	mg/L		0.000242	0.000298	0.000117	0.000158	0.000168
silicon, total	7440-21-3	E420	0.10	mg/L		5.96	12.2	6.38	4.40	4.16
silver, total	7440-22-4	E420	0.000010	mg/L		0.000075	0.000117	0.000010	0.000027	0.000024
sodium, total	7440-23-5	E420	0.050	mg/L		1.51	2.59	1.58	1.30	1.17
strontium, total	7440-24-6	E420	0.00020	mg/L		0.120	0.116	0.0719	0.130	0.125
sulfur, total	7704-34-9	E420	0.50	mg/L		12.8	5.89	3.33	14.7	14.4
thallium, total	7440-28-0	E420	0.000010	mg/L		0.000059	0.000154	0.000011	0.000022	0.000020

Analytical Results

Sub-Matrix: **Water**
(Matrix: **Water**)

Analyte	CAS Number	Method	LOR	Unit	Client sample ID	W4	W21	W1	W29	W22
					Client sampling date / time	11-Jul-2020 11:20	11-Jul-2020 11:40	11-Jul-2020 14:00	11-Jul-2020 14:40	11-Jul-2020 15:00
						VA20B0234-001	VA20B0234-002	VA20B0234-003	VA20B0234-004	VA20B0234-005
						Result	Result	Result	Result	Result
Total Metals										
tin, total	7440-31-5	E420	0.00010	mg/L		<0.00010	0.00015	<0.00010	<0.00010	<0.00010
titanium, total	7440-32-6	E420	0.00030	mg/L		0.0766	0.226	0.0240	0.0240	0.0220
uranium, total	7440-61-1	E420	0.000010	mg/L		0.000802	0.00212	0.000556	0.000740	0.000519
vanadium, total	7440-62-2	E420	0.00050	mg/L		0.00450	0.0124	0.00117	0.00180	0.00184
zinc, total	7440-66-6	E420	0.0030	mg/L		0.0163	0.0291	0.0035	0.0082	0.0072
zirconium, total	7440-67-7	E420	0.00030	mg/L		0.00046	0.00042	<0.00030	0.00034	0.00041
Dissolved Metals										
aluminum, dissolved	7429-90-5	E421	0.0010	mg/L		0.0513	0.0589	0.0287	0.0553	0.0596
antimony, dissolved	7440-36-0	E421	0.00010	mg/L		0.00050	0.00122	0.00102	0.00046	0.00027
arsenic, dissolved	7440-38-2	E421	0.00010	mg/L		0.00537	0.0294	0.0366	0.00464	0.00098
barium, dissolved	7440-39-3	E421	0.00010	mg/L		0.0334	0.0408	0.0338	0.0354	0.0326
beryllium, dissolved	7440-41-7	E421	0.000020	mg/L		<0.000020	<0.000020	<0.000020	<0.000020	<0.000020
bismuth, dissolved	7440-69-9	E421	0.000050	mg/L		<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
boron, dissolved	7440-42-8	E421	0.010	mg/L		<0.010	<0.010	<0.010	<0.010	<0.010
cadmium, dissolved	7440-43-9	E421	0.0000050	mg/L		0.0000161	0.0000066	0.0000064	0.0000160	0.0000181
calcium, dissolved	7440-70-2	E421	0.050	mg/L		22.9	16.2	10.8	24.1	23.7
chromium, dissolved	7440-47-3	E421.Cr-L	0.00010	mg/L		0.00016	0.00011	<0.00010	0.00015	0.00019
cobalt, dissolved	7440-48-4	E421	0.00010	mg/L		0.00025	0.00016	<0.00010	0.00018	0.00019
copper, dissolved	7440-50-8	E421	0.00020	mg/L		0.00149	0.00084	0.00044	0.00137	0.00139
iron, dissolved	7439-89-6	E421	0.010	mg/L		0.111	0.104	0.014	0.114	0.136
lead, dissolved	7439-92-1	E421	0.000050	mg/L		0.000148	0.000102	<0.000050	0.000112	0.000109
lithium, dissolved	7439-93-2	E421	0.0010	mg/L		0.0038	0.0030	0.0016	0.0040	0.0041
magnesium, dissolved	7439-95-4	E421	0.100	mg/L		7.46	5.60	2.08	8.39	7.72
manganese, dissolved	7439-96-5	E421	0.00010	mg/L		0.0272	0.0176	0.00075	0.0255	0.0254
mercury, dissolved	7439-97-6	E509	0.0000050	mg/L		<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050
molybdenum, dissolved	7439-98-7	E421	0.000050	mg/L		0.000420	0.00184	0.00205	0.000258	0.000055
nickel, dissolved	7440-02-0	E421	0.00050	mg/L		0.00166	0.00062	<0.00050	0.00156	0.00168
phosphorus, dissolved	7723-14-0	E421	0.050	mg/L		<0.050	<0.050	<0.050	<0.050	<0.050
potassium, dissolved	7440-09-7	E421	0.100	mg/L		0.711	0.832	0.587	0.670	0.577
selenium, dissolved	7782-49-2	E421	0.000050	mg/L		0.000142	0.000240	0.000249 DTC	0.000177	0.000190
silicon, dissolved	7440-21-3	E421	0.050	mg/L		3.41	4.92	5.52	3.51	3.26
silver, dissolved	7440-22-4	E421	0.000010	mg/L		<0.000010	<0.000010	<0.000010	<0.000010	<0.000010

Analytical Results

Sub-Matrix: **Water**
(Matrix: **Water**)

Analyte	CAS Number	Method	LOR	Unit	Client sample ID	W4	W21	W1	W29	W22
					Client sampling date / time	11-Jul-2020 11:20	11-Jul-2020 11:40	11-Jul-2020 14:00	11-Jul-2020 14:40	11-Jul-2020 15:00
						VA20B0234-001	VA20B0234-002	VA20B0234-003	VA20B0234-004	VA20B0234-005
						Result	Result	Result	Result	Result
Dissolved Metals										
sodium, dissolved	7440-23-5	E421	0.050	mg/L		1.47	1.79	1.54	1.28	1.11
strontium, dissolved	7440-24-6	E421	0.00020	mg/L		0.122	0.108	0.0723	0.128	0.127
sulfur, dissolved	7704-34-9	E421	0.50	mg/L		12.7	6.23	2.85	13.9	13.8
thallium, dissolved	7440-28-0	E421	0.000010	mg/L		<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
tin, dissolved	7440-31-5	E421	0.00010	mg/L		<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
titanium, dissolved	7440-32-6	E421	0.00030	mg/L		0.00112	0.00228	<0.00030	0.00067	0.00063
uranium, dissolved	7440-61-1	E421	0.000010	mg/L		0.000562	0.00136	0.000383	0.000638	0.000429
vanadium, dissolved	7440-62-2	E421	0.00050	mg/L		<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
zinc, dissolved	7440-66-6	E421	0.0010	mg/L		<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
zirconium, dissolved	7440-67-7	E421	0.00030	mg/L		0.00036	<0.00030	<0.00030	0.00035	0.00040
dissolved mercury filtration location	----	EP509	-	-		Laboratory	Laboratory	Field	Laboratory	Laboratory
dissolved metals filtration location	----	EP421	-	-		Laboratory	Laboratory	Field	Laboratory	Laboratory

Please refer to the General Comments section for an explanation of any qualifiers detected.

APPENDIX B

External Laboratory Groundwater Quality Results

ALS Environmental

CERTIFICATE OF ANALYSIS

Work Order	: **VA20B0441**	Page	: 1 of 4
Amendment	: **(Preliminary Report)**		
Client	: **Victoria Gold (Yukon) Corp.**	Laboratory	: Vancouver - Environmental
Contact	: Lindsay Rear	Account Manager	: Hilary Woods
Address	: Suite 1000 - 1050 W. Pender St Vancouver BC Canada V6E 3S7	Address	: 8081 Lougheed Highway Burnaby BC Canada V5A 1W9
Telephone	: ----	Telephone	: +1 604 253 4188
Project	: GWQ (HLF)	Date Samples Received	: 15-Jul-2020 16:50
PO	: 14043	Date Analysis Commenced	: 15-Jul-2020
C-O-C number	: 20200714a	Issue Date	: 20-Jul-2020 09:43
Sampler	: KT/KB/JJ/SB		
Site	: ----		
Quote number	: Q68199		
No. of samples received	: 2		
No. of samples analysed	: 2		

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QC Interpretive report to assist with Quality Review and Sample Receipt Notification (SRN).

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is conducted in accordance with US FDA 21 CFR Part 11.

Signatories	*Position*	*Laboratory Department*
Angelo Salandanan	Lab Assistant	Metals, Burnaby, British Columbia
Dee Lee	Analyst	Metals, Burnaby, British Columbia
Kevin Duarte	Team Leader - Inorganics	Inorganics - Water Quality, Burnaby, British Columbia
Kim Jensen	Department Manager - Metals	Metals, Burnaby, British Columbia
Tracy Harley	Supervisor - Water Quality Instrumentation	Inorganics - Water Quality, Burnaby, British Columbia

General Comments

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Refer to the ALS Quality Control Interpretive report (QCI) for applicable references and methodology summaries. Reference methods may incorporate modifications to improve performance.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

Please refer to Quality Control Interpretive report (QCI) for information regarding Holding Time compliance.

Key : CAS Number: Chemical Abstracts Services number is a unique identifier assigned to discrete substances
LOR: Limit of Reporting (detection limit).

Unit	*Description*
-	No Unit
µS/cm	Microsiemens per centimetre
mg/L	milligrams per litre
pH units	pH units

<: less than.

>: greater than.

Surrogate: An analyte that is similar in behavior to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.

Test results reported relate only to the samples as received by the laboratory.

UNLESS OTHERWISE STATED on SRN or QCI Report, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

Analytical results in reports identified as "Preliminary Report" are considered authorized for use.

Qualifiers

Qualifier	*Description*
SFT	*Sample was filtered due to turbidity interference. Result reflects soluble analyte concentration.*

Analytical Results

Sub-Matrix: **Water**
(Matrix: **Water**)

Analyte	CAS Number	Method	LOR	Unit	Client sample ID	MW19 HLF-1b	MWAG-6	----	----	----
					Client sampling date / time	13-Jul-2020 08:45	13-Jul-2020 09:30	----	----	----
						VA20B0441-001	VA20B0441-002	--------	--------	--------
						Result	Result	----	----	----
Physical Tests										
conductivity	----	E100	2.0	µS/cm		274	207	----	----	----
hardness (as CaCO3), dissolved	----	EC100	0.60	mg/L		132	95.1	----	----	----
pH	----	E108	0.10	pH units		7.36	6.91	----	----	----
Anions and Nutrients										
bromide	24959-67-9	E235.Br-L	0.050	mg/L		<0.050	<0.050	----	----	----
chloride	16887-00-6	E235.Cl	0.50	mg/L		<0.50	1.58	----	----	----
fluoride	16984-48-8	E235.F	0.020	mg/L		0.464	0.328	----	----	----
nitrate (as N)	14797-55-8	E235.NO3-L	0.0050	mg/L		0.0395	0.528	----	----	----
nitrite (as N)	14797-65-0	E235.NO2-L	0.0010	mg/L		<0.0010	<0.0010	----	----	----
phosphorus, total	7723-14-0	E372-U	0.0020	mg/L		<0.0020	0.0182	----	----	----
sulfate (as SO4)	14808-79-8	E235.SO4	0.30	mg/L		32.2	25.7	----	----	----
Cyanides										
cyanide, total	----	E333	0.0050	mg/L		<0.0050	<0.0050	----	----	----
cyanide, weak acid dissociable	----	E336	0.0050	mg/L		<0.0050	<0.0050	----	----	----
thiocyanate	302-04-5	E344	0.50	mg/L		<0.50	<0.50 SFT	----	----	----
Dissolved Metals										
aluminum, dissolved	7429-90-5	E421	0.0010	mg/L		<0.0010	0.0074	----	----	----
antimony, dissolved	7440-36-0	E421	0.00010	mg/L		<0.00010	0.00019	----	----	----
arsenic, dissolved	7440-38-2	E421	0.00010	mg/L		0.00320	0.0375	----	----	----
barium, dissolved	7440-39-3	E421	0.00010	mg/L		0.00201	0.00284	----	----	----
beryllium, dissolved	7440-41-7	E421	0.000020	mg/L		<0.000020	<0.000020	----	----	----
bismuth, dissolved	7440-69-9	E421	0.000050	mg/L		<0.000050	<0.000050	----	----	----
boron, dissolved	7440-42-8	E421	0.010	mg/L		<0.010	<0.010	----	----	----
cadmium, dissolved	7440-43-9	E421	0.0000050	mg/L		0.0000058	0.0000175	----	----	----
calcium, dissolved	7440-70-2	E421	0.050	mg/L		28.8	19.5	----	----	----
chromium, dissolved	7440-47-3	E421.Cr-L	0.00010	mg/L		<0.00010	<0.00010	----	----	----
cobalt, dissolved	7440-48-4	E421	0.00010	mg/L		<0.00010	<0.00010	----	----	----
copper, dissolved	7440-50-8	E421	0.00020	mg/L		<0.00020	0.00057	----	----	----
iron, dissolved	7439-89-6	E421	0.010	mg/L		0.276	0.011	----	----	----
lead, dissolved	7439-92-1	E421	0.000050	mg/L		<0.000050	<0.000050	----	----	----
lithium, dissolved	7439-93-2	E421	0.0010	mg/L		0.0751	0.0321	----	----	----

Analytical Results

Sub-Matrix: **Water**
(Matrix: **Water**)

Analyte	CAS Number	Method	LOR	Unit	Client sample ID	MW19 HLF-1b	MWAG-6	----	----	----
					Client sampling date / time	13-Jul-2020 08:45	13-Jul-2020 09:30	----	----	----
						VA20B0441-001	VA20B0441-002	--------	--------	--------
						Result	Result	----	----	----
Dissolved Metals										
magnesium, dissolved	7439-95-4	E421	0.100	mg/L		14.5	11.2	----	----	----
manganese, dissolved	7439-96-5	E421	0.00010	mg/L		0.0461	0.00048	----	----	----
mercury, dissolved	7439-97-6	E509	0.0000050	mg/L		<0.0000050	<0.0000050	----	----	----
molybdenum, dissolved	7439-98-7	E421	0.000050	mg/L		<0.000050	0.000314	----	----	----
nickel, dissolved	7440-02-0	E421	0.00050	mg/L		<0.00050	0.00088	----	----	----
phosphorus, dissolved	7723-14-0	E421	0.050	mg/L		<0.050	<0.050	----	----	----
potassium, dissolved	7440-09-7	E421	0.100	mg/L		1.92	1.38	----	----	----
selenium, dissolved	7782-49-2	E421	0.000050	mg/L		0.000958	0.00116	----	----	----
silicon, dissolved	7440-21-3	E421	0.050	mg/L		5.66	5.79	----	----	----
silver, dissolved	7440-22-4	E421	0.000010	mg/L		<0.000010	0.000010	----	----	----
sodium, dissolved	7440-23-5	E421	0.050	mg/L		2.89	2.47	----	----	----
strontium, dissolved	7440-24-6	E421	0.00020	mg/L		0.184	0.134	----	----	----
sulfur, dissolved	7704-34-9	E421	0.50	mg/L		10.8	7.96	----	----	----
thallium, dissolved	7440-28-0	E421	0.000010	mg/L		<0.000010	<0.000010	----	----	----
tin, dissolved	7440-31-5	E421	0.00010	mg/L		<0.00010	<0.00010	----	----	----
titanium, dissolved	7440-32-6	E421	0.00030	mg/L		<0.00030	0.00040	----	----	----
uranium, dissolved	7440-61-1	E421	0.000010	mg/L		0.000522	0.000106	----	----	----
vanadium, dissolved	7440-62-2	E421	0.00050	mg/L		<0.00050	<0.00050	----	----	----
zinc, dissolved	7440-66-6	E421	0.0010	mg/L		<0.0010	0.0019	----	----	----
zirconium, dissolved	7440-67-7	E421	0.00030	mg/L		<0.00030	<0.00030	----	----	----
dissolved mercury filtration location	----	EP509	-	-		Field	Field	----	----	----
dissolved metals filtration location	----	EP421	-	-		Field	Field	----	----	----

Please refer to the General Comments section for an explanation of any qualifiers detected.

APPENDIX C

External Laboratory Soil Quality Results

ALS Environmental

CERTIFICATE OF ANALYSIS

Work Order	: **WR2000502**	Page	: 1 of 2
Client	: **Victoria Gold (Yukon) Corp.**	Laboratory	: Whitehorse - Environmental
Contact	: Lindsay Rear	Account Manager	: Hilary Woods
Address	: Suite 1000 - 1050 W. Pender St Vancouver BC Canada V6E 3S7	Address	: #12 151 Industrial Road Whitehorse YT Canada Y1A 2V3
Telephone	: ----	Telephone	: +1 867 668 6689
Project	: HLF Soil	Date Samples Received	: 17-Jul-2020 11:07
PO	: 15673	Date Analysis Commenced	: 19-Jul-2020
C-O-C number	: 20200716b	Issue Date	: 21-Jul-2020 13:58
Sampler	: KT/KB		
Site	: ----		
Quote number	: Q68199		
No. of samples received	: 3		
No. of samples analysed	: 3		

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QC Interpretive report to assist with Quality Review and Sample Receipt Notification (SRN).

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is conducted in accordance with US FDA 21 CFR Part 11.

Signatories	*Position*	*Laboratory Department*
Lindsay Gung	Supervisor - Water Chemistry	Inorganics - Water Quality, Burnaby, British Columbia
Ophelia Chiu	Supervisor - Organics Instrumentation	Organics, Burnaby, British Columbia

General Comments

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Refer to the ALS Quality Control Interpretive report (QCI) for applicable references and methodology summaries. Reference methods may incorporate modifications to improve performance.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

Please refer to Quality Control Interpretive report (QCI) for information regarding Holding Time compliance.

Key : CAS Number: Chemical Abstracts Services number is a unique identifier assigned to discrete substances
LOR: Limit of Reporting (detection limit).

Unit	*Description*
%	percent
mg/kg	milligrams per kilogram

<: less than.

>: greater than.

Surrogate: An analyte that is similar in behavior to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.

Test results reported relate only to the samples as received by the laboratory.

UNLESS OTHERWISE STATED on SRN or QCI Report, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

Analytical results in reports identified as "Preliminary Report" are considered authorized for use.

Analytical Results

Sub-Matrix: **Solid**
(Matrix: **Soil/Solid**)

Analyte	*CAS Number*	*Method*	*LOR*	*Unit*	*Client sample ID*	**HLF-DG1-Soil**	**HLF-DG2-Soil**	**HLF-DG3-Soil**	**----**	**----**
					Client sampling date / time	16-Jul-2020 07:55	16-Jul-2020 08:05	16-Jul-2020 08:10	----	----
						WR2000502-001	**WR2000502-002**	**WR2000502-003**	**--------**	**--------**
						Result	Result	Result	----	----
Physical Tests										
moisture	----	E144	0.25	%		10.8	22.9	19.4	----	----
Cyanides										
cyanide, total	----	E333	0.050	mg/kg		<0.050	<0.051	0.214	----	----
cyanide, weak acid dissociable	----	E336	0.050	mg/kg		<0.050	<0.051	0.089	----	----

Please refer to the General Comments section for an explanation of any qualifiers detected.

APPENDIX D

Acute Toxicity Results

Acute Toxicity Test Results

Samples VA20B0234-001 W4, VA20B0234-002 W21, VA20B0234-003 W1, VA20B0234-004 W29 and VA20B0234-005 W22,
collected July 11, 2020

Final Report

July 21, 2020

Submitted to: **ALS Environmental**
Burnaby, BC

8664 Commerce Court, Burnaby, BC V5A 4N7

SAMPLE INFORMATION

Sample ID	Dates				Receipt temp.
	Collected	Received	Rainbow trout test initiation	*Daphnia magna* test initiation	
VA20B0234-001 W4	11-Jul-20 at 1120h	13-Jun-20 at 1457h	14-Jul-20 at 1722h	14-Jul-20 at 1305h	2.8 – 5.1°C
VA20B0234-002 W21	11-Jul-20 at 1140h	13-Jun-20 at 1457h	14-Jul-20 at 1718h	14-Jul-20 at 1305h	2.8 – 5.1°C
VA20B0234-003 W1	11-Jul-20 at 1400h	13-Jun-20 at 1457h	14-Jul-20 at 1720h	14-Jul-20 at 1305h	2.8 – 5.1°C
VA20B0234-004 W29	11-Jul-20 at 1440h	13-Jun-20 at 1457h	14-Jul-20 at 1705h	14-Jul-20 at 1305h	2.8 – 5.1°C
VA20B0234-005 W22	11-Jul-20 at 1500h	13-Jun-20 at 1457h	14-Jul-20 at 1708h	14-Jul-20 at 1305h	2.8 – 5.1°C

TESTS

- Rainbow trout 96-h single concentration screening test
- *Daphnia magna* 48-h single concentration screening test

RESULTS

Toxicity test results

Sample ID	Percent survival in 100% (v/v) sample	
	Rainbow trout	*Daphnia magna*
VA20B0234-001 W4	90	100
VA20B0234-002 W21	100	100
VA20B0234-003 W1	100	100
VA20B0234-004 W29	100	100
VA20B0234-005 W22	100	100

QA/QC

QA/QC summary	Rainbow trout	*Daphnia magna*
Reference toxicant LC50 (95% CL)	70.7 (51.9 – 96.1) µg/L Zn[1]	7.8 (5.5 – 11.0) g/L NaCl[2]
Reference toxicant historical mean (2 SD range)	88.2 (35.4 – 219.9) µg/L Zn	6.3 (4.8 – 8.2) g/L NaCl
Reference toxicant CV	48%	13%
Organism health history	Acceptable	Acceptable
Protocol deviations	None	None
Water quality range deviations	None	None
Control performance	Acceptable	Acceptable
Test performance	Valid	Valid

[1] Test date: July 14, 2020; [2] Test Date: July 8, 2020, LC = Lethal Concentration, CL = Confidence Limits, SD = Standard Deviation, CV = Coefficient of Variation

Report By:
Yvonne Lam, B.Sc.
Laboratory Biologist

Reviewed By:
Edmund Canaria, R.P. Bio.
Senior Analyst

This report has been prepared by Nautilus Environmental Company Inc. based on data and/or samples provided by our client and the results of this study are for their sole benefit. Any reliance on the data by a third party is at the sole and exclusive risk of that party. The results presented here relate only to the samples tested.

APPENDIX A – Summary of test conditions

Table 1. Summary of test conditions: 96-h rainbow trout (*Oncorhynchus mykiss*) single concentration test.

Test species	*Oncorhynchus mykiss*
Organism source	Hatchery
Organism age	Juvenile
Test type	Static
Test duration	96 hours
Test vessel	20-L glass aquarium
Test volume	10 to 20 L (depending on size of fish)
Test solution depth	≥15 cm
Test concentrations	100% (undiluted) sample, plus laboratory control
Test replicates	1 per treatment
Number of organisms	10 per replicate
Control/dilution water	Dechlorinated Metro Vancouver municipal tapwater
Test solution renewal	None
Test temperature	15 ± 1°C
Feeding	None
Light intensity	100 to 500 lux
Photoperiod	16 hours light / 8 hours dark
Aeration	6.5 ± 1 mL/min/L
Test measurements	Temperature, dissolved oxygen and pH measured daily; salinity measured in the undiluted sample at test initiation; conductivity measured at test initiation and termination; survival checked daily
Test protocol	Environment Canada (2000), EPS 1/RM/13, with 2007 & 2016 amendments
Test endpoints	Survival
Test acceptability criterion for controls	Survival ≥90%
Reference toxicant	Zinc (added as $ZnSO_4$)

Table 2. Summary of test conditions: 48-h *Daphnia magna* single concentration test.

Test species	*Daphnia magna*
Organism source	In-house culture
Organism age	<24-hour old neonates
Test type	Static
Test duration	48 hours
Test vessel	250-mL glass beaker
Test volume	200 mL
Test solution depth	6 cm
Test concentrations	100% (undiluted) sample, plus laboratory control
Test replicates	3 per treatment
Number of organisms	10 per replicate
Control/dilution water	Moderately-hard reconstituted water + 2.5 µg/L Se
Test solution renewal	None
Test temperature	20 ± 2°C
Feeding	None
Light intensity	400 to 800 lux
Photoperiod	16 hours light / 8 hours dark
Aeration	None
Test measurements	Temperature, dissolved oxygen and pH measured daily; salinity, hardness and alkalinity measured in the undiluted sample at test initiation; conductivity measured at test initiation and termination; survival checked daily
Test protocol	Environment Canada (2000), EPS 1/RM/14, with 2016 amendments
Test endpoint	Survival
Test acceptability criterion for controls	Survival ≥90%
Reference toxicant	Sodium chloride (NaCl)

APPENDIX B – Toxicity test data

Rainbow Trout Summary Sheet

Client: ALS Environmental

Start Date/Time: 14Jul20 @ 1722h

Work Order No.: 201300

Test Species: *Oncorhynchus mykiss*

Test Validity Criteria:
≥ 90% control survival
WQ Ranges:
T (°C) = 15 ± 1; DO (mg/L) = 7.0 to 10.3; pH = 5.5 to 8.5

Sample Information:

Sample ID: VA20B0234-001 W4
Sample Date: 11Jul20
Date Received: 13Jul20
Sample Volume: 2x 10L
Other: —

Dilution Water:

Type: Dechlorinated Municipal Tap Water
Hardness (mg/L $CaCO_3$): 13
Alkalinity (mg/L $CaCO_3$): 16

Test Organism Information:

Batch No.: 062220a
Source: Lyndon Fish Hatcheries
No. Fish/Volume (L): 10/12L
Loading Density (g/L): 0.24
Mean Length ± SD (mm): 31 ± 3 Range: 26 - 35
Mean Weight ± SD (g): 0.29 ± 0.07 Range: 0.15 - 0.41

Zinc Reference Toxicant Results:

Reference Toxicant ID: RTZnL063
Stock Solution ID: 20Zn02
Date Initiated: 14Jul20
96-h LC50 (95% CL): 70.7 (51.9 - 96.1) µg/L Zn

Reference Toxicant Mean and Historical Range: 88.2 (35.4 - 219.9) µg/L Zn
Reference Toxicant CV (%): 48%

Test Results: 90% survival at 96h in the 100% (v/v) undiluted sample.

Reviewed by: [signature]

Date reviewed: July 21, 2020

96-Hour Rainbow Trout Toxicity Test Data Sheet

Client/Project#: ALS Environmental
Sample I.D. VA20B0234-001 W4
W.O. # 201300
RBT Batch #: 062220a
Date Collected/Time: July 11/20 @ 11:20h
Date Setup/Time: July 14/20 @ 17:22h
CER #: 8
Sample Setup By: [signature]

Thermometer: cer8
D.O. meter/probe: 2 / D2
Cond./Salinity meter/probe: 2 / CP2
pH meter/probe: 2 / P2

Number Fish/Volume: 10/12L
7-d % Mortality: 1.7
Total Pre-aeration Time (mins): 105
Aeration rate adjusted to 6.5 ± 1 mL/min/L? (Y/N): Y

Undiluted Sample WQ			
Parameters	Initial WQ	Adjustment	30 min WQ
Temp °C	15.5		16.0
D.O. (mg/L)	10.6		10.2
pH	7.3		7.3
Cond. (µS/cm)	179		178
Salinity (ppt)	0.1		0.1

Concentration	# Survivors							Temperature (°C)					Dissolved Oxygen (mg/L)					pH					Conductivity (µS/cm)	
(% v/v)	1	2	4	24	48	72	96	0	24	48	72	96	0	24	48	72	96	0	24	48	72	96	0	96
Ctrl				10	10	10	10	15.0	16.0	16.0	15.0	15.0	9.9	9.6	8.9	9.3	9.5	7.1	7.1	7.4	7.2	7.1	32	38
100				10	10	10	9	16.0	16.0	16.0	15.0	15.0	9.9	9.7	9.1	9.4	9.5	7.3	8.0	7.3	7.3	7.3	176	188
Initials				[initials]	[initials]	[initials]	[initials]	[initials]	[initials]	[initials]	[initials]	[initials]	[initials]	[initials]	[initials]	[initials]	[initials]	[initials]	[initials]	[initials]	[initials]	[initials]	[initials]	[initials]

Sample Description/Comments: turbid, light brown sample, fine particulates, no odor

Fish Description at 96 h Remaining fish appears Normal Number of Stressed Fish at 96 h 0

Other Observations:

Reviewed by: [signature] Date Reviewed: July 21, 2020

Rainbow Trout Summary Sheet

Client: ALS Environmental

Start Date/Time: 14Jul20 @ 1718h

Work Order No.: 201300

Test Species: *Oncorhynchus mykiss*

Test Validity Criteria:
≥ 90% control survival
WQ Ranges:
T (°C) = 15 ± 1; DO (mg/L) = 7.0 to 10.3; pH = 5.5 to 8.5

Sample Information:

Sample ID: VA20B0234-002 W21
Sample Date: 11Jul20
Date Received: 13Jul20
Sample Volume: 2x 10L
Other: —

Dilution Water:

Type: Dechlorinated Municipal Tap Water
Hardness (mg/L $CaCO_3$): 13
Alkalinity (mg/L $CaCO_3$): 16

Test Organism Information:

Batch No.: 062220a
Source: Lyndon Fish Hatcheries
No. Fish/Volume (L): 10/12L
Loading Density (g/L): 0.22
Mean Length ± SD (mm): 32 ± 2 Range: 28 - 36
Mean Weight ± SD (g): 0.29 ± 0.08 Range: 0.19 - 0.42

Zinc Reference Toxicant Results:

Reference Toxicant ID: RT2nL063
Stock Solution ID: 20Zn02
Date Initiated: 14Jul20
96-h LC50 (95% CL): 70.7 (51.9 - 96.1) µg/L Zn

Reference Toxicant Mean and Historical Range: 88.2 (35.4 - 219.9) µg/L Zn
Reference Toxicant CV (%): 48%

Test Results: 100% survival at 96h in the 100% (v/v) undiluted sample.

Reviewed by: [signature]

Date reviewed: July 21, 2020

96-Hour Rainbow Trout Toxicity Test Data Sheet

Client/Project#: ALS Environmental
Sample I.D. VA20B0234-002 W21
W.O. # 201300
RBT Batch #: 062220a
Date Collected/Time: July 11/20 @ 11:40h
Date Setup/Time: July 14/20 @ 17:18h
CER #: 8
Sample Setup By: [signature]

Thermometer: cer8
D.O. meter/probe: 2 / D2
Cond./Salinity meter/probe: 2 / P2
pH meter/probe: 2 / P2

Number Fish/Volume: 10/12L
7-d % Mortality: 1.7
Total Pre-aeration Time (mins): 100
Aeration rate adjusted to 6.5 ± 1 mL/min/L? (Y/N): Y

Undiluted Sample WQ			
Parameters	Initial WQ	Adjustment	30 min WQ
Temp °C	16.0		16.0
D.O. (mg/L)	10.1		10.0
pH	7.5		7.4
Cond. (µS/cm)	137		137
Salinity (ppt)	0.1		0.1

Concentration	# Survivors							Temperature (°C)					Dissolved Oxygen (mg/L)					pH					Conductivity (µS/cm)	
(% v/v)	1	2	4	24	48	72	96	0	24	48	72	96	0	24	48	72	96	0	24	48	72	96	0	96
Ctrl				10	9	9	9	15.0	16.0	16.0	15.0	15.0	9.9	9.6	8.9	9.4	9.5	7.1	7.1	7.5	7.2	7.1	32	41
100				10	10	10	10	16.0	16.0	16.0	15.0	15.0	9.9	9.6	9.1	9.5	9.5	7.4	8.1	7.4	7.3	7.3	137	145
Initials				[signature]	[signature]	[signature]	[signature]	[signature]	[signature]	[signature]	[signature]	[signature]	[signature]	[signature]	[signature]	[signature]	[signature]	[signature]	[signature]	[signature]	[signature]	[signature]	[signature]	[signature]

Sample Description/Comments: turbid, yellow-brown colored sample, no particulates, no odor

Fish Description at 96 h Remaining fish appear Normal Number of Stressed Fish at 96 h 0

Other Observations:

Reviewed by: [signature] Date Reviewed: July 21, 2020

Version 2.5; Issued July 19, 2017

Nautilus Environmental Company Inc.

Rainbow Trout Summary Sheet

Client: ALS Environmental

Start Date/Time: 14 Jul 20 @ 1720h

Work Order No.: 201300

Test Species: *Oncorhynchus mykiss*

Test Validity Criteria:
≥ 90% control survival
WQ Ranges:
T (°C) = 15 ± 1; DO (mg/L) = 7.0 to 10.3; pH = 5.5 to 8.5

Sample Information:

Sample ID: VA20B0234-003 W1
Sample Date: 11 Jul 20
Date Received: 13 Jul 20
Sample Volume: 2 x 10L
Other: —

Dilution Water:

Type: Dechlorinated Municipal Tap Water
Hardness (mg/L $CaCO_3$): 13
Alkalinity (mg/L $CaCO_3$): 16

Test Organism Information:

Batch No.: 062220a
Source: Lyndon Fish Hatcheries
No. Fish/Volume (L): 10/12L
Loading Density (g/L): 0.26
Mean Length ± SD (mm): ~~0.2~~ 32 ± 3 Range: 28 - 36
Mean Weight ± SD (g): 0.31 ± 0.11 Range: 0.20 - 0.50

Zinc Reference Toxicant Results:

Reference Toxicant ID: RTZnL063
Stock Solution ID: 20Zn02
Date Initiated: 14 Jul 20
96-h LC50 (95% CL): 70.7 (51.9 - 96.1) µg/L Zn

Reference Toxicant Mean and Historical Range: 88.2 (35.4 - 219.9) µg/L Zn
Reference Toxicant CV (%): 48%

Test Results: 100% survival at 96h in the 100% (v/v) undiluted sample.

Reviewed by: [signature]

Date reviewed: July 21, 2020

96-Hour Rainbow Trout Toxicity Test Data Sheet

Client/Project#: ALS Environmental
Sample I.D. VA20B0234-003 W1
W.O. # 201300
RBT Batch #: 062220a
Date Collected/Time: July 11/20 @ 14:00h
Date Setup/Time: July 14/20 @ 17:20h
CER #: 8
Sample Setup By:

Thermometer: CER8
D.O. meter/probe: 2/D2
Cond./Salinity meter/probe: 2/CP2
pH meter/probe: 2/P2

Number Fish/Volume: 10/12L
7-d % Mortality: 1.7
Total Pre-aeration Time (mins): 105
Aeration rate adjusted to 6.5 ± 1 mL/min/L? (Y/N): Y

Undiluted Sample WQ			
Parameters	Initial WQ	Adjustment	30 min WQ
Temp °C	16.0		~~15.9~~ 16.0
D.O. (mg/L)	10.2		10.0
pH	7.1		7.4
Cond. (µS/cm)	79		79
Salinity (ppt)	0		0

Concentration	# Survivors							Temperature (°C)					Dissolved Oxygen (mg/L)					pH					Conductivity (µS/cm)	
(% v/v)	1	2	4	24	48	72	96	0	24	48	72	96	0	24	48	72	96	0	24	48	72	96	0	96
Ctrl				10	10	10	10	15.0	16.0	16.0	15.0	15.0	10.0	9.6	9.2	9.5	9.6	7.1	7.1	7.3	7.2	7.1	32	38
100				10	10	10	10	16.0	16.0	16.0	15.0	15.0	9.9	9.5	9.3	9.5	9.6	7.4	7.9	7.2	7.0	7.1	79	86
Initials				SM	SM	SM	SM		SM	SM	SM	SM		SM	SM	SM	SM		SM	SM	SM	SM		

Sample Description/Comments: clear, slightly yellow sample, no particulates, no odor

Fish Description at 96 h: All fish appear Normal — Number of Stressed Fish at 96 h: 0

Other Observations:

Reviewed by: — Date Reviewed: July 21, 2020

Rainbow Trout Summary Sheet

Client: ALS Environmental

Start Date/Time: 14 Jul 20 @ 1705h

Work Order No.: 201300

Test Species: *Oncorhynchus mykiss*

Test Validity Criteria:
≥ 90% control survival
WQ Ranges:
T (°C) = 15 ± 1; DO (mg/L) = 7.0 to 10.3; pH = 5.5 to 8.5

Sample Information:

Sample ID: VA20B0234-004 W29
Sample Date: 11 Jul 20
Date Received: 13 Jul 20
Sample Volume: 2 × 10L
Other: —

Dilution Water:

Type: Dechlorinated Municipal Tap Water
Hardness (mg/L $CaCO_3$): 13
Alkalinity (mg/L $CaCO_3$): 16

Test Organism Information:

Batch No.: 062220a
Source: Lyndon Fish Hatcheries
No. Fish/Volume (L): 10/12L
Loading Density (g/L): 0.25
Mean Length ± SD (mm): 32 ± 2 Range: 27 - 34
Mean Weight ± SD (g): 0.30 ± 0.06 Range: 0.21 - 0.39

Zinc Reference Toxicant Results:

Reference Toxicant ID: RTZnL063
Stock Solution ID: 20Zn02
Date Initiated: 14 Jul 20
96-h LC50 (95% CL): 70.7 (51.9 - 96.1) µg/L Zn

Reference Toxicant Mean and Historical Range: 88.2 (35.4 - 219.9) µg/L Zn
Reference Toxicant CV (%): 48%

Test Results: 100% survival at 96h in the 100% (v/v) undiluted sample.

Reviewed by: [signature]

Date reviewed: July 21, 2020

96-Hour Rainbow Trout Toxicity Test Data Sheet

Client/Project#: ALS Environmental
Sample I.D. VA20B0234-004 W29
W.O. # 201300
RBT Batch #: 062220a
Date Collected/Time: July 11/20 @ 14:40h
Date Setup/Time: July 14/20 @ 17:05h
CER #: 8
Sample Setup By:

Thermometer: ER8
D.O. meter/probe: 2 / D2
Cond./Salinity meter/probe: 2 / CP2
pH meter/probe: 2 / P2

Number Fish/Volume: 10/12L
7-d % Mortality: 1.7
Total Pre-aeration Time (mins): 30
Aeration rate adjusted to 6.5 ± 1 mL/min/L? (Y/N): Y

Undiluted Sample WQ			
Parameters	Initial WQ	Adjustment	30 min WQ
Temp °C	16.0		16.0
D.O. (mg/L)	10.0		9.8
pH	7.4		7.3
Cond. (µS/cm)	198		198
Salinity (ppt)	0.1		0.1

Concentration	# Survivors							Temperature (°C)					Dissolved Oxygen (mg/L)					pH @ 7.1					Conductivity (µS/cm)	
(% v/v)	1	2	4	24	48	72	96	0	24	48	72	96	0	24	48	72	96	0	24	48	72	96	0	96
Ctrl				10	10	10	10	16.0	16.0	16.0	15.0	15.0	9.6	9.6	9.1	9.4	9.6	7.1	7.1	7.1	7.1	7.1	32	38
100				10	10	10	10	16.0	16.0	16.0	15.0	15.0	9.8	9.7	9.2	9.5	9.6	7.3	8.0	7.4	7.3	7.4	198	808
Initials				SM	JW	CM	SR	CM	CM	JW	SM	SR	SM	SM	JW	SM	SR	MS	CM	JW	SM	SR	SM	SR

Sample Description/Comments: Semi-turbid yellow odourless liquid with no particulates

Fish Description at 96 h: All fish appear Normal Number of Stressed Fish at 96 h: 0

Other Observations:

Reviewed by: Date Reviewed: July 21, 2020

Rainbow Trout Summary Sheet

Client: ALS Environmental

Start Date/Time: 14 Jul 20 @ 1708h

Work Order No.: 201300

Test Species: *Oncorhynchus mykiss*

Test Validity Criteria:
≥ 90% control survival
WQ Ranges:
T (°C) = 15 ± 1; DO (mg/L) = 7.0 to 10.3; pH = 5.5 to 8.5

Sample Information:

Sample ID: VA20B0234-005 W22
Sample Date: 11 Jul 20
Date Received: 14 Jul 20
Sample Volume: 2 x 10L
Other: —

Dilution Water:

Type: Dechlorinated Municipal Tap Water
Hardness (mg/L $CaCO_3$): 13
Alkalinity (mg/L $CaCO_3$): 16

Test Organism Information:

Batch No.: 062220a
Source: Lyndon Fish Hatcheries
No. Fish/Volume (L): 10/12L
Loading Density (g/L): 0.28
Mean Length ± SD (mm): 33 ± 3 Range: 28 - 36
Mean Weight ± SD (g): 0.34 ± 0.08 Range: 0.21 - 0.48

Zinc Reference Toxicant Results:

Reference Toxicant ID: RTZnL063
Stock Solution ID: 20Zn02
Date Initiated: 14 Jul 20
96-h LC50 (95% CL): 70.7 (51.9 - 96.1) µg/L Zn

Reference Toxicant Mean and Historical Range: 88.2 (35.4 - 219.9) µg/L Zn
Reference Toxicant CV (%): 48%

Test Results: 100% survival at 96h in the 100% (v/v) undiluted sample.

Reviewed by: [signature] Date reviewed: July 21, 2020

96-Hour Rainbow Trout Toxicity Test Data Sheet

Client/Project#: ALS Environmental
Sample I.D. VA20B0234-005 W22
W.O. # 201300
RBT Batch #: 062220a
Date Collected/Time: July 11/20 @ 15:00h
Date Setup/Time: July 14/20 @ 17:00h
CER #: 8
Sample Setup By:

Thermometer: CER8
D.O. meter/probe: 2/D2
Cond./Salinity meter/probe: 2/C2
pH meter/probe: 2/P2

Number Fish/Volume: 10/12L
7-d % Mortality: 1.7
Total Pre-aeration Time (mins): 30
Aeration rate adjusted to 6.5 ± 1 mL/min/L? (Y/N): Y

Undiluted Sample WQ			
Parameters	Initial WQ	Adjustment	30 min WQ
Temp °C	16.0		16.0
D.O. (mg/L)	10.2		9.8
pH	7.3		7.5
Cond. (µS/cm)	190		190
Salinity (ppt)	0.1		0.1

Concentration	# Survivors							Temperature (°C)					Dissolved Oxygen (mg/L)					pH (①7.1)					Conductivity (µS/cm)	
(% v/v)	1	2	4	24	48	72	96	0	24	48	72	96	0	24	48	72	96	0	24	48	72	96	0	96
Ctrl				10	10	10	10	16.0	16.0	16.0	15.0	15.0	9.5	9.7	9.2	9.5	9.6	7.1	7.1	7.6	7.1	7.1	31	39
100				10	10	10	10	16.0	16.0	16.0	15.0	15.0	9.8	9.6	9.5	9.6	9.6	7.5	8.1	7.4	7.4	7.5	190	199
Initials				GM	JSW	M	DR	GM	GM	JSW	M	DR	GM	GM	JSW	GM	DR	GM	GM	JSW	GM	DR	GM	DR

Sample Description/Comments: Slightly turbid, brown colored sample, no particulates, no odor

Fish Description at 96 h: All fish appear Normal Number of Stressed Fish at 96 h: 0

Other Observations:

Reviewed by: Date Reviewed: July 21, 2020

Daphnia magna Summary Sheet

Client: ALS Environmental
Work Order No.: 201299

Start Date/Time: July 14/2020 @ 1305 h
Test Species: *Daphnia magna*
Set up by: MMC

Sample Information:

Sample ID: VA20B0234-001 W4
Sample Date: July 11/2020
Date Received: July 13/2020
Sample Volume: 2 x 20 L
10 mL

Test Validity Criteria:

≥ 90% mean control survival and/or mobility and ≤2 daphnids exibit immobility and/or mortality in any single control replicate.

WQ Ranges:

T (°C) = 20 ± 2; DO (mg/L) = 3.6 to 9.4; pH = 6 to 8.5

Test Organism Information:

Broodstock No.: 062420A
Age of young (Day 0): <24 h
Avg No. young per brood in previous 7 d: 16
Mortality (%) in previous 7 d: 0
Days to first brood: 7

NaCl Reference Toxicant Results:

Reference Toxicant ID: DmDC53
Stock Solution ID: 20NaO3
Date Initiated: July 08/2020
48-h LC50 (95% CL): 7.8 (5.5 - 11.0) g/LNaCL

Reference Toxicant Mean and Historical Range: 6.3 (4.8 - 8.2) g/L NaCL
Reference Toxicant CV (%): 13

Test Results: 100% survival at 48h in the undiluted 100% (v/v) sample.

Reviewed by: [signature]

Date reviewed: July 21, 2020

Freshwater Acute
48 Hour Toxicity Test Data Sheet

Client: ALS Environmental
Sample ID: VA20B0234-001 W4
Work Order No.: 201299

Start Date/Time: July 14/2020 @ 1305 h
CER #: 5
No. Organisms/volume: 10/200mL
Test Organism: D.magna
Set up by: MF

Thermometer: CER#5 pH meter/probe: 6 / 6 DO meter/probe: 6 / 6 Cond./Salinity meter/probe: 6 / 6

Concentration % (v/v)	Rep	Number of Live Organisms 24	48	No. Immobilized 48	Temperature (°C) 0	24	48	Dissolved oxygen (mg/L) 0	24	48	pH 0	24	48	Conductivity (µS/cm) 0	48
Control	A	10	10	0	19.0	19.0	19.0	8.6	8.4	8.6	8.0	8.1	8.1	346	352
	B	10	10	0											
	C	10	10	0											
	D														
100	A	10	10	0	19.0	19.0	19.0	9.3	8.5	8.6	7.6	7.6	7.8	182	185
	B	10	10	0											
	C	10	10	0											
	D														
	A														
	B														
	C														
	D														
	A														
	B														
	C														
	D														
	A														
	B														
	C														
	D														
	A														
	B														
	C														
	D														
Technician Initials		MF	MF	MF	MF	MF	MF	MF	MF	MF	MF	MF	MF	MF	MF

	Hardness*	Alkalinity*
Concentration	*(mg/L as CaCo3)	
Control (MHW)	96	80
Highest conc.	88	54
Hardness adjusted		

	Initial WQ	Adjustment	Adjusted WQ
Temp (°C)	19.0		
DO (mg/L)	9.3		
pH	7.6		
Cond (µS/cm)	182		
Salinity (ppt)	0.1		

Comments: _____ Mortality: Heartbeat checked under microscope not reqd

Sample Description: Turbid, light brown, no odour, some particulates

Batch#: 062420A 7-d previous # young/brood: 16 Previous 7-d Mortality (%): 0 Day of 1st Brood: 7

Reviewed by: _____ Date reviewed: July 21, 2020

Daphnia magna Summary Sheet

Client: ALS Environmental
Work Order No.: 201289

Start Date/Time: July 14/2020 @ 1305 h
Test Species: *Daphnia magna*
Set up by: MMC

Sample Information:

Sample ID: VA20B0234-002 W21
Sample Date: July 11/2020
Date Received: July 13/2020
Sample Volume: 2 x 20 L
10 mL

Test Validity Criteria:

≥ 90% mean control survival and/or mobility and ≤2 daphnids exibit immobility and/or mortality in any single control replicate.

WQ Ranges:

T (°C) = 20 ± 2; DO (mg/L) = 3.6 to 9.4; pH = 6 to 8.5

Test Organism Information:

Broodstock No.: 062420A
Age of young (Day 0): <24 h
Avg No. young per brood in previous 7 d: 16
Mortality (%) in previous 7 d: 0
Days to first brood: 7

NaCl Reference Toxicant Results:

Reference Toxicant ID: DmDC53
Stock Solution ID: 20NaC03
Date Initiated: July 08/2020
48-h LC50 (95% CL): 7.8 (5.5 - 11.0) g/LNaCL

Reference Toxicant Mean and Historical Range: 6.3 (4.8 - 8.2) g/L NaCL
Reference Toxicant CV (%): 13

Test Results: 100% survival at 48h in the undiluted 100% (v/v) sample.

Reviewed by: [signature]
Date reviewed: July 21, 2020

Freshwater Acute
48 Hour Toxicity Test Data Sheet

Client: ALS Environmental
Sample ID: VA20B0234-002 W21
Work Order No.: 201299

Start Date/Time: July 14/2020 @ 1305 h
CER #: 5
No. Organisms/volume: 10/200mL
Test Organism: *D.magna*
Set up by: MK

Thermometer: CER#5 pH meter/probe: 6 / 6 DO meter/probe: 6 / 6 Cond./Salinity meter/probe: 6 / 6

Concentration % (v/v)	Rep	Number of Live Organisms 24	Number of Live Organisms 48	No. Immobilized 48	Temperature (°C) 0	Temperature (°C) 24	Temperature (°C) 48	Dissolved oxygen (mg/L) 0	Dissolved oxygen (mg/L) 24	Dissolved oxygen (mg/L) 48	pH 0	pH 24	pH 48	Conductivity (µS/cm) 0	Conductivity (µS/cm) 48
Control	A	10	10	0	19.0	19.0	19.0	8.6	8.4	8.6	8.0	8.1	8.1	346	352
	B	10	10	0											
	C	10	10	0											
	D														
100	A	10	10	0	19.0	19.0	19.0	9.1	8.5	8.5	7.8	7.8	7.9	141	143
	B	10	10	0											
	C	10	10	0											
	D														
	A														
	B														
	C														
	D														
	A														
	B														
	C														
	D														
	A														
	B														
	C														
	D														
	A														
	B														
	C														
	D														
Technician Initials		MK	MK	MK	MK	MK	MK	MK	MK	MK	MK	MK	MK	MK	MK

Concentration	Hardness*	Alkalinity*
	*(mg/L as CaCo3)	
Control (MHW)	96	80
Highest conc.	66	58
Hardness adjusted	—	—

	Initial WQ	Adjustment	Adjusted WQ
Temp (°C)	MK ~~14~~ 19.0		
DO (mg/L)	9.1		
pH	7.8		
Cond (µS/cm)	141		
Salinity (ppt)	0.1		

Comments: _____ Mortality: Heartbeat checked under microscope not req'd

Sample Description: turbid, yellow brown, no odour, no particulates

Batch#: 062420A 7-d previous # young/brood: 16 Previous 7-d Mortality (%): 0 Day of 1st Brood: 7.

Reviewed by: _____ Date reviewed: July 21, 2020

Daphnia magna Summary Sheet

Client: ALS Environmental
Work Order No.: 201299

Start Date/Time: July 14/2020 @ 1305
Test Species: *Daphnia magna*
Set up by: MC

Sample Information:

Sample ID: VA20B0234-003 W1
Sample Date: July 11/2020
Date Received: July 13/2020
Sample Volume: 2 x 20L
10 mL

Test Validity Criteria:

≥ 90% mean control survival and/or mobility and ≤2 daphnids exibit immobility and/or mortality in any single control replicate.

WQ Ranges:

T (°C) = 20 ± 2; DO (mg/L) = 3.6 to 9.4; pH = 6 to 8.5

Test Organism Information:

Broodstock No.: 062420A
Age of young (Day 0): <24 h
Avg No. young per brood in previous 7 d: 16
Mortality (%) in previous 7 d: 0
Days to first brood: 7

NaCl Reference Toxicant Results:

Reference Toxicant ID: Dm DC53
Stock Solution ID: 20NaO3
Date Initiated: July 08/2020
48-h LC50 (95% CL): 7.8 (5.5 - 11.0) g/L NaCL

Reference Toxicant Mean and Historical Range: 6.3 (4.8-8.2) g/L NaCL
Reference Toxicant CV (%): 13

Test Results: 100% survival at 48h in the undiluted 100% (v/v) sample.

Reviewed by: [signature]

Date reviewed: July 21, 2020

Freshwater Acute
48 Hour Toxicity Test Data Sheet

Client: ALS Environmental
Sample ID: VA20B0234-003 W1
Work Order No.: 201299

Start Date/Time: July 14/2020 @1305h
CER #: 5
No. Organisms/volume: 10/200mL
Test Organism: D.magna
Set up by: MK

Thermometer: CER#5 pH meter/probe: 6/6 DO meter/probe: 6/6 Cond./Salinity meter/probe: 6/6

Concentration 2(v/v)	Rep	Number of Live Organisms 24	Number of Live Organisms 48	No. Immobilized 48	Temperature (°C) 0	Temperature (°C) 24	Temperature (°C) 48	Dissolved oxygen (mg/L) 0	Dissolved oxygen (mg/L) 24	Dissolved oxygen (mg/L) 48	pH 0	pH 24	pH 48	Conductivity (µS/cm) 0	Conductivity (µS/cm) 48
Control	A	10	10	0	19.0	19.0	19.0	8.6	8.4	8.6	8.0	8.1	8.1	346	352
	B	10	10	0							8.0				
	C	10	10	0							MK				
	D														
100	A	10	10	0	19.0	19.0	19.0	8.9	8.5	8.7	7.7	7.7	7.7	82	85
	B	10	10	0											
	C	10	10	0											
	D														
	A														
	B														
	C														
	D														
	A														
	B														
	C														
	D														
	A														
	B														
	C														
	D														
	A														
	B														
	C														
	D														
Technician Initials		MK	MK	MK	MK	MK	MK	MK	MK	MK	MK	MK	MK	MK	MK

	Hardness*	Alkalinity*
Concentration	*(mg/L as CaCo3)	
Control (MHW)	96	80
Highest conc.	38	36
Hardness adjusted		

	Initial WQ	Adjustment	Adjusted WQ
Temp (°C)	19.0		
DO (mg/L)	8.9		
pH	7.7		
Cond (µS/cm)	82		
Salinity (ppt)	0.0		

Comments: _____ Mortality: Heartbeat checked under microscope not req'd

Sample Description: clear, slightly yellow, no odour, no particulates

Batch#: 062420A 7-d previous # young/brood: 16 Previous 7-d Mortality (%): 0 Day of 1st Brood: 7.

Reviewed by: _____ Date reviewed: July 21, 2020

Daphnia magna Summary Sheet

Client: ALS Environmental
Work Order No.: 201299

Start Date/Time: July 14/2020 @ 1305
Test Species: *Daphnia magna*
Set up by: MC

Sample Information:

Sample ID: VA20B0234-004 W29
Sample Date: July 11/2020
Date Received: July 13/2020
Sample Volume: 2 x 4 L
10 mf

Test Validity Criteria:

≥ 90% mean control survival and/or mobility and ≤2 daphnids exibit immobility and/or mortality in any single control replicate.

WQ Ranges:

T (°C) = 20 ± 2; DO (mg/L) = 3.6 to 9.4; pH = 6 to 8.5

Test Organism Information:

Broodstock No.: 062420A
Age of young (Day 0): <24 h
Avg No. young per brood in previous 7 d: 16
Mortality (%) in previous 7 d: 0
Days to first brood: 7

NaCl Reference Toxicant Results:

Reference Toxicant ID: Dm DC53
Stock Solution ID: 20NaO3
Date Initiated: July 08/2020
48-h LC50 (95% CL): 7.8 (5.5 - 11.0) g/LNaCL

Reference Toxicant Mean and Historical Range: 6.3 (4.8-8.2) g/L NaCL
Reference Toxicant CV (%): 13

Test Results: 100% survival at 48h in the undiluted 100% (v/v) sample.

Reviewed by: [signature]

Date reviewed: July 21, 2020

Freshwater Acute
48 Hour Toxicity Test Data Sheet

Client: ALS Environmental
Sample ID: VA20B0234-004 W29
Work Order No.: 201299

Start Date/Time: July 14/2020 @1305 h
CER #: 5
No. Organisms/volume: 10/200mL
Test Organism: *D.magna*
Set up by: MF

Thermometer: CER#5 pH meter/probe: 6/6 DO meter/probe: 6/6 Cond./Salinity meter/probe: 6/6

Concentration % (v/v)	Rep	Number of Live Organisms 24	Number of Live Organisms 48	No. Immobilized 48	Temperature (°C) 0	Temperature (°C) 24	Temperature (°C) 48	Dissolved oxygen (mg/L) 0	Dissolved oxygen (mg/L) 24	Dissolved oxygen (mg/L) 48	pH 0	pH 24	pH 48	Conductivity (µS/cm) 0	Conductivity (µS/cm) 48
control	A	10	10	0	19.0	19.0	19.0	8.6	8.4	8.6	8.0	8.1	8.1	346	352
	B	10	10	0											
	C	10	10	0											
	D														
100	A	10	10	0	19.0	19.0	19.0	9.2	8.4	8.7	7.7	7.8	7.9	203	203
	B	10	10	0											
	C	10	10	0											
	D														
	A														
	B														
	C														
	D														
	A														
	B														
	C														
	D														
	A														
	B														
	C														
	D														
	A														
	B														
	C														
	D														
Technician Initials		MF	MF	MF	MF	MF	MF	MF	MF	MF	MF	MF	MF	MF	MF

Concentration	Hardness*	Alkalinity*
	*(mg/L as CaCo3)	
Control (MHW)	96	80
Highest conc.	94	62
Hardness adjusted		

	Initial WQ	Adjustment	Adjusted WQ
Temp (°C)	19.0		
DO (mg/L)	9.2		
pH	7.7		
Cond (µS/cm)	203		
Salinity (ppt)	0.1		

Comments: _____ Mortality: Heartbeat checked under microscope not required

Sample Description: slightly turbid, yellow, no odour, no particulates

Batch#: 062420A 7-d previous # young/brood: 16 Previous 7-d Mortality (%): 0 Day of 1st Brood: 7.

Reviewed by: _____ Date reviewed: July 21, 2020

Daphnia magna Summary Sheet

Client: ALS Environmental
Work Order No.: 201299

Start Date/Time: July 14/2020 @ 1305 h
Test Species: *Daphnia magna*
Set up by: MMC

Sample Information:

Sample ID: VA20B0234-005 W22
Sample Date: July 11/2020
Date Received: July 13/2020
Sample Volume: 2 x 8 L
10 mL

Test Validity Criteria:

≥ 90% mean control survival and/or mobility and ≤2 daphnids exibit immobility and/or mortality in any single control replicate.

WQ Ranges:

T (°C) = 20 ± 2; DO (mg/L) = 3.6 to 9.4; pH = 6 to 8.5

Test Organism Information:

Broodstock No.: 062420A
Age of young (Day 0): <24 h
Avg No. young per brood in previous 7 d: 16
Mortality (%) in previous 7 d: 0
Days to first brood: 7

NaCl Reference Toxicant Results:

Reference Toxicant ID: DmDC53
Stock Solution ID: 20NaD3
Date Initiated: July 08/2020
48-h LC50 (95% CL): 7.8 (5.5 - 11.0) g/L NaCL

Reference Toxicant Mean and Historical Range: 6.3 (4.8-8.2) g/L NaCL
Reference Toxicant CV (%): 13

Test Results: 100% survival at 48h in the undiluted 100% (v/v) sample.

Reviewed by: [signature]

Date reviewed: July 21, 2020

Freshwater Acute
48 Hour Toxicity Test Data Sheet

Client: ALS Environmental
Sample ID: VA20B0234-005 WZZ.
Work Order No.: 201299

Start Date/Time: July 14/2020 @ 1305 h
CER #: 5
No. Organisms/volume: 10/200mL
Test Organism: D.magna
Set up by: MK

Thermometer: CER#5 pH meter/probe: 6/6 DO meter/probe: 6/6 Cond./Salinity meter/probe: 6/6

Concentration % (v/v)	Rep	Number of Live Organisms 24	Number of Live Organisms 48	No. Immobilized 48	Temperature (°C) 0	Temperature (°C) 24	Temperature (°C) 48	Dissolved oxygen (mg/L) 0	Dissolved oxygen (mg/L) 24	Dissolved oxygen (mg/L) 48	pH 0	pH 24	pH 48	Conductivity (µS/cm) 0	Conductivity (µS/cm) 48
Control	A	10	10	0	19.0	19.0	19.0	8.6	8.4	8.6	8.0	8.1	8.1	346	352
	B	10	10	0											
	C	10	10	0											
	D														
100	A	10	10	0	19.0	19.0	19.5	9.1	8.4	8.8	7.6	7.8	7.9	194	196
	B	10	10	0											
	C	10	10	0											
	D														
	A														
	B														
	C														
	D														
	A														
	B														
	C														
	D														
	A														
	B														
	C														
	D														
	A														
	B														
	C														
	D														
Technician Initials		MK	MK	MK	MK	MK	MK	MK	MK	MK	MK	MK	MK	MK	MK

	Hardness*	Alkalinity*
Concentration	*(mg/L as CaCo3)	
Control (MHW)	96	80
Highest conc.	92	58
Hardness adjusted	—	—

	Initial WQ	Adjustment	Adjusted WQ
Temp (°C)	19.0		
DO (mg/L)	9.1		
pH	7.6		
Cond (µS/cm)	194		
Salinity (ppt)	0.1		

Comments: _____ Mortality: Heartbeat checked under microscope not req'd

Sample Description: slightly turbid, brown, no odour, no particulates.

Batch#: 062420A 7-d previous # young/brood: 16 Previous 7-d Mortality (%): 0 Day of 1st Brood: 7.

Reviewed by: _____ Date reviewed: July 21, 2020

APPENDIX C – Chain-of-custody form

Chain of Custody

Vancouver - Environmental
8081 Lougheed Highway
Burnaby BC Canada V5A 1W9

3034

Destination Lab:	**Nautilus Environmental (Burnaby)**
Address:	8664 Commerce Court Burnaby BC Canada V5A 4N7
Client:	Victoria Gold (Yukon) Corp.
Work Order Number:	**VA20B0234**
Original Receipt Date/Time	Instructions Received
13/07/2020 11:10	

Relinquished By
Date/Time
Received By
Date/Time
Receipt Temp

Return as indicated: Results: Invoice: Electronic Data:

Attention: Hilary Woods

ALS Sample ID	Client ID	Matrix	Container Type	Test Codes	Method Description	Due Date	Sampling Date and Time	Remarks
VA20B0234-001	W4	Water	HDPE carboy LC50	DAP-LC50-48	Survival/LC50 Daphnia Magna (48 hours)	14-07-2020	11/07/2020 11:20	
VA20B0234-001	W4	Water	HDPE carboy LC50	TRT-LC50-96	Survival/LC50 Rainbow Trout (96 hours)	14-07-2020	11/07/2020 11:20	
VA20B0234-002	W21	Water	HDPE carboy LC50	DAP-LC50-48	Survival/LC50 Daphnia Magna (48 hours)	14-07-2020	11/07/2020 11:40	
VA20B0234-002	W21	Water	HDPE carboy LC50	TRT-LC50-96	Survival/LC50 Rainbow Trout (96 hours)	14-07-2020	11/07/2020 11:40	
VA20B0234-003	W1	Water	HDPE carboy LC50	DAP-LC50-48	Survival/LC50 Daphnia Magna (48 hours)	14-07-2020	11/07/2020 14:00	
VA20B0234-003	W1	Water	HDPE carboy LC50	TRT-LC50-96	Survival/LC50 Rainbow Trout (96 hours)	14-07-2020	11/07/2020 14:00	
VA20B0234-004	W29	Water	HDPE carboy LC50	DAP-LC50-48	Survival/LC50 Daphnia Magna (48 hours)	14-07-2020	11/07/2020 14:40	
VA20B0234-004	W29	Water	HDPE carboy LC50	TRT-LC50-96	Survival/LC50 Rainbow Trout (96 hours)	14-07-2020	11/07/2020 14:40	
VA20B0234-005	W22	Water	HDPE carboy LC50	DAP-LC50-48	Survival/LC50 Daphnia Magna (48 hours)	14-07-2020	11/07/2020 15:00	
VA20B0234-005	W22	Water	HDPE carboy LC50	TRT-LC50-96	Survival/LC50 Rainbow Trout (96 hours)	14-07-2020	11/07/2020 15:00	

2x10

2x10

2x10

2x10

2x11

Emergency TAT

please confirm with AM

- all single concentration testing

TH

2.8-5.1°C

July 13/20 @ 14:57

201299 - DM plt

201300 - RBJ plt

END OF REPORT

EAGLE GOLD PROJECT
SPILL RESPONSE FORM

VICTORIA GOLD CORP

FIRST OBSERVER			
Name & Company:	Victoria Gold		
Date Observed:	26-Jul-2020	**Time Observed:** 5:10 am	
Location of Spill:	Warehouse Cold Storag	**VGC Tracking Number:** VGC20-024	
Distance to Waterbody:	400	**Photos Taken?**	☑ Yes ☐ No
Estimated Spill Volume:	1250 L	**Reported to:** K.Babin	

PERSON/DEPT. RESPONSIBLE FOR SPILL	
Supervisor/Investigator:	Trevor Dunn
Date of Spill:	26-Jul-2020
Substance Spilled:	Diesel
Equipment Involved:	Fuel Truck
Volume of Contaminated Material:	20 m3 of potentially contaminated soil material
Personnel Contacted for Disposal (Name):	Site services
Cause of Spill: (Equipment Failure, vehicle accident, foreign object, etc.)	Operator error. Operator left the refueling area while offloading fuel. Fuel spilled out of truck tank when tank was full.
Spill Response Actions Taken: (Containment and/or absorbent materials used, equipment required for clean-up, Pre-trip attached, etc.)	Operator shut off truck fuel pump once aware of the spill. Soil samples were taken at the base of removed materials. Free product was contained by earthen berms, spill sorbents and booms. Oil gator was spread on impacted areas. Residual contaminated water and free product was directed to a sump and pumped to containment totes.

ENVIRONMENTAL DEPARTMENT USE ONLY			
Spill Line Tracking Number	20-072	**Reportable to Spill Hotline?**	☑ Yes ☐ No
Info Re. Spill Hotline:	Reported July 26, 2020 - 20:50 Justin Hooper		
Disposal Container Labelled?	☐ Yes ☐ No	**Samples taken?**	☑ Yes ☐ No
Environmental areas affected: (Watercourse, soil, etc.):	Soil samples were taken from base of removed materials and results are pending.		
Method of Disposal & Further Remediation Required:	Potentially contaminated materials relocated to the Land Treatment Facility (LTF).		
Follow Up Required?	☐ Yes ☑ No	**Follow Up Date:**	

SIGNATURES REQUIRED FOR ALL REPORTABLE SPILLS			
Employee:		**Signature:**	
Supervisor:	Bruce Corbiere	**Signature:**	B Corbiere
Safety:		**Signature:**	
Environment:	Lindsay Rear	**Signature:**	LINDSAY REAR

Final Report

EAGLE GOLD PROJECT
SPILL RESPONSE FORM

VICTORIA GOLD CORP

FIRST OBSERVER			
Name & Company:	Victora Gold		
Date Observed:	2020-09-06	**Time Observed:** 9:00 Am	
Location of Spill:	1050 Bench lube skid	**VGC Tracking Number:** VGC20-029	
Distance to Waterbody:	>1km	**Photos Taken?**	☑ Yes ☐ No
Estimated Spill Volume:	180 L	**Reported to:** B.Bowden	
PERSON/DEPT. RESPONSIBLE FOR SPILL			
Supervisor/Investigator:	Denys Evans		
Date of Spill:	2020-09-06		
Substance Spilled:	Waste oil		
Equipment Involved:	Lube Skid		
Volume of Contaminated Material:	10 m2 of ground material		
Personnel Contacted for Disposal (Name):	Site Services		
Cause of Spill: (Equipment Failure, vehicle accident, foreign object, etc.)	Accidental overflow while transferring waste oil to disposal tote.		
Spill Response Actions Taken: (Containment and/or absorbent materials used, equipment required for clean-up, Pre-trip attached, etc.)	Containment using earthen berms, spill booms, pads and gator powder. Soil was removed for treatment in the permitted LTF. Contaminated pads and booms were placed in mega bags for back haul.		
ENVIRONMENTAL DEPARTMENT USE ONLY			
Spill Line Tracking Number	20-085	**Reportable to Spill Hotline?**	☑ Yes ☐ No
Info Re. Spill Hotline:	Reported to Murray		
Disposal Container Labelled?	☑ Yes ☐ No	**Samples taken?**	☑ Yes No
Environmental areas affected: (Watercourse, soil, etc.):	10 50 bench ground		
Method of Disposal & Further Remediation Required:	Contaminated material was removed for treatment in the LTF.		
Follow Up Required?	☑ Yes ☐ No	**Follow Up Date:**	
SIGNATURES REQUIRED FOR ALL REPORTABLE SPILLS			
Employee:		**Signature:**	
Supervisor:	Talwin	**Signature:**	
Safety:		**Signature:**	
Environment:	Bill Bowden	**Signature:**	Bill Bowden

Victoria GOLD CORP	Additional Spill Information		
Spill Date:	September 6, 2020	VGC Spill #	VGC20-029
Volume (L):	180 l	Yukon Government #	20-084
Substance	Waste Oil	Location	1050 Bench

1 Photos



Photo 1 – Spill pads, gator and small booms placed around spill for containment

Victoria GOLD CORP	Additional Spill Information		
Spill Date:	September 6, 2020	VGC Spill #	VGC20-029
Volume (L):	180 l	Yukon Government #	20-084
Substance	Waste Oil	Location	1050 Bench



Photo 2 – Ground area after waste oil had been removed and ground scraped.

Victoria GOLD CORP	Additional Spill Information		
Spill Date:	September 6, 2020	VGC Spill #	VGC20-029
Volume (L):	180 l	Yukon Government #	20-084
Substance	Waste Oil	Location	1050 Bench

2 Laboratory Results - Excavated material received in Land Treatment Facility

(Note Project identifier in Chain of Custody/Analytical Request Form incorrectly labelled)

ALS Environmental

CERTIFICATE OF ANALYSIS

Work Order	: **WR2000847**	Page	: 1 of 4
Client	: **Victoria Gold (Yukon) Corp.**	Laboratory	: Whitehorse - Environmental
Contact	: Hugh Coyle	Account Manager	: Hilary Woods
Address	: Suite 1000 - 1050 W. Pender St Vancouver BC Canada V6E 3S7	Address	: #12 151 Industrial Road Whitehorse YT Canada Y1A 2V3
Telephone	: 604 682 5122	Telephone	: +1 867 668 6689
Project	: HLF1B Spill	Date Samples Received	: 10-Sep-2020 13:11
PO	: 15673	Date Analysis Commenced	: 14-Sep-2020
C-O-C number	: 20200909c	Issue Date	: 21-Sep-2020 11:23
Sampler	: FL, KT		
Site	: Victoria Gold Corp.		
Quote number	: Q68199		
No. of samples received	: 1		
No. of samples analysed	: 1		

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Surrogate Control Limits

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QC Interpretive report to assist with Quality Review and Sample Receipt Notification (SRN).

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is conducted in accordance with US FDA 21 CFR Part 11.

Signatories	*Position*	*Laboratory Department*
Brieanna Allen	Department Manager - Organics	Organics, Burnaby, British Columbia
Paul Cushing	Team Leader - Organics	Organics, Burnaby, British Columbia

General Comments

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Refer to the ALS Quality Control Interpretive report (QCI) for applicable references and methodology summaries. Reference methods may incorporate modifications to improve performance.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

Please refer to Quality Control Interpretive report (QCI) for information regarding Holding Time compliance.

Key : CAS Number: Chemical Abstracts Services number is a unique identifier assigned to discrete substances
LOR: Limit of Reporting (detection limit).

Unit	*Description*
%	percent
mg/kg	milligrams per kilogram

<: less than.

>: greater than.

Surrogate: An analyte that is similar in behavior to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.

Test results reported relate only to the samples as received by the laboratory.

UNLESS OTHERWISE STATED on SRN or QCI Report, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

Analytical results in reports identified as "Preliminary Report" are considered authorized for use.

Qualifiers

Qualifier	*Description*
DLCI	*Detection Limit Raised: Chromatographic interference due to co-elution.*
DLQ	*Detection Limit raised due to co-eluting interference. GCMS qualifier ion ratio did not meet acceptance criteria.*

Analytical Results

Sub-Matrix: **Soil**
(Matrix: **Soil/Solid**)

Analyte	CAS Number	Method	LOR	Unit	Client sample ID: VGC20-029-LTF	----	----	----	----
					Client sampling date / time: 09-Sep-2020 09:50	----	----	----	----
					WR2000847-001	--------	--------	--------	--------
					Result	----	----	----	----
Physical Tests									
moisture	----	E144	0.25	%	13.6	----	----	----	----
Volatile Organic Compounds [BTEXS+MTBE]									
benzene	71-43-2	E611A	0.0050	mg/kg	<0.0050	----	----	----	----
ethylbenzene	100-41-4	E611A	0.015	mg/kg	<0.015	----	----	----	----
methyl-tert-butyl ether [MTBE]	1634-04-4	E611A	0.200	mg/kg	<0.200	----	----	----	----
styrene	100-42-5	E611A	0.050	mg/kg	<0.050	----	----	----	----
toluene	108-88-3	E611A	0.050	mg/kg	<0.050	----	----	----	----
xylene, m+p-	179601-23-1	E611A	0.050	mg/kg	<0.050	----	----	----	----
xylene, o-	95-47-6	E611A	0.050	mg/kg	<0.050	----	----	----	----
xylenes, total	1330-20-7	E611A	0.075	mg/kg	<0.075	----	----	----	----
Volatile Organic Compounds Surrogates									
bromofluorobenzene, 4-	460-00-4	E611A	0.050	%	103	----	----	----	----
difluorobenzene, 1,4-	540-36-3	E611A	0.050	%	97.4	----	----	----	----
Hydrocarbons									
VHs (C6-C10)	----	E581.VH+F1	10	mg/kg	<10	----	----	----	----
VPHs	----	EC580A	10	mg/kg	<10	----	----	----	----
Hydrocarbons Surrogates									
dichlorotoluene, 3,4-	97-75-0	E581.VH+F1	1.0	%	103	----	----	----	----
Polycyclic Aromatic Hydrocarbons									
acenaphthene	83-32-9	E641A-L	0.0050	mg/kg	<0.0050	----	----	----	----
acenaphthylene	208-96-8	E641A-L	0.0050	mg/kg	<0.0050	----	----	----	----
acridine	260-94-6	E641A-L	0.010	mg/kg	<0.010	----	----	----	----
anthracene	120-12-7	E641A-L	0.0040	mg/kg	<0.0040	----	----	----	----
benz(a)anthracene	56-55-3	E641A-L	0.010	mg/kg	<0.010	----	----	----	----
benzo(a)pyrene	50-32-8	E641A-L	0.010	mg/kg	<0.010	----	----	----	----
benzo(b+j)fluoranthene	----	E641A-L	0.010	mg/kg	<0.010	----	----	----	----
benzo(b+j+k)fluoranthene	----	E641A-L	0.015	mg/kg	<0.022	----	----	----	----
benzo(g,h,i)perylene	191-24-2	E641A-L	0.010	mg/kg	<0.010	----	----	----	----
benzo(k)fluoranthene	207-08-9	E641A-L	0.010	mg/kg	<0.020 DLCI	----	----	----	----
chrysene	218-01-9	E641A-L	0.010	mg/kg	<0.010	----	----	----	----

Analytical Results

Sub-Matrix: Soil (Matrix: Soil/Solid)					Client sample ID	VGC20-029-LTF	----	----	----	----
					Client sampling date / time	09-Sep-2020 09:50	----	----	----	----
Analyte	CAS Number	Method	LOR	Unit		WR2000847-001	--------	--------	--------	--------
						Result	----	----	----	----
Polycyclic Aromatic Hydrocarbons										
dibenz(a,h)anthracene	53-70-3	E641A-L	0.0050	mg/kg		<0.0060 DLCI	----	----	----	----
fluoranthene	206-44-0	E641A-L	0.010	mg/kg		<0.010	----	----	----	----
fluorene	86-73-7	E641A-L	0.010	mg/kg		<0.010	----	----	----	----
indeno(1,2,3-c,d)pyrene	193-39-5	E641A-L	0.010	mg/kg		<0.010	----	----	----	----
methylnaphthalene, 1-	90-12-0	E641A-L	0.010	mg/kg		0.028	----	----	----	----
methylnaphthalene, 2-	91-57-6	E641A-L	0.010	mg/kg		0.042	----	----	----	----
methylnaphthalenes, 1+2-	----	E641A-L	0.015	mg/kg		0.070	----	----	----	----
naphthalene	91-20-3	E641A-L	0.010	mg/kg		<0.030 DLQ	----	----	----	----
phenanthrene	85-01-8	E641A-L	0.010	mg/kg		<0.010	----	----	----	----
pyrene	129-00-0	E641A-L	0.010	mg/kg		<0.010	----	----	----	----
quinoline	6027-02-7	E641A-L	0.010	mg/kg		<0.020 DLQ	----	----	----	----
B(a)P total potency equivalents [B(a)P TPE]	----	E641A-L	0.020	mg/kg		<0.011	----	----	----	----
IACR (CCME)	----	E641A-L	0.15	mg/kg		<0.14	----	----	----	----
Polycyclic Aromatic Hydrocarbons Surrogates										
acridine-d9	34749-75-2	E641A-L	0.010	%		99.1	----	----	----	----
chrysene-d12	1719-03-5	E641A-L	0.010	%		108	----	----	----	----
naphthalene-d8	1146-65-2	E641A-L	0.010	%		101	----	----	----	----
phenanthrene-d10	1517-22-2	E641A-L	0.010	%		103	----	----	----	----

Please refer to the General Comments section for an explanation of any qualifiers detected.

Victoria GOLD CORP	Additional Spill Information		
Spill Date:	September 6, 2020	VGC Spill #	VGC20-029
Volume (L):	180 l	Yukon Government #	20-084
Substance	Waste Oil	Location	1050 Bench

3 Laboratory Results - Confirmation sampling at spill location post clean up

(Note Project identifier in Chain of Custody/Analytical Request Form incorrectly labelled)

ALS Environmental

CERTIFICATE OF ANALYSIS

Work Order	: **WR2000849**	Page	: 1 of 5
Client	: **Victoria Gold (Yukon) Corp.**	Laboratory	: Whitehorse - Environmental
Contact	: Bill Bowden	Account Manager	: Hilary Woods
Address	: Suite 1000 - 1050 W. Pender St Vancouver BC Canada V6E 3S7	Address	: #12 151 Industrial Road Whitehorse YT Canada Y1A 2V3
Telephone	: 867.456.7700 ext. 6381	Telephone	: +1 867 668 6689
Project	: HLF1B Spill	Date Samples Received	: 10-Sep-2020 13:11
PO	: 15673	Date Analysis Commenced	: 14-Sep-2020
C-O-C number	: 20200909d	Issue Date	: 21-Sep-2020 11:29
Sampler	: FL, KT		
Site	: Victoria Gold Corp.		
Quote number	: Q68199		
No. of samples received	: 5		
No. of samples analysed	: 5		

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Surrogate Control Limits

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QC Interpretive report to assist with Quality Review and Sample Receipt Notification (SRN).

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is conducted in accordance with US FDA 21 CFR Part 11.

Signatories	*Position*	*Laboratory Department*
Brieanna Allen	Department Manager - Organics	Organics, Burnaby, British Columbia
Paul Cushing	Team Leader - Organics	Organics, Burnaby, British Columbia

General Comments

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Refer to the ALS Quality Control Interpretive report (QCI) for applicable references and methodology summaries. Reference methods may incorporate modifications to improve performance.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

Please refer to Quality Control Interpretive report (QCI) for information regarding Holding Time compliance.

Key : CAS Number: Chemical Abstracts Services number is a unique identifier assigned to discrete substances
LOR: Limit of Reporting (detection limit).

Unit	*Description*
%	percent
mg/kg	milligrams per kilogram

<: less than.

>: greater than.

Surrogate: An analyte that is similar in behavior to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.

Test results reported relate only to the samples as received by the laboratory.

UNLESS OTHERWISE STATED on SRN or QCI Report, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

Analytical results in reports identified as "Preliminary Report" are considered authorized for use.

Qualifiers

Qualifier	*Description*
DLCI	*Detection Limit Raised: Chromatographic interference due to co-elution.*
DLQ	*Detection Limit raised due to co-eluting interference. GCMS qualifier ion ratio did not meet acceptance criteria.*

Analytical Results

Sub-Matrix: **Soil**
(Matrix: **Soil/Solid**)

Analyte	CAS Number	Method	LOR	Unit	Client sample ID	VGC20-029 Floor	VGC20-029-Step 1	VGC20-029-Step 2	VGC20-029-Step 3	VGC20-029-Step 4
					Client sampling date / time	09-Sep-2020 18:30	09-Sep-2020 18:35	09-Sep-2020 18:40	09-Sep-2020 18:45	09-Sep-2020 18:50
						WR2000849-001	WR2000849-002	WR2000849-003	WR2000849-004	WR2000849-005
						Result	Result	Result	Result	Result
Physical Tests										
moisture	----	E144	0.25	%		12.8	16.7	4.70	10.5	8.56
Volatile Organic Compounds										
chlorobenzene	108-90-7	E611C	0.050	mg/kg		<0.050	<0.050	<0.050	<0.050	<0.050
chloromethane	74-87-3	E611C	0.050	mg/kg		<0.050	<0.050	<0.050	<0.050	<0.050
dichlorobenzene, 1,2-	95-50-1	E611C	0.050	mg/kg		<0.050	<0.050	<0.050	<0.050	<0.050
dichlorobenzene, 1,3-	541-73-1	E611C	0.050	mg/kg		<0.050	<0.050	<0.050	<0.050	<0.050
dichlorobenzene, 1,4-	106-46-7	E611C	0.050	mg/kg		<0.050	<0.050	<0.050	<0.050	<0.050
dichloropropane, 1,2-	78-87-5	E611C	0.050	mg/kg		<0.050	<0.050	<0.050	<0.050	<0.050
dichloropropylene, cis+trans-1,3-	542-75-6	E611C	0.075	mg/kg		<0.075	<0.075	<0.075	<0.075	<0.075
dichloropropylene, cis-1,3-	10061-01-5	E611C	0.050	mg/kg		<0.050	<0.050	<0.050	<0.050	<0.050
tetrachloroethane, 1,1,1,2-	630-20-6	E611C	0.050	mg/kg		<0.050	<0.050	<0.050	<0.050	<0.050
tetrachloroethane, 1,1,2,2-	79-34-5	E611C	0.050	mg/kg		<0.050	<0.050	<0.050	<0.050	<0.050
trichloroethane, 1,1,2-	79-00-5	E611C	0.050	mg/kg		<0.050	<0.050	<0.050	<0.050	<0.050
trichlorofluoromethane	75-69-4	E611C	0.050	mg/kg		<0.050	<0.050	<0.050	<0.050	<0.050
Volatile Organic Compounds [BTEXS+MTBE]										
benzene	71-43-2	E611C	0.0050	mg/kg		<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
ethylbenzene	100-41-4	E611C	0.015	mg/kg		<0.015	<0.015	<0.015	<0.015	<0.015
methyl-tert-butyl ether [MTBE]	1634-04-4	E611C	0.050	mg/kg		<0.050	<0.050	<0.050	<0.050	<0.050
styrene	100-42-5	E611C	0.050	mg/kg		<0.050	<0.050	<0.050	<0.050	<0.050
toluene	108-88-3	E611C	0.050	mg/kg		<0.050	<0.050	<0.050	<0.050	<0.050
xylene, m+p-	179601-23-1	E611C	0.050	mg/kg		<0.050	<0.050	<0.050	<0.050	<0.050
xylene, o-	95-47-6	E611C	0.050	mg/kg		<0.050	<0.050	<0.050	<0.050	<0.050
xylenes, total	1330-20-7	E611C	0.075	mg/kg		<0.075	<0.075	<0.075	<0.075	<0.075
Volatile Organic Compounds [Drycleaning]										
carbon tetrachloride	56-23-5	E611C	0.050	mg/kg		<0.050	<0.050	<0.050	<0.050	<0.050
chloroethane	75-00-3	E611C	0.050	mg/kg		<0.050	<0.050	<0.050	<0.050	<0.050
dichloroethane, 1,1-	75-34-3	E611C	0.050	mg/kg		<0.050	<0.050	<0.050	<0.050	<0.050
dichloroethane, 1,2-	107-06-2	E611C	0.050	mg/kg		<0.050	<0.050	<0.050	<0.050	<0.050
dichloroethylene, 1,1-	75-35-4	E611C	0.050	mg/kg		<0.050	<0.050	<0.050	<0.050	<0.050
dichloroethylene, cis-1,2-	156-59-4	E611C	0.050	mg/kg		<0.050	<0.050	<0.050	<0.050	<0.050

Analytical Results

Sub-Matrix: **Soil**
(Matrix: **Soil/Solid**)

Analyte	CAS Number	Method	LOR	Unit	Client sample ID	VGC20-029 Floor	VGC20-029-Step 1	VGC20-029-Step 2	VGC20-029-Step 3	VGC20-029-Step 4
					Client sampling date / time	09-Sep-2020 18:30	09-Sep-2020 18:35	09-Sep-2020 18:40	09-Sep-2020 18:45	09-Sep-2020 18:50
						WR2000849-001	WR2000849-002	WR2000849-003	WR2000849-004	WR2000849-005
						Result	Result	Result	Result	Result
Volatile Organic Compounds [Drycleaning]										
dichloroethylene, trans-1,2-	156-60-5	E611C	0.050	mg/kg		<0.050	<0.050	<0.050	<0.050	<0.050
dichloromethane	75-09-2	E611C	0.050	mg/kg		<0.050	<0.050	<0.050	<0.050	<0.050
dichloropropylene, trans-1,3-	10061-02-6	E611C	0.050	mg/kg		<0.050	<0.050	<0.050	<0.050	<0.050
tetrachloroethylene	127-18-4	E611C	0.050	mg/kg		<0.050	<0.050	<0.050	<0.050	<0.050
trichloroethane, 1,1,1-	71-55-6	E611C	0.050	mg/kg		<0.050	<0.050	<0.050	<0.050	<0.050
trichloroethylene	79-01-6	E611C	0.010	mg/kg		<0.010	<0.010	<0.010	<0.010	<0.010
vinyl chloride	75-01-4	E611C	0.050	mg/kg		<0.050	<0.050	<0.050	<0.050	<0.050
Volatile Organic Compounds Surrogates										
bromofluorobenzene, 4-	460-00-4	E611C	0.050	%		104	100	99.8	97.9	106
difluorobenzene, 1,4-	540-36-3	E611C	0.050	%		93.2	90.5	130	93.1	95.4
Hydrocarbons										
EPH (C10-C19)	----	E601A	200	mg/kg		380	<200	<200	<200	<200
EPH (C19-C32)	----	E601A	200	mg/kg		4040	660	200	410	240
VHs (C6-C10)	----	E581.VH+F1	10	mg/kg		<10	<10	<10	<10	<10
HEPHs	----	EC600A	200	mg/kg		4040	660	<200	410	240
LEPHs	----	EC600A	200	mg/kg		380	<200	<200	<200	<200
VPHs	----	EC580A	10	mg/kg		<10	<10	<10	<10	<10
Hydrocarbons Surrogates										
bromobenzotrifluoride, 2- (EPH surr)	392-83-6	E601A	5.0	%		88.2	88.5	87.6	88.1	86.4
dichlorotoluene, 3,4-	97-75-0	E581.VH+F1	1.0	%		119	92.8	88.7	91.4	96.1
Polycyclic Aromatic Hydrocarbons										
acenaphthene	83-32-9	E641A-L	0.0050	mg/kg		<0.0090 DLCI	<0.0050	<0.0050	<0.0050	<0.0050
acenaphthylene	208-96-8	E641A-L	0.0050	mg/kg		<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
acridine	260-94-6	E641A-L	0.010	mg/kg		<0.020 DLCI	<0.010	<0.010	<0.010	<0.010
anthracene	120-12-7	E641A-L	0.0040	mg/kg		<0.0060 DLCI	<0.0040	<0.0040	<0.0040	<0.0040
benz(a)anthracene	56-55-3	E641A-L	0.010	mg/kg		<0.010	<0.010	<0.010	<0.010	<0.010
benzo(a)pyrene	50-32-8	E641A-L	0.010	mg/kg		<0.010	<0.010	<0.010	<0.010	<0.010
benzo(b+j)fluoranthene	----	E641A-L	0.010	mg/kg		<0.010	<0.010	<0.010	<0.010	<0.010
benzo(b+j+k)fluoranthene	----	E641A-L	0.015	mg/kg		<0.022	<0.015	<0.015	<0.015	<0.015
benzo(g,h,i)perylene	191-24-2	E641A-L	0.010	mg/kg		<0.010	<0.010	<0.010	<0.010	<0.010
benzo(k)fluoranthene	207-08-9	E641A-L	0.010	mg/kg		<0.020 DLCI	<0.010	<0.010	<0.010	<0.010

Analytical Results

Sub-Matrix: **Soil**
(Matrix: **Soil/Solid**)

Analyte	CAS Number	Method	LOR	Unit	Client sample ID	VGC20-029 Floor	VGC20-029-Step 1	VGC20-029-Step 2	VGC20-029-Step 3	VGC20-029-Step 4
					Client sampling date / time	09-Sep-2020 18:30	09-Sep-2020 18:35	09-Sep-2020 18:40	09-Sep-2020 18:45	09-Sep-2020 18:50
						WR2000849-001	WR2000849-002	WR2000849-003	WR2000849-004	WR2000849-005
						Result	Result	Result	Result	Result
Polycyclic Aromatic Hydrocarbons										
chrysene	218-01-9	E641A-L	0.010	mg/kg		<0.010	<0.010	<0.010	<0.010	<0.010
dibenz(a,h)anthracene	53-70-3	E641A-L	0.0050	mg/kg		<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
fluoranthene	206-44-0	E641A-L	0.010	mg/kg		<0.010	<0.010	<0.010	<0.010	<0.010
fluorene	86-73-7	E641A-L	0.010	mg/kg		<0.020 DLCI	<0.010	<0.010	<0.010	<0.010
indeno(1,2,3-c,d)pyrene	193-39-5	E641A-L	0.010	mg/kg		<0.010	<0.010	<0.010	<0.010	<0.010
methylnaphthalene, 1-	90-12-0	E641A-L	0.010	mg/kg		0.065	<0.010	<0.010	<0.010	<0.010
methylnaphthalene, 2-	91-57-6	E641A-L	0.010	mg/kg		0.095	<0.010	<0.010	<0.010	<0.010
naphthalene	91-20-3	E641A-L	0.010	mg/kg		<0.040 DLQ	<0.010	<0.010	<0.010	<0.010
phenanthrene	85-01-8	E641A-L	0.010	mg/kg		<0.020 DLQ	<0.010	<0.010	<0.010	<0.010
pyrene	129-00-0	E641A-L	0.010	mg/kg		<0.020 DLQ	<0.010	<0.010	<0.010	<0.010
quinoline	6027-02-7	E641A-L	0.010	mg/kg		<0.030 DLCI	<0.010	<0.010	<0.010	<0.010
B(a)P total potency equivalents [B(a)P TPE]	----	E641A-L	0.020	mg/kg		<0.010	<0.010	<0.010	<0.010	<0.010
IACR (CCME)	----	E641A-L	0.15	mg/kg		<0.14	<0.11	<0.11	<0.11	<0.11
Polycyclic Aromatic Hydrocarbons Surrogates										
acridine-d9	34749-75-2	E641A-L	0.010	%		95.3	102	89.4	95.6	96.0
chrysene-d12	1719-03-5	E641A-L	0.010	%		105	112	100	107	108
naphthalene-d8	1146-65-2	E641A-L	0.010	%		95.7	104	96.4	99.8	98.6
phenanthrene-d10	1517-22-2	E641A-L	0.010	%		98.5	107	96.9	102	101
Volatile Organic Compounds [THMs]										
bromodichloromethane	75-27-4	E611C	0.050	mg/kg		<0.050	<0.050	<0.050	<0.050	<0.050
bromoform	75-25-2	E611C	0.050	mg/kg		<0.050	<0.050	<0.050	<0.050	<0.050
chloroform	67-66-3	E611C	0.050	mg/kg		<0.050	<0.050	<0.050	<0.050	<0.050
dibromochloromethane	124-48-1	E611C	0.050	mg/kg		<0.050	<0.050	<0.050	<0.050	<0.050

Please refer to the General Comments section for an explanation of any qualifiers detected.

EAGLE GOLD PROJECT
SPILL RESPONSE FORM

VICTORIA GOLD CORP

FIRST OBSERVER			
Name & Company:	Victoria Gold Corp.		
Date Observed:	November 28, 2020	**Time Observed:** 5:30pm	
Location of Spill:	Sec/Ter Laydown	**VGC Tracking Number:** VGC-20-039	
Distance to Waterbody:	+1000m	**Photos Taken?**	☑ Yes ☐ No
Estimated Spill Volume:	500 L	**Reported to:** Environment	
PERSON/DEPT. RESPONSIBLE FOR SPILL			
Supervisor/Investigator:	Justin Magill		
Date of Spill:	November 28, 2020		
Substance Spilled:	Hydraulic Oil		
Equipment Involved:	Zoom Boom/Tote container		
Volume of Contaminated Material:	7 cubic meters of snow and gravel		
Personnel Contacted for Disposal (Name):	Phil Emerson, Environment Dept.		
Cause of Spill: (Equipment Failure, vehicle accident, foreign object, etc.)	Zoom boom was moving totes at the secondary crusher parking lot and in front of one tote there was a small raised berm. The fork of the zoom boom was lifted by the berm and instead of sliding into the pallet the fork punctured the tote, releasing some contents.		
Spill Response Actions Taken: (Containment and/or absorbent materials used, equipment required for clean-up, Pre-trip attached, etc.)	Snow berms and spill booms were deployed to contain the spill and absorbent pads were applied to ground to clean up free product. Snow was collected and placed in mega bags and an excavator with digging bucket was used to scrap up frozen material and place in mega bags for transport to the LTF. Soil sampling conducted.		
ENVIRONMENTAL DEPARTMENT USE ONLY			
Spill Line Tracking Number	20-107	**Reportable to Spill Hotline?**	☑ Yes ☐ No
Info Re. Spill Hotline:	500L hydraulic spill caused by a zoom boom puncturing a hydraulic tote		
Disposal Container Labelled?	☐ Yes ☐ No	**Samples taken?**	☑ Yes ☐ No
Environmental areas affected: (Watercourse, soil, etc.):	none		
Method of Disposal & Further Remediation Required:	Contaminated material will be placed in the LTF upon receipt of ALS results		
Follow Up Required?	☑ Yes ☐ No	**Follow Up Date:** Dec 7	
SIGNATURES REQUIRED FOR ALL REPORTABLE SPILLS			
Employee:		**Signature:**	
Supervisor:	Justin Magill	**Signature:**	JM
Safety:		**Signature:**	
Environment:	Phil Emerson	**Signature:**	Phil Emerson

EAGLE GOLD PROJECT
SPILL RESPONSE FORM

VICTORIA GOLD CORP

FIRST OBSERVER			
Name & Company:	Victoria Gold Corporation		
Date Observed:	2020-12-26	**Time Observed:** 09:00	
Location of Spill:	Warehouse	**VGC Tracking Number:** VGC20-042	
Distance to Waterbody:	500m	**Photos Taken?**	☑ Yes ☐ No
Estimated Spill Volume:	200L	**Reported to:** Enviro	

PERSON/DEPT. RESPONSIBLE FOR SPILL	
Supervisor/Investigator:	Chris Schaad
Date of Spill:	2020-12-26
Substance Spilled:	Septic Waste
Equipment Involved:	Vac Truck
Volume of Contaminated Material:	0 - snow
Personnel Contacted for Disposal (Name):	Site Services
Cause of Spill: (Equipment Failure, vehicle accident, foreign object, etc.)	Pumping out septic tank at W.S.L washcar with vac truck. Once finished, operator turned off shut off valve and pump controls as well as P.T.O. Before driving away, operator noticed septic waste being released to the laydown and realized that the shut off valve was not completely closed.
Spill Response Actions Taken: (Containment and/or absorbent materials used, equipment required for clean-up, Pre-trip attached, etc.)	Operator closed the shut off valve completely and notified supervisor. The impacted area was contained and spill response was initiated. The contaminated material was scraped up with a bucket and spread out over the septic field. Lime was spread out on the contaminated snow at the area where the incident occured.

ENVIRONMENTAL DEPARTMENT USE ONLY			
Spill Line Tracking Number	20-113	**Reportable to Spill Hotline?**	☑ Yes ☐ No
Info Re. Spill Hotline:			
Disposal Container Labelled?	☐ Yes ☑ No	**Samples taken?**	☐ Yes ☑ No
Environmental areas affected: (Watercourse, soil, etc.):	None - contaminated snow was moved to septic field.		
Method of Disposal & Further Remediation Required:	Scraped up impacted snow and placed on septic field. Lime spread on impacted area.		
Follow Up Required?	☐ Yes ☑ No	**Follow Up Date:** N/A	

SIGNATURES REQUIRED FOR ALL REPORTABLE SPILLS			
Employee:		**Signature:**	
Supervisor:	Christian Schaad	**Signature:** ch Schaad	Jan/05/2021
Safety:		**Signature:**	
Environment:	Bill Bowden	**Signature:** Bill Bowden	Jan/05/2021

Victoria GOLD CORP	Additional Spill Information		
Spill Date:	December 12, 2020	VGC Spill #	VGC20-042
Volume (L):	200	Yukon Government #	20-113
Substance	Sewage	Location	Warehouse Laydown



Photo 1: Initial sewage release laydown prior to impacted snow removal and clean-up.



Photo 2: Laydown following spill cleanup and impacted snow removal.

Victoria GOLD CORP	Additional Spill Information		
Spill Date:	December 12, 2020	VGC Spill #	VGC20-042
Volume (L):	200	Yukon Government #	20-113
Substance	Sewage	Location	Warehouse Laydown



Photo 3: Impacted snow deposited on the main camp septic field for containment



Photo 4: Sewage release location following lime treatment.

APPENDIX Q1

Eagle Gold Mine 2020 Environmental Audit Report

Eagle Gold Mine 2020 Environmental Audit Report

November 30, 2020

Prepared for:

Victoria Gold Corporation

Prepared by:

Stantec Consulting Ltd.

Project Number: 123221646

Revision: 1

Executive Summary

The Eagle Gold Mine (the Project), is owned and operated by Victoria Gold (Yukon) Corp (VGC) and is located within the Mayo mining district of Yukon Territory, Canada. The mine is situated approximately 85 km north of Mayo and 400 km north of Whitehorse. The Project is an open pit mine, in-valley heap leach with three stage crush and gold recovery plant.

VGC received a quartz mining license to build the open pit mine in September 2013. A Comprehensive Cooperation Benefits Agreement was signed with the First Nation of Na-Cho Nyak Dun in 2011. Preliminary construction works began in August 2017 and full construction works commenced in March 2018. The Project poured its first gold Q3, 2019 and achieved commercial production on July 1, 2020. In full production, the mine will produce 210,000 ounces per year and the mine life is ten plus years.

Clause 12.0 of Quartz Mine License 0011 (QML-0011) requires the undertaking of an environmental audit every two years, by an independent contractor acceptable to the Director of the Mineral Resources Branch of EMR. Stantec Consulting Ltd. (Stantec) was contracted by VGC to complete an Environmental Audit for the Project in accordance with the conditions of QML-0011. The period of this audit report is inclusive of monitoring and surveillance activities at the Project site from July 1, 2018 to June 30, 2020. This report will be the first audit for the mine, and this audit spans the construction phase and into the first year of mine operations.

The audit scope involved an evaluation of compliance with the following approved plans:

- Environmental Monitoring, Surveillance and Adaptive Management Plan (EMSAMP) Version 2018-01, 2019-01 and 2020-01
- Construction and Operations Water Management Plan Version 2017-01,
- Water Management Plan Version 2020-01,
- Solid Waste and Hazardous Materials Management Plan Version 2017-02,
- Spill Response Plan Version 2017-02,
- Wildlife Protection Plan Version 2017-01.

The auditors reviewed the following regulatory reporting submissions:

- Water License QZ14-041-01 / Quartz Mining License QML-0011 2018 Annual Report and relevant appendices,
- Water License QZ14-041-01 / Quartz Mining License QML-0011 2019 Annual Report and relevant appendices,
- Monthly reports covering climate, air quality, hydrology, groundwater quality and quantity, surface water quality, geochemistry, soils, vegetation, and physical structures monitoring from January to June 2020 and relevant appendices,



- Annual Physical Stability Assessment Report dated December 20, 2018,
- Annual Physical Stability Assessment Report dated October 29, 2019,
- Quarterly Wildlife Reports from September 2018 to June 1, 2020.

Additional records and documents that were reviewed, but not listed above, are listed in the discipline sections under sub-sections titled ‘Documents Reviewed’.

The audit evaluated:

- Compliance and adequate implementation of the plans and associated monitoring programs,
- Confirming the water monitoring (surface water quality and quantity, groundwater, and aquatic, habitat), terrestrial environment and physical stability assessments were completed to the specifications in the approved plans.

The following general steps were taken to conduct the audit:

1. Identification of documents to be reviewed to fulfill the audit objectives and requirements
2. Comparison of monitoring activities at all sites against the execution described in the. EMSAMP for frequency, methods, and results,
3. Review of data quality assurance and quality control procedures,
4. Confirmation that AMP thresholds are being monitored in conformance with the EMSAMP,
5. Confirmation that AMP responses follow what is outlined in the EMSAMP and were reported, appropriately,
6. Provision of an audit adequacy statement regarding conformance with plans within the audit scope,
7. Provision of a summary table of identified gaps and/or recommendations for the monitoring programs

Key findings of the audit are provided in section 8.0 of the report. Overall, the implementation of VGC’s environmental management system has been adequate and has demonstrated continual improvement throughout the audit period. Reports and data reviewed do not indicate that indicators of environmental quality (water quality and quantity, aquatic resources (sediment, benthic invertebrates, fish and fish habitat) air quality, soils, vegetation, wildlife and wildlife habitat, stability of physical structures and waste management) are degraded or degrading.

Stantec noted that there were some common deficiencies across several monitoring programs and associated recommendations (Table ES 1).

Table ES 1 Global Audit Themes and Corrective Actions

Global Audit Deficiency	Recommendation
Reporting monitoring activities and results without sufficient supporting data and information (e.g., validated datasets, statistical analyses, results compared against relevant standards or guidelines)	All reports (monthly, quarterly, annual) should provide validated data sets, supporting data QA/QC documentation, and data analyses and interpretation specified in the project Environmental Monitoring and Surveillance and Adaptive Management Plan
Inconsistent implementation and/or documentation of QA/QC programs	Standard Operating Procedures and/or checklist QA/QC checklist should be developed for all monitoring programs
Equipment malfunction resulting in gaps in datasets (i.e. climate, hydrology)	Regularly inspect equipment and data sensors/loggers to prevent prolonged periods of data loss. Maintain an Equipment Maintenance Log for monitoring equipment and maintain equipment on a regular schedule and/or as required
Missing rationale in reports for gaps in implementation of monitoring schedules	Provide rationale for gaps in quarterly, monthly, and annual reporting, and any corrective action taken to address gaps
For monitoring programs with numerical threshold standards or objectives, statistical analyses were not performed to determine if statistically significant changes occurred to the receiving environment (i.e. air quality, hydrology, surface water quality, groundwater, soils, vegetation)	Develop discipline-appropriate statistical tests and report on trend analysis relative to baseline data
Lack of adaptive management responses or rationale for not implementing adaptive management measures.	Provide reasoning for implementing and not implementing adaptive management measures in quarterly, monthly, and annual reporting

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Abbreviations

ADR	Adsorption Desorption Recovery
AMP	Adaptive Management Plan
AMT	Adaptive Management Threshold
AQC	Air Quality Criteria
AQMP	Air Quality Monitoring Plan
BMP	Best Management Practices
CAAQS	Canadian Ambient Air Quality Standards
CCME	Canadian Council of Ministers of the Environment
DQO	Data Quality Objective
EBAM	Beta-Attenuation Particulate Monitors
EC	Environment Canada
EMR	Department of Energy, Mines and Resources
EMSAMP	Environmental Monitoring and Surveillance Plan
EOR	Engineer of Record
EP	Eagle Pup
EPCM	Engineering Procurement Construction Management
EQS	Effluent Quality Standards
ESC	Erosion Sediment Control
EVP	Event Pond
FNNND	First Nation of Na-Cho Nyak Dun
FOS	Factor of Safety
FT	Mine Water Treatment Plant Finishing Tank
HLF	Heap Leach Facility
HLFUMV	Heap Leach Facility Underdrain Monitoring Vault
IFC	Issued for Construction

ISQG	Interim Sediment Quality Guideline
LDSP	Lower Dublin South Pond
LDSPI	Lower Dublin South Pond Inflow
LDSPO	Lower Dublin South Pond Outflow
LDSP-UND	LDSP Undertrain Outflow
MDMER	Metal and Diamond Mine Effluent Regulations
MWTP	Mine Water Treatment Plant
NH_3	Ammonia
NO_2	Nitrogen Dioxide
OAQC	Ontario Air Quality Criteria
OPP	Open Pit Pond
OPPO	Open Pit Pond Overflow
PASS	Passive Air Sampling Systems
PDI	Platinum Gulch Ditch
PEL	Probable Effects Level
PG	Platinum Gulch
PGS	Platinum Gulch WRSA Seepage
PM_{10}	Particulate Matter 10 (microns)
$PM_{2.5}$	Particulate Matter 2.5 (microns)
PS	Open Pit Sump
QA	Quality Assurance
QC	Quality Control
QML	Quartz Mine License
SGC	StrataGold Corporation
SO_2	Sulphur Dioxide
SOP	Standard Operating Procedure
TDR	Time-domain Reflectometer
TSP	Total Suspended Particulate



TSS	Total Suspended Sediment
VGC	Victoria Gold (Yukon) Corp.
WL	Water Licence
WMP	Water Management Plan
WPP	Wildlife Protection Plan
WQO	Water Quality Objective
WRSA	Waste Rock Storage Area
YAAQO	Yukon Ambient Air Quality Objectives
YESAA	Yukon Environmental and Socio-Economic Act



1.0 INTRODUCTION

Stantec Consulting Ltd. (Stantec) was retained by Victoria Gold (Yukon) Corporation (VGC) in August 2020 to carry out an audit of the Eagle Gold Mine (the Project) in accordance with the conditions of the Quartz Mine License QML-0011 (QML). The objective of this audit was to assess whether the environmental management plans and regulatory controls set out in the QML are implemented in and about the mine and that the environmental management systems and controls are functioning as intended.

1.1 BACKGROUND

The Eagle Gold Mine is owned and operated by VGC and is located within the Mayo mining district of Yukon Territory, Canada. The Project is situated approximately 85 km north of Mayo and 400 km north of Whitehorse. The Project is an open pit mine, in-valley heap leach with three stage crush and gold recovery plant.

VGC completed the Environmental Assessment process under the *Yukon Environmental and Socio-economic Assessment Act* (YESAA) and received Decision Documents from the Yukon Government and federal regulatory agencies in April 2013. An initial quartz mining license was received in September 2013, followed by a Water Use License in Dec 2015. Preliminary construction began in August 2017 and full construction works commenced in March 2018. A Comprehensive Cooperation Benefits Agreement was signed with the First Nation of Na-Cho Nyak Dun in 2011.

In 2017, construction activities began with camp expansion, access road upgrades, site road construction, diversions and ditching, pond construction, clearing and grubbing, civil earthworks, septic system upgrade, and borrow source development. In March 2018, after a winter hiatus, activities resumed and included construction of Phase I of the Heap Leach Facility (HLF), Events Pond, Crushing and Screening Plants, Overland Conveying System and coarse ore transfer areas, Cement and Lime Silos, Adsorption, Desorption and Recovery Plant and Reagent Storage Buildings, Metallurgical Laboratories, Administration Office, mine offices, ANFO and Detonator Storage, Water Distribution Systems, pre-stripping of the Eagle pit and initial development of the Platinum Gulch Waste Rock Storage Area, and construction of 90-day Ore Stockpile.

Commissioning of the built facilities began in Q2 2019. On February 16, 2019, VGC notified responsible authorities of their intent to enter the Production Phase (defined in the regulatory approvals as the relocation of waste rock from the Eagle Pit to a waste rock storage area) on March 17, 2019.
Ore production commenced on July 1, 2019 and VGC poured its first gold Q3, 2019. The mine achieved commercial production on July 1, 2020. In full production, the mine will produce 210,000 ounces per year and the mine life is ten plus years.

1.2 REGULATORY SETTING

The operation of the Project is governed by various regulatory approvals and non-discretionary Territorial and Federal legislation. A key regulatory approval for the Project is the Quartz Mining Licence QML-0011 issued pursuant to section 141(2)(a) of the Quartz Mining Act by the Department of Energy, Mines and Resources (EMR).

Clause 12.0 of QML-0011 requires the undertaking of an environmental audit every two years, by an independent contractor acceptable to the Director of the Mineral Resources Branch of EMR.

The period of this audit report is inclusive of monitoring and surveillance activities that occurred at the mine site from July 1, 2018 through to June 30, 2020. This report documents the first audit and spans the end of construction activities and into the first year of mine operations.

Three approved versions of the Project Environmental Monitoring and Surveillance and Adaptive Management Plan (EMSAMP) [versions 2018-01, 2019-01, 2020-01] and two versions of the Water Management Plan (WMP) [versions 2017-02 and 2020-01] were effective for specific timeframes during the audit period. The Solid Waste and Hazardous Waste Management Plan (version 2017-02), Spill Response Plan (version 2017-02) and Wildlife Protection Plan (2017-01) were in effect for the entire audit period. Table 1 shows the effective periods of the plans approved during construction and operations.

Table 1 Effective Time Periods of Management Plans

Audit Period	Plans / Effective Period	Project Phase
Audit Period (July 1, 2018–June 30, 2020)	EMSAMP 2018-01 (Beginning of Audit Period: July 1, 2018–June 18, 2019)	**Construction** (August 18, 2017–March 16, 2019) **Operations/Production Phase** (commencement of operations — March 17, 2019–present)
	EMSAMP 2019 -01 (June 19, 2019–May 18, 2020)	End of Construction, Beginning of Operations
	EMSAMP 2020-01 (May 19, 2020–June 30, 2020, End of Audit Period)	Operations
	Construction and Operations Water Management Plan 2017-02 – (Beginning of Audit Period, July 1 2018 to January 2020)	Construction and Beginning of Operations
	Water Management Plan 2020-01 – January 2020 to June 30, 2020 End of Audit Period	Operations

Monitoring activities and results specified by these plans (reported in annual and monthly reports) were audited to the requirements of these plans, during their effective period.

1.3 APPROACH

The scope and objectives of the audit were approved by the Yukon Government Department of Energy, Mines and Resources (EMR). The audit for 2020 was a desk top exercise due to Covid-19 precautions.

The audit scope involved an evaluation of compliance with the following approved plans:

- Environmental Monitoring, Surveillance and Adaptive Management Plan (EMSAMP) Version 2018-01, 2019-01 and 2020-01
- Construction and Operations Water Management Plan Version 2017-01,
- Water Management Plan Version 2020-01,
- Solid Waste and Hazardous Materials Management Plan Version 2017-02,
- Spill Response Plan Version 2017-02,
- Wildlife Protection Plan Version 2017-01.

The auditors reviewed the following regulatory reporting submissions:

- Water License QZ14-041-01 / Quartz Mining License QML-0011 2018 Annual Report and relevant appendices,
- Water License QZ14-041-01 / Quartz Mining License QML-0011 2019 Annual Report and relevant appendices,
- Monthly reports covering climate, air quality, hydrology, groundwater quality and quantity, surface water quality, geochemistry, soils, vegetation and physical structures monitoring from January to June 2020 and relevant appendices,
- Annual Physical Stability Assessment Report dated December 20, 2018,
- Annual Physical Stability Assessment Report dated October 29, 2019,
- Quarterly Wildlife Reports from September 2018 to June 1, 2020.

The audit evaluated:

- Compliance and adequate implementation of the plans and associated monitoring programs,
- Confirming the monitoring (surface water quality and quantity, groundwater, and aquatics and fish and fish habitat), terrestrial environment and physical stability assessments were completed to the specifications in the approved plans and licences.

The following general steps were taken to conduct the audit:

1. Identification of documents to be reviewed to fulfill the audit objectives and requirements,
2. Comparison of monitoring activities at all sites against the execution described in the EMSAMP for frequency, methods, and results,
3. Review of data quality assurance and quality control procedures,
4. Confirmation that AMP thresholds are being monitored in conformance with the EMSAMP,
5. Confirmation that AMP responses follow what is outlined in the EMSAMP and were reported appropriately,
6. Provision of an audit adequacy statement regarding conformance with plans within the audit scope, and
7. Provision of a summary table of identified gaps and/or recommendations for the monitoring programs.

The evaluated disciplines were meteorological and atmospheric environment, water resources (which included surface quantity and quality, groundwater quantity and quality, geochemistry and the aquatic environment), the terrestrial environment (which included reclamation, vegetation, soils, and wildlife) and geotechnical stability (which included permafrost monitoring, open pits, material storage and stockpiles and the heap leach and process facilities). The audit also covered a review of the solid waste and hazardous materials handling and spill response.

In accordance with VGC commitments during the YESAA process ongoing noise monitoring is not required. VGC has committed to monitoring sound levels related to significant changes in mining activity or if complaints are made. VGC conducted monitoring of noise levels during blasting in July 2018 and again in May and June 2019. Noise levels were below thresholds set out in the EMSAMP (below 120 dB) therefore continued monitoring was not necessary. VGC has committed to recording any noise complaints received and including them in reporting required by the regulatory approvals for the Project. Additional mitigation measures, or adaptive management strategies will be identified and implemented as required.

2.0 ATMOSPHERIC ENVIRONMENT

This section presents an audit of the climate and air quality monitoring programs as specified in the applicable EMSAMP documents, compared to the data and information reported in supporting annual and monthly reports. The intent is to determine if ongoing monitoring and data collection meets the commitments outlined in the EMSAMP.

2.1 CLIMATE

2.1.1 Documents Reviewed

Documents shown in Table 2 were reviewed for the climate monitoring section of the audit:

Table 2 Climate Monitoring Program Documents Reviewed

Document	Version Reviewed	Sections Applicable during Construction Phase	Sections Applicable to Mine Operations Phase
EMSAMP	2018-01	10.0 – Climate	N/A
EMSAMP	2019-01	10.0 – Climate	N/A
EMSAMP	2020-01	N/A	10.0 - Climate
Water Licence QZ14-041 Quartz Mining License QML-0011 2018 Annual Report	N/A	3.7.1 – Climate Monitoring; Appendix M Climate Data	N/A
Water Licence QZ14-041 Quartz Mining License QML-0011 2019 Annual Report	N/A	3.8.1 – Climate Monitoring; Appendix R Climate Data	N/A
Type A Water Use License QZ14-041-1 Monthly Report, Reporting Period: January 2020 to June 2020	N/A	N/A	Section 6.1 of monthly reports
Standard Operating Procedures/QA/QC Program	Not developed	Not developed	VGC SOP ENV 17 Weather and Climate Stations

2.1.2 Monitoring Program Implementation and Data QA/QC

Two solar powered automated climate stations are currently operating in the Project area. The Potato Hills station (elevation 1,420 m) was installed in 2007 and the Camp station (elevation 782 m) in 2009. The climate stations continuously collect data for the following parameters:

- Air temperature
- Precipitation
- Wind speed and direction
- Barometric pressure,
- Solar radiation
- Snow depth, and
- Relative Humidity

Snow depth information is also collected during winter with monthly manual snow course surveys near both climate stations and in the vicinity of the Heap Leach Facility (in Ann Gulch). During the audit period, the 2018 manual snow survey location in Ann Gulch was discontinued due to construction activity (HLF Phase 1 construction). The new survey location was established in 2019 upgradient of the HLF.

Climate data for each station is collected and submitted in full as excel data and also summarized in annual and monthly reports for the following frequencies:

- Monthly and annual recorded mean, minimum and maximum air temperature
- Total monthly and annual precipitation, as well as estimated rainfall and snowfall amounts
- Maximum 24-hour precipitation totals for each month
- Monthly snowpack depth as well as estimated monthly snowmelt distribution
- Monthly average barometric pressure and relative humidity
- Monthly and annual recorded mean, minimum and maximum wind speed and direction
- Monthly and annual recorded mean, minimum and maximum net solar radiation
- Estimates of monthly sublimation and evaporation/evapotranspiration

Data retrieval frequencies require monthly station visits during the open water season concurrent with hydrology data collection, and in the winter concurrent with collection of the manual snow course surveys.

Climate monitoring parameters, frequencies and reporting requirements have remained the same throughout construction and operations phases.

Table 3 summarizes compliance with the construction and operations EMSAMPs climate data collection programs for the audit period. Note that the data record is considered incomplete for a month when there are less than 25 days of data available for that month.

Table 3 Climate Monitoring Program Implementation

Monitoring Method	EMSAMP Version 2018-01 Compliance	EMSAMP Version 2019-01 Compliance	EMSAMP Version 2020-01 Compliance	Data QA/QC	Reporting
Climate Station: Potato Hills	• Data record incomplete[1] for: – Air temperature – Wind speed and direction[2] – Relative humidity – Barometric pressure – Solar radiation – Snow depth[3] • Station replaced on Sept. 22, 2018, but malfunctioned Dec. 2018	• Data record incomplete for: – Air temperature[5] – Wind speed and direction[5] – Relative humidity[6] – Barometric pressure[6] – Wind direction[2] – Snow depth[7] – Precipitation[8] – Solar radiation[9] • Station decommissioned in Oct. 2019. To be replaced in 2020	• Data record incomplete[11] for: – Wind speed and direction – Relative humidity – Barometric pressure – Wind direction – Snow depth – Precipitation – Solar radiation • Station replaced March 13, 2020. Data was not recorded during May due to technical malfunction. Servicing completed in May 2020 to correct malfunction.	Data set was incomplete for the audit period, but improved consistently in monthly data collection during 2020	• Annual reports are adequate • Monthly reports should present summary statistics of raw data for snow depth, wind direction and solar radiation, similar to summary statistics presented for temperature, barometric pressure, relative humidity, wind speed and precipitation.
Climate Station: Camp	Data record complete	• Data record incomplete for: – Precipitation[10]	• Data record incomplete for: – Precipitation[12] • Station received general maintenance and a replacement of the existing precipitation gauge with a Geonor all-weather precipitation monitor March 11, 2020. Data complete to end of April. Data was not recorded throughout May due to technical malfunction. Servicing completed in May 2020 to correct malfunction. Data complete from May 28–June 30, 2020	Incomplete for the audit period, but improved significantly during 2020	
Manual Snow Course Survey: Potato Hills	Data record complete	Data record complete	Data record complete	Complete	Annual and monthly reporting is adequate
Manual Snow Course Survey: Camp	Data record complete	Data record complete	Data record complete	Complete	
Manual Snow Course Survey: Ann Gulch	Data record incomplete[4]	• Discontinued due to construction • Re-established at HLF (in Ann Gulch upgradient from HLF Phase 1 construction)	N/A	Complete	
Manual Snow Course Survey: Heap Leach Facility (HLF)	N/A	Data record complete	Data record complete	Complete	

Table 3 Climate Monitoring Program Implementation

NOTES:

[1] Air temperature, wind speed, relative humidity and barometric pressure data were not recorded to the central datalogger at Potato Hills for the following time periods in 2018: April 28 to May 16; June 7 to June 29; July 3 to July 13; August 5 to September 22; and December 2 to December 16.

[2] Potato Hills wind direction sensor was disabled in October 2018 due to power drain on other station sensors.

[3] The snow depth sensor installed at the Potato Hills climate station did not return usable data for the period January 2017 to December 2018.

[4] The Ann Gulch survey location was not available in 2018 due to construction activities in the area. A new survey location was established in 2019 uphill from the active HLF pad.

[5] Potato Hills air temperature and wind speed data were not recorded to the central datalogger for the following time periods in 2019: February 1 to February 28; May 10 to June 1; August 17 to August 24; and September 4 to October 7. No wind direction data was available from the Potato Hills climate station in 2019.

[6] Potato Hills barometric pressure and relative humidity data were not recorded for the following time periods in 2019: February 1 to February 28; May 10 to June 1; August 17 to October 7.

[7] Potato Hills snow depth sensor installed returned minimally usable data for the periods of March 1 to April 16 and May 2 to May 9, 2019.

[8] The Potato Hills climate precipitation sensor did not return usable data from March to June 2019 and from August to October 2019.

[9] The Potato Hills solar radiation sensor did not return usable data for 2019.

[10] The Camp climate station precipitation sensor did not return usable data from January 2019 to December 2019.

[11] Audit of 2020 climate data collection program was based solely on monthly summary data reports. Data gaps are considered preliminary until data validation is performed for the purposes of annual reporting.

[12] The Camp climate station precipitation gauge malfunctioned in January 2020. Precipitation data was incomplete to the end of May 2020.

2.1.3 Reporting Adequacy, Compliance and Recommendations

Data gaps in the implementation of the climate monitoring program during the construction and operations phase of the audit period were due to malfunction of climate station sensors and deficiency in the implementation of QA/QC procedures during this time. Stantec notes that VGC has taken steps to rectify this deficiency in the spring of 2020, by replacing the Potato Hills climate station, which had exceeded its expected lifetime, servicing the Camp Station (which included replacing certain sensors) and retaining a qualified professional (QP) to perform annual calibrations and data validation.

Due to the sensitive nature of climate station sensors, and regulatory requirements to maintain complete climate datasets, Stantec recommends that VGC consider maintaining a spare climate station sensors on site that may be easily deployed should sensors fail or when gaps are noted during monthly review of data records.

Table 4 summarizes compliance gaps and/or deficiencies for the climate monitoring program and provides recommendations for corrective action.

Table 4 Climate Monitoring Program Compliance and Recommendations

Compliance Gaps and/or Deficiencies	Recommendation/Corrective Action
Incomplete climate data recorded between 2018–2020 during the construction phase and portions of the operations phase of mining	• Keep spare climate station sensors on-site for rapid deployment should sensors/equipment begin to fail or data gaps are noted. • Append annual QP climate stations' calibration report/records to annual report.

2.2 AIR QUALITY

2.2.1 Documents Reviewed

Documents shown in Table 5 were reviewed for the audit of air quality:

Table 5 Air Quality Monitoring Program Documents Reviewed

Document	Version Reviewed	Sections Applicable during Construction Phase	Sections Applicable to Operations Phase
EMSAMP	2018-01	11.0 – Air Quality	N/A
EMSAMP	2019-01	11.0 – Air Quality	N/A
EMSAMP	2020-01	N/A	11.0 – Air Quality
Air Quality Monitoring Plan	N/A	N/A	All sections
Air Emissions Permit No. 60-060	N/A	N/A	All conditions
Water Licence QZ14-041 Quartz Mining License QML-0011 2018 Annual Report	N/A	3.7.2 – Air Quality Monitoring and Appendix N – Air Quality Data	N/A
Water Licence QZ14-041 Quartz Mining License QML-0011 2019 Annual Report	N/A	3.8.2 – Air Quality Monitoring (Air quality data appendix not included in 2019 Annual Report)	3.8.2 – Air Quality Monitoring (Air quality data appendix not included in 2019 Annual Report)
Type A Water Use License QZ14-041-1 Monthly Report, Reporting Period: January 2020 to June 2020	N/A	N/A	6.2 – Air Quality Data Collection in available monthly reports for audit period
Dustfall Monitoring Procedure	All sections	All sections	All sections
High Volume Air Sampling Procedure	N/A	N/A	All sections
MetOne EBAM Particulate Monitor Procedure	All sections	All sections	All sections
Passive Monitoring Procedure	N/A	N/A	All sections

2.2.2 Monitoring Program Implementation and Data QA/QC

The air quality monitoring program began in 2018 and will continue throughout operations.

Prior to and during the mine construction phase, air quality monitoring was conducted in accordance with approved EMSAMPs (versions 2018-01 and 2019-01). Early in the construction phase, VGC installed and operated three (environment) Beta-Attenuation Particulate Monitors (EBAMs) capable of continuous measurement of Total Suspended Particulate (TSP), Coarse Particulate Matter (PM_{10}) and Fine Particulate Matter ($PM_{2.5}$). These monitors were and continue to be located near the Camp climate station. EBAM sampling began August 22, 2018. Four dustfall sampling stations were also established on August 23, 2018 alongside four permanent vegetation sampling plots. Dustfall samples were and continue to be collected and submitted for laboratory analysis monthly. The main change between construction and start-up of operations of the mine was the addition of the Passive Air Sampling System (PASS) stations and Hi-Volume Partisol Air Sampler.

Monitoring during operations is conducted for the following parameters: TSP, $PM_{2.5}$, PM_{10}, Nitrogen Dioxide (NO_2), Sulphur Dioxide (SO_2) and Ammonia (NH_3). PASSs for NO_2, SO_2 and NH_3 was initiated in January 2020, in accordance with the conditions of the mine Air Emissions Permit #60-060.

VGC currently employs the following methods to collect air quality data:

1. Three continuous EBAM monitors for TSP, PM_{10}, and $PM_{2.5}$
2. Five dustfall stations collect samples for analysis of total particulates and total metals deposition (flux)
3. Five PASS samplers collect samples for analysis of NO_2, SO_2 and NH_3
4. One Hi-Volume Partisol sampler collects samples for analysis of TSP and metals

EBAMs monitors are located near the Camp climate station, west of the existing camp and within the Haggart Creek valley. Dustfall and PASS samplers are located at various locations south, west and east of the mine facilities, adjacent to soil and vegetation monitoring plots. The Hi-Volume sampler is co-located with the EBAM monitors near the camp station.

TSP, $PM_{2.5}$, and PM_{10} concentrations in ambient air are monitored continuously, and recorded each hour, 24-hours per day. Total dustfall, NO_2, SO_2, and NH_3 samples are collected monthly for laboratory analysis. Metals deposition samples are collected monthly for laboratory analysis and Hi-Volume TSP samples are collected weekly for laboratory analysis.

Monitoring results are compared to air quality criteria set out in the Project Air Emissions Permit No. 60-060 (effective as of December 2019 and amended September 2020). The Project Air Quality Criteria (AQC) are the most stringent criteria referenced in Yukon Ambient Air Quality Objectives (YAAQO), Canadian Ambient Air Quality Standards (CAAQS) and Ontario Air Quality Criteria (OAQC) for metals and NH_3. Collectively, the AQCs define the maximum allowable limits during mine operations for the above-described parameters. Monitoring results are reported monthly and annually as part of EMSAMP reporting, and quarterly, in compliance with the Air Emissions Permit. Quarterly reporting began in Q1 of 2020.

Data reliability and integrity is maintained through implementation of an air quality data QA/QC program. The QA/QC program is described in the project Air Quality Monitoring Plan (AQMP) and relies primarily on:

- Weekly EBAM operational inspections,
- Monthly EBAM Leak/Flow Audits,
- Bi-annual EBAM calibration and maintenance,
- Standard Operating Procedure for PASS samplers
- Quarterly calibration of Hi-Volume Partisol sampler
- All sample laboratory analysis completed by external accredited laboratories
- Chain of custody are used to send samples to the external accredited laboratories

Data validation criteria defined in the AQMP are:

24-hour samples (TSP/$PM_{2.5}$/Metals):

- valid only if within ±10% of the required sample period;
- valid only if the sampled air volume is within ±10% of the target flow;
- valid only if filter material (High volume sampler only) is intact upon retrieval, and not damaged during removal, storage or shipping.

Annual means:

- Annual arithmetic or geometric means are valid only if at least 75% of the possible samples under the relevant sample frequency are valid.

Passive samplers (SO_2, NO_2, NH_3):

- Valid only if the targeted 30-day sampling period is met within ±2 days.

Dustfall (Total Particulate and metals)

- Valid only if the targeted 30-day sampling period is met within ±2 days.

Quantitative air quality management triggers are defined in the EMSAMP and require corrective actions to reduce or bring emissions into compliance with the Project AQC. The management triggers are as follows:

- If air quality concentrations are within 80% of YAAQOs, actions will be taken to minimize the emissions
- If TSP concentrations exceed 100 µg/m^3 24-hour average, or 50 µg/m^3 as an annual geometric mean, additional dust control mitigation measures will be implemented. Additional measures are specified in versions of the EMSAMP and in the Air Emissions Permit.

Table 6 below summarizes compliance with the construction and operations EMSAMPs air quality data collection programs and Air Emissions Permit for the audit period.



Table 6 Air Quality Monitoring Program Implementation

Monitoring Method	EMSAMP Version 2018-01 Compliance	EMSAMP Version 2019-01 /Air Emission Permit[a] Compliance	EMSAMP Version 2020-01/Air Emission Permit Compliance	Data QA/QC	Reporting
EBAMs (stations installed August 22, 2018 adjacent to the Camp climate station)	• Compliant with the exception of: – 9 instances when the TSP 24 hr average concentration was greater than the Yukon Ambient Air Quality Standards – 5 instances when the PM_{10} 24 hr average concentration was greater than the Yukon Ambient Air Quality Standards	• Compliant with the exception of – 2 instances when the TSP 24 hr average concentration was greater than the AQC – 5 instances when the $PM_{2.5}$ 24 hr average concentration was greater than the AQC – 4 instances when the PM_{10} 24 hr average concentration was greater than the AQC	Compliant	• EBAMs inspections, audits, calibration and maintenance adequate • Operations carried out according to SOP • Data validation adequate	• 2018 annual reporting adequate. Supporting air quality data provided in appendix. • 2019 annual reporting inadequate due to missing air quality data appendix and an error in Table 3.8-2. This table was copied without alteration from the 2018 report. • Q1 quarterly report adequate • Q2 quarterly report adequate
Dustfall (stations installed Aug 23, 2018 adjacent to vegetation plots)	Compliant with respect to monthly laboratory sample analysis and reporting	Compliant with respect to monthly laboratory sample analysis and reporting	Compliant with respect to monthly laboratory sample analysis and reporting	• Laboratory QA/QC procedure report and results are provided with analytical results. • Operations carried out according to SOP	• 2018 monthly reporting adequate, but should show comparison to AQC • 2019 monthly reporting adequate, but should show comparison to AQC • Results not discussed in 2018 or 2019 annual reports • Q1 quarterly report adequate • Q2 quarterly report adequate
Passive Air Sampling System (PASS) (stations installed Jan 1, 2020 adjacent to dustfall stations)	Not in use for this period	Compliant with respect to monthly laboratory sample analysis and reporting	Compliant with respect to monthly laboratory sample analysis and reporting	• Laboratory QA/QC procedure report and results are provided with analytical results. • Operations carried out according to SOP	• January-March 2020 reporting adequate • Q1 quarterly report adequate • Q2 quarterly report adequate
Hi-Volume Partisol Air Sampler (installed May 21, 2020 adjacent to EBAMs)	Not in use for this period	Not in use for this period	Compliant with respect to monthly laboratory sample analysis and reporting	• Laboratory QA/QC procedure report and results are provided with analytical results. • Operations carried out according to SOP	Q2 quarterly report adequate

NOTE:
[a] Air Emissions Permit No. 60-060 effective as of December 2019 and amended in September 2020.

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2.2.3 Reporting Adequacy, Compliance and Recommendations

The implementation of the Eagle Gold Mine air quality monitoring program was adequate during the audit period. Performance data indicated that measured concentrations were greater than the 24-hour AQC for TSP, $PM_{10,}$ and $PM_{2.5}$ some days during the construction phase. Management responses set out in the construction phase EMSAMPs were implemented appropriately and described adequately in the 2018 and 2019 annual reports. Reports reviewed for the operations phase of the audit period indicate that the frequency of exceedances decreased compared to the construction period.

Stantec noted reporting inconsistencies during the audit period such as omitting to provide validated datasets to support discussion of results, and reporting results of sampling without showing comparison to the AQC. Implementation of the monitoring program going forward should involve improvements in reporting monitoring results.

Table 7 summarizes compliance gaps and/or deficiencies for the air quality monitoring program and provides recommendations for corrective action.

Table 7 Air Quality Monitoring Program Compliance and Recommendations

Compliance Gaps and/or Deficiencies	Recommendation/Corrective Action
Inconsistency in data reporting	Submit validated datasets with all annual and quarterly reports, and compare monitoring results to AQC

3.0 WATER RESOURCES

This section presents an audit of the water resources monitoring programs as specified in the applicable EMSAMP documents, compared to the data and information reported in supporting annual and monthly reports. The intent is to determine if ongoing monitoring and data collection meets the commitments outlined in the EMSAMP. This audit is specific to the following areas:

- Surface Water Hydrology
- Surface Water Quality
- Groundwater Quantity and Quality
- Geochemical Monitoring
- Stream Sediment
- Benthic Macroinvertebrates
- Fish and Fish Habitat

The scope of this water resources audit is limited to those monitoring methods as specified in the three versions of the EMSAMPs effective during the audit period.

3.1 SURFACE WATER HYDROLOGY

3.1.1 Documents Reviewed

Documents shown in Table 8 were reviewed for the surface water hydrology section of the audit:

Table 8 Surface Water Hydrology Documents Reviewed

Document	Version Reviewed	Sections Applicable during Construction Phase	Sections Applicable to Operations Phase
EMSAMP	2018-01	2.0 – Surface Water Hydrology	N/A
EMSAMP	2019-01	2.0 – Surface Water Hydrology	2.0 – Surface Water Hydrology
EMSAMP	2020-01	2.0 – Surface Water Hydrology	2.0 – Surface Water Hydrology
Water Licence QZ14-041 Quartz Mining License QML-0011 2018 Annual Report	N/A	3.1 – Surface Water Hydrology	N/A
Water Licence QZ14-041 Quartz Mining License QML-0011 2019 Annual Report	N/A	3.1 – Surface Water Hydrology	3.1 – Surface Water Hydrology

Table 8 Surface Water Hydrology Documents Reviewed

Document	Version Reviewed	Sections Applicable during Construction Phase	Sections Applicable to Operations Phase
Type A Water Use License QZ14-041-1 Monthly Report, Reporting Period: January 2020 to June 2020	N/A	N/A	2.2 – Surface Water Hydrology
Construction and Operations Water Management Plan	2017-01	All	All
Water Management Plan	2020-01	All	All

3.1.2 Monitoring Program Implementation and Data QA/QC

Table 9 summarizes the compliance requirement categories for surface water hydrology.

Table 9 Surface Water Hydrology Compliance Requirements

Category	Compliance Criteria	Description of Compliance Requirement
1. Field Program	1A: Frequency	Monitoring was performed at the prescribed frequency (station-specific).
	1B: Tasks	Required tasks were completed at each site visit (e.g., collect data, perform routine maintenance, obtain discharge measurement)
2. Analysis	2A: Rating Curve	For automated stations, a rating curve has been (or is being) developed in accordance with standard industry practices and applicable EMSAMP.
	2B: Streamflow Record	For automated stations, a continuous streamflow record has been generated using continuous stage record and rating curve or other method. For manual stations, discharges and/or water levels have been summarized.
	2C: QA/QC	QA/QC has been performed in accordance with standard industry practices and applicable EMSAMP.
3. Reporting and Adaptive Management	3A: Reporting	Reporting covering/discussing the station was submitted at the prescribed frequency.
	3B: Exceedance Check/Comment	The results were compared to the applicable exceedance thresholds and an evaluation was formally made.
	3C: Response to Exceedance(s)	If an exceedance occurred, the appropriate adaptive management response was performed.

The specifics (e.g., applicable sites, monitoring frequency, required data) of the compliance requirements in Table 9 varied between the three EMSAMP versions (i.e., EMSAMP 2018-01, EMSAMP 2019-01, EMSAMP 2020-01). Therefore, a surface water hydrology audit was performed separately for each of the three EMSAMP versions.

The two WMP versions did not differ to a significant enough degree as to require separate sections. Therefore, WMP compliance was evaluated considering both WMP's simultaneously.

3.1.2.1 EMSAMP 2018-01

EMSAMP2018-01 was applicable from July 1, 2018 to June 18, 2019. The stations and corresponding monitoring requirements for this phase are summarized in Table 2.3.1 within Section 2 of EMSAMP 2018-01. The 2018 and 2019 annual reports were reviewed for compliance with EMSAMP2018-01 requirements for construction from July 1, 2018 to March 16, 2019 and for operations from March 17, 2019 to June 18, 2019. VGC monthly reports completed for the applicable period were not reviewed.

Table 10 summarizes the compliance performance for EMSAMP 2018-01.

3.1.2.2 EMSAMP 2019-01

EMSAMP 2019-01 was applicable from June 19, 2019 to May 18, 2020. The stations and corresponding monitoring requirements are summarized in Table 2.3-1 and 2.3-2 within Section 2 of EMSAMP 2019-01. The 2019 annual report and the January – May 2020 monthly reports were reviewed for compliance with operations phase requirements of the EMSAMP 2019-01.

Table 11 summarizes the compliance performance for EMSAMP 2019-01.

3.1.2.3 EMSAMP 2020-01

EMSAMP2020-01 was applicable from May 19, 2020 to June 30, 2020. During this time, the mine was in the operations phase. The stations and corresponding monitoring requirements are summarized in Table 2.3-2 within Section 2 of EMSAMP 2020-01. The May and June 2020 monthly reports were reviewed for compliance with EMSAMP 2020-01.

Table 12 summarizes the compliance performance for EMSAMP 2020-01.

Table 10 Surface Water Hydrology Monitoring Program Compliance – EMSAMP 2018-01

Station	Monitoring Required		Location Description	Compliance Requirements							
				1. Field Program		2. Analysis			3. Reporting and Adaptive Management		
	Construction	Operations		1A: Frequency	1B: Tasks	2A: Rating Curve	2B: Streamflow Record	2C: QA/QC	3A: Reporting Frequency	3B: Check for Threshold Event	3C: Response to Threshold Event
W1 [a]	a	a	Dublin Gulch above Stewart	Partial compliance. Winter frequency ok. Freshet frequency not completed [2]. Loggers installed during open water.	Partial compliance. Flows obtained. Monitoring visit tasks outlined in EMSAMP 2018-01 Section 2.3.1 not documented.	Compliant. Rating curve developed.	Compliant. Flow record from open water logger data/rating curve and manual winter measurement interpolation. Freshet measurements required to improve continuous record.	Partial compliance. Field visit QA/QC tasks discussed but not documented. Equipment calibration not documented. Rating curve/flow record QA/QC demonstrated.	Compliant. Station covered in annual reports.	Compliant. Evaluation of flows compared to qualitative triggers for adaptive management was made.	N/A. Adaptive management measures not applicable, as the qualitative triggers for adaptive management were considered to be not met.
W4 [a]	a	a	Haggart Creek below Dublin	Partial compliance. Winter frequency ok. Freshet frequency not completed [2]. Loggers installed during open water.	Partial compliance. Flows obtained. Monitoring visit tasks outlined in EMSAMP 2018-01 Section 2.3.1 not documented.	Compliant. Rating curve developed.	Compliant. Flow record from open water logger data/rating curve and manual winter measurement interpolation. Freshet measurements required to improve continuous record.	Partial compliance. Field visit QA/QC tasks discussed but not documented. Equipment calibration not documented. Rating curve/flow record QA/QC demonstrated.	Compliant. Station covered in annual reports.	Compliant. Evaluation of flows compared to qualitative triggers for adaptive management was made.	N/A. Adaptive management measures not applicable, as the qualitative triggers for adaptive management were considered to be not met.
W5 [a]	a	a	Haggart Creek above Lynx Creek	Partial compliance. Winter frequency ok. Freshet frequency not completed [2]. Loggers installed during open water.	Partial compliance. Flows obtained. Monitoring visit tasks outlined in EMSAMP 2018-01 Section 2.3.1 not documented.	Compliant. Rating curve developed.	Compliant. Flow record from open water logger data/rating curve and manual winter measurement interpolation. Freshet measurements required to improve continuous record.	Partial compliance. Field visit QA/QC tasks discussed but not documented. Equipment calibration not documented. Rating curve/flow record QA/QC demonstrated.	Compliant. Station covered in annual reports.	Compliant. Evaluation of flows compared to qualitative triggers for adaptive management was made.	N/A. Adaptive management measures not applicable, as the qualitative triggers for adaptive management were considered to be not met.
W6 [a]	a	a	Lynx Creek above Haggart Creek	Partial compliance. Winter frequency ok. Freshet frequency not completed [2]. Loggers installed during open water.	Partial compliance. Flows obtained. Monitoring visit tasks outlined in EMSAMP 2018-01 Section 2.3.1 not documented.	Compliant. Rating curve developed.	Compliant. Flow record from open water logger data/rating curve and manual winter measurement interpolation. Freshet measurements required to improve continuous record.	Partial compliance. Field visit QA/QC tasks discussed but not documented. Equipment calibration not documented. Rating curve/flow record QA/QC demonstrated.	Compliant. Station covered in annual reports.	Compliant. Evaluation of flows compared to qualitative triggers for adaptive management was made.	N/A. Adaptive management measures not applicable, as the qualitative triggers for adaptive management were considered to be not met.

Table 10 Surface Water Hydrology Monitoring Program Compliance – EMSAMP 2018-01

Station	Monitoring Required		Location Description	Compliance Requirements							
				1. Field Program		2. Analysis			3. Reporting and Adaptive Management		
	Construction	Operations		1A: Frequency	1B: Tasks	2A: Rating Curve	2B: Streamflow Record	2C: QA/QC	3A: Reporting Frequency	3B: Check for Threshold Event	3C: Response to Threshold Event
W20 [b]	b	b	Bawn Boy Gulch	Partial compliance. Manual measurement frequency ok for 2018. No data for 2019. Future monitoring plan not communicated.	Partial compliance. Flows partially obtained. Monitoring visit tasks outlined in EMSAMP 2018-01 Section 2.3.1 not documented.	N/A. Rating curve not required for manual measurement stations.	Partial compliance. Manual flow measurements reported for 2018, but not 2019.	Partial compliance. Field visit QA/QC tasks discussed but not documented. Equipment calibration not documented.	Compliant. Station covered in annual reports.	Not compliant. Data not provided; check for whether threshold triggered.	Not compliant. Data not provided; check for check for whether threshold triggered and response performed.
W21 [d]	d	g	Dublin Gulch at Mouth	Partial compliance. Winter frequency ok. Freshet frequency not completed [2]. Loggers installed during open water.	Partial compliance. Flows obtained. Monitoring visit tasks outlined in EMSAMP 2018-01 Section 2.3.1 not documented.	Compliant. Rating curve being developed.	Partial compliance. Winter interpolation not completed. Flow record from open water logger data/rating curve.	Partial compliance. Field visit QA/QC tasks discussed but not documented. Equipment calibration not documented. Rating curve/flow record QA/QC demonstrated.	Compliant. Station covered in annual reports.	Partial compliance. Evaluation of flows compared to qualitative triggers for adaptive management was made for other automated stations, but not this station.	Partial compliance. Unknown if adaptive management measurements are required as evaluation for triggers for adaptive management not completed for this site.
W22 [a]	a	a	Haggart Creek above Project Influence	Partial compliance. Winter frequency ok. Freshet frequency not completed [2]. Loggers installed during open water.	Partial compliance. Flows obtained. Monitoring visit tasks outlined in EMSAMP 2018-01 Section 2.3.1 not documented.	Compliant. Rating curve developed.	Compliant. Flow record from open water logger data/rating curve and manual winter measurement interpolation. Freshet measurements required to improve continuous record.	Partial compliance. Field visit QA/QC tasks discussed but not documented. Equipment calibration not documented. Rating curve/flow record QA/QC demonstrated.	Compliant. Station covered in annual reports.	Compliant. Evaluation of flows compared to qualitative triggers for adaptive management was made.	N/A. Adaptive management measures not applicable, as the qualitative triggers for adaptive management were considered to be not met.
W23 [b]	b	b	Haggart Creek below Lynx Creek	Not compliant. 2019 annual report suggest no data collected since 2011. No future monitoring plan communicated.	Not compliant. Monitoring visit tasks outlined in EMSAMP 2018-01 Section 2.3.1 not documented.	N/A. Rating curve not required for manual measurement stations.	Not compliant. No manual flow measurements provided.	Partial compliance. Field visit QA/QC tasks discussed but not documented. Equipment calibration not documented.	Partial compliance. Mention of W23 in 2019 annual report only.	Partial compliance. Evaluation of flows compared to qualitative triggers for adaptive management was made for other automated stations, but not this station.	Partial compliance. Unknown if adaptive management measurements are required as evaluation for triggers for adaptive management not completed for this site .

Table 10 Surface Water Hydrology Monitoring Program Compliance – EMSAMP 2018-01

Station	Monitoring Required		Location Description	Compliance Requirements							
				1. Field Program		2. Analysis			3. Reporting and Adaptive Management		
	Construction	Operations		1A: Frequency	1B: Tasks	2A: Rating Curve	2B: Streamflow Record	2C: QA/QC	3A: Reporting Frequency	3B: Check for Threshold Event	3C: Response to Threshold Event
W26 [a]	a	a	Stewart Gulch	Partial compliance. Winter measurements not completed. Freshet frequency not completed [2]. Loggers installed during open water.	Partial compliance. Flows obtained. Monitoring visit tasks outlined in EMSAMP 2018-01 Section 2.3.1 not documented.	N/A. Parshall flume installed.	Partial compliance. Flow record from open water logger data and parshall flume provided. Winter measurement interpolation not completed. Freshet measurements required to improve continuous record...	Partial compliance. Field visit QA/QC tasks discussed but not documented. Equipment calibration not documented. Flow record QA/QC demonstrated.	Compliant. Station covered in annual reports.	Partial compliance. Evaluation of flows compared to qualitative triggers for adaptive management was made for other automated stations, but not this station.	Partial compliance. Unknown if adaptive management measurements are required as evaluation for triggers for adaptive management not completed for this site.
W27 [a]	a	N/A	Eagle Creek near Camp below Eagle Creek Pond	Partial compliance. Winter measurements not completed. Freshet frequency not completed [2]. Loggers installed during open water.	Partial compliance. Flows obtained. Monitoring visit tasks outlined in EMSAMP 2018-01 Section 2.3.1 not documented.	N/A. Parshall flume installed.	Partial compliance. Incomplete flow record from open water logger data due to logger malfunction. Winter measurement interpolation not completed. Freshet measurements required to improve continuous record.	Partial compliance. Field visit QA/QC tasks discussed but not documented. Equipment calibration not documented. Flow record QA/QC demonstrated.	Compliant. Station covered in annual reports.	Partial compliance. Evaluation of flows compared to qualitative triggers for adaptive management was made for other automated stations, but not this station.	Partial compliance. Unknown if adaptive management measurements are required as evaluation for triggers for adaptive management not completed for this site.
W29 / W99 [a]	a	a	Haggart Creek below Eagle Creek and Platinum Gulch	Partial compliance. Winter frequency ok. Freshet frequency not completed [2]. Loggers installed during open water.	Partial compliance. Flows obtained. Monitoring visit tasks outlined in EMSAMP 2018-01 Section 2.3.1 not documented.	Compliant. Rating curve developed at W29. Rating curve being developed at W99.	Partial compliance. Flow record not provided at W29 due to logger malfunction and station damage. Flow record provided at W99 for open water season; winter interpolation not completed.	Partial compliance. Field visit QA/QC tasks discussed but not documented. Equipment calibration not documented. Rating curve/flow record QA/QC demonstrated.	Compliant. Station covered in annual reports.	Partial compliance. Evaluation of flows compared to qualitative triggers for adaptive management was made for other automated stations, but not this station.	Partial compliance. Unknown if adaptive management measurements are required as evaluation for triggers for adaptive management not completed for this site.
W39 [c]	c	c	Haggart Creek above South McQuesten River	Partial compliance. Manual measurements obtained, but not on consistent or quarterly schedule.	Partial compliance. Flows obtained. Monitoring visit tasks outlined in EMSAMP 2018-01 Section 2.3.1 not documented.	N/A. Rating curve not required for manual measurement stations.	Partial compliance. Manual measurements reported, but not on consistent or quarterly schedule.	Partial compliance. Field visit QA/QC tasks discussed but not documented. Equipment calibration not documented.	Compliant. Station covered in annual reports.	Partial compliance. Evaluation of flows compared to qualitative triggers for adaptive management was made for other automated stations, but not this station.	Partial compliance. Unknown if adaptive management measurements are required as evaluation for triggers for adaptive management not completed for this site.

Table 10 Surface Water Hydrology Monitoring Program Compliance – EMSAMP 2018-01

Station	Monitoring Required		Location Description	Compliance Requirements							
				1. Field Program		2. Analysis			3. Reporting and Adaptive Management		
	Construction	Operations		1A: Frequency	1B: Tasks	2A: Rating Curve	2B: Streamflow Record	2C: QA/QC	3A: Reporting Frequency	3B: Check for Threshold Event	3C: Response to Threshold Event
W45 [a]	a	N/A	Eagle Creek above Haggart Creek	Partial compliance. Winter frequency ok. Freshet frequency not completed [2]. Loggers installed during open water.	Partial compliance. Flows obtained. Monitoring visit tasks outlined in EMSAMP 2018-01 Section 2.3.1 not documented.	Compliant. Rating curve being developed.	Compliant. Flow record not provided as rating curve is in development. Water level record for open water season provided.	Partial compliance. Field visit QA/QC tasks discussed but not documented. Equipment calibration not documented. Rating curve/flow record QA/QC demonstrated.	Compliant. Station covered in annual reports.	Partial compliance. Evaluation of flows compared to qualitative triggers for adaptive management was made for other automated stations, but not this station.	Partial compliance. Unknown if adaptive management measurements are required as evaluation for triggers for adaptive management not completed for this site.
W49 [c]	c	c	South McQuesten River below Haggart Creek	Partial compliance. Manual measurements obtained, but not on consistent or quarterly schedule.	Partial compliance. Flows obtained. Monitoring visit tasks outlined in EMSAMP 2018-01 Section 2.3.1 not documented.	N/A. Rating curve not required for manual measurement stations.	Partial compliance. Manual measurements reported, but not on consistent or quarterly schedule.	Partial compliance. Field visit QA/QC tasks discussed but not documented. Equipment calibration not documented. documented.	Compliant. Station covered in annual reports.	Partial compliance. Evaluation of flows compared to qualitative triggers for adaptive management was made for other automated stations, but not this station.	Partial compliance. Unknown if adaptive management measurements are required as evaluation for triggers for adaptive management not completed for this site.
CS-01 [d]	d	N/A	Sediment Basin - below lower Process Access Road	Reports reviewed do not address/discuss this station. Compliance cannot be determined using reports. VGC communication outside of reporting (personal communication, October 29, 2020), indicated the site was not constructed and is inactive, suggesting EMSAMP requirements not applicable.							
CS-02 [d]	d	N/A	Sediment Basin - below Truck Shop	Reports reviewed do not address/discuss this station. Compliance cannot be determined using reports. VGC communication outside of reporting (personal communication, October 29, 2020), indicated the site was not constructed and is inactive, suggesting EMSAMP requirements not applicable.							
CS-03 [d]	d	N/A	Sediment Basin - below AN/Emulsion access and storage area	Reports reviewed do not address/discuss this station. Compliance cannot be determined using reports. VGC communication outside of reporting (personal communication, October 29, 2020), indicated the site was not constructed and is inactive, suggesting EMSAMP requirements not applicable.							
CS-04 [d]	d	d	Sediment Basin - below Ice Rich Storage Area	Reports reviewed do not address/discuss this station. Compliance cannot be determined using reports. VGC communication outside of reporting (personal communication, October 29, 2020), indicated the site was not constructed and is inactive, suggesting EMSAMP requirements not applicable.							
EPS [d]	d	d	Eagle Pup WRSA Seepage	Reports reviewed do not address/discuss this station. Compliance cannot be determined using reports. VGC communication outside of reporting (personal communication, October 29, 2020), indicated the site was not constructed and is inactive, suggesting EMSAMP requirements not applicable.							
LDSPI [d]	d	e	Lower Dublin South Pond Inflow	Reports reviewed do not address/discuss this station directly; only make indirect reference to upstream diversions to accommodate work in and around LDSP (suggests not constructed yet). Compliance cannot be determined using reports. VGC communication outside of reporting (personal communication, 29 October 2020) indicated discharging to LDSP did not occur, making EMSAMP requirements not applicable.							
LDSPO [d]	d	e	Lower Dublin South Pond Outflow	Reports reviewed do not address/discuss this station directly; only make indirect reference to upstream diversions to accommodate work in and around LDSP (suggests not constructed yet). Compliance cannot be determined using reports. VGC communication outside of reporting (personal communication, 29 October 2020) indicated discharging from LDSP did not occur, making EMSAMP requirements not applicable.							

Table 10 Surface Water Hydrology Monitoring Program Compliance – EMSAMP 2018-01

Station	Monitoring Required		Location Description	Compliance Requirements							
				1. Field Program		2. Analysis			3. Reporting and Adaptive Management		
	Construction	Operations		1A: Frequency	1B: Tasks	2A: Rating Curve	2B: Streamflow Record	2C: QA/QC	3A: Reporting Frequency	3B: Check for Threshold Event	3C: Response to Threshold Event
PDI [d]	d	N/A	Platinum Gulch Ditch	Reports reviewed do not address/discuss this station. Compliance cannot be determined using reviewed reports. VGC communication outside of reporting (personal communication, October 29, 2020), indicated the site was not constructed and is inactive, suggesting EMSAMP requirements not applicable.							
PGS	N/A	d	Platinum Gulch WRSA Seepage	Reports reviewed do not address/discuss this station. Compliance cannot be determined using reviewed reports. VGC communication outside of reporting (personal communication, October 29, 2020), indicated the site was not active, suggesting EMSAMP requirements not applicable.							
PDI & PGS PTS	N/A	g	Platinum Gulch Ditch into Lower Dublin South Pond	Reports reviewed do not address/discuss this station. Compliance cannot be determined using reviewed reports. VGC communication outside of reporting (personal communication, October 29, 2020), indicated the site was not active, suggesting EMSAMP requirements not applicable.							
PS	N/A	f	Open Pit Sump	Reports reviewed do not address/discuss this station. Compliance cannot be determined using reviewed reports. VGC communication outside of reporting (personal communication, October 29, 2020), indicated the site was not active, suggesting EMSAMP requirements not applicable.							
MWTP	N/A	d	Mine Water Treatment Plant	Reports reviewed do not address/discuss this station. Compliance cannot be determined using reviewed reports. VGC communication outside of reporting (personal communication, October 29, 2020), indicated the site was not active, suggesting EMSAMP requirements not applicable.							
FT	N/A	d	Mine Water Treatment Plant Finishing Tank	Reports reviewed do not address/discuss this station. Compliance cannot be determined using reviewed reports. VGC communication outside of reporting (personal communication, October 29, 2020), indicated the site was not active, suggesting EMSAMP requirements not applicable.							
OPP	N/A	g	Open Pit Pond	No open pit pond. EMSAMP requirements not applicable.							
OPPO	N/A	b	Open Pit Pond Overflow	No open pit pond. EMSAMP requirements not applicable.							

NOTES:
[1] N/A if manual monitoring protocol is performed. If automated monitoring protocol is performed, rating curve must be developed.
[2] VGC communication outside of reporting (personal communication, 29 October 2020) indicated certain freshet measurements not obtained due to unsafe ice or flow conditions.
[a] Automated monitoring. Manual monitoring weekly during freshet until loggers installed and twice a month during winter.
[b] Manual monitoring on a monthly basis.
[c] Manual monitoring on a quarterly basis.
[d] Station may be either manual or automatic. Measurements taken weekly when discharging if manual measurements only.
[e] Automated monitoring when discharging.
[f] Automated monitoring when dewatering
[g] Manual measurement of water level

Table 11 Surface Water Hydrology Monitoring Program Compliance – EMSAMP 2019-01

Station	Location Description	Compliance Requirements							
		1. Field Program		2. Analysis [1]			3. Reporting and Adaptive Management [1]		
		1A: Frequency	1B: Tasks	2A: Rating Curve	2B: Streamflow Record	2C: QA/QC	3A: Reporting	3B: Check for Threshold Event	3C: Response to Threshold Event
W1	Dublin Gulch above Stewart Gulch inflow	Partial compliance. Winter frequency not sufficient. Freshet frequency insufficient[3]. Loggers installed during open water.	Partial compliance. Monitoring visit tasks outlined in EMSAMP 2019-01 Section 2.3.1 not documented.	Compliant. Rating curve developed. 2020 data not incorporated yet.	Partial compliance. Winter interpolation compliance unknown. No open water season data due to logger malfunction.	Partial compliance. Field visit QA/QC tasks discussed but not documented. Equipment calibration not documented. Rating curve/flow record QA/QC demonstrated.	Compliant. Station in 2019 annual report, 2020 monthly reports.	N/A. Not listed as requiring adaptive management check in EMSAMP 2019-01.	N/A. Not listed as requiring adaptive management check in EMSAMP 2019-01.
W4	Haggart Creek below Dublin Gulch	Partial compliance. Winter frequency not sufficient. Freshet frequency sufficient. Loggers installed during open water.	Partial compliance. Flows obtained. Monitoring visit tasks outlined in EMSAMP 2019-01 Section 2.3.1 not documented.	Compliant. Rating curve developed. 2020 data not incorporated yet.	Compliant. Flow record from open water logger data/rating curve. Winter interpolation compliance unknown. Freshet measurements required to improve data record.	Partial compliance. Field visit QA/QC tasks discussed but not documented. Equipment calibration not documented. Rating curve/flow record QA/QC demonstrated.	Compliant. Station in 2019 annual report, 2020 monthly reports.	Partial compliance. Average monthly variance computed (instead of median). Comparison to quantitative performance thresholds not completed.	Not compliant. Performance thresholds exceeded but adaptive management responses were not performed/documented, nor were they documented as not applicable with a rationale.
W5	Haggart Creek above Lynx Creek	Partial compliance. Winter frequency not sufficient. Freshet frequency not sufficient[3]. Loggers installed during open water.	Partial compliance. Flows obtained. Monitoring visit tasks outlined in EMSAMP 2019-01 Section 2.3.1 not documented.	Compliant. Rating curve developed. 2020 data not incorporated yet.	Compliant. Flow record from open water logger data/rating curve. Winter interpolation compliance unknown. Freshet measurements required to improve data record.	Partial compliance. Field visit QA/QC tasks discussed but not documented. Equipment calibration not documented. Rating curve/flow record QA/QC demonstrated.	Compliant. Station in 2019 annual report, 2020 monthly reports.	N/A. Not listed as requiring adaptive management check in EMSAMP 2019-01.	N/A. Not listed as requiring adaptive management check in EMSAMP 2019-01.
W6	Lynx Creek above Haggart Creek	Partial compliance. Winter frequency not sufficient. Freshet frequency not sufficient[3]. Loggers installed during open water.	Partial compliance. Flows obtained. Monitoring visit tasks outlined in EMSAMP 2019-01 Section 2.3.1 not documented.	Compliant. Rating curve developed. 2020 data not incorporated yet.	Compliant. Flow record from open water logger data/rating curve. Winter interpolation compliance unknown. Freshet measurements required to improve data record.	Partial compliance. Field visit QA/QC tasks discussed but not documented. Equipment calibration not documented. Rating curve/flow record QA/QC demonstrated.	Compliant. Station in 2019 annual report, 2020 monthly reports.	N/A. Not listed as requiring adaptive management check in EMSAMP 2019-01.	N/A. Not listed as requiring adaptive management check in EMSAMP 2019-01.
W20	Bawn Boy Gulch	Partial compliance. No data for 2019. 2020 monthly reports indicate monitoring re-started. Unsafe winter conditions noted.	Partial compliance. Flow measurements attempted in 2020. Monitoring visit tasks outlined in EMSAMP 2019-01 Section 2.3.1 not documented.	N/A. Rating curve not required for manual measurement stations.	Not compliant. Water level records not provided.	Partial compliance. Field visit QA/QC tasks discussed but not documented. Equipment calibration not documented.	Partial compliance. Not in 2019 annual report. Station included in 2020 monthly reports.	N/A. Not listed as requiring adaptive management check in EMSAMP 2019-01.	N/A. Not listed as requiring adaptive management check in EMSAMP 2019-01.
W21	Dublin Gulch above confluence with Haggart Creek	Unknown. Required frequency not specified in EMSAMP.	Partial compliance. Flows/water levels attempted. Monitoring visit tasks outlined in EMSAMP 2019-01 Section 2.3.1 not documented.	N/A. Compliance requires water levels only; rating curve not required. Noted that rating curve was actively being developed.	Not compliant. No manual water level measurements provided; no automated water levels provided as logger malfunctioned in 2019.	Partial compliance. Field visit QA/QC tasks discussed but not documented. Equipment calibration not documented.	Compliant. Station in 2019 annual report, 2020 monthly reports.	N/A. Performance thresholds for water level not provided in EMSAMP2019-01.	N/A. Performance thresholds for water level not provided in EMSAMP2019-01.

Table 11 Surface Water Hydrology Monitoring Program Compliance – EMSAMP 2019-01

Station	Location Description	Compliance Requirements							
		1. Field Program		2. Analysis [1]			3. Reporting and Adaptive Management [1]		
		1A: Frequency	1B: Tasks	2A: Rating Curve	2B: Streamflow Record	2C: QA/QC	3A: Reporting	3B: Check for Threshold Event	3C: Response to Threshold Event
W22	Haggart Creek above Project Influence	Partial compliance. Winter frequency not sufficient. Freshet frequency likely not sufficient[3]. Loggers installed during open water.	Partial compliance. Flows obtained. Monitoring visit tasks outlined in EMSAMP 2019-01 Section 2.3.1 not documented.	Compliant. Rating curve developed. 2020 data not incorporated yet.	Compliant. Flow record from open water logger data/rating curve. Winter interpolation compliance unknown. Freshet measurements required to improve data record.	Partial compliance. Field visit QA/QC tasks discussed but not documented. Equipment calibration not documented. Rating curve/flow record QA/QC demonstrated.	Compliant. Station in 2019 annual report, 2020 monthly reports.	N/A. Not listed as requiring adaptive management check in EMSAMP 2019-01.	N/A. Not listed as requiring adaptive management check in EMSAMP 2019-01.
W23	Haggart Creek below Lynx Creek	Partial compliance. No data in 2019. 2020 monthly reports indicate monitoring re-started.	Partial compliance. Flow measurements attempted/obtained in 2020. Monitoring visit tasks outlined in EMSAMP 2019-01 Section 2.3.1 not documented.	N/A. Rating curve not required for manual measurement stations.	Not compliant. No manual flow measurements provided.	Partial compliance. Field visit QA/QC tasks discussed but not documented. Equipment calibration not documented.	Partial compliance. Not in 2019 annual report. Station included in 2020 monthly reports.	N/A. Not listed as requiring adaptive management check in EMSAMP 2019-01.	N/A. Not listed as requiring adaptive management check in EMSAMP 2019-01.
W26	Stewart Gulch	Partial compliance. Winter frequency not sufficient. Freshet frequency not sufficient[3]. Loggers installed during open water.	Partial compliance. Flows obtained. Monitoring visit tasks outlined in EMSAMP 2019-01 Section 2.3.1 not documented.	N/A. Parshall flume installed.	Compliant. Flow record from open water logger data/parshall flume. Winter interpolation compliance unknown. Freshet measurements required to improve data record.	Partial compliance. Field visit QA/QC tasks discussed but not documented. Equipment calibration not documented. Parshall flume/flow record QA/QC demonstrated.	Compliant. Station in 2019 annual report, 2020 monthly reports.	N/A. Not listed as requiring adaptive management check in EMSAMP 2019-01.	N/A. Not listed as requiring adaptive management check in EMSAMP 2019-01.
W27	Eagle Creek near Camp below Eagle Creek Pond	Partial compliance. Winter frequency not sufficient. Freshet frequency not sufficient[3]. Loggers installed during open water.	Partial compliance. Flows obtained. Monitoring visit tasks outlined in EMSAMP 2019-01 Section 2.3.1 not documented.	N/A. Parshall flume installed.	Compliant. Flow record from open water logger data/parshall flume. Winter interpolation compliance unknown. Freshet measurements required to improve data record.	Partial compliance. Field visit QA/QC tasks discussed but not documented. Equipment calibration not documented. Flow record QA/QC demonstrated.	Compliant. Station in 2019 annual report, 2020 monthly reports.	N/A. Not listed as requiring adaptive management check in EMSAMP 2019-01.	N/A. Not listed as requiring adaptive management check in EMSAMP 2019-01.
W29	Haggart Creek below Eagle Creek and Platinum Gulch	Partial compliance. Winter frequency not sufficient. Freshet frequency sufficient. Loggers installed during open water.	Partial compliance. Flows obtained. Monitoring visit tasks outlined in EMSAMP 2019-01 Section 2.3.1 not documented.	Compliant. Rating curve developed. 2020 data not incorporated yet.	Partial compliance. Winter interpolation compliance unknown. No open water season automated data due to logger malfunction, however it is noted that data records for W29 have been replaced by W99.	Partial compliance. Field visit QA/QC tasks discussed but not documented. Equipment calibration not documented. Rating curve/flow record QA/QC demonstrated.	Compliant. Station in 2019 annual report, 2020 monthly reports.	Not compliant. Flow records not compared to performance thresholds.	Not compliant. Performance thresholds exceeded but adaptive management responses were not performed/ documented, nor were they documented as not applicable with a rationale.

Table 11 Surface Water Hydrology Monitoring Program Compliance – EMSAMP 2019-01

Station	Location Description	Compliance Requirements							
		1. Field Program		2. Analysis [1]			3. Reporting and Adaptive Management [1]		
		1A: Frequency	1B: Tasks	2A: Rating Curve	2B: Streamflow Record	2C: QA/QC	3A: Reporting	3B: Check for Threshold Event	3C: Response to Threshold Event
W39	Haggart Creek above South McQuesten River	Partial compliance. Manual measurements obtained, but not on consistent or quarterly schedule.	Partial compliance. Flows obtained. Monitoring visit tasks outlined in EMSAMP 2019-01 Section 2.3.1 not documented.	N/A. Rating curve not required for manual measurement stations.	Partial compliance. Manual measurements reported, but not on consistent or quarterly schedule.	Partial compliance. Field visit QA/QC tasks discussed but not documented. Equipment calibration not documented.	Compliant. Station in 2019 annual report, 2020 monthly reports.	N/A. Not listed as requiring adaptive management check in EMSAMP 2019-01.	N/A. Not listed as requiring adaptive management check in EMSAMP 2019-01.
W45	Eagle Creek above Haggart Creek	Partial compliance. Winter frequency not sufficient. Freshet frequency not sufficient[3]. Loggers installed during open water.	Partial compliance. Flows obtained. Monitoring visit tasks outlined in EMSAMP 2019-01 Section 2.3.1 not documented.	Compliant. Rating curve being developed. 2020 data not incorporated yet.	Partial compliance. Winter interpolation compliance unknown but manual measurements not shown. Water level records provided in lieu of discharge as rating curve still being developed.	Partial compliance. Field visit QA/QC tasks discussed but not documented. Equipment calibration not documented. Rating curve/flow record QA/QC demonstrated.	Compliant. Station in 2019 annual report, 2020 monthly reports.	N/A. Not listed as requiring adaptive management check in EMSAMP 2019-01.	N/A. Not listed as requiring adaptive management check in EMSAMP 2019-01.
W49	South McQuesten River below Haggart Creek	Partial compliance. Manual measurements obtained, but not on consistent or quarterly schedule.	Partial compliance. Flows obtained. Monitoring visit tasks outlined in EMSAMP 2019-01 Section 2.3.1 not documented.	N/A. Rating curve not required for manual measurement stations.	Partial compliance. Manual measurements reported, but not on consistent or quarterly schedule.	Partial compliance. Field visit QA/QC tasks discussed but not documented. Equipment calibration not documented.	Compliant. Station in 2019 annual report, 2020 monthly reports.	N/A. Not listed as requiring adaptive management check in EMSAMP 2019-01.	N/A. Not listed as requiring adaptive management check in EMSAMP 2019-01.
W99	Haggart Creek above 15 Pup	Partial compliance. Winter frequency not sufficient. Freshet frequency not sufficient[3]. Loggers installed during open water.	Partial compliance. Flows obtained. Monitoring visit tasks outlined in EMSAMP 2019-01 Section 2.3.1 not documented.	Compliant. Rating curve being developed. 2020 data not incorporated yet.	Compliant. Winter interpolation compliance unknown. Freshet measurements required to improve data record.	Partial compliance. Field visit QA/QC tasks discussed but not documented. Equipment calibration not documented. Rating curve/flow record QA/QC demonstrated.	Compliant. Station in 2019 annual report, 2020 monthly reports.	N/A. Not listed as requiring adaptive management check in EMSAMP 2019-01.	N/A. Not listed as requiring adaptive management check in EMSAMP 2019-01.
CS-01	Sediment Basin - below lower Process Access Road	These stations are not constructed. Station is not active.							
CS-03	Sediment Basin - below Truck Shop	These stations are not constructed. Station is not active.							
CS-06	Sediment Basin - below AN/Emulsion access and storage area	These stations are not constructed. Station is not active.							
CS-07	Sediment Basin - below Ice Rich Storage Area	These stations are not constructed. Station is not active.							
EPS	Eagle Pup WRSA Seepage	These stations are not constructed. Station is not active.							
FT	Mine Water Treatment Plant Finishing Tank	These stations are not constructed. Station is not active.							

Table 11 Surface Water Hydrology Monitoring Program Compliance – EMSAMP 2019-01

Station	Location Description	Compliance Requirements							
		1. Field Program		2. Analysis [1]			3. Reporting and Adaptive Management [1]		
		1A: Frequency	1B: Tasks	2A: Rating Curve	2B: Streamflow Record	2C: QA/QC	3A: Reporting	3B: Check for Threshold Event	3C: Response to Threshold Event
HLFUMV	Heap Leach Facility Underdrain Monitoring Vault	Partial compliance. No data in 2019. 2020 monthly reports indicate site not active until May 2020.	Partial compliance. No data in 2019.	Partial compliance. No data in 2019.	Partial compliance. No data in 2019.	Partial compliance. No data in 2019.	Partial compliance. Not in 2019 annual report. Station included in 2020 monthly reports.	N/A. Not listed as requiring adaptive management check in EMSAMP 2019-01.	N/A. Not listed as requiring adaptive management check in EMSAMP 2019-01.
LDSPI	Lower Dublin South Pond Inflow	Partial compliance. No data in 2019. 2020 monthly reports indicate site not active.	Partial compliance. No data in 2019.	Partial compliance. No data in 2019.	Partial compliance. No data in 2019.	Partial compliance. No data in 2019.	Partial compliance. Not in 2019 annual report. Station included in 2020 monthly reports.	N/A. Not listed as requiring adaptive management check in EMSAMP 2019-01.	N/A. Not listed as requiring adaptive management check in EMSAMP 2019-01.
LDSP	Lower Dublin South Pond Outflow	Partial compliance. No data in 2019. 2020 monthly reports indicate site not active.	Partial compliance. No data in 2019.	Partial compliance. No data in 2019.	Partial compliance. No data in 2019.	Partial compliance. No data in 2019.	Partial compliance. Not in 2019 annual report. Station included in 2020 monthly reports.	N/A. Not listed as requiring adaptive management check in EMSAMP 2019-01.	N/A. Not listed as requiring adaptive management check in EMSAMP 2019-01.
MWTP	Mine Water Treatment Plant	2019 annual report reviewed do not address/discuss this station. 2020 monthly reports indicate station not active. Compliance cannot be fully determined using reports. VGC communication outside of reporting (personal communication, 29 October 2020), indicated the site was not constructed and is inactive, suggesting EMSAMP requirements not applicable.							
OPP	Open Pit Pond	2019 annual report reviewed do not address/discuss this station. 2020 monthly reports indicate station not active. Compliance cannot be fully determined using reports. VGC communication outside of reporting (personal communication, 29 October 2020), indicated the site was not constructed and is inactive, suggesting EMSAMP requirements not applicable .							
OPPO	Open Pit Pond Overflow	2019 annual report reviewed do not address/discuss this station. 2020 monthly reports indicate station not active. Compliance cannot be fully determined using reports. VGC communication outside of reporting (personal communication, 29 October 2020), indicated the site was not constructed and is inactive, suggesting EMSAMP requirements not applicable.							
PGS	Platinum Gulch WRSA Seepage	Partial compliance. No data in 2019. 2020 monthly reports indicate site not active.	Partial compliance. Flow conditions (no flow/frozen/flow measurement) obtained in 2020. Monitoring visit tasks outlined in EMSAMP 2019-01 Section 2.3.1 not documented.	N/A. Rating curve not required for manual measurement stations.	Not compliant. No streamflow record demonstrated.	Partial compliance. Field visit QA/QC tasks discussed but not documented. Equipment calibration not documented.	Partial compliance. Not in 2019 annual report. Station included in 2020 monthly reports.	N/A. Not listed as requiring adaptive management check in EMSAMP 2019-01.	N/A. Not listed as requiring adaptive management check in EMSAMP 2019-01.
PDI	Platinum Gulch Ditch	Partial compliance. No data in 2019. 2020 monthly reports indicate site not active.	Partial compliance. Flow conditions (no flow/frozen/flow measurement) obtained in 2020. Monitoring visit tasks outlined in EMSAMP 2019-01 Section 2.3.1 not documented.	N/A. Rating curve not required for manual measurement stations.	Not compliant. No streamflow record demonstrated.	Partial compliance. Field visit QA/QC tasks discussed but not documented. Equipment calibration not documented.	Partial compliance. Not in 2019 annual report. Station included in 2020 monthly reports.	N/A. Not listed as requiring adaptive management check in EMSAMP 2019-01.	N/A. Not listed as requiring adaptive management check in EMSAMP 2019-01.
PS	Open Pit Sump	2019 annual report reviewed do not address/discuss this station. 2020 monthly reports indicate station not active. Compliance cannot be fully determined using reports. VGC communication outside of reporting (personal communication, 29 October 2020), indicated the site was not constructed and is inactive, suggesting EMSAMP requirements not applicable.							

Table 12 Surface Water Hydrology Monitoring Program Compliance – EMSAMP 2020-01

Station	Location Description	Compliance Requirements							
		1. Field Program		2. Analysis [1]			3. Reporting and Adaptive Management [1]		
		1A: Frequency	1B: Tasks	2A: Rating Curve	2B: Streamflow Record	2C: QA/QC	3A: Reporting	3B: Check for Threshold Event	3C: Response to Threshold Event
W1 [a]	Dublin Gulch above Stewart	Compliant. Manual measurements demonstrated. Logger installations not documented.	Partial compliance. Flows obtained. Monitoring visit tasks outlined in EMSAMP 2020-01 Section 2.3.1 not documented.	N/A. Rating curve information not required in monthly reports.	N/A. Flow records not required in monthly reports	Not compliant. QA/QC procedures not demonstrated.	Compliant. Included in monthly reports.	N/A. Not listed as requiring adaptive management check in EMSAMP 2020-01.	N/A. Not listed as requiring adaptive management check in EMSAMP 2020-01.
W4 [a]	Haggart Creek below Dublin	Compliant. Manual measurements demonstrated. Logger installations not documented.	Partial compliance. Flows obtained. Monitoring visit tasks outlined in EMSAMP 2020-01 Section 2.3.1 not documented.	N/A. Rating curve information not required in monthly reports.	N/A. Flow records not required in monthly reports	Not compliant. QA/QC procedures not demonstrated.	Compliant. Included in monthly reports.	N/A. Performance threshold check or discussion of adaptive management applicability to be completed in annual reporting.	N/A. Performance threshold check to be completed in annual reporting.
W5 [a]	Haggart Creek above Lynx Creek	Compliant. Manual measurements demonstrated. Logger installations not documented.	Partial compliance. Flows obtained. Monitoring visit tasks outlined in EMSAMP 2020-01 Section 2.3.1 not documented.	N/A. Rating curve information not required in monthly reports.	N/A. Flow records not required in monthly reports	Not compliant. QA/QC procedures not demonstrated.	Compliant. Included in monthly reports.	N/A. Not listed as requiring adaptive management check in EMSAMP 2020-01.	N/A. Not listed as requiring adaptive management check in EMSAMP 2020-01.
W6 [a]	Lynx Creek above Haggart Creek	Compliant. Manual measurements demonstrated. Logger installations not documented.	Partial compliance. Flows obtained. Monitoring visit tasks outlined in EMSAMP 2020-01 Section 2.3.1 not documented.	N/A. Rating curve information not required in monthly reports.	N/A. Flow records not required in monthly reports	Not compliant. QA/QC procedures not demonstrated.	Compliant. Included in monthly reports.	N/A. Not listed as requiring adaptive management check in EMSAMP 2020-01.	N/A. Not listed as requiring adaptive management check in EMSAMP 2020-01.
W20 [b]	Bawn Boy Gulch	Compliant. Site visits demonstrated.	Partial compliance. Flows attempted. Monitoring visit tasks outlined in EMSAMP 2020-01 Section 2.3.1 not documented.	N/A. Rating curve information not required for manual measurement stations.	N/A. Flow records not required in monthly reports	Not compliant. QA/QC procedures not demonstrated.	Compliant. Included in monthly reports.	N/A. Not listed as requiring adaptive management check in EMSAMP 2020-01.	N/A. Not listed as requiring adaptive management check in EMSAMP 2020-01.
W21 [a]	Dublin Gulch at Mouth	Compliant. Manual measurements demonstrated. Logger installations not documented.	Partial compliance. Flows obtained. Monitoring visit tasks outlined in EMSAMP 2020-01 Section 2.3.1 not documented.	N/A. Rating curve information not required in monthly reports.	N/A. Flow records not required in monthly reports	Not compliant. QA/QC procedures not demonstrated.	Compliant. Included in monthly reports.	N/A. Not listed as requiring adaptive management check in EMSAMP 2020-01.	N/A. Not listed as requiring adaptive management check in EMSAMP 2020-01.
W22 [a]	Haggart Creek above Project Influence	Compliant. Manual measurements demonstrated. Logger installations not documented.	Partial compliance. Flows obtained. Monitoring visit tasks outlined in EMSAMP 2020-01 Section 2.3.1 not documented.	N/A. Rating curve information not required in monthly reports.	N/A. Flow records not required in monthly reports	Not compliant. QA/QC procedures not demonstrated.	Compliant. Included in monthly reports.	N/A. Not listed as requiring adaptive management check in EMSAMP 2020-01.	N/A. Not listed as requiring adaptive management check in EMSAMP 2020-01.
W23 [b]	Haggart Creek below Lynx Creek	Compliant. Manual measurements demonstrated.	Partial compliance. Flows attempted. Monitoring visit tasks outlined in EMSAMP 2020-01 Section 2.3.1 not documented.	N/A. Rating curve information not required for manual measurement stations.	N/A. Flow records not required in monthly reports	Not compliant. QA/QC procedures not demonstrated.	Compliant. Included in monthly reports.	N/A. Not listed as requiring adaptive management check in EMSAMP 2020-01.	N/A. Not listed as requiring adaptive management check in EMSAMP 2020-01.

Table 12 Surface Water Hydrology Monitoring Program Compliance – EMSAMP 2020-01

Station	Location Description	Compliance Requirements							
		1. Field Program		2. Analysis [1]			3. Reporting and Adaptive Management [1]		
		1A: Frequency	1B: Tasks	2A: Rating Curve	2B: Streamflow Record	2C: QA/QC	3A: Reporting	3B: Check for Threshold Event	3C: Response to Threshold Event
W26 [a]	Stewart Gulch	Compliant. Manual measurements demonstrated. Logger installations not documented.	Partial compliance. Flows obtained. Monitoring visit tasks outlined in EMSAMP 2020-01 Section 2.3.1 not documented.	N/A. Rating curve information not required in monthly reports.	N/A. Flow records not required in monthly reports	Not compliant. QA/QC procedures not demonstrated.	Compliant. Included in monthly reports.	N/A. Not listed as requiring adaptive management check in EMSAMP 2020-01.	N/A. Not listed as requiring adaptive management check in EMSAMP 2020-01.
W27 [a]	Eagle Creek near Camp below Eagle Creek Pond	Compliant. Manual measurements demonstrated. Logger installations not documented.	Partial compliance. Flows obtained. Monitoring visit tasks outlined in EMSAMP 2020-01 Section 2.3.1 not documented.	N/A. Rating curve information not required in monthly reports.	N/A. Flow records not required in monthly reports	Not compliant. QA/QC procedures not demonstrated.	Compliant. Included in monthly reports.	N/A. Not listed as requiring adaptive management check in EMSAMP 2020-01.	N/A. Not listed as requiring adaptive management check in EMSAMP 2020-01.
W29 [b]	Haggart Creek below Eagle Creek and Platinum Gulch	Compliant. Manual measurements demonstrated. Logger installations not documented.	Partial compliance. Flows obtained. Monitoring visit tasks outlined in EMSAMP 2020-01 Section 2.3.1 not documented.	N/A. Rating curve information not required for manual measurement stations.	N/A. Flow records not required in monthly reports	Not compliant. QA/QC procedures not demonstrated.	Compliant. Included in monthly reports.	N/A. Performance threshold check or discussion of adaptive management applicability to be completed in annual reporting.	N/A. Performance threshold check to be completed in annual reporting.
W39 [c]	Haggart Creek above South McQuesten River	Compliant. Manual measurement attempted in May.	Partial compliance. Flows attempted. Monitoring visit tasks outlined in EMSAMP 2020-01 Section 2.3.1 not documented.	N/A. Rating curve information not required for manual measurement stations.	N/A. Flow records not required in monthly reports	Not compliant. QA/QC procedures not demonstrated.	Compliant. Included in monthly reports.	N/A. Not listed as requiring adaptive management check in EMSAMP 2020-01.	N/A. Not listed as requiring adaptive management check in EMSAMP 2020-01.
W45 [a]	Eagle Creek above Haggart Creek	Compliant. Manual measurements demonstrated. Logger installations not documented.	Partial compliance. Flows obtained. Monitoring visit tasks outlined in EMSAMP 2020-01 Section 2.3.1 not documented.	N/A. Rating curve information not required in monthly reports.	N/A. Flow records not required in monthly reports	Not compliant. QA/QC procedures not demonstrated.	Compliant. Included in monthly reports.	N/A. Not listed as requiring adaptive management check in EMSAMP 2020-01.	N/A. Not listed as requiring adaptive management check in EMSAMP 2020-01.
W49 [c]	South McQuesten River below Haggart Creek	Compliant. Manual measurement attempted in May.	Partial compliance. Flows attempted. Monitoring visit tasks outlined in EMSAMP 2020-01 Section 2.3.1 not documented.	N/A. Rating curve information not required for manual measurement stations.	N/A. Flow records not required in monthly reports	Not compliant. QA/QC procedures not demonstrated.	Compliant. Included in monthly reports.	N/A. Not listed as requiring adaptive management check in EMSAMP 2020-01.	N/A. Not listed as requiring adaptive management check in EMSAMP 2020-01.
W99 [a]	Haggart Creek above 15 Pup	Compliant. Manual measurements demonstrated. Logger installations not documented.	Partial compliance. Flows obtained. Monitoring visit tasks outlined in EMSAMP 2020-01 Section 2.3.1 not documented.	N/A. Rating curve information not required in monthly reports.	N/A. Flow records not required in monthly reports	Not compliant. QA/QC procedures not demonstrated.	Compliant. Included in monthly reports.	N/A. Not listed as requiring adaptive management check in EMSAMP 2020-01.	N/A. Not listed as requiring adaptive management check in EMSAMP 2020-01.

Table 12 Surface Water Hydrology Monitoring Program Compliance – EMSAMP 2020-01

Station	Location Description	Compliance Requirements							
		1. Field Program		2. Analysis [1]			3. Reporting and Adaptive Management [1]		
		1A: Frequency	1B: Tasks	2A: Rating Curve	2B: Streamflow Record	2C: QA/QC	3A: Reporting	3B: Check for Threshold Event	3C: Response to Threshold Event
ADR Pad Ditch [h]	ADR Pad Ditch Outlet	N/A. Daily site visits not required as site not active and not discharging. .	N/A. Not required when not discharging or not active..	N/A. Rating curve information not required for manual measurement stations.	N/A. Flow records not required in monthly reports	N/A. Not required when not active.	N/A	N/A. Not listed as requiring adaptive management check in EMSAMP 2020-01.	N/A. Not listed as requiring adaptive management check in EMSAMP 2020-01.
CS-07 [e]	Sediment Basin - below Ice Rich Storage Area	Compliant. Site visit demonstrated but noted as not active.	N/A. Not required when not active	N/A. Rating curve information not required in monthly reports.	N/A. Flow records not required in monthly reports	N/A. Not required when not active.	N/A	N/A. Not listed as requiring adaptive management check in EMSAMP 2020-01.	N/A. Not listed as requiring adaptive management check in EMSAMP 2020-01.
EPS [b]	Eagle Pup WRSA Seepage	Compliant. Site visit demonstrated but noted as not active.	N/A. Not required when not active.	N/A. Rating curve information not required for manual measurement stations.	N/A. Flow records not required in monthly reports	N/A. Not required when not active.	N/A	N/A. Not listed as requiring adaptive management check in EMSAMP 2020-01.	N/A. Not listed as requiring adaptive management check in EMSAMP 2020-01.
FT [e]	Mine Water Treatment Plant Finishing Tank	Compliant. Site visit demonstrated but noted as not active.	N/A. Not required when not active	N/A. Rating curve information not required in monthly reports.	N/A. Flow records not required in monthly reports	N/A. Not required when not active	N/A	N/A. Not listed as requiring adaptive management check in EMSAMP 2020-01.	N/A. Not listed as requiring adaptive management check in EMSAMP 2020-01.
HLFUMV [a]	Heap Leach Facility Underdrain Monitoring Vault	Compliant. Site visits demonstrated. Logger installations not documented.	Partial compliance. Flows obtained. Monitoring visit tasks not demonstrated.	N/A. Rating curve information not required in monthly reports.	N/A. Flow records not required in monthly reports	Not compliant. QA/QC procedures not demonstrated.	Compliant. Included in monthly reports.	N/A. Not listed as requiring adaptive management check in EMSAMP 2020-01.	N/A. Not listed as requiring adaptive management check in EMSAMP 2020-01.
LDSPI [e]	Lower Dublin South Pond Inflow	Compliant. Site visit demonstrated but noted as flow N/A.	N/A. Not required when not active	N/A. Rating curve information not required in monthly reports.	N/A. Flow records not required in monthly reports	N/A. Not required when not active	Compliant. Included in monthly reports.	N/A. Not listed as requiring adaptive management check in EMSAMP 2020-01.	N/A. Not listed as requiring adaptive management check in EMSAMP 2020-01.
LDSPO [e]	Lower Dublin South Pond Outflow	Compliant. Site visits demonstrated (no flow). Logger installations not documented.	N/A. Not required when not active.	N/A. Rating curve information not required in monthly reports.	N/A. Flow records not required in monthly reports	N/A. Not required when not active	Compliant. Included in monthly reports.	N/A. Not listed as requiring adaptive management check in EMSAMP 2020-01.	N/A. Not listed as requiring adaptive management check in EMSAMP 2020-01.

Table 12 Surface Water Hydrology Monitoring Program Compliance – EMSAMP 2020-01

Station	Location Description	Compliance Requirements							
		1. Field Program		2. Analysis [1]			3. Reporting and Adaptive Management [1]		
		1A: Frequency	1B: Tasks	2A: Rating Curve	2B: Streamflow Record	2C: QA/QC	3A: Reporting	3B: Check for Threshold Event	3C: Response to Threshold Event
LDSP-UND [b]	LDSP Undertrain Outflow	Compliant. Manual measurements demonstrated. Logger installations not documented.	Partial compliance. Flows obtained. Monitoring visit tasks not demonstrated.	N/A. Rating curve information not required for manual measurement stations.	N/A. Flow records not required in monthly reports	Not compliant. QA/QC procedures not demonstrated.	Compliant. Included in monthly reports.	N/A. Not listed as requiring adaptive management check in EMSAMP 2020-01.	N/A. Not listed as requiring adaptive management check in EMSAMP 2020-01.
MWTP [e]	Mine Water Treatment Plant	Compliant. Site visit demonstrated but noted as not active.	N/A. Not required when not active	N/A. Rating curve information not required in monthly reports.	N/A. Flow records not required in monthly reports	N/A. Not required when not active.	Compliant. Included in monthly reports.	N/A. Not listed as requiring adaptive management check in EMSAMP 2020-01.	N/A. Not listed as requiring adaptive management check in EMSAMP 2020-01.
OPP [g]	Open Pit Pond	Compliant. Not required during operation. Site visit demonstrated but noted as not active.	N/A. Not required during operation	N/A. Rating curve information not required for manual measurement stations.	N/A. Flow records not required in monthly reports	N/A. Not required when not active.	Compliant. Included in monthly reports.	N/A. Not listed as requiring adaptive management check in EMSAMP 2020-01.	N/A. Not listed as requiring adaptive management check in EMSAMP 2020-01.
OPPO [b]	Open Pit Pond Overflow	Compliant. Site visit demonstrated but noted as not active.	Partial compliance. Site visit performed. Monitoring visit tasks outlined in EMSAMP 2020-01 Section 2.3.1 not documented.	N/A. Rating curve information not required for manual measurement stations.	N/A. Flow records not required in monthly reports	Not compliant. QA/QC procedures not demonstrated.	Compliant. Included in monthly reports.	N/A. Not listed as requiring adaptive management check in EMSAMP 2020-01.	N/A. Not listed as requiring adaptive management check in EMSAMP 2020-01.
PGS [b]	Platinum Gulch WRSA Seepage	Compliant. Manual measurements demonstrated.	Partial compliance. Flows obtained. Monitoring visit tasks outlined in EMSAMP 2020-01 Section 2.3.1 not documented.	N/A. Rating curve information not required for manual measurement stations.	N/A. Flow records not required in monthly reports	Not compliant. QA/QC procedures not demonstrated.	Compliant. Included in monthly reports.	N/A. Not listed as requiring adaptive management check in EMSAMP 2020-01.	N/A. Not listed as requiring adaptive management check in EMSAMP 2020-01.
PDI [b]	Platinum Gulch Ditch	Compliant. Manual measurements demonstrated.	Partial compliance. Flows obtained. Monitoring visit tasks outlined in EMSAMP 2020-01 Section 2.3.1 not documented.	N/A. Rating curve information not required for manual measurement stations.	N/A. Flow records not required in monthly reports	Not compliant. QA/QC procedures not demonstrated.	Compliant. Included in monthly reports.	N/A. Not listed as requiring adaptive management check in EMSAMP 2020-01.	N/A. Not listed as requiring adaptive management check in EMSAMP 2020-01.
PS [f]	Open Pit Sump	Compliant. Site visit demonstrated but noted as not active.	N/A. Not required when not active.	N/A. Rating curve information not required in monthly reports.	N/A. Flow records not required in monthly reports	N/A. Not required when not active	N/A	N/A. Not listed as requiring adaptive management check in EMSAMP 2020-01.	N/A. Not listed as requiring adaptive management check in EMSAMP 2020-01.

Table 12 Surface Water Hydrology Monitoring Program Compliance – EMSAMP 2020-01

Station	Location Description	Compliance Requirements							
		1. Field Program		2. Analysis [1]			3. Reporting and Adaptive Management [1]		
		1A: Frequency	1B: Tasks	2A: Rating Curve	2B: Streamflow Record	2C: QA/QC	3A: Reporting	3B: Check for Threshold Event	3C: Response to Threshold Event

NOTES:
[1] Compliance for analysis and reporting requirements could often not be checked for compliance; 2020 monthly reports do not provide rating curves, flow records, QA/QC, monitoring summaries, or adaptive management checks
[a] Automated monitoring. Manual monitoring weekly during freshet until loggers installed and monthly during winter.
[b] Manual monitoring on a monthly basis.
[c] Manual monitoring on a quarterly basis.
[e] Automated monitoring when discharging.
[f] Automated monitoring when dewatering.
[g] Quarterly manual water level measurements during active closure.
[h] Manual measurement on a daily basis when discharging.

3.1.2.4 Water Management Plan

The Licensee's compliance with WMP 2017-01 and WMP 2020-01 was evaluated concurrently. Both WMP 2017-01 and WMP 2020-01 are approved plans with design components and as-recorded surveys sealed by a professional engineer licensed to practice in the Yukon.

The compliance evaluation for the WMPs checked for completion, and for effectiveness. Compliance with completion occurred if the water management infrastructure item was documented as installed by the required time (e.g., prior to operation). Compliance with effectiveness occurred if water quality did not exceed the Effluent Quality Standards during operations (Table 7.1-1 in WMP 2017-01, Table 6.1-1 in WMP 2020-01), and if regular inspection (as required) was documented for water management infrastructure/measures. Table 13 summarizes the main water management infrastructure, and provides an evaluation of compliance based on the reviewed reporting. Water quality implications are discussed in Section 3.2 (Surface Water Quality).

Table 13 Water Management Plan Implementation

Water Management Infrastructure	Compliance
LDSP	Partial compliance. VGC communication outside of reviewed reporting (personal communication, 29 October 2020) indicated as built report submitted in 2017 annual report. Completion date not documented in reviewed reports. Use of water from LDSP for dust suppression and concrete mentioned in June–October 2018 (2018 annual report) and storage in LDSP mentioned in May–September 2019, suggesting completion to some degree. Completion of specific LDSP components (spillway, embankment, inlet tie-ins, etc.) not documented in reviewed reports.
Ditch A	Partial compliance. VGC communication outside of reviewed reporting (personal communication, 29 October 2020) indicated ditch as built report provided to EMR as appendix to 2019 Annual Report. In reviewed reporting, excavation, rip rap armoring, HDPE pipe fusing documented as completed in 2019. Inlet to LDSP documented as completed in 2019. Month of completion not documented in reviewed reports. Completion prior to beginning of operation (August 31, 2020) not documented in reviewed reports
Ditch B	Partial compliance. VGC communication outside of reporting (personal communication, October 29, 2020) indicated ditch as built report provided to EMR as appendix to 2019 Annual Report. In reviewed reporting, excavation, rip rap armoring began in 2018, scheduled for completion in March 2019. Completion not documented in reviewed reports. Inlet to LDSP documented as completed in 2019 (month of completion not documented). Completion prior to beginning of operation (August 31, 2020) not documented in reviewed reports. Ditch B extension to toe of Eagle Pup documented as planned for 2020.
Ditch C	Compliant. Excavation, rip rap armoring completed in April 2019, prior to beginning of operation (August 31, 2020).
Culverts	Partial compliance. VGC communication outside of reporting (personal communication, October 29, 2020) indicated culvert inventory has been provided to EMR-CMI. In reviewed reporting, installation of numerous culverts throughout 2018 and 2019 documented. Inventory of culvert locations, characteristics, and completion dates not provided in reviewed reports.
Unnamed Ditches	Partial compliance. Installation of numerous conveyance/diversion ditches throughout 2018 and 2019 documented. Inventory of ditch locations, characteristics, and completion dates not provided.

Table 13 Water Management Plan Implementation

Water Management Infrastructure	Compliance
Events Pond	Partial compliance. VGC communication outside of reporting (personal communication, October 29, 2020) indicated as builts provided to YWB as appendix to 2019 Annual Report. In reviewed reporting, documented as completed in 2019. Month of completion not documented. Completion prior to beginning of operation (August 31, 2020) not documented in reviewed reports.
MWTP	N/A. Not required until Phase 2.
Erosion and Sediment Control BMP's	N/A. Reporting requirements are on an annual basis and were not specified as required until the 2020 Water Management Plan (Table 2.3-2); the 2020 annual report was not a reviewed report. Current and planned implementation of ESC BMP's are generally referenced in 2018 and 2019 annual reporting.

3.1.3 Reporting Adequacy, Compliance and Recommendations

Overall, compliance results for the applicable EMSAMPs were a mix of compliant, partial compliance, and not compliant (See Table 10 to Table 12). Several consistent non-compliance or partial compliance themes were observed throughout the audit period. The Licensee's adherence to the applicable EMSAMP has appeared to improve through the audit period. This improvement was gradual through the audit period and was not related to a transition in project phase (e.g., construction to start-up/operation). For example, in the January – June 2020 monthly reports, all of the stations which were listed in EMSAMP 2019-01 and EMSAMP 2020-01 were listed and commented on in the 2020 monthly reports, whereas the 2018 and 2019 annual reports did not cover/discuss all of the stations listed in the EMSAMPs.

Table 14 summarizes the consistent compliance gaps/deficiencies resulting in partial compliance or non-compliance, and provides recommendations/corrective actions for each.

Table 14 Surface Water Hydrology Compliance and Recommendations

Compliance Gap and/or Deficiency	Recommendation/Corrective Action
EMSAMPs reference RISC (2009) as the document which was used to develop hydrology data collection. This document is out of date; Version 2.0 of that document was published in 2018.	The EMSAMP surface water hydrology program should be updated to reflect Version 2 of the hydrometric standards (RISC 2018).
Poor documentation of revised sampling approaches for various stations based on data collection challenges or change in phase (e.g., monitoring frequency, monitoring type).	Explicitly document and provide rationale for changes to station monitoring approach or regime where applicable, and indicate plans for revising applicable EMSAMP sections.
Prior to the 2020 monthly reports, there was insufficient documentation of periods where “discharging” or “dewatering” was occurring; this informs the requirement for monitoring at several station.	Based on review of monthly reports from 2020, it appears that VGC has improved this. The 2020 annual report, and future monthly and annual reports, should continue to document periods of discharging or dewatering at applicable locations throughout site as to inform the need for monitoring at applicable sites.
For automated stations, winter and freshet time periods were not clearly delineated as to allow for demonstration of compliance as outlined in the EMSAMPs.	Recommend one of two changes: 1. Document approximate dates of freshet start and logger deployment each year in the monthly and annual reports to delineate winter, freshet, and open water periods (each of which have different monitoring requirements), or 2. Update the EMSAMP requirements for the freshet period to better acknowledge i) the subjectivity of determining freshet period and/or ii) the difficulty of obtaining flow measurements during freshet flows.
Quarterly manual monitoring stations are not completed at consistent times of the year.	Clarify “quarterly monitoring” schedule, with backup sampling protocols if conditions are unsafe.
Prior to the 2020 Monthly Reports, not all of the monitoring stations outlined in the EMSAMPs are discussed/addressed in the annual reports.	Discuss/address all monitoring stations listed in the applicable EMSAMP, noting the status (e.g., active, not active) of each. Include data for all active monitoring stations (automated, manual) in reporting.
The EMSAMPs list general tasks to be completed at each field visit (Section 2.3.1). Completion of these tasks was discussed in general in annual reports but documentation was not provided per requirements of RISC (2018).	Provide summary information regarding the completion of the tasks associated with each field visit in the annual reports, and/or indicate (in reporting) that these data have been documented internally and are available upon request.
Logger malfunctions resulted in the loss of partial or full open water season datasets at several stations.	As outlined in the general tasks in the EMSAMPs (Section 2.3.1), download logger data either at every monitoring visit, or at an appropriate regular frequency, to minimize data loss and rectify issues.
Sites experienced flows which were too high to safely obtain a flow measurement. The flows experienced in June are part of the seasonal range in flows and should be captured as part of the rating curve development or verification.	If possible considering a reasonable level of effort and resources, safe flow measurement methods and procedures should be developed and implemented to capture high flows which are essential to development of reliable rating curves. If no method is safe considering reasonable levels of effort and resources, it should be stated in the reporting as such (e.g., as was completed in 2020 Monthly Reports) with a rationale, and the rating curves identified as valid below an identified threshold.

Table 14 Surface Water Hydrology Compliance and Recommendations

Compliance Gap and/or Deficiency	Recommendation/Corrective Action
QA/QC related to field and analytical tasks (e.g., benchmark surveys, station condition, field processes, photos, equipment calibration) were not documented.	Recommend that QA/QC processes in accordance with Section 2.3.1 in EMSAMP2018-01, EC 2001, RISC 2018 are documented and provided in reporting.
Flow records are in partial compliance due to lack of winter and freshet measurements and/or logger malfunctions.	Implement monitoring program as outlined in applicable EMSAMP or provide rationale for implementation not being possible in reporting and amend EMSAMP.
For automated stations, it is not clear what the manual monitoring frequency is during the freshet in EMSAMP2020-01.	Clarify this in future EMSAMPs/reporting.
It is not clear in the EMSAMPs if the adaptive management performance thresholds are applicable to manual monitoring stations.	Clarify this in future EMSAMPs/reporting.
Average monthly flows were used instead of median monthly flows (as specified in Table 2.4-1 in EMSAMP2019-01 and EMSAMP2020-01) in evaluation of performance thresholds.	Use median monthly flows in evaluation of performance thresholds as outlined in EMSAMP.
The method of evaluation of performance thresholds for adaptive management was not completed in accordance with quantitative procedure outlined in EMSAMPs.	Apply the quantitative evaluation protocol outlined in the EMSAMPs for performance thresholds for adaptive management at relevant monitoring locations.
The evaluation of performance thresholds for adaptive management was not completed for all automated stations listed in the EMSAMPs.	Perform evaluation of performance thresholds for adaptive management for all relevant automated stations as outlined in the EMSAMP.
Adaptive management responses were not clearly performed following an AMP event of performance thresholds.	Implement and document the adaptive management responses if performance thresholds exceeded at relevant monitoring locations as outlined in EMSAMPs.
Full documentation of completion timelines and dates for key water management infrastructure not documented in reviewed reports.	Include specific completion dates in annual reporting for all key water management components.

3.2 SURFACE WATER QUALITY

3.2.1 Documents Reviewed

Documents shown in Table 15 were reviewed for the surface water quality monitoring section of the audit. In addition, the monitoring program was reviewed with respect to procedures outlined in the British Columbia Field Sampling Manual as per the EMSAMPs (BC ENV 2013), and the Guidance Document for the Sampling and Analysis of Metal Mining Effluents (EC 2001).

Table 15 Surface Water Quality Documents Reviewed

Document	Version Reviewed	Sections Applicable during Construction Phase	Sections Applicable to Operations Phase
EMSAMP	2018-01	3.0 – Surface Water Quality	N/A
EMSAMP	2019-01	3.0 – Surface Water Quality	3.0 – Surface Water Quality
EMSAMP	2020-01	N/A	3.0 – Surface Water Quality
Construction and Operations Water Management Plan	2017-01	3.4.3 – Surface Water Quality	3.4.3 – Surface Water Quality 4.3 – Discharge Protocols 7.0 – Operations Water Management
Water Management Plan	2020-01	N/A	3.4.2 – Surface Water Quality 4.3 – Discharge Protocols 6.0 Water Management Implementation
Water Licence QZ14-041, Quartz Mining License QML-0011 2018 Annual Report	N/A	3.2 – Surface Water Quality	N/A
Water Licence QZ14-041, Quartz Mining License QML-0011 2019 Annual Report	N/A	3.2 – Surface Water Quality	3.2 – Surface Water Quality
Water Licence QZ14-041-01 Monthly reports January 1 to June 30, 2020	N/A	N/A	3.0 – Surface Water Quality
Water Licence QZ14-041-01 (Amendment 1, August 23, 2019)	Amendment 1	Schedule 3 – WQOs	Part F – EQS

3.2.2 Monitoring Program Implementation

The surface water monitoring program was designed to meet the following objectives during construction and operations as described in EMSAMP 2018-01 and EMSAMP 2019-01:

- Continue to collect water quality data in the receiving environment as the Project transitions from construction to operations at stations upstream and downstream of Project influences.
- Collect water quality data to verify compliance with the discharge criteria specified in QZ14-041.
- Provide a continuous water quality database to support adaptive management strategies to meet water quality compliance criteria and protect aquatic life.

The following are key watersheds where the surface water monitoring program focuses on compliance monitoring and environmental effects:

- Haggart Creek from below the confluence of Fisher Gulch to immediately downstream of the confluence of Lynx Creek;
- Dublin Gulch from Bawn Boy Gulch to the confluence with Haggart Creek;
- Eagle Creek;
- Lynx Creek; and
- South McQuesten River at the confluence of Haggart Creek

The surface water monitoring program is implemented according the objectives stated in the EMSAMP versions.

3.2.3 Compliance with EMSAMP

The Construction and Operations Water Management Plan 2017-01 and the Water Management Plan 2020-01 were reviewed for alignment with the applicable EMSAMP. Discharge protocols relating to the adaptive management thresholds (AMTs) and EQS were aligned with the EMSAMP and Water Licence QZ14-041.

For the construction phase, the 2018 and 2019 Annual Reports were reviewed for compliance with surface water quality sections of the EMSAMP 2018-01 and EMSAMP 2019-01. In this review, monitoring stations, sampling frequency, parameters analyzed, and rationale for missing data were checked for compliance with the applicable EMSAMPs. The results of this task are listed in Table 16.
During construction, effluent compliance points and effluent quality standards were not established and no discharge of contact water to the surface water occurred.

For the operational phase, the 2019 Annual Report and applicable 2020 Monthly Reports were reviewed for compliance with EMSAMP 2019-01 and EMSAMP 2020-01. In this review, monitoring stations, sampling frequency, parameters analyzed, and rationale for missing data were checked for compliance with the applicable EMSAMPs. The results of this task are listed in in Table 17. Effluent compliance points, effluent quality standards (EQS), and water quality objectives (WQOs) were described in EMSAMP 2019-01 as per the Water License QZ14-041, Amendment 1, August 23, 2019. Table 18 lists the threshold trigger events for surface water monitoring sites during operations while Table 19 describes the responses and follow up actions completed with auditor's comments on deficiencies.

Table 16 Surface Water Quality Monitoring Program Compliance Table – Construction

Site Name	Site Description	EMSAMP Version	Data and Frequency Required				Compliance Check (Y/N) with Rationale for Missing Data								
			Field Measurements		Laboratory Analysis		Construction Phase (July 1, 2018 - March 17, 2019)								
			Turbidity	pH, Temperature, Dissolved Oxygen, Turbidity and Conductivity	Turbidity and Total Suspended Solids	Full Analytical Suite	Jul-18	Aug-18	Sep-18	Oct-18	Nov-18	Dec-18	Jan-19	Feb-19	Mar-19
W1	Dublin Gulch above Stewart	2018-01	-	M	-	M	Y	Y	Y	Y	Y	Y	Y	Y	Y
W21	Dublin Gulch at mouth	2018-01	-	M	-	M	Y	Y	Y	Y	Y - No Sample	Y	Y	Y	Y - No Sample
W4	Haggart Creek below Dublin	2018-01	-	M	-	M	Y	Y	Y	Y	Y	Y	Y	Y	Y
W22	Haggart Creek above Project Influence	2018-01	-	M	-	M	Y	Y	Y	Y	Y	Y	Y	Y	Y
W5	Haggart Creek above Lynx Creek	2018-01	-	M	-	M	Y	Y	Y	Y	Y	Y	Y	Y	Y
W6	Lynx Creek above Haggart Creek	2018-01	-	Q	-	Q	Y			Y			Y		
W20	Bawn Boy Gulch	2018-01	-	M	-	M	Y	Y	Y	Y	Y	Y	Y	Y	Y
W23	Haggart Creek below Lynx Creek	2018-01	-	M	-	M	Y	Y	Y	Y	Y	Y	Y	Y	Y
W26	Stewart Gulch	2018-01	-	M	-	M	Y	Y	Y	Y	Y	Y - No Sample	Y - No Sample	Y - No Sample	Y - No Sample
W27	Eagle Creek near Camp	2018-01	-	M	-	M	Y	Y	Y	Y	Y - No Sample	Y - No Sample	Y - No Sample	Y - No Sample	Y - No Sample
W29	Haggart Creek below Eagle Creek and Platinum Gulch	2018-01	-	M	-	M	Y	Y	Y	Y	Y	Y	Y	Y	Y
W39	Haggart Creek above South McQuesten River	2018-01	-	Q	-	Q	Y			Y			N	N	Y - No Sample
W45	Eagle Creek above Haggart Creek	2018-01	-	M	-	M	Y	Y	Y	Y	Y	Y	Y	Y - No Sample	Y - No Sample
W49	South McQuesten River below Haggart Creek	2018-01	-	Q	-	Q	Y			Y			Y		
EPS	Eagle Pup WRSA Seepage	2018-01	D	Md	Wd	Md	Y - No Sample	Y - No Sample	Y - No Sample	Y - No Sample	Y - No Sample	Y - No Sample	Y - No Sample	Y - No Sample	Y - No Sample
PDI	Platinum Gulch Ditch into Lower Dublin South Pond	2018-01	D	Md	Wd	Md	Y - No Sample	Y - No Sample	Y - No Sample	Y - No Sample	Y - No Sample	Y - No Sample	Y - No Sample	Y - No Sample	Y - No Sample
LDSPI	Lower Dublin South Pond Inflow	2018-01	D	Md	Wd	Md	Y - No Sample	Y - No Sample	Y - No Sample	Y - No Sample	Y - No Sample	Y - No Sample	Y - No Sample	Y - No Sample	Y - No Sample
LDSPO	Lower Dublin South Pond Outflow	2018-01	D	Md	Wd	Md	Y - No Sample	Y - No Sample	Y - No Sample	Y - No Sample	Y - No Sample	Y - No Sample	Y - No Sample	Y - No Sample	Y - No Sample
CS-01	Sediment Basin - below Lower Process Access Road	2018-01	D	Md	Wd	Md	Y - No Sample	Y - No Sample	Y - No Sample	Y - No Sample	Y - No Sample	Y - No Sample	Y - No Sample	Y - No Sample	Y - No Sample
CS-02	Sediment Basin – below Truck Shop	2018-01	D	Md	Wd	Md	Y - No Sample	Y - No Sample	Y - No Sample	Y - No Sample	Y - No Sample	Y - No Sample	Y - No Sample	Y - No Sample	Y - No Sample

Table 16 Surface Water Quality Monitoring Program Compliance Table – Construction

Site Name	Site Description	EMSAMP Version	Data and Frequency Required				Compliance Check (Y/N) with Rationale for Missing Data								
			Field Measurements		Laboratory Analysis		Construction Phase (July 1, 2018 - March 17, 2019)								
			Turbidity	pH, Temperature, Dissolved Oxygen, Turbidity and Conductivity	Turbidity and Total Suspended Solids	Full Analytical Suite	Jul-18	Aug-18	Sep-18	Oct-18	Nov-18	Dec-18	Jan-19	Feb-19	Mar-19
CS-03	Sediment Basin - below South Infrastructure	2018-01	D	Md	Wd	Md	Y - No Sample	Y - No Sample	Y - No Sample	Y - No Sample	Y - No Sample	Y - No Sample	Y - No Sample	Y - No Sample	Y - No Sample
CS-04	SB-G4 – below Ice Rich Overburden Storage Area	2018-01	D	Md	Wd	Md	Y - No Sample	Y - No Sample	Y - No Sample	Y - No Sample	Y - No Sample	Y - No Sample	Y - No Sample	Y - No Sample	Y - No Sample

NOTES:
Y – No Sample = inactive station, no flow, no discharge, dry conditions, frozen, not active, heavy sediment, or no safe access
D – Daily when discharging; M – Monthly; Md - Monthly when discharging; Q – Quarterly; Wd - Weekly when discharging

Table 17 Surface Water Quality Monitoring Program Compliance Table – Operations

Site	Location Description	Sampling Frequency			Compliance Check (Y/N) with Rationale for Missing Data Operations Phase (April 2019 – June 2020)														
		Field Measurements	Laboratory Analysis																
		pH, Temperature, Dissolved Oxygen and Specific Conductance	Analytical Suite[5]	48-Hour and 96-Hour LT50	Apr-19	May-19	Jun-19	Jul-19	Aug-19	Sep-19	Oct-19	Nov-19	Dec-19	Jan-20	Feb-20	Mar-20	Apr-20	May-20	Jun-20
					EMSAMP 2019-01														EMSAMP 2020-01
W1	Dublin Gulch above Stewart	M	M	-	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
W21	Dublin Gulch below Event Ponds	M	M	-	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
W4	Haggart Creek below Dublin	D, M	D[1], M[1]	-	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
W22	Haggart Creek above Project Influence	M	M[2]	-	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
W5	Haggart Creek above Lynx Creek	M	M[2]	-	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y - No Sample	Y	Y	Y - No Sample	Y	Y
W6	Lynx Creek above Haggart Creek	M	M[2]	-	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y - No Sample	Y	Y	Y	Y	Y
W20	Bawn Boy Gulch	M	M	-	Y	Y	Y	Y	Y	Y	Y	Y - No Sample	Y	Y - No Sample	Y - No Sample	Y - No Sample	Y - No Sample	Y - No Sample	Y
W23	Haggart Creek below Lynx Creek	M	M[2]	-	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
W27	Eagle Creek near Camp below LDSP	M	M	-	Y	Y	Y	Y	Y	Y	Y	Y - No Sample	Y - No Sample	Y - No Sample	Y - No Sample	Y - No Sample	Y - No Sample	Y	Y
W26	Stewart Gulch	M	M	-	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y - No Sample	Y - No Sample	Y - No Sample	Y - No Sample	Y	Y
W29	Haggart Creek below Eagle Creek & Platinum Gulch	D, M	D[1], M[2]	-	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
W39	Haggart Creek above South McQuesten River	Q	Q[2]	-	Y	Y	Y	Y			Y			Y			Y		
W45	Eagle Creek above Haggart Creek	M	M	-	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y - No Sample	Y - No Sample	Y	Y
W49	South McQuesten River below Haggart Creek	Q	Q[2]	-	Y	Y	Y	Y			Y			Y			Y		
W99	Haggart Creek above 15 Pup	M	Q[2]	-	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y

Table 17 Surface Water Quality Monitoring Program Compliance Table – Operations

Site	Location Description	Sampling Frequency			Compliance Check (Y/N) with Rationale for Missing Data Operations Phase (April 2019 – June 2020)														
		Field Measurements	Laboratory Analysis																
		pH, Temperature, Dissolved Oxygen and Specific Conductance	Analytical Suite[5]	48-Hour and 96-Hour LT50	Apr-19	May-19	Jun-19	Jul-19	Aug-19	Sep-19	Oct-19	Nov-19	Dec-19	Jan-20	Feb-20	Mar-20	Apr-20	May-20	Jun-20
EPS	Eagle Pup WRSA Seepage	M	M	-	Y - No Sample	Y - No Sample	Y - No Sample	Y - No Sample	Y - No Sample	Y - No Sample	Y - No Sample	Y - No Sample	Y	Y - No Sample	Y - No Sample	Y - No Sample	Y - No Sample	Y	Y
PDI & PG_PTS[5]	Platinum Gulch Ditch into Lower Dublin South Pond	M	M	-	Y - No Sample	Y - No Sample	Y - No Sample	Y – No Sample	Y - No Sample	Y - documented in Sept 2019 monthly report but station mislabeled as LDSPI (DA4)	Y - No Sample	Y - No Sample	Y - No Sample	Y - No Sample	Y - No Sample	Y - No Sample	Y - No Sample	Y	Y
PGS	Platinum Gulch WRSA Seepage	M	M	-	Y - No Sample	Y - No Sample	Y - No Sample	Y - No Sample	Y - No Sample	Y - documented in Sept 2019 monthly report but station mislabeled as LDSPI (DA4)	Y - No Sample	Y - No Sample	Y - No Sample	Y - No Sample	Y - No Sample	Y - No Sample	Y - No Sample	Y	Y
PS	Open Pit Sump	M	M	-	Y - No Sample	Y - No Sample	Y - No Sample	Y - No Sample	Y - No Sample	Y - No Sample	Y - No Sample	Y - No Sample	Y - No Sample	Y - No Sample	Y - No Sample	Y - No Sample	Y - No Sample	Y - No Sample	Y - No Sample
MWTP	Mine Water Treatment Plant	D	D[2]	-	Y - No Sample	Y - No Sample	Y - No Sample	Y - No Sample	Y - No Sample	Y - No Sample	Y - No Sample	Y - No Sample	Y - No Sample	Y - No Sample	Y - No Sample	Y - No Sample	Y - No Sample	Y - No Sample	Y - No Sample
FT	Mine Water Treatment Plant Finishing Tank	D	D[2]	-	Y - No Sample	Y - No Sample	Y - No Sample	Y - No Sample	Y - No Sample	Y - No Sample	Y - No Sample	Y - No Sample	Y - No Sample	Y - No Sample	Y - No Sample	Y - No Sample	Y - No Sample	Y - No Sample	Y - No Sample
LDSPI	Lower Dublin South Pond Inflow	D, M	D[2], M	M	Y	Y	Y	Y	Y	Y	Y	Y - No Sample	Y - No Sample	Y - No Sample	Y - No Sample	Y - No Sample	Y	N - See note 6	Y
LDSP	Lower Dublin South Pond Outflow	D, W	D[2], W[2,3]	Md	Y	Y - No Sample	Y - No Sample	Y - No Sample	Y - No Sample	Y - No Sample	Y - No Sample	Y - No Sample	Y - No Sample	Y - No Sample	Y - No Sample	Y - No Sample	Y - No Sample	Y - No Sample	Y - No Sample
CS-07	SG-G4 below Ice Rich Overburden Storage Area	Md	Md	-	Y - No Sample	Y - No Sample	Y - No Sample	Y - No Sample	Y - No Sample	Y - No Sample	Y - No Sample	Y - No Sample	Y - No Sample	Y - No Sample	Y - No Sample	Y - No Sample	Y - No Sample	Y - No Sample	Y - No Sample

Table 17 Surface Water Quality Monitoring Program Compliance Table – Operations

Site	Location Description	Sampling Frequency			Compliance Check (Y/N) with Rationale for Missing Data Operations Phase (April 2019 – June 2020)														
		Field Measurements	Laboratory Analysis																
		pH, Temperature, Dissolved Oxygen and Specific Conductance	Analytical Suite[5]	48-Hour and 96-Hour LT50	Apr-19	May-19	Jun-19	Jul-19	Aug-19	Sep-19	Oct-19	Nov-19	Dec-19	Jan-20	Feb-20	Mar-20	Apr-20	May-20	Jun-20
LDSP- UND	LDSP Underdrain Outflow	M	M[3]	-	Y - No Sample	Y - No Sample	Y - No Sample	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
HLFUMV	Heap Leach Facility Underdrain Monitoring Vault	C, D, W	D[4], M[2,3]	M	Y - No Sample	Y - No Sample	Y - No Sample	Y - No Sample	Y - No Sample	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
ADR Pad Ditch	ADR Pad Ditch Outlet	D, M	D[2], W[2,3]		Y - No Sample	Y - No Sample	Y - No Sample	Y - No Sample	Y - No Sample	Y - No Sample	Y - No Sample	Y - No Sample	Y - No Sample	Y - No Sample	Y - No Sample	Y - No Sample	Y - No Sample	Y - No Sample	Y - No Sample

NOTES:

[1] Laboratory analysis includes WAD, Total CN, Thiocyanate and Cyanate.

[2] Laboratory analysis includes WAD and Total CN.

[3] Calculation of un-ionized ammonia

[4] Laboratory analysis only includes WAD and Total CN - no other parameters required.

[5] Laboratory analysis includes physical parameters: pH, Specific Conductance, turbidity, TSS, TDS and hardness as well as total and dissolved organic carbon; cyanide species, major anions and nutrients (alkalinity, total nitrogen, total Kjeldahl nitrogen (TKN), ammonia-N, nitrate-N, nitrite-N, total dissolved phosphate-P, ortho-phosphate-P, sulphate, bromide, chloride, fluoride); and, total and dissolved metals (Al, Sb, As, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Mo, Hg, Ni, , K, Se, Ag, Na, Sr, Tl, S U, Zn).

[6] May 2020 Monthly Report states LDSPI sampled as a combination of all ditch inflows but no analytical data was associated with this Station

C - Continuous monitoring for specific conductance; D - Daily when discharging; W - Weekly when discharging; M - Monthly; Md - Monthly when discharging; Q - Quarterly

Y - No Sample = inactive station, no flow, no discharge, dry conditions, frozen, not active, heavy sediment, or no safe access

Table 18 Surface Water Quality Monitoring Program Exceedance Table – Operations

Site	Site Description	Parameter in Exceedance	Standards						Standards Exceeded																
			WQO (mg/L)	MDMER (mg/L)	EQS (mg/L)	AMT T1 (mg/L)	AMT T2 (mg/L)	AMT T3 (mg/L)	Jan-19	Feb-19	Mar-19	Apr-19	May-19	Jun-19	Jul-19	Aug-19	Sep-19	Oct-19	Nov-19	Dec-19	Jan-20	Feb-20	Mar-20	Apr-20	May-20	Jun-20
									Construction[1]						Operations										
									EMSAMP 2018-01						EMSAMP 2019-01										EMSAMP 2020-01
W1	Dublin Gulch above Stewart																								
W21	Dublin Gulch below Event Ponds																								
W4	Haggart Creek below Dublin	Al (dissolved)	0.1			0.075	0.085	0.1					WQO											WQO, AMT T3	WQO, AMT T2
		As (total)	0.0085			0.0064	0.0072	0.0085				WQO	WQO				WQO[2]							WQO, AMT T3	WQO, AMT T3
		Cd (total)	0.000197			0.000148	0.000167	0.000197																AMT T1	
		Co (total)	0.004			0.003	0.0034	0.004																WQO, AMT T3	
		Fe (total)	1			0.75	0.85	1				WQO	WQO											WQO, AMT T3	WQO, AMT T3	WQO, AMT T2
		Cu (total)	0.005			0.00375	0.00425	0.005																WQO, AMT T3	WQO, AMT T2	
		Pb (total)	0.0077			0.00578	0.00655	0.0077																WQO, AMT T3		
		Hg (total)	0.00002			0.000015	0.000017	0.00002																WQO, AMT T3		
		Zn (total)	0.038			0.0285	0.0323	0.038																AMT T2		
W22	Haggart Creek above Project Influence	Al (dissolved)	0.1			0.075	0.085	0.1																	WQO, AMT T3	
		Fe (total)	1			0.75	0.85	1																	WQO, AMT T3	
W6																										
W20	Bawn Boy Gulch																								
W23	Haggart Creek below Lynx Creek	Al (dissolved)	0.1			0.075	0.085	0.1					WQO												WQO, AMT T2	
		As (total)	0.0085			0.0064	0.0072	0.0085					WQO	WQO										WQO, AMT T3	WQO, AMT T3	
		Cu (total)	0.005			0.00375	0.00425	0.005																	WQO, AMT T3	
		Fe (total)	1										WQO	WQO											WQO, AMT T3	

Table 18 Surface Water Quality Monitoring Program Exceedance Table – Operations

Site	Site Description	Parameter in Exceedance	Standards						Standards Exceeded																
			WQO (mg/L)	MDMER (mg/L)	EQS (mg/L)	AMT T1 (mg/L)	AMT T2 (mg/L)	AMT T3 (mg/L)	Jan-19	Feb-19	Mar-19	Apr-19	May-19	Jun-19	Jul-19	Aug-19	Sep-19	Oct-19	Nov-19	Dec-19	Jan-20	Feb-20	Mar-20	Apr-20	May-20	Jun-20
									Construction[1]						Operations										
									EMSAMP 2018-01						EMSAMP 2019-01										EMSAMP 2020-01
W27	Eagle Creek near Camp below LDSP																								
W26	Stewart Gulch																								
W29	Haggart Creek below Eagle Creek & Platinum Gulch	Al (dissolved)	0.1			0.075	0.085	0.1					WQO											WQO, AMT T3	WQO, AMT T3
		As (total)	0.0085			0.0064	0.0072	0.0085				WQO	WQO										WQO, AMT T3	WQO, AMT T3	WQO, AMT T3
		Cu (total)	0.005			0.00375	0.00425	0.005				WQO	WQO										WQO, AMT T3	WQO, AMT T3	
		Fe (total)	1			0.75	0.85	1				WQO	WQO										WQO, AMT T3	WQO, AMT T3	WQO, AMT T3
		Cd (total)	0.000197			0.000148	0.000167	0.000197															WQO, AMT T3		
		Co (total)	0.004			0.003	0.0034	0.004															WQO, AMT T3		
		Pb (total)	0.0077			0.00578	0.00655	0.0077															WQO, AMT T3		
		Hg (total)	0.00002			0.000015	0.000017	0.00002															WQO, AMT T3	WQO, AMT T2	
		Zn (total)	0.038			0.0285	0.0323	0.038															WQO, AMT T3		
W39	Haggart Creek above South McQuesten River																								
W45	Eagle Creek above Haggart Creek																								
W49	South McQuesten River below Haggart Creek																								

Table 18 Surface Water Quality Monitoring Program Exceedance Table – Operations

Site	Site Description	Parameter in Exceedance	Standards						Standards Exceeded																	
			WQO (mg/L)	MDMER (mg/L)	EQS (mg/L)	AMT T1 (mg/L)	AMT T2 (mg/L)	AMT T3 (mg/L)	Jan-19	Feb-19	Mar-19	Apr-19	May-19	Jun-19	Jul-19	Aug-19	Sep-19	Oct-19	Nov-19	Dec-19	Jan-20	Feb-20	Mar-20	Apr-20	May-20	Jun-20
									Construction[1]						Operations											
									EMSAMP 2018-01						EMSAMP 2019-01											EMSAMP 2020-01
W99	Haggart Creek above 15 Pup	Al (dissolved)	0.1			0.075	0.085	0.1					WQO												WQO, AMT T3	WQO, AMT T3
		As (total)	0.0085			0.0064	0.0072	0.0085				WQO	WQO												WQO, AMT T3	WQO, AMT T3
		Cu (total)	0.005			0.00375	0.00425	0.005																	WQO, AMT T3	
		Fe (total)	1			0.75	0.85	1				WQO	WQO												WQO, AMT T3	WQO, AMT T3
		Hg (total)	0.00002			0.000015	0.000017	0.00002																	WQO, AMT T2	
EPS	Eagle Pup WRSA Seepage																									
PDI & PG_PTS[5]	Platinum Gulch Ditch into Lower Dublin South Pond																									
PGS	Platinum Gulch WRSA Seepage																									
PS	Open Pit Sump																									
MWTP	Mine Water Treatment Plant																									
FT	Mine Water Treatment Plant Finishing Tank																									
LDSPI	Lower Dublin South Pond Inflow																									
LDSP	Lower Dublin South Pond Outflow	As (total)			0.0053							EQS												EQS		
		TSS		30	15							EQS												EQS		
		Fe (total)			6.4																			EQS		
CS-07	SG-G4 below Ice Rich Overburden Storage Area																									
LDSP-UND	LDSP Underdrain Outflow																									
HLFUMV	Heap Leach Facility Underdrain Monitoring Vault																									
ADR Pad Ditch	ADR Pad Ditch Outlet																									

Table 18 Surface Water Quality Monitoring Program Exceedance Table – Operations

Site	Site Description	Parameter in Exceedance	Standards						Standards Exceeded														
			WQO (mg/L)	MDMER (mg/L)	EQS (mg/L)	AMT T1 (mg/L)	AMT T2 (mg/L)	AMT T3 (mg/L)	Jan-19	Feb-19	Mar-19	Apr-19	May-19	Jun-19	Jul-19	Aug-19	Sep-19	Oct-19	Nov-19	Dec-19	Jan-20	Feb-20	Mar-20	Apr-20	May-20	Jun-20
									Construction[1]						Operations											
									EMSAMP 2018-01						EMSAMP 2019-01											EMSAMP 2020-01

NOTES:
[1] Exceedances are reported for all 2019 data (as per the Quartz Mining Licence QML-0011 2019 Annual Report), although at the time of the sample event, the WQO were not established (part of the EMSAMP 2019-01)
[2] Results from September 11, 2019 is currently considered potentially erroneous as most other measured metals or metalloid parameters were not highly elevated in the W4 September 11, 2019 sample.
WQO = Water Quality Objective (QZ14-041)
MDMER = Metal and Diamond Mining Effluent Regulations, Schedule 4 Authorized Discharge
EQS = Effluent Quality Standard (QZ14-041)
AMT = Adaptive Management Threshold, T1 = Tier 1, T2 = Tier 2, T3 = Tier 3

Table 19 Surface Water Quality Exceedances and Responses

Date	Stations	Standard Exceeded	Response(s)	Follow Up Reporting	Auditor's Comments
April 2019	W4, W29, W99, W23	WQO	• Discharges were ceased when on-site TSS data indicated EQS exceedance	Results included in the 2019 Annual Report. Email notification sent to NND (Na-Cho Nyak Dun) Lands & Resources and the Energy and Mines Resources Compliance Inspector.	As per Section 3.8.3 of the EMSAMP 2018-01, adaptive management measures during operations that will be employed in the event these thresholds are reached include: • MWTP inspection during operations to determine if system is functioning as intended • PTS inspection early and post closure to determine if system is functioning as intended • Repair MWTP components and adjust reagent dosages as necessary • Perform maintenance on passive treatment systems • Verify on site analysis results with accredited laboratory results • Re-sample and analyze after verification water treatment system functioning properly • Consider need for temporary re-routing of contact water to suspend effluent discharge until licensed effluent concentrations are achieved prior to discharge. Examples of operational/ routing changes include: – Recirculation of excess process water within the HLF until repairs and adjustments are made to MWTP to achieve licensed effluent concentrations – Rerouting contact water from Open Pit and Waste Rock Storage Areas from MWTP to the events pond and/or HLF for storage and recirculation temporarily – Suspend Open Pit dewatering operations • Consider capital improvements to augment or replace existing treatment systems The 2019 Annual Report did not include a detailed AMT response following the above stated methods.
April 2020	W23, W29, W99	WQO and AMT T3	• Sample frequency changed from monthly to weekly. • Acute lethality testing was performed on the discharged water on April 21 and yielded results that were non-acutely lethal to rainbow trout or Daphnia Magna. • VGC continued to maintain the Dublin Gulch exploration road to keep snowmelt runoff from mobilizing sediment from the road.	A full report regarding the discharge from April 20–28, 2020 has been provided to the Yukon Water Board via the Waterline registry for QZ14-04-1 on May 19, 2020. A Freshet/High-Volume Management Plan was requested by Energy and Mines Resources in July 2020 to be prepared. VGC submitted this plan on September 30, 2020.	As per Section 3.8 of the EMSAMP 2019-01 notification, review, evaluation, and action for exceeding an AMT were partially completed. Missing: • For WQO and AMT exceedances, compare values to baseline to determine if any significant changes have occurred to the receiving environment water quality, complete a trend analysis and include methods and results in the report. • Detailed AMT response following the EMSAMP methods was not clear.
May 2020	W22, W4, W29, W99, W23	WQO and AMT T2 and T3	• Additional samples were collected mid-May at Stations W22, W4, and W29.	No follow up reporting noted.	As per Section 3.8 of the EMSAMP 2019-01 notification, review, evaluation, and action for exceeding an AMT were not completed. Increased sample frequency (monthly to weekly) as per the Water Management Plan was not completed after the exceedance in early May.
June 2020	W4, W29, W99	WQO and AMT T2 and T3	• Additional samples were collected mid-June following an AMT T2 exceedance at W4	No follow up reporting noted.	As per Section 3.8 of the EMSAMP 2019-01 notification, review, evaluation, and action for exceeding an AMT were not completed. Increased sample frequency (monthly to weekly) as per the Water Management Plan was not completed after the exceedance in mid-June.

3.2.4 Data QA/QC

2018 Annual Report

The methods of the QA/QC program were adequately described, though results (e.g., number of samples collected, duplicate relative percent differences, any failed data quality objectives (DQOs), and corrective action if DQOs fail) were not included in the report body nor were results of the QA/QC samples included in Appendix D and therefore total number of QA/QC samples (e.g., >10% of dataset) could not be determined.

2019 Annual Report

The methods and summary of results of the QA/QC program were adequately described except for the duplicate samples – where summary of results was omitted. However, detailed results (e.g., number of samples collected, duplicate relative percent differences, any failed DQOs were not included in the report body nor were analytical results of the QA/QC samples included in Appendix F; however, this data was available in the 2019 Monthly Reports. A total of 14% of QA/QC samples were collected (30 QA/QC samples per 212 surface water samples) which follows recommendations (>10%) as per BC ENV (2013).

2020 Monthly Reports

Details of the QA/QC program was not included in the monthly reports. For all 2020 monthly reports—in the report body or Appendix A, QA/QC duplicate samples are not identified, but assumed to be the Station number followed by "…01" for duplicates, "…02" for travel blanks, "…03" for travel blanks, and "…04" for equipment blank. From this assumption, 7 duplicate samples, three field blanks, and three travel blanks were collected between January and June 2020 resulting in 9.1% of QA/QC samples to total samples (13 QA/QC samples per 143 surface water samples). BC ENV (2013) recommends >10%.

3.2.5 Reporting Adequacy

The 2018 Annual Report, the 2019 Annual Report, and the 2020 Monthly Reports were reviewed for adequacy and compliance. Overall, the reporting and summarization of data collected for the surface water quality monitoring program is complete and adequate with deviations described below.

2018 Annual Report

The 2018 Annual Report adequately described and reported the construction monitoring program as described in the EMSAMP 2018-01; however, deviations and omissions were noted:

- Rationale for missed sampling events was not provided in relevant sections and was inferred from the TSS table (Table 3.2-2)
- As described in Section 3.2.4, the results of the QA/QC samples were not described or included in Appendix D.

2019 Annual Report

The 2019 Annual Report adequately described and reported the construction and operational monitoring program as described in the EMSAMP 2018-01 and EMSAMP 2019-01; however, some deviations and omissions were noted:

- Tabulated list of the water quality results including QA/QC data, reported from the analytical lab, were absent from the report and appendices. Instead, water quality results were reported in graph form which adequately compared parameters to WQOs and Effluent Quality Standards, as stated in the Water Licence QZ14-041, but does not show the laboratory reported value or full analytical suite.
- As this report does not include the tabulated water quality results, a check for compliance with the EMSAMPs was completed using the 2019 Monthly Reports
- A summary of QA/QC duplicate sample results were not included in the report body.
- In Appendix F, the quality of Figures 2-5, 2-6, 2-9, 2-11, 2-13, 2-14, 2-15, 2-16, and 2-17, was poor, the x axis could not be read.
- In Appendix F, scatter plots of arsenic, aluminum, sulphate, selenium, and uranium were plotted with baseline (2007) to current (2019) data; however, analytes were not statistically compared to baseline values to determine if any significant changes have occurred to the receiving environment water quality nor method or results of trend analysis included.
- Cyanate and thiocyanate were not included in the analytical suite.
- TSS and arsenic exceeded MDMER (TSS) and EQS (arsenic and TSS) during a discharge event at Station LDSP in April 2019. While discharge was ceased due to high field TSS, details of adaptive management measures (as per EMSAMP 2018-01 as this was during construction) were omitted (e.g., inspections, repairs, verification of analyte results, and/or re-run samples).

2020 Monthly Reports

The 2020 Monthly Reports adequately described and reported the operational monitoring program as described in the EMSAMP 2019-01; however, some deviations and omissions were noted:

- In Table 3.3-1 in January 2020 Monthly report, no rationale was provided for missing field parameters for Station W27, rationale was found in Table 2.2-1, part of the hydrology section.
- For all 2020 monthly reports – in the report body or Appendix A, QA/QC duplicate samples are not identified, but assumed to be the Station number followed by "…01 or …02". In addition, duplicate samples should not include the parent sample (i.e., Station number) in the sample name.
- WQO and Adaptive Management Thresholds (AMT) were exceeded in April, May, and June 2020. Exceeded analytes were not statistically compared to baseline values to determine if any significant changes have occurred to the receiving environment water quality nor method or results of trend analysis included. In addition, details of the AMT response were not included.
- Table 3.2-1 in May 2020 Monthly report states that Station LDSPI was sampled as a combination of all ditch flows, but laboratory data was not attached to the report for that station.

- Table 3.2-1 in May 2020 Monthly report states that Station EPS was not active, but Appendix A included laboratory water quality data for Station EPS. VG noted that EPS is active and the discrepancy was a reporting error.

3.2.6 Summary of Deficiencies and Recommendations

Table 20 summarizes compliance gaps and/or deficiencies for the surface water monitoring program and provides recommendations for corrective actions.

Table 20 Surface Water Quality Compliance and Recommendations

Compliance Gap and/or Deficiency	Recommendation/Corrective Action
2018 Annual Report – Rationale for missing sample events	Include a footnote for each table describing missing data rationale (e.g., frozen water)
2018 Annual Report – QA/QC results not described	Include text in the report body describing the results of the QA/QC program (e.g., number of QA/QC samples, summary of results, DQOs, and corrective actions for failed DQOs). Also include these data in the database (Appendix D) or tabulated form.
2019 Annual Report – Water Quality Results	Include a tabulated form of all water quality data including QA/QC samples
2019 Annual Report – QA/QC results not completely described	Include results of duplicate sample results as well as total amount of QA/QC samples collected and summarize data in a tabulated form.
2019 Annual Report – Quality of plots	Improve quality of plots so axes can be read (Appendix F)
2019 Annual Report – Statistical and trend analysis	For WQO exceedances, the EMSAMP commits VGC to compare values to baseline to determine if any significant changes have occurred to the receiving environment water quality, complete a trend analysis, and include methods and results in the report. We recommend an adjustment to this commitment with the goal of an achievable exercise for this project (e.g., complete statistical analysis to determine significance, and/or monitor over x number of sampling events to determine if it is a real change in water quality)
2019 Annual Report – Cyanide species	Include cyanate and thiocyanate in the analytical suite for compliance with EMSAMP 2019-01
2019 Annual Report – AMT Responses	The EMSAMPs requests VGC to describe in detail the response for any AMT exceedances. As per the Water Management Plan, sampling frequency will increase accordingly (next higher order) to better characterize trends.
2020 Monthly Reports – QA/QC	Report on QA/QC samples collected monthly and include results in the report body including laboratory QA/QC results. Frequency of QA/QC samples are to meet >10% ratio of QA/QC samples to total water quality samples. Currently field blanks are being collected are documented in the 2020 monthly report water quality appendices.

Table 20 Surface Water Quality Compliance and Recommendations

Compliance Gap and/or Deficiency	Recommendation/Corrective Action
2020 Monthly Reports – AMT Responses	For WQO and AMT exceedances, the EMSAMP commits VGC to compare values to baseline to determine if any significant changes have occurred to the receiving environment water quality, complete a trend analysis and include methods and results in the report. We recommend an adjustment to this commitment with the goal of an achievable exercise for this project (e.g., complete statistical analysis to determine significance, and/or monitor over x number of sampling events to determine if it is a real change in water quality). We also recommend to include a detailed AMT response. As per the Water Management Plan, sampling frequency should increase accordingly (next higher order) to better characterize trends.

3.3 GROUNDWATER QUANTITY AND QUALITY

3.3.1 Documents Reviewed

Documents in Table 21 were reviewed for the groundwater quantity and quality section of the audit:

Table 21 Groundwater Quantity and Quality Documents Reviewed

Document	Version Reviewed	Sections Applicable to Construction Phase	Sections Applicable to Operations Phase
EMSAMP	2018-01	4.0 Groundwater Quantity 5.0 Groundwater Quality	N/A
EMSAMP	2019-01	4.0 Groundwater Quantity 5.0 Groundwater Quality	4.0 Groundwater Quantity 5.0 Groundwater Quality
EMSAMP	2020-01	N/A	4.0 Groundwater Quantity 5.0 Groundwater Quality
Water Licence QZ14-041 Quartz Mining License QML-0011 2018 Annual Report	2019-01	3.3 Groundwater; Appendix F 2018 Groundwater Hydrographs Appendix G 2018 Groundwater Quality Data	N/A
Water Licence QZ14-041 Quartz Mining License QML-0011 2019 Annual Report	N/A	3.4 Groundwater; Appendix J 2020 Numerical Hydrogeological Model Update Appendix K Eagle Gold 2019 Groundwater Quality Data	3.4 Groundwater; Appendix J 2020 Numerical Hydrogeological Model Update Appendix K Eagle Gold 2019 Groundwater Quality Data
Type A Water Use License QZ14-041-1 Monthly Report, Reporting Period: January 2020 to June 2020	N/A	N/A	4.0 Groundwater Quantity and Quality; Appendix B Lab Results: Groundwater

Table 21 Groundwater Quantity and Quality Documents Reviewed

Document	Version Reviewed	Sections Applicable to Construction Phase	Sections Applicable to Operations Phase
Eagle Gold EMSAMP WRB Concerns on EMSAMP Implementation July 2020	N/A	N/A	N/A
Eagle Gold Project Water Management Plan	2020-01	3.5 Groundwater	3.5 Groundwater 5.5 Groundwater Model

The periods of the groundwater monitoring program audited (January 2018 to June 2020) include the mine's construction phase and operations phase, and a transition period between the two phases. The approved groundwater monitoring program (e.g. well locations, data collection frequency) presented in the EMSAMP are different for each of the phases. The relevant version of the EMSAMP and groundwater monitoring programs used as the basis of the auditing are presented in Table 21.

3.3.2 Monitoring Program Implementation and Data QA/QC

3.3.2.1 Groundwater Quantity

The objective of the groundwater quantity monitoring program presented in the EMSAMP is to provide groundwater level measurement to monitor potential project effects on the occurrence and quantity of groundwater during mine construction and start-up phases. The main components of the groundwater quantity program, as presented in the relevant EMSAMPs, are:

- Field program to install and maintain a network of groundwater monitoring wells at strategic locations and perform continuous and/or manual groundwater level measurement at selected wells in accordance with the monitoring schedule proposed in the EMSAMPs.
- Desktop assessment to compile and calibrate field groundwater level data, plot hydrographs versus time, precipitation, and temperature, and compare the hydrographs to existing baseline data.
- Preparation of data summary report at the completion of construction, annually during operation, and for specific reporting periods as identified in the Reclamation and Closure Plan.

As a part of the audit's effort to evaluate the implementation of the groundwater quantity monitoring program, the groundwater level records presented in the 2018 and 2019 annual reports and 2020 monthly reports were reviewed and compared with the applicable groundwater quantity monitoring requirements in the relevant EMSAMP.

As noted in Section 3.3.1, groundwater quantity monitoring requirements (e.g. well locations, data collection frequency) for the construction and operations phases were different. It is understood that during the transition period from the mine construction phase to operations phase most of the monitoring wells in the construction phase monitoring program (Table 22) were gradually decommissioned and no longer being monitored. At the same time, new wells in the operations phase monitoring network were progressively installed. The audit results of the two phases are presented separately in Table 22 and Table 23. Recommendations on the implementation of the groundwater quantity monitoring program are presented in section 3.3.3.

Table 22 Groundwater Quantity Monitoring Program Implementation – Construction Phase

Well ID	Facility	Datalogger	Groundwater Level Monitoring Frequency[1]	01/2018	02/2018	03/2018	04/2018	05/2018	06/2018	07/2018	08/2018	09/2018	10/2018	11/2018	12/2018	01/2019	02/2019	03/2019	04/2019	05/2019	06/2019	07/2019	08/2019	09/2019	10/2019	11/2019	12/2019	Note
MW10-AG6	HLF	Yes	Downloaded quarterly	L	L	L M	L	L	L M	L	L M	L M	L M		M	M	M	M	M	M	M	M	M		M			Logger deployed in Feb-19 but above water level.
MW10-AG3A	HLF	Yes	Downloaded quarterly	L	L	L M	L	L	L M		M	M			M	M	L M	L M	L M	L M	L M	L M	L M	L M	L	L	L M	Logger failed Jun-18, redeployed Feb-19. Well excavated.
MW10-AG3B	HLF	No	Quarterly			M		M													M	M	M	M			M	Well decommissioned.
BH-BGC11-26	HLF	Yes	Downloaded quarterly						L M	L	L M	L M	L	M	M	M												Logger above water level Nov-2018 to May-2019. Well decommissioned.
MW10-DG6	HLF	Yes	Downloaded quarterly	L	L	L	L	L	L	L M	L M	L	L M		M	M												Well damaged in construction.
MW10-OBS1	Lower Dublin South Pond	Yes	Downloaded quarterly	L	L	L	L	L M	L	L	L M	L M		L M	M	M	L M	L M	L M	L M								Logger removed Nov-18, redeployed Feb-19. Well decommissioned
BH-BGC11-72	Lower Dublin South Pond	Yes	Downloaded quarterly		L	L M	L	L M	L	L M	L	L M	L M		M	L M	L M	L M	L M	L M	M	M	M	L M	L M			Logger removed May-19, re-deployed Sep-19
BH-BGC11-74	Lower Dublin South Pond	Yes	Downloaded quarterly	L	L	L M	L	L	L M	L	L M	L M	L M		M	L M	L M	L M	L M	L M	L M	L M	L M	L M	L M			
MW96-15(B)	EP WRSA	Yes	Downloaded quarterly	L	L	L	L	L	L	L	L	L M	L M	L M	L M	L M				M	M	M	M	M	M			Logger removed in 2019.
MW96-13A	EP WRSA	Yes	Downloaded quarterly	L	L	L M		L M	L	L M	L	L M	L M	L M	L	L M	L M	L	L M	L M	L M	L M	L M	L	L M			
MW96-13B	EP WRSA	Yes	Downloaded quarterly	L	L	L M			L M	L	L	L M	M	M	M	M	L M	L M	L M	L	L M	L M	L M	L M				Logger removed in Oct-18, re-deployed in Feb-19
MW96-14B	EP WRSA	No	Quarterly							M	M	M	M					M	M	M	M	M		M				Location frost jacked
MW96-17A	Open Pit	Yes	Downloaded monthly	L	L	L	L	L	L	L	L	L	L															Decommissioned in Jan-19
MW96-17B	Open Pit	No	Monthly						M	M			M			M												Decommissioned in Jan-19
MW10-PG1	PG WRSA	Yes	Downloaded quarterly	L	L	L M	L	L	L M	L	L M			M	M	M	L M	L M	L M	L M	L M	L M	L M	L M	L			Logger removed Oct-18, re-deployed Feb-19

NOTES:
[1] "M" – manual groundwater level record, "L" – datalogger groundwater level record, the timing of the records shown in the table was visually identified from hydrographs therefore is approximate.

Table 23 Groundwater Quantity Monitoring Program Implementation – Operations Phase

Well ID	Facility	Datalogger[1]	Groundwater Level Monitoring Frequency[2]	05/2019	06/2019	07/2019	08/2019	09/2019	10/2019	11/2019	12/2019	01/2020	02/2020	03/2020	04/2020	05/2020	06/2020	07/2020	Notes
BH-BGC11-73a	Open Pit	Yes	Quarterly	L	L	L	L	L	L	L	L								.
BH-BGC11-73b	Open Pit	Yes	Quarterly	L	L	L	L	L	L	L	L								
BH-BGC11-73c	Open Pit	Yes	Quarterly	L	L	L	L	L	L	L	L								
PW-BGC11-02	Open Pit	No	Quarterly																Documents reviewed do not contain GW level data from this well.
MW19-PGW1a	PG WRSA	Yes	Quarterly												M				Q1 2020 measurement not completed due to COVID-19
MW19-PGW1b	PG WRSA	Yes	Quarterly																Q1 2020 measurement not completed due to COVID-19
MW10-PG1	PG WRSA and Open Pit	Yes	Quarterly	L M	L M	L M	L M	L M	L						M		M		Q1 2020 measurement not completed due to COVID-19
MW96-13A	EP WRSA	Yes	Quarterly	L M	L M	L M	L M	L	L M							M	M		Q1 2020 measurement not completed due to COVID-19
MW96-13B	EP WRSA	Yes	Quarterly	L	L M	L M	L M	L M								M	M		Q1 2020 measurement not completed due to COVID-19
MW96-14B	EP WRSA	No	Quarterly	M	M	M		M								M	M		Q1 2020 measurement not completed due to COVID-19
MW96-15(B)	EP WRSA	No	Quarterly	M	M	M	M	M	M							M	M		Q1 2020 measurement not completed due to COVID-19
MW19-EPW1a	EP WRSA	Yes	Quarterly	L M	L M	L M	L M	L	L M	L				M			M		Q1 2020 measurement not completed due to COVID-19.
MW19-EPW1b	EP WRSA	Yes	Quarterly	M	L M	L	L M	L M	L M	L				M			M		Q1 2020 measurement not completed due to COVID-19.
MW19-HLF1a	HLF	Yes	Quarterly	L	L M	L M	L M	L	L	L				M			M		Q1 2020 measurement not completed due to COVID-19.
MW19-HLF1b	HLF	No	Quarterly	M	M	M	M	M						M			M		Q1 2020 measurement not completed due to COVID-19.
MW10-AG6	HLF	Yes	Quarterly	M	M	M	M		M										Logger deployed in Feb-19 but above water level. Q1 2020 measurement not completed due to COVID-19.
MW19-DG6Ra	HLF	Yes	Quarterly	M	M	L M	L M	L	L M	L M				M		M			Q1 2020 measurement not completed due to COVID-19.
MW19-DG6Rb	HLF	Yes	Quarterly			M	M		M					M		M			Q1 2020 measurement not completed due to COVID-19.

Table 23 Groundwater Quantity Monitoring Program Implementation – Operations Phase

Well ID	Facility	Datalogger[1]	Groundwater Level Monitoring Frequency[2]	05/2019	06/2019	07/2019	08/2019	09/2019	10/2019	11/2019	12/2019	01/2020	02/2020	03/2020	04/2020	05/2020	06/2020	07/2020	Notes
MW19-EVP1a	Events Pond	No	Quarterly			M										M	M		Q1 2020 measurement not completed due to COVID-19.
MW19-EVP1b	Events Pond	No	Quarterly	M	M	M	M	M	M							M	M		Q1 2020 measurement not completed due to COVID-19.
MW19-EVP2a	Events Pond	No	Quarterly	M		M	M								M		M		Q1 2020 measurement not completed due to COVID-19.
MW19-EVP2b	Events Pond	No	Quarterly	M	M	M	M	M	M						M		M		Q1 2020 measurement not completed due to COVID-19.
MW18-DG2R	Lower Dublin South Pond	Yes	Quarterly	L M	L M	L M	L	L	L M	L M					M		M		Q1 2020 measurement not completed due to COVID-19.
MW18-LDSP1	Lower Dublin South Pond	Yes	Quarterly												M		M		Q1 2020 measurement not completed due to COVID-19.
MW19-LDSP2A	Lower Dublin South Pond	Yes	Quarterly	L M	L M	L M	L M	L M	L	L					M		M		Q1 2020 measurement not completed due to COVID-19.
MW19-LDSP2B	Lower Dublin South Pond	Yes	Quarterly	L M	L M	L M	L M	L M	L	L					M		M		Q1 2020 measurement not completed due to COVID-19.
BH-BGC11-72	Lower Dublin Gulch	Yes	Quarterly	L M	M	M	M	L M	L M						M			M	Logger removed May-19, re-deployed Sep-19. Q1 2020 measurement not completed due to COVID-19.
BH-BGC11-74	Lower Dublin Gulch	No	Quarterly	L M	L M	L M	L M	L M	L M						M			M	Q1 2020 measurement not completed due to COVID-19.
MW96-9b	Upper Dublin Gulch	No	Quarterly	L M	L M	L M	L M	L M	L M	L	L	L							Manual data not collected in 2020 due to equipment malfunction or unsafe condition. Q1 2020 measurement not completed due to COVID-19.

NOTES:
[1] The documents reviewed do not contain 2020 datalogger data.
[2] "M" – manual groundwater level record, "L" – datalogger groundwater level record, the timing of the records shown in the table was visually identified from hydrographs therefore is approximate.

3.3.2.2 Groundwater Quality

The objective of the groundwater quality monitoring program is to monitor project effects on the quality of groundwater as the project transitions from baseline conditions through construction and operations. The key components of the groundwater quantity program, as presented in the relevant EMSAMP, are:

- Field program to install and maintain a network of groundwater monitoring wells at strategic locations, and collect groundwater samples from selected wells in accordance with the monitoring schedule, and sampling and transportation protocols presented in the EMSAMP. The groundwater quality monitoring is integrated with the groundwater quantity monitoring program such that groundwater samples are collected from a subset of wells that are monitored for groundwater levels.
- Field QA/QC program including collection of trip blanks, field blanks, and field duplicates samples.
- Field and lab analysis of groundwater samples for the following groundwater quality parameters:
  - Field parameters: temperature, pH, conductivity, turbidity
  - Lab physical parameters: temperature, conductivity, turbidity, TDS, TSS, pH
  - Anion: Cl, SO_4, NO_3, NO, CN_2, Total Alkalinity
  - Nutrients: TKN, NH3, T-Nitrogen, Total-PO_4, Dissolved-PO_4, Ortho-PO_4
  - Carbon: Dissolved Organic Carbon, Total Organic Carbon
  - Total metals: ICPOES/MS + mercury, trace metals (Al, Sb, As, Ba, Be, B, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Mo, Ni, P, K, Se, Si, Ag, Na, Sr, Tl, V, U, Zn)
  - Dissolved metals: ICPOES/MS + mercury, trace metals (Al, Sb, As, Ba, Be, B, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Mo, Ni, P, K, Se, Si, Ag, Na, Sr, Tl, V, U, Zn)
- Desktop analysis of analytical results and compilation of groundwater quality data, review data against baseline groundwater quality and QA/QC criteria to identify and eliminate false positives and negatives, compare results to applicable permit discharge or monitoring criteria, and plot concentration of regulated constituents and key indicator parameters versus time and applicable standards and baseline concentrations.
- Submission of groundwater quality data for regulatory review.

As a part of this audit's effort to evaluate the implementation of the groundwater quality monitoring program, the groundwater quality data presented in the 2018 and 2019 annual reports and 2020 monthly reports were reviewed and compared to applicable groundwater quality monitoring requirements in the relevant EMSAMP.

As noted in Section 3.3.1, monitoring requirements (e.g. well locations, data collection frequency) for construction phase and operations phase are different. It is understood that during the transition period from the mine construction phase to operations phase , most of the monitoring wells in the construction phase monitoring program (Table 24) were gradually decommissioned and no longer being monitored. At the same time, new wells in the mine operation phase monitoring network were progressively installed. The audit results of the evaluation of the two phases are presented separately in Table 24 and Table 25.



Table 24 Groundwater Quality Monitoring Program Implementation – Construction Phase

Well ID[1]	Facility	Groundwater Sample Frequency	01/2018	02/2018	03/2018	04/2018	05/2018	06/2018	07/2018	08/2018	09/2018	10/2018	11/2018	12/2018	01/2019	02/2019	03/2019	04/2019	05/2019	06/2019	07/2019	08/2019	09/2019	10/2019	11/2019	12/2019	Note
MW10-AG6	HLF	Quarterly			S			S		S			S							S							
MW10-AG3A	HLF	Quarterly			S			S			S	S					S		S				S			S	
BH-BGC11-26	HLF	Quarterly																									Well decommissioned.
MW10-DG6	HLF	Quarterly								S		S															Well decommissioned.
MW10-OBS1	Lower Dublin South Pond	Quarterly			S						S	S							S								
MW96-15(B)	EP WRSA	Quarterly									S	S							S				S	S			
MW96-13A	EP WRSA	Quarterly			S			S			S	S					S		S	S			S				Well decommissioned.
Blank[2]																											
Field Duplicate[2]																											

NOTES:
[1] "S" – Groundwater sample collected.
[2] Groundwater quality lab analysis data included in the 2018 and 2019 annual reports do not contain lab results of blank or duplicate samples.

Table 25 Groundwater Quality Monitoring Program Implementation – Operations Phase

Well ID[1]	Facility	GW Quality Sample Frequency[2]	05/2019	06/2019	07/2019	08/2019	09/2019	10/2019	11/2019	12/2019	01/2020	02/2020	03/2020	04/2020	05/2020	06/2020	07/2020	Note
MW19-PGW1a	PG WRSA	Quarterly														S		Q1 2020 sampling not completed due to COVID-19
MW19-PGW1b	PG WRSA	Quarterly																Q1 2020 sampling not completed due to COVID-19
MW10-PG1	PG WRSA and Open Pit	Quarterly												S		S		Q1 2020 sampling not completed due to COVID-19
MW96-13A	EP WRSA	Quarterly													S			Q1 2020 sampling not completed due to COVID-19
MW96-13B	EP WRSA	Quarterly																Q1 2020 sampling not completed due to COVID-19
MW96-15(B)	EP WRSA	Quarterly													S	S		Q1 2020 sampling not completed due to COVID-19
MW19-EPW1a	EP WRSA	Quarterly												S		S		Q1 2020 sampling not completed due to COVID-19
MW19-EPW1b	EP WRSA	Quarterly												S		S		Q1 2020 sampling not completed due to COVID-19
MW10-AG3A	HLF	Quarterly	S				S			S								Q1 2020 sampling not completed due to COVID-19
MW19-HLF1a	HLF	Quarterly																Q1 2020 sampling not completed due to COVID-19
MW19-HLF1b	HLF	Quarterly		S			S	S						S		S		Q1 2020 sampling not completed due to COVID-19
MW19-DG6Ra	HLF	Quarterly					S	S						S		S		Q1 2020 sampling not completed due to COVID-19
MW19-DG6Rb	HLF	Quarterly												S		S		Q1 2020 sampling not completed due to COVID-19
MW19-EVP1a	Events Pond	Quarterly																Q1 2020 sampling not completed due to COVID-19
MW19-EVP1b	Events Pond	Quarterly																Q1 2020 sampling not completed due to COVID-19
MW19-EVP2a	Events Pond	Quarterly																Q1 2020 sampling not completed due to COVID-19
MW19-EVP2b	Events Pond	Quarterly												S		S		Q1 2020 sampling not completed due to COVID-19
MW18-DG2R	Lower Dublin South Pond	Quarterly												S		S		Q1 2020 sampling not completed due to COVID-19
MW18-LDSP1	Lower Dublin South Pond	Quarterly																Q1 2020 sampling not completed due to COVID-19
MW19-LDSP2A	Lower Dublin South Pond	Quarterly	S				S	S								S		Q1 2020 sampling not completed due to COVID-19

Table 25 Groundwater Quality Monitoring Program Implementation – Operations Phase

Well ID[1]	Facility	GW Quality Sample Frequency[2]	05/2019	06/2019	07/2019	08/2019	09/2019	10/2019	11/2019	12/2019	01/2020	02/2020	03/2020	04/2020	05/2020	06/2020	07/2020	Note
MW19-LDSP2B	Lower Dublin South Pond	Quarterly												S		S		Q1 2020 sampling not completed due to COVID-19
BH-BGC11-72	Lower Dublin Gulch	Quarterly												S				Q1 2020 sampling not completed due to COVID-19
BH-BGC11-74	Lower Dublin Gulch	Quarterly												S			S	Q1 2020 sampling not completed due to COVID-19
Blank[2]														1				
Field Duplicate[2]														1	1	2		

NOTES:
[1] "S" – Groundwater sample collected.
[2] Groundwater quality lab analysis data included in the 2018 and 2019 annual reports do not include results of blank or duplicate samples.

3.3.3 Reporting Adequacy, Compliance and Monitoring

Table 26 summarizes compliance gaps and/or deficiencies for the groundwater quantity and quality monitoring program and provides recommendations for corrective action.

Table 26 Groundwater Quantity and Quality Compliance and Recommendations

Compliance Gaps and/or Deficiencies	Recommendation/Corrective Action
Groundwater quantity and quality monitoring from some wells was performed less frequently than the schedule prescribed in the relevant EMSAMPs.	• A number of factors, including those beyond the control of VGC may result in a scheduled monitoring not being performed (e.g. weather, equipment malfunction, unsafe condition, construction, pandemic). The monthly and annual reporting needs to provide the rationale for missed monitoring in tabular format and if any corrective action will be taken. • The annual and monthly reporting should include the installation and decommission date, and operational status of monitoring wells. • A maintenance log should be maintained for any maintenance or repairs made to logs and reported in the annual report.
EMSAMP (2020-01, S. 4.5) states that groundwater levels will be compared to predicted (modeled) effects due to the loss of recharge in the HLF and WRSA.. However, trends were not quantitatively compared with predicted (modelled) effect in the 2019 Annual Report or 2020 Monthly Reports. It is unclear if the trends are consistent with the predicted thresholds or if the model requires calibration based on field observation.	• Compare measured groundwater levels to predicated effects in assessment in operations phase once dewatering of the pit commences. • Calibrate modeled adaptive management thresholds for groundwater quantity based on field observation.
EMSAMP (2020-01, S. 4.4) states that groundwater hydrographs will be compared with existing baseline data to assess potential change associated with the Project. The 2019 Annual Report in S. 3.4.3.1 presents a qualitative discussion of the observed changes in groundwater quantity associated with the construction and operation of mine. This discussion is not presented in the context of modelled effect or groundwater quantity indicators.	Present further assessment of the change in groundwater quantity associated with the Project. The assessment would be strengthened if a list of groundwater quantity indicators and associated triggers were developed and utilized in the operation stage.
EMSAMP (2020-01, S. 5.2) presents groundwater quality parameters to be analyzed in the monitoring program. Review of groundwater quality records in the 2019 Annual Report suggests some samples were not analyzed for the full suite of parameters.	• Review water licence conditions and lab records to confirm if required parameters were analyzed. • Include all analyzed parameters and lab reports in annual reporting.

Table 26 Groundwater Quantity and Quality Compliance and Recommendations

Compliance Gaps and/or Deficiencies	Recommendation/Corrective Action
• EMSAMP (2020-01, S. 5.3.2 and 5.3.3) describes the field QA/QC program for groundwater quality monitoring, which includes collection and analysis of trip blanks, field blanks and duplicates. • The 2019 Annual Report does not present information on the implementation of the QA/QC program. Appendix K of the 2019 Annual Report (Groundwater Quality Data) does not contain records of the QA/QC samples.	• Present information on the implementation of the field QA/QC program and the results of the QA/QC program in the annual reports.
EMSAMP (2020-01, S. 5.3.3) states that plots of concentrations of regulated constituents and key indicator parameters versus time will also show applicable standards and baseline concentration. Plots in the 2019 Annual Report do not contain the applicable standards and baseline concentration.	Present applicable standards and baseline concentration in the groundwater water sample constituent concentration plots for the annual report.
EMSAMP (2020-01, S. 5.4.1) describes that trends in groundwater quality will be examined to potentially inform management actions. The existing analysis of the water quality trend in the 2019 Annual Report contains discussion of the trend but in some cases does not provide rationale for the observed trends.	• Present groundwater quality trend analysis in monthly and annual reporting to confirm that trends are being monitored appropriately. • Present groundwater quality trend assessment in the context of baseline water quality and predicted effects of the Project. • Provide greater logical link between discussion of observed groundwater quality trend and proposed adaptive management actions (e.g. no action).

3.4 GEOCHEMICAL MONITORING

3.4.1 Documents Reviewed

Documents shown in Table 27 were reviewed for the geochemical section of the audit:

Table 27 Geochemical Monitoring Program Documents Reviewed

Document	Version Reviewed	Sections Applicable during Construction Phase	Sections Applicable to Operations Phase
EMSAMP	2018-01	6.0 - Geochemical Monitoring	N/A
EMSAMP	2019-01	6.0 - Geochemical Monitoring	6.0 Geochemical Monitoring
EMSAMP	2020-01	N/A	6.0 Geochemical Monitoring
Water Licence QZ14-041, Quartz Mining License QML-0011 2018 Annual Report	N/A	3.4 - Geochemical Monitoring	N/A
Water Licence QZ14-041, Quartz Mining License QML-0011 2019 Annual Report	N/A	3.5 - Geochemical Monitoring	3.5 Geochemical Monitoring
Water Licence QZ14-041-01 Monthly reports January 1 to June 30, 2020	N/A	N/A	5.0 Geochemical Monitoring
Quartz Mining Licence QML-0011	N/A	N/A	9.3 and 9.4

3.4.2 Monitoring Program Implementation

During construction, the geochemical monitoring program was designed to meet the following objectives as described in EMSAMP 2018-01, EMSAMP 2019-01, EMSAMP 2020-01:

- Assess the potential for metal leaching and acidic drainage from excavated rock to determine if it is suitable for construction material.
- Verify geochemical predictions made during the mine planning phase.
- Assess the level of weathering-driven reaction products and their potential to migrate; and
- Evaluate the effectiveness of measures to prevent and control metal leaching and acidic drainage (if applicable).

During operations, the geochemical monitoring program was designed with the following methods as described in EMSAMP 2018-01, EMSAMP 2019-01, EMSAMP 2020-01:

- Assaying capability will be required once operations commence. Assaying may include a mobile or containerized lab whose equipment would be re-installed in the permanent facilities once constructed, or a program to build a lab utilizing modular or pre-engineered construction that would be extended to provide the additional facilities contemplated.
- The assay lab will use both fire assay and perform atomic absorption assay to support both mining and processing functions. It is estimated that up to 200 blast-hole samples will require gold assays each day using fire assay.
- Crushing equipment to prepare samples for metallurgical testing to be included with all appropriate dust controls.
- Plant ore head samples, process solution samples and carbon samples will require assaying as well as samples from the metallurgical laboratory. The laboratory will include crushers, pulverizers and all associated equipment, including dust collection and environmental safety controls for sample preparation through to fire assaying.
- Analysis will be primarily for gold and silver, however pH, cyanide, total and sulfide sulfur, as well as arsenic will be included.

In addition, waste rock contact water monitoring during operations comprises in EMSAMP 2018-01, EMSAMP 2019-01, EMSAMP 2020-01:

- Monthly water quality sample collection at seeps if detected from the toe of Eagle Pup and Platinum Gulch WSRAs (included as part of the surface water quality audit)
- Flow monitoring every two weeks when flow is occurring and measurable at each seep collection point (included as part of the hydrology audit)
- Field barrel monitoring at least four times per year (during ice-free periods)
- Analysis to include hardness, pH, anions and nutrients (acidity, alkalinity, chloride, fluoride, nitrate, nitrite, and sulfate) and dissolved metals
- One replicate analyses conducted for each sampling event
- Monthly survey of waste facilities during ice-free months to observe developments of new seeps (as per Section 6.3.3 of the EMSAMP 2020-01)

The geochemical monitoring sampling protocol of the EMSAMP was updated in the 2020 version as per requirement in the Water Licence QZ14-041 Amendment 1 (August 23, 2019) to reflect:

5. *i) the collection and analysis of blast-hole chip composite samples of waste rock and ore from each blast round in the open pit;*
6. *ii) each composite sample will represent a maximum of 20% of the total blast holes per blast round;*
7. *iii) composite samples will be analysed for carbon, sulphur and arsenic; and*
8. *iv) results will be geospatially linked to the sample location from the pit, and if possible, to the deposition area within the WRSA and the HLF Pad.*

The geochemical monitoring program is consistent across all three version of the EMSAMPs, with minor variances noted above. The geochemical monitoring program was implemented according the objectives stated in the EMSAMP versions; however, compliance with the EMSAMP is included in the following section.

3.4.3 Compliance with EMSAMP

For the construction phase, the 2018 and 2019 Annual Reports were reviewed for compliance with EMSAMP 2018-01 and EMSAMP 2019-01. For the operations phase, the 2019 Annual Report and the 2020 Monthly Reports were reviewed for compliance with EMSAMP 2019-01 and EMSAMP 2020-01.

The following field and laboratory methods and compliance with sampling frequencies per the EMSAMP were reviewed for each mine phase:

- Construction
  - Surficial material static testing
  - Bedrock material static testing
- Operations
  - Blast-hole static testing
  - Waste rock static testing
  - Field barrel kinetic testing
  - Waste rock contact water (seep) monitoring

The results of this task are listed in Table 28.

Table 28 Geochemical Monitoring Program Compliance Table – Construction and Operations

Phase	Program	Analysis Location	Methods	Required		Conducted		Sample Compliance Check (Y/N) with Rationale	Methods Check (Y/N) with Rationale
				Sampling Quantity	Sampling Frequency	Sampling Quantity	Sampling Frequency		
Construction	Surficial Material Static Testing	Off-Site Analysis	• Visual inspection to determine presence of high concentrations of sulphides. • Bulk grab samples at each major excavation in distinct geological formations encountered and/or from every 200,000 m3 material moved. • The samples will be reduced to 1-2 kg in size using a riffle splitter prior to shipping to an accredited analytical laboratory for testing. • Test methods will include the following as recommended in MEND (2009) and summarized in Table 6.3-1: – Rinse pH and electrical conductivity (EC) on the <2 mm fraction -Modified Acid Base Accounting on the bulk sample and the <2 mm fraction – Metal analysis by ICP-MS following aqua regia digestion on the bulk sample and the <2 mm fraction – Leach extraction tests will be completed on every 5th sample using a 3:1 water to solid ratio on the <1 cm sample fraction Waste rock used for construction or fill purposes must have a pH of at least 5.0, a NP:AP ratio of at least 3:1, and a total sulphide sulphur content of no greater than 0.3% (QML-0011)	Varies	Each major excavation or every 200,000 m^3 material moved	**2018 Annual Report** - 12 Samples	**2018 Annual Report -** Not described, grab samples	**2018 Annual Report** - N Visual inspection not described. No description of volume of material moved or if samples were per distinct geological formation	**2018 Annual Report** - Y

Table 28 Geochemical Monitoring Program Compliance Table – Construction and Operations

Phase	Program	Analysis Location	Methods	Required		Conducted		Sample Compliance Check (Y/N) with Rationale	Methods Check (Y/N) with Rationale
				Sampling Quantity	Sampling Frequency	Sampling Quantity	Sampling Frequency		
Construction	Bedrock Static Testing	Off-Site Analysis	• Grab samples at each major excavation in distinct geological formations encountered and/or from every 100,000 m3 material moved (except for the open pit) • The samples will be reduced to 1-2 kg in size using a riffle splitter prior to shipping to an accredited analytical laboratory for testing. • Test methods will include the following as recommended in MEND (2009) and summarized in Table 6.3-1: – Rinse pH and electrical conductivity (EC) on the <2 mm fraction – Modified Acid Base Accounting on the bulk sample and the <2 mm fraction – Metal analysis by ICP-MS following aqua regia digestion on the bulk sample and the <2 mm fraction – Leach extraction tests will be completed on every 5th sample using a 3:1 water to solid ratio on the <1 cm sample fraction Waste rock used for construction or fill purposes must have a pH of at least 5.0, a NP:AP ratio of at least 3:1, and a total sulphide sulphur content of no greater than 0.3% (QML-0011)	Varies	Each major excavation or every 100,000 m^3 material moved (except for open pit)	**2018 Annual Report -** 15 Samples **2019 Annual Report -** 7 Samples	**2018 Annual Report -** Not described, grab samples **2019 Annual Report -** Not described, grab samples collected on January 25, 2019	**2018 Annual Report** - N No description of volume of material moved or if samples were per distinct geological formation **2019 Annual Report** - N No description of volume of material moved or if samples were per distinct geological formation	**2018 Annual Report** - Y - all bedrock samples met criteria for construction or fill purposes. Y
Operations	Blast-hole Static Testing	On-Site Analysis	• Blast-hole chip composites of waste rock and ore from each blast round in the open pit. Each composite sample will represent a maximum of 20% of the total blast holes per blast round. • Geological logging of blast hole composites. • Analysis for **carbon,** sulphur and arsenic. • Results will be geospatially linked to the sample location from the pit, and if possible, to the area within the waste storage facilities **and the HLF pad** that it is placed.	20% of total blast hole (EMSAMP 2020-01 onwards)	Each blast round	**2019 Annual Report** - 7 samples	**2019 Annual Report** - Not described, samples collected in July and December, 2019	**2019 Annual Report** - N - Details of blast rounds were not included in the annual report Section 3.5; therefore sample compliance could not be completed.	**2019 Annual Report** - N - analysis for carbon, sulfur, and arsenic were still being compiled and not included in the annual report. Geological logs were not included in the annual report. Confirmation of the geo-spatial link of the samples pending.

Table 28 Geochemical Monitoring Program Compliance Table – Construction and Operations

Phase	Program	Analysis Location	Methods	Required		Conducted		Sample Compliance Check (Y/N) with Rationale	Methods Check (Y/N) with Rationale
				Sampling Quantity	Sampling Frequency	Sampling Quantity	Sampling Frequency		
Operations	Blast-hole Static Testing	Off-Site Analysis	• Grab samples collected quarterly representing blasted waste, reduced to 1–2 kg in size using a riffle splitter prior to shipping to an accredited analytical laboratory for testing of the following methods as recommended in MEND, 2009. – Rinse pH and EC – Modified Acid Base Accounting (ABA) including a total sulphur, sulphate sulphur, fizz rating, modified Sobek neutralization potential and total inorganic carbon – Metal analysis by ICP-MS following aqua regia digestion	20% of total blast hole (EMSAMP 2020-01 onwards)	Quarterly	**2019 Annual Report - 7 samples**	**2019 Annual Report** - 7 samples collected in Q3 and Q4	**2019 Annual Report** - Y	**2019 Annual Report** - Y
Operations	Waste Rock Static Testing	Off-Site Analysis	Annual waste sampling from placed waste rock in the storage facilities (Eagle Pup and Platinum Gulch) consisting of collection of grab samples from waste produced in the previous calendar year. The number of samples will vary depending on production. One sample per million tonnes of waste produced be collected.	Varies. 1 sample/million tonnes of waste	Annual	**2019 Annual Report** - N/A**	**2019 Annual Report** - N/A**	2019 Annual Report - N/A**	2019 Annual Report - N/A**
Operations	All Static Testing	Off-Site Analysis	Samples will be sieved to collect samples representing specific grain size distributions as follows: • Bulk sample • <2 mm fraction • <1 cm fraction (including the < 2 mm fraction) • The samples will be reduced to 1-2 kg in size using a riffle splitter prior to shipping to an accredited analytical laboratory for testing. Test methods will include the following as recommended in MEND (2009) and summarized in Table 6.3-1: • Rinse pH and EC on the <2 mm size fraction • Modified Acid Base Accounting including a total sulphur, sulphate sulphur, fizz rating, modified Sobek neutralization potential and total inorganic carbon on all three size fractions • Metal analysis by ICP-MS following aqua regia digestion on all four size fractions • Leach extraction analyses using a 3:1 water to solid ratio on the <1 cm sample fraction	N/A	N/A	N/A	N/A	N/A	**2019 Annual Report** - N - All analyses are correct with the exception of conducting the SFE tests on < 1 cm and <2 mm fractions. These details are not included in Appendix I ALS Reports. ALS states a 0.50 g sample is prepared, but does not include size fractions completed in that preparation - only refers to MEND 1.20.1 Predication Manual. The MEND 1.20.1 Prediction Manual methods describe 100 g samples of minus 6.35 mm size fraction.

Table 28 Geochemical Monitoring Program Compliance Table – Construction and Operations

Phase	Program	Analysis Location	Methods	Required		Conducted		Sample Compliance Check (Y/N) with Rationale	Methods Check (Y/N) with Rationale
				Sampling Quantity	Sampling Frequency	Sampling Quantity	Sampling Frequency		
Operations	Field Barrel Kinetic Testing	Off-Site Analysis	Field barrel monitoring is currently being conducted at least four times per year (during ice-free periods), and will continue through initial operations to expand the time trends until actual seepage database is adequate and can be related to the barrel data. Analysis currently includes hardness, pH, anions and nutrients (acidity, alkalinity, chloride, fluoride, nitrate, nitrite and sulfate) and dissolved metals. Replicate analyses are completed on one sample for each sampling campaign.	Four	Per Year	**2019 Annual Report** - field bin dataset was not included, sample frequency could be inferred from figures in Appendix H. Inferred: 7 samples between mid-2018 and October 2019	**2019 Annual Report** -Could not be determined. No attached dataset.	**2019 Annual Report -** Y*	**2019 Annual Report -** N - raw data not attached. No replicate samples reported.
Operations	Waste Rock Contact Water (Seep) Monitoring	Off-Site Analysis	Monthly sample collected as part of the Surface Water Quality Monitoring (included as part of the surface water quality audit) Flow measurements every two weeks when flowing at each seep collection point (included as part of the hydrology audit) Monthly survey of waste facilities during ice-free months to monitor for development of new seeps.	As needed	Monthly Survey	N/A	N/A	N/A	**2019 Annual Report** - N - Monthly seep survey not documented.

3.4.4 Data QA/QC

2018 Annual Report

- A total of 27 samples were collected as part of construction activities. There were no documented duplicate samples collected nor analyzed.

2019 Annual Report

- A total of 14 samples were collected as part of construction (7 samples) and operation (7 samples) activities. There were no documented duplicate samples collected nor analyzed.

2020 Monthly Reports

- In June 2020, two field bins were installed with two samples collected and one duplicate (with the assumption that reference "samples number…01" is a duplicate sample). From this assumption, 50% of total samples were QA/QC samples (half of the samples), compliant with EMSAMP (requiring one duplicate per sampling campaign). In May 2020, one sample of construction material was collected, analyzed, and reported in the June 2020 report. There were no QA/QC samples for the construction material sample. Overall greater than 10% QA/QC samples were collected as required by the EMSAMP.
- Results of the QA/QC samples (i.e., duplicate relative percent differences) were not included in the report body for June 2020.

3.4.5 Reporting Adequacy

The 2018 Annual Report, the 2019 Annual Report, and the 2020 Monthly Reports were reviewed for adequacy and compliance. Overall, the reporting and summarization of data collected for the geochemical monitoring program is complete and adequate with deviations described below.

2018 Annual Report

- Section 3.4.3 reports sulphur content ranging from non-detect at <0.01% to 22%, where it is reported as <0.01% to 0.22% in Table 3.4-1
- In Section 3.4.3, the NP:AP ratio reported in Table 3.4.1 would be better interpreted as the neutralization potential ratio (NPR) which is neutralization potential / acid potential (NP/AP) (e.g., 13.3, instead of 8:0.6 as per Sample VICEAG-GCM-01). This was corrected in the 2019 Annual Report.
- Section 3.4.3, Table 3.4-1 lists 26 samples, but Appendix I list 27 samples collected in 2018. Sample VICEAG-GCM-31 was omitted from Table 3.4-1
- In Section 3.4.3, Table 3.4-1 does not mention the type of material (i.e., surficial or bedrock) nor the rationale for sampling (i.e., distinct geological formation encountered and/or from every 100,000 or 200,000 m^3 material moved as per EMSAMP 2018-01)
- Acid base accounting results, including rinse pH and electrical conductivity, were not included in Appendix I

2019 Annual Report

- Field barrel analytical data was not included in the report or appendices (only figure form in Appendix H); therefore, compliance with sample frequency could not be determined nor compliance for analytical parameters analyzed determined.
- Section 3.5.2, Table 3.5-1 does not mention the type of material (i.e., surficial or bedrock) nor the rationale for sampling (i.e., distinct geological formation encountered and/or from every 100,000 or 200,000 m^3 material moved as per EMSAMP 2019-01)
- Details of blast rounds were not included in the annual report Section 3.5; therefore, sample compliance could not be completed for operations blast hole static testing.
- Geological logs of the blast-hole samples were not included.
- Appendix I did not state whether <1 cm size fraction was used for shake flask extraction tests
- Details of monthly seep survey for development on new seeps were not documented.

2020 Monthly Reports

- Results of the QA/QC samples (i.e., duplicate relative percent differences) were not included in the report body for June 2020. Duplicate samples were not explicitly described as such, the assumption that reference “samples number…01” is a duplicate sample.

3.4.6 Summary of Deficiencies and Recommendations

Table 29 summarizes compliance gaps and/or deficiencies for the geochemical monitoring program and provides recommendations for corrective actions.

Table 29 Geochemical Monitoring Compliance and Recommendations

Compliance Gaps and/or Deficiencies	Recommendation/Corrective Action
2018 Annual Report – QA/QC samples	Collect duplicate samples of construction monitoring samples and include discussion of results including relative percent differences in report body and append dataset.
2018 Annual Report – Report NPR values	Report NPR values in addition to NP:AP for better interpretation of results. This was corrected in the 2019 Annual Report.
2018 and 2019 Annual Report – Sample type description	Include details on the material sample collected (i.e., surficial, or bedrock) and why these samples were collected (i.e., 1 per 100,000 m^3 material moved or distinct geological unit).
2018 Annual Report – Appended analytical data	Include all analytical data in appendices. Missing: acid base accounting, rinse pH, and electrical conductivity.
2019 Annual Report – Appended analytical data	Include field barrel analytical data in appendices.

Table 29 Geochemical Monitoring Compliance and Recommendations

Compliance Gaps and/or Deficiencies	Recommendation/Corrective Action
2019 Annual Report – QA/QC samples	Collect duplicate samples of construction and operational monitoring samples, include discussion of result (including relative percent differences) in report body, and append dataset.
2019 Annual Report – Details of blast rounds	Include details of blast rounds so compliance with EMSAMP can be evaluated. Include geological logs of blast holes.
2019 Annual Report – Monthly seep sample survey	Include details of monthly seep sample survey in report.
2019 Annual Report – Shake flask extraction size fraction	Check with off-site laboratory (ALS) if shake flask extraction is conducted on <2 mm and <1 cm size fraction.
2020 Monthly Reports – QA/QC samples	Collect duplicate samples of construction monitoring samples and include discussion in report body and append dataset. For operational samples, include relative percent differences and discuss results in the report body. Consider re-naming duplicate samples to not include parent sample name. Explicitly describe which samples are duplicates of respective parent sample.

3.5 AQUATIC ENVIRONMENT

3.5.1 Stream Sediment

3.5.1.1 Documents Reviewed

Documents shown in Table 30 were reviewed for the stream sediment section of the audit.

Table 30 Stream Sediment Documents Reviewed

Document	Version Reviewed	Sections applicable during construction phase	Sections applicable to mine operations phase
EMSAMP	2018-01	7.0 – Stream Sediment	N/A
EMSAMP	2019-01	N/A	7.0 – Stream Sediment
EMSAMP	2020-01	N/A	7.0 – Stream Sediment
Water Licence QZ14-041 Quartz Mining License QML-0011 2018 Annual Report	N/A	3.5.1 – Stream Sediment Appendix J – Stream Sediment Monitoring Report (Laberge 2018)	N/A
Water Licence QZ14-041 Quartz Mining License QML-0011 2019 Annual Report	N/A	N/A	3.6.1 – Stream Sediment Appendix M – Stream Sediment Monitoring Report (Laberge 2020)

3.5.1.2 Stream Sediment Monitoring Program Design in EMSAMPS

The objectives of the stream sediment monitoring program, in all versions of the EMSAMP (Strata Gold 2018, 2019, Victoria Gold 2020), were to:

- collect data on pH and metal levels in the fine sediment fraction in watercourses in the study area as these parameters are relevant to toxicity and physical habitat requirements for benthos, fish eggs, and juvenile fish
- obtain data on sediment quality that can be used to evaluate changes related to the Project
- provide ongoing data to support refinement of future monitoring programs.

These data were to be collected from:

- five sites in Haggart Creek between the confluence of Fisher Gulch to the confluence of Lynx Creek (one above Project influence and four below Project influence)
- two sites in Dublin Gulch (both above Project influence)
- one site in Lower Eagle Creek (below Project influence)
- one site in Lynx Creek (reference site in unaffected stream)

Field samples were to be collected in depositional habitats (i.e., pools) downstream of riffle habitats using methods compatible with Part D (Soil and Sediment Sampling) of the British Columbia Field Sampling Manual (BC Ministry of Forests and Natural Resource Operations 2013).

Triplicate samples were to be collected from each of nine sites with each sample being comprising of a composite of five individual grabs. Composite samples were to be placed in individual acid-wash glass bottles and kept cool for delivery to the analytical lab.

Quality assurance/quality control (QA/QC) methods to be used in the field included: cleaning equipment with de-ionized water between sites, rinsing equipment with ambient water between replicates, wearing nitrile gloves while sampling and preparing samples, using acid-washed glass sampling jars, and storing samples on ice in a clean cooler. A field replicate was also to be collected at each site.

In the lab, sediment samples were to be sieved to isolate the <63 µm fraction so that analysis of total metal concentrations could be conducted. In 2018 and 2019, the fine fraction was to be analyzed for pH, and total concentrations of 19 metals and metalloids. In 2020, the fine fraction was to be analyzed for particle size distribution, pH, total organic carbon, and a suite of 33 metals and metalloids. In all years, only total concentrations were to be analyzed; no dissolved fractions were required in any of the EMSAMPs. While detection limits for some parameters have remained the same from 2018 to 2020 (e.g., zinc), required detection limits for many parameters are orders of magnitude lower in 2020 than for 2018 and 2019 (e.g., antimony, arsenic, silver) (Table 31).

QA/QC methods to be used in the lab included: use of certified reference materials including CRM standard MESS-2 for trace elements from the National Research Council of Canada and analysis of laboratory replicates. Laboratory replicates were not defined in any of the EMSAMPs.

Results were to be compared to pre-construction baseline values and the BC Interim Sediment Quality Guidelines (ISQG) for arsenic, cadmium, chromium, copper, iron, lead, manganese, mercury, nickel, silver, and zinc (Nagpal et al. 2006). Statistical analyses were to be performed on the monitoring data and compared directly to baseline results (i.e., pre 2018) to determine if any statistically significant change in sediment quality had occurred.

Table 31 Comparison of Stream Sediment Quality Parameters and Detection Limits for each year of the EMSAMP

	EMSAMP year		
Parameter	**2018**	**2019**	**2020**
pH	✓ (0.1)	✓ (0.1)	✓ 0.1
Particle Size Distribution			✓ (%)
Total Organic Carbon			✓ (%)
Aluminum, total			✓ (50.0)
Antimony, total	✓ (10.0)	✓ (10.0)	✓ (0.1)
Arsenic, total	✓ (5.0)	✓ (5.0)	✓ (0.05)
Barium, total	✓ (1.0)	✓ (1.0)	✓ (0.5)
Beryllium, total	✓ (0.5)	✓ (0.5)	✓ (0.1)
Bismuth, total			✓ (0.1)
Boron, total			✓ (10.0)
Cadmium, total	✓ (0.5)	✓ (0.5)	✓ (0.02)
Calcium, total			✓ (50.0)
Chromium, total	✓ (2.0)	✓ (2.0)	✓ (0.5)
Cobalt, total	✓ (2.0)	✓ (2.0)	✓ (0.1)
Copper, total	✓ (1.0)	✓ (1.0)	✓ (0.5)
Iron, total			✓ (50.0)
Lead, total	✓ (30.0)	✓ (30.0)	✓ (0.1)
Lithium, total			✓ (2.0)
Magnesium, total			✓ (10.0)
Manganese, total			✓ (0.2)
Mercury, total	✓ (0.005)	✓ (0.005)	✓ (0.005)
Molybdenum, total	✓ (4.0)	✓ (4.0)	✓ (0.1)
Nickel, total	✓(5.0)	✓(5.0)	✓(0.5)
Phosphorus, total			✓(50.0)
Potassium, total			✓(100.0)
Selenium, total	✓ (2.0)	✓ (2.0)	✓ (0.1)
Silver, total	✓(2.0)	✓(2.0)	✓(0.05)
Sodium, total			✓(50.0)

Table 31 Comparison of Stream Sediment Quality Parameters and Detection Limits for each year of the EMSAMP

	EMSAMP year		
Parameter	**2018**	**2019**	**2020**
Strontium, total			✓(0.1)
Sulfur, total			✓(100.0)
Thallium, total	✓ (1.0)	✓ (1.0)	✓ (0.05)
Tin, total	✓(5.0)	✓(5.0)	✓(0.2)
Titanium, total			✓(1.0)
Uranium, total	✓ (0.05)	✓ (0.05)	✓ (0.05)
Vanadium, total	✓(2.0)	✓(2.0)	✓(0.2)
Zinc, total	✓ (1.0)	✓ (1.0)	✓ (1.0)
NOTES: ✓ = parameter analyzed Values in brackets represent laboratory detection limits in mg/Kg dry weight except for % for particle size distribution and total organic carbon and pH units for pH			

Adaptive management thresholds for sediment monitoring were set at:

- 25% higher than median baseline concentrations for those parameters that currently exceed the Probable Effects Level[1] (PEL) as a baseline condition
- The PEL for those parameters that do not exceed PELs at baseline

If parameter concentrations exceed these thresholds, adaptive management measures specific in EMSMAP will be considered. Because sediment arsenic concentrations naturally exceed the arsenic PEL at most sites, the dominant species of arsenic was to be identified to determine if it was the biologically available form.

Table 32 and Table 33 below provides the audit results of the sediment quality monitoring programs.

[1] The Probable Effects Level is a threshold above which adverse biological effects frequently occur (more than 50% adverse effects occur above the PEL).

Table 32 2018 Stream Sediment Construction Monitoring Program Implementation

Stream	Site	Triplicate Samples collected? (Yes/No)	Field Duplicate Collected? (Yes/No)	Field QA/QC protocols followed? (Yes/No)	Required lab analysis conducted? (Yes/No)	Lab QA/QC protocols followed? (Yes/No)	Lab detection limits met or exceeded? (Yes/No)	Results compared to BC ISWQs? (Yes/No)	Results compared to Baseline Data? (Yes/No)	Required Statistical Analyses performed? (Yes/No)
Haggart Creek	W22	Yes	Yes	Yes	Yes[1]	Yes[2]	Yes	Yes	Yes[3]	No
	W4	Yes	No	Yes	Yes[1]	Yes[2]	Yes	Yes	Yes[3]	No
	W29	Yes	No	Yes	Yes[1]	Yes[2]	Yes	Yes	Yes[3]	No
	W5	Yes	No	Yes	Yes[1]	Yes[2]	Yes	Yes	Yes[3]	No
	W23	Yes	No	Yes	Yes[1]	Yes[2]	Yes	Yes	Yes[3]	No
Dublin Gulch	W1	Yes	No	Yes	Yes[1]	Yes[2]	Yes	Yes	Yes[3]	No
	W26	Yes	No	Yes	Yes[1]	Yes[2]	Yes	Yes	Yes[3]	No
Eagle Creek	W27	Yes	No	Yes	Yes[1]	Yes[2]	Yes	Yes	Yes[3]	No
Lynx Creek	W6	Yes	No	Yes	Yes[1]	Yes[2]	Yes	Yes	Yes[3]	No

NOTES:

[1] particle size distribution and a suite of 32 metals and metalloids were analyzed in 2018 instead of the 19 required by the 2018 EMSAMP; particle size distribution was not prescribed in the 2018 EMSAMP

[2] lab QA/QC included analysis of lab duplicates; standard protocol for Certified Analytical Labs but not prescribed in 2018 EMSAMP

[3] arsenic and nickel only

Table 33 2019 Stream Sediment Operational Monitoring Program Compliance Summary

Stream	Site	Triplicate Samples collected? (Yes/No)	Field Duplicate Collected? (Yes/No)	Field QA/QC protocols followed? (Yes/No)	Required lab analysis conducted? (Yes/No)	Lab QA/QC protocols followed? (Yes/No)	Lab detection limits met or exceeded? (Yes/No)	Results compared to BC ISWQs? (Yes/No)	Results compared to Baseline Data? (Yes/No)	Required Statistical Analyses performed? (Yes/No)
Haggart Creek	W22	Yes	Yes	Yes	Yes[2]	Yes[3]	Yes	Yes	Yes[4]	No
	W4	Yes	No	Yes	Yes[2]	Yes[3]	Yes	Yes	Yes[4]	No
	W29	Yes	No	Yes	Yes[2]	Yes[3]	Yes	Yes	Yes[4]	No
	W5	Yes	No	Yes	Yes[2]	Yes[3]	Yes	Yes	Yes[4]	No
	W23	Yes	No	Yes	Yes[2]	Yes[3]	Yes	Yes	Yes[4]	No
Dublin Gulch	W1	Yes	No	Yes	Yes[2]	Yes[3]	Yes	Yes	Yes[4]	No
	W26	No[1]								
Eagle Creek	W27	Yes	No	Yes	Yes[2]	Yes[3]	Yes	Yes	Yes[4]	No
Lynx Creek	W6	Yes	No	Yes	Yes[2]	Yes[3]	Yes	Yes	Yes[4]	No

NOTES:

[1] Samples could not be collected due to low water and absence of depositional areas

[2] Particle size distribution and a suite of 32 metals and metalloids were analyzed in 2018 instead of the 19 required by the 2019 EMSAMP; particle size distribution was not prescribed in the 2018 EMSAMP

[3] Lab QA/QC included analysis of lab duplicates; standard protocol for Certified Analytical Labs but not prescribed in 2019 EMSAMP

[4] Arsenic and nickel only

3.5.1.3 Compliance with the EMSAMP Stream Sediment Monitoring Program

In 2018, triplicate stream sediment samples were collected at the nine required sites (Table 32). In 2019, triplicate stream sediment samples were collected at only eight of the nine required sites (Table 33). No samples were collected from site W26 in Dublin Gulch in 2019 due to low flow conditions and lack of depositional areas to collect sediment.

All required field QA/QC protocols were followed in 2018 and 2019 with the exception that field duplicates were only collected at one of the nine sites. In the lab, all required analyses were conducted plus the additional analysis of particle size distribution, total organic carbon, and 13 other sediment quality parameters. Detection limits were provided in the laboratory analytical reports and met or exceeded those required in the 2018 and 2019 EMSAMPs. Lab QA/QC protocols included analysis of lab duplicates, which were not prescribed in the 2018 or 2019 EMSAMP but are an industry standard.

Mean concentrations, standard deviations, and coefficients of variation were calculated for the 2018 and 2019 data. Mean concentrations were compared to the appropriate CCME and/or BC ISWGs. However, the author reported a BC Working Sediment Quality Guideline for selenium; there is only an “alert” concentration for selenium in sediment and not an official BC working sediment quality guideline.

Results of the 2018 and 2019 surveys were presented in tabular form for 10 selected sediment quality parameters and not the entire suite; selected parameters were those deemed potential toxic to aquatic ecosystems, likely presence in the mineral deposit near the mine, and existence of environmental guidelines for the protection of freshwater aquatic life. Mean concentrations of arsenic and nickel were presented graphically to show comparison to Interim Sediment Quality Guidelines (ISQGs) and Probably Effects Levels (PELs) and the spatial differences between sites. Mean concentrations of arsenic and nickel were also compared in tables and graphs to mean arsenic and nickel concentrations determined from the 63 µm fraction from the same sites in previous years. These two parameters were selected because they consistently exceeded the PEL or ISWG at each sample site in 2018. Comparison of results for other parameters between years was not provided. Statistical analyses of potential significant differences in mean parameter concentrations, including arsenic and nickel, between 2018 and 2019 and previous years were not conducted.

Arsenic was the only parameter to exceed the CCME and BC WQG PEL for freshwater aquatic life in 2018; mean arsenic concentrations exceeded the PEL at all nine sites in 2018 and at all eight sites in 2019. Although mean arsenic concentrations exceeded the PEL at all sites in all previous years of sampling, including at reference sites and sites upstream of the influence of the Project, there was no mention of whether the 2018 or 2019 mean arsenic concentrations exceeded the adaptive management threshold defined in the 2018 and 2019 EMSAMPs or whether additional mitigation measures to control arsenic concentrations in stream sediments are warranted. Further, arsenic speciation was not conducted although recommended in the EMSAMP if arsenic concentrations in stream sediments exceeded guideline PELs.

3.5.1.4 Summary of Deficiencies and Recommendations

Deficiencies in the 2018 and 2019 annual reports are summarized in Table 34. VGC indicated the identified compliance gaps or deficiencies are being addressed in the Study Design that Victoria Gold is preparing for submission to Environment and Climate Change Canada for its Environmental Effects Monitoring (EEM) plan under Schedule 5 of the MDMER. However, this EEM plan study design was not included in the scope of this audit and, therefore, the gaps and deficiencies are only based on a comparison of the annual monitoring program reports to the requirements of the EMSAMPs.

Table 34 Stream Sediment Monitoring Program Deficiencies and Recommendations

Compliance Gaps and/or Deficiencies	Recommendation/Corrective Action
Field methods – use of stainless-steel trowel to collect samples	Samples collected for analysis of metal concentrations should be collected with plastic utensils to avoid potential contamination
Field methods – out of date field method guidelines	Methods should be consistent with updated BC Field Sampling Manual from 2020 and with BC's "Water and Air Baseline Monitoring Guidance Document for Mine Proponents and Operators" (BC MoE 2016)
Field methods – site documentation	Water depth, sediment texture and color, and presence of debris, biofilms, odours, or sheens should be described at each site. Sites should be photographed showing upstream, downstream, obliques, banks, riparian vegetation, and substrates
Lab methods – screening equipment	Laboratories should be required to screen sediment samples for particle size distribution and <63 µm fraction using non-metallic screens to avoid potential contamination
Reporting – units	Clearly document that guidelines and concentrations are reported as dry or wet weight
Reporting - guidelines	Sediment quality guideline for selenium is only an "alert" concentration and not a working sediment quality guideline
Reporting - guidelines	Clearly indicate whether guidelines for specific parameters are from CCME and/or BC WQG
Reporting – detection limits	Reports should identify results that are below detection limits (e.g., boron and silver)
QA/QC – field methods	Clearly document the field QA/QC procedures followed
QA/QC – field duplicates	Every third or fifth sample should be "field split" to assess sampler and laboratory QA/QC as per BC MoE 2016
QA/QC – laboratory detection limits	Reports should describe instances where laboratory detection limits are not ≤ $1/5^{th}$ of the respective sediment quality guideline or ≤ $1/5^{th}$ of the lowest background concentration
Reporting – lack of statistical analyses	Reports should include statistical comparison of data to pre-construction baseline data as required by EMSAMP
Reporting – lack of discussion of need for adaptive management due to PEL exceedances for arsenic	Conduct statistical analyses comparing contemporary and pre-construction data to identify any significant differences and conduct arsenic speciation analyses on future stream sediment samples

3.5.2 Benthic Invertebrates

Documents shown in Table 35 were reviewed for the benthic invertebrate monitoring section of the audit.

Table 35 Benthic Invertebrate Documents Reviewed

Document	Version Reviewed	Sections applicable during construction phase	Sections applicable to mine operations phase
EMSAMP	2018-01	8.0 – Benthic Macroinvertebrates	N/A
EMSAMP	2019-01	N/A	8.0 – Benthic Macroinvertebrates
EMSAMP	2020-01	N/A	8.0 – Benthic Macroinvertebrates
Water Licence QZ14-041 Quartz Mining License QML-0011 2018 Annual Report	N/A	3.5.2 – Benthic Macroinvertebrates Appendix K – Benthic Invertebrate Monitoring Report	N/A
Water Licence QZ14-041 Quartz Mining License QML-0011 2019 Annual Report	N/A	N/A	3.6.2 – Benthic Macroinvertebrates Appendix N – Benthic Invertebrates Monitoring Report

3.5.2.1 Benthic Invertebrates Monitoring Program Design in EMSAMPS

The objectives of the benthic invertebrate monitoring program, in all versions of the EMSAMP (Strata Gold 2018, 2019, Victoria Gold 2020), were to:

- Characterize community diversity and abundance during the transition from baseline and through construction of the Project
- Determine variation relative to baseline data
- Provide supporting information for fisheries assessments and to comply with future MMER requirements

Benthic invertebrate data were to be collected from the same nine sites as the stream sediments:

- five sites in Haggart Creek between the confluence of Fisher Gulch to the confluence of Lynx Creek (one above Project influence and four below Project influence)
- two sites in Dublin Gulch (both above Project influence)
- one site in Lower Eagle Creek (below Project influence)
- one site in Lynx Creek (reference site in unaffected stream)

Benthic macroinvertebrates sampling methods were to be consistent with methods recommended in the Metal Mine Guidance Document for Aquatic Environmental Effects Monitoring (Environmental Canada 2012). Riffle habitat were to be sampled in late summer/fall using a quantifiable bottom sampler (e.g., Surber). Three replicate samples were to be collected at each site with a minimum separation of three times bank-full width between replicates. Field measurements of water temperature, dissolved oxygen concentration, pH, and conductivity, bankfull and wetted width, depth, gradient and canopy cover were to be measured at each site.

Benthic invertebrates were to be identified to lowest practical level (typically genus) and enumerated by a qualified taxonomic laboratory with experience identifying benthic invertebrates from northern environments. The method and level of sub-sampling was to be identified during sorting.

Data analysis as per the EMSAMP is to include total number of individuals per sample, number of organisms per unit area, and the following indices:

- Total invertebrate density for each replicate as well as arithmetic mean, standard deviation, median, minimum, and maximum
- Family density for each replicate as well as arithmetic mean, standard deviation, median, minimum, and maximum
- Family richness
- Simpson’s diversity or similar index
- Simpson’s evenness, or similar index
- Bray Curtis index or similar index
- Taxon (i.e., Family) proportion
- Taxon (i.e., Family) presence/absence

Total invertebrate density, Family richness, Simpson’s evenness index, and Bray-Curtis index was to be statistically analyzed using ANOVA (power of 0.1). If the ANOVA determined that a metric had a significant difference among stations, a multiple comparison test (e.g., Tukey test) was to be used to determine if the exposure sites were significantly different from reference sites. Any significant differences were to be interpreted as a Project effect requiring adaptive management measures listed in the EMSAMPs. Results were to be interpreted relative to the other indices as well as to supporting environmental variables measured at the time of sampling, results of fish surveys, and relative to historical sampling. The effect of any outliers on results were to be evaluated.

Table 36 and Table 37 below provides the audit results of the benthic invertebrate monitoring program.

Table 36 2018 Benthic Invertebrate Construction Monitoring Program Compliance Summary

Stream	Site	Triplicate Samples collected? (Yes/No)	Samples collected at appropriate time of year and from appropriate habitat? (Yes/No)	Field QA/QC protocols followed? (Yes/No)	Required lab analysis conducted? (Yes/No)	Lab QA/QC protocols followed? (Yes/No)	Required community indices calculated? (Yes/No)	Required statistical analyses performed? (Yes/No)[4]	Results compared to Baseline Data? (Yes/No)	Adaptive Management Requirements discussed? (Yes/No)
Haggart Creek	W22	Yes	Yes	Yes[1]	Yes[2]	unknown	No	No	Yes[3]	No
	W4	Yes	Yes	Yes[1]	Yes[2]	unknown	No	No	Yes[3]	No
	W29	Yes	Yes	Yes[1]	Yes[2]	unknown	No	No	Yes[3]	No
	W5	Yes	Yes	Yes[1]	Yes[2]	unknown	No	No	Yes[3]	No
	W23	Yes	Yes	Yes[1]	Yes[2]	unknown	No	No	Yes[3]	No
Dublin Gulch	W1	Yes	Yes	Yes[1]	Yes[2]	unknown	No	No	Yes[3]	No
	W26	Yes	Yes	Yes[1]	Yes[2]	unknown	No	No	Yes[3]	No
Eagle Creek	W27	Yes	Yes	Yes[1]	Yes[2]	unknown	No	No	Yes[3]	No
Lynx Creek	W6	Yes	Yes	Yes[1]	Yes[2]	unknown	No	No	Yes[3]	No

NOTES:

[1] All field QA/QC procedures were followed except for the need for *a priori* criteria regarding acceptability of samples collected

[2] All organisms identified to genus or species for all insect larvae

[3] Qualitatively only

[4] VGC to perform statistical analysis as part of EEM study design.

Table 37 2019 Benthic Invertebrate Operations Monitoring Program Compliance Summary

Stream	Site	Triplicate Samples collected? (Yes/No)	Samples collected at appropriate time of year and from appropriate habitat? (Yes/No)	Field QA/QC protocols followed? (Yes/No)	Required lab analysis conducted? (Yes/No)	Lab QA/QC protocols followed? (Yes/No)	Required community indices calculated? (Yes/No)	Required statistical analyses performed? (Yes/No)	Results compared to Baseline Data? (Yes/No)	Adaptive Management Requirements discussed? (Yes/No)
Haggart Creek	W22	Yes	Yes	Yes[1]	Yes[2]	Yes	No	No	Yes[3]	No
	W4	Yes	Yes	Yes[1]	Yes[2]	Yes	No	No	Yes[3]	No
	W29	Yes	Yes	Yes[1]	Yes[2]	Yes	No	No	Yes[3]	No
	W5	Yes	Yes	Yes[1]	Yes[2]	Yes	No	No	Yes[3]	No
	W23	Yes	Yes	Yes[1]	Yes[2]	Yes	No	No	Yes[3]	No
Dublin Gulch	W1	Yes	Yes	Yes[1]	Yes[2]	Yes	No	No	Yes[3]	No
	W26	Yes	Yes	Yes[1]	Yes[2]	Yes	No	No	Yes[3]	No
Eagle Creek	W27	Yes	Yes	Yes[1]	Yes[2]	Yes	No	No	Yes[3]	No
Lynx Creek	W6	Yes	Yes	Yes[1]	Yes[2]	Yes	No	No	Yes[3]	No

NOTES:

[1] All field QA/QC procedures were followed except for the need for *a priori* criteria regarding acceptability of samples collected

[2] All organisms identified to genus or species for all insect larvae

[3] Qualitatively only

3.5.2.2 Compliance with the EMSAMP Stream Benthic Invertebrate Monitoring Program

Benthic invertebrate samples were collected from riffle habitats at all nine sites using a Surber sampler with a 300 micron mesh net in September 2018 (Table 36) and September 2019 (Table 37). Samples were preserved in buffered formalin and transported to the taxonomic lab in Summerland, BC. The required in-situ water quality parameters were collected at each site. Channel measurements (e.g., bankfull width, gradient, canopy cover) were reported in the appendices except for channel gradient. Site photos were provided in an appendix. QA/QC procedures in the field were consistent with those described in the EMSAMP. However, as per EEM QA/QC protocols, no *a priori* criteria for acceptability of samples obtained in the field were not developed or followed.

In the lab, samples were sorted and if the number of organisms in each sample was estimated to be greater than 600 individuals, the sample was sub-sampled to achieve a minimum of 300 organisms for identification and enumeration. Organisms were identified to genus or species level. QA/QC procedures and results of QA/QC procedures for lab sorting, sub-sampling, and individual identification were not provided in the 2018 report or in the appendices but were provided in the 2019 report and appendices.

Data analysis in 2018 and 2019 included total abundance per site, total density per site (organisms/m^2), taxonomic richness, Simpson's Diversity Index, and taxon proportion percentage as required by the EMSAMP. However, standard deviation, median, and minimum and maximum values for total density were not calculated, nor were family density, family richness, Simpson's evenness, and a Bray-Curtis index for any site in 2018 and 2019 as was required by the EMSAMP. Abundance, relative abundance, and richness of pollution sensitive Ephemeroptera, Plecoptera, and Trichoptera (EPT taxa) were calculated in both years as was a Hilenshoff Biotic Index. Neither of these indices were required by the EMSAMPs. No statistical comparisons of total invertebrate density, Family richness, Simpson's evenness index, or Bray-Curtis index were analyzed using ANOVAs as required by the EMSAMP. Instead, qualitative comparisons were made between sites sampled in 2018 and 2019. Statistical analyses are planned in 2021 after the completion of the first EEM study year

Data from 2018 and 2019 were compared to previous year's data using total density and Simpson's Diversity Indices as metrics for comparison. No statistical analyses were performed comparing 2018 and 2019 data to pre-construction data and only qualitative trends were identified. As a result, the need for adaptive management actions could not be determined and was not discussed. Although potential effects of elevated arsenic on benthic invertebrate communities was discussed, arsenic concentrations were collected from depositional areas while benthic invertebrates were collected from erosional areas and the discussion does not mention the implications of this difference. There was no discussion of potential effects of environmental variables measured at the time of sampling, or results of fish surveys, or acknowledgment of any outliers or their effects on benthic invertebrate results as was required by the EMSAMP.



3.5.2.3 Summary of Deficiencies and Recommendations

Deficiencies in the 2018 and 2019 annual reports for the benthic invertebrate monitoring program are summarized in Table 38. The identified compliance gaps or deficiencies are being addressed by VGC in the Study Design that Victoria Gold is preparing for submission to Environment and Climate Change Canada for its Environmental Effects Monitoring (EEM) plan under Schedule 5 of the MDMER. However, this EEM plan study design was not included in the scope of this audit and, therefore, the gaps and deficiencies are only based on a comparison of the annual monitoring program reports to the requirements of the EMSAMPs.

Table 38 Benthic Macroinvertebrates Monitoring Program Deficiencies and Recommendations

Compliance Gaps and/or Deficiencies	Recommendation/Corrective Action
Study design – insufficient sites in reference or upstream areas as per EEM guidance	Identify and begin sampling in second reference stream to bring the number of unaffected sites up to 5 as recommended in Environment Canada's EEM guidance; a minimum of three reference sites are recommended in BC's Water and Air Quality Baseline Monitoring Guidance Document
Study design – number of appropriate replicate numbers is unknown	Conduct power analysis on existing data to determine the number of replicate samples required to provide sufficient data to determine statistically significant differences between sites and between years given known variability in benthic communities. Without a power analysis, the default number of replicates per site should be increased to 5.
Field QA/QC procedures – no *a prior* criteria for sample appropriateness as required by EEM	Develop *a priori* criteria and apply to next survey
Lab QA/QC procedures and results – not provided in report or appendices	Provide lab QA/QC procedures and results in appendix
Data analysis - Missing community metrics required in EMSAMP (i.e., family density and richness, Simpson's evenness, and Bray-Curtis)	Include all community indices identified in EMSAMP
Data analysis – missing statistical analyses comparing sites and contemporary data to pre-construction data	Conduct the required ANOVAs and multiple comparison tests as required by EMSAMP (e.g., append appropriate statistical analyses in excel format) and EEM for BACI study design.
Reporting – only qualitative comparisons between sites and years discussed	There is sufficient data from sites and between years to conduct quantitative statistical analysis to determine significant difference between impact and reference sites and trends between years.
Reporting – no discussion of need for adaptive management actions; no statistical analyses performed to inform adaptive management	Discuss adaptive management considering quantitative analysis of site data and trend analysis
Reporting – no indication that results are site averages in the tables	Clearly identify what data in tables represents

Table 38 Benthic Macroinvertebrates Monitoring Program Deficiencies and Recommendations

Compliance Gaps and/or Deficiencies	Recommendation/Corrective Action
Reporting – no reference for Pacific Salmon Federation rating of "good quality" based on EPT taxa in the 2018 annual report	Provide all references in report
Reporting – incorrect identification of "fair" based on HBI to Site W26 in 2018 annual report	Incorporate quality and independent review into reporting structure
Reporting – no analysis or discussion of environmental variables, fish results, or outlier effects on benthic invertebrate results as required by EMSAMP	Discuss all requirements of the EMSAMPs in the annual reports.

3.5.3 Fish and Fish Habitat

3.5.3.1 Documents Reviewed

Documents shown in Table 39 were reviewed for the fish and fish habitat section of the audit.

Table 39 Fish and Fish Habitat Documents Reviewed

Document	Version Reviewed	Sections applicable during construction phase	Sections applicable to mine operations phase
EMSAMP	2018-01	9.0 – Fish and Fish Habitat	N/A
EMSAMP	2019-01	N/A	9.0 – Fish and Fish Habitat
EMSAMP	2020-01	N/A	9.0 – Fish and Fish Habitat
Water Licence QZ14-041 Quartz Mining License QML-0011 2018 Annual Report	N/A	Section 3.5.3 – Fish and Fish Habitat Appendix L Fish and Fish Habitat Monitoring Report	
Water Licence QZ14-041 Quartz Mining License QML-0011 2019 Annual Report	N/A	N/A	Section 3.6.3 – Fish and Fish Habitat Appendix O Fish and Fish Habitat Monitoring Report

3.5.3.2 Fish and Fish Habitat Monitoring Program Design in EMSAMPS

The overall objectives of the Fish and Fish Habitat monitoring program in the 2018, 2019 and 2020 EMSAMPs were to assess the effect of effluent on fish and to document changes to fish habitat downstream of the Project. A fish tissue study was to be undertaken if the concentration of effluent in the exposure area was >1% in the area within 250 m of the final discharge point, as per Environment Canada EEM guidance.

Fish sampling was to occur annually in July or August and was to include sampling locations in Iron Rust Creek (n=1), upstream of the Project, Haggart Creek (n=3), downstream of the project, and Lynx Creek (n=1), a reference site. Sampling was to be conducted with standard collection methods suitable for the habitats present (e.g., electrofishing, baited minnow traps, angling, seining). The following data was to be collected from fish captured at each sample location:

- Abundance (based on catch-per-unit effort)
- Species
- Weight
- Length
- General condition

All data were to be recorded on modified RISC site cards.

Various adaptive management measures would be triggered if direct or indirect mortality of fish or change to fish abundance or community assemblage occur including:

- Fish mortalities
- Chronic toxicity effects to individual fish
- changes to fish abundance or community assemblages
- Acute or chronic toxicity effects are observed while the effluent discharge standards and receiving water quality objectives are consistently met
- Low flows result in decreased habitat availability
- Changes to fish habitat occur as described in hydrology, sediment, and benthic invertebrate sections, including Increased sedimentation

Table 40 summarizes the fish and fish habitat monitoring program compliance with the construction and operations EMSAMPs for the audit.

Table 40 2018 & 2019 Fish and Fish Habitat Monitoring Program Implementation

Stream	Site	Sampling conducted at appropriate time of year? (Yes/No)	Appropriate methods used? (Yes/No)	All required data collected? (Yes/No)	Appropriate data analysis performed? (Yes/No)	Adaptive Management Requirements Met? (Yes/No)	Data meets requirements of future EEM plan? (Yes/No)
Haggart Creek	HC1	No[1]	Yes	No[2]	Yes	No[3]	No[4]
	HC2	No[1]	Yes	No[2]	Yes	No[3]	No[4]
	HC3	No[1]	Yes	No[2]	Yes	No[3]	No[4]
Iron Rust Creek	IR2	No[1]	Yes	No[2]	Yes	No[3]	No[4]
Lynx Creek	L1	No[1]	Yes	No[2]	Yes	No[3]	No[4]

NOTES:

[1] Sampling conducted in September and not in July or August as required by EMSAMP

[2] Condition of fish not recorded

[3] No mention of adaptive management thresholds or triggers in annual reports or appendices

[4] Insufficient fish abundance for non-lethal sampling; no baseline fish tissue concentrations; no data on reproduction, growth, or condition provided; no indicator fish species identified

3.5.3.3 Compliance with the EMSAMP Fish and Fish Habitat Monitoring Program

Fish and fish habitat surveys were conducted in September of 2018 and 2019 instead of July or August as prescribed in the EMSAMP. This delay in sampling likely resulted in results not directly comparable to previous summer surveys due to the onset of winter conditions that may have limited fish efficiency and movement of fish to overwintering areas. Single-pass electrofishing was conducted within open stream sections (i.e., without block nets) and baited minnow traps were set overnight. Both methods are consistent with the EMSAMP.

Results of the fish habitat surveys were presented in site summary sheets (with photos), raw data appendices, tabular summaries, and comparative graphs. Data analyses included characterization of channel, substrate, cover, and habitat conditions at each site, total number of fish captured, by species, at each site and length frequency distributions for fish species with enough individual captures. Condition of individual fish was not recorded. Fish data were compared to previous year's data in text and tables. Only 33 fish were captured in 2018 and only fish 70 fish were captured in 2019 which was below the minimum number of 100 individual fish recommended by EEM technical guidance (Environment Canada 2012). Only 85 fish were captured in 2017 suggesting that the EEM minimum is unlikely to be attained at current effort levels.

There was no mine effluent discharge in 2018, therefore, there was no need for a fish tissue study. Mine effluent was discharged to Haggart Creek on two occasions in 2019: April 20 and April 27–29. Although the 2019 annual report includes a section regarding EEM monitoring requirements under the MDMER (including preparation of a final EEM study design for submission to Environment Canada in April 2020), there was no mention in the fish section of the 2019 annual report or the fish and fish habitat appendix about the need for fish tissue sampling in accordance with the MDMER due to these effluent discharges (i.e., whether the concentration of effluent in the exposure area was >1% in the area within 250 m of the final discharge point).

Neither the 2018 or 2019 annual reports or their appendices indicated whether any of the thresholds for adaptive management were triggered and if any of the prescribed measures were implemented. Neither annual report provided any recommendations for which fish species in any of the affected or unaffected watersheds would be suitable as indicator fish species for EEM.

3.5.3.4 Reporting Adequacy, Compliance and Recommendations

Table 41 summarizes compliance gaps and/or deficiencies for the fish and fish habitat monitoring program and provides recommendations for corrective action. In general, the fish and fish habitat monitoring program in 2018 and 2019 was completed as specified in the EMSAMPs. However, the surveys were conducted in September and not in summer as required by the EMSAMP. As the author's reported, this delay in sampling likely reduced the efficiency of sampling and reduced the numbers of fish captured. Condition of fish was also not recorded in 2018 or 2019 nor were indication of whether adaptive management thresholds were exceeded.

Although not required in the EMSAMPs, future annual reporting should make recommendations for fish tissue and fish community sampling for future EEM programs should mine effluent discharge occur once the mine is in operation. Finally, the identified compliance gaps or deficiencies are being addressed by VGC in the Study Design that Victoria Gold is preparing for submission to Environment and Climate Change Canada for its Environmental Effects Monitoring (EEM) plan under Schedule 5 of the MDMER. However, this EEM plan study design was not included in the scope of this audit and, therefore, the gaps and deficiencies are only based on a comparison of the annual monitoring program reports to the requirements of the EMSAMPs.

Table 41 Fish and Fish Habitat Monitoring Program Deficiencies and Recommendations

Compliance Gaps and/or Deficiencies	Recommendation/Corrective Action
Field methods - Fish and fish habitat surveys conducted in September instead of July or August when fish communities are likely more stable and fish sampling is more efficient	Although not a deficiency of the annual monitoring programs, sampling should be conducted in summer when fish community is most stable and sampling efficiency is highest.
Field methods – fish condition was not documented as required by the EMSAMPs	Conduct external examinations and fill in standardized necropsy form for each fish or sub-sample of fish of each species captured
Field methods – single pass open sites	Although not required by the EMSAMPs and not a deficiency of the annual monitoring programs, multi-pass depletion estimates in closed sites would provide more accurate and repeatable results and be better for long-term monitoring and statistical analyses
Field methods – insufficient numbers of fish captured for EEM program at current effort levels	The EMSAMP references that a minimum of 100 fish is recommended for non-lethal sampling according to EEM technical guidance (Environment Canada 2012). Sampling in summer and using multi-pass electrofishing methods may increase numbers of fish available for capture
Reporting – no mention of need for fish tissue study	Even if no mine effluent discharge occurred, reports should indicate whether a fish tissue study is required or not as part of MDMER monitoring; the EMSAMP indicates that a fish tissue study is required if the concentration of effluent in the exposure area was >1% in the area within 250 m of the final discharge point but the 2019 annual report did not indicate if this criterion was met.
Reporting – no recommendation for indicator fish species for future EEM program	Although not required by the EMSAMPs, the authors should provide a recommendation for a suitable indicator fish species for monitoring potential effects of future mine effluent discharges. Given the fish community present at the site, slimy sculpin would appear to be at least one of the indicator species chosen for future EEM programs
Reporting – no mention of adaptive management trigger or threshold exceedances	Reports should specify whether any of the adaptive management thresholds in the EMSAMPs were exceeded and if any of the adaptive management measures were required and implemented each year

4.0 TERRESTRIAL ENVIRONMENT

This section presents an audit of the terrestrial environment monitoring programs as specified in the applicable EMSAMP documents, compared to the data and information reported in supporting annual and monthly reports. The intent is to determine if ongoing monitoring and data collection meets the commitments outlined in the EMSAMP. This audit is specific to the following areas:

- Vegetation
- Soils
- Wildlife Protection

The scope of this terrestrial environment audit is limited to those monitoring methods as specified in the three versions of the EMSAMPs and in the Wildlife Protection Plan (version 2017-01) effective during the audit period.

4.1 VEGETATION AND SOILS

4.1.1 Documents Reviewed

Documents in Table 42 were reviewed for the vegetation and soils section of the audit:

Table 42 Vegetation, Soils and Reclamation Documents Reviewed

Document	Version Reviewed	Sections applicable during construction phase	Sections applicable to Operations phase
EMSAMP	2018-01	12.0 – Vegetation 13.0 - Soils	N/A
EMSAMP	2019-01	12.0 – Vegetation 13.0 – Soils	N/A
EMSAMP	2020-01	N/A	12.0 – Vegetation 13.0 – Soils
Water Licence QZ14-041 Quartz Mining License QML-0011 2018 Annual Report	N/A	3.8.1 – Vegetation Monitoring Program and Appendix O – Vegetation Monitoring at the Eagle Gold Project 3.8.2 Soils and Appendix P – Soils Monitoring Report	N/A
Water Licence QZ14-041 Quartz Mining License QML-0011 2019 Annual Report	N/A	3.9.1 – Vegetation Monitoring Program and Appendix T – Vegetation Monitoring at the Eagle Gold Project (including soil sampling at D-2B and D-4B. 3.9.3 - Soils	3.9.1 - Vegetation Monitoring Program and Appendix T – Vegetation Monitoring at the Eagle Gold Project (including soil sampling at D-2B and D-4B. 3.9.3 - Soils

4.1.2 Monitoring Program Implementation and Data QA/QC

4.1.2.1 Vegetation Monitoring Program

The objectives of vegetation monitoring program were established prior to the mine construction phase and remain the same for the operations phase. These objectives are:

- To measure plant metal uptake, and
- To identify whether any trends in metal uptake could be attributed to site activities.

Vegetation (foliar) samples are collected annually in the summer (July/August) from four permanent plots at the locations shown in Table 43. Soil monitoring samples are collected in the same plots in conjunction with annual vegetation sampling.

Due to construction in 2019 and evolving operations needs, sites D2B and D4B were re-established at short distances from their original locations, established in 2018.

Table 43 Locations of Vegetation and Soil Monitoring Plots

Plot #	Aspect	Elevation (m)	Site Description
D1	Level	1417	Potato Hills near climate station
D2B	West	834	Upslope of the air quality station and the camp climate station
D3	Southwest	1356	Top of Eagle Pup near the over-the-top road
D4B	Level	757	On the west side of the access road just upstream of the Haggart Creek culverts

Samples are sent for laboratory analysis of 34 total metals concentrations. Total metals concentrations in sample results are compared to toxicity values for cattle (Puls, 1994) as there are no territorial or federal guidelines regarding metals concentrations in vegetation with respect to wildlife consumption (e.g., moose and/or caribou). Results are presented in the annual report and data for metals associated with the gold recovery process (arsenic, cadmium, chromium, mercury and lead) are compared year over year to assess for increases in concentrations over baseline values. Vegetation species composition is also assessed to determine vegetative assembly and local ecosystem changes over the Project phases.

For the purpose of QA/QC of laboratory analytical technique, duplicates of selected vegetation samples and reference standards are completed.

In the event vegetation monitoring indicates that metals concentration in vegetation is significantly increasing, VGC will consider additional dust control contingency measures described by the Dust Control Plan, Air Quality Management Plan, and applicable EMSAMP to limit particulate matter settling on vegetation.

4.1.2.2 Soil Monitoring Program

The objectives of the soils monitoring program were established prior to the mine construction phase and remain the same for the operations phase. These objectives are:

- To measure metal and nutrient levels in soils during operations, and
- To help identify whether any trends in trace metal and nutrient levels in soils could be attributed to site activities.

Soil monitoring is performed in coordination with vegetation monitoring, once annually during the growing season (July /August). Soil samples are collected from the surface soil horizon at depths between 0 and 0.5 m and then sent for laboratory analysis of pH, 36 metals and plant available nutrients. Ten percent of analyzed samples are blind duplicates, as an assurance on analytical quality and consistency.

Soil metals analytical results are compared to Canadian Council of Ministers of the Environment (CCME) soil quality guidelines (2018) and Yukon Contaminated Sites Regulations for agriculture and parklands soils (2002). All results are presented in the annual reports

Due to the need to re-establish vegetation/soil monitoring sites D2 and D4 (now D2B and D4B) in 2019, soil monitoring program results to date are considered representative of baseline soil conditions.

In the event future monitoring data indicates that metals concentration in soil within the mine footprint or at sites established outside the mine footprint are increasing, VGC will engage additional dust control contingency measures to limit particulate matter settling on soils.

Table 44 below provides the audit results of the vegetation and soil monitoring programs.

Table 44 Vegetation and Soils Monitoring Program Implementation

Monitoring Program	EMSAMP Version 2018-01 Compliance	EMSAMP Version 2019-01 Compliance	EMSAMP Version 2020-01 Compliance	Data QA/QC & Reporting
Vegetation	Monitoring program compliant with the EMSAMP for this period	Monitoring program compliant with the EMSAMP for this period	2020 monitoring program schedule outside of audit period	• 2018 annual reporting adequate • 2019 annual reporting adequate • Duplicate samples not collected in 2018 or 2019
Soils	Monitoring program compliant with the EMSAMP for this period	Monitoring program compliant with the EMSAMP for this period	2020 monitoring program schedule outside of audit period	• 2018 annual reporting adequate • 2019 annual reporting adequate • Duplicate samples not collected in 2018 or 2019

4.1.3 Reporting Adequacy, Compliance and Recommendations

The sampling program, data analysis, discussion and regulatory reporting for the vegetation and soils monitoring program was adequate for the audit period and compliant with the versions of the EMSAMP in effect during each sample program. However, Stantec recommends that the adaptive management component of the program rely on a statistical method to determine increases in metals associated with the gold recovery process (arsenic, cadmium, chromium, mercury and lead) in vegetation and soils that are 'significant'. This would facilitate management decision-making on implementing additional dust control contingency measures and would help to determine if the monitoring program is achieving its objectives.

Table 45 summarizes compliance gaps and/or deficiencies for the soils and vegetation monitoring program and provides recommendations for corrective action.

Table 45 Reclamation, Soils and Vegetation Monitoring Program Compliance and Recommendations

Compliance Gaps and/or Deficiencies	Recommendation/Corrective Action
N/A	Develop statistically-based trigger for determining 'significant' increases in metals (arsenic, cadmium, chromium, mercury and lead) concentrations in vegetation plot samples.
Missing duplicate vegetation sample analysis in 2018 and 2019	Collect duplicate samples, if sufficient vegetation is available

4.2 WILDLIFE PROTECTION

4.2.1 Documents Reviewed

Documents in Table 46 were reviewed for the wildlife protection section of the audit:

Table 46 Wildlife Protection Documents Reviewed

Document	Version Reviewed	Sections Applicable during Construction Phase	Sections Applicable to Operations Phase
Wildlife Protection Plan	2017-01	3.0 – Wildlife Protection Procedures 4.0 - Monitoring	3.0 – Wildlife Protection Procedures 4.0 - Monitoring
Water Licence QZ14-041 Quartz Mining License QML-0011 2018 Annual Report	N/A	3.8.3 - Wildlife	N/A
Water Licence QZ14-041 Quartz Mining License QML-0011 2019 Annual Report	N/A	3.9.4 - Wildlife	N/A

Table 46 Wildlife Protection Documents Reviewed

Document	Version Reviewed	Sections Applicable during Construction Phase	Sections Applicable to Operations Phase
2019 Late Winter Moose Distribution Survey	N/A	All	N/A
2020 Late Winter Moose Distribution Survey	N/A	N/A	All
September 2018 Quartz Mine Licence QML-0011 Quarterly report	N/A	All	N/A
December 2018 Quartz Mine Licence QML-0011 Quarterly report	N/A	All	N/A
March 2019 Quartz Mine Licence QML-0011 Quarterly report	N/A	All	N/A
June 2019 Quartz Mine Licence QML-0011 Quarterly report	N/A	All	N/A
September 2019 Quartz Mine Licence QML-0011 Quarterly report	N/A	N/A	All
December 2019 Quartz Mine Licence QML-0011 Quarterly report	N/A	N/A	All
March 2020 Quartz Mine Licence QML-0011 Quarterly report	N/A	N/A	All
June 2020 Quartz Mine Licence QML-0011 Quarterly report	N/A	N/A	All

4.2.2 Management and Monitoring Program Implementation and Data QA/QC

The Wildlife Protection Plan (the Plan) guides management and monitoring of wildlife during the mine's construction and operations phases. Section 4.0 of the Plan describes four wildlife-related monitoring programs that have been implanted at the Mine:

1. Wildlife Records Program
2. Heap Leach Facility Area and Events Pond Monitoring Program
3. Moose Distribution Surveys
4. Metal Levels in Vegetation Monitoring Program

An audit of the Wildlife Records Program, Heap Leach Facility Area and Events Pond Monitoring Program, and Moose Distribution Surveys are provided in this section. Table 46 lists the documents reviewed. An audit of the Metal Levels in Vegetation Monitoring Program is provided in Section 4.1 (Vegetation, Soils and Reclamation) of this audit.

Wildlife Records Program

The objective of the Wildlife Records Program is to provide data to evaluate changes to wildlife distribution and habitat use as a result of Mine activities during construction and operations. The wildlife records program includes monitoring of wildlife incidents, observations of focal species and species at risk, and monitoring of the implementation of mitigation measures described in Section 3.0 of the Plan. The data collected are also intended to inform adaptive management as required. The Plan requires annual reporting be completed on the findings of the Wildlife Records Program.

The wildlife sections of the 2018 and 2019 Annual Reports were reviewed (Table 46).

Wildlife is addressed in four sections of the 2018 Annual Report. Section 3.8.3 (Wildlife) states that bear aware training was provided to all personnel as part of the site orientation. Section 3.8.3.1 (Pre-Clearing Wildlife Surveys) states that pre-clearing wildlife feature and bird surveys were completed and no notable wildlife features were found. No information is provided on the survey locations or on the number or species of bird nests detected. Section 3.8.3.2 (Wildlife Incidents) summarizes wildlife incidents which occurred in 2018. The report lists three wildlife incidents, one involving an injured red fox and two involving grizzly bears. Finally, Section 3.8.3.3 (Annual Moose Survey) summarizes the annual moose survey.

Wildlife is addressed in four sections of the 2019 Annual Report. Section 3.9.4 (Wildlife) states that wildlife mitigation measures were implemented. Section 3.9.4.1 (Nesting Songbird Surveys) states that pre-clearing nesting bird surveys were completed.. Section 3.9.4.2 (Wildlife Incidents) states that there were several observations of animals near the camp and mine site and that live trapping of nuisance animals was completed three times. There is no information provided on the species trapped or why they were deemed nuisance animals. Finally, Section 3.9.4.3 (Annual Moose Survey) summarizes the annual moose survey.

Quartz Mining License QML-0011 requires that quarterly reporting of wildlife incidents and observation be completed. The September 2018 through June 2020 quarterly reports were reviewed (Table 46). These reports summarized wildlife incidents and observations as required by QML-0011.

Heap Leach Facility Area and Events Pond Monitoring Program

The objective of the Heap Leach Facility Area and Events Pond Monitoring Program is to confirm that wildlife access to process solution is restricted. Section 4.2 of the Plan states that monitoring of the heap leach facility area will be undertaken as part of the Wildlife Records Program and that regular inspections of the events pond will be completed by the Environmental Coordinator. The Plan requires annual reporting be completed on the results of the heap leach facility area monitoring and events pond inspections.

Monitoring and inspection of the heap leach facility area and events pond is only required once process solution is present during operations. These facilities did not become operational until August 2019; therefore, the audit of the Heap Leach Facility Area and Events Pond Monitoring Program is limited to the period from August 2019 to June 30, 2020.

The 2019 Annual Report and QML-0011 quarterly reports do not contain any records from the heap leach facility area during the audit period (Table 47). However, there are wildlife observations from the heap leach facility area recorded as part of the wildlife records program from outside the audit period. The 2019 Annual Report and QML00011 quarterly reports do not contain any information regarding wildlife-related inspections of the events pond during the audit period (Table 47). However, Stantec received verbal confirmation that monitoring of the heap leach facility and events pond is completed routinely. These data are collected on hard copy datasheets before being entered onto internal tracking sheets. Stantec received an internal tracking sheet with records for May 2020 through November 2020. A review of the hand-written records was beyond the scope of this review.

Moose Distribution Surveys

The purpose of the moose distribution surveys is to monitor the distribution and abundance of moose during the late-winter season to inform adaptive management strategies for mitigating mine effects on moose. The Plan commits to annual winter moose distribution surveys during construction and operations. The 2018 moose distribution survey was completed in March 2018, which is outside the period considered by this audit. The 2019 moose distribution survey was completed from March 5 to 7, 2019 and was the second construction phase survey (Table 47). The 2020 moose distribution survey was completed from March 5 to 6, 2020 and was the first operations phase survey (Table 47).

Table 47 Wildlife Protection Monitoring Program Implementation

	Wildlife Records Program		Heap Leach Facility Area and Events Pond Monitoring Program	Moose Distribution Surveys
	Wildlife Incidents	Wildlife Observations		
2018	Completed	Completed	N/A[1]	N/A[2]
2019	Completed	Completed	Completed[3]	Completed
2020	Completed	Completed	Completed[3]	Completed

NOTES:

[1] The heap leach facility area and events pond did not become operational until August 2019. Monitoring of these facilities is only required during operations; therefore, the audit of the Heap Leach Facility Area and Events Pond Monitoring Program is limited to the period from August 2019 to June 30, 2020.

[2] The 2018 moose distribution survey was completed in March 2018, which is outside the period considered by this audit.

[3] Stantec received verbal confirmation that this monitoring was completed

4.2.3 Reporting Adequacy, Compliance and Recommendations

Wildlife Records Program

There were minor discrepancies between the wildlife incidents described in the 2018 Annual Report, the 2018 September Quarterly Report, and the 2018 December Quarterly Report (Table 48). The 2018 Annual Report includes only one wildlife incident during the audit period, the discovery and subsequent euthanasia of an injured red fox on November 20, 2018. However, the 2018 September Quarterly report identifies three additional wildlife incidents: a bird fatality on a site access road, the removal of two squirrel middens, and the relocation of an active bird nest.

Stantec recommends that all wildlife incidents which result in human-wildlife conflict, wildlife fatality or removal, or nest disturbance be documented in a table in the main body of the annual report. Stantec also recommends that where possible the root cause(s) of the incident be determined and included in the annual report, and that this information be used as part of the adaptive management framework as described in the Plan (Table 48).

Stantec also recommends that location names be standardized where possible, and that coordinates be recorded so as to allow more accurate mapping of wildlife observations. This would assist in evaluating changes to wildlife distribution and habitat use as a result of Mine activities (Table 48).

Heap Leach Facility Area and Events Pond Monitoring Program

Stantec received verbal confirmation that routine monitoring of the heap leach facility and events pond is completed. These data are collected on hard copy datasheets before being entered onto internal tracking sheets. Stantec received an internal tracking sheet with records for May 2020 through November 2020. A review of the hand-written records was beyond the scope of this review. Stantec recommends that reporting on the heap leach facility and events pond monitoring be summarized in the annual report (Table 48).

Moose Distribution Surveys

The methods used in the 2019 and 2020 surveys followed those described in the Plan. The 2019 and 2020 surveys and reports are considered reliable, and no compliance gaps or deficiencies were identified. While not a gap, to improve readability Stantec recommends that the summary of incidental observations clearly indicate the current-year's observations before providing a comparison with prior-year surveys.

Table 48 Wildlife Protection Monitoring Program Compliance and Recommendations

Compliance Gaps and/or Deficiencies	Recommendation/Corrective Action
Specific information on wildlife incidents is not provided in the Wildlife Records Program	Provide a summary of all wildlife incidents resulting in human-wildlife conflict, wildlife fatality or removal, or nest disturbance in the annual reports along with a summary of the root cause(s). Any corrective actions should be documented.
There is no formal documentation of the wildlife protection monitoring in the Heap Leach Facility Area and Events Pond Monitoring Program	Include the results of the monitoring program in the annual report or in a separate report.

5.0 GEOTECHNICAL STABILITY OF INFRASTRUCTURE AND FACILITIES

This section presents an audit of the geotechnical and physical stability monitoring procedures of infrastructure and facilities on site as specified in the applicable EMSAMP documents, compared to the data and information reported in supporting annual and monthly reports. The intent is to determine if ongoing monitoring and data collection meets the commitments outlined in the EMSAMP. This audit is specific to the following areas:

- Permafrost foundations
- Open pit
- Material Storage and Stockpiling Areas
- Heap Leach Facility

The scope of this physical stability audit is limited to those monitoring methods as specified in the three EMSAMP documents listed below in Table 49.

This audit does not assess the ongoing geotechnical stability, or infrastructures stabilities outside of the four areas stated above. This audit also excludes review and assessment on the limit equilibrium slope stability and related Factor of Safety (FOS) design criteria, quantifying deformation and/or settlement, comparing reported groundwater tables with established trigger levels in other documentation, open pit wall stability, catch berm adequacy, the surveillance and inspection checklist of the Adsorption Desorption Recovery (ADR) Plant as laid out in EMSAMP 2020-01 Table 18.3-1, and determination if WRSA or stockpile structures were constructed to design specification.

5.1 PERMAFROST MONITORING

5.1.1 Documents Reviewed

The following documents in Table 49 were reviewed as part of the permafrost physical stability section of the audit.

Table 49 Permafrost Monitoring Program Document Review

Document	Version Reviewed	Sections applicable during construction phase	Sections applicable to Operations phase
Quartz Mining License QML-0011	Amendment April 17, 2018 Amendment May 19, 2020	13.0 – Reporting and Inspections	13.0 – Reporting and Inspections
EMSAMP	2018-01	15.0 – Infrastructure and Facilities	N/A
EMSAMP	2019-01	15.0 – Infrastructure and Facilities	15.0 – Infrastructure and Facilities
EMSAMP	2020-01	N/A	15.0 – Infrastructure and Facilities
Water Licence QZ14-041 Quartz Mining License QML-0011 2018 Annual Report	N/A	4.0 - Physical Monitoring	N/A
Water Licence QZ14-041 Quartz Mining License QML-0011 2019 Annual Report	N/A	4.0 - Physical Monitoring	4.0 - Physical Monitoring
Type A Water Use License QZ14-041-1 Monthly Report, Reporting Period: January 2020 to June 2020	N/A	N/A	8.0 - Physical Monitoring

5.1.2 Monitoring Program Implementation and Data QA/QC

This section compares the permafrost monitoring program described in the EMSAMP to the field programs and data collected over the audit period reported in the annual reports.

Permafrost monitoring activities summarized in those documents in 49 The documents were checked for compliance with monitoring frequency and methods described in the EMSAMP documents. Non-compliances, such as missing monitoring results, AMP thresholds, or other deficiencies in carrying out the monitoring programs are identified in Table 50 and discussed in 5.1.3.

Table 50 Permafrost Monitoring Program Implementation

Monitoring Method	EMSAMP – 2018 Monitoring Requirements	Compliance (Yes/No)	EMSAMP – 2019 Monitoring Requirements	Compliance (Yes/No)	EMSAMP – 2020 Monitoring Requirements	Compliance (Yes/No)
Visual Inspection	• Regular Intervals • Freshet, prolonged rainy periods, freeze-up	No[1]	• Regular Intervals • Freshet, prolonged rainy periods, freeze-up	No[1]	• Regular Intervals • Freshet, prolonged rainy periods, freeze-up	No[1]
Subsurface temperature monitoring (thermistor)[2]	• Quarterly	Yes	• Quarterly	Yes	• Quarterly	Yes
Surface water Quality (TSS, Turbidity)	• Freshet, rainy periods, freeze-up	Yes	• Freshet, rainy periods, freeze-up	Yes	• Freshet, rainy periods, freeze-up	Yes
Weather Data Review (precipitation, temperature, freezing/thawing indices)	• Annually	No[3]	• N/A (requirement removed)	N/A[4]	• N/A (requirement removed)	N/A[3]

NOTES:

[1] Execution of visual inspections not documented or discussed in annual or monthly reports.

[2] 13 thermistors are located where visual inspections are required.

[3] Freeze, thaw indices not documented or referenced in 2018 annual report.

[4] Weather data review criteria for removed in EMSAMP 2019-01 and EMSAMP 2020-01.

5.1.3 Reporting Adequacy, Compliance and Recommendations

Table 51 summarizes the compliance gaps and/or deficiencies identified with the permafrost monitoring program.

The notable non-compliance related to permafrost monitoring is the absence of recorded and documented regular visual inspections, specifically during the freshet, rainy periods, and freeze-up. These inspections should be recorded and documented as per the EMSAMP 2020-01 document.

Table 51 Permafrost Monitoring Program Compliance and Recommendations

Compliance Gaps and/or Deficiencies	Recommendation/Corrective Action
Regular visual Inspections not reported.	Include an appendix in Annual and Monthly reporting that summarizes the observations from regular visual inspections to identify and quantify any deformation associated with melting of permafrost, such as but not limited to, cracks, subsidence, sinkholes, and sloughing on existing foundations and slope overlay permafrost. Summarize those visual inspections executed during the freshet, prolonged rainy periods, and rising trend in any thermistors.
Prolonged rainy period not quantified.	Define / quantify duration of a prolonged rainy period based on exceedance of design criteria (duration, precipitation volume).
Freeze/Thaw indices not reported under EMSAMP -2018-01.	Corrective action no longer required because Weather Data Review requirement removed from EMSAMP monitoring program starting June 2019 (EMSAMP 2019-01 and 2020-01).
Thermistor GT18-09 not read in Q3 of 2019	Provide reasoning for missed reading.

5.2 OPEN PIT

5.2.1 Documents Reviewed

The following documents in Table 52 were reviewed as part of the geotechnical stability of the open pit portion of the audit.

Table 52 Open Pit Monitoring Program Document Review

Document	Version Reviewed	Sections applicable during construction phase	Sections applicable to Operations phase
Quartz Mining License QML-0011	Amendment April 17, 2018 Amendment May 19, 2020	13.0 – Reporting and Inspections	13.0 – Reporting and Inspections
EMSAMP	2018-01	16.0 – Open Pit	N/A
EMSAMP	2019-01	16.0 – Open Pit	16.0 – Open Pit
EMSAMP	2020-01	N/A	16.0 – Open Pit
Water Licence QZ14-041 Quartz Mining License QML-0011 2018 Annual Report	2018	3.3 – Groundwater 4.4 – Open Pit	N/A
Water Licence QZ14-041 Quartz Mining License QML-0011 2019 Annual Report	N/A	3.4 – Groundwater 4.1 – Eagle Pit 4.5 – Engineer's Physical Stability Annual Inspection	3.4 – Groundwater 4.1 – Eagle Pit 4.5 – Engineer's Physical Stability Annual Inspection
2019 Physical Stability Inspection	N/A	N/A	6.0 – Open Pit 18.0 - Recommendations
Type A Water Use License QZ14-041-1 Monthly Report, Reporting Period: January 2020 to June 2020	N/A	N/A	4.1 – Groundwater 8.0 – Physical Monitoring Program

5.2.2 Monitoring Program Implementation and Data QA/QC

This section compares the open pit monitoring program described in the EMSAMP to the field programs and data collected over the audit period. The open pit development did not commence prior to 2019, thus the audit is based on one year from the commencement of the operations phase to June 2020.

Open pit monitoring activities summarized in documents shown in Table 52 were checked for compliance with monitoring frequency and methods described in the EMSAMP. Non-compliances, such as missing monitoring results and exceedances of objectives/standards, AMP thresholds, or other deficiencies in carrying out the monitoring programs are identified in Table 53 and discussed in Section 5.2.3.

Table 53 Open Pit Monitoring Program Implementation

Monitoring Method	EMSAMP – 2018 Monitoring Requirements	Compliance (Yes/No)	EMSAMP – 2019 Monitoring Requirements	Compliance (Yes/No)	EMSAMP – 2020 Monitoring Requirements	Compliance (Yes/No)
Visual Inspection	• Daily	N/A[1]	• Daily	No[2]	• Daily	No[2]
Drone Survey	• N/A	N/A[1]	• N/A	N/A[3]	• Regular (bi-weekly)	Yes
Survey Prisms	• Monthly	N/A[1]	• Monthly	N/A[4]	• Monthly	No[4]
Robotic Theodolites	• Hourly (if implemented)	N/A[1]	• Hourly (if implemented)	N/A[5]	• Hourly (if implemented)	N/A[5]
Piezometer	• Monthly • Annual (data summary report)	N/A[1]	• Monthly (Construction) • Quarterly (Operation)	Yes[6]	• Quarterly	No[7]
TDR Cables (not installed)	• No frequency	N/A[1]	• No frequency	N/A[5]	• No frequency	N/A[5]
Slope Inclinometers (not installed)	• No frequency	N/A[1]	• No frequency	N/A[5]	• No frequency	N/A[5]
Extensometers	• No frequency	N/A[1]	• No frequency	No	• No frequency	No
Fixed Slope Radar (not installed)	• No frequency	N/A[1]	• No frequency	N/A[5]	• No frequency	N/A[5]
Mobile Slope Radar (not installed)	• No frequency	N/A[1]	• No frequency	N/A[5]	• No frequency	N/A[5]
Stability Reporting	• Annually, prior to October 1	Yes	• Annually, prior to October 1	Yes	• Annually, prior to October 1	N/A[8]

Table 53 Open Pit Monitoring Program Implementation

Monitoring Method	EMSAMP – 2018 Monitoring Requirements	Compliance (Yes/No)	EMSAMP – 2019 Monitoring Requirements	Compliance (Yes/No)	EMSAMP – 2020 Monitoring Requirements	Compliance (Yes/No)

NOTES:

[1] Open pit not developed in 2018.

[2] Execution of visual inspections not documented or discussed in annual or monthly report

[3] Drone survey criteria not included in EMSAMP 2018-01 and 2019-01.

[4] Survey prisms scheduled for implementation at open pit.

[5] Monitoring method not implemented / installed at open pit.

[6] The following piezometers listed in EMSAMP2019-01 MW96-17A, MW96-17B 09-BGC-GTH2a, 10-BGC-GTH-05, 10-BGC-GTH-06, 10-BGC-GTH-07, 10-BGC-GTH-08, 10-BGC-GTH-10 are not reported in the 2019 annual report: VGC indicated they were decommissioned in February 2019.

[7] The following piezometer installations listed in EMSAMP2020-01 are not reported in the June 2020 monthly report: BH-BGC11-73a, BH-BGC11-73b, and BH-BGC11-73c. [8] Annual physical stability report deadline given as October 1 2020, beyond the time scope of this audit.

In addition to the EMSAMP monitoring requirements listed above, the Quartz Mining Licence requires VGC to respond to recommendations resulting from the annual stability inspection that are related to the open pit. From the one (1) annual inspection within the audit scope for the open pit, for 2019, Stantec identified three (3) general recommendations relevant to the open pit. These relevant recommendations are listed below, as referenced from the 2019 physical stability inspection (All North, 2019).

1. VGC should assign a qualified, on site, individual to be responsible for monitoring and documentation of any mass earth structures that have significant risks in the case of a failure. The individual should develop a standard operating procedure for the monitoring and risk management of these structures. This individual should be responsible for coordination with a qualified professional to review monitoring data for concerns and trends if they are not qualified themselves.
    a. VGC response: Monitoring of structures is done by the Technical Services department working closely with the EOR for the areas and while following standard operating procedures (ongoing).
2. Any finalized construction of mass earth structures should include a final construction report that includes any operational and maintenance requirements (if any) to ensure stability of the structure.
    a. VGC response: As per both the QML and WL, the EOR will provide a final construction report, which includes requirements for maintenance as needed, once the structures are complete (ongoing).
3. VGC should consider a monitoring program to assist in early warning and detection of any movements in mass earth structures. Such a program might use permanent survey points, slope inclinometers, piezometers, or other tools to measure internal/external movements and pore water pressures. Such a monitoring program should be developed with the assistance of and be implemented with the oversight of a qualified professional.
    a. VGC response: Monitoring programs have been developed, are in use and undergoing further refinement by the technical services department with the oversight of a qualified professional. (Q2 2020).

5.2.3 Reporting Adequacy, Compliance and Recommendations

Table 54 summarizes the compliance gaps and/or deficiencies identified with the open pit monitoring program.

The notable non-compliance related to open monitoring is the absence of reported daily visual inspections. These inspections should be recorded and documented as per the EMSAMP 2020-01 document. There is also a lack of consistency between the number of piezometer instruments listed in the EMSAMP documents (2019-01, 2020-01) and those with reported water tables in the 2019 annual report and June 2020 monthly report. Stantec understands the MW series instruments, MW97-17A and MW96-17B, : 09-BGC-GTH2a, 10-BGC-GTH-05, 10-BGC-GTH-06, 10-BGC-GTH-07, 10-BGC-GTH-08, 10-BGC-GTH-10 were decommissioned in February 2019 and therefore excluded from the 2019 annual report. Stantec also understands the BH-BGC11-73 series instruments (a, b, and c) were decommissioned in early 2020 and therefore excluded from the 2020 monthly report.

VGC plans to implement a system of prisms to detect movements, initially scheduled for implementation in 2020 but delayed due to site access complications. This combined with documented visual inspection, piezometric monitoring, bi-weekly drone survey and annual stability review would provide sufficient general monitoring of the performance of the open pit. There are number of instruments and monitoring listed in EMSAMP that are not yet implemented, such as, robotic theodolite, TDR cables, slope inclinometers, fixed slope radar, and mobile slope radar. These instruments and monitoring can be considered as contingency when movements are observed from the general monitoring. It would be recommended to adjust the EMSAMP to indicate that these are contingent to general monitoring subject to review of the qualified personnel for the open pit stability.

Of the three (3) physical stability recommendations, two (2) are ongoing and Recommendation 3 is addressed by the bi-weekly execution of drone surveys and the planned implementation of monitoring prisms.

Table 54 Open Pit Monitoring Program Compliance and Recommendations

Compliance Gaps and/or Deficiencies	Recommendation/Corrective Action
Daily visual inspections not reported.	Include an appendix in Annual and Monthly reporting that summarizes the observations from these daily visual inspections.
Monthly collection of survey prism data not reported.	Stantec understands there are currently no active prisms installed at the open pit, and VGC is implementing a program scheduled for 2020 to install up to 15 prisms on the 1408, 1375, and 1395 benches. Following prism installation, include in Annual and Monthly reports a list of active survey prisms with coordinates (northing, easting, elevation) and deformation readings.
Piezometers read quarterly instead of monthly in 2018 as required in EMSAMP 2018-01.	Corrective action not required since the piezometer reading frequency is specified as quarterly in subsequent EMSAMP 2019-01, superseding the 2018 requirement and bringing the piezometer reading schedule into compliance.
Scheduled piezometer readings for Q1 2020 not collected due to COVID-19 related staffing issues.	Assess if datalogger installed in Open Pit piezometer BH-BGC11-73a,b,c collected and stored data for Q1 2020. For remaining piezometer(s), collect data as soon as reasonably practical and provide reading summary or reasoning for data gap in Annual reporting.
Piezometer data not collected in Q2 2020.	Assess if datalogger installed in Open Pit piezometer BH-BGC11-73a,b,c collected and stored data for Q2 2020. For remaining piezometer(s), collect data as soon as reasonably practical and provide reading summary or reasoning for data gap in Annual reporting.
Piezometers listed in EMSAMP documentation without reported water tables.	Provide reasoning for piezometers with absence of documented water table readings.
Data for two (2) extensometers installed at open pit not reported.	The EMSAMP documents do not lay out a minimum required monitoring frequency for extensometers installed at the open pit. A qualified personnel should determine a reading frequency for these instruments and should be summarized in the annual reports and compared against established velocity trigger levels.
Multiple instrumentation listed in EMSAMP documentation that is not currently installed on site (robotic theodolites, TDR cables, slope inclinometers, fixed slope radar, mobile slope radar).	Remove from EMSAMP documentation reference to instrumentation not installed (or planned for installation) on Open Pit.
Equipment maintenance logs were not provided to back-up data reported in monthly/annual reports.	Provide equipment maintenance logs as supporting documentation to monthly/annual reports.

5.3 MATERIALS STORAGE AND STOCKPILE MANAGEMENT AREAS

5.3.1 Documents Reviewed

The following documents in Table 55 were reviewed as part of the geotechnical stability of the materials storage and stockpile management areas portion of the audit.

Table 55 Materials Storage and Stockpile Management Areas Monitoring Program Document Review

Document	Version Reviewed	Sections applicable during construction phase	Sections applicable to Operations phase
Quartz Mining License QML-0011	Amendment April 17, 2018 Amendment May 19, 2020	13.0 – Reporting and Inspections	13.0 – Reporting and Inspections
EMSAMP	2018-01	17.0 – Material Storage and Stockpile Management Areas	N/A
EMSAMP	2019-01	17.0 – Material Storage and Stockpile Management Areas	17.0 – Material Storage and Stockpile Management Areas
EMSAMP	2020-01	N/A	17.0 – Material Storage and Stockpile Management Areas
Water Licence QZ14-041 Quartz Mining License QML-0011 2018 Annual Report	N/A	3.3 – Groundwater 4.5 - Material Storage and Stockpile Management Areas	N/A
Water Licence QZ14-041 Quartz Mining License QML-0011 2019 Annual Report	N/A	3.4 - Groundwater 4.4 - Material Storage and Stockpile Management Areas 4.5 – Engineer's Physical Stability Annual Inspection	3.4 - Groundwater 4.4 - Material Storage and Stockpile Management Areas 4.5 – Engineer's Physical Stability Annual Inspection
2018 Physical Stability Inspection	N/A	6.0 – 90 Day Stockpile 10.0 – Stockpile A 11.0 – Stockpile B 12.0 - Recommendations	N/A
2019 Physical Stability Inspection	N/A	4.0 – 90 Day Stockpile 7.0 – Platinum Gulch Dump 17.0 – Un-Named Stockpile Area 18.0 - Recommendations	4.0 – 90 Day Stockpile 7.0 – Platinum Gulch Dump 17.0 – Un-Named Stockpile Area 18.0 - Recommendations
Type A Water Use License QZ14-041-1 Monthly Report, Reporting Period: January 2020 to June 2020	N/A	N/A	4.1 – Groundwater 8.0 – Physical Monitoring Program

5.3.2 Monitoring Program Implementation and Data QA/QC

This section compares the materials storage and stockpile management areas monitoring program described in the EMSAMP to the field programs and data collected over the audit period.

Monitoring activities summarized in documents shown in Table 55 were checked for compliance with monitoring frequency and methods described in the EMSAMP. Non-compliances, such as missing monitoring results and exceedances of objectives/standards, AMP thresholds, or other deficiencies in carrying out the monitoring programs are identified in Table 56 and discussed in section *12.a*.

Table 56 Materials Storage and Stockpile Management Areas Monitoring Program Implementation

Monitoring Method	EMSAMP 2018-01 Monitoring Requirements	Compliance (Yes/No)	EMSAMP 2019-01 Monitoring Requirements	Compliance (Yes/No)	EMSAMP 2020-01 Monitoring Requirements	Compliance (Yes/No)
Visual / Drone inspection	• Daily (WRSA crest) • Weekly (WRSA toe) • Weekly (developing Stockpile) • Monthly (established Stockpile) • Monthly (detailed WRSA)	No[1]	• Daily (WRSA crest) • Weekly (WRSA toe) • Weekly (developing Stockpile) • Monthly (established Stockpile) • Monthly (detailed WRSA)	No[1]	• Daily (WRSA crest) • Weekly (WRSA toe) • Weekly (developing Stockpile) • Monthly (established Stockpile) • Monthly (detailed WRSA)	No[1]
Piezometers	• Quarterly • Annual (data summary Report)	Yes	• Quarterly	Yes	• Quarterly	No[2]
Rock Drain Flow	• Weekly	N/A[3]	• Weekly	N/A[3]	• Weekly	N/A[3]
Survey Prisms	• No frequency	N/A[4]	• No frequency	N/A[4]	• No frequency	N/A[4]
Wireline Extensometers	• No frequency	Yes	• No frequency	Yes	• No frequency	N/A[5]
Inclinometers	• No frequency	N/A[4]	• No frequency	N/A[4]	• No frequency	N/A[4]
Radar / photogrammic surveying	• No frequency	N/A[4]	• No frequency	N/A[4]	• No frequency	N/A[4]
Annual Physical Stability	• Annually, prior to October 1	Yes	• Annually, prior to October 1	Yes	• Annually, prior to October 1	N/A[5]

Table 56 Materials Storage and Stockpile Management Areas Monitoring Program Implementation

Monitoring Method	EMSAMP 2018-01 Monitoring Requirements	Compliance (Yes/No)	EMSAMP 2019-01 Monitoring Requirements	Compliance (Yes/No)	EMSAMP 2020-01 Monitoring Requirements	Compliance (Yes/No)
NOTES: [1] Execution of daily, weekly, monthly visual / drone inspections not documented or discussed in annual or monthly reports. [2] The following piezometer installations listed EMSAMP2020-01 are not listed in the June 2020 monthly report: MW96-15, and MW96-14B Stantec understands these piezometer installations were reported in the monthly report as MW96-15b and MW96-14, respectively. Stantec further understands that MW19-PGW-1b was damaged and could not be sampled for the monthly report. [3] Rock drain under construction as of June 2020 monthly report. [4] Monitoring method not implemented / installed at WRSA or stockpile structures. [5] Annual physical stability report deadline given as October 1 2020, beyond the time scope of this audit. [6] Wireline extensometer reading frequency not listed as monthly, may be provided in 2020 annual report.						

Stantec understands a physical stability inspection for the year ending 2020 was executed over September 23 and 24 of this year,

In addition to the EMSAMP monitoring requirements listed above, the Quartz Mining Licence requires VGC to respond to recommendations resulting from the annual stability inspections that are related to material storage and stockpile. From the two (2) annual inspection completed, by All North in 2018 and 2019, Stantec identified a total of 12 separate recommendations relevant to the material storage and stockpiles, are listed below:

1. 2018 – All stockpiles, material storage areas, and other mass earth structures should all have formal foundation and construction designs completed by a qualified professional.
    a. VGC response: Formal foundation and construction designs are part of EPCM's work for turnover to VGC. All turnover documentation will specifically identify minor modifications from the issued for construction design and the final constructed facility (Jun 2019).
2. 2018 – [related to 90 day stockpile] mitigate risks associated with perched rocks throughout the slope. Boulders should be removed in a controlled manner, or have a machine press (or bury) the boulders into the existing fill so they have a more stable base, and are less likely to become dislodged. Care should be taken during this work to ensure that the critical infrastructure, workers, and equipment are restricted from the fallout path, or other appropriate mitigation measures are pure in place.
    a. VGC response: The 90-day stockpile had only undergone preliminary clearing and earthworks at the time of the annual physical stability assessment. Stability analyses for this facility have been completed (post assessment) and provide recommendations for suitable foundation conditions for the 90-day stockpile to ensure that the required factors of safety are achieved (completed).
3. 2018 - [related to Stockpile B] this stockpile should be graded on top to eliminate or seal tension cracking.
    a. VGC response: Grading has taken place to stabilize the location identified (completed).
4. 2018 – [related to Stockpile B] the extent (volume and location) of ice and other frozen materials in the stockpile should be determined based on site records and information from site staff available. A record of the resulting instability should be noted.
    a. VGC response: Stockpile B will be reviewed post assessment by a Geotechnical Engineer. Any recommendations made (reshaping etc.) will be performed prior to handing over to VGC at completion. A material tracking sheet showing what as hauled to this location has been maintained during construction activities but was inadvertently not made available during the assessment (Jun 2019).
5. 2018 – [related to Stockpile B] have a qualified professional determine if ice and other frozen materials are an acceptable material for construction of a mass earth structure, and if they are, how they should be placed or incorporated in an overall stockpile design to ensure that there are no localized failures as a result.
    a. VGC response: Stockpile B will be reviewed post assessment by a Geotechnical Engineer. Any recommendations that made (reshaping etc.) will be performed prior to handing over to VGC at completion (Jun 2019).

6. 2019 - [related to 90 Day Stockpile] pull back over-steepened walls along the perimeter ditch which are sloughing into the ditch. This ditch may require a liner and/or rock armoring, and final grading to attain physical stability and prevent pooling.
    a. VGC response: Oversteepened slopes were temporary in nature, and have been reduced since observation in Sept 2019. Pad construction will continue after freshet 2020, and so will require ongoing monitoring and maintenance (Q3 2020 / ongoing).
7. 2019 – [related to 90 Day Stockpile] Tie perimeter ditch into the collection sump, directing water away from the road
    a. VGC response: this ditch/sump system will be completed as per engineering specifications and will be tied into the Ditch A pipeline (Q2 2020).
8. 2019 – [related to Un-named Stockpile Area] consider additional ditching and water management in the area to prevent scouring of the road surfaces and erosion around the stockpiles. Ditch water away from the laydown areas to prevent ponding.
    a. VGC response: Continual monitoring of stockpiles underway and will address water management on an as needed basis (on-going).
9. 2018&2019 - VGC should assign a qualified, on site, individual to be responsible for monitoring and documentation of any mass earth structures that have significant risks in the case of a failure. The individual should develop a standard operating procedure for the monitoring and risk management of these structures. This individual should be responsible for coordination with a qualified professional to review monitoring data for concerns and trends, if they are not qualified themselves.
    a. VGC response: Monitoring of structures is done by the Technical Services department working closely with the EOR for the areas and while following standard operating procedures (on-going).
10. 2018&2019 - VGH should continue to assign individuals to document and be responsible for the monitoring and construction review to determine if such structures are constructed in accordance with design. any variations between design documents and final construction should be included in the final record drawings.
    a. VGC response: Monitoring of structures including construction review to meet design specs is done by the Technical Services department working closely with the EOR for the areas. Construction reports and as-built drawings document variations or minor modification from IFC designs (on-going).
11. 2018&2019 - Any finalized construction of mass earth structures should include a final construction report that includes any operational and maintenance requirements (if any) to ensure stability of the structure.
    a. VGC response: VGC response: As per both the QML and WL, the EOR will provide a final construction report, which includes requirements for maintenance as needed, once the structures are complete (ongoing).

12. 2018&2019 - VGH should consider a monitoring program to assist in early warning and detection of any movements in mass earth structures. Such a program might use permanent survey points, slope inclinometers, piezometers, or other tools to measure internal/external movements and pore water pressures. Such a monitoring program should be developed with the assistance of and be implemented with the oversight of a qualified professional.
    a. VGC response: Monitoring programs have been developed, are in use and undergoing further refinement by the technical services department with the oversight of a qualified professional (Q2 2020).

5.3.3 Reporting Adequacy, Compliance and Recommendations

Table 57 summarizes compliance gaps and/or deficiencies identified with the materials storage and stockpile management areas monitoring program.

The notable non-compliance is the absence of documented visual inspections. These inspections should be recorded and documented as required in the EMSAMP 2020-01 document. There is also a lack of consistency between the number of piezometer instruments listed in the EMSAMP document 2020-01 and those with reported water tables in the June 2020 monthly report as listed: MW96-15, MW96-14B, and MW19-PGW-1b. Stantec understands the first two installation, MW96-15 and MW96-14B, were listed as MW96-15B and MW96-14 respectively, in the monthly report. MW19-PGW-1b was reported as damaged and could not be sampled.

The EMSAMP documents require weekly inspections of WRSA rock drain discharge areas. However, Stantec understands that as of June 2020 these structures are still under construction and not yet operational, thus monitoring requirements are not applicable until their completion.

Of the 12 physical stability recommendations, recommendations #1, 4, 5, 7, and 12 are scheduled for completion within the scope of this environmental audit. The remaining recommendations are ongoing, planned for future implementation, or are listed as completed by VGC.

- Recommendation 1 is addressed with the official handover package from construction to operations (Construction release, C1 Certification). Stantec assumes this handover package contains all relevant foundation and construction designs and accepted by a qualified professional.
- Recommendation 4 is not addressed in the available documentation, with no mention of a Stockpile B review.
- Recommendation 5 is not addressed in the available documentation, with no mention of a Stockpile B review.
- Recommendation 7 is scheduled for implementation in March and April 2020. This implementation is not documented in the relevant monthly reports.
- Recommendation 12 is addressed and the 2019 annual report presents readings for two (2) wireline extensometers installed on PG WRSA. Stantec understands an additional two (2) extensometers have been installed on this structure, with data not reported. The WRSA structures are also reported to be monitored bi-weekly with aerial drones.

Table 57 Materials Storage and Stockpile Management Areas Monitoring Program Compliance and Recommendations

Compliance Gaps and/or Deficiencies	Recommendation/Corrective Action
Visual inspections (daily, weekly, monthly) not reported.	Include an appendix in Annual and Monthly reporting that summarizes the observations from these visual inspections.
Not all WRSA and stockpile piezometers as listed in EMSAMP 2020-01 have water levels reported in June 2020 monthly report.	Confirm list of active piezometers installed in WRSA and stockpiles, include data in monthly and annual reports. Provide reasoning behind non-documented groundwater tables.
Multiple instrumentation listed in EMSAMP documentation that is not currently installed on site (Survey Prisms, Inclinometers, Radar / photogrammic surveying).	Remove from EMSAMP documentation reference to instrumentation not installed (or planned for installation) on WRSA and stockpile structures.
Existing monitoring methods (wireline extensometer) implemented on site do not state a monitoring frequency.	VGC should consider discrete reading frequencies for wireline extensometers, specify in EMSAMP documentation.
Follow up and close out of physical stability recommendation 4 and 5 not documented in annual or monthly reports.	Provide documentation detailing the follow up and response actions for addressing recommendations.

5.4 HEAP LEACH FACILITY

5.4.1 Documents Reviewed

The following documents in Table 58 were reviewed as part of the physical stability of the Heap Leach Facility portion of the audit.

Table 58 Heap Leach Facility Monitoring Program Document Review

Document	Version Reviewed	Sections applicable during construction phase	Sections applicable to Operations phase
Quartz Mining License QML-0011	Amendment April 17, 2018 Amendment May 19, 2020	13.0 – Reporting and Inspections	13.0 – Reporting and Inspections
EMSAMP	2018-01	18.0 – Heap Leach and Process Facilities	N/A
EMSAMP	2019-01	18.0 – Heap Leach and Process Facilities	18.0 – Heap Leach and Process Facilities
EMSAMP	2020-01	N/A	18.0 – Heap Leach and Process Facilities
Water Licence QZ14-041 Quartz Mining License QML-0011 2018 Annual Report	N/A	3.3 – Groundwater 4.7 - Heap Leach and Process Facilities	N/A

Table 58 Heap Leach Facility Monitoring Program Document Review

Document	Version Reviewed	Sections applicable during construction phase	Sections applicable to Operations phase
Water Licence QZ14-041 Quartz Mining License QML-0011 2019 Annual Report	N/A	3.4 – Groundwater 4.3 - Heap Leach and Process Facilities 4.5 – Engineer's Physical Stability Annual Inspection	3.4 – Groundwater 4.3 - Heap Leach and Process Facilities 4.5 – Engineer's Physical Stability Annual Inspection
2018 Physical Stability Inspection	N/A	8.0 – Heap Leach Facility 12.0 - Recommendations	N/A
2019 Physical Stability Inspection	N/A	5.0 – Heap Leach Facility 18.0 - Recommendations	5.0 – Heap Leach Facility 18.0 - Recommendations
Type A Water Use License QZ14-041-1 Monthly Report, Reporting Period: January 2020 to June 2020	N/A	N/A	2.3.3 – In-Heap Pond 4.1 – Groundwater Monitoring

5.4.2 Monitoring Program Implementation and Data QA/QC

This section compares the Heap Leach Facility monitoring program described in the EMSAMP to the field programs and data collected and provided for the purpose of the audit over the audit period.

Heap Leach Facility monitoring activities summarized in documents shown in Table 58 were checked for compliance with monitoring frequency and methods described in the EMSAMP. The details for the non-compliance, such as missing monitoring results and exceedances of objectives/standards, AMP thresholds, or other deficiencies in carrying out the monitoring programs are identified in Table 59 and discussed in Section 5.4.3.

Table 59 Heap Leach Facility Monitoring Program Implementation

Monitoring Method	EMSAMP 2018-01 Monitoring Requirements	Compliance (Yes/No)	EMSAMP 2019-01 Monitoring Requirements	Compliance (Yes/No)	EMSAMP 2020-01 Monitoring Requirements	Compliance (Yes/No)
Routine (visual) Inspection	• Weekly • Daily (General Visual)	No[1]	• Weekly • Daily (General Visual)	No[1]	• Weekly (Embankment)	No[1]
Piezometer	• Quarterly • Weekly (Embankment, In Heap) • Annual (data summary Report)	Yes	• Quarterly • Weekly (Embankment, In Heap) • Annual (data summary Report)	No[2]	• Continuous (Embankment, In Heap) • Daily (Heap leap pad during freshet)	No[3]
Inclinometer	• Monthly	N/A[4]	• Monthly	No[4]	• Monthly	No[4]
Fluid Levels (Events Pond)	• N/A	N/A[5]	• N/A	N/A[5]	• Daily	Yes
HLF and Dam Inspection	• Annually	Yes	• Annually	Yes	• Annually	N/A[6]
Physical Stability Inspection	• Annually, prior to October 1	Yes	• Annually, prior to October 1	Yes	• Annually, prior to October 1	N/A[6]

Table 59 Heap Leach Facility Monitoring Program Implementation

Monitoring Method	EMSAMP 2018-01 Monitoring Requirements	Compliance (Yes/No)	EMSAMP 2019-01 Monitoring Requirements	Compliance (Yes/No)	EMSAMP 2020-01 Monitoring Requirements	Compliance (Yes/No)
DSR	• Every 5 years	N/A[7]	• Every 5 years	N/A[7]	• Every 5 years	N/A[7]
Surveillance and Inspection of Adsorption, Desorption, and Recovery (ADR) Plant	• Regularly	N/A[8]	• Regularly	N/A[8]	• Regularly	N/A[8]

NOTES:

[1] Execution of daily, weekly, visual inspections not documented or discussed in annual or monthly reports.

[2] The following piezometers listed in EMSAMP 2019-01 are not reported in the 2019 annual report: MW10-AG6, BG-BGC11-26, MW19-HLF2a, MW19-HLF2b.

[3] The following piezometer listed in EMSAMP 2020-01 are not reported in the June 2020 monthly report: MWXX-AGR6, MW10-AG3A, MWXX-HLF2a, MWXX-HLF2b, MWXX-HLF3a, MWXX-HLF3b, MWXX-HL4a, MWXX-HLF4b. Stantec assumes the “XX” series instruments were not installed prior to June 30, 2020.

[4] Inclinometer data not reported in 2019 annual report, Q1/Q2 monthly reports.

[5] Monitoring requirement not laid out in relevant EMSAMP document.

[6] Annual physical stability, HLF and Dam Inspection for 2020 can be carried out in remainder of 2020 calendar year, outside scope of this audit.

[7] Dam Safety Review (DSR) not required during time scope of audit.

[8] ADR Plant surveillance and inspection checklist laid out in EMSAMP documents outside scope of this physical stability section of the environmental audit. Stantec assumes this is documented by VGC supervisor and operator and records filed on site.

Stantec understands a physical stability inspection for the year ending 2020 was executed over September 23 and 24 of this year.

In addition to the EMSAMP monitoring requirements listed above, the Quartz Mining Licence requires VGC to respond to recommendations resulting from the annual stability inspection that are related to the Heap Leach Facility. From the two (2) annual inspection completed, by All North in 2018 and 2019, Stantec identified a total of 12 separate recommendations relevant to the ADR and heap leach facility, are listed below:

1. 2018 – [related to ADR] reduce the outside slope of material in the stockpile above the ADR Access Road. The stockpile West Northwest of the ADR Building is composed of a mix of several materials with unknown compaction and possibly over steepened outside slopes. It is recommended that the stockpile be shaped within geotechnical design specifications, or that the location of the pile is adjusted so that there is a bench between the crest of the adjacent slope, and the toe of the stockpile. If the stockpile is to remain long term, the structure should have a design completed by a qualified professional.
    a. VGC response: The over-steepening of the crest area was addressed when an access road adjacent to the area was developed. Slopes above ADR access road will be addressed as part of the final area handover. Post completion a Geotechnical Engineer will conduct a further review of the installation and provide recommendations for additional mitigations as necessary (Jun 2019).
2. 2018 - [related to ADR] at the time of inspection, there appeared to be over-steepened temporary cut slopes created adjacent to short term haul roads used for construction access in the area. Cut back slopes adjacent to haul roads that do not meet geotechnical specifications for the site, or have recommendations in place for temporary slopes during construction.
    a. VGC response: The area adjacent to the ADR pad continues to be used for construction purposes. The interior area has been utilized as a storage area for unsuitable materials backhauled from local cut areas which has been used as backfill to mitigate this concern (completed).
3. 2019 - [related to ADR] review engineering requirements for the North Toe Ditch to confirm ditch size, and need for rock armoring. Toe ditch is currently tied into the roadside ditch, which should also be reviewed for engineering requirements. Recommend reviewing hydraulic design of both ditches to determine what is necessary.
    a. VGC response: Review of design to be done and if necessary ditch system will be modified (Q2 2020).
4. 2019 – [related to HLF] continue to monitor the cut slopes around the perimeter of the HLF for erosion. Maintain the upper bench and remove sloughing material as required.
    a. VGC response: This area will be monitored and repaired with the Phase 1B Expansion (Q2/Q3 2020).

5. 2019 – [related to HLF] install further ditching at the top of the temporary upper overburden stockpile area to control water flow and address scouring issue on the access road.
    a. VGC response: This area will be regraded and grubbed as part of the Phase 1 B Expansion (Q2/Q3 2020).
6. 2019 – [related to HLF] consider re-shaping the temporary upper overburden stockpile to reduce risk of material sloughing down towards the access road.
    a. VGC response: This area will be monitored and repaired with the Phase 1B Expansion (Q2/Q3 2020).
7. 2019 – [related to HLF] review requirements of Phase 1 Interception ditch outfall. Currently the ditch terminates at the top of an un-vegetated slope, and would be more stable with an armored exfiltration outfall/sediment sump.
    a. VGC response: Most of this area will be grubbed and regraded in preparation for the Phase 1 B Expansion. The outfall for the interceptor ditch will be constructed in Q2/Q3 (Q2/Q3 2020).
8. 2019 – [related to HLF] monitor road settlement around 0+650 of the interceptor ditch alignment. Currently this section requires some additional fill to facilitate truck traffic. Additional settlement could impact the functionality of the interception ditch. Additional settlement or failure is unlikely to impact other infrastructure, due to adequate setback from the toe of the slope.
    a. VGC response: Most of this area will be grubbed and regraded in preparation for the Phase 1 B Expansion. The outfall for the interceptor ditch will be constructed in Q2/Q3 (Q2/Q3 2020).
9. 2018&2019 - VGC should assign a qualified, on site, individual to be responsible for monitoring and documentation of any mass earth structures that have significant risks in the case of a failure. The individual should develop a standard operating procedure for the monitoring and risk management of these structures. This individual should be responsible for coordination with a qualified professional to review monitoring data for concerns and trends, if they are not qualified themselves.
    a. VGC response: VGC response: Monitoring of structures is done by the Technical Services department working closely with the EOR for the areas and while following standard operating procedures (on-going).
10. 2018&2019 - VGC should continue to assign individuals to document and be responsible for the monitoring and construction review to determine if such structures are constructed in accordance with design. any variations between design documents and final construction should be included in the final record drawings.
    a. VGC response: Monitoring of structures including construction review to meet design specs is done by the Technical Services department working closely with the EOR for the areas. Construction reports and as-built drawings document variations or minor modification from IFC designs (on-going).

11. 2018&2019 - Any finalized construction of mass earth structures should include a final construction report that includes any operational and maintenance requirements (if any) to ensure stability of the structure.
    a. VGC response: As per both the QML and WUL, the EOR will provide a final construction report, which includes requirements for maintenance as needed, once the structures are complete (ongoing).
12. 2018&2019 - VGC should consider a monitoring program to assist in early warning and detection of any movements in mass earth structures. Such a program might use permanent survey points, slope inclinometers, piezometers, or other tools to measure internal/external movements and pore water pressures. Such a monitoring program should be developed with the assistance of and be implemented with the oversight of a qualified professional.
    a. VGC response: Monitoring programs have been developed, are in use and undergoing further refinement by the technical services department with the oversight of a qualified professional (Q2 2020).

5.4.3 Reporting Adequacy, Compliance and Recommendations

Table 60 summarizes the compliance gaps and/or deficiencies identified with the Heap Leach Facility monitoring program.

The notable non-compliance is the absence of documented routine (visual) inspections. These inspections should be recorded and documented as per the EMSAMP 2020-01 document. There is also a lack of consistency between the piezometer instruments listed in the EMSAMP documents (2019-01, 2020-01) and those with reported water tables in the 2019 annual report and June 2020 monthly report. The piezometers listed in EMSAMP 2019-01 without reported water levels in the 2019 annual report are: MW10-AG6, BG-BGC11-26, MW19-HLF2a, MW19-HLF2b. MW10-AG3a is listed in EMSAMP 2020-01 and is not documented in the June 2020 monthly report. Stantec is assuming the following piezometers listed in EMSAMP 2020-01 were not installed prior to June 30, 2020: MWXX-HLF2a, MWXX-AGR6 MWXX-HLF2b, MWXX-HLF3a, MWXX-HLF3b, MWXX-HL4a, MWXX-HLF4b.

Of the 12 physical stability recommendations, recommendation #1, 3, and 12 are scheduled for completion within the scope of this environmental audit. The remaining recommendations are listed as ongoing, scheduled for future implementation, or listed as complete by VGC.

- Recommendation 1 is addressed with the official handover package from construction to operations (Construction release, C1 Certification). Stantec assumes this handover package contains all relevant foundation and construction designs and accepted by a qualified professional.
- Recommendation 3 is not addressed in the 2020 monthly reports, and review of the North Toe Ditch has not been documented in the available reports.
- Recommendation 12 is addressed with the installation of piezometers P1, P2, and P3 through the HLF embankment, in addition to an inclinometer casing for monitoring deformation. Available documentation does not present inclinometer casing readings.

Table 60 Heap Leach Facility Monitoring Program Compliance and Recommendations

Compliance Gaps and/or Deficiencies	Recommendation/Corrective Action
Routine (visual) inspections (daily, weekly) not reported.	Include an appendix in Annual and Monthly reporting that summarizes the observations from these visual inspections.
Embankment Piezometers P1, P2, P3 appear to be collecting data continuously but data not reported monthly.	Provide continuous data plots of embankment piezometers P1, P2, P3 in monthly reports. Include these instruments in next EMSAMP revision.
Partial reporting of piezometer readings as listed in EMSAMP 2019-01 in 2019 annual report.	Confirm HLF piezometers as listed in EMSAMP 2019-01 are reporting groundwater readings, include in monthly and annual reporting. Provide reasoning for missing groundwater level readings.
Partial reporting of piezometer readings as listed in EMSAMP 2020-01 in June 2020 monthly report.	Confirm HLF piezometers as listed in EMSAMP 2020-01 are reporting groundwater readings, include in monthly and annual reporting. Provide reasoning for missing groundwater level readings.
Existing monitoring methods (slope inclinometer casing) implemented on site do not state a monitoring frequency.	VGC to consider discrete reading frequencies for slope inclinometer casing, specify in EMSAMP documentation.
Follow up and close out of physical stability recommendation 3 not documented in annual or monthly reports.	Provide documentation detailing the follow up and response actions for addressing recommendation.

6.0 SOLID WASTE AND HAZARDOUS MATERIALS MANAGEMENT

6.1 DOCUMENTS REVIEWED

Documents in Table 61 were reviewed for the solid waste and hazardous materials management section of the audit. As this aspect of site environmental management is carried out in the field and documented by hand written reports required at various frequencies (daily, weekly, monthly, quarterly), Stantec modified the audit approach to review representative inspection logs and reports (Table 62). This review was supported by an interview with the site Environmental Superintendent regarding oversight of this program (personal communication, B. Bowden, September 23, 2020). Table 63 was prepared in consultation with VGCs site services department.

Table 61 Solid Waste and Hazardous Materials Management Document Reviewed

Document	Version Reviewed	Sections applicable during construction phase	Sections applicable to Operations phase
Solid Waste and Hazardous Materials Management Plan	2017-02	All sections	All sections

Version 2017-01 of the Solid Waste and Hazardous Materials Management Plan was approved on March 17, 2017. Version 2017-02, approved in July 2017, incorporated revisions made to update the site layout, and to support applications for permits under the *Environment Act* (i.e. Waste Management Permit, Air Emissions Permit, Burning Permit, Permit/certificate for Transport of Dangerous Goods and Land Treatment Facility Permit). Version 2017-02 was the approved plan effective during the audit period.

6.2 PLAN IMPLEMENTATION

Implementation of the Solid Waste and Hazardous Materials Management Plan (during construction and operations) was and is carried out through scheduled inspections and related documentation of inspections. Field inspections are carried out, according to the frequencies specified in the Solid Waste and Hazardous Materials Management Plan by VGC Environmental Technicians, and reports are reviewed by site VGC Environmental Coordinators for items that require corrective action by operations staff or senior management. Corrective actions are tracked in a dedicated log and updated upon completion.

Stantec reviewed inspections records shown in Table 62.

Table 62 Solid Waste and Hazardous Materials Management Inspections Records Reviewed

Waste Category	Frequency	Record	Record Date/Period
Hazardous Waste	As Required	Completed hazardous waste manifest	July 13, 2020
Wet/Dry Waste	As Required	Incinerator Operations Log	July 26–Sept 1, 2020
Wet/Dry Waste	Weekly	Incinerator Maintenance Log	May–June 2019
Hazardous Waste	Daily	Hazardous Substance Inspection Checklist (Fuel Stations/Propane Tanks	Week of July 21, 2020
Solid Waste/Fuel	Weekly	Environmental QA/QC Inspection (includes inspection of site waste management, fuel management and spill kits)	Week of July 10 and 27, 2020
Brush	As Required	Control Burn Log	January–August 2020

Table 63 below provides the audit results of the solid and hazardous waste management program.

Table 63 Solid Waste and Hazardous Materials Management Program Implementation

Solid Waste and Hazardous Materials Storage Areas	Inspections[a]		Record Keeping[b]	
	Frequency	Compliance (Yes/No)	Frequency	Compliance (Yes/No)
Waste Storage Areas	Daily	Yes	n/a	Yes
Landfill Area	Weekly	Yes	As Required	Yes
Incinerator	Monthly or As Required	Yes	As Required Per Use	Yes
Incinerator Stack Tests	n/a	n/a	Quarterly or to supplier recommended frequency	n/a[d]o
Waste Oil Burner	Monthly or As Required	Yes	Monthly or Each Inspection	Yes
Land Treatment Facility	Quarterly or As Required	Yes	Quarterly or Each Inspection	Yes
Used Tire Storage Area (Truck Shop)	Quarterly or As Required	Yes	Quarterly or As Required	Yes
Haz.Mat. & Special Waste Storage Areas	Weekly or As Required	Yes	Monthly or As Required	Yes
Open Burning Area	n/a	Yes	As Required Per Use	Yes
Spills and Leaks	n/a	Yes	See audit section 4.0	Yes

NOTES:

[a] Inspection requirements are as set out in the plan and permits

[b] Record keeping requirements are as set out in the plan and permits

[c] As required when wastes are disposed of and when cells are activated or closed

[d] As per the incinerator supplier recommended frequency, the incinerator did not require at stack test during the audit period.

6.3 REPORTING ADEQUACY, COMPLIANCE AND RECOMMENDATIONS

Based on the organization and inspection details in the various logs and inspection reports kept by VGC, Stantec confirms that implementation of the solid waste and hazardous materials management program was carried out adequately during the audit period.

Regular inspections are conducted by a Yukon Government (YG) Inspector and include inspection of solid waste and hazardous waste management areas. There were no corrective actions related to solid and hazardous waste management required by the YG Inspector during the audit period.

Table 64 Solid and Hazardous Waste Management Plan Compliance and Recommendations

Compliance Gaps and/or Deficiencies	Recommendation/Corrective Action
None	

7.0 SPILL RESPONSE

7.1 DOCUMENTS REVIEWED

Documents in Table 65 were reviewed for the spill response section of the audit. Spill response training, procedures and reporting measures were audited against the 2017-02 version of the Spill Response Plan as it was the approved version for the audit period.

Table 65 Spill Response Plan Documents Reviewed

Document	Version Reviewed	Sections applicable during construction phase	Sections applicable to Operations phase
Spill Response Plan	2017-02	All sections	N/A
Water Licence QZ14-041 Quartz Mining License QML-0011 2018 Annual Report	N/A	3.10 - Spills and Accidents and Appendix U – Spill Response Forms	N/A
Water Licence QZ14-041 Quartz Mining License QML-0011 2019 Annual Report	N/A	3.12 - Spills and Accidents and Appendix X – Spill Response Forms	NA
Type A Water Use License QZ14-041-1 Monthly Report, Reporting Period: January 2020 to June 2020	N/A	N/A	All sections

Table 66 below provides the audit results of the spill response program.

7.2 SPILL RESPONSE PLAN IMPLEMENTATION

Table 66 Spill Response Plan Implementation

Year	No. of Reportable Spills	Response Procedures Implemented	Reporting	Training and Prevention
2018	• 9 Septic • 3 Coolant	• Spill response procedures implemented as per the Spill Response Plan • Construction of Land Treatment Facility planned for 2019	• Spills reported to Yukon Spill Report Line	• Spill response training was a component of site orientation for all staff • Spill prevention was carried out through routine vehicle and equipment maintenance and pre-operation inspections
2019	• 1 Diesel • 4 Coolant • 1 Waste Oil • 3 Hydraulic Oil	• Spill response procedures implemented as per the Spill Response Plan • Land Treatment Facility (LTF) constructed in summer of 2019 • Excavated contaminated materials were transferred to the LTF	• Spills reported to Yukon Spill Report Line • Spills reports sent to the Yukon Water Board and the Dept. of Energy, Mines and Resources	• Spill response training was a component of site orientation for all staff • Spill prevention was carried out through routine vehicle and equipment maintenance and pre-operation inspections
2020	• 1 Diesel • 5 Coolant • 3 Hydraulic Oil	• Spill response procedures implemented as per the Spill Response Plan • Excavated contaminated materials were transferred to the LTF	• Spills reported to Yukon Spill Report Line • Spills reports sent to the Yukon Water Board and the Dept. of Energy, Mines and Resources	• Spill response training was a component of site orientation for all staff • Spill prevention was carried out through routine vehicle and equipment maintenance and pre-operation inspections

7.3 REPORTING ADEQUACY, COMPLIANCE AND RECOMMENDATIONS

Spill training and prevention, response and reporting was carried out according to the Spill Response Plan effective during the audit period (version 2017-02). All reportable spills were reported to the Yukon Spill Line, the Department of Energy, Mines and Resources and the Yukon Water Board within the required timeframe. VGC has notified FNNND Lands and Resources Manager of reportable spills (by email) since November 2019 (personal communication, L.Rear, September 29, 2020). An FNNND site Environmental Monitor also assists with liaising with FNNND regarding spills by providing spill status updates and carrying out inspections.

All reportable spills, with the exception of the spill (control pond discharge to ground) described in Section 3.2.3 (Table 19) are considered closed by the YG Inspector (i.e. remediation is complete). VGC has completed corrective actions regarding the first spill and expects that the incident will be closed by the YG Inspector within 2020. VGC conducted excavation and sampling operations from February to April to remediate the diesel spill. Final soil samples taken from the excavation floor and walls show that soil quality meets the Yukon Contaminated Sites Regulation standards for commercial and industrial soils. A 0final report describing the incident, remediation operations and soil sampling results was submitted to the Yukon Government on May 28, 2020.

VGC provided adequate responses to spills and is compliant with reporting requirements and personnel training specified in the Spill Response Plan.

Note that:

- VGC maintains records of preventative maintenance and all work orders in a dedicated database named PRONTO Xi. This software is used for tracking assets, work orders, and procurement,
- Light Vehicles are inspected prior to use.
- Both reportable and non-reportable spills, are tracked in a log specifying key information such as date, spill type, quantity, location, cause, mitigations employed and clean-up status.

Table 67 Spill Response Program Compliance and Recommendations

Compliance Gaps and/or Deficiencies	Recommendation/Corrective Action
None	None

8.0 SUMMARY AND RECOMMENDATIONS

Stantec has conducted this audit and prepared this report with the objective of assessing whether VGC's environmental management plans and regulatory controls set out in the Quartz Mining Licence (QML)-0011 are implemented in and about the mine, and that the environmental management systems and controls are functioning as intended.

Stantec has audited VGCs implementation of environmental and physical stability monitoring programs against versions of the EMSAMP, Water Management Plan and Wildlife Protection Plan in effect during the mine construction (July 1, 2018–March 16, 2019) and operations phases (March 17, 2019–June 2020) for compliance with these plans and with regulatory standards and thresholds set out in these plans.

Overall the implementation of VGC's environmental management system has been adequate and has demonstrated continual improvement throughout the audit period. Reports and data reviewed do not indicate there is any immediate concerns for water quality and quantity, aquatic habitat, air quality, soils, vegetation, wildlife and wildlife habitat, stability of physical structures and waste management.

Gaps, deficiencies and recommendations for corrective actions and improvements discussed above are shown in Table 68 for all disciplines. Stantec noted that there were some common themes with regard to deficiencies across several monitoring programs:

- Reporting monitoring activities and results without sufficient supporting data and information (e.g., validated datasets, statistical analyses, results compared against relevant standards or guidelines)
- Inconsistent implementation and/or documentation of QA/QC monitoring programs,
- Equipment malfunction resulting in gaps in datasets (i.e. climate, hydrology),
- Missing rationale in reports for gaps in implementation of the monitoring schedule,
- For monitoring programs with threshold standards or objectives, statistical analyses were not performed to determine statistically significant changes occurred to the receiving environment (i.e., air quality, hydrology, surface water quality, groundwater, soils, vegetation)
- Lack of adaptive management responses or rationale for not implementing adaptive management measures.

With respect to the last two deficiencies, the EMSAMP lacks quantitative adaptive management thresholds for certain monitored parameters/functional areas that would provide clear triggers for implementation of management actions. Stantec recommends that VGC work towards setting up statistically based sampling plans to help inform development of some adaptive management trigger thresholds into the next version of the EMSAMP.

Table 68 Recommendations for Improvements and Corrective Actions

Discipline	Compliance Gaps and/or Deficiencies	Recommendation/Corrective Action
Atmospheric Environment		
Climate	Incomplete climate data recorded between 2018–2020 during the construction phase and portions of the operations phase of mining	• Keep spare climate station sensors on-site for rapid deployment should sensors/equipment begin to fail or data gaps are noted. • Append annual QP climate stations' calibration report/records to annual report.
Air Quality	Inconsistency in data reporting	Submit validated datasets with all annual and quarterly reports, and compare monitoring results to AQC
Water Resources		
Surface Water Hydrology	EMSAMPs reference RISC (2009) as the document which was used to develop hydrology data collection. This document is out of date; Version 2.0 of that document was published in 2018.	The EMSAMP surface water hydrology program should be updated to reflect Version 2 of the hydrometric standards (RISC 2018).
	Insufficient documentation of revised sampling approaches for various stations based on data collection challenges or change in phase (e.g., monitoring frequency, monitoring type).	Explicitly document and provide rationale for changes to station monitoring approach or regime where applicable, and indicate plans for revising applicable EMSAMP sections.
	Prior to the 2020 monthly reports, there was insufficient documentation of periods where "discharging" or "dewatering" was occurring; this informs the requirement for monitoring at several stations.	Based on review of monthly reports from 2020, it appears that VGC has improved this. The 2020 annual report, and future monthly and annual reports, should continue to document periods of discharging or dewatering at applicable locations throughout site to inform the need for monitoring at applicable sites.
	For automated stations, winter and freshet time periods were not clearly delineated as to allow for demonstration of compliance as outlined in the EMSAMPs.	Recommend one of <u>two</u> changes: 1. Document dates of freshet start and logger deployment each year in the monthly and annual reports to delineate winter, freshet, and open water periods (each of which have different monitoring requirements), <u>or</u> 2. Update the EMSAMP requirements for the freshet period to better acknowledge i) the subjectivity of determining freshet period and/or ii) the difficulty of obtaining flow measurements during freshet flows.
	Prior to the 2020 Monthly Reports, not all of the monitoring stations outlined in the EMSAMPs are discussed/addressed in the annual reports.	Discuss/address all monitoring stations listed in the applicable EMSAMP, noting the status (e.g., active, not active) of each. Include data for all active monitoring stations (automated, manual) in reporting.
	Quarterly manual monitoring stations are not completed at consistent times of the year.	Clarify "quarterly monitoring" schedule, with backup sampling protocols if conditions are unsafe.
	The EMSAMPs list general tasks to be completed at each field visit (Section 2.3.1). Completion of these tasks was discussed in general in annual reports but documentation was not provided per requirements of RISC (2018).	Provide summary information regarding the completion of the tasks associated with each field visit in the annual reports, and/or indicate (in reporting) that these data have been documented internally and are available upon request.
	Logger malfunctions resulted in the loss of partial or full open water season datasets at several stations.	As outlined in the general tasks in the EMSAMPs (Section 2.3.1), download logger data either at every monitoring visit, or at an appropriate regular frequency, to minimize data loss and rectify issues.
	Sites experienced flows which were too high to safely obtain a flow measurement. The flows experienced in June are part of the seasonal range in flows and should be captured as part of the rating curve development or verification.	If possible, considering a reasonable level of effort and resources, safe flow measurement methods and procedures should be developed and implemented to capture high flows which are essential to development of reliable rating curves. If no method is safe considering reasonable levels of effort and resources, it should be stated in the reporting as such (e.g., as was completed in 2020 Monthly Reports) with a rationale, and the rating curves identified as valid below an identified threshold.
	QA/QC related to field and analytical tasks (e.g., benchmark surveys, station condition, field processes, photos, equipment calibration) were not documented.	Recommend that QA/QC processes in accordance with Section 2.3.1 in EMSAMP2018-01, EC 2001, RISC 2018 are documented and provided in reporting.
	Flow records are in partial compliance due to lack of winter and freshet measurements and/or logger malfunctions.	Implement monitoring program as outlined in applicable EMSAMP , or provide rationale for implementation not being possible in reporting and amend EMSAMP.
	For automated stations, it is not clear what the manual monitoring frequency is during the freshet in EMSAMP2020-01.	Clarify this in future EMSAMPs/reporting.
	It is not clear in the EMSAMPs if the adaptive management performance thresholds are applicable to manual monitoring stations.	Clarify this in future EMSAMPs/reporting.

Table 68 Recommendations for Improvements and Corrective Actions

Discipline	Compliance Gaps and/or Deficiencies	Recommendation/Corrective Action
Surface Water Hydrology (cont'd)	Average monthly flows were used instead of median monthly flows (as specified in Table 2.4-1 in EMSAMP2019-01 and EMSAMP2020-01) in evaluation of performance thresholds.	Use median monthly flows in evaluation of performance thresholds as outlined in EMSAMP.
	The method of evaluation of performance thresholds for adaptive management was not completed in accordance with quantitative procedure outlined in EMSAMPs.	Apply the quantitative evaluation protocol outlined in the EMSAMPs for performance thresholds for adaptive management at relevant monitoring locations.
	The evaluation of performance thresholds for adaptive management was not completed for all automated stations listed in the EMSAMPs.	Perform evaluation of performance thresholds for adaptive management for all relevant automated stations as outlined in the EMSAMP.
	Adaptive management responses were not clearly performed following exceedance of performance thresholds.	Implement and document the adaptive management responses if performance thresholds exceeded at relevant monitoring locations as outlined in EMSAMPs.
	Full documentation of completion timelines and dates for key water management infrastructure not documented.	Include specific completion dates in annual reporting for all key water management components.
Surface Water Quality	2018 Annual Report – Rationale for missing sample events	Include a footnote for each table describing missing data rationale (e.g., frozen water)
	2018 Annual Report – QA/QC results not described	Include text in the report body describing the results of the QA/QC program (e.g., number of QA/QC samples, summary of results, DQOs, and corrective actions for failed DQOs). Also include these data in the database (Appendix D) or tabulated form.
	2019 Annual Report – Water Quality Results	Include a tabulated form of all water quality data including QA/QC samples
	2019 Annual Report – QA/QC results not completely described	Include results of duplicate sample results as well as total amount of QA/QC samples collected and summarize data in a tabulated form.
	2019 Annual Report – Quality of plots	Improve quality of plots so axes can be read (Appendix F)
	2019 Annual Report – Statistical and trend analysis	For WQO exceedances, the EMSAMP commits VGC to compare values to baseline to determine if any significant changes have occurred to the receiving environment water quality, complete a trend analysis, and include methods and results in the report. We recommend an adjustment to this commitment with the goal of an achievable exercise for this project (e.g., monitor over x number of sampling events to determine if it is a real change in water quality)
	2019 Annual Report – Cyanide species	Include cyanate and thiocyanate in the analytical suite for compliance with EMSAMP 2019-01
	2019 Annual Report – AMT Responses	The EMSAMPs requests VGC to describe in detail the response for any AMT exceedances. As per the Water Management Plan, sampling frequency will increase accordingly (next higher order) to better characterize trends.
	2020 Monthly Reports – QA/QC	Report on QA/QC samples collected monthly and include results in the report body including laboratory QA/QC results. Frequency of QA/QC samples are to meet >10% ratio of QA/QC samples to total water quality samples. *(Stantec understands that currently, Field blanks are being collected and are documented in the 2020 monthly report water quality appendices.)*
	2020 Monthly Reports – AMT Responses	For WQO and AMT exceedances, the EMSAMP commits VGC to compare values to baseline to determine if any significant changes have occurred to the receiving environment water quality, complete a trend analysis and include methods and results in the report. We recommend an adjustment to this commitment with the goal of an achievable exercise for this project (e.g., monitor over x number of sampling events to determine if it is a real change in water quality). We also recommend to include a detailed AMT response. As per the Water Management Plan, sampling frequency should increase accordingly (next higher order) to better characterize trends.

Table 68 Recommendations for Improvements and Corrective Actions

Discipline	Compliance Gaps and/or Deficiencies	Recommendation/Corrective Action
Groundwater Quantity and Quality	Groundwater quantity and quality monitoring from some wells was performed less frequently than the schedule prescribed in the relevant EMSAMPs.	• A number of factors, including those beyond the control of VGC may result in a scheduled monitoring not being performed (e.g. weather, equipment malfunction, unsafe condition, construction, pandemic). The monthly and annual reporting needs to provide the rationale for missed monitoring in tabular format and if any corrective action will be taken. • The annual and monthly reporting should include the installation and decommission date, and operational status of monitoring wells. • A maintenance log should be maintained for any maintenance or repairs made to logs and reported in the annual report.
	EMSAMP (2020-01, S. 4.5) states that groundwater levels will be compared to predicted (modeled) effects due to the loss of recharge in the HLF and WRSA. However, trends were not quantitatively compared with predicted (modelled) effect in the 2019 Annual Report or 2020 Monthly Reports. It is unclear if trends are consistent with the predicted thresholds or if the model requires calibration based on field observation.	• Compare measured groundwater levels to predicated effects in assessment. • Calibrate modeled adaptive management thresholds for groundwater quantity based on field observation.
	EMSAMP (2020-01, S. 4.4) states that groundwater hydrographs will be compared with existing baseline data to assess potential change associated with the Project. The 2019 Annual Report in S. 3.4.3.1 presents a qualitative discussion of the observed changes in groundwater quantity associated with the construction and operation of mine. This discussion is not presented in the context of modelled effect or groundwater quantity indicators.	Present further assessment of the change in groundwater quantity associated with the Project. The assessment would be strengthened if a list of groundwater quantity indicators and associated triggers were developed and utilized in the operation stage.
	EMSAMP (2020-01, S. 5.2) presents groundwater quality parameters to be analyzed in the monitoring program. Review of groundwater quality records in the 2019 Annual Report suggests some samples were not analyzed for the full suite of parameters.	• Review water licence conditions and lab records to confirm if required parameters were analyzed. • Include all analyzed parameters and lab reports in annual reporting.
	• EMSAMP (2020-01, S. 5.3.2 and 5.3.3) describes the field QA/QC program for groundwater quality monitoring, which includes collection and analysis of trip blanks, field blanks and duplicates. • The 2019 Annual Report does not present information on the implementation of the QA/QC program. Appendix K of the 2019 Annual Report (Groundwater Quality Data) does not contain records of the QA/QC samples.	Present information on the implementation of the field QA/QC program and the results of the QA/QC program in the annual reports.
	EMSAMP (2020-01, S. 5.3.3) states that plots of concentrations of regulated constituents and key indicator parameters versus time will also show applicable standards and baseline concentration. Plots in the 2019 Annual Report do not contain the applicable standards and baseline concentration.	Present applicable standards and baseline concentration in the groundwater water sample constituent concentration plots for the annual report.
	EMSAMP (2020-01, S. 5.4.1) describes that trends in groundwater quality will be examined to potentially inform management actions. The existing analysis of the water quality trend in the 2019 Annual Report contains discussion of the trend but in some cases does not provide rationale for the observed trends.	• Present groundwater quality trend analysis in monthly and annual reporting to confirm that trends are being monitored appropriately. • Present groundwater quality trend assessment in the context of baseline water quality and predicted effects of the Project. • Provide greater logical link between discussion of observed groundwater quality trend and proposed adaptive management actions (e.g., no action).

Table 68 Recommendations for Improvements and Corrective Actions

Discipline	Compliance Gaps and/or Deficiencies	Recommendation/Corrective Action
Geochemistry	2018 Annual Report – QA/QC samples	Collect duplicate samples of construction monitoring samples and include discussion of results including relative percent differences in report body and append dataset.
	2018 Annual Report – Report NPR values	Report NPR values in addition to NP:AP for better interpretation of results. This was corrected in the 2019 Annual Report.
	2018 and 2019 Annual Report – Sample type description	Include details on the material sample collected (i.e., surficial, or bedrock) and why these samples were collected (i.e., 1 per 100,000 m^3 material moved or distinct geological unit).
	2018 Annual Report – Appended analytical data	Include all analytical data in appendices. Missing: acid base accounting, rinse pH, and electrical conductivity.
	2019 Annual Report – Appended analytical data	Include field barrel analytical data in appendices.
	2019 Annual Report – QA/QC samples	Collect duplicate samples of construction and operational monitoring samples, include discussion of result (including relative percent differences) in report body, and append dataset.
	2019 Annual Report – Details of blast rounds	Include details of blast rounds so compliance with EMSAMP can be evaluated. Include geological logs of blast holes.
	2019 Annual Report – Monthly seep sample survey	Include details of monthly seep sample survey in report.
	2019 Annual Report – Shake flask extraction size fraction	Check with off-site laboratory (ALS) if shake flask extraction is conducted on <2 mm and <1cm size fraction.
	2020 Monthly Reports – QA/QC samples	Collect duplicate samples of construction monitoring samples and include discussion in report body and append dataset. For operational samples, include relative percent differences and discuss results in the report body. Consider re-naming duplicate samples to not include parent sample name. Explicitly describe which samples are duplicates of respective parent sample.
Aquatic Environment		
Stream Sediment	Field methods – use of stainless-steel trowel to collect samples	Samples collected for analysis of metal concentrations should be collected with plastic utensils to avoid potential contamination
	Field methods – out of date field method guidelines	Methods should be consistent with updated BC Field Sampling Manual from 2020 and with BC's "Water and Air Baseline Monitoring Guidance Document for Mine Proponents and Operators" (BC MoE 2016)
	Field methods – site documentation	Water depth, sediment texture and color, and presence of debris, biofilms, odours, or sheens should be described at each site. Sites should be photographed showing upstream, downstream, obliques, banks, riparian vegetation, and substrates
	Lab methods – screening equipment	Laboratories should be required to screen sediment samples for particle size distribution and <63 µm fraction using non-metallic screens to avoid potential contamination
	Reporting – units	Clearly document that guidelines and concentrations are reported as dry or wet weight
	Reporting - guidelines	Sediment quality guideline for selenium is only an "alert" concentration and not a working sediment quality guideline
	Reporting - guidelines	Clearly indicate whether guidelines for specific parameters are from CCME and/or BC WQG
	Reporting – detection limits	Reports should identify results that are below detection limits (e.g., boron and silver)
	QA/QC – field methods	Clearly document the field QA/QC procedures followed
	QA/QC – field duplicates	Every third or fifth sample should be "field split" to assess sampler and laboratory QA/QC as per BC MoE 2016
	QA/QC – laboratory detection limits	Reports should describe instances where laboratory detection limits are not ≤ $1/5^{th}$ of the respective sediment quality guideline or ≤ $1/5^{th}$ of the lowest background concentration
	Reporting – lack of statistical analyses	Reports should include statistical comparison of data to pre-construction baseline data as required by EMSAMP
	Reporting – lack of discussion of need for adaptive management due to PEL exceedances for arsenic	Conduct statistical analyses comparing contemporary and pre-construction data to identify any significant differences and conduct arsenic speciation analyses on future stream sediment samples

Table 68 Recommendations for Improvements and Corrective Actions

Discipline	Compliance Gaps and/or Deficiencies	Recommendation/Corrective Action
Benthic Macroinvertebrates	Study design – insufficient sites in reference or upstream areas as per EEM guidance	Identify and begin sampling in second reference stream to bring the number of unaffected sites up to 5 as recommended in Environment Canada's EEM guidance; a minimum of three reference sites are recommended in BC's Water and Air Quality Baseline Monitoring Guidance Document. (*Stantec understands that VGC is currently preparing an Environmental Effects Monitoring plan for submission to Environment and Climate Change Canada in 2021 that will address this recommendation.)*
	Study design – number of appropriate replicate numbers is unknown	Conduct power analysis on existing data to determine the number of replicate samples required to provide sufficient data to determine statistically significant differences between sites and between years given known variability in benthic communities. Without a power analysis, the default number of replicates per site should be increased to 5. (*Stantec understands that VGC is currently preparing an Environmental Effects Monitoring plan for submission to Environment and Climate Change Canada in 2021 that will address this recommendation.)*
	Field QA/QC procedures – not *a prior* criteria for sample appropriateness as required by EEM	Develop *a priori* criteria and apply to next survey (*Stantec understands that VGC is currently preparing an Environmental Effects Monitoring plan for submission to Environment and Climate Change Canada in 2021 that will address this recommendation.)*
	Lab QA/QC procedures and results – not provided in report or appendices	Provide lab QA/QC procedures and results in appendix
	Data analysis - Missing community metrics required in EMSAMP (i.e., family density and richness, Simpson's evenness, and Bray-Curtis)	Include all community indices identified in EMSAMP
	Data analysis – missing statistical analyses comparing sites and contemporary data to pre-construction data	Conduct the required ANOVAs and multiple comparison tests as required by EMSAMP (e.g., append appropriate statistical analyses in excel format) and EEM for BACI study design. (*Stantec understands that VGC is currently preparing an Environmental Effects Monitoring plan for submission to Environment and Climate Change Canada in 2021 that will address this recommendation.)*
	Reporting – only qualitative comparisons between sites and years discussed	There is sufficient data from sites and between years to conduct quantitative statistical analysis to determine significant difference between impact and reference sites and trends between years.
	Reporting – no discussion of need for adaptive management actions; no statistical analyses performed to inform adaptive management	Discuss adaptive management considering quantitative analysis of site data and trend analysis
	Reporting – no indication that results are site averages in the tables	Clearly identify what data in tables represents
	Reporting – no reference for Pacific Salmon Federation rating of "good quality" based on EPT taxa in the 2018 annual report	Provide all references in report
	Reporting – incorrect identification of "fair" based on HBI to Site W26 in 2018 annual report	Incorporate quality and independent review into reporting structure
	Reporting – no analysis or discussion of environmental variables, fish results, or outlier effects on benthic invertebrate results as required by EMSAMP	Discuss all requirements of the EMSAMPs in the annual reports.
Fish and Fish Habitat	Field methods - Fish and fish habitat surveys conducted in September instead of July or August when fish communities are likely more stable and fish sampling is more efficient	Although not a deficiency of the annual monitoring programs, sampling should be conducted in summer when fish community is most stable and sampling efficiency is highest.
	Field methods – fish condition was not documented as required by the EMSAMPs	Conduct external examinations and fill in standardized necropsy form for each fish or sub-sample of fish of each species captured
	Field methods – single pass open sites	Although not required by the EMSAMPs and not a deficiency of the annual monitoring programs, multi-pass depletion estimates in closed sites would provide more accurate and repeatable results and be better for long-term monitoring and statistical analyses
	Field methods – insufficient numbers of fish captured for EEM program at current effort levels	The EMSAMP references that a minimum of 100 fish is recommended for non-lethal sampling according to EEM technical guidance (Environment Canada 2012). Sampling in summer and using multi-pass electrofishing methods may increase numbers of fish available for capture

Table 68 Recommendations for Improvements and Corrective Actions

Discipline	Compliance Gaps and/or Deficiencies	Recommendation/Corrective Action
Fish and Fish Habitat (cont'd)	Reporting – no mention of need for fish tissue study	Even if no mine effluent discharge occurred, reports should indicate whether a fish tissue study is required or not as part of MDMER monitoring; the EMSAMP indicates that a fish tissue study is required if the concentration of effluent in the exposure area was >1% in the area within 250 m of the final discharge point but the 2019 annual report did not indicate if this criterion was met. (*Stantec understands that VGC is currently preparing an Environmental Effects Monitoring plan for submission to Environment and Climate Change Canada in 2021 that will address this recommendation.)*
	Reporting – no recommendation for indicator fish species for future EEM program	Although not required by the EMSAMPs, the authors should provide a recommendation for a suitable indicator fish species for monitoring potential effects of future mine effluent discharges. Given the fish community present at the site, slimy sculpin would appear to be at least one of the indicator species chosen for future EEM programs. (*Stantec understands that VGC is currently preparing an Environmental Effects Monitoring plan for submission to Environment and Climate Change Canada in 2021 that will address this recommendation.)*
	Reporting – no mention of adaptive management trigger or threshold exceedances	Reports should specify whether any of the adaptive management thresholds in the EMSAMPs were exceeded and if any of the adaptive management measures were required and implemented each year
Terrestrial Environment		
Vegetation and Soils	N/A	Develop statistically-based trigger for determining 'significant' increases in metals (arsenic, cadmium, chromium, mercury and lead) concentrations in vegetation plot samples.
	Missing duplicate vegetation sample analysis in 2018 and 2019	Collect duplicate samples if sufficient vegetation is available
Wildlife Protection	Specific information on wildlife incidents is not provided in the Wildlife Records Program	Provide a summary of all wildlife incidents resulting in human-wildlife conflict, wildlife fatality or removal, or nest disturbance in the annual reports along with a summary of the root cause(s). Any corrective actions should be documented.
	There is no formal documentation of the wildlife protection monitoring in the Heap Leach Facility Area and Events Pond Monitoring Program	Include the results of the monitoring program in the annual report or in a separate report.
Geotechnical Stability of Infrastructure and Facilities		
Permafrost	Regular visual Inspections not reported.	Include an appendix in Annual and Monthly reporting that summarizes the observations from regular visual inspections to identify and quantify any deformation associated with melting of permafrost, such as but not limited to, cracks, subsidence, sinkholes, and sloughing on existing foundations and slope overlay permafrost. Summarize those visual inspections executed during the freshet, prolonged rainy periods, and rising trend in any thermistors.
	Prolonged rainy period not quantified.	Define / quantify duration of a prolonged rainy period based on exceedance of design criteria (duration, precipitation volume).
	Freeze/Thaw indices not reported under EMSAMP -2018-01.	Corrective action no longer required because Weather Data Review requirement removed from EMSAMP monitoring program starting June 2019 (EMSAMP 2019-01 and 2020-01).
	Thermistor GT18-09 not read in Q3 of 2019	Provide reasoning for missed reading.
Open Pit	Daily visual inspections not reported.	Include an appendix in Annual and Monthly reporting that summarizes the observations from these daily visual inspections.
	Monthly collection of survey prism data not reported.	Stantec understands there are currently no active prisms installed at the open pit, and VGC is implementing a program scheduled for 2020 to install up to 15 prisms on the1408, 1375, and 1395 benches. Following prism installation, include in Annual and Monthly reports a list of active survey prisms with coordinates (northing, easting, elevation) and deformation readings.
	Piezometers read quarterly instead of monthly in 2018 as required in EMSAMP 2018-01.	Corrective action not required since the piezometer reading frequency is specified as quarterly in subsequent EMSAMP 2019-01, superseding the 2018 requirement and bringing the piezometer reading schedule into compliance.
	Scheduled piezometer readings for Q1 2020 not collected due to COVID-19 related staffing issues.	Assess if datalogger installed in Open Pit piezometer BH-BGC11-73a,b,c collected and stored data for Q1 2020. For remaining piezometer(s), collect data as soon as reasonably practical and provide reading summary or reasoning for data gap in Annual reporting.

Table 68 Recommendations for Improvements and Corrective Actions

Discipline	Compliance Gaps and/or Deficiencies	Recommendation/Corrective Action
Open Pit (cont'd)	Piezometer data not collected in Q2 2020.	Assess if datalogger installed in Open Pit piezometer BH-BGC11-73a,b,c collected and stored data for Q2 2020. For remaining piezometer(s), collect data as soon as reasonably practical and provide reading summary or reasoning for data gap in Annual reporting.
	Piezometers listed in EMSAMP documentation without reported water tables.	Provide reasoning for piezometers with absence of documented water table readings.
	Data for two (2) extensometers installed at open pit not reported.	The EMSAMP documents do not lay out a minimum required monitoring frequency for extensometers installed at the open pit. A qualified personnel should determine a reading frequency for these instruments and should be summarized in the annual reports and compared against established velocity trigger levels.
	Multiple instrumentation listed in EMSAMP documentation that is not currently installed on site (robotic theodolites, TDR cables, slope inclinometers, fixed slope radar, mobile slope radar).	Remove from EMSAMP documentation reference to instrumentation not installed (or planned for installation) on Open Pit.
	Equipment maintenance logs were not provided to back-up data reported in monthly/annual reports.	Provide equipment maintenance logs as supporting documentation to monthly/annual reports.
Materials Storage and Stockpile Management	Visual inspections (daily, weekly, monthly) not reported.	Include an appendix in Annual and Monthly reporting that summarizes the observations from these visual inspections.
	Not all WRSA and stockpile piezometers as listed in EMSAMP 2020-01 have water levels reported in June 2020 monthly report.	Confirm list of active piezometers installed in WRSA and stockpiles, include data in monthly and annual reports. Provide reasoning behind non-documented groundwater tables.
	Multiple instrumentation listed in EMSAMP documentation that is not currently installed on site (Survey Prisms, Inclinometers, Radar / photogrammic surveying).	Remove from EMSAMP documentation reference to instrumentation not installed (or planned for installation) on WRSA and stockpile structures.
	Existing monitoring methods (wireline extensometer) implemented on site do not state a monitoring frequency.	VGC should consider discrete reading frequencies for wireline extensometers, specify in EMSAMP documentation.
	Follow up and close out of physical stability recommendation 4 and 5 not documented in annual or monthly reports.	Provide documentation detailing the follow up and response actions for addressing recommendations.
Heap Leach Facility	Routine (visual) inspections (daily, weekly) not reported.	Include an appendix in Annual and Monthly reporting that summarizes the observations from these visual inspections.
	Embankment Piezometers P1, P2, P3 appear to be collecting data continuously but data not reported monthly.	Provide continuous data plots of embankment piezometers P1, P2, P3 in monthly reports. Include these instruments in next EMSAMP revision.
	Partial reporting of piezometer readings as listed in EMSAMP 2019-01 in 2019 annual report.	Confirm HLF piezometers as listed in EMSAMP 2019-01 are reporting groundwater readings, include in monthly and annual reporting. Provide reasoning for missing groundwater level readings.
	Partial reporting of piezometer readings as listed in EMSAMP 2020-01 in June 2020 monthly report.	Confirm HLF piezometers as listed in EMSAMP 2020-01 are reporting groundwater readings, include in monthly and annual reporting. Provide reasoning for missing groundwater level readings.
	Existing monitoring methods (slope inclinometer casing) implemented on site do not state a monitoring frequency.	VGC to consider discrete reading frequencies for slope inclinometer casing, specify in EMSAMP documentation.
	Follow up and close out of physical stability recommendation 3 not documented in annual or monthly reports.	Provide documentation detailing the follow up and response actions for addressing recommendation.
Solid Waste and Hazardous Materials Management	No recommendation	
Spill Response	No recommendation	

9.0 CLOSURE AND LIMITATIONS

The audit was executed by the Stantec Consulting Limited by qualified professionals in their identified area of competency shown in Table 69.

Table 69 List of Auditors and their Credentials for the Eagle Gold Mine 2020 Environmental Audit Report

Auditors & Reviewers	Credentials	Discipline
Christiane Buie	M.A., Dipl.Tech., EPt	Auditor: Air quality, Climate, Spill response, Solid Waste and Hazardous Materials Management
Jeff Muirhead	M.A.Sc., P.Eng. (Yukon), CISEC	Auditor: Hydrology and Water Management
Xéna McArthur	B.Sc., P.Geo (BC)	Auditor: Surface Water Quality and Geochemistry
Ryan Shao	MSc., P.Geo (BC)	Auditor: Hydrogeology
Brad Horne	M Sc., R.P. Bio. (BC)	Auditor: Aquatic Resources
Andrew Burgin	P.Eng. (BC)	Auditor: Geotechnical Engineering
Christina Ball	B.Sc., R.P.Bio (BC)	Auditor: Wildlife Protection
Ali Naghibi	Ph.D., P.Eng. (BC)	Hydrology Quality Reviewer
Brenda Bailey	Ph.D, P.Geo. (BC)	Surface Water Quality and Geochemistry Quality Reviewer
Alvin Tong	P.Eng. (BC)	Geotechnical Engineering Quality Reviewer
Colleen Bryden	M.Sc., R.P.Bio.(BC)	Wildlife Quality Reviewer
Dan Jarratt	Ph.D, P.Eng. (BC)	Meteorological and Atmospheric Quality Reviewer
Sandra Nelson	M.Sc., R.P. Bio. (BC)	Aquatic Resources Quality Reviewer
Natalie Tashe	M.Sc., P.Ag.,(BC) MCPM	Independent Reviewer

Stantec's Quality and Independent Reviewers have employed Stantec's strict Quality Assurance (QA) and Quality Control (QC) program throughout the audit execution process. The QA/QC program is designed to reduce the potential for errors while providing a systematic review of all facets of the audit. Our Quality and Independent Reviewers have provided critical quality review to verify that key issues were addressed, and that VGC's and Stantec's internal quality control standards were met.

This document entitled Eagle Gold Mine 2020 Environmental Audit Report was prepared by Stantec Consulting Ltd. ("Stantec") for the account of Victoria Gold Corp. (the "Client"). The material in it reflects Stantec's professional judgment in light of the scope, schedule and other limitations stated in the document and in the contract between Stantec and the Client. The audit objective is to report on the findings of the documents reviewed with respect to protection of the receiving environment.

Closure and LImitations
November 30, 2020

The audit recommendations in the document are based on conditions and information existing at the time the document was published and do not take into account any subsequent changes that may happened at the mine. The audit is a desktop assessment and does not include site verification. In preparing the document, Stantec did not verify information supplied to it by others. Any use which a third party makes of this document is the responsibility of such third party. Such third party agrees that Stantec shall not be responsible for costs or damages of any kind, if any, suffered by it or any other third party as a result of decisions made or actions taken based on this document.

10.0 REFERENCES

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APPENDIX Q2

VGC Response to 2020 Environmental Audit Report Findings

Table 1: Third Party Audit Findings and Victoria Gold Response

Discipline	Compliance Gaps and/or Deficiencies	Recommendation/Corrective Action	VGC Response
		ATMOSPHERIC ENVIRONMENT	
Climate	Incomplete climate data recorded between 2018–2020 during the construction phase and portions of the operations phase of mining	• Keep spare climate station sensors on-site for rapid deployment should sensors/equipment begin to fail or data gaps are noted. • Append annual QP climate stations' calibration report/records to annual report.	VGC has received the recommended equipment maintenance and part replacement summary from the supplier of the two site climate stations. Based on the summary, a critical parts procurement and maintenance program will be instituted by the VGC Environmental Department that is further informed by their site experience with the equipment. Relevant calibration and maintenance logs for climate stations will be provided in future annual report.
Air Quality	Inconsistency in data reporting	Submit validated datasets with all annual and quarterly reports, and compare monitoring results to AQC	The scope of the audit did not initially include review of the quarterly reports required under the Air Emissions Permit issued for the Eagle Gold Mine. The quarterly reports prepared up to the effective date of the audit were subsequently provided to the auditor and, as noted in Table 6 of audit, were found to be adequate. VGC will continue to prepare and submit air quality information as required by Air Emissions Permit #60-060. Inconsistency in data reporting identified in the audit were based on annual reports prepared by VGC prior to the receipt of Permit #60-060. Future annual reporting under the QML with respect to air quality will be informed by the detailed quarterly reports which VGC believes will address the findings of the audit.
		WATER RESOURCES	
Surface Water Hydrology	EMSAMPs reference RISC (2009) as the document which was used to develop hydrology data collection. This document is out of date; Version 2.0 of that document was published in 2018.	The EMSAMP surface water hydrology program should be updated to reflect Version 2 of the hydrometric standards (RISC 2018).	In the event that an update to the EMSAMP is warranted in the future, the most current RISC standards will be referenced as recommended.
	Insufficient documentation of revised sampling approaches for various stations based on data collection challenges or change in phase (e.g., monitoring frequency, monitoring type).	Explicitly document and provide rationale for changes to station monitoring approach or regime where applicable, and indicate plans for revising applicable EMSAMP sections.	As noted in Tables 10 to 12 in the audit, VGC's compliance with the frequency and reporting of field programs improved over time and, based on EMSAMP v2020-01, were found to be compliant. VGC has reviewed summary information relating to QA/QC and site task programs contained within monthly reporting for the Wolverine Mine (as these reports are completed by a third-party consultant on behalf of Yukon Government) and will work towards emulating this information in future reporting as necessary. In the event that an update to the EMSAMP is warranted in the future, changes to station monitoring approach or regime will be updated as necessary
	Prior to the 2020 monthly reports, there was insufficient documentation of periods where "discharging" or "dewatering" was occurring; this informs the requirement for monitoring at several stations.	Based on review of monthly reports from 2020, it appears that VGC has improved this. The 2020 annual report, and future monthly and annual reports, should continue to document periods of discharging or dewatering at applicable locations throughout site to inform the need for monitoring at applicable sites.	As noted by the auditor, the deficiency in monthly reporting prior to 2020 has been corrected. Ongoing annual and monthly reports will continue to document periods of discharge as recommended.
	For automated stations, winter and freshet time periods were not clearly delineated as to allow for demonstration of compliance as outlined in the EMSAMPs.	Recommend one of <u>two</u> changes: 1) Document dates of freshet start and logger deployment each year in the monthly and annual reports to delineate winter, freshet, and open water periods (each of which have different monitoring requirements), <u>or</u>	Data logger deployment and winterization are performed when the task is deemed safe for access and when monitoring will have minimal impact from ice conditions. VGC will clearly report the date of the deployment of hydrology loggers in future monthly and annual reports.

Discipline	Compliance Gaps and/or Deficiencies	Recommendation/Corrective Action	VGC Response
		2) Update the EMSAMP requirements for the freshet period to better acknowledge i) the subjectivity of determining freshet period and/or ii) the difficulty of obtaining flow measurements during freshet flows.	Winter and freshet time periods are subjective definitions which has been generally acknowledged by the regulatory bodies involved with the Project to date thus, VGC does not believe an update to the EMSAMP is warranted.
	Prior to the 2020 Monthly Reports, not all of the monitoring stations outlined in the EMSAMPs are discussed/addressed in the annual reports.	Discuss/address all monitoring stations listed in the applicable EMSAMP, noting the status (e.g., active, not active) of each. Include data for all active monitoring stations (automated, manual) in reporting.	As noted by the auditor, the deficiency in monthly reporting prior to 2020 has been corrected. The status of each monitoring station will continue to be provided in monthly reporting and will be provided in annual reports.
	Quarterly manual monitoring stations are not completed at consistent times of the year.	Clarify “quarterly monitoring” schedule, with backup sampling protocols if conditions are unsafe.	Quarterly flow measurement will comply with EMSAMP and Water Use Licence (WUL) timing requirements as safe sampling conditions allow. Should quarterly measurement not occur during the licenced time period, the backup protocol is to sample during the next safest condition.
	The EMSAMPs list general tasks to be completed at each field visit (Section 2.3.1). Completion of these tasks was discussed in general in annual reports but documentation was not provided per requirements of RISC (2018).	Provide summary information regarding the completion of the tasks associated with each field visit in the annual reports, and/or indicate (in reporting) that these data have been documented internally and are available upon request.	Confirmation that tasks associated with each field visit will be provided in future annual reports and that documentation is available upon request. For clarity, documentation is prepared as required by RISC (2018); however, the data was not provided in VGC reporting but has been and will continue to be checked to ensure compliance with the requirements of RISC (2018).
	Logger malfunctions resulted in the loss of partial or full open water season datasets at several stations.	As outlined in the general tasks in the EMSAMPs (Section 2.3.1), download logger data either at every monitoring visit, or at an appropriate regular frequency, to minimize data loss and rectify issues.	Logger data will be downloaded at regular intervals to minimize potential for data loss. VGC plans to install direct read cables in 2021 to allow for more efficient and accurate data transfer and in field determination of the adequacy of data collection.
	Sites experienced flows which were too high to safely obtain a flow measurement. The flows experienced in June are part of the seasonal range in flows and should be captured as part of the rating curve development or verification.	If possible, considering a reasonable level of effort and resources, safe flow measurement methods and procedures should be developed and implemented to capture high flows which are essential to development of reliable rating curves. If no method is safe considering reasonable levels of effort and resources, it should be stated in the reporting as such (e.g., as was completed in 2020 Monthly Reports) with a rationale, and the rating curves identified as valid below an identified threshold.	While VGC endeavors to retrieve all data samples staff safety is the first consideration. Where a flow measurement is omitted due to unsafe conditions this will continue to be stated in reporting.
	QA/QC related to field and analytical tasks (e.g., benchmark surveys, station condition, field processes, photos, equipment calibration) were not documented.	Recommend that QA/QC processes in accordance with Section 2.3.1 in EMSAMP2018-01, EC 2001, RISC 2018 are documented and provided in reporting.	The review of this information was not within the scope of the audit, nevertheless, summary information and confirmation that data related to field and analytical tasks have been documented internally. Confirmation that QA/QC related to field and analytical tasks will be provided in annual reports. Documentation is available upon request.
	Flow records are in partial compliance due to lack of winter and freshet measurements and/or logger malfunctions.	Implement monitoring program as outlined in applicable EMSAMP, or provide rationale for implementation not being possible in reporting and amend EMSAMP.	VGC endeavors to complete flow measurements as outlined in the EMSAMP; however, winter hydrological monitoring at certain stations is not always possible due to ice and frozen conditions on creeks and streams. Where a flow measurement is omitted due to winter access conditions or safety concerns, this will continue to be stated in reporting.
	For automated stations, it is not clear what the manual monitoring frequency is during the freshet in EMSAMP2020-01.	Clarify this in future EMSAMPs/reporting.	The frequency for manual measurements listed in EMSMAP 2020-01 is taken verbatim from the WUL. VGC undertakes monthly manual flow measurements when the automated stations are not installed and again when the station is installed.
	It is not clear in the EMSAMPs if the adaptive management performance thresholds are applicable to manual monitoring stations.	Clarify this in future EMSAMPs/reporting.	In general, AMT’s do not apply to those considered only manual monitoring stations. As the execution of the program is VGC’s responsibility, our Environmental Department understands that the thresholds are intended to apply year-round to W4 and W99 (for additional comparison to W29 baseline and W99 established dataset), which are continuous gaged stations during

Discipline	Compliance Gaps and/or Deficiencies	Recommendation/Corrective Action	VGC Response
			ice-free season and manually monitored otherwise. No additional clarification to the EMSAMP is required.
	Average monthly flows were used instead of median monthly flows (as specified in Table 2.4-1 in EMSAMP2019-01 and EMSAMP2020-01) in evaluation of performance thresholds.	Use median monthly flows in evaluation of performance thresholds as outlined in EMSAMP.	Median monthly flows will be used when comparing hydrology performance thresholds as outlined in the EMSAMP (this is available in 2020 August and September monthly reports).
	The method of evaluation of performance thresholds for adaptive management was not completed in accordance with quantitative procedure outlined in EMSAMPs.	Apply the quantitative evaluation protocol outlined in the EMSAMPs for performance thresholds for adaptive management at relevant monitoring locations.	Quantitative evaluations when adaptive management triggers have been reached were initiated subsequent to the effective date of the audit. This information is available for review by interested parties in the August and September monthly reports. Additionally, VGC has recently purchased a more robust software package to support our adaptive management evaluations.
	The evaluation of performance thresholds for adaptive management was not completed for all automated stations listed in the EMSAMPs.	Perform evaluation of performance thresholds for adaptive management for all relevant automated stations as outlined in the EMSAMP.	Quantitative evaluations when adaptive management triggers have been reached were initiated subsequent to the effective date of the audit. This information is available for review by interested parties in the August and September monthly reports. Additionally, VGC has recently purchased a more robust software package to support our adaptive management evaluations.
	Adaptive management responses were not clearly performed following exceedance of performance thresholds.	Implement and document the adaptive management responses if performance thresholds exceeded at relevant monitoring locations as outlined in EMSAMPs.	Adaptive management responses will be implemented as necessary and documented if performance thresholds are exceeded at relevant monitoring locations as outlined in the EMSAMP. This evaluation first considers whether the exceedances are attributable to Project influence (i.e., very high or low flows attributed to seasonally wet or dry periods).
	Full documentation of completion timelines and dates for key water management infrastructure not documented.	Include specific completion dates in annual reporting for all key water management components.	All key water management component completion dates will be documented in annual reporting. Completion timelines and dates were provided to the relevant regulatory agencies in as built reports submitted 60 days after infrastructure completion; however, review of this documentation was not within the scope of the audit.
Surface Water Quality	2018 Annual Report – Rationale for missing sample events	Include a footnote for each table describing missing data rationale (e.g., frozen water)	The observation provided by the auditor was not found again in response to their review of the 2019 annual report thus VGC considers this deficiency to have been resolved. VGC will continue to provide a rationale for missing sampling events, where applicable, in future annual reporting.
	2018 Annual Report – QA/QC results not described	Include text in the report body describing the results of the QA/QC program (e.g., number of QA/QC samples, summary of results, DQOs, and corrective actions for failed DQOs). Also include these data in the database (Appendix D) or tabulated form.	QA/QC program results including duplicates and total amount of QA/QC sampling will be included in future annual reports.
	2019 Annual Report – Water Quality Results	Include a tabulated form of all water quality data including QA/QC samples	Water quality data and QA/QC program results are provided in monthly water use licence reports. VGC does not consider the duplication of this information in annual reporting necessary.
	2019 Annual Report – QA/QC results not completely described	Include results of duplicate sample results as well as total amount of QA/QC samples collected and summarize data in a tabulated form.	QA/QC program results including duplicates and total amount of QA/QC sampling will be included in future annual reports.
	2019 Annual Report – Quality of plots	Improve quality of plots so axes can be read (Appendix F)	Diagrams in annual reporting will be reviewed for legibility.
	2019 Annual Report – Statistical and trend analysis	For WQO exceedances, the EMSAMP commits VGC to compare values to baseline to determine if any significant changes have occurred to the receiving environment water quality, complete a trend analysis, and include methods and results in the report. We recommend an adjustment to this commitment with the goal of an achievable exercise for this project (e.g.,	Quantitative evaluations when water quality objective adaptive management triggers have been reached were initiated subsequent to the effective date of the audit. This information is available for review by interested parties in the August and September monthly reports. Additionally, VGC has recently purchased a more robust software package to support our adaptive

Discipline	Compliance Gaps and/or Deficiencies	Recommendation/Corrective Action	VGC Response
		monitor over x number of sampling events to determine if it is a real change in water quality)	management evaluations. We will consider the recommendation to revise the way in which the data is analyzed.
	2019 Annual Report – Cyanide species	Include cyanate and thiocyanate in the analytical suite for compliance with EMSAMP 2019-01	ESAMP 2019-01 is no longer the active version of the Plan. Audit review of compliance with EMSAMP 2020-01 (which mimics WUL requirements) indicates that this matter has been resolved.
	2019 Annual Report – AMT Responses	The EMSAMPs requests VGC to describe in detail the AMT response for any AMT exceedances. As per the Water Management Plan, sampling frequency will increase accordingly (next higher order) to better characterize trends.	Section 3.2.5 of the audit references adaptive management reporting with respect to a discharge event in April 2019. A full, detailed report for this discharge including sampling approach and frequency was provided as an appendix to the 2019 annual report. The full review of this appendix was not within the scope of the audit and VGC believes sufficiently detailed information was provided and that the adaptive management approach was sufficient.
	2020 Monthly Reports – QA/QC	Report on QA/QC samples collected monthly and include results in the report body including laboratory QA/QC results. Frequency of QA/QC samples are to meet >10% ratio of QA/QC samples to total water quality samples. *(Stantec understands that currently, Field blanks are being collected and are documented in the 2020 monthly report water quality appendices.)*	QA/QC water quality samples are collected currently at a rate of >10% ratio to total water quality samples. VGC has reviewed summary information relating to QA/QC and site task programs contained within monthly reporting for the Wolverine Mine as a recent Yukon example (as these reports are completed by a third-party consultant on behalf of Yukon Government). Based on this review we will use this as a good example as one to follow in future reporting as necessary.
	2020 Monthly Reports – AMT Responses	For WQO and AMT exceedances, the EMSAMP commits VGC to compare values to baseline to determine if any significant changes have occurred to the receiving environment water quality, complete a trend analysis and include methods and results in the report. We recommend an adjustment to this commitment with the goal of an achievable exercise for this project (e.g., monitor over x number of sampling events to determine if it is a real change in water quality). We also recommend to include a detailed AMT response. As per the Water Management Plan, sampling frequency should increase accordingly (next higher order) to better characterize trends.	Quantitative evaluations when water quality objective adaptive management triggers have been reached were initiated subsequent to the effective date of the audit. This information is available for review by interested parties in the August and September monthly reports. For future reporting, we will consider the recommendation to revise the way in which the data is analyzed. Additionally, VGC has recently purchased a more robust software package to support our adaptive management evaluations.
Groundwater Quantity and Quality	Groundwater quantity and quality monitoring from some wells was performed less frequently than the schedule prescribed in the relevant EMSAMPs.	• A number of factors, including those beyond the control of VGC may result in a scheduled monitoring not being performed (e.g. weather, equipment malfunction, unsafe condition, construction, pandemic). The monthly and annual reporting needs to provide the rationale for missed monitoring in tabular format and if any corrective action will be taken. • The annual and monthly reporting should include the installation and decommission date, and operational status of monitoring wells. • A maintenance log should be maintained for any maintenance or repairs made to logs and reported in the annual report.	The rationale for missed monitoring events will be expanded upon in relevant monthly reports and in the annual report. VGC can include well installation, decommissioning and operational status in future annual reports. Maintenance records are currently maintained for groundwater wells and will be referenced in future annual reports as necessary.
	EMSAMP (2020-01, S. 4.5) states that groundwater levels will be compared to predicted (modeled) effects due to the loss of recharge in the HLF and WRSA. However, trends were not quantitatively compared with predicted (modelled) effect in the 2019 Annual Report or 2020 Monthly Reports. It is unclear if trends are consistent with the predicted thresholds or if the model requires calibration based on field observation.	• Compare measured groundwater levels to predicated effects in assessment. • Calibrate modeled adaptive management thresholds for groundwater quantity based on field observation.	VGC intends to complete quantitative comparison between observed and modeled groundwater levels in future annual reports. Given the level of effort to undertake such comparisons, and that the groundwater level data is collected quarterly, meaningful comparisons cannot really be made until full hydrologic cycle has occurred, thus quarterly comparisons are not believed to be necessary.
	EMSAMP (2020-01, S. 4.4) states that groundwater hydrographs will be compared with existing baseline data to assess potential change associated	Present further assessment of the change in groundwater quantity associated with the Project. The assessment would be strengthened if a list	VGC intends to complete quantitative comparison between observed and modeled groundwater levels in future annual reports.

Discipline	Compliance Gaps and/or Deficiencies	Recommendation/Corrective Action	VGC Response
	with the Project. The 2019 Annual Report in S. 3.4.3.1 presents a qualitative discussion of the observed changes in groundwater quantity associated with the construction and operation of mine. This discussion is not presented in the context of modelled effect or groundwater quantity indicators.	of groundwater quantity indicators and associated triggers were developed and utilized in the operation stage.	VGC acknowledges that adaptive management thresholds still need further development and will endeavor to complete this work for use in 2021.
	EMSAMP (2020-01, S. 5.2) presents groundwater quality parameters to be analyzed in the monitoring program. Review of groundwater quality records in the 2019 Annual Report suggests some samples were not analyzed for the full suite of parameters.	• Review water licence conditions and lab records to confirm if required parameters were analyzed. • Include all analyzed parameters and lab reports in annual reporting.	At the time of the preparation of this response, VGC had not clarified with the auditor which parameter(s) had been omitted in the suite of parameters analyzed at reported on for 2019. VGC will ensure that all future groundwater quality samples are analyzed for the parameters required by the WUL conditions and the EMSAMP and that laboratory data is reported in future annual reports.
	• EMSAMP (2020-01, S. 5.3.2 and 5.3.3) describes the field QA/QC program for groundwater quality monitoring, which includes collection and analysis of trip blanks, field blanks and duplicates. • The 2019 Annual Report does not present information on the implementation of the QA/QC program. Appendix K of the 2019 Annual Report (Groundwater Quality Data) does not contain records of the QA/QC samples.	Present information on the implementation of the field QA/QC program and the results of the QA/QC program in the annual reports.	Groundwater quality QA/QC data results will be included in annual reporting.
	EMSAMP (2020-01, S. 5.3.3) states that plots of concentrations of regulated constituents and key indicator parameters versus time will also show applicable standards and baseline concentration. Plots in the 2019 Annual Report do not contain the applicable standards and baseline concentration.	Present applicable standards and baseline concentration in the groundwater water sample constituent concentration plots for the annual report.	Applicable standards and baseline concentrations will be included in the groundwater constituent concentration plots in future annual reports.
	EMSAMP (2020-01, S. 5.4.1) describes that trends in groundwater quality will be examined to potentially inform management actions. The existing analysis of the water quality trend in the 2019 Annual Report contains discussion of the trend but in some cases does not provide rationale for the observed trends.	• Present groundwater quality trend analysis in monthly and annual reporting to confirm that trends are being monitored appropriately. • Present groundwater quality trend assessment in the context of baseline water quality and predicted effects of the Project. • Provide greater logical link between discussion of observed groundwater quality trend and proposed adaptive management actions (e.g. no action).	VGC intends to complete quantitative comparison between observed and baseline groundwater quality trends in future annual reports. VGC acknowledges that adaptive management thresholds still need further development and will endeavor to complete this work for use in 2021.
Geochemistry	2018 Annual Report – QA/QC samples	Collect duplicate samples of construction monitoring samples and include discussion of results including relative percent differences in report body and append dataset.	Total QA/QC samples endeavor to be equal or greater to 10%, relative to project samples. Certain programs may have more or less than this general overall target. QA/QC duplicate samples for construction material geochemical analysis will be conducted and reported in the annual report.
	2018 Annual Report – Report NPR values	Report NPR values in addition to NP:AP for better interpretation of results. This was corrected in the 2019 Annual Report.	No further action necessary.
	2018 and 2019 Annual Report – Sample type description	Include details on the material sample collected (i.e., surficial, or bedrock) and why these samples were collected (i.e., 1 per 100,000m^3 material moved or distinct geological unit).	Material sample information will be included in future annual reports.
	2018 Annual Report – Appended analytical data	Include all analytical data in appendices. Missing: acid base accounting, rinse pH, and electrical conductivity.	Analytical data, including ABA, rinse pH and EC, are currently provided in monthly reporting. This data is also provided to a third-party consultant responsible for the development and assessment of source term chemistry for the site water quality model. Submission of this information is thus considered by VGC to be sufficient.
	2019 Annual Report – Appended analytical data	Include field barrel analytical data in appendices.	Analytical data, including the field barrel data, are currently provided in monthly reporting. This data is also provided to a third-party consultant responsible for the development and assessment of source term chemistry

Discipline	Compliance Gaps and/or Deficiencies	Recommendation/Corrective Action	VGC Response
			for the site water quality model. Submission of this information is thus considered by VGC to be sufficient.
	2019 Annual Report – QA/QC samples	Collect duplicate samples of construction and operational monitoring samples, include discussion of result (including relative percent differences) in report body, and append dataset.	Total QA/QC samples endeavor to be equal or greater to 10%, relative to project samples. Certain programs may have more or less than this general overall target. QA/QC duplicate samples for construction material geochemical analysis will be conducted and reported in the annual report.
	2019 Annual Report – Details of blast rounds	Include details of blast rounds so compliance with EMSAMP can be evaluated. Include geological logs of blast holes.	Geological logging of blast hole composites will be undertaken, and provided in annual reports, as considered in the EMSAMP. This will not be completed for each blast hole, but on a representative basis
	2019 Annual Report – Monthly seep sample survey	Include details of monthly seep sample survey in report.	Monthly surveys of the WRSAs are undertaken during normal stacking operations for the facilities and as a component of the physical stability inspection program. To date, there has been no report of the development of seeps which is to be expected given the configuration of the active dump (the Platinum Gulch WRSA) being only in the upland section of the drainage where groundwater levels are not near surface.
	2019 Annual Report – Shake flask extraction size fraction	Check with off-site laboratory (ALS) if shake flask extraction is conducted on <2mm and <1cm size fraction.	Analytical methods will be confirmed with external laboratory to confirm that the methods are as proposed in the EMSAMP.
	2020 Monthly Reports – QA/QC samples	Collect duplicate samples of construction monitoring samples and include discussion in report body and append dataset. For operational samples, include relative percent differences and discuss results in the report body. Consider re-naming duplicate samples to not include parent sample name. Explicitly describe which samples are duplicates of respective parent sample.	Total QA/QC samples endeavor to be equal or greater to 10%, relative to project samples. Certain programs may have more or less than this general overall target. RPDs and QA/QC results will be discussed in future annual reporting. The naming convention that VGC has adopted for QA/QC samples has met our needs and will continue.
AQUATIC ENVIRONMENT			
Stream Sediment	Field methods – use of stainless-steel trowel to collect samples	Samples collected for analysis of metal concentrations should be collected with plastic utensils to avoid potential contamination	To date, the execution of the stream sediment field program has been undertaken by an independent qualified third party. VGC will discuss the methods proposed in the EMSMAP and actually used for the field programs to ensure that an appropriate utensil is used. In the event that an update to the EMSAMP is warranted in the future, the sampling method will be updated as necessary.
	Field methods – out of date field method guidelines	Methods should be consistent with updated BC Field Sampling Manual from 2020 and with BC's "Water and Air Baseline Monitoring Guidance Document for Mine Proponents and Operators" (BC MoE 2016)	To date, the execution of the stream sediment field program has been undertaken by an independent qualified third party. VGC will discuss the methods proposed in the EMSMAP and actually used for the field programs to ensure that appropriate methods are used. In the event that an update to the EMSAMP is warranted in the future, the sampling methods will be updated as necessary.
	Field methods – site documentation	Water depth, sediment texture and color, and presence of debris, biofilms, odours, or sheens should be described at each site. Sites should be photographed showing upstream, downstream, obliques, banks, riparian vegetation, and substrates	
	Lab methods – screening equipment	Laboratories should be required to screen sediment samples for particle size distribution and <63 µm fraction using non-metallic screens to avoid potential contamination	The lab certificates for stream sediment samples acknowledge that the correct screen size has been utilized but does not state the material that the screen is made from. VGC will raise this matter with the third party engaged to complete the stream sediment monitoring to ensure that industry standard practices are followed.
	Reporting – units	Clearly document that guidelines and concentrations are reported as dry or wet weight	Future reporting will document whether the guidelines and concentrations reported are dry or wet weight.

Discipline	Compliance Gaps and/or Deficiencies	Recommendation/Corrective Action	VGC Response
	Reporting - guidelines	Sediment quality guideline for selenium is only an “alert” concentration and not a working sediment quality guideline	Noted.
	Reporting - guidelines	Clearly indicate whether guidelines for specific parameters are from CCME and/or BC WQG	Future reporting will clearly indicate specific guideline sources.
	Reporting – detection limits	Reports should identify results that are below detection limits (e.g., boron and silver)	Future reporting will identify whether results are below detection limits.
	QA/QC – field methods	Clearly document the field QA/QC procedures followed	QA/QC field procedures will be included in final reports as appropriate or indicate that this information can be provided upon request.
	QA/QC – field duplicates	Every third or fifth sample should be “field split” to assess sampler and laboratory QA/QC as per BC MoE 2016	To date, the execution of the stream sediment field program has been undertaken by an independent qualified third party. VGC will discuss the QA/QC proposed in the EMSMAP and actually used for the field programs to ensure that appropriate QA/QC approach is used.
	QA/QC – laboratory detection limits	Reports should describe instances where laboratory detection limits are not ≤ 1/5th of the respective sediment quality guideline or ≤ 1/5th of the lowest background concentration	
	Reporting – lack of statistical analyses	Reports should include statistical comparison of data to pre-construction baseline data as required by EMSAMP	VGC will evaluate how best to conduct statistical comparisons with pre-construction baseline data as a component of future stream sediment sampling programs.
	Reporting – lack of discussion of need for adaptive management due to PEL exceedances for arsenic	Conduct statistical analyses comparing contemporary and pre-construction data to identify any significant differences and conduct arsenic speciation analyses on future stream sediment samples	
Benthic Macroinvertebrates	Study design – insufficient sites in reference or upstream areas as per EEM guidance	Identify and begin sampling in second reference stream to bring the number of unaffected sites up to 5 as recommended in Environment Canada’s EEM guidance; a minimum of three reference sites are recommended in BC’s Water and Air Quality Baseline Monitoring Guidance Document. (*Stantec understands that VGC is currently preparing an Environmental Effects Monitoring plan for submission to Environment and Climate Change Canada in 2021 that will address this recommendation.)*	VGC became subject to ECCC’s EEM Sampling program requirements in April 2019 (with the first site discharge) requiring an EEM Study to be submitted in April 2020, with study implementation planned for 2021. VGC is currently finalizing an EEM Study Design in compliance with ECCC’s technical guidance that will address this recommendation.
	Study design – number of appropriate replicate numbers is unknown	Conduct power analysis on existing data to determine the number of replicate samples required to provide sufficient data to determine statistically significant differences between sites and between years given known variability in benthic communities. Without a power analysis, the default number of replicates per site should be increased to 5. (*Stantec understands that VGC is currently preparing an Environmental Effects Monitoring plan for submission to Environment and Climate Change Canada in 2021 that will address this recommendation.)*	
	Field QA/QC procedures – no *a prior* criteria for sample appropriateness as required by EEM	Develop *a priori* criteria and apply to next survey (*Stantec understands that VGC is currently preparing an Environmental Effects Monitoring plan for submission to Environment and Climate Change Canada in 2021 that will address this recommendation.)*	
	Lab QA/QC procedures and results – not provided in report or appendices	Provide lab QA/QC procedures and results in appendix	A summary of lab QA/QC procedures will be provided in future annual reports and results will be provided upon request.
	Data analysis - Missing community metrics required in EMSAMP (i.e., family density and richness, Simpson’s evenness, and Bray-Curtis)	Include all community indices identified in EMSAMP	Appropriate community metrics will be provided based on the results obtained from EEM studies.

Discipline	Compliance Gaps and/or Deficiencies	Recommendation/Corrective Action	VGC Response
	Data analysis – missing statistical analyses comparing sites and contemporary data to pre-construction data	Conduct the required ANOVAs and multiple comparison tests as required by EMSAMP (e.g., append appropriate statistical analyses in excel format) and EEM for BACI study design. (*Stantec understands that VGC is currently preparing an Environmental Effects Monitoring plan for submission to Environment and Climate Change Canada in 2021 that will address this recommendation.)*	VGC is currently finalizing an EEM Study Design in compliance with ECCC's technical guidance that will address this recommendation.
	Reporting – only qualitative comparisons between sites and years discussed	There is sufficient data from sites and between years to conduct quantitative statistical analysis to determine significant difference between impact and reference sites and trends between years.	As stated in the EMSMAP, the current aquatic environment monitoring program is considered interim until the finalization of the EEM study design. As stated in section 3.5.2.2, statistical analyses are planned in 2021 after the completion of the first EEM study year.
	Reporting – no discussion of need for adaptive management actions; no statistical analyses performed to inform adaptive management	Discuss adaptive management considering quantitative analysis of site data and trend analysis	VGC will work with third party consultants engaged to prepare reports on our behalf to ensure that statistical analyses are performed as necessary to inform adaptive management.
	Reporting – no indication that results are site averages in the tables	Clearly identify what data in tables represents	VGC will work with third party consultants engaged to prepare reports on our behalf to ensure that tables in final reporting clearly indicate the type of data presented.
	Reporting – no reference for Pacific Salmon Federation rating of "good quality" based on EPT taxa in the 2018 annual report	Provide all references in report	VGC will discuss this matter with the author of the report and follow up with the auditor as necessary. The referenced section appears to list the Pacific Stream Keepers Federation document with "DFO" listed as the source and the refence being "Stream Keepers Module 4 Stream Invertebrate Survey. Stewardship Series. British Columbia." thus the concern is unclear at this time.
	Reporting – incorrect identification of "fair" based on HBI to Site W26 in 2018 annual report	Incorporate quality and independent review into reporting structure	Quality reviews of final reports are included through consultant and VGC report production. If future audits identify additional review issues, VGC will consider engaging alternate consultant support to ensure reports are sufficiently prepared.
	Reporting – no analysis or discussion of environmental variables, fish results, or outlier effects on benthic invertebrate results as required by EMSAMP	Discuss all requirements of the EMSAMPs in the annual reports.	Benthic invertebrate study results will be incorporated into the fish studies as supporting information (as an indication of overall health of system from keystone species condition).
Fish and Fish Habitat	Field methods - Fish and fish habitat surveys conducted in September instead of July or August when fish communities are likely more stable and fish sampling is more efficient	Although not a deficiency of the annual monitoring programs, sampling should be conducted in summer when fish community is most stable and sampling efficiency is highest.	VGC environmental staff have conducted fish studies in collaboration with Aquatic Biologists familiar with the regional area and fish community habits and will continue to rely on their expertise, and that of our own field staff, with respect to the most appropriate time of year to conduct sampling.
	Field methods – fish condition was not documented as required by the EMSAMPs	Conduct external examinations and fill in standardized necropsy form for each fish or sub-sample of fish of each species captured	VGC is currently finalizing an EEM Study Design to be in compliance with ECCC's technical guidance which currently includes an assessment of the external condition of each fish with standard necropsy observations.
	Field methods – single pass open sites	Although not required by the EMSAMPs and not a deficiency of the annual monitoring programs, multi-pass depletion estimates in closed sites would provide more accurate and repeatable results and be better for long-term monitoring and statistical analyses	VGC has historically conducted Catch Per Unit Effort (CPUE) sampling procedures, due to the low population numbers typical of the local stream systems. VGC is currently finalizing an EEM Study Design in compliance with ECCC's technical guidance that will address this recommendation.
	Field methods – insufficient numbers of fish captured for EEM program at current effort levels	Although not specified in the EMSAMPs, a minimum of 100 fish is required for non-lethal sampling according to EEM technical guidance. Sampling in summer and using multi-pass electrofishing methods may increase numbers of fish available for capture	CPUE can be used to justify lower catch. Streams in the project area have low density of fish and with high effort required

Discipline	Compliance Gaps and/or Deficiencies	Recommendation/Corrective Action	VGC Response
	Reporting – no mention of need for fish tissue study	Even if no mine effluent discharge occurred, reports should indicate whether a fish tissue study is required or not as part of MDMER monitoring; the EMSAMP indicates that a fish tissue study is required if the concentration of effluent in the exposure area was >1% in the area within 250 m of the final discharge point but the 2019 annual report did not indicate if this criterion was met. (*Stantec understands that VGC is currently preparing an Environmental Effects Monitoring plan for submission to Environment and Climate Change Canada in 2021 that will address this recommendation.)*	Data obtained to date indicate that mercury and selenium concentrations were below the EEM triggers for conducting applicable fish tissue surveys as defined in the MDMER. Therefore, VGC is not required to conduct either a fish tissue mercury or selenium survey.
	Reporting – no recommendation for indicator fish species for future EEM program	Although not required by the EMSAMPs, the authors should provide a recommendation for a suitable indicator fish species for monitoring potential effects of future mine effluent discharges. Given the fish community present at the site, slimy sculpin would appear to be at least one of the indicator species chosen for future EEM programs. (*Stantec understands that VGC is currently preparing an Environmental Effects Monitoring plan for submission to Environment and Climate Change Canada in 2021 that will address this recommendation.)*	VGC became subject to ECCC's EEM Sampling program requirements in April 2019 (with the first site discharge) requiring an EEM Study to be submitted in April 2020, with study implementation planned for 2021. VGC is currently finalizing an EEM Study Design in compliance with ECCC's technical guidance that will address this recommendation.
	Reporting – no mention of adaptive management trigger or threshold exceedances	Reports should specify whether any of the adaptive management thresholds in the EMSAMPs were exceeded and if any of the adaptive management measures were required and implemented each year	VGC is currently finalizing an EEM Study Design in compliance with ECCC's technical guidance that will address this recommendation. Any quantitative analysis conducted will inform on adaptive management strategies and be reported in annual reporting.
TERRESTRIAL ENVIRONMENT			
Vegetation and Soils	N/A	Develop statistically-based trigger for determining 'significant' increases in metals (arsenic, cadmium, chromium, mercury and lead) concentrations in vegetation plot samples.	VGC will work the third-party contractor engaged for sampling and reporting on the vegetation monitoring program and will develop statistically based triggers for determining significance that can be used in future reports.
	Missing duplicate vegetation sample analysis in 2018 and 2019	Collect duplicate samples if sufficient vegetation is available	QA/QC duplicate samples are collected if sufficient vegetation is available.
Wildlife Protection	Specific information on wildlife incidents is not provided in the Wildlife Records Program	Provide a summary of all wildlife incidents resulting in human-wildlife conflict, wildlife fatality or removal, or nest disturbance in the annual reports along with a summary of the root cause(s). Any corrective actions should be documented.	A summary and resulting corrective actions of all wildlife incidents resulting in human-wildlife conflict, wildlife fatality or removal, or nest disturbance will be included in the annual reports. This data and information are also currently provided in quarterly wildlife reports provided to EMR.
	There is no formal documentation of the wildlife protection monitoring in the Heap Leach Facility Area and Events Pond Monitoring Program	Include the results of the monitoring program in the annual report or in a separate report.	To date, there has only been one wildlife related incident related to the HLF and Events Pond. The findings from this incident have been provided to the appropriate Conservation Officer and in the pertinent quarterly wildlife report provided to EMR. Summaries of the wildlife monitoring program will continue to be provided to EMR by way of quarterly wildlife reports and in future annual reporting.
GEOTECHNICAL STABILITY OF INFRASTRUCTURE AND FACILITIES			
Permafrost	Regular visual Inspections not reported.	Include an appendix in Annual and Monthly reporting that summarizes the observations from regular visual inspections to identify and quantify any deformation associated with melting of permafrost, such as but not limited to, cracks, subsidence, sinkholes, and sloughing on existing foundations and slope overlay permafrost. Summarize those visual inspections executed during the freshet, prolonged rainy periods, and rising trend in any thermistors.	Infrastructure monitoring including permafrost will continue to be summarized in annual reporting. Geotechnical stability of major infrastructure is also considered in the annual independent physical stability inspection conducted to fulfill conditions in the Quartz Mine Licence. Areas of specific concern identified by the independent third party (note - no significant concerns have been raised to date) will be specific focus areas for VGC operational staff.

Discipline	Compliance Gaps and/or Deficiencies	Recommendation/Corrective Action	VGC Response
	Prolonged rainy period not quantified.	Define / quantify duration of a prolonged rainy period based on exceedance of design criteria (duration, precipitation volume).	The design basis for various infrastructure adjacent to permafrost includes concepts for short term rain events (i.e., 100 yr 24-hr) and long term (monthly) conditions as evaluated using water balance models that consider upset conditions (including sustained rainy periods). These considerations are already reflected in the design and capacity for each structure. For natural terrain, such as permafrost, a subjective analysis focusing on actual observed effects of rainy periods on the terrain is better suited to evaluate terrain stability. Thus, this recommendation is not considered necessary.
	Freeze/Thaw indices not reported under EMSAMP -2018-01.	Corrective action no longer required because Weather Data Review requirement removed from EMSAMP monitoring program starting June 2019 (EMSAMP 2019-01 and 2020-01).	Noted.
	Thermistor GT18-09 not read in Q3 of 2019	Provide reasoning for missed reading.	While VGC endeavors to fulfill all EMSAMP listed sampling, occasionally samples are missed based on adverse weather conditions or department resource constraints. Future annual reports will include reasoning for missed readings.
Open Pit	Daily visual inspections not reported.	Include an appendix in Annual and Monthly reporting that summarizes the observations from these daily visual inspections.	Infrastructure monitoring including the open pit is conducted regularly and will continue to be summarized in annual reporting.
	Monthly collection of survey prism data not reported.	Stantec understands there are currently no active prisms installed at the open pit, and VGC is implementing a program scheduled for 2020 to install up to 15 prisms on the1408, 1375, and 1395 benches. Following prism installation, include in Annual and Monthly reports a list of active survey prisms with coordinates (northing, easting, elevation) and deformation readings.	VGC has scheduled installation of survey prism within the pit benches over the winter of 2020/2021. Resulting data will be included in future annual reporting.
	Piezometers read quarterly instead of monthly in 2018 as required in EMSAMP 2018-01.	Corrective action not required since the piezometer reading frequency is specified as quarterly in subsequent EMSAMP 2019-01, superseding the 2018 requirement and bringing the piezometer reading schedule into compliance.	Noted.
	Scheduled piezometer readings for Q1 2020 not collected due to COVID-19 related staffing issues.	Assess if datalogger installed in Open Pit piezometer BH-BGC11-73a,b,c collected and stored data for Q1 2020. For remaining piezometer(s), collect data as soon as reasonably practical and provide reading summary or reasoning for data gap in Annual reporting.	Data collection and rationale for missed samples will be included in future annual reporting.
	Piezometer data not collected in Q2 2020.	Assess if datalogger installed in Open Pit piezometer BH-BGC11-73a,b,c collected and stored data for Q2 2020. For remaining piezometer(s), collect data as soon as reasonably practical and provide reading summary or reasoning for data gap in Annual reporting.	Data collection and rationale for missed samples will be included in future annual reporting. Note that BH-BGC11-73a,b,c was decommissioned in early 2020 during open pit advancement, therefore there was no data to collect.
	Piezometers listed in EMSAMP documentation without reported water tables.	Provide reasoning for piezometers with absence of documented water table readings.	All data collection and rationale for missed samples will be included in annual reporting.
	Data for two (2) extensometers installed at open pit not reported.	The EMSAMP documents do not lay out a minimum required monitoring frequency for extensometers installed at the open pit. A qualified personnel should determine a reading frequency for these instruments and should be summarized in the annual reports and compared against established velocity trigger levels.	The implementation of monitoring strategies and instrumentation is ongoing and future annual reports will provide relevant information as it becomes available. The discussion provided in the EMSAMP was intended to provide context for overall environmental monitoring on the site only. Observation of pit wall stability is undertaken by qualified personnel on the mine site on a regular and frequent basis.
	Multiple instrumentation listed in EMSAMP documentation that is not currently installed on site (robotic theodolites, TDR cables, slope inclinometers, fixed slope radar, mobile slope radar).	Remove from EMSAMP documentation reference to instrumentation not installed (or planned for installation) on Open Pit.	Instrumentation proposed for the observation of facilities was intended to be understood to develop over time. The implementation of monitoring strategies and instrumentation is ongoing and future annual reports will

Discipline	Compliance Gaps and/or Deficiencies	Recommendation/Corrective Action	VGC Response
			provide relevant information as it becomes available. The discussion provided in the EMSAMP was intended to provide context for overall environmental monitoring on the site only.
	Equipment maintenance logs were not provided to back-up data reported in monthly/annual reports.	Provide equipment maintenance logs as supporting documentation to monthly/annual reports.	A summary of relevant equipment maintenance logs will be included in future annual reports and will be made available upon request.
Materials Storage and Stockpile Management	Visual inspections (daily, weekly, monthly) not reported.	Include an appendix in Annual and Monthly reporting that summarizes the observations from these visual inspections.	Future annual reports will include a summary of material storage and stockpile monitoring undertaken the previous year. Additionally, the annual independent third-party inspection, provided to EMR, includes observation of material storage and stockpile areas.
	Not all WRSA and stockpile piezometers as listed in EMSAMP 2020-01 have water levels reported in June 2020 monthly report.	Confirm list of active piezometers installed in WRSA and stockpiles, include data in monthly and annual reports. Provide reasoning behind non-documented groundwater tables.	Available data from relevant monitoring instrumentation is provided in monthly and annual reports. Additional installations proposed for the operations period of the mine have been impacted by COVID-19 travel restrictions. The planned installations will take place when travel and site restrictions allow.
	Multiple instrumentation listed in EMSAMP documentation that is not currently installed on site (Survey Prisms, Inclinometers, Radar / photogrammic surveying).	Remove from EMSAMP documentation reference to instrumentation not installed (or planned for installation) on WRSA and stockpile structures.	Instrumentation proposed for the observation of facilities was intended to be understood to develop over time. The implementation of monitoring strategies and instrumentation is ongoing and future annual reports will provide this information as it becomes available
	Existing monitoring methods (wireline extensometer) implemented on site do not state a monitoring frequency.	VGC should consider discrete reading frequencies for wireline extensometers, specify in EMSAMP documentation.	Monitoring of material storage and stockpiles provided in the EMSAMP is to provide overall context for site inspections and management. Details regarding frequencies for monitoring these facilities are considered in plan outside of the scope of the audit and standard operating procedures followed at the project site. Inclusion of this level of detail in the EMSAMP is not considered appropriate as it is not an environmental monitoring function.
	Follow up and close out of physical stability recommendation 4 and 5 not documented in annual or monthly reports.	Provide documentation detailing the follow up and response actions for addressing recommendations.	The physical stability inspection is conducted on an annual basis and the selected firm utilizes previous reports to describe activities undertaken by VGC to address previously identified issues and whether a concern remains. Any facility that requires major construction or maintenance to address performance issues will have follow up documentation included in the annual report as required by the QML and WUL.
Heap Leach Facility	Routine (visual) inspections (daily, weekly) not reported.	Include an appendix in Annual and Monthly reporting that summarizes the observations from these visual inspections.	Visual inspections for the HLF are part of routine operations. This information is provided to the EOR for the facility which is then used for their third-party reporting and as design input for subsequent phases of the HLF. VGC considers this approach more appropriate than providing raw inspection data as a component of EMSAMP reporting.
	Embankment Piezometers P1, P2, P3 appear to be collecting data continuously but data not reported monthly.	Provide continuous data plots of embankment piezometers P1, P2, P3 in monthly reports. Include these instruments in next EMSAMP revision.	Piezometers installed in the HLF are recording data continuously and this information will be provided in future annual reports
	Partial reporting of piezometer readings as listed in EMSAMP 2019-01 in 2019 annual report.	Confirm HLF piezometers as listed in EMSAMP 2019-01 are reporting groundwater readings, include in monthly and annual reporting. Provide reasoning for missing groundwater level readings.	Piezometers installed in the HLF are recording data continuously and this information will be provided in future annual reports
	Partial reporting of piezometer readings as listed in EMSAMP 2020-01 in June 2020 monthly report.	Confirm HLF piezometers as listed in EMSAMP 2020-01 are reporting groundwater readings, include in monthly and annual reporting. Provide reasoning for missing groundwater level readings.	Piezometers installed in the HLF are recording data continuously and this information will be provided in future annual reports.
	Existing monitoring methods (slope inclinometer casing) implemented on site do not state a monitoring frequency.	VGC to consider discrete reading frequencies for slope inclinometer casing, specify in EMSAMP documentation.	Monitoring frequencies are evaluated on a case by case basis depending on overall assessment of the facility and daily observations made by the general foreman. Discrete (or absolute) reading frequencies are not recommended.

Discipline	Compliance Gaps and/or Deficiencies	Recommendation/Corrective Action	VGC Response
	Follow up and close out of physical stability recommendation 3 not documented in annual or monthly reports.	Provide documentation detailing the follow up and response actions for addressing recommendation.	The physical stability inspection is conducted on an annual basis and the selected firm utilizes previous reports to describe activities undertaken by VGC to address previously identified issues and whether a concern remains. Any facility that requires major construction or maintenance to address performance issues will have follow up documentation included in the annual report as required by the QML and WUL.
OTHER PLANS			
Solid Waste and Hazardous Materials Management	No recommendation		
Spill Response	No recommendation		

APPENDIX R

Eagle Gold Project Annual Physical Stability Assessment Report

2011 PG Pulpmill Road, Prince George, BC, V2L 4V1 Phone: 250-614-7291

Allnorth Information		VICTORIA GOLD CORP.	
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Document Description

Annual Physical Stability Assessment Report – Victoria Gold – Eagle Gold Project

Project Description:

Visual inspection of the following structures: Open Pit, Platinum Gulch Dump, Lower Dublin South (Control) Pond, Secondary Crusher, Primary Crusher, Secondary Stockpile, Adsorption, Desorption and Recovery Plant, Heap Leach Facility, Events Pond, Ditches A, B, and C, Former Nuway Crusher Pad, Orica Laydown, Various Un-named Stockpiles.

REVISION HISTORY

Revision	Status	Date	Prepared By	Checked By	Approved By	Description of Revision
A	IFR	20/10/06	SBB	DW	DW	Issued for Review
0	IAF	20/10/26	SBB	DW	DW	Issued as Final
1	IAF	20/12/15	SBB	DW	DW	Issued as Final

Status:

PRE	- Preliminary	IFP	- Issued for Procurement
IFR	- Issued for Review and Comment	IFC	- Issued for Construction
IFA	- Issued for Approval	AB	- As Built
IFQ	- Issued for Quotation	IAF	-Issued as Final

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1 BACKGROUND

In September, 2020, Allnorth Consultants Limited (Allnorth) was retained by Victoria Gold Corp. (VGC) to conduct a visual physical stability assessment of their Eagle Gold mining operation located in Mayo Mining District, Yukon, Canada in support of Quartz Mining License QML-0011. Spencer Bergin, EIT of Allnorth conducted the inspection on September 23rd and 24th. The inspection was limited to visual inspection and did not include any specific geotechnical or structural testing or evaluation. Visual inspection generally consisted of traversing the structures on foot, and viewing the structures in their entirety from accessible vantage points. Any issues that were discovered were investigated and documented with detailed notes and photographs. The Allnorth inspector was given complete freedom in determining what to look at, and was not restricted access to any locations within the site. Conditions on site were clear for inspections though the on-site representative indicated that there had been heavy rain recently and through-out the summer.

Allnorth previously completed similar inspections in September of 2019 and 2018. Some photos taken during these inspections were used for comparison. Some areas had no basis for comparison, as construction was underway during the previous inspection, and has since been completed. Any photos included from the previous 2019 and 2018 inspections are noted.

The mining project was currently extracting, storing, processing, and refining ore at the time of inspection. Construction of all major infrastructure has been completed and development of successive phases of the Heap Leach Facility (HLF), open pit mine and waste rock area expansion continue. A few remaining areas are under construction or will be further developed within the next year such as Ditch A and B. As the project is in the early stages, historical records for survey data are limited to certain facilities at this time. As more survey data is collected and made available this can be used for stability monitoring and will likely become part of the physical stability assessment in the future.

2 SCOPE

This report outlines the findings of the physical stability assessment conducted from September 23rd-24th of 2020. This report documents the findings of the physical stability assessment and makes recommendations for remediation, additional inspection or monitoring of the issues identified. The following structures were included in the assessment:

- Lower Dublin South (Control) Pond and outfall,
- Secondary Stockpile (also known as 90 Day Stockpile),
- Heap Leach Facility,
- Open Pit
- Platinum Gulch Dump
- Cut and fill slopes of the Primary, Secondary, and Tertiary Crushers including MSE walls,
- Cut and fill slopes of the Adsorption, Desorption and Recovery Plant,
- Events Pond,
- Ditches A, B, and C,
- Former Nuway Crusher Pad,
- Orica Laydown,
- Various un-named stockpiles

The purpose of the inspection is to identify any visual indicators associated with instability of mass earth structures, including but not limited to tension cracking, bulging, pooled water above the slope or near the toe of the slope, falling material, indications of creep, slumps, deposits of debris, or cracking in bedrock. Additionally, constructed slopes were reviewed for slope angles and compared against the recommend slope angles for known material types on site. Refer to **Appendix A** for a map showing the site plan for the 2020 inspection. A site plan for the 2019 inspection is available in **Appendix B** for comparison. A site plan for the 2018 inspection was not available.

3 LOWER DUBLIN SOUTH (CONTROL) POND

3.1 Diversion Ditch Overflow

Some minor pooling of water was noticed at the shed which houses the junction of pipes and is adjacent to the rip-rapped groundwater diversion ditch (Figure 1), no other items noted. Site noted that there was above average rainfall throughout the summer and leading up to the site visit which may have lead to this and other instances of pooling water on site. There is an outlet sump and weir which were constructed between the 2018 and 2019 inspections; no issues noted (Figure 2).



Figure 1: LDSP – Pooling adjacent to Shed and Diversion Ditch



Figure 2: LDSP – Outlet Sump and Weir

3.2 1500mm Spillway Outlet Culvert

1. The condition of this culvert appears to be the same compared to the previous years inspections (Figures 3 and 4). No water was observed flowing through the culvert in the 2018 and 2019 inspections but a steady flow was observed for this inspection (Figure 5). No concerns noted.

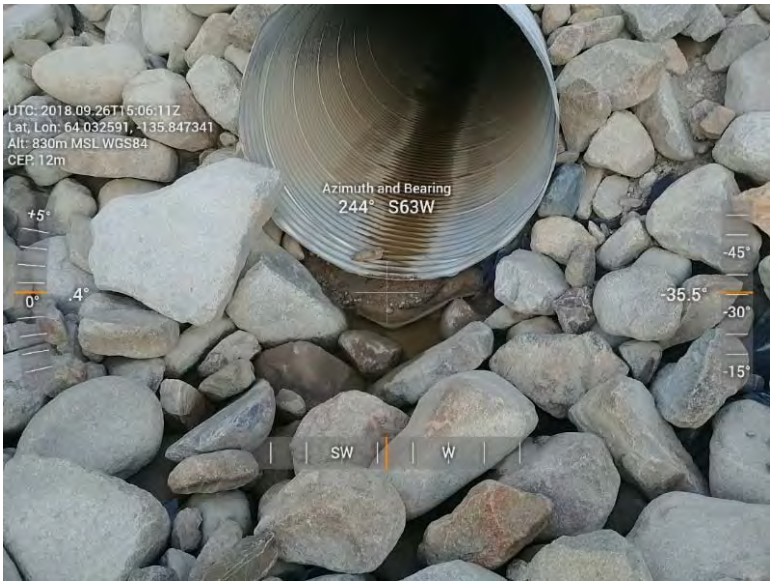

Figure 3: LDSP - 1500mm Culvert 2018 Inspection



Figure 4: LDSP - 1500mm Culvert 2019 Inspection



Figure 5: LDSP - 1500mm Culvert 2020 Inspection

3.3 Cut slopes

1. Some saturated material and erosion was noted on the slope of the southwest corner of the Control Pond over the width of the narrow access road in 2019 (Figure 6) and does not appear to have been completely rectified as of this inspection (Figure 7). Water flowing down Ditch A may be leaking into the fill in this area. There was some flow into this area from a culvert crossing a former construction access road, which was observed in 2019 (Figure 8) and still present as of this inspection (Figure 9). This area will be included in the Ditch A remediation effort which was observed to be underway in other areas during the site inspection. This would include lining and armoring Ditch A.



Figure 6: LDSP – Erosion on the Southwest slope 2019



Figure 7: LDSP – Erosion on the Southwest slope 2020



Figure 8: LDPS – Some flow from adjacent culvert 2019



Figure 9: LDPS – Some flow from adjacent culvert 2020

4 SECONDARY STOCKPILE

4.1 Benches and Cut Slopes

1. The Secondary Stockpile (also known as the 90 Day Stockpile) was under construction in 2019 (Figure 10) and was completed by the time of this inspection (Figure 11). Some over-steepened cut slopes were observed in the 2019 inspection (photos unavailable) however they appear to have been addressed as of this inspection (Figure 12).



Figure 10: Secondary Stockpile under construction 2019



Figure 11: Secondary Stockpile completed 2020



Figure 12: Secondary Stockpile Cut Slopes 2020

4.2 Perimeter Interception Ditch

1. A perimeter interception ditch extends around the downhill toe of the Secondary Stockpile area (Figure 13 and Figure 14). The construction of this ditch is not yet complete, as it is currently un-lined with no rock armoring, and is founded on native soils, and over-steepened and sloughing in places.



Figure 13: Perimeter Ditching



Figure 14: Perimeter Ditching

2. In one location some pooling of water has occurred as it appears that the final grade has not been completed (Figure 15).



Figure 15: Pooling water in perimeter ditch

3. The outlet of one side of the perimeter ditch does not currently tie into the collection sump (Figures 16).



Figure 16: Unconnected Ditch Section

4. The Secondary Stockpile perimeter ditch eventually ties into Ditch A, with part of the connecting ditch blocked by a buried culvert. This is noted in Section 12 – Ditch A.

5 HEAP LEACH FACILITY

The Heap Leach Facility (HLF) is currently operational. In 2019 the Phase 1A expansion had been constructed as shown in Figure 17. By the time of the 2020 inspection the Phase 1B expansion was largely complete with placement of overliner drain fill and PLS collection piping ongoing as shown in Figure 18.



Figure 17: Heap Leach Facility Overview 2019

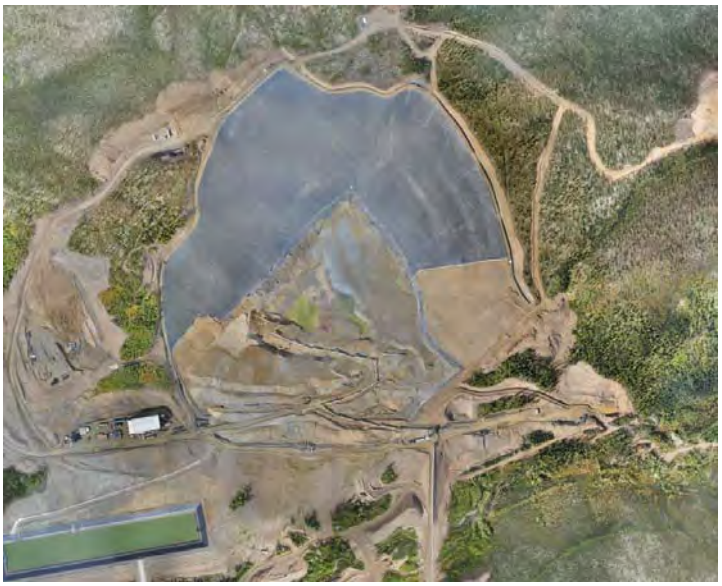

Figure 18: Heap Leach Facility Overview 2020

5.1 Toe Slope

1. Some scouring and rilling noted along the toe slope below the HLF and above the un-named stockpile area. See Figure 19 below for details.



Figure 19: Scouring and rilling along toe slope of HLF

5.2 Temporary Access Road above HLF

1. Noted sections of pooling water and or soft/deflecting areas on temporary access road above Phase 1B of the HLF. See Figures 20 – 22.



Figure 20: Pooling water above Phase 1B of the HLF



Figure 21: Soft road sections above Phase 1B of the HLF



Figure 22: Soft road sections above Phase 1B of the HLF

5.3 Phase 1B Interception Ditch

1. The phase 1B interception ditch appears to have been recently constructed. Rock armoring appears to be class 25kg to 50kg, and approximately 100mm to 150mm thick. Geotextile was visible in several locations (Figure 23).



Figure 23: Typical Phase 1B Ditch

2. The interceptor ditch has collected silt/material in some sections, indicating scour and/or erosion on the uphill cut slope and/or sloughing from the access road. (Figure 24, 25)



Figure 24: Material deposited in HLF Phase 1B Interceptor Ditch



Figure 25: Material deposited in HLF Phase 1B Interceptor Ditch

3. A section of the interceptor ditch along the North edge of the HLF appeared to be unfinished, with geotextile installed but no rock armoring (Figure 26).



Figure 26: Unfinished section of Interceptor Ditch

4. Based on visual inspection it did not appear that the Phase 1B Interceptor Ditch was properly graded from the ditch origin (East) to the discharge point (West). This could lead to pooling water forming above the HLF and lead to slope stability issues. See Figure 27 for a view from the ditch origin above the East edge of the Phase 1B HLF expansion.



Figure 27: Phase 1B Interception Ditch sloping

6 OPEN PIT

1. The pit walls appear stable, and constructed in competent rock. See Figure 28 below for details.



Figure 28: Pit Walls

7 PLATINUM GULCH DUMP

1. Platinum Gulch Dump is currently operational, and the side slopes appear to be stable. See Figure 29 below.



Figure 29: Dump Fill Slope

8 PRIMARY CRUSHER

8.1 MSE Walls

1. No apparent damage or deterioration was noted during the inspection of the Primary Crusher MSE wall (Figure 30 - 32). No changes were visually identified from the 2019 inspection.



Figure 30: Primary Crusher



Figure 31: Northwest Face



Figure 32: Southeast Face

8.2 Cut and Fill slopes

1. Cut and fill slopes appear to be acceptable, no stability or erosion issues noted. (Figures 33 and 34).



Figure 33: Northwest fill slopes



Figure 34: Cut slopes above Primary Crusher

9 SECONDARY/TERTIARY CRUSHER

9.1 MSE Wall

1. No apparent damage or deterioration was noted during the inspection of the Secondary/Tertiary Crusher MSE wall (Figure 35 – 36). No changes were visually identified from the 2019 inspection.



Figure 35: South side of MSE wall



Figure 36: MSE wall behind secondary/tertiary crusher

9.2 Cut Slopes

1. Observed locations behind the secondary crusher showed no signs of stability or erosion issues (Figure 37). Some outcrops of rippable rock visible.



Figure 37: Cut slopes above Secondary/Tertiary Crusher

10 ADSORPTION, DESORPTION, AND RECOVERY PLANT (ADR)

10.1 Cut and Fill Slopes

1. Cut slopes behind the ADR area appear to be competent rock, and currently stable though some unraveling and rilling were noted (Figure 38). Minor accumulation of small debris was noted at the toe of the slope, collecting in the ditch, and was observed in the 2018 and 2019 inspections (Figures 39 and 40).

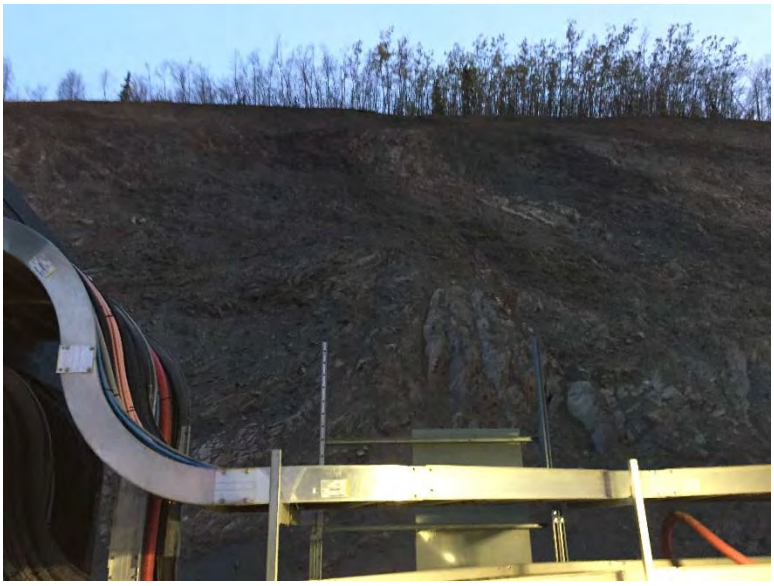

Figure 38: Slopes behind ADR (2020) with unraveling and rilling



Figure 39: Slopes behind ADR (2019)



Figure 40: Slopes behind ADR (2018)

10.2 North Toe Ditch

1. There is a small V ditch, referred to here as the North Toe Ditch (Figure 41), with sides close to 1:1 cut at the base of a large steep slope which is cut into bedrock; the ditch is not armored and contains loose gravel and fines, although there are no apparent scouring issues. There is also a culvert which has been installed along the ditch alignment.



Figure 41: Typical North Toe Ditch cross section

11 EVENTS POND

11.1 Cut/Fill Slopes

1. The events pond was constructed between the 2018 and 2019 inspections, with hillslope unraveling noted in the 2019 inspection.



Figure 42: Overall view of event pond

2. Rill erosion and scour channels on the cut slopes above the event pond and the heap leach spillway were noted in this inspection as shown in Figures 43 – 45.



Figure 43: Rill erosion below HLF spillway



Figure 44: Rill erosion above HLF spillway



Figure 45: Scoured channel above Event Pond

11.2 Pooling Water

1. Pooling water was noted in various locations along the North side of the event pond as shown in Figures 46 – 48.



Figure 46: Pooling water above Event Pond



Figure 47: Pooling water above Event Pond

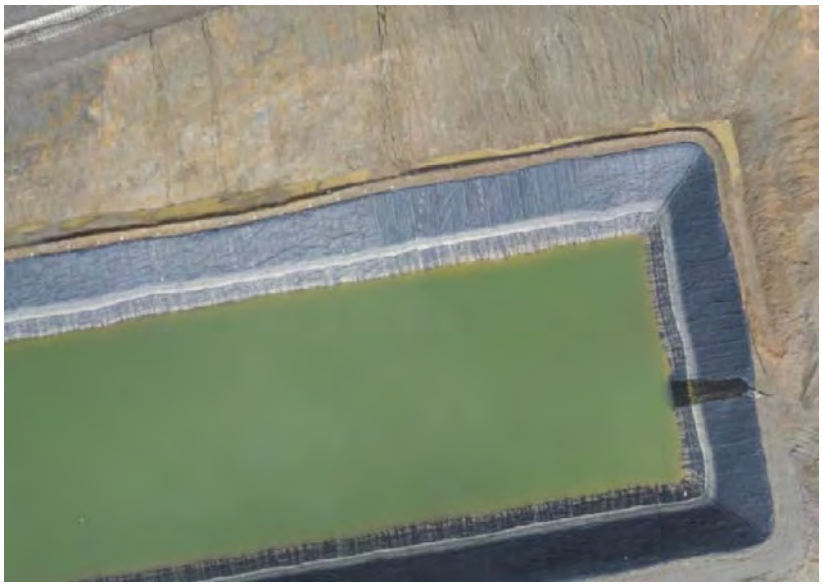

Figure 48: Pooling water above Event Pond

11.3 Silt Build-up

1. Silt build-up was noted at the discharge of the heap leach spillway into the event pond as shown in Figure 49. Material accumulation on the bottom of the pond was also observed from above as shown in Figure 50.



Figure 49: Silt build-up at HLF Spillway discharge



Figure 50: Material build-up on Event Pond bottom

11.4 Heap Leach Spillway

1. As noted in Section 11.1 scouring was observed upslope and downslope of the heap leach spillway. Material has begun to accumulate in the spillway as shown in Figure 51. The spillway is constructed with a concrete-filled fabric liner and appears stable.



Figure 51: Slopes from heap leach spillway

11.5 Events Pond Emergency Spillway

1. The emergency spillway is in place, constructed of similar material as the HLF spillway, and appears stable (Figure 52). The spillway is directed downslope towards Dublin Gulch. No concerns at this time.



Figure 52: Events Pond Emergency spillway

12 DITCH A

1. Ditch A carries flow from the Platinum Gulch Dump down to the Control Pond. The ditch formerly (2019) collected flow in a collection sump (Figure 53) which was then transferred in gravity drain HDPE piping down to the LDSP. The sump and all piping (other than sections acting as temporary culverts at road crossings) has since been removed and the ditch is being reconstructed with liner and armoring as seen in Figure 54 and 55.



Figure 53: Flow into collection sump (2019)



Figure 54: Ditch A under construction (2020)



Figure 55: Ditch A under construction (2020)

2. A culvert for a tie-in ditch from the Secondary Stockpile perimeter ditch was observed to be blocked with sediment/material just before the connection to Ditch A. The culvert outlet and inlet (buried) can be seen in Figures 56 and 57 respectively.



Figure 56: Secondary Stockpile drainage ditch culvert blocked (outlet)



Figure 57: Secondary Stockpile drainage ditch culvert blocked (inlet)

13 DITCH B

1. Ditch B begins at a small watercourse known as Suttles Gulch. The ditch flows West towards the Control Pond. The ditch is armored with approximately class 25kg rock. Some slope instability was noted near the control pond, with erosion carrying sediment down the cut slope (Figure 58). Site representatives are already aware of this issue, and sediment is being actively managed using silt fencing (Figure 59).



Figure 58: Erosion on South cut slope above Ditch B



Figure 59: Silt fencing constructed in areas of erosion on cut slopes

14 DITCH C

1. Diversion Ditch C (Figure 60) begins at the 1500mm outlet culvert for the Control Pond and terminates in Haggart Creek (Figure 61). This ditch acts as both an emergency spillway if the Control Pond is filled over capacity or a conveyance channel for water released from the control pond through the low level outlet. The ditch is armored with approximately class 10kg rock, and liner is visible in several locations. The ditch crosses several roads via culverts.



Figure 60: Ditch C typical section



Figure 61: Ditch C Outfall to Haggart Creek

2. Pooling water and sedimentation was observed on the North side of Ditch C immediately West of the culvert from the LDSP spillway to Ditch C (Figure 62). There appeared to be a lined ditch that provided a path for the pooled water to flow down to Ditch C though the discharge of this ditch was not controlled (Figure 63)



Figure 62: Pooled water above Ditch C



Figure 63: Pooled water ditch discharge into Ditch C

15 FORMER NUWAY CRUSHER PAD

1. This area is not currently being used, but a VGC representative indicated that it is within the Phase 3 footprint of the HLF and will eventually be regraded in preparation for ongoing HLF development. Observed some over steepened slopes (Figure 64), with material collecting at the toe of these slopes.



Figure 64: Over steepened slopes

16 ORICA LAYDOWN

1. One section of cut slope was noted as being over-steepened in the 2019 inspection (Figure 65). This appears to have been since rectified as slopes appeared acceptable during this years inspection (Figure 66).



Figure 65: Section of over-steepened slope (2019)



Figure 66: Section of corrected slope (2020)

2. An unlined, unarmored ditch from the portable structures (Figure 67) appears to have been constructed since the previous inspection. The ditch appears interrupted in places but flow generally leads to the Orica sump (Figure 68) before discharging to the woods.



Figure 67: Orica perimeter ditch



Figure 68: Orica sump

17 UN-NAMED STOCKPILE AREA

17.1 Stockpile Sloping

1. Several un-named overburden stockpiles have been placed to the south of the HLF and Event Pond (Figure 69). Some of the stockpiles have over-steepened sides, but there is little risk to other infrastructure. The area is currently mostly un-used.



Figure 69: Some stockpiles with steep side slopes

17.2 Water Management

1. There are some minor water management issues in the area, with rainfall run-off flowing down and around the stockpiles as apparent from the small gulley that formed at the base (Figure 70). Some ponding water is present in the laydown areas (Figure 71).



Figure 70: Small gulley forming adjacent to stockpiles



Figure 71: Ponded area adjacent to stockpiles

18 RECOMMENDATIONS

18.1 General

1. VGC should assign a qualified, on site, individual to be responsible for monitoring and documentation of any mass earth structures that have significant risks in the case of a failure. The individual should develop a standard operating procedure for the monitoring and risk management of these structures. This individual should be responsible for coordination with a qualified professional to review monitoring data for concerns and trends, if they are not qualified themselves.
2. VGC should continue to assign individuals to document and be responsible for the monitoring and construction of any structures to determine if the structures are constructed in accordance with design. Any variations between design documents and final construction should be included in final record drawings.
3. Any finalized construction of mass earth structures should include a final construction report that includes any operational and maintenance requirements (if any) to ensure stability of the structure.
4. VGC should consider a monitoring program to assist in early warning and detection of any movements in mass earth structures. Such a program might use permanent survey points, slope inclinometers, piezometers, or other tools to measure internal/external movements and pore water pressures. Such a monitoring program should be developed with the assistance of and be implemented with the oversight of a qualified professional.
5. For any stockpiles, cut slopes, and/or fill slopes with over-steepened slopes that do not require immediate rectification (due to proximity to structures, roadways, active work areas, etc) VGC should still cordon off the area above and/or below the over-steepened slope depending on what would be accessible to site staff.

18.2 LDSP (Control Pond)

1. Address erosion occurring on the southwest slope of the pond. This is likely due to water infiltration from Ditch A or the adjacent culvert outlet. This section of ditch may require further armoring or installation of a liner to properly direct water away from the Control Pond slope.

18.3 Secondary Stockpile

1. Tie the perimeter ditch into the collection sump.

18.4 HLF

1. Continue to monitor the cut slopes around the perimeter of the HLF for erosion. Maintain the upper bench and remove sloughing material as required.
2. Monitor the toe slope below the HLF for rill erosion and revegetate and stabilize the slopes as needed.
3. Consider re-grading temporary access road (slope towards interception ditch) above HLF to prevent pooling water forming.

4. Monitor soft/deflecting areas of temporary access road above HLF, particularly above HLF liner anchor trench.
5. Check Phase 1B Interception Ditch design and complete construction if needed for sections that are lined but not armored. Check design for sloping requirements to outfall and confirm whether installed ditch meets design and monitor ditch for potential of pooling water.

18.5 Open Pit

1. No specific recommendations at this time.

18.6 Platinum Gulch Dump

1. No specific recommendations at this time.

18.7 Primary Crusher and MSE Wall

1. A monitoring program should be established using regular survey of the MSE walls, to detect any potential movement. 3D scanning equipment would provide an adequate monitoring program, with scan frequency to be determined between site and an experienced professional.

18.8 Secondary/Tertiary Crusher and MSE Wall

1. A monitoring program should be established using regular survey of the MSE walls, to detect any potential movement. 3D scanning equipment would provide an adequate monitoring program, with scan frequency to be determined between site and an experienced professional.

18.9 ADR

1. Review engineering requirements for the North Toe Ditch to confirm ditch size, and need for rock armoring. Toe ditch is currently tied into the roadside ditch, which should also be reviewed for engineering requirements. Recommend reviewing hydraulic design of both ditches to determine what is necessary.

18.10 Event Pond

1. Monitor minor erosion of cut slopes and maintain as required.
2. Monitor pooling water above the North side of the Event Pond and regrade area to prevent pool formation or install a water handling system (sump pumps, etc.).
3. Monitor material deposits on HLF spillway and Event Pond to ensure the spillway and pond designs are not compromised through either blockage of flow or reduced pond capacity.

18.11 Ditch A

1. Un-block the feeder ditch/culvert which will carry flow from the Secondary Stockpile perimeter ditch to Ditch A.

18.12 Ditch B

1. Continue to manage sediment entering the ditch from the cut slopes on the downstream end. Silt fencing is currently in place to address this.
2. Monitor erosion above South side of Ditch B and consider re-sloping area as needed.

18.13 Ditch C

1. Monitor pooling water above LDSP outlet to Ditch C. Consider tieing in pooled water discharge ditch with Ditch C to prevent erosion and scouring on North side of Ditch C.

18.14 Former Nuway Crusher Pad

1. Pull back over-steepened slopes prior to utilizing this area. Flag over-steepened slopes in the meantime to protect site staff.

18.15 Orica Laydown

1. Monitor perimeter sump for flow interruptions/blockages and consider re-trenching if pooled water observed.

18.16 Un-Named Stockpile Area

1. Consider additional ditching and water management in the area to prevent scouring of the road surfaces and erosion around the stockpiles. Ditch water away from the laydown areas to prevent ponding.
2. Flag over-steepened slopes in area to protect site staff.

19 CONCLUSION

The structures reviewed in this inspection generally show little evidence of movement or risk indicators. Where risk of movement was identified, the risk is typically low and the consequence of a small instability is managed by minimizing exposure to workers, infrastructure or high value natural resources. Slopes reviewed meet the recommendations for slope angles in most locations.

The fact that some current infrastructure is currently incomplete and in construction leaves insufficient baseline data for comparison, but will improve with subsequent reviews. VGC representatives have noted that they have surveys and monitoring programs for infrastructure where a risk of failure would have significant consequences (i.e. the Open Pit, Platinum Gulch Dump, HLF) but review of that survey data was not included as a part of this inspection. Comparisons to inspection reports from previous years have been noted where relevant.

There are some minor erosional and stability concerns within the project, that can be addressed with some minor planning and maintenance as mining operations continue in order to moderate or eliminate the associated risks.

We trust this report satisfies your requirements at this time and thank you for the opportunity to work with you on the project. If you have questions or concerns do not hesitate to contact our office.

Yours truly,

ALLNORTH CONSULTANTS LIMITED

Prepared By:

Spencer Bergin, EIT

Reviewed By:



Don Williams, P. Eng.
Division Manager

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Any opinions of probable cost provided in the report are based on Allnorth's experience and information available to Allnorth at the time such estimates are made. Client acknowledges that due to assumptions that must be made, Allnorth shall not be liable for the accuracy of such estimates.

Appendix A Site Plan (2020 Inspection)


Heap Leach Facility
(Phase 1B Expansion)
Former Nu-way Crusher Pad
ADR Plant
Event Pond
LDSP (Control Pond)
Un-named Stockpile Area
Ditch C
Ditch B
Secondary Stockpile
Secondary/Tertiary Crushers
Primary Crusher
Open Pit
Ditch A
Orica Laydown
Platinum Gulch Dump

Appendix B Site Plan (2019 Inspection)


N
Phase 1 Interception Ditch
Upper Overburden Stockpile
Heap Leach Facility
Phase 1 Heap Leach Facility
Borrow Pit / Future Landfill
ADR Plant
ADR
Event Pond
Events Pond
Stockpile
Unnamed Stockpile Area
Ditch C
Control Pond
Camp
Septic Field
Warehouse
Stockpile
Ditch B
LDSP (Control) Pond
Stockpile
Conveyor
Future EP WRSA
90 Day Stockpile
Stockpile
Secondary and Tertiary Crusher
Camp Road
Power Plant Substation
Waste Management
90 Day Storage
Crushing Circuit
Primary Crusher
Open Pit
Open Pit
Ditch A
Possible Future Ice Rich Material Storage
PG WRSA In Use
Platinum Gulch Dump
Explosives Storage
Orica Laydown
Transmission Line
0
250
500
1,000
Meters

APPENDIX S

Review of the Cyanide Management Plan and Implementation – Summary Audit Report

ICMI Cyanide Code for Gold Mining
Review of the Cyanide Management Plan and Implementation

Summary Audit Report

Victoria Gold Corp.,
80 Richmond Street West
Suite 204
Toronto, ON M5H 2A4, Canada

Submitted to:
Victoria Gold Corp.

2020 Audit Cycle

314 N. Last Chance Gulch
Suite 214
Helena, MT 59601
www.fortedynamics.com

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4.7 Provide spill prevention or containment measures for process tanks and pipelines.....18

4.8 Implement quality control/quality assurance procedures to confirm that cyanide facilities are constructed according to accepted engineering standards and specifications. 18

4.9 Implement monitoring programs to evaluate the effects of cyanide use on wildlife, surface and ground water quality. 19

5. DECOMMISSIONING: Protect communities and the environment from cyanide through development and implementation of decommissioning plans for cyanide facilities. 19

5.1 Plan and implement procedures for effective decommissioning of cyanide facilities to protect human health, wildlife and livestock. 19

5.2 Establish an assurance mechanism capable of fully funding cyanide-related decommissioning activities. 20

6. WORKER SAFETY: Protect workers' health and safety from exposure to cyanide. 20

6.1 Identify potential cyanide exposure scenarios and take measures as necessary to eliminate, reduce and control them. 20

6.2 Operate and monitor cyanide facilities to protect worker health and safety and periodically evaluate the effectiveness of health and safety measures. 21

6.3 Develop and implement emergency response plans and procedures to respond to worker exposure to cyanide. 23

7. EMERGENCY RESPONSE: Protect communities and the environment through the development of emergency response strategies and capabilities. 23

7.1 Prepare detailed emergency response plans for potential cyanide releases. 24

7.2 Involve site personnel and stakeholders in the planning process. 24

7.3 Designate appropriate personnel and commit necessary equipment and resources for emergency response. 24

7.4 Develop procedures for internal and external emergency notification and reporting. 25

7.5 Incorporate into response plans monitoring elements and remediation measures that account for the additional hazards of using cyanide treatment chemicals 26

7.6 Periodically evaluate response procedures and capabilities and revise them as needed. 26

8. TRAINING: Train workers and emergency response personnel to manage cyanide in a safe and environmentally protective manner. 27

8.1 Train workers to understand the hazards associated with cyanide use. 27

8.2 Train appropriate personnel to operate the facility according to systems and procedures that protect human health, the community and the environment. 27

8.3 Train appropriate workers and personnel to respond to worker exposures and environmental releases of cyanide 28

9. DIALOGUE: Engage in public consultation and disclosure 29

9.1 Provide stakeholders the opportunity to communicate issues of concern. 29

9.2 Initiate dialogue describing cyanide management procedures and responsively address identified concerns. 29
9.3 Make appropriate operational and environmental information regarding cyanide available to stakeholders. 29

Mining Operation: Eagle Gold Mine

Mine Owner: Victoria Gold Corp.

Mine Operator: Victoria Gold (Yukon) Corp.

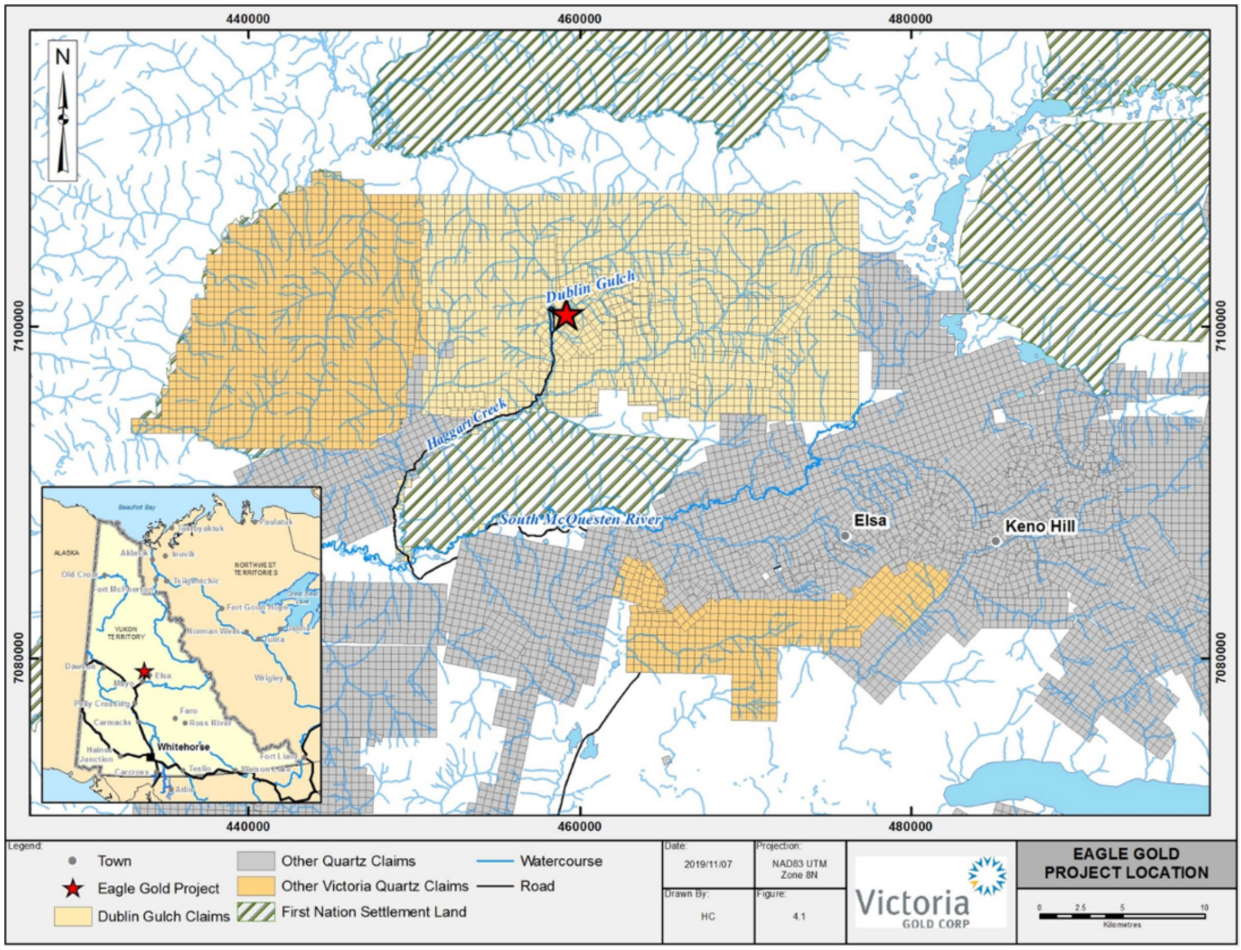
Name of Responsible Manager: John McConnell, President & CEO

Address and Contact Information:

Victoria Gold Corp.,
80 Richmond Street West
Suite 204
Toronto, ON M5H 2A4, Canada
T: 416.866.8800
F: 416.866.8801

Location and description of the operation

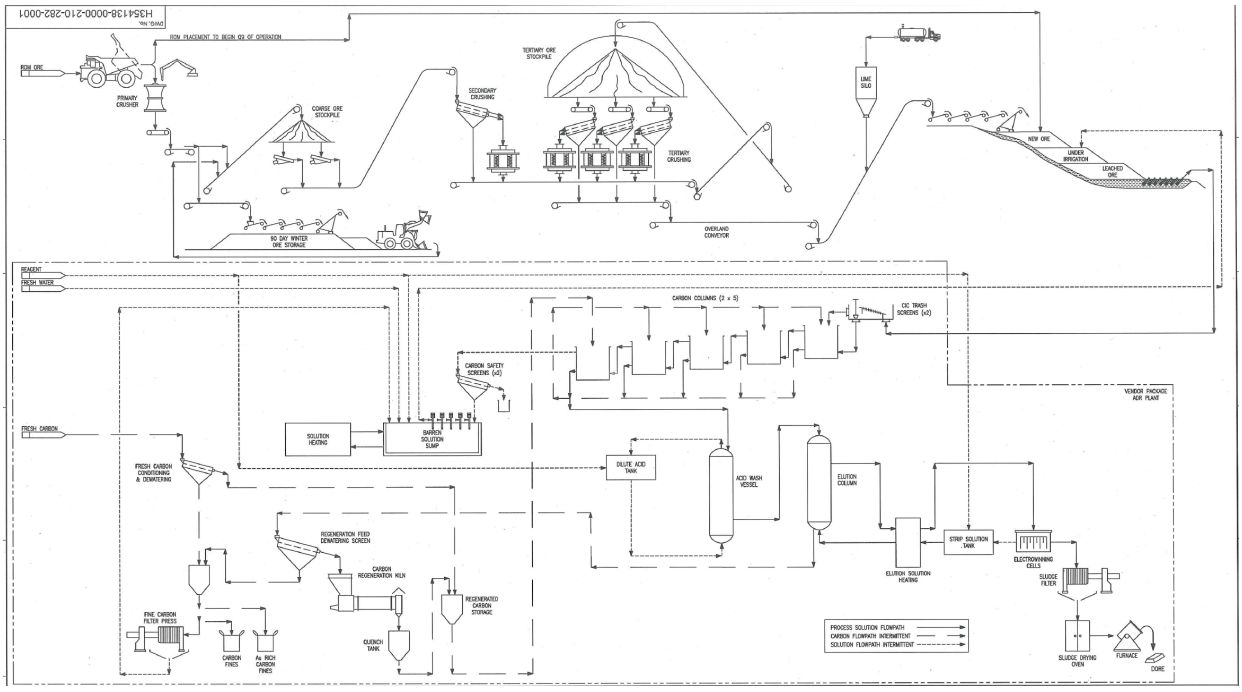
The Eagle Gold Mine location is presented in the picture below:



The Eagle Gold deposit is situated within Victoria Gold's Dublin Gulch property. The Eagle deposit is actively being mined using open pit methods. Ore extracted from the open pit is either fed through a three-stage crushing plant (to produce an 80% passing (P80) 6.5 mm product) and transferred by covered conveyor to the heap leach pad (HLP) or trucked as run-of-mine (ROM) ore, that bypasses the crushing plant, to the HLP.

Gold is extracted from ore into a solution by using a sodium cyanide heap leaching process within the HLP. Gold is then recovered from solution by an adsorption-desorption-recovery (ADR) carbon plant.

The Eagle process flows diagram is presented below:



Scope of service

Forte Dynamics, Inc. (Forte) was requested by Victoria Gold Corp. (Victoria, VGC) to perform the annual audit of the Eagle Gold Mine's Cyanide Management Plan (CMP) and its implementation following the guidelines of the International Cyanide Code for the Manufacture, Transport, and Use of Cyanide in the Production of Gold (Cyanide Code, Code). Adam House, a certified technical expert auditor for gold mining under the Code performed the audit. Forte has reviewed the CMP and supporting information, and the findings of the review are presented below following the Cyanide Code summary report format. The scope did not include a Cyanide Code certification audit, nor did it include a dedicated site visit for the purpose of the audit given the challenges due to COVID-19. Rather, Forte relied on prior site visits and communication with the site team, photographs, electronic document review, and personnel interviews to conduct the assessment remotely.

SECTION 1 – INTRODUCTION

As part of project development and as a condition of the Water Use License (WUL), License #QZ14-041-1, issued by the Yukon Water Board, Victoria prepared a Cyanide Management Plan. The plan is written to follow the guidelines of the Cyanide Code for the Principles and Standards of Practice under the Code. The WUL requires an annual audit of the CMP. The CMP provided for review was Version 2019-02, issued April 2019. A cutoff date of June 30, 2020 was used for data analysis purposes.

The CMP was developed prior to project completion and still references the operation as a "project", bearing the StrataGold Corporation name and logo. At the time of the audit, the CMP had not undergone the required annual internal review and update. It is VGC's intent to have

the annual internal review coincide with the annual compliance audit. It is recommended that during the 2020 update, references throughout the document be updated to reflect active mining operations and processing with cyanide, as well as updating the company name and logo to consistently reflect Victoria Gold Corp. across all documents associated with the plan. It is further recommended the annual internal review and update be conducted ahead of the compliance audit so that the auditor(s) are reviewing the most recent version of the document. Any recommendations as outcomes of the audit would warrant the appropriate review and update to the CMP, as would any changes in the operation that impact the CMP.

SECTION 2 – PRINCIPLE 1, PRODUCTION: Encourage responsible cyanide manufacturing by purchasing from manufacturers who operate in a safe and environmentally protective manner.

1.1 Purchase cyanide from manufacturers employing appropriate practices and procedures to limit exposure of their workforce to cyanide and to prevent releases of cyanide to the environment.

The operation's long-term supply contract with the cyanide supplier, Cyanco Canada Inc. (Cyanco), does not require that the cyanide be produced at a facility that has been certified as following the Code. However, the certification status of the cyanide supplier, who is the product manufacturer, was verified by review of the ICMI website. During the audit period VGC only purchased cyanide from Cyanide Code certified producers, with the agreement to purchase 100% of their required cyanide from Cyanco. No cyanide was purchased from an independent distributor(s) during the audit period, nor are current plans or provisions in place to do so. While no secondary supply contract is in place, there are alternative suppliers available in North America that are also certified under the Code if a disruption in the supply chain necessitated an alternative supplier.

Cyanco provides cyanide to the Eagle Mine in intermediate bulk containers (IBC's) consisting of dual layer polypropylene/polypropylene bags with wooden overpack crates. The crates are loaded into 20-foot seaworthy intermodal containers for delivery to site by truck.

2. TRANSPORTATION: Protect communities and the environment during cyanide transport.

2.1 Establish clear lines of responsibility for safety, security, release prevention, training and emergency response in written agreements with producers, distributors and transporters.

Written agreements meeting the Cyanide Code's requirements were in place for the supply contract (i.e. Cyanco) during the audit. The cyanide purchase contract includes the cyanide manufacturer's (seller) responsibility on delivering the product to the mine site.

The seller's transportation supply chain is currently certified under the Cyanide Code. Supply is through the Cyanco Western U.S./Canada Rail, Barge & Truck Supply Chain. The supply chain includes rail, barge, & truck transportation from Cyanco's Alvin, Texas, USA production

plant to the Eagle site in Canada. The certification status of the supply chain was verified via the Cyanide Code website. One element of the supply chain was implied but not implicitly stated in the summary audit report available on Cyanide Code website; however, inclusion of this portion of the supply chain, and a status of full compliance, was confirmed with the lead auditor responsible for certifying transportation with an amendment intended to be submitted for the summary audit report.

Regarding storage and security at ports of entry, the contract includes Seller´s responsibility for interim loading, storage, unloading during shipment and unloading at the operation.

Safety and maintenance of the means of transportation throughout transport is addressed as seller's responsibility in the contracts, as well for task and safety training and emergency response for transporters and handlers throughout transport.

2.2 Require that cyanide transporters implement appropriate emergency response plans and capabilities and employ adequate measures for cyanide management.

The contract states the seller is responsible for all aspects of transportation of cyanide to the Eagle site, as well as cyanide production. The contract does not commit the Seller to maintaining ICMC certification and signatory status. However, the cyanide transporters to Eagle are certified under the Code.

The sole cyanide supply chain to Eagle is certified under the Code. The Cyanco Western U.S. / Canada Rail, Barge, & Truck Supply Chain, currently supplies the cyanide to the mine site. It is comprised of barge, rail and truck movements using the Cyanco supply chain from the Alvin, TX production plant to the customer location. The Cyanco supply chain was first ICMC certified on March 06, 2013 and underwent appropriate recertification audits since that time. This branch of the supply chain was most recently recertified on April 22, 2020 to include transportation to the Eagle site.

Cyanco is responsible for the safety and security of the transport, including emergency response. Cyanco follows their Global Transportation Emergency Response Plan (GTERP) and engages CHEMTREC for emergency response notifications in the US and ERAP in Canada. Cyanco utilizes Terrapure as the emergency response contractor within Canada.

3. HANDLING AND STORAGE: Protect workers and the environment during cyanide handling and storage.

3.1 Design and construct unloading, storage and mixing facilities consistent with sound, accepted engineering practices and quality control and quality assurance procedures, spill prevention and spill containment measures.

The CMP indicates that the cyanide delivery area will be “cordoned off with warning signs and visual barriers to prevent unauthorized passage of personnel and equipment while the cyanide intermodal containers are being offloaded”. In practice, signs and barriers are not used for the

offloading process; however, spotters are utilized to keep personnel away from the area while the crane is unloading a container from the truck. The use of spotters was verified through photographs taken during the process. The CMP should be updated to reflect the actual operational practices.

The plan further indicates that a dedicated area for the sea containers will be provided at the ADR plant. The area was intended to be fenced off for container storage. However, fencing was not installed to allow better access to the containers and for use of the crane to unload the containers from the trucks. The CMP should be updated to reflect the actual operational practices. The CMP also describes placement of the containers such that the lockable doors are facing one another such that access to the door is restricted without movement of the entire container. Placement of the containers with the doors facing one another was verified and documented.

A single container is to be placed on a “bermed concrete pad” at the main entry to the ADR plant to allow operations access for unloading the cyanide crates for use. The intent of the bermed pad was to permit the dry retrieval of any potential spillage of cyanide. A dedicated concrete pad was verified for this purpose. The pad is not bermed, as this would impede normal access into the ADR plant; however, the existing arrangement would still allow for the dry retrieval of any potential spillage. The CMP description should be updated to reflect the as-built condition of the pad.

A dedicated area within the ADR plant is used for the short-term storage of the IBC’s as they are prepared for use. Access to the building contains appropriate warning signs, consistent with the language specified in the Code. The storage area also includes an HCN detector with audible and visual alarms, combination safety shower and eyewash station, and dry powder fire extinguishers for use in an emergency.

Eagle uses cyanide from IBC containers, which are stored in the sea containers until they are brought into the plant and prepared for use. The cyanide mixing system, including the cyanide mixing and cyanide storage tanks, was designed by Hatch. A complete set of design drawings was available for review by the auditor. These drawings are stamped by a Certified Professional Engineer Registered in the Yukon Territory.

Observations within the plant confirmed that the cyanide mixing area was located within the internal structure of the process plant within a dedicated concrete containment area. The mixing system appeared to be maintained in good condition. Cyanide mixing and storage tanks were located within concrete berms. The mixing area is also subject to inspections each shift to detect any obvious releases or failure in containment. Shift reports were provided for review during the audit.

The cyanide storage area is located inside the plant area and located far away from communities and surface waters. The cyanide storage is adjacent to the process plant building, where the Process operations personnel are located. The process plant has HCN gas monitors equipped with visual and audible alarms at the cyanide mix area that will alert employees in case of a release of HCN gas. Operators are also required to have a portable HCN monitor in use. In

addition, the standard operating procedure (SOP) CMP-SOP-020 – Cyanide Emergency Response Procedures covers multiple emergency scenarios, including for the process plant in the event of high concentrations of HCN gas.

Any potential spills of solid cyanide from the IBC containers in the bulk storage area will be contained within the sea container. Spillage of any dry product during unloading of the containers would be contained on the concrete pad, as noted above, allowing for dry cleanup. Spillage inside the plant would also occur within the concrete containment area, allowing for dry cleanup.

Eagle has a preparation area for cyanide that includes a mixing tank and a storage tank. There are solution level indicators with high-level alarms installed on both tanks. These levels are continuously monitored from the control room. No failures of the level indicators were reported. The auditor observed screenshots of HMI showing that the level indicators were functioning correctly.

Cyanide mixing and storage tanks are secured to solid, reinforced concrete pedestal-type foundations and are contained within concrete bunded areas which appear to be in good condition. The cyanide mixing and storage containment volume is not the recommended 110% of the largest tank. It is approximately 40% of the required volume, including the dedicated sump that reports back to the mixing tank. A low point in one section of the containment wall, measuring approximately 2” deep x 13’ wide would direct any excess solution into the main containment area beneath the carbon columns. This combined containment exceeds the 110% required. In addition, the carbon column area also has a dedicated sump to evacuate any spillage to the discharge launder of the final carbon column.

The cyanide storage is located in an outdoor area west of the process plant building. As such, it has adequate ventilation, and build-up of hydrogen cyanide gas is unlikely to occur. As it does not have a roof, the site uses the characteristics of the IBC’s, securely stored within the sea containers, to meet the intent of the Code requirements. The risk of potential contact with meteoric water is very low. The cyanide storage containers are secured with a lock and positioned door to door such that access to the cyanide containers is restricted.

The cyanide mixing and storage tanks are located in southwestern portion of the plant area, near the main rollup equipment door. The building appears to have appropriate ventilation to prevent build-up of hydrogen cyanide gas. These tanks are located within the plant building and has restricted access. The area can only be accessed with the presence of authorized operations personnel. The cyanide mixing and storage tanks are stored within a dedicated containment area with concrete berms, with no other materials permitted to be stored in this area.

3.2 Operate unloading, storage and mixing facilities using inspections, preventive maintenance and contingency plans to prevent or contain releases and control and respond to worker exposures.

The empty cyanide bags are triple rinsed over the mix tank after the contents are emptied. The rinsed bags, including the liner, plywood crate, and strapping materials are collected and transported to a secure, onsite incinerator for disposal, according to CMP-SOP-006 – Controlled

Disposal of Cyanide Packaging Materials. The packaging materials are stored inside of a secure sea container until they are incinerated in maximum batch sizes of 340 kg. Photographs of the rinse system and secure storage area were provided to the auditor.

Eagle has CMP-SOP-005 – Cyanide Mixing Process that outlines the requirements for inspection, observation and mixing of cyanide solutions, including the sequence required for the cyanide mixing process. It also includes instructions for the prefill of the cyanide mixing tank with water and ensure a pH of at least 12 through caustic solution prior to adding cyanide. The current operational practice is to ensure a pH of at least 11 prior to cyanide addition A pH of 11 is adequate to avoid HCN evolution, but remains below the threshold for dissolving silica, which is problematic for operations. The pH is achieved through the addition of sodium hydroxide to the mix tank, or through the pH from the residual solution remaining from the prior batch. The CMP and procedure should be updated to reflect actual operational practices. This procedure also requires that any solid cyanide spillage in the mixing area must be swept up for disposal and the area cleaned with hypochlorite solution to detoxify any residue before being hosed to the sump.

The Cyanide Mixing Process procedure requires operators to use the appropriate personal protective equipment (PPE) during mixing activities. These include both standard PPE required for operations, as well as specialty items such as steel-toed boots, rubber gloves, rubber boots, approved respirator, face shield, chemical suit with hood, hardhat, safety glasses, hearing protection and a personal HCN detector. The PPE requirements are further described in CMP-SOP-008 – PPE for Cyanide Facility Operations. The mixing process was verified by the auditor during prior site visits and through photographs provided for the audit. The CMP references a video monitoring system to allow remote observation of the mixing area; however, site confirms that the video monitoring system has not yet been installed. The procedure does require two operations personnel for cyanide mixing with the area barricaded and secured from unauthorized access during mixing. Remote video monitoring capability should be considered best practice, but the current procedure satisfies the intent of the Code.

Procedure CMP-SOP-004 – Receipt and Storage of Reagent Cyanide indicates that the sea containers are handled using a forklift to unload the delivery trucks and either to place the containers within the bulk storage area or on the concrete pad near the ADR plant and cyanide mixing area. While not specified within the procedure, truck unloading and container movement also occurs through the use of a mobile crane, as observed through photos provided for the audit. This procedure also indicates that containers shall not be stacked. The solid cyanide product inside the IBCs already comes with red colorant dye, as delivered by Cyanco.

The cyanide mixing process was observed through photos provided during the audit. Prior onsite reviews, the procedures, and the documentation provided during the review indicated that Eagle has appropriate SOPs and practices to handle and prepare cyanide solutions in a safe manner.

4. OPERATIONS Manage cyanide process solutions and waste streams to protect human health and the environment.

4.1 Implement management and operating systems designed to protect human health and the environment including contingency planning and inspection and preventive maintenance procedures.

Eagle has several documents that are intended to support the safe operation of cyanide facilities. Some of these key items include the Cyanide Management Plan, the SOP's related to cyanide operations, and the Heap Leach Facility Operation, Maintenance and Surveillance (OMS) Manual. All SOPs include a section related to PPE requirements and considerations of safety hazards. The operation has identified equipment, personnel, and procedures for cyanide unloading and mixing activities as well as for storage facilities, processing facilities, and all associated piping and pumps as having contact with cyanide. SOPs were reviewed and found to be sufficiently detailed to enable safe operation. Several minor items within the CMP and SOPs were recommended to be updated to reflect the now as-built nature of the facility for consistency with the delivered project and operation. These updates are planned as part of the 2021 CMP update cycle.

Eagle has manuals and procedures that identify the assumption and parameters for the safe operation of the facilities. The Operational Maintenance and Surveillance Manual considers routine operational aspects, as well as maintenance requirements and surveillance of the facility. The Heap Leach Facility Contingency Water Management Plan addresses the design storm event considerations for the HLF, including the Probable Maximum Flood. Maximum operating in-heap pond level and response actions at various levels are detailed in the OMS. Historic in-heap pond level data during 2020 was reviewed and evidenced that at all times the pond elevation maintained at least the required freeboard within the pond. The Environmental Monitoring, Surveillance and Adaptive Management Plan (EMSAMP) is in place to manage key items such as surface water hydrology, surface and ground water quality, HLF and pond leak detection, and storage volumes. The plan details indicators, thresholds, and adaptive management measures to be taken for threshold exceedances.

The CMP also includes monitoring point of 50 ppm weak acid dissociable (WAD) cyanide present in the event pond to trigger wildlife deterrent measures. Further, if the need arises, and for the protection of the environment, a cyanide detoxification system is available in the ADR plant to assist in reducing the cyanide concentration of process solutions. The pond level and subsequent cyanide concentration are reviewed on a continuous basis to maintain a concentration that is not toxic to avian and terrestrial wildlife that could come in contact with the pond water for a short period of exposure. Eagle does not have direct water discharges that have been treated for cyanide to surface water.

The CMP and OMS include a list of critical aspects and areas to be inspected and inspection frequencies. At the HLF and ADR plant, Eagle conducts inspections for pipeline leaks, ponding or pooling of solution, wildlife, condition of interceptor ditches, pond levels, condition of the facilities, functionality of safety equipment, signage, facility integrity, etc. In the case of the process plant, inspections include: the bulk cyanide storage area, the cyanide mixing and storage area, the incinerator area, the ADR plant primary and containment areas, the pregnant and barren solution pipelines, among others.

Eagle has developed and implemented a management of change (MOC) process for operational changes to ensure that a systematic approach to changes is followed with the aim of ensuring the continued safety throughout the process. These systematic processes ensure that the change is managed in a proactive fashion. The MOC process ensures safety, health, and environmental risks and hazards are properly controlled when making changes to the facility, operation, or personnel. The MOC uses a format that includes a description of the proposed change, a risk assessment section, review, evaluation, and approval.

Eagle has implemented a HLF Contingency Water Management Plan for the site to respond to upsets in water balance, problems identified by inspections, and to address temporary shutdowns of the facilities. Procedures for stopping and starting the plant facilities, events of a power outage, provide response measures for emergencies related to failures of cyanide equipment, and response plans to address upsets in the process water balance. Contingency scenarios are included in the CMP, OMS Manual and SOPs. The OMS also includes activities related to surveillance of the HLF and solution pipelines and actions to be taken in case of a line rupture. Any spillage within the ADR plant are contained within the process plant containment. The pregnant and barren solution lines are contained within lined ditches or on the lined HLF, allowing for containment of any leakage. Should the in-heap pond become overwhelmed, solution would report to the events pond. In relation to a temporary closure or cessation of operations scenario, Eagle addresses options to manage solution in the HLF Contingency Water Management Plan, including the use of the in-pad and event ponds volumes, the use of liner to reduce meteoric water infiltration, or the use of enhanced evaporation.

Eagle has a program to conduct routine inspections of cyanide facilities, with the results of the inspections reviewed by the designated staff at least weekly. The inspections are conducted in different areas of the operation, with the frequencies varying from every shift to special annual inspections. The inspection program of cyanide facilities including unloading, mixing and storage activities and frequency of inspections were found to be sufficient to assure that the operation is safe and functioning within design parameters. The auditor reviewed inspections records and verified that inspections are conducted on a consistent manner.

A site visit specific to the audit was not possible due to COVID. However, based on prior site visits during operation, as well as photos provided for the audit, the auditor did verify the condition of tanks, secondary containments, pipelines, pumps, valves, pipeline trench, pond freeboard, and the absence of salt buildup is consistently in good order. The auditor reviewed inspection records and verified that inspections of cyanide facilities are conducted on a consistent manner. The inspections are documented and include date of the inspection, the name of the inspector and observed deficiencies.

Eagle uses two mechanisms to document, track and close corrective actions identified during inspections: Corrective actions that are related to maintenance of equipment at the process plants and HLF are managed by the maintenance department. Work orders resulting from deficiencies related to the cyanide facilities are initiated, tracked, prioritized, planned, and closed. All other corrective actions not related to maintenance of equipment that are identified through inspections conducted by process personnel or other areas (e.g. Environmental) are tracked, implemented and followed up until closure. The auditors reviewed examples of items identified

during inspections and records of the corrective actions. The inspections are reviewed by managers to ensure closure of the corrective action items.

The maintenance group has a preventive maintenance program for pumps, pipelines, valves, flow meters, gauges, level sensors, pH meters, sump pumps, filters, HCN sensors, tanks, ponds, and cyanide facilities in general. The Preventative Maintenance Plan is included in the CMP. The preventive maintenance program helps perform periodic maintenance and inspections of the integrity of process equipment, piping and tanks to ensure they are working properly. A corrective action maintenance schedule is also generated every week. Examples of corrective action records were reviewed and followed up to ensure they are being closed according to schedule.

Emergency power considerations are included in the CMP under CMP-SOP-010 – Backup Generator Operations and Maintenance. Eagle has three emergency power generators for the site. Each generator is rated for 1650 kW of output. In addition, eight (8) other generators of varying output are available on site. These three generators start automatically if there is a grid power outage to immediately restore power to the ADR Plant and HLF, allowing for the rapid restart of all critical equipment. Generators are monitored continuously via the plant control system and they are electrically and mechanically inspected on a weekly basis. Other routine and preventative maintenance programs specific to the generators are also in place, including on-load and no-load testing per the maintenance schedule.

4.2 Introduce management and operating systems to minimize cyanide use, thereby limiting concentrations of cyanide in mill tailings.

This section is not applicable to the Eagle site under the Cyanide Code, as there is no milling operation.

4.3 Implement a comprehensive water management program to protect against unintentional releases.

Eagle uses a comprehensive, probabilistic water balance using the Monte Carlo simulation software, GoldSim. This model was updated from the initial projections to include site operational data, as well as updated Climate/Meteorological data from operations, considering the proposed process plan through mine closure. An external consulting company (Mines Group, 2019) performed the initial water balance. The most recent water balance update report was produced by Forte Dynamics, Inc. in April 2020, approximately two months prior to the data cutoff date for the audit.

The operational water balance includes the following factors: solution application rates, precipitation and evaporation rates, effects of freshet runoff, and impacts of freezing and thawing. Potential power outages is not included in the operational water balance as Eagle has emergency backup generators on site which will avoid any effects on water balance activities. However, the potential impacts of power outages on solution management are considered in the most recent water balance update report. The event pond has a storage capacity capable of receiving 72-hours of drain down and runoff from a 100-year rainfall event, while still maintaining

a 0.5m freeboard. Should solution enter the event pond, the operation prioritizes solution recovery from the pond for makeup water in the HLF rather than continuing fresh water addition.

Eagle has zero process water discharges to surface waters during operations. In closure when the leach pad begins to drain down, water collected in the events pond or excess solutions may be treated in the mine water treatment plant and discharged if water quality standards are met. A description of the water balance model and calculations are included in the GoldSim Water Balance Model Report, dated April 2020.

Eagle conducts frequent inspections of the HLF and monitoring activities to ensure these facilities are operated according to the design criteria, following the inspection program included in the CMP and OMS manual. Process operators conduct routine inspections on the HLF, including conditions of the HLF and event ponds. The auditor reviewed inspections records and verified that inspections to the ADR Plant and HLF facilities are conducted on a consistent manner.

Freeboard in the in-heap pond is monitored on a continuous basis and reported daily. The auditor reviewed historic data on the pond level and confirmed that the level was maintained below the overflow level to the event pond. The event pond level was also maintained below the trigger points. During prior field visits, the auditor also observed that the freeboard was being maintained.

Climate data for Eagle has been collected since 2007. Multiple weather stations on site collects precipitation data on a daily basis. Data collected is used to compare the results to design assumptions and to calibrate the water balance model. The water balance model is updated and calibrated annually using precipitation, pond levels, solution flow rates and temperature data, as mentioned in the GoldSim Water Balance Report, dated April 2020. Eagle is a fairly young operation; however, several of the water balance model input parameters have been updated with revised assumptions based on actual operating data, as noted in the Water Balance Report by Forte Dynamics Inc. The water balance projections will continue to be revised as necessary based on actual data.

4.4 Implement measures to protect birds, other wildlife and livestock from adverse effects of cyanide process solutions.

Eagle monitors the HLF for indications of solution ponding. If ponding is observed, the CMP and OMS outline measures to be taken to mitigate the ponding or exclude avian species from accessing the solution. Measures can include reducing or eliminating flow to the area and/or covering the ponded area with avian exclusion screens.

If process or storm water collects in the event pond, operations recycles the solution back onto the HLF as soon as possible. If the solution concentration is determined to be above 50 mg/L WAD cyanide, the site increases monitoring of the effectiveness of the installed avian deterrent devices. Eagle has implemented electronic propane gas cannons to be used to scare away birds and other wildlife getting too close to the event pond. No cyanide-related wildlife mortalities have occurred since the startup of Eagle operations through the audit period of June 2020.

The CMP indicates that a wildlife exclusion fence was to be installed around the perimeter of the event pond to prevent access by larger terrestrial wildlife. The fencing was not installed as part of the project, but the auditor confirmed that the fence is included for installation under the 2021 capital budget.

4.5 Implement measures to protect fish and wildlife from direct and indirect discharges of cyanide process solutions to surface water.

Eagle does not have direct discharges to surface water from cyanide facilities during operation. When operations cease, process solutions will be managed by recirculating solution onto the leach pad or through evaporation. If the ponds or pad are unable to manage the solution, during closure, solution could be discharged through the mine water treatment plant if the water quality levels are met. The site has a comprehensive water management program in place to help protect against unintentional releases. Further, the facility design as a zero discharge facility aids in reducing the potential for indirect discharge.

Surface water quality monitoring data was provided from July 2019 through June 2020, covering the period prior to the introduction of cyanide. Trace quantities of cyanide measuring 0.005 mg/L total & WAD are present in both reference sites and surface monitoring locations indicated in the Environmental Monitoring, Surveillance, and Adaptive Management Plan, which are outside of the project influence, suggesting this as a natural background level. The monitoring results have no measured cyanide concentrations exceeding the background levels in down gradient monitoring locations, suggesting that direct or indirect discharge is not occurring.

4.6 Implement measures designed to manage seepage from cyanide facilities to protect the beneficial uses of ground water.

The Eagle HLF was constructed with measures to protect groundwater from seepage of process solutions and water. The HLF is constructed with a dual-layer synthetic geomembrane liner system of linear low-density polyethylene (LLDPE) over a geosynthetic clay liner (GCL) system in the in-heap pond area. This design is also used for the event pond. Above the pond level in the HLF, the pad transitions to an LLDPE over GCL system. A solution drainage and collection system lies on top of the liner system for recovery and pumping of the pregnant solution. A Leak Detection and Recovery System (LDRS) is constructed in the in-heap pond and event pond which return any solution collected to the heap or pond, respectively. This system is installed between the two layers of LLDPE to allow for detection of any leaks in the primary liner system.

The process plant is designed and operated to manage seepage and protect groundwater quality. The entire process area, including the cyanide mixing area, is contained within a reinforced concrete pad surrounded by curbs, parapets and stem walls, which provide a competent barrier to seepage. The concrete floor is sloped to drain solution into common sumps and then pump the solution back into the process circuit. All process tanks at the plant are secured to solid, reinforced concrete pedestal-type foundations and are contained within concrete berms with good condition concrete flooring. This foundation and floor system serves to prevent any seepage from the tank bottoms from entering the ground. Further, an LLDPE liner system was placed beneath the entire extents of the ADR plant and pregnant and barren

solution pipeline corridor. The additional liner system further serves to minimize the potential for seepage and protect groundwater for beneficial uses.

Similar to surface water monitoring results, the site data reviewed for groundwater does not suggest any impacts from cyanide to the beneficial use of groundwater from the operation.

4.7 Provide spill prevention or containment measures for process tanks and pipelines.

Spill prevention and containment measures are provided for all cyanide mixing, storage, and process solution tanks. The ADR plant tanks, piping, and pumps are enclosed within the ADR plant building which has a reinforced concrete slab and stem walls to provide containment. The floor is sloped to solution collection sumps. The sumps are designed to operate with automatic level sensors to return any solution collected back into the process. The combined containment within the ADR plant exceeds the minimum requirement of 110% of the largest tank. As noted above in under Standard of Practice 3.1, the cyanide mixing and storage containment is approximately 40% of the tank volume, with excess solution reporting to the CIC area containment and sump.

Other secondary and tertiary containment, including liner under the ADR plant provides for additional protection. Where the pregnant solution pipeline enters the building and the barren solution pipeline exits the building, the lines are run parallel to one another in an LLDPE lined channel, providing secondary containment. The facility design and subsequent visual inspection confirmed that pipes, tanks, and other systems containing process solution utilize carbon steel, HDPE, corrugated polyethylene, or stainless steel, all of which are compatible with cyanide and high pH solutions.

The tertiary lined event pond provides additional containment for the HLF in-heap pond to contain any spillage if the overflow level is reached. The pond has a pump back system for storm water or process solution return to the process system.

4.8 Implement quality control/quality assurance procedures to confirm that cyanide facilities are constructed according to accepted engineering standards and specifications.

The HLF at Eagle was designed by BGC Engineering Inc. with the process plant designed by Hatch. The design drawings by both firms were produced by Professional Engineers registered in the Yukon Territory and both having the appropriate Permit to Practice. Construction management was overseen primarily by JDS Energy & Mining Inc. The Eagle facility construction was performed by multiple contractors, including but not limited to Pelly Construction, The Gisborne Group, Clark Builders, and others. The quality control and quality assurance (QA/QC) programs were implemented during the initial construction of cyanide facilities at Eagle, with services provided primarily by Tetra Tech and Layfield Canada Ltd. The complete record package of the QA/QC documents was reviewed by the auditor.

The final record of construction package for the ADR plant and HLF areas is available electronically and was provided for auditor review. This package covered the leach pad earthworks and geosynthetic liner installation, as well as the ADR LLDPE liner and concrete

equipment foundations and containment area. The final issued for construction (IFC) drawings were available for piping and mechanical disciplines and indicate that the design is consistent with the intent of the Code. Turnover package requirements for the mechanical and piping elements of the project specify inclusion of all required welding certifications and non-destructive test results were provided in a table of contents for these elements, however, no QA/QC or record report or as-built drawings were provided. Visual inspection during prior site visits indicated that the tanks and pipelines were in good working order with no evidence of leakage, such as buildup of salts. The mechanical as-built/record of construction package is believed to be available and compiled by JDS; however, as it was not provided for this audit, the site was requested to obtain all relevant documents ahead of the next audit to demonstrate adherence to the CMP.

4.9 Implement monitoring programs to evaluate the effects of cyanide use on wildlife, surface and ground water quality.

The CMP, the Environmental Monitoring, Surveillance, and Adaptive Management Plan, the Wildlife Protection Plan, and CMP-SOP-025 – Environmental Monitoring Procedures specify the requirements implemented by Eagle to monitor the effects of cyanide use on wildlife, surface, and ground water quality.

A comprehensive wildlife monitoring program is in place and detailed records were provided documenting the extensive wildlife interactions at the site. No wildlife mortalities related to cyanide have occurred at the site during the period of the audit.

The groundwater and surface water monitoring program also provide for an extensive program to ensure water quality is protected for beneficial uses. The documents noted above also provide requirements for sampling, preservation, chain of custody requirements, reporting requirements, etc. to ensure sample integrity is maintained. Results from the monitoring program were reviewed by the auditor as discussed previously.

5. DECOMMISSIONING: Protect communities and the environment from cyanide through development and implementation of decommissioning plans for cyanide facilities.

5.1 Plan and implement procedures for effective decommissioning of cyanide facilities to protect human health, wildlife and livestock.

Eagle has an approved Reclamation and Closure Plan (RCP) for the site, which addresses the long-term physical and chemical stability of the site, including reclamation of surface disturbances from existing development. The plan was first submitted to the Yukon Water Board in August 2014, and the plan is required to be revised and resubmitted every two (2) years on or before October 1st. The last plan submittal, and thus the current plan during the audit period covering through June 2020 was RCP Version 2018-03 submitted in September 2018. In addition to regulatory approval, the RCP also includes engagement with First Nations groups and other stakeholders. The plan seeks to guide the return of the site to appropriate and functional ecosystems, similar to predevelopment conditions, while meeting key end land use

objectives. The RCP addresses water quality, physical stability, land use, aesthetics, and public health and safety.

The RCP outlines the measures to be implemented to achieve the objectives, as well as the criteria that will be used to determine the successful implementation of the plan. The HLF facility will continue residual leaching until such time that cyanide destruction and rinsing can occur. This period will be followed by final draindown and cover. The RCP describes the use of the in-heap pond as a bioreactor to improve solution quality. Considerations of evaporation, water treatment, and revegetation of the cover with local species that have high moisture uptake characteristics are also considered in the RCP. The process plant will be decommissioned and dismantled. Foundations will be broken up to the extents possible, with reinforced concrete generally buried in place with material suitable for supporting revegetation.

As noted above, the RCP, which includes the closure cost estimate, is required by the Yukon Water Board (YWB) and the Yukon Government Department of Energy, Mines and Resources (EMR) to be resubmitted every two years.

5.2 Establish an assurance mechanism capable of fully funding cyanide-related decommissioning activities.

The RCP includes a detailed cost estimate for closure of the Eagle project, including all cyanide facilities and cyanide-related closure activities. The cost estimate provides for a two-year peak liability, covering the construction year and first year of operation, as well as the life-of-mine (LOM) closure cost. The cost estimate was developed in compliance with the Yukon Mine Site Reclamation and Closure Policy Financial Guidelines and approved by the YWB. The estimate uses unit rates and quantities for items such as earthworks, piping removal, building removal, HLF detoxification, and care and maintenance monitoring costs. Labor is assumed to be provided by a third-party, consistent with requirements under the Code. The current bonding required is to cover the two-year peak liability and surety for this bond is held by Intact Insurance Company, which was updated most recently on January 14, 2020, with the certificate provided to the auditor for review. The bond amount will continue to be reviewed and updated, as necessary, with each subsequent resubmittal of the RCP.

6. WORKER SAFETY: Protect workers' health and safety from exposure to cyanide.

6.1 Identify potential cyanide exposure scenarios and take measures as necessary to eliminate, reduce and control them.

The CMP includes procedures describing the proper execution of cyanide-related tasks, such as unloading bulk cyanide shipments, mixing cyanide batches, plant operations, confined space entry, and equipment decontamination for maintenance. The CMP and associated SOPs provide guidance as to how tasks should be conducted to reduce or eliminate worker exposure. The CMP requires regular review of the SOPs with updates occurring, as needed. Several of the procedures reviewed for cyanide related tasks have undergone multiple revisions.

The procedures indicate to the operator the personal protective equipment (PPE) that is required for each task to be undertaken. Area inspections are also conducted each shift to minimize risk to employees. Personnel are also required to conduct and document pre-work inspections prior to carrying out a specific task.

Eagle has implemented procedures for the review of proposed modifications to procedures. The Management of Change procedure requires review and approval of a cross-functional team, including representatives from Health, Safety & Security, Environmental, Maintenance, Mine Operations, Processing, Site Services, Information Technology (IT), Supply Chain, and the General Manager prior to implementing any proposed change.

Input from workers is considered in procedure development and while evaluating the effectiveness of the procedures. The workers can contribute to the procedures through direct comments on the procedure, pre-task inspections, or during safety meetings.

6.2 Operate and monitor cyanide facilities to protect worker health and safety and periodically evaluate the effectiveness of health and safety measures.

Eagle has determined the appropriate pH for limiting HCN evolution during mixing and operations. The CMP indicates that a pH of between 10 and 10.5 should be maintained in the pregnant and barren solutions. In the CMP and CMP-SOP-005 – Cyanide Mixing Process, the pH of the solution prior to adding cyanide is indicated to be at least 12. However, site practice, which is consistent with industry practice, is to achieve a pH of at least 11 prior to adding cyanide to the mix tank. Operator logs documenting the pH of the process solutions every two hours and were found to be maintained above pH 10. The control system continuously monitors and trends for the mix tank pH, indicating that it is being maintained above pH 11. Both the operator logs and pH trend were reviewed by the auditor. The CMP and SOP should be updated to reflect the operational practices of the site.

Eagle monitors the cyanide concentration in the HLF and plant to determine the appropriate cyanide addition rates, and operations adjusts the addition rates as necessary. Eagle was designed with a cyanide concentration of 500 ppm in the barren solution; however, operating data shows that the site solution concentration is significantly lower than the design point, with operating logs indicating actual concentrations ranging from approximately 200 to 300 ppm. The CMP references use of an inline cyanide analyzer; however, an analyzer was not installed and is not currently planned. Cyanide concentrations are measured and recorded every two hours, along with the pH, with adjustments to the addition rate made as necessary to control at the target concentration.

A pre-startup risk assessment was undertaken to determine the locations that the HCN detectors should be placed. These locations were selected, based on where workers could be exposed to HCN at 10 ppm on an instantaneous basis or 4.7 ppm continuously over an 8-hour period. There are nine detectors placed throughout the ADR Plant. The detectors are Dräger brand and have both audible and visual alarms, with the low-level alarm point at 4.7 ppm with an amber strobe and 10 ppm with a blue strobe. The CMP and SOP's have varying descriptions of

detection level (4.5 vs. 4.7 ppm and 6.7 vs. 10 ppm), as well as strobe colors (red vs. blue). The site confirmed the setpoints as 4.7 and 10 ppm, as well as the strobe colors as amber and blue. The CMP and SOPs should be updated to reflect the operation of the installed units. The stationary HCN detectors are calibrated monthly on a regular PM schedule, per the manufacturer's procedure. Maintenance records for all 9 units were reviewed and found to be consistently calibrated, per the schedule and spanned over a one-year period.

In addition to the stationary detectors, operators in the ADR Plant carry a personal gas detector. The personal detectors are Gas Badge Pro units. These units are to be bump tested daily, prior to use. Calibration logs provided by the manufacturer indicated that the instruments were generally functioning as they were supposed to, with a couple of units that failed calibration or had an extended period without undergoing calibration. In review with site, it was indicated that failed units are not placed into service until they pass calibration, and units with extended calibration periods are typically those that have not been in service for a period of time.

Warning signs advising anyone entering the area that cyanide is present are posted at the entrances to the facility. Anyone coming on site, including visitors and contractors, must receive site hazard training, which includes basic information regarding cyanide. The signage clearly indicates that eating, drinking, or open flames are not permitted within cyanide facilities.

Safety showers, eye wash stations and dry powder/non-acidic sodium bicarbonate fire extinguishers are located throughout the operation. Two additional combination shower/eyewash units were recommended at the CIC feed level, as well as on the carbon safety screen platform over the barren solution sump. Confirmation by the operation that work orders have been generated for the installation of the additional units was provided. These items are maintained, inspected, and tested on a routine basis, as indicated in CMP-SOP-008 – Cyanide Facility Inspection.
The mixing and storage tanks, as well as pipelines containing cyanide are clearly identified to alert personnel to the contents. All lines containing cyanide, including low concentrations, are labeled with the specific contents and flow direction. Line labels are orange with black lettering. In addition, concentrated cyanide lines are indicated with orange/black labels, as well as purple tape on both sides of the label to further alert individuals to the presence of concentrated cyanide.

Safety Data Sheets (SDS), which include first aid procedures and additional information on cyanide safety and exposure, are found in hard copy in a binder in the ADR Plant control room. In addition, electronic copies of the information are available to all employees via the process drive on the site network. Similar information is posted directly on the cyanide mixing and storage tanks, including exposure symptoms, first aid and emergency response. All signage and SDS are printed in English, the language of the workforce.

The CMP includes procedures to investigate and evaluate cyanide exposure incidents to determine if the programs and procedures are adequate or if changes are required to protect worker health and safety or improve emergency response to cyanide exposures. The MoC process would be utilized to implement any recommended changes.

6.3 Develop and implement emergency response plans and procedures to respond to worker exposure to cyanide.

Eagle has potable water supply to the safety showers and eyewash stations, oxygen, a resuscitator, and a radio are readily available at the ADR Plant, near the mixing and storage area.

The CMP references amyl nitrite, as well as the Cyanokit, as being available at the control room and medical clinic. However, Canada discontinued the use of amyl nitrite for cyanide exposure. Upon startup, due to the qualifications required and the administration procedures for the Cyanokit, the site elected to store all of the antidote kits at the medical clinic, with kits split between the clinic and the ambulance. The kits are checked for proper storage, inventory and product expiry by the medical clinic staff.

Eagle has a written emergency response plan and procedures for responding to cyanide related incidents. The plan and procedures include responding to cyanide exposures, the site's "Code 1" procedure, rapid response process, communications, air ambulance evacuation and response to medical emergencies. Eagle has a medical clinic staffed 24/7 with two primary care paramedics with IV endorsements to allow administration of the Cyanokit. The clinic and the paramedics are under the medical direction of Iridia Healthcare. The site Cyanokit administration procedure was developed and approved by Iridia.

In addition to the clinic staff, the site has an emergency response team to provide primary response, rescue, and recovery, if required. An ambulance is available on site; however, due to the remote location of the site and limited regional resources, an emergency extending beyond the capabilities of the site clinic would likely require patient transport by air. The primary destination for air transport is Whitehorse General Hospital, however, if travel to Whitehorse is not possible, resources are available at the Mayo Nurses' Station, as well as Dawson City Community Hospital. If a patient requires transport offsite for a cyanide related emergency, the procedures require attendance by one of the site paramedics and at least one Cyanokit must accompany the patient.

The CMP requires that mock drills related to cyanide emergencies be conducted at least annually. Through the audit data cutoff period of June 2020, no drill had been conducted to date. However, a drill was reported to have occurred in August 2020, but documentation of the drill was not provided. Site should ensure drills with varying scenarios are conducted at least annually, consistent with the CMP.

The auditor requested written confirmation that a formal agreement was in place for offsite medical facilities to assist in an emergency, as required under the Code and specified within the CMP. However, no response was provided to verify that a formal agreement is in place.

7. EMERGENCY RESPONSE: Protect communities and the environment through the development of emergency response strategies and capabilities.

7.1 Prepare detailed emergency response plans for potential cyanide releases.

Eagle has developed the CMP, the HLF OMS, the Environmental Monitoring, Surveillance, and Adaptive Management Plan, the HLF Contingency Water Management Plan, and the Emergency Response Plan (ERP), all of which address response to the accidental release of cyanide. The Emergency Response Plan considers multiple potential failure scenarios involving cyanide and the site-specific environment, operation, and response.

Cyanco and its supply chain are responsible for the safe transport of cyanide to the site. As such, any cyanide related spills prior to delivery at site would be managed by Cyanco or their transporters. If necessary, site personnel could be requested to assist in an offsite response. Site personnel assisted with a December 2019 incident involving the rollover of a sea container carrying cyanide to the site. There was no release of product due to the incident, but the site assisted in securing and recovering the sea container.

Multiple emergency situations that could occur at site are addressed through the various documents, including the CMP and ERP. The plans detail responses specific to cyanide spills or leaks including process solution and dry reagent spills and makes provision for initial response, first aid, spill reporting contacts and spill control and cleanup. The HLF OMS provides specific procedures related to the heap leach area. Any potential emergency that has the potential to affect a community will trigger the notification requirements outlined in the Emergency Response Plan.

7.2 Involve site personnel and stakeholders in the planning process.

Eagle has included its workforce and stakeholders as potentially affected communities in emergency response planning. Coordination with local offsite medical providers was reported to have occurred, including air ambulance support. However, as noted, documentation confirming that formal agreements are in place were requested but not supplied. Site should confirm that offsite partners are aware of and are properly trained for their role in assisting with a cyanide related emergency.

Worker input into the planning is intended through comments on procedures, feedback in safety meetings and by taking part in the mock drills. Examples of worker input into procedures and cyanide related safety meetings were provided. As noted previously, a mock drill had not yet occurred as of the cutoff date for data collection related to this audit.

Eagle had regular interaction and consultation with the First Nation of Na-Ch Nyäk Dun (FNNND) and the Village of Mayo prior to startup to solicit input. Documentation of ongoing routine coordination was also provided to the auditor. Information regarding accidental releases, or any other incident that could impact water supplies, human health, or wildlife habitat are to be communicated to the potentially affected communities.

7.3 Designate appropriate personnel and commit necessary equipment and resources for emergency response.

The ERP provides primary contact details for the incident management team members, including the General Manager who has authority to ensure that sufficient and adequate resources are allocated to carry out the ERP. Alternate personnel are named for some roles, but not all roles have an identified alternate. The ERP does describe the roles and responsibilities for those involved in responding to an emergency.

Contact information in the ERP includes call-out procedures and 24-hour contact information for the Incident Management Team and the ERT. Phone numbers and email for all relevant parties are included in the ERP. Radios are also available for 24-hour communications.

The ERT Team Roles, Responsibilities, and Minimum Requirements are documented within the ERP, including training requirements for the ERT members, and it is the responsibility to the Emergency Response Coordinators to ensure that training is provided and maintained. All responders undergo the same training.

Emergency response equipment, including the locations of cyanide antidote kits are provided in the CMP and SOPs. As noted, the CMP references a kit at the ADR Plant, but upon startup of operations, it was determined that the kits should remain at the site medical clinic, as they cannot be administered by personnel other than the site paramedics.

The cyanide emergency response equipment is checked regularly by the site paramedics. ERT members check other emergency response equipment, including the site ambulance. The medical clinic inventory checks, which include the Cyanokits, as well as ambulance inspection forms were provided to the auditor.

Emergency response planning requirements have not been confirmed with external resources who may be required in an emergency. Outside entities should be engaged regularly and included in mock drills, as appropriate.

7.4 Develop procedures for internal and external emergency notification and reporting.

The CMP and ERP provide communication requirements and procedures for the site. The ERP addresses contact requirements for public communications, employee communications, regulatory contacts, contact information for response assistance from local assets, as well as through Cyanco, First Nations contacts, among others.

Among other responsibilities, the Incident Management Team Leader coordinates overall crisis management during an emergency. The Information Officer is responsible for overall communications and is the link between the onsite Incident Commander and the Corporate Emergency Management Team. The Information Officer will also prepare responses to media inquiries, with the appropriate spokesperson designated to deliver appropriate messaging. The Government/Regulatory and Liaison Officer is the point of contact for First Nations communications. The Emergency Response Coordinator advises when mutual aid assistance is required. Appropriate subject matter experts provide consultation related to emergencies where technical expertise relevant to the incident is required.

The ERP contains procedures for communication including emergency response contact information. In the event of an incident, the Corporate Emergency Management Team in consultation with the Incident Command Team, will notify affected parties in local communities, as necessary. Procedures for notifying outside agencies and the media are provided in the ERP.

7.5 Incorporate into response plans monitoring elements and remediation measures that account for the additional hazards of using cyanide treatment chemicals.

The CMP provides procedures in the event of cyanide release and addresses cyanide recovery and remediation if necessary. CMP-SOP-020 – Cyanide Emergency Response Procedures identifies the monitoring activities to be undertaken to identify the extent and effects of a release, The EMSAMP and CMP-SOP-025 – Environmental Monitoring Procedures detail the requirements for sampling and disposal of any contaminated material from a cyanide release. Releases resulting in contaminated soils would be cleaned up and disposed of onto the HLF.

Treatment with chemicals for neutralization or decontamination is allowed for managing spilled solid cyanide within the mixing area containment, per CMP-SOP-005 – Cyanide Mixing Process. Operations would treat any contaminated area with sodium or calcium hypochlorite to destroy the cyanide. Following a minimum one-hour decomposition, the spillage could be washed to a sump with a large volume of water and the solution returned to the process. The CMP-SOP-020 – Cyanide Emergency Response Procedures further allows treatment with hypochlorite of any water flowing through the area where a spill has occurred, requiring the slurry to be contained and recovered into suitable containers.

Drinking water is prepared through onsite generation of potable water. In the event of an emergency, drinking water could be trucked to site, if necessary.

The CMP does not explicitly prohibit the use of chemicals such as sodium hypochlorite, ferrous sulfate and hydrogen peroxide to treat any cyanide that would have been released into surface water. The plan references the safe use and application of the peroxide detox system to ensure that the process does not unduly impact surface waters. The plan should be updated to specify that addition of these chemicals to surface water is prohibited.

The CMP, the HLF OMS, and the Environmental Monitoring, Surveillance, and Adaptive Management Plan all address response to the accidental release of cyanide and detail the requirements for sampling and disposal of any contaminated material from a cyanide release. These documents outline procedures for validation sampling of any cleanup or remediation measures in the event of a cyanide release.

The CMP and the Environmental Monitoring, Surveillance, and Adaptive Management Plan address the potential need for monitoring the effects of a cyanide release. These documents also address sampling and monitoring.

7.6 Periodically evaluate response procedures and capabilities and revise them as needed.

The CMP requires that the ERP be reviewed at least annually and updated to incorporate changes in facility infrastructure or operational processes that involve management or the use of cyanide. The ERP is also intended to be updated to incorporate any lessons learned as outcomes from emergency response or mock drills.

As noted previously, mock drills involving cyanide are intended to be conducted at least annually. However, at the data cutoff date of June 2020, Eagle had not yet undergone its first mock drill since commencing operations. Also, at the time of the audit cutoff date, the ERP had not required implementation due to any cyanide-related incidents. Provisions are in place within the CMP to incorporate lessons learned from any incidents or mock drills, if and when they occur.

8. TRAINING: Train workers and emergency response personnel to manage cyanide in a safe and environmentally protective manner.

8.1 Train workers to understand the hazards associated with cyanide use.

New workers at the mine receive detailed orientation training. Workers typically receive classroom training prior to receiving in-plant training. Initial cyanide hazard training (Level 1) addresses cyanide basics and awareness. Upon completing orientation, personnel requiring it also receive detailed cyanide related training (Level 2 and Level 3), as well initial task training, which includes task specific hazards.

Contractors working at site must also undergo site induction training, which includes cyanide hazard training. Depending on the nature of the work to be performed, contractors may receive Level 1 through Level 3 training.

Annual cyanide refresher training, cyanide related task training, and cyanide release training are to be provided to all employees who may be exposed to cyanide. However, at the time of the data cutoff date, refresher training was not yet required, given the short duration the site has been in operation. The tracker did not provide the date that training was complete. The date of initial training and all subsequent refresher training should be recorded in the tracker. All three levels of training include a written test.

Training records for all initial cyanide hazard training for all site and contractor personnel have been retained electronically. ERT member records for cyanide hazard training are recorded separately in the tracking spreadsheet. An ERT specific certification tracking sheet was provided, but the sheet did not indicate specific training that was completed, such as firefighting, occupational first aid, HAZMAT, etc. Specific and detailed training records should be kept for the ERT for both initial certifications and ongoing refresher training.

8.2 Train appropriate personnel to operate the facility according to systems and procedures that protect human health, the community and the environment.

Eagle trains personnel to perform their routine tasks, including unloading bulk cyanide, mixing, production tasks, and maintenance with minimal risk to health, safety or the environment by

preventing unplanned releases. Employees whose role requires working around cyanide receive training on how to perform their assigned tasks with minimal risk.

Cyanide related training elements for employee training are addressed in the Level 1, 2, and 3 cyanide training program, as well as through the operation's SOPs. Operators will also be trained components from the Heap Leach and Process Facilities Plan, the Spill Response Plan, the HLF Contingency Water Management Plan, the Emergency Response Plan, the Environmental Monitoring Surveillance and Adaptive Management Plan and the Preventive Maintenance Program Plan relevant to their duties.

The cyanide related training program at Eagle is intended to be administered by personnel or supervisors with prior experience in training and the knowledge and experience in the systems that are the primary subject of the training. The training content for Eagle was developed by the Process Manager who has extensive experience in personnel training on the safe use of cyanide.

Cyanide is a regular topic for safety meetings. The sign in sheets for several meetings with a cyanide-related topic were provided for review.

All operators are trained prior to working with cyanide. New employees are required to complete the appropriate level of training for their specific task, including the written test, prior to beginning work. These written tests for each level of training are used, in part, to help evaluate the effectiveness of the training and ensure the trainees understand the material being presented.

As noted above, training records were provided, but the tracking sheet only indicated the individual, department, and level of training. The training record should also indicate the date training was completed, the name of the trainer, and the written test results.

8.3 Train appropriate workers and personnel to respond to worker exposures and environmental releases of cyanide.

Eagle trains employees in the use and handling of cyanide, including mixing, leaching and maintenance processes, so that they are aware of the proper handling, decontamination, and first aid procedures. Training also includes response to first aid or cyanide release incidents. The CMP also indicates that workers will participate in the mock emergency drills.

Employees working with cyanide are trained in initial response, including recognizing the signs and symptoms of exposure, as well as basic first aid measures. Employees are also trained as to the locations of emergency response equipment. The ERT also received additional training, such as firefighting, occupational first aid (OFA) level 3, HAZMAT response, etc.

Given the remote and self-contained nature of the site, Eagle intends for all emergency response to be performed by site personnel. However, in the event of an emergency that is beyond site management's capabilities, a contingency plan should be in place, including formal agreements for offsite assistance.

Mock drills involving cyanide are intended to be conducted at least annually. However, at the data cutoff date of June 2020, Eagle had not yet undergone its first mock drill since commencing operations. Also, at the time of the audit cutoff date, the ERP had not required implementation due to any cyanide-related incidents. Records of ERT and employee involvement, as well as any offsite support, in any future mock drills should be recorded and the lessons learned incorporated into the ERP.

9. DIALOGUE: Engage in public consultation and disclosure.

9.1 Provide stakeholders the opportunity to communicate issues of concern.

Eagle conducts on-going communication in Mayo and other regional locations in order to provide general information on the Project. This communication permits discussion of any concerns or questions related to the use of cyanide or other aspects of mine operations. Stakeholders participate through informal meetings, Project specific workshops and open houses, or the regulatory engagement processes to include the FNNND, the YWCHSB, community leaders, and other stakeholders in discussions on the project. The Environmental Assessment Consultation Summary was provided to document initial engagement. Documentation of regular ongoing communication meetings with the FNNND were provided to the auditor.

9.2 Initiate dialogue describing cyanide management procedures and responsively address identified concerns.

The meetings referenced above also allow the site to disseminate general written or visual information on cyanide, its use in the mining process, and the general practices established to protect the environment and the health and safety of the workforce and the public with respect to any potential spills or releases. The Environmental Assessment Consultation Summary was provided to document initial engagement. Documentation of regular ongoing communication meetings with the FNNND were provided to the auditor.

9.3 Make appropriate operational and environmental information regarding cyanide available to stakeholders.

Eagle makes information about the operation publicly available and is committed to disseminating information on any cyanide exposures or releases that could impact human health or the environment, in compliance with all applicable Yukon and Federal Government requirements. These will include any release of process solution outside of containment, any release of hazardous product in which there is a potential for that product to enter a waterway, and any release that results in dysfunction from lack of oxygen or poisoning. In addition, as noted in the Emergency Response Plan, a designated member of the senior management team, the Information Officer/Government Liaison Officer, will serve as a single point of contact with the media for specific information on any such exposure or release, associated corrective measures, and preventive measures taken the reduce or prevent the recurrence of similar incidents in future. As of the cutoff date for data collection, no cyanide related releases or significant injuries had occurred.

APPENDIX T

Independent Limited Assurance Review of the Eagle Gold Mine Cyanide Management Plan

11762 Calle Vivienda
San Diego, CA, 92128
Telephone: (720) 442-3919
www.smartaccess.us

INDEPENDENT LIMITED ASSURANCE REVIEW OF THE EAGLE GOLD MINE CYANIDE MANAGEMENT PLAN

Prepared by:

SmartAccEss Socio-Environmental Consulting LLC

11762 Calle Vivienda,
San Diego, CA, 92128
USA

Prepared for:

Victoria Gold Corp

80 Richmond Street West, Suite 204
Toronto, ON M5H 2A4,
Canada

February 2021

11762 Calle Vivienda
San Diego, CA, 92128
Telephone: (720) 442-3919
www.smartaccess.us

Independent Limited Assurance Report

To the Directors of Victoria Gold Corp:

SmartAccEss Socio-Environmental Consulting (SmartAccEss) was engaged by Victoria Gold Corp (Victoria, VGC) to provide limited assurance on the conformance of the Eagle Gold Mine Cyanide Management Plan (CMP) with the International Cyanide Management Code (Cyanide Code, Code) for the period ended June 30th 2020.

Assurance conclusion

Based on the evidence reviewed by SmartAccEss, nothing has come to our attention to indicate that Victoria's Eagle Mine CMP conformance with the Cyanide Code as described below, as of June 30th 2020, is not fairly stated, in all material respects. This conclusion is to be read in the context of the remainder of this report.

Assurance scope

The assurance scope consists solely of an independent review of the *Summary Audit Report "Review of the Cyanide Management Plan and Implementation*" prepared by Forte Dynamics dated February 2, 2021. SmartAccEss has not conducted a site visit nor reviewed the CMP content.

Forte Dynamics was requested by Victoria to perform the annual audit of the Eagle Gold Mine's CMP to comply with a condition of the Water Use License #QZ14-041-1, issued by the Yukon Water Board. The annual audit did not include a Cyanide Code certification audit, nor did it include a dedicated site visit for the purpose of the audit given the challenges due to COVID-19. Rather, Forte Dynamics relied on prior site visits and communication with the site team, photographs, electronic document review, and personnel interviews to conduct the assessment remotely.

The criteria for Victoria's conformance with the Cyanide Code requirements are set out by the International Cyanide Management Institute (ICMI) in the revised *Auditor Guidance for Use of Gold Mining Operations Verification Protocol* dated February 2018.

Respective responsibilities of the company and the independent practitioner

Victoria is responsible for ensuring that the company designs, implements, operates and monitors activities, processes and controls to ensure conformance with the requirements of the Cyanide Code. It is also responsible for the preparation and regular update of the CMP and to conduct the annual audits required by permit conditions.

SmartAccEss responsibilities are to carry out a limited assurance engagement and to express a conclusion based on the work performed. The extent of evidence-gathering procedures performed in a limited assurance engagement is less than for a reasonable level of assurance, and therefore level of assurance is provided.

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San Diego, CA, 92128
Telephone: (720) 442-3919
www.smartaccess.us

Limited assurance performed

SmartAccEss reviewed the *Summary Audit Report "Review of the Cyanide Management Plan and Implementation*" to compare its content with the requirements set out in the Cyanide Code, and validates that Victoria has conducted an annual audit of the Cyanide Management Plan. The review verified that:

- The CMP follows the structure of the Cyanide Code, and the report prepared by Forte follows the structure of a Cyanide Code Summary report covering all 9 Principles and 31 Standards of Practice.
- All key aspects and elements of the Cyanide Code have been included in the report. Systems are in place to manage cyanide in a responsible manner and in compliance with the Code. The report indicates that the Eagle mine has:
  - Appropriate SOPs and practices to handle and prepare cyanide solutions in a safe manner.
  - Contingency and emergency response plans in place to respond to cyanide related emergencies.
  - No impacts to surface water or groundwater related to cyanide.
  - No wildlife mortalities related to cyanide.
  - Programs to regularly inspect and maintain facilities to ensure safe management of cyanide.
  - A water balance that is managed to protect against unintentional releases.
  - Cyanide facilities that have been constructed following QA/QC procedures.
  - A closure plan including decommissioning activities and bonding in place.
  - Health and safety measures to protect workers from exposure to cyanide.
  - Training programs for workers and emergency response personnel in cyanide management.
  - Engagement programs with local communities and disclosure.
- The Eagle mine has less than one year of operation and in certain cases systems are still under implementation (e.g. mock drills, annual refresher training).

Based on the review, it is fair to conclude that Victoria substantially complies with the Cyanide Code requirements. The report identified opportunities for improvement in some of the Code Principles.

This assurance report is provided solely to Victoria in accordance with the terms of engagement. This work has been undertaken so that SmartAccEss might report to Victoria on those matters we have been engaged to report upon in this assurance report, and for no other purpose. SmartAccEss does not accept or assume responsibility to anyone other than Victoria for the work conducted, for this assurance report, or for the conclusion we have reached.

Considering this assurance was mainly focused on validating the completion of the annual audit of the CMP, the engagement was conducted by a professional with suitable skills and experience in both assurance and in the Cyanide Code.

Inherent limitations

Non-financial information, such as Eagle Mine conformance with the Cyanide Code, is subject to more inherent limitations than financial information, given the more qualitative characteristics of the subject matter and the methods used for determining conformance. The absence of a significant body of established

11762 Calle Vivienda
San Diego, CA, 92128
Telephone: (720) 442-3919
www.smartaccess.us

practice on which to draw to evaluate and measure nonfinancial information allows for different, but acceptable, measurement techniques and can affect comparability between entities and over time.

Independence and competency statement

In conducting this engagement, SmartAccEss has complied with the independence and other ethical requirements of the Code of Ethics for Environmental Professionals issued by the National Registry of Environmental Professional (NREP – www.nrep.com), which is founded on fundamental principles of integrity, objectivity, professional competence and due care, confidentiality and professional behavior.

SmartAccEss confirms that the independent reviewer that undersigns this letter is accredited as both Lead Auditor and Mining Technical Expert Auditor by the International Cyanide Management Institute and have ample experience auditing the Cyanide Code.



Luis (Tito) Campos

SmartAccEss Socio-Environmental Consulting, LLC

San Diego, CA

February 23rd 2021

APPENDIX U1

Seeding Trials with Seeds Sourced from Yukon Seed and Restoration

#4 – 25 Pilgrim Place
Whitehorse, Y.T.
Y1A 0M7
867-668-6838

TECHNICAL MEMO

To: Lindsay Rear
Victoria Gold

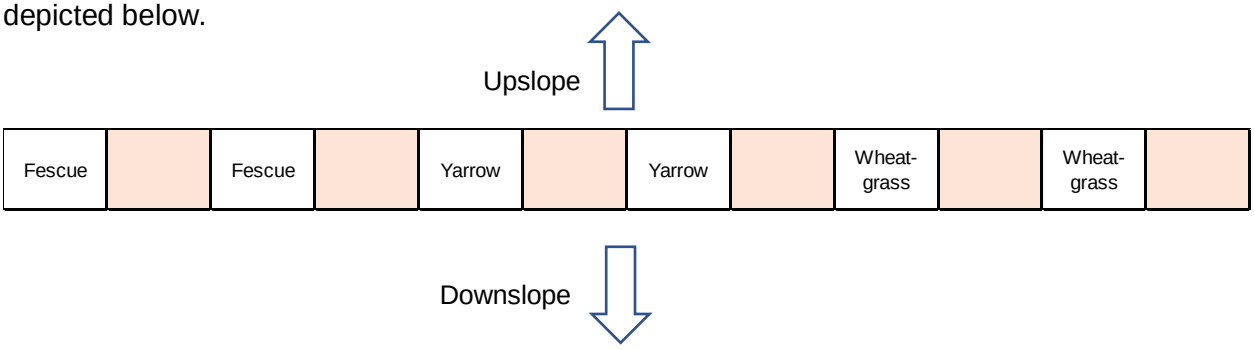
Date: October 14th, 2020

From: Bonnie Burns
Laberge Environmental Services

Re: **SEEDING TRIALS WITH SEEDS SOURCED FROM YUKON SEED AND RESTORATION, SEPTEMBER 2020**

Yukon Seed and Restoration of Mayo Yukon provided Victoria Gold (VG) with three species of locally sourced seeds for trial testing. It is the intent of VG to hopefully purchase local seeds in the future for their reclamation needs.

Three species that have erosion control potential were seeded on trial plots. Included were yarrow (*Achillea millefolium*), Altai fescue (*Festuca altaica*) and wheatgrass (*Elymus sp*.). In collaboration with Katie Babin of VG, two sites were chosen that will likely remain undisturbed in the long term, on slopes at the Pelly Laydown area south of the security gate at Km 43. The plots were laid out in a linear fashion perpendicular to the slope. Duplicate plots were seeded per species at each site. Each plot was one square meter with a buffer plot between the seeded plots. The layout is depicted below.



The objective was to apply 500 pure live seeds (PLS) per plot. Since the purity or the germination rate of the supplied local seed was unknown, and the seeds were not completely clean (some chaff etc was present) the amount of seed was doubled. Weights of each species of seed were determined and then an appropriate amount weighed to achieve the approximate number of seeds per plot. This worked out to 0.3 g/plot for yarrow, 1.3 g/plot for fescue and 2.0 g/plot for wheatgrass.

Prior to seeding, each plot was scarified to a depth of approximately 15 cm and any existing vegetation and large rocks were removed. Once the plots were prepared the seeds were scattered evenly throughout the square meter. The seeds were then gently tamped down to ensure good seed/soil contact. A buffer was left between each seeded plot.

Characteristics of the two sites established and seeded on September 22nd are tabulated below.

Characteristic	Site #1	Site #2
UTM Coordinates, NAD 83, Zone 8W	458360 7098961	458413 7098306
Aspect	South facing	North facing
Bearing	190°	315°
Slope	20 to 30°	5 to 10°
Elevation (m)	751	758

Composite soil samples were collected at each site and analyzed by ALS. Two scoops of soil were collected from each of the six plots per site prior to seeding, mixed thoroughly and placed into new, clean glass jars. Samples were kept cool prior to delivery to the ALS depot in Whitehorse, Yukon. Analyses were completed by the ALS laboratory in Burnaby, BC. Data is summarized below with the full analytical report appended to this memo.

PHYSICAL AND NUTRIENT CHARACTERISTICS				
Parameter	**LDL**	**Units**	**TP-1**	**TP-2**
pH (1:2 soil:water)	0.1	pH units	7.9	7.36
Texture class			Coarse	Coarse
Available phosphate (as P)	2	mg/kg	<2.0	<2.0
Available nitrate + nitrite (as N)	1	mg/kg	<1.0	<1.0
Available nitrite (as N)	0.4	mg/kg	<0.40	<0.40
Available nitrate (as N)	2	mg/kg	<2.0	<2.0
Available potassium	20	mg/kg	43	34
Total carbon	0.05	%	0.575	0.299
Inorganic carbon (as CaCO3 equivalent)	0.4	%	1.59	<0.40
Inorganic carbon	0.05	%	0.191	<0.050
Total organic carbon	0.05	%	0.384	0.299
Organic matter	0.1	%	0.66	0.52

The coarse, near neutral soil at both sites contained no available phosphate or any form of nitrogen, and very little carbon, as is typical of mineral soils.

The soil samples were also analyzed for a suite of 35 metals. Of these boron, sulfur and tin were not detected at either site. Concentrations of applicable metals were compared to the most recent Canadian Council of Ministers of the Environment (CCME) guidelines and the Yukon Contaminated Sites Regulations for agriculture and parklands in the table below. Arsenic was the only parameter that exceeded all of the guidelines and did so at both sites. Arsenic is associated with the gold bearing anomalies in the district and these concentrations reflect the natural mineralization of the Project area that have been documented in previous baseline reports.

RESULTS COMPARED TO CCME AND YUKON AGRICULTURE AND PARKLAND GUIDELINES FOR METALS IN SOILS						
Element	**TP-1**	**TP-2**	**CCME (mg/kg)**		**Yukon CSR (mg/kg)**	
			Agriculture	**Parkland**	**Agriculture**	**Parkland**
Antimony (Sb)	9.95	8.01	20	20	20	20
Arsenic (As)	**224**	**159**	12	12	15	15
Barium (Ba)	144	74.2	750	500	750	500
Beryllium (Be)	0.3	0.29	4	4	4	4
Cadmium (Cd)	0.325	0.333	1.4	10	1.5	1.5
Chromium (Cr)	14.2	12.9	64	64	50	60
Cobalt (Co)	10.4	9.64	40	50	40	50
Copper (Cu)	35.7	23.6	63	63	90	90
Lead (Pb)	31	28.2	70	140	100	100
Mercury (Hg)	0.0478	0.0429	6.6	6.6	0.6	15
Molybdenum (Mo)	0.76	0.76	5	10	5	10
Nickel (Ni)	24.7	21.3	45	45	150	150
Selenium (Se)	0.33	0.24	1	1	2	1
Silver (Ag)	0.24	0.13	20	20	20	20
Thallium (Tl)	0.134	0.1	1	1	2	--
Tin (Sn)	<2.0	<2.0	5	50	5	50
Uranium	1.2	1.36	23	23		
Vanadium (V)	19.4	14.8	130	130	200	200
Zinc (Zn)	72.7	70.4	250	250	150	150
Data that exceeds the guidelines are highlighted in orange.						

Commencing in the summer of 2021, annual monitoring of the trials will be conducted. The assessments will measure the progress and allow for refinement of the prescriptions and techniques for application to similar areas requiring erosion control at the Eagle Gold Project.

Photographs of each site are presented below.



Notes:

Near Pelly Laydown

Each site is a transect of six 1 m x 1 m plots perpendicular to the slope

Test species: Altai fescue, yarrow and slender wheatgrass

Revegetation Trials 2020

Prepared by: Krystal Isbister
FloraTek Consulting

Coordinate System: NAD83/Yukon Albers

Base Map: VG Ortho 2020-09-02

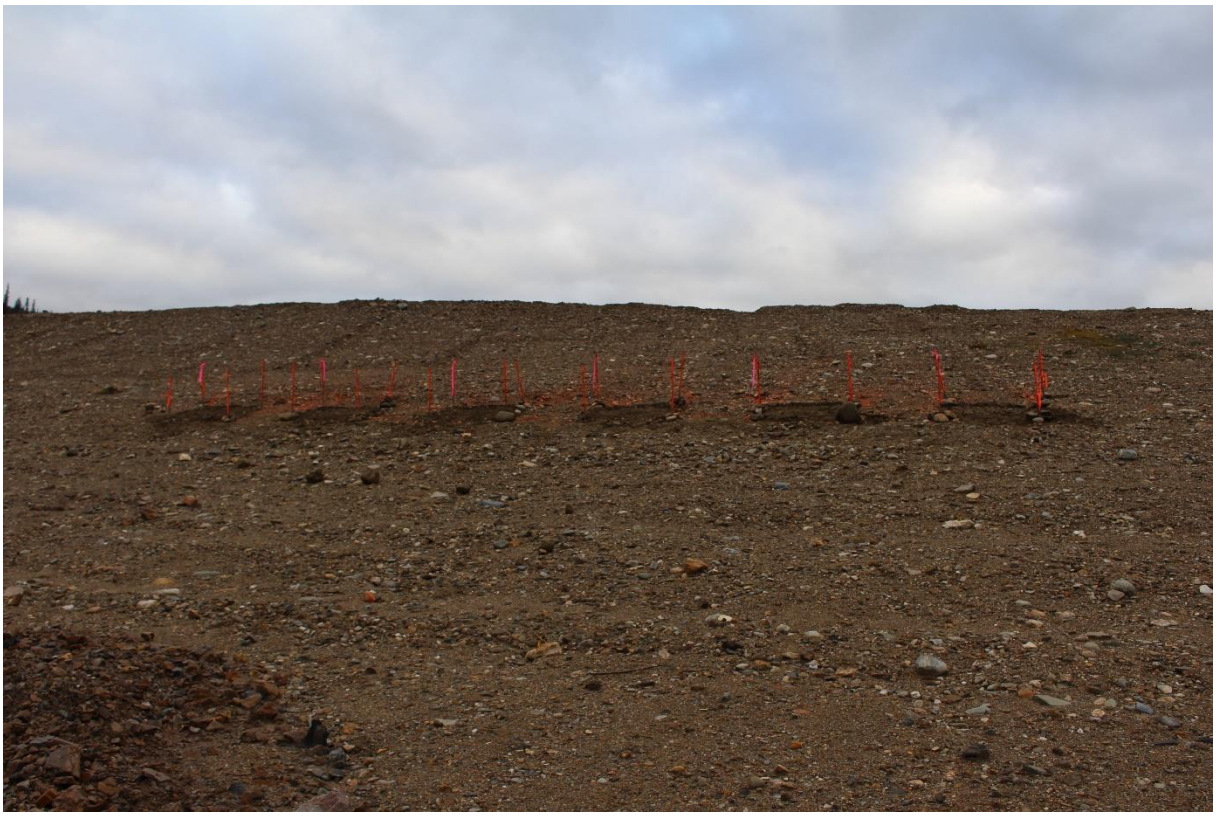
Mapping Software: QGIS 3.2.2

Date: October 30th, 2020

Photographs of Site #1



All plots prepared and seeded.



Looking upslope to the seeded plots.

Photographs of Site #2



Prepared and seeded plots.



Looking downslope at Site #2.

ALS Environmental

CERTIFICATE OF ANALYSIS

Work Order	: **VA20B6536**	Page	: 1 of 6
Client	: **Victoria Gold (Yukon) Corp.**	Laboratory	: Vancouver - Environmental
Contact	: Bill Bowden	Account Manager	: Hilary Woods
Address	: Suite 1000 - 1050 W. Pender St Vancouver BC Canada V6E 3S7	Address	: 8081 Lougheed Highway Burnaby BC Canada V5A 1W9
Telephone	: 867.456.7700 ext. 6381	Telephone	: +1 604 253 4188
Project	: Veg Plot Soil - September	Date Samples Received	: 26-Sep-2020 14:20
PO	: 14043	Date Analysis Commenced	: 30-Sep-2020
C-O-C number	: 20200924e	Issue Date	: 13-Oct-2020 10:36
Sampler	: AT, BB, K T		
Site	: Victroria Gold Corp.		
Quote number	: Q68199		
No. of samples received	: 8		
No. of samples analysed	: 8		

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QC Interpretive report to assist with Quality Review and Sample Receipt Notification (SRN).

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is conducted in accordance with US FDA 21 CFR Part 11.

Signatories	*Position*	*Laboratory Department*
Brieanna Allen	Department Manager - Organics	Organics, Burnaby, British Columbia
Colby Bingham	Quality Systems Coordinator	Inorganics, Saskatoon, Saskatchewan
Hedy Lai	Team Leader - Inorganics	Inorganics, Saskatoon, Saskatchewan
Mae Soropia	Laboratory Analyst	Metals, Burnaby, British Columbia
Nancy Cruse	Laboratory _ Supervisor	Inorganics, Saskatoon, Saskatchewan
Shaneel Dayal	Analyst	Metals, Burnaby, British Columbia
Xihua Yao	Laboratory Analyst	Inorganics, Saskatoon, Saskatchewan

General Comments

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Refer to the ALS Quality Control Interpretive report (QCI) for applicable references and methodology summaries. Reference methods may incorporate modifications to improve performance.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

Please refer to Quality Control Interpretive report (QCI) for information regarding Holding Time compliance.

Key : CAS Number: Chemical Abstracts Services number is a unique identifier assigned to discrete substances
LOR: Limit of Reporting (detection limit).

Unit	*Description*
-	No Unit
%	percent
mg/kg	milligrams per kilogram
pH units	pH units

<: less than.

>: greater than.

Surrogate: An analyte that is similar in behavior to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.

Test results reported relate only to the samples as received by the laboratory.

UNLESS OTHERWISE STATED on SRN or QCI Report, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

Analytical results in reports identified as "Preliminary Report" are considered authorized for use.

Analytical Results

Sub-Matrix: **Soil**
(Matrix: **Soil/Solid**)

Analyte	CAS Number	Method	LOR	Unit	Client sample ID	TP-1	TP-2	Site-A	Site-D	Site-E
					Client sampling date / time	22-Sep-2020	22-Sep-2020	22-Sep-2020 07:30	22-Sep-2020 08:00	22-Sep-2020 08:45
						VA20B6536-001	VA20B6536-002	VA20B6536-003	VA20B6536-004	VA20B6536-005
						Result	Result	Result	Result	Result
Physical Tests										
pH (1:2 soil:water)	----	E108	0.10	pH units		7.90	7.36	8.13	8.18	7.54
Particle Size										
texture class	----	E178	-	-		Coarse	Coarse	Coarse	Coarse	Coarse
Anions and Nutrients										
phosphate, available (as P)	14265-44-2	E384	2.0	mg/kg		<2.0	<2.0	<2.0	3.5	3.8
Organic / Inorganic Carbon										
carbon, total [TC]	----	E351	0.050	%		0.575	0.299	0.274	0.142	0.169
carbon, inorganic [IC]	----	E354	0.050	%		0.191	<0.050	0.072	0.054	0.054
carbon, inorganic [IC], (as CaCO3 equivalent)	----	E354	0.40	%		1.59	<0.40	0.60	0.45	0.45
carbon, total organic [TOC]	----	EC356	0.050	%		0.384	0.299	0.202	0.088	0.115
organic matter	----	EC356	0.10	%		0.66	0.52	0.35	0.15	0.20
Plant Available Nutrients										
nitrate + nitrite, available (as N)	----	E269.N+N	1.0	mg/kg		<1.0	<1.0	<1.0	<1.0	<1.0
nitrate, available (as N)	14797-55-8	EC269.NO3	2.0	mg/kg		<2.0	<2.0	<2.0	<2.0	<2.0
nitrite, available (as N)	14797-65-0	E269.NO2	0.40	mg/kg		<0.40	<0.40	<0.40	0.49	<0.40
potassium, available	7440-09-7	E390	20	mg/kg		43	34	41	88	75
Metals										
aluminum	7429-90-5	E440	50	mg/kg		7170	5500	11400	8370	10800
antimony	7440-36-0	E440	0.10	mg/kg		9.95	8.01	7.22	48.9	69.4
arsenic	7440-38-2	E440	0.10	mg/kg		224	159	85.4	1480	1140
barium	7440-39-3	E440	0.50	mg/kg		144	74.2	47.5	112	110
beryllium	7440-41-7	E440	0.10	mg/kg		0.30	0.29	0.30	0.76	1.05
bismuth	7440-69-9	E440	0.20	mg/kg		1.07	1.15	1.10	3.23	1.80
boron	7440-42-8	E440	5.0	mg/kg		<5.0	<5.0	<5.0	<5.0	<5.0
cadmium	7440-43-9	E440	0.020	mg/kg		0.325	0.333	0.147	0.506	0.901
calcium	7440-70-2	E440	50	mg/kg		3660	1340	3530	2030	3380
chromium	7440-47-3	E440	0.50	mg/kg		14.2	12.9	16.0	18.6	21.9
cobalt	7440-48-4	E440	0.10	mg/kg		10.4	9.64	15.4	17.1	21.3
copper	7440-50-8	E440	0.50	mg/kg		35.7	23.6	49.7	50.3	65.2
iron	7439-89-6	E440	50	mg/kg		24800	23800	29000	36600	46500

Analytical Results

Sub-Matrix: **Soil**
(Matrix: **Soil/Solid**)

Analyte	CAS Number	Method	LOR	Unit	Client sample ID	TP-1	TP-2	Site-A	Site-D	Site-E
					Client sampling date / time	22-Sep-2020	22-Sep-2020	22-Sep-2020 07:30	22-Sep-2020 08:00	22-Sep-2020 08:45
						VA20B6536-001	VA20B6536-002	VA20B6536-003	VA20B6536-004	VA20B6536-005
						Result	Result	Result	Result	Result
Metals										
lead	7439-92-1	E440	0.50	mg/kg		31.0	28.2	22.0	64.5	153
lithium	7439-93-2	E440	2.0	mg/kg		9.4	7.8	13.5	11.6	18.4
magnesium	7439-95-4	E440	20	mg/kg		3850	2380	5060	2810	4010
manganese	7439-96-5	E440	1.0	mg/kg		392	607	520	589	1070
mercury	7439-97-6	E510	0.0050	mg/kg		0.0478	0.0429	0.0232	0.0869	0.0479
molybdenum	7439-98-7	E440	0.10	mg/kg		0.76	0.76	0.43	1.48	1.88
nickel	7440-02-0	E440	0.50	mg/kg		24.7	21.3	28.3	38.1	50.3
phosphorus	7723-14-0	E440	50	mg/kg		384	300	238	394	415
potassium	7440-09-7	E440	100	mg/kg		1120	900	1240	3270	4650
selenium	7782-49-2	E440	0.20	mg/kg		0.33	0.24	<0.20	0.25	0.27
silver	7440-22-4	E440	0.10	mg/kg		0.24	0.13	0.40	1.55	1.92
sodium	7440-23-5	E440	50	mg/kg		88	58	<50	78	86
strontium	7440-24-6	E440	0.50	mg/kg		25.6	14.1	38.0	33.0	29.7
sulfur	7704-34-9	E440	1000	mg/kg		<1000	<1000	<1000	<1000	<1000
thallium	7440-28-0	E440	0.050	mg/kg		0.134	0.100	0.109	0.491	0.552
tin	7440-31-5	E440	2.0	mg/kg		<2.0	<2.0	<2.0	<2.0	<2.0
titanium	7440-32-6	E440	1.0	mg/kg		218	140	65.5	343	455
tungsten	7440-33-7	E440	0.50	mg/kg		1.58	2.20	<0.50	5.21	0.80
uranium	7440-61-1	E440	0.050	mg/kg		1.20	1.36	1.04	2.45	2.65
vanadium	7440-62-2	E440	0.20	mg/kg		19.4	14.8	17.2	22.0	25.5
zinc	7440-66-6	E440	2.0	mg/kg		72.7	70.4	65.4	122	127
zirconium	7440-67-7	E440	1.0	mg/kg		5.3	3.7	8.5	10.8	13.6

Please refer to the General Comments section for an explanation of any qualifiers detected.

Analytical Results

Sub-Matrix: **Soil**
(Matrix: **Soil/Solid**)

Analyte	CAS Number	Method	LOR	Unit	Client sample ID	Site-G	Site-J	Dup	----	----
					Client sampling date / time	22-Sep-2020 08:14	22-Sep-2020 09:20	22-Sep-2020 07:00	----	----
						VA20B6536-006	VA20B6536-007	VA20B6536-008	--------	--------
						Result	Result	Result	----	----
Physical Tests										
pH (1:2 soil:water)	----	E108	0.10	pH units		8.17	8.01	8.24	----	----
Particle Size										
texture class	----	E178	-	-		Coarse	Fine	Coarse	----	----
Anions and Nutrients										
phosphate, available (as P)	14265-44-2	E384	2.0	mg/kg		<2.0	<2.0	<2.0	----	----
Organic / Inorganic Carbon										
carbon, total [TC]	----	E351	0.050	%		0.153	0.397	0.316	----	----
carbon, inorganic [IC]	----	E354	0.050	%		0.068	0.096	0.094	----	----
carbon, inorganic [IC], (as CaCO3 equivalent)	----	E354	0.40	%		0.57	0.80	0.79	----	----
carbon, total organic [TOC]	----	EC356	0.050	%		0.085	0.301	0.222	----	----
organic matter	----	EC356	0.10	%		0.15	0.52	0.38	----	----
Plant Available Nutrients										
nitrate + nitrite, available (as N)	----	E269.N+N	1.0	mg/kg		<1.0	<1.0	<1.0	----	----
nitrate, available (as N)	14797-55-8	EC269.NO3	2.0	mg/kg		<2.0	<2.0	<2.0	----	----
nitrite, available (as N)	14797-65-0	E269.NO2	0.40	mg/kg		0.54	0.41	0.42	----	----
potassium, available	7440-09-7	E390	20	mg/kg		78	56	50	----	----
Metals										
aluminum	7429-90-5	E440	50	mg/kg		9180	9330	12400	----	----
antimony	7440-36-0	E440	0.10	mg/kg		17.5	21.4	10.7	----	----
arsenic	7440-38-2	E440	0.10	mg/kg		497	204	126	----	----
barium	7440-39-3	E440	0.50	mg/kg		100	113	48.8	----	----
beryllium	7440-41-7	E440	0.10	mg/kg		0.97	0.39	0.31	----	----
bismuth	7440-69-9	E440	0.20	mg/kg		4.58	0.98	1.08	----	----
boron	7440-42-8	E440	5.0	mg/kg		<5.0	<5.0	<5.0	----	----
cadmium	7440-43-9	E440	0.020	mg/kg		0.339	0.406	0.159	----	----
calcium	7440-70-2	E440	50	mg/kg		2330	4180	2650	----	----
chromium	7440-47-3	E440	0.50	mg/kg		20.9	17.6	17.3	----	----
cobalt	7440-48-4	E440	0.10	mg/kg		16.9	12.8	15.8	----	----
copper	7440-50-8	E440	0.50	mg/kg		45.1	35.2	42.5	----	----
iron	7439-89-6	E440	50	mg/kg		36400	28700	31900	----	----

Analytical Results

Sub-Matrix: **Soil**
(Matrix: **Soil/Solid**)

Analyte	CAS Number	Method	LOR	Unit	Client sample ID	Site-G	Site-J	Dup	----	----
					Client sampling date / time	22-Sep-2020 08:14	22-Sep-2020 09:20	22-Sep-2020 07:00	----	----
						VA20B6536-006	VA20B6536-007	VA20B6536-008	--------	--------
						Result	Result	Result	----	----
Metals										
lead	7439-92-1	E440	0.50	mg/kg		51.2	81.3	22.9	----	----
lithium	7439-93-2	E440	2.0	mg/kg		13.0	12.4	14.3	----	----
magnesium	7439-95-4	E440	20	mg/kg		3570	4210	5560	----	----
manganese	7439-96-5	E440	1.0	mg/kg		386	481	488	----	----
mercury	7439-97-6	E510	0.0050	mg/kg		0.0488	0.0541	0.0134	----	----
molybdenum	7439-98-7	E440	0.10	mg/kg		1.75	0.77	0.48	----	----
nickel	7440-02-0	E440	0.50	mg/kg		36.7	29.3	30.8	----	----
phosphorus	7723-14-0	E440	50	mg/kg		390	395	268	----	----
potassium	7440-09-7	E440	100	mg/kg		3400	1920	1520	----	----
selenium	7782-49-2	E440	0.20	mg/kg		0.24	0.29	<0.20	----	----
silver	7440-22-4	E440	0.10	mg/kg		0.32	1.51	0.32	----	----
sodium	7440-23-5	E440	50	mg/kg		101	115	<50	----	----
strontium	7440-24-6	E440	0.50	mg/kg		30.9	31.6	26.3	----	----
sulfur	7704-34-9	E440	1000	mg/kg		<1000	<1000	<1000	----	----
thallium	7440-28-0	E440	0.050	mg/kg		0.412	0.184	0.125	----	----
tin	7440-31-5	E440	2.0	mg/kg		<2.0	<2.0	<2.0	----	----
titanium	7440-32-6	E440	1.0	mg/kg		378	259	76.0	----	----
tungsten	7440-33-7	E440	0.50	mg/kg		1.84	3.11	<0.50	----	----
uranium	7440-61-1	E440	0.050	mg/kg		2.48	1.52	1.20	----	----
vanadium	7440-62-2	E440	0.20	mg/kg		25.2	21.1	19.2	----	----
zinc	7440-66-6	E440	2.0	mg/kg		105	99.7	69.9	----	----
zirconium	7440-67-7	E440	1.0	mg/kg		16.6	11.5	9.5	----	----

Please refer to the General Comments section for an explanation of any qualifiers detected.

APPENDIX U2

Cover System Construction QA and QC Report

Victoria Gold Cover System Construction Quality Assurance and Quality Control Report

February 3, 2021



Victoria GOLD CORP

okane

Integrated Mine Waste Management and Closure Services
Specialists in Geochemistry and Unsaturated Zone Hydrology

Victoria Gold
Cover System Construction Quality Assurance and Quality Control Report

1048-005-004

February 2021

Prepared for:

Victoria Gold Corp.
1050 West Pender Street, Suite 100
Vancouver, BC
V6E 3S7
604-682-5122

Prepared by:

Tara Baker
Sr. Geo-environmental Engineer
tbaker@okc-sk.com

Okane Consultants Inc.

Suite 1900, 736 6th Avenue SW
Calgary, AB T2P 3T7
Canada

Telephone: (587) 583 5741
Web: www.okc-sk.com

Rev. #	Rev. Date	Author	Reviewer	PM Sign-off
0	February 3, 2021	AH, HC	TB	TB
1	March 26, 2021	AH, HC	LD	LD
2	March 26, 2021	AH, HC	LD	LD
3	March 29, 2021	AH, HC	LD	LD

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EXECUTIVE SUMMARY

Victoria Gold Corp. (VG) has committed to a phased approach to reclamation and closure for the Eagle Gold Mine in central Yukon Territory, as described in Version 2020-01 of the Reclamation and Closure Plan (RCP). Relocation of an overburden stockpile presented an opportunity to advance cover system monitoring in support of this goal. VG contracted Okane for characterization and instrumentation of the relocated overburden stockpile.

The scope of work is construction of a base case cover system following the construction and material sampling quality assurance / quality control (QA/QC) programs developed by Okane for relocated overburden at the Platinum Gulch WRSA 1370 Dump, and training support and virtual overview to ensure that VG carries out the program with site personnel. The material sampling program conducted before and during cover system construction was developed to characterize the physical and hydraulic properties of the overburden material to determine its suitability for use in a reclamation cover system.

The plateau and adjacent slope of the waste rock storage area (WRSA) were covered with approximately 0.50 m of overburden material in September 2020 in accordance with the base case configuration in the RCP. Soil moisture and meteorological monitoring systems were installed by VG in October 2020.

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Figure 3.1: Sampling locations at 1370 Bench in September 2020. 9

1 INTRODUCTION

Victoria Gold Corp. (VG) owns and operates the Eagle Gold Mine on the Dublin Gulch property located in central Yukon Territory. Version 2020-01 of the Reclamation and Closure Plan (RCP) was submitted to the Yukon Water Board (YWB) and the Department of Energy, Mines, and Resources (EMR) in fulfillment of the requirements of the mine water use licences issued by the YWB October 23, 2020.

Victoria Gold has committed to a phased approach to reclamation and closure through operations and into decommissioning. The current RCP outlined a series of tasks for a proposed research program in support of ongoing reclamation and closure planning. Previous research tasks in the RCP included research into reclamation cover system configurations and the processes governing performance. Relocation of an overburden stockpile presented an opportunity to advance cover system monitoring in support of progressive reclamation. VG contracted Okane Consultants Inc. (Okane) for characterization and instrumentation of the relocated overburden stockpile to take advantage of the relocation by developing an understanding of performance for a base case cover system design configuration (Okane, 2020a).

1.1 Project Objectives and Scope

The objective of the overburden stockpile relocation was to cover the plateau and slope of the waste rock storage area (WRSA) to 0.50 m depth, aligned with the base case configuration in Version 2020-01 of the RCP, in a fashion consistent with expected full-scale practices. VG took advantage of this opportunity to cover an adjacent slope on the existing WRSA, the objective of which was to test the feasibility of covering the preferred angle of repose slope post closure. The current slope of the WRSA is approximately 1.15H:1V, the angle of repose, which will have a high likelihood of segregation of overburden during placement on the slope (Okane, 2020b).

The objective of the material sampling program conducted before and during cover system construction was characterization of the physical and hydraulic properties of the overburden material to determine its suitability for use in a reclamation cover system. Data from the characterization program will aid in the interpretation of performance monitoring data collected as part of the instrumentation program. Furthermore, material characterization data serves as a critical input for numerical modelling programs that use performance monitoring data for calibration (Okane, 2020a).

The scope of work is construction of a base case cover system following the construction and material sampling quality assurance / quality control (QA/QC) programs for relocated

overburden at the Platinum Gulch WRSA 1370 Dump, and training support and virtual overview to ensure that VG carries out the program with site personnel.

2 GENERAL INFORMATION

A construction QA/QC program is necessary to ensure documentation of base case cover system construction. Okane developed the Eagle Mine Cover Trial Construction Quality Control Program which outlines the QA / QC procedures and criteria to be followed during cover system construction (Okane, 2020b). Field QA/QC procedures included a material sampling and testing plan to determine as-built properties of the cover system (Okane, 2020c). The material sampling plan and construction quality control program were submitted to VG on August 20 and 28, respectively.

VG site personnel completed the construction QA/QC program on site. Okane provided virtual training via PowerPoint presentation to VG site personnel prior to construction commencement. Qualified, experienced Okane personnel were available during the duration of construction for virtual oversight of VG employees implementing field QA/QC techniques. It was proposed that reports be provided to Okane every second day by VG site personnel completing the work to facilitate oversight, and morning meetings be completed after a review of the reports by Okane. A laboratory material testing program was designed as part of the QA/QC program (Okane, 2020c) and completed at an accredited laboratory. Okane provided instruction on material sampling and recommended the number and types of laboratory tests as part of the QA/QC plan. VG collected material samples and submitted the samples to the laboratory for testing.

2.1 Construction Team

Table 2.1 provides a list of personnel involved in the construction of the cover system, including progress reports provided by VG and collection of samples.

Table 2.1: Construction and Sampling Team

Personnel	Company	Role
Lindsay Rear	VG	Environmental Manager
Phil Emerson	VG	Environmental Coordinator
Jessica Wilkinson	VG	Environmental Technician
Larisa Doucette	Okane	Project Coordinator
Hal Cooper	Okane	Sampling Program Contact
Kevin Olynyk	Ewing Construction	Excavator Operator
Marshall Ewing	Ewing Construction	Supervisor and Dozer Operator
Mike Cox	Mueller Electric	Electrician
Curtis Dinan	Mueller Electric	Electrician

2.2 Construction Timeline

Based on progress reports provided by VG, a timeline for construction, sample collection and instrumentation install is provided below.

- September 2: VG reported that efforts had been made to prepare the plateau by filling holes and flattening the bench.
- September 3-4: The area, perimeter, and depth of the overburden spread were measured.
- September 6-7: Overburden samples were collected at Zones 1-3.
- September 7: Construction began. VG reported on September 8 that half of the overburden pile had been knocked down.
- September 10: Overburden samples were collected at Zones 4-6. A shovel was pulling out overburden material from pile and spreading it out as sampling was being conducted.
- September 22: Construction of the overburden spread was complete.
- October 19-20: Ewing Construction regraded the overburden to achieve the target depth of 0.50 m, focusing on the staked areas designated for monitoring station installation. VG completed a successful test of internet and cell access on October 19 in preparation for Okane support of instrumentation installation planned for October 22.
- October 21: Both meteorological stations were installed but the sensors were not wired because the electrician preferred to wait until all sensors were installed.
- October 22: Excavation for the slope soil monitoring station began that morning but the overburden material depth was >1.5 m. The slope was regraded with the excavator to achieve the target depth of closer to 0.50 m. The excavator dug pits on the plateau and slope for the soil monitoring stations, and the pits were instrumented with soil sensors. Both soil and meteorological sensors were then wired.
- October 23: Larisa Doucette worked remotely with the crew to verify the monitoring stations were working properly. The soil sensors were packed within the soil pits with hand tools. The plateau meteorological station was leveled, and the soil pits were backfilled and leveled by the excavator. The excavator then completed packing the berm at the slope station location.

- October 26: Phil was to request a final as-built survey of the plateau. A survey of the slope had been completed.

2.3 Equipment

The overburden material was spread across the waste rock using a dozer operated by Ewing Construction. The soil pits for the plateau and slope soil monitoring stations were excavated and backfilled with an excavator operated by Ewing Construction.

A camera was installed prior to construction with a view of a large portion of the area to be covered, in order to monitor construction activities. Following construction, the camera was moved to the plateau monitoring station to provide information on snow melt timing.

2.4 Safety and Environment

No safety or environmental incidents were reported.

3 COVER SYSTEM CONSTRUCTION

A 0.50 m cover system was recommended for construction on the eastern portion of the plateau area and a portion of the south-southeast slope of the WRSA. Standard operating procedures were implemented to complete construction of the cover system. Standard procedures include paddock dumping and dozing of the overburden material from the existing stockpile across the plateau of the WRSF to produce the 0.50 m cover system layer, and nominal tracking by dozer after placement. Some of the remaining overburden was pushed over the crest and spilled down the south-southeast slope. The area for slope coverage was selected in order to reduce slope lengths while avoiding the air quality station on the east side of the WRSA. This application method for the cover system aligns with the proposed final closure method for the mine, as waste rock slopes are not intended to be regraded and slope faces will be covered by dozing material over the crest of each bench. This application method does not provide a uniform cover system thickness on the waste rock slopes but will allow for a greater understanding of the infiltration rates on both benches and slopes for the refinement of cover system model inputs. A plateau area berm was constructed to prevent additional run-on from the plateau onto the slope, isolating the water balance to a single landscape element and preventing erosion to the extent possible.

3.1 Construction Materials

The approximate area of the 1370 plateau is 47,500 m^2, and the amount of stockpiled overburden that was relocated is 20,777 m^3. The overburden material was described as "gravelly silt, light to medium brown, compacted in some areas, with some coarser material." The overburden material was frozen to the consistency of cement overnight on September 10 but described as "soup-like" the following morning after thawing. Material was frozen during excavation to install soil monitoring stations on October 22.

3.1.1 Material Control Testing

The material characterization program collected samples from six overburden zones to account for potential variability in properties of the material. Three zones were within the overburden stockpile and three zones were within the overburden material that was already spread on the plateau when sampling began.

Overburden material samples were collected from five random locations in each discrete zone to produce one composite sample collected in one 20 L pail. The same procedure was carried out two additional times for a total of three composite samples per zone. Three composite samples were collected in this manner in each of the six zones, for a total of 18 composite samples (Okane, 2020c). Sampling locations were spread out to capture the variability of material properties within the overburden stockpile and spread material. In

addition, a digital particle size distribution (PSD) sample was collected for each composite sample. Table 3.1 outlines the testing regime and samples tested, and sampling locations are shown in Figure 3.1. The laboratory testing program included:

- PSD as determined by the hydrometer method using AASHTO T 88 Standard Method of Test for Particle Size Analysis of Soils;
- Atterberg Limits using ASTM D4318-17 Standard Test Methods for Liquid Limit, Plastic Limit, and Plasticity Index of Soils;
- Standard Proctor using D698-12;
- Hydraulic Conductivity using D5084-16; and
- Soil Water Characteristic Curve using ASTM D6839-02.

Two samples (20-VGE-OVB-03-01 and 20-VGE-OVB-04-01) were chosen by Okane for additional analysis based on the results from the first three laboratory tests which included hydraulic conductivity (k_{sat}), soil water characteristic curves (SWCC), specific gravity, and standard proctor compaction testing. Specific gravity, standard proctor, and hydraulic conductivity tests have been completed on the two samples to date.

A summary of the test results is provided in Section 3.3 and the full test results in Appendix A.

Table 3.1: Samples collected for material characterization.

Zone	UTM Zone 8 W		Sample ID	Location	Date	Test						
	Easting[1]	Northing				Digital PSD	Hydrometer PSD	Atterberg Limits	Standard Proctor	K_{sat}	SWCC	SG
1	460506	7099025	20VGE-OVB-01-01	South	2020-09-06	✓	✓	✓				
			20VGE-OVB-01-02	Middle	2020-09-06	✓						
			20VGE-OVB-01-03	North	2020-09-06	✓						
2	458371	7097839	20VGE-OVB-02-01	South	2020-09-07	✓	✓	✓				
			20VGE-OVB-02-02	Middle	2020-09-07	✓						
			20VGE-OVB-02-03	North	2020-09-07	✓						
3	460541	7099098	20VGE-OVB-03-01	South	2020-09-07	✓	✓	✓	✓	✓	✓	✓
			20VGE-OVB-03-02	Middle	2020-09-07	✓						
			20VGE-OVB-03-03	North	2020-09-07	✓						
4	460591	7099175	20-VGE-OVB-04-01	South	2020-09-10	✓	✓	✓	✓	✓	✓	✓
			20-VGE-OVB-04-02	Middle	2020-09-10	✓						
			20-VGE-OVB-04-03	North	2020-09-10	✓						
5	460572	7099200	20-VGE-OVB-05-01	South	2020-09-10	✓	✓	✓				
			20-VGE-OVB-05-02	Middle	2020-09-10	✓						
			20-VGE-OVB-05-03	North	2020-09-10	✓						
6	458516	7100751	20-VGE-OVB-06-01	South	2020-09-10	✓	✓	✓				
			20-VGE-OVB-06-02	Middle	2020-09-10	✓						
			20-VGE-OVB-06-03	North	2020-09-10	✓						
	460592	7099173	20-VGE-OVB-Plateau-01		2020-10-23		✓					
	460550	7099045	20-VGE-OVB-Slope-01		2020-10-23		✓					
			20-VGE-WR-Plateau-01		2020-11-30		✓					



Figure 3.1: Sampling locations at 1370 Bench in September 2020.

3.2 Construction of Cover System

The construction areas and locations of the monitoring stations are provided in Appendix B, and photographs of construction in Appendix C. Progress reports prepared by VG during sampling and construction are provided in Appendix D.

The plateau was prepared for overburden by filling holes and flattening the bench. The area, perimeter, and depth of overburden spread were measured on September 3-4 by taking eight (8) waypoints as well as a track of the spread. The total area of overburden spread was 5,317 m^2 (57,234 ft^2) with a perimeter of 405 m. The spread of overburden was uneven, ranging from 0.15 to 0.50 m. Personnel collecting overburden samples from the slope at Zones 4 to 6 on September 10 described the slope as approximately 60% or 1.66:1V, similar to the 1.15:1V angle of repose.

Construction of the overburden spread was completed between September 7-22. VG observed on September 22 that the meteorological station planned for the slope could not be located on the slope because the incline was too steep for safe installation. A new location

was proposed "right on the edge", near the time lapse camera. Instrumentation installation was delayed until the trial area could be regraded to 0.50 m.

Phil Emerson and Lindsay Rear of VG arrived at the 1370 Bench on October 19 to observe the new contractor, Ewing Construction, levelling overburden throughout the pad. Approximately 2" of snow was observed on the bench. The survey contractor had staked a 20 x 20 m location for the plateau meteorological station further to the north. VG consulted with operator and supervisor Marshall Ewing to level the pad to 0.50 m, requesting high accuracy for the proposed meteorological station location. In addition, VG reviewed the staked area for the slope meteorological station and determined the area was adequate.

Spreading of overburden material continued on October 20, with even spreading hampered by freezing conditions. The overburden depth was expected to be between 0.4 to 0.7 m but the surveyor was unable to advise on cut/fill in this area because the original elevation of the stockpile was not captured in earlier surveys. The operator, Senior Mine Technician and Senior Project Manager decided the dozer operator would cut down the dump to confirm 0.50 m of overburden had been placed and then cut and fill accordingly.

Both meteorological stations were installed on October 21. The excavator was unavailable until 3 pm so operators decided to wait until 8 am the following morning to excavate pits to install the soil monitoring sensors, rather than allow the pits to freeze overnight. Wiring of the soil sensors was therefore also delayed because the electrician requested to wait until the pits were dug.

Frost had penetrated 0.2 to 0.3 m into the ground when excavation to install the soil sensors began on October 22. Excavation for the slope monitoring station began in the morning but the overburden material depth was found to be >1.5 m, so Larisa Doucette (Okane) was consulted. The berm and slope were excavated back to stockpile in a section of ~20 m, and the slope was regraded with the excavator to achieve the target depth of 0.50 m.

Following regrading the slope from the crest to the sensor installation location was 2.5H:1V and from the crest to the bottom toe was 2H:1V (Rear, 2021). The slope soil monitoring station was therefore installed on the slope instead of the berm. The excavator dug a pit on the plateau for the soil monitoring station, finding the overburden was frozen throughout the profile with large chunks of frozen earth, and an overburden depth of approximately 0.6 m. Soil sensors were installed and both soil and meteorological sensors were then wired. The progress report indicates the soil pit for the slope monitoring station was excavated and instrumented on October 22 as well.

Larisa Doucette worked remotely with the crew on October 23 to verify the monitoring stations were working properly. The Ewing operator moved material to cover the excavation on the slope, using hand tools to level the areas close to the weather stations, and reshaped the

berm. Unfrozen material was transported to the soil pit on the plateau and the sensors were packed within the soil pit using hand tools. The plateau meteorological station was leveled, and the soil pit was backfilled and leveled by the excavator. The excavator then completed packing the berm at the slope station location.

3.2.1 Construction QA/QC Activities

The slope was regraded when the overburden depth was discovered to be >1.5 m instead of the target 0.50 m depth. The regrading reduced the slope angle from the 1.15H:1V angle of repose to 2-2.5H:1V.

3.3 Material Properties

PSD of the nine overburden samples submitted for analysis was determined using the American Association of State Highway and Transportation Officials (AASHTO) Soil Classification System as shown in Table 3.2. The AASHTO classification is A-2-4 based on PSD and Atterberg Limits, provided in Table 3.3.

The overburden is 43% gravel and 57% sandy loam as classified using the Canadian System of Soil Classification (CSSC), with clay and sand representing approximately 8.5% and 58% respectively of particles >2 mm in diameter. The low plasticity of the overburden is attributed to low clay content. PSD data is provided in Appendix A.

Table 3.2: Summary of PSD of overburden samples.

AASHTO Soil Classification System	Average (%)	Minimum (%)	Maximum (%)
Clay	4	3	5
Silt	18	13	25
Fine sand	11	7	12
Coarse sand	21	15	23
Fine and medium gravel	34	31	49
Coarse gravel	8	2	13
Summary			
Silt and clay	26	19	31
Sand	31	22	35
Gravel	43	36	59

Table 3.3: Summary of Atterberg limits from overburden samples.

Atterberg Limit	Average (%)	Minimum (%)	Maximum (%)
Plastic Limit (PL)	21	20	22
Liquid Limit (LL)	27	24	30
Plasticity Index (PI)	6	3	9

Nine samples of overburden and six samples of waste rock were collected from the slope and plateau monitoring station locations for material calibration of the soil moisture sensors. Analysis for the overburden and waste rock material is provided in Table 3.4 and Table 3.5.

Table 3.4: Overburden bulk density and gravimetric water content.

Parameter	Average (%)	Minimum (%)	Maximum (%)
Bulk Density (g/cm^3)	1.71	1.6	1.8
Gravimetric water content (g/g)	0.11	0.05	0.16
Porosity[1] (%)	34		

[1]Porosity estimated assuming particle density of 2.6 g/cm^3.

Table 3.5: Waste rock bulk density and gravimetric water content.

Parameter	Average (%)	Minimum (%)	Maximum (%)
Bulk Density (g/cm^3)	1.71	1.6	1.8
Gravimetric water content (g/g)	0.07	0.002	0.13
Porosity[1] (%)	34		

[1]Porosity estimated assuming particle density of 2.6 g/cm^3.

Standard proctor testing on two overburden samples (20-VGE-OVG-03-01 and 20-VGE-OVG-04-01) determined that molding water content is 9.7 to 11.3% for maximum compaction of 1,988 to 2,054 kg/m^3 dry density. Hydraulic conductivity testing on two overburden samples (20-VGE-OVG-03-01 and 20-VGE-OVG-04-01) determined hydraulic conductivities of 2.5 x 10^{-9} m/s and 4.4 x 10^{-9} m/s, respectively at 95% compaction. Standard proctor and hydraulic conductivity data is provided in Appendix A.

Soil water characteristic curves (SWCCs) are currently being completed on two overburden samples and data is not yet available.

4 CLOSURE

Please do not hesitate to contact me at (403) 815-0009 or tbaker@okc-sk.com should you have any questions or comments.

5 REFERENCES

Okane Consultants Inc. 2020a. Eagle Gold Mine Overburden Stockpile Characterization and Instrumentation Scope of Services. July 23, 2020. Technical letter from Lindsay Tallon to Lindsay Rear, Environmental Manager, Victoria Gold Corp., Vancouver, British Columbia, Canada. Okane reference P-1048-005.

Okane Consultants Inc. 2020b. Eagle Mine Cover Trial Construction Quality Control Program Rev1. September 3, 2020. Memorandum from Lindsay Tallon and Larisa Doucette to Lindsay Rear, Environmental Manager, Victoria Gold Corp., Vancouver, British Columbia, Canada. Okane reference 1048-005.

Okane Consultants Inc. 2020c. Victoria Gold – Standard Operating Procedure for Material Sampling. August 20, 2020. Memorandum from Hal Cooper to Lindsay Rear, Environmental Manager, Victoria Gold Corp., Vancouver, British Columbia, Canada. Okane reference 1048-005.

Okane Consultants Inc. 2020d. B-1048-005 Victoria Gold Eagle Gold Mine – 2020 Update to RCP. September 29, 2020. Memorandum from Lindsay Tallon to Lindsay Rear, Environmental Manager, Victoria Gold Corp., Vancouver, British Columbia, Canada. Okane reference B-1048-005.

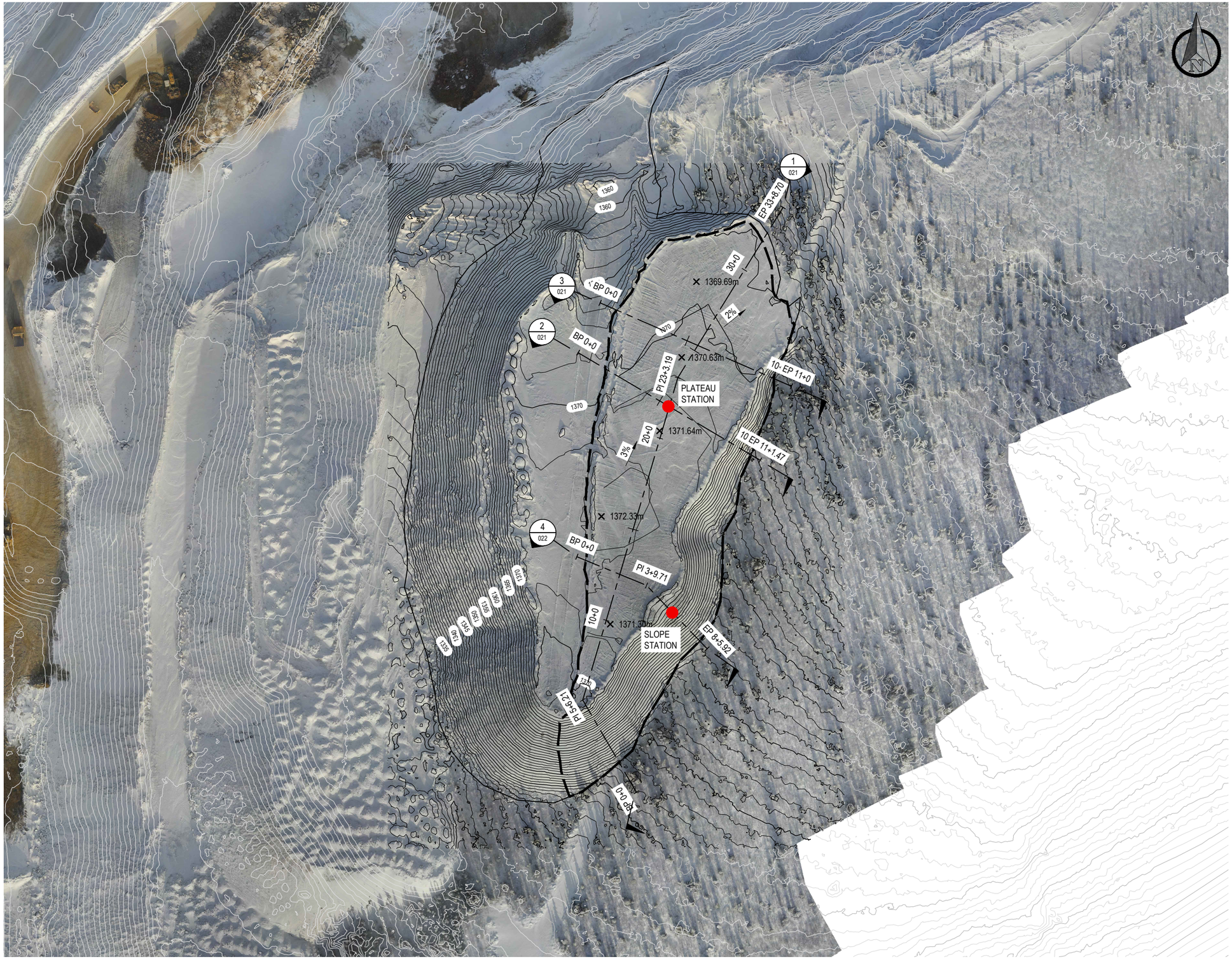
Rear, L. 2021. Personal communication to Tara Baker, Engineer, Okane Consultants Inc. via email on January 13, 2021. Lindsay Rear, Environmental Manager, Victoria Gold Inc.

Appendix A

Material Sampling Data

Appendix B

As-Built Drawings



okane

Integrated Mine Waste Management and Closure Services
Specialists in Geochemistry and Unsaturated Zone Hydrology

AS BUILT

Legend/Notes

NOTE

1. ALL UNITS IN METRES U.N.O.
2. IMAGERY AND TOPOGRAPHY PROVIDED BY THE CLIENT.
3. CLIENT PROVIDED AS-BUILT DATA FOR COVER SYSTEM PLACE ON PLATEAU, COLLECTED 10-29-2020.
4. FINAL TRIAL BOUNDARY ESTIMATED BASED ON CONTOUR DATA.

LEGEND

AS-BUILT COVER CONTOUR — 1300

EXISTING CONTOUR — 1300

TRIAL BOUNDARY

1370 DUMP BOUNDARY

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SCALE 1:2000

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2		
1		
0	AS-BUILT DATA	2020/11/24
A	ISSUED FOR CLIENT REVIEW	2020/09/24

Client/Project

VICTORIA GOLD CORP
TSX | VGCX

VICTORIA GOLD CORP.
WASTE ROCK STORAGE FACILITY
COVER SYSTEM TRIAL

Drawn by
H. COOPER

Designed by
L. DOUCETTE

Approved by
L. TALLON

Drawing title

PLATEAU COVER SYSTEM
PLACEMENT - AS-BUILT

Project no.	Drawing no.	Sheet	Revision
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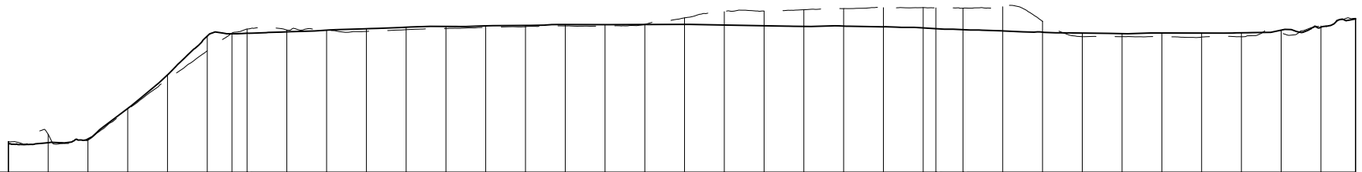

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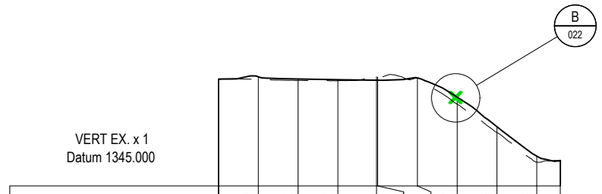

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DEPTH	0.78	0.37	0.27	-0.88	-0.76	0.04	1.75	1.49	1.55	
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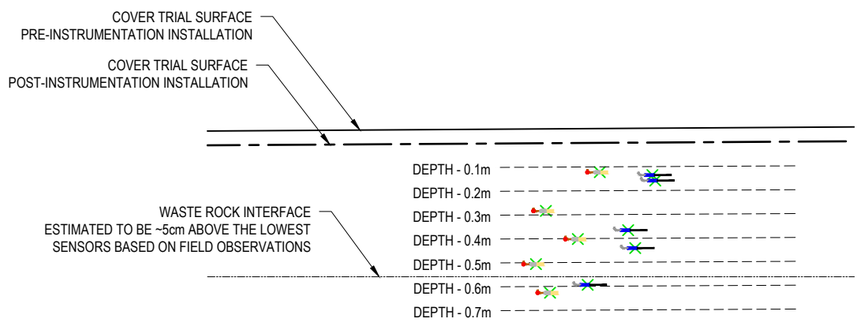

PLATEAU STATION INSTRUMENTATION LAYOUT

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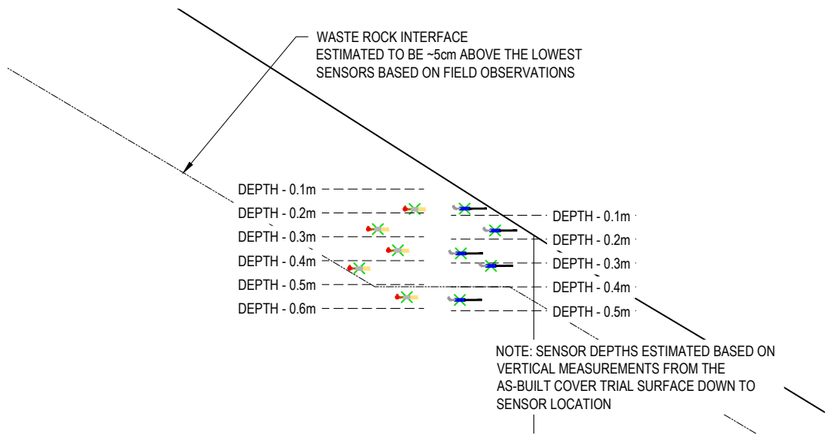

SLOPE STATION INSTRUMENTATION LAYOUT

DETAIL B (022)
1:50

okane
Integrated Mine Waste Management and Closure Services
Specialists in Geochemistry and Unsaturated Zone Hydrology

AS BUILT

Legend/Notes

NOTE

1. ALL UNITS IN METRES U.N.O.
2. IMAGERY AND TOPOGRAPHY PROVIDED BY THE CLIENT.
3. CLIENT PROVIDED AS-BUILT DATA FOR COVER SYSTEM PLACE ON PLATEAU, COLLECTED 10-29-2020.

LEGEND

VOLUMETRIC WATER CONTENT (CS650)

SOIL MATRIC SUCTION (CS229)

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1		
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A	ISSUED FOR CLIENT REVIEW	2020/09/24

Client/Project

VICTORIA GOLD CORP
TSX | VGCX

VICTORIA GOLD CORP.
WASTE ROCK STORAGE FACILITY
COVER SYSTEM TRIAL

Drawn by: H. COOPER
Designed by: L. DOUCETTE
Approved by: L. TALLON

Drawing title

PLATEAU COVER SYSTEM PLACEMENT - AS-BUILT SECTIONS AND INSTRUMENTATION

Project no.	Drawing no.	Sheet	Revision
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Appendix C

Photo Log



Photo 1 1370 Bench on September 6, 2020.



Photo 2 Face of Zone 1 on September 6, 2020.



Photo 3 Digital PSD of Zone 1 composite sample area 1 (20VGE-OVB-01-01).



Photo 4 Digital PSD of Zone 1 composite sample area 2 (20VGE-OVB-01-02).



Photo 5 Digital PSD of Zone 1 composite sample area 3 (20VGE-OVB-01-02).



Photo 6 Oversized fraction at Zone 1 sample area 3.



Photo 7 Face of Zone 2 on September 7, 2020.



Photo 8 Digital PSD of Zone 2 composite sample area 1 (20VGE-OBV-02-01).



Photo 9 Digital PSD of Zone 2 composite sample area 2 (20VGE-OBV-02-02).



Photo 10 Digital PSD of Zone 2 composite sample area 3 (20VGE-OBV-02-03).



Photo 11 Oversized fraction at Zone 2 sample area 3.



Photo 12 Face of Zone 3 on September 7, 2020.



Photo 13 Digital PSD of Zone 3 composite sample area 1 (20VGE-OBV-03-01).



Photo 14 Digital PSD of Zone 3 composite sample area 2 (20VGE-OBV-03-02).



Photo 15 Digital PSD of Zone 3 composite sample area 3 (20VGE-OBV-03-03).



Photo 16 Oversized fraction at Zone 3 sample area 3.



Photo 17 1370 bench on September 10, 2020.



Photo 18 1370 bench on September 10, 2020.

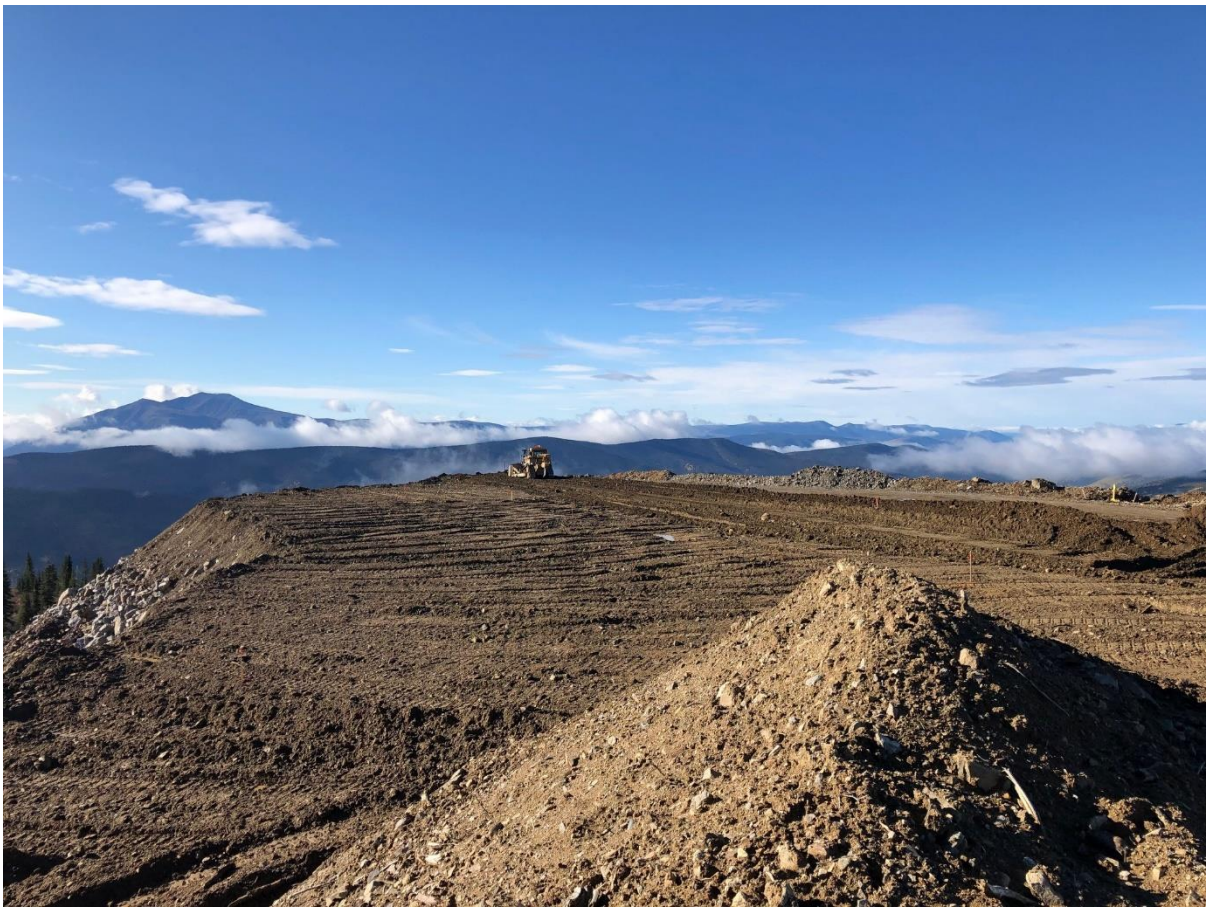


Photo 19 1370 bench on September 10, 2020.



Photo 20 1370 bench on September 10, 2020.



Photo 21 1370 bench on September 10, 2020.


Photo 22 Face of Zone 4 on September 10, 2020.



Photo 23 Digital PSD of Zone 4 composite sample area 1 (20-VGE-OVB-04-01).



Photo 24 Digital PSD of Zone 4 composite sample area 2 (20-VGE-OVB-04-02).



Photo 25 Digital PSD of Zone 4 composite sample area 3 (20-VGE-OVB-04-03).



Photo 26 Oversized fraction at Zone 4 composite sample area 1.



Photo 27 Oversized fraction at Zone 4 composite sample area 2.



Photo 28 Oversized fraction at Zone 4 composite sample area 3.



Photo 29 Face of Zone 5 on September 10, 2020.



Photo 30 Digital PSD of Zone 5 composite sample area 1 (20-VGE-OVB-05-01).



Photo 31 Digital PSD of Zone 5 composite sample area 2 (20-VGE-OVB-05-02).



Photo 32 Digital PSD of Zone 5 composite sample area 3 (20-VGE-OVB-05-03).



Photo 33 Oversized fraction at Zone 5 composite sample area 2.



Photo 34 Face of Zone 6 on September 10, 2020.



Photo 35 Digital PSD of Zone 6 composite sample area 1 (20-VGE-OVB-06-01).



Photo 36 Digital PSD of Zone 6 composite sample area 2 (20-VGE-OVB-06-02).



Photo 37 Digital PSD of Zone 6 composite sample area 3 (20-VGE-OVB-06-03).



Photo 38 Oversized fraction at Zone 6 composite sample area 1.



Photo 39 Overburden spreading on 1370 bench on September 11, 2020.



Photo 40 Overburden spreading on 1370 bench on September 11, 2020.



Photo 41 Overburden spreading on 1370 bench on September 11, 2020.



Photo 42 1370 bench on September 11, 2020.



Photo 43 Heavy fog in morning of September 19, 2020 at 1370 bench.



Photo 44 Overburden at 1370 bench on September 19, 2020.



Photo 45 Overburden at 1370 bench on September 19, 2020.



Photo 46 Reclamation work at 1370 bench on September 20, 2020.



Photo 47 1370 bench on September 22, 2020.



Photo 48 Rutting area on 1370 bench on September 22, 2020.



Photo 49 1370 bench on September 22, 2020.



Photo 50 1370 bench on September 22, 2020.



Photo 51 1370 bench on September 22, 2020.



Photo 52 1370 bench on September 22, 2020.



Photo 53 1370 bench on September 22, 2020.



Photo 54 1370 bench on September 22, 2020.



Photo 55 1370 bench on September 22, 2020.



Photo 56 1370 bench on September 22, 2020.



Photo 57 View directly south across the 1370 bench of bulldozer working on October 19, 2020.



Photo 58 View directly north across the 1370 bench with the staked 20x20 m area on October 19, 2020.



Photo 59 View east over the covered slope on October 19, 2020, showing the staked location for the slope climate station.



Photo 60 View south from the designated slope meteorological station area on October 19, 2020.



Photo 61 1370 bench on October 20, 2020 following removal of snow and grade stakes.



Photo 62 Excavator removing material at slope monitoring station on October 22, 2020 to meet project specification of 0.50 m.

Appendix D

Progress Reports

Eagle Mine 1370 Cover System Progress Report

Date:	2020-09-03, 04	**Owner/Client:**	
Day:		**Okane Project #:**	
Prepared by:	KT	**Project Location:**	Eagle Mine - Bench 1370

Number of Pages in Report

Environmental Conditions:

Weather	Showers	Wind	Low
Temperature (High/Low)	4C -	Humidity	80 to 100%

Location of Work:

Overburden on the 1370 Bench. Specifically, the overburden that has been spread out already (57234 sq ft).

Effects on Work (weather, incidents, breakdowns, delays, etc.):

Heavy rain was making the roads muddy. 4x4 is needed.

Health, Safety, & Environment:

Safety: To access the 1370 Bench, communication with the Pit Supervisor is to be obtained prior to entry. Haul trucks are hauling ore most days, situational awareness is imperative to worker's safety.

Sampling/Construction/Installation Notes:

Obtained area, perimeter and depth readings of overburden material that has been spread out. See photos and map attached.

Sampling was not conducted at this time.

Construction was not ongoing at this time.

Communication:

Total area of overburden spread to date is 57234 sq ft.
Total perimeter of overburden spread to date is 405m.
Depth of spread is uneven, approximately 15-50cm.
8 waypoints were taken (shown on map) as well as a track of the spread.

Sampling will be conducted within the next couple days once all equipment is obtained.

Incidents:

No incidents.

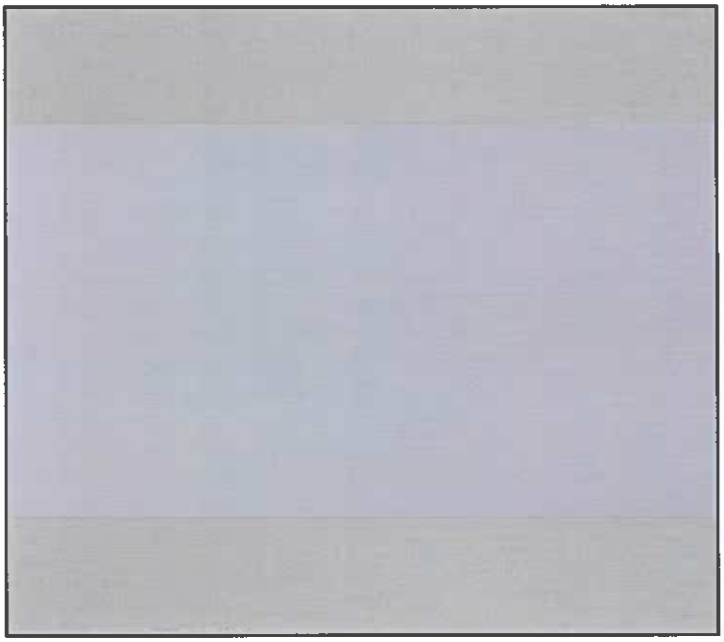
Other General Remarks:

By signing below I agree that the above statements are an accurate representation of events.

Okane Consultants:

Victoria Gold Representative:

PHOTOGRAPHS



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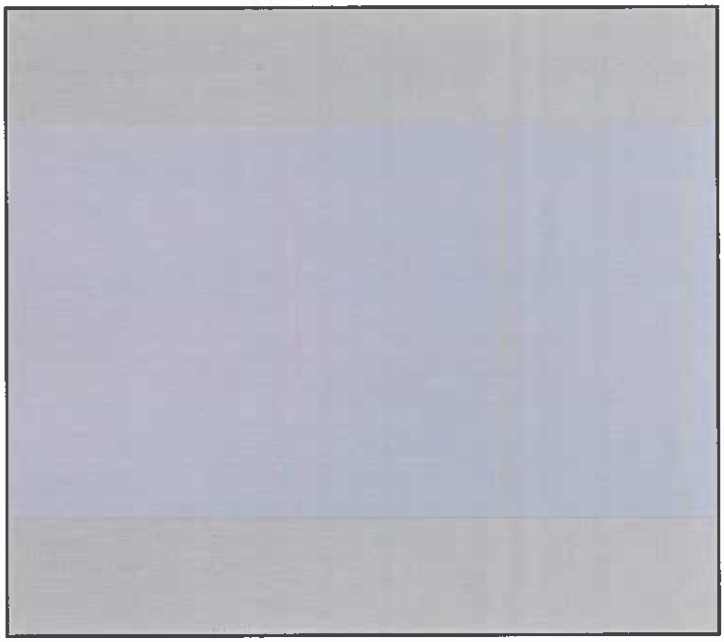

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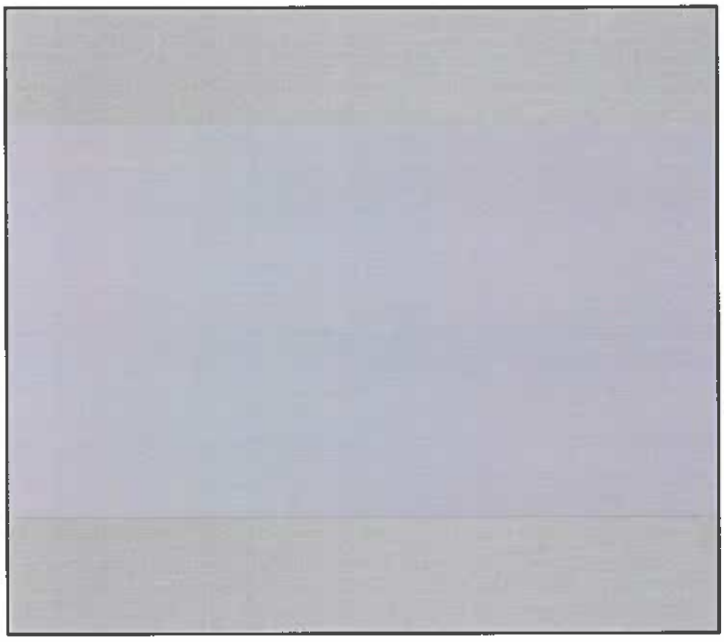

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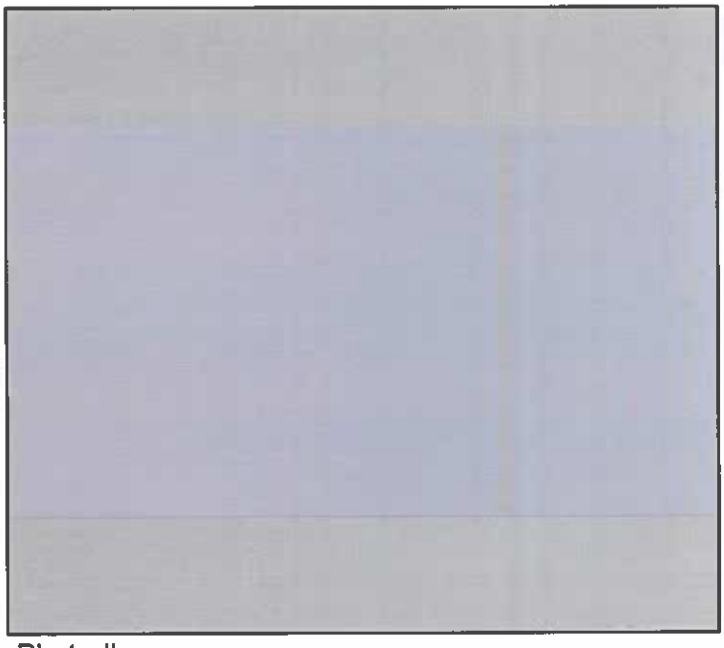

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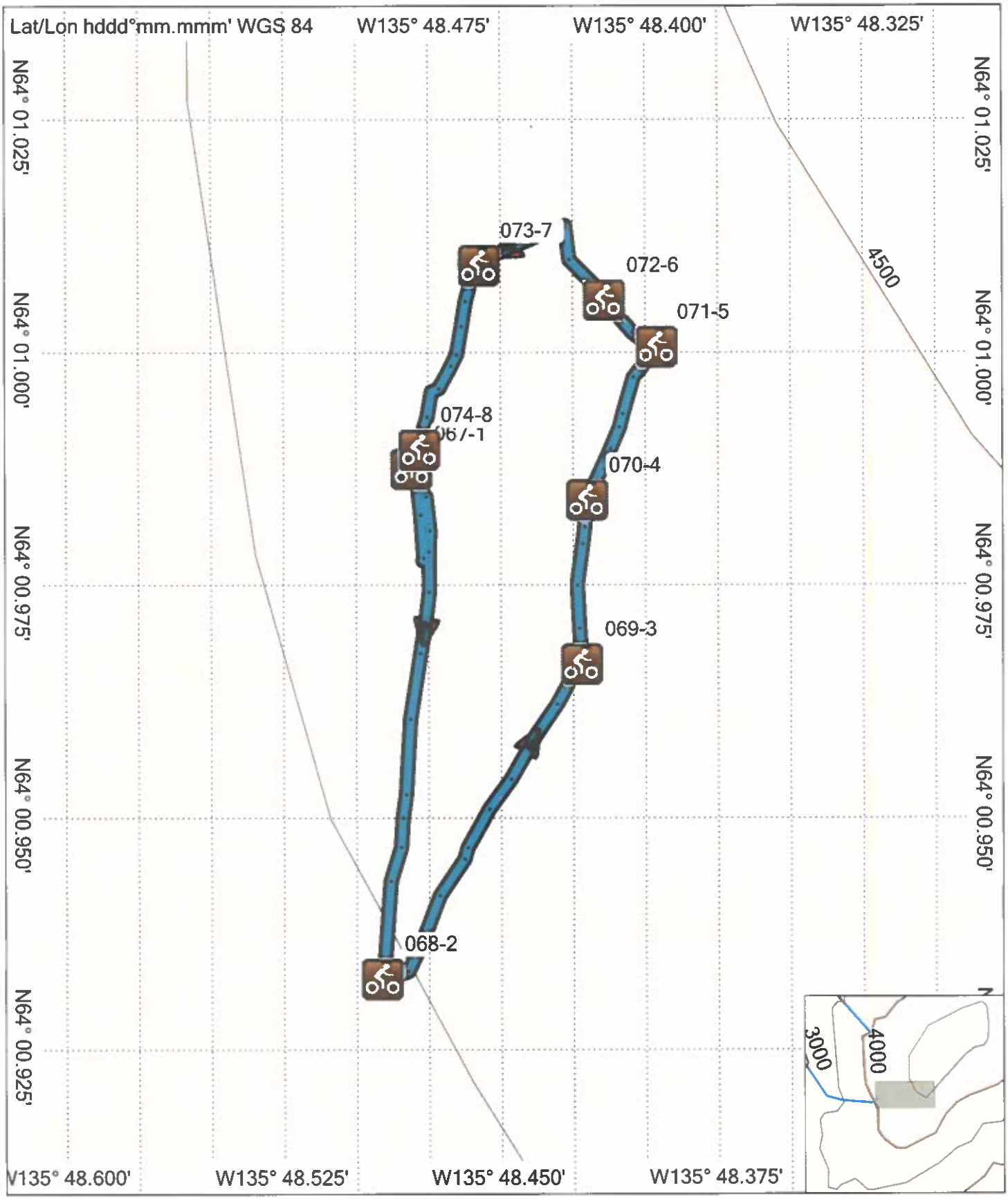

Topo Canada v4
© Dmti Spatial Inc. 2008
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0 ft 60 ft 120 ft 180 ft 240 ft

TN MN 24.0°

GARMIN. 1/1/2010

1370 Bench

Eagle Mine 1370 Cover System Progress Report

Date:	2020-09-10	**Owner/Client:**	
Day:	2	**Okane Project #:**	
Prepared by:	KT	**Project Location:**	Eagle Gold Mine

Number of Pages in Report

Environmental Conditions:

Weather	Clear		Wind	Moderate
Temperature (High/Low)	2C	- 0C	Humidity	40 to 60%

Location of Work:

Overburden on the 1370 Bench.

Effects on Work (weather, incidents, breakdowns, delays, etc.):

Frost is now present at Eagle Mine. Wind was moderate during this visit.

Health, Safety, & Environment:

Safety: To access the 1370 Bench, communication with the Pit Supervisor is to be obtained prior to entry. Haul trucks are hauling ore, call your km's in the pit. Be aware of machinery blind spots.

Sampling/Construction/Installation Notes:

Sampling:
Sampled Zone 4, 5 and 6. Slope was approximately a 60% incline, so sampling took longer. Because of the frost at night and sun during the morning, material was becoming saturated with moisture and becoming soup-like.

Construction:
A shovel was pulling out overburden material from pile and spreading it out during our time sampling. Communication was established prior to sampling. Photos were taken. Time lapse camera is still taking 2 photos every hour.

Communication:

Two different sized balls were used (one 6" and one 8.7" due to communication error). Red is 8.7", orange is 6". The 8.7" red ball was always placed above the 6" orange ball in medium scale photos.

We (the samplers) had a tough time sampling the slope. The material was almost equivalent to cement (probably the frost) but it did loosen up after walking around on it mixed with the warmth from the sun.

Incidents:

No incidents.

Other General Remarks:

By signing below I agree that the above statements are an accurate representation of events.

Okane Consultants:

Victoria Gold Representative:

Eagle Mine 1370 Cover System Progress Report

Date:	Sep-19-20	**Owner/Client:**	
Day:	4	**Okane Project #:**	
Prepared by:	KT, KB	**Project Location:**	Eagle

Number of Pages in Report

Environmental Conditions:

Weather	Fair		Wind	Low
Temperature (High/Low)	1	5	Humidity	60 to 80%

Location of Work:

Overburden on the 1370 Bench.

Effects on Work (weather, incidents, breakdowns, delays, etc.):

Weather: Heavy fog in the early morning until 9am.

Health, Safety, & Environment:

Safety: To access the 1370 Bench, communication with Pit Supervisor is to be obtained prior to entry. Haul trucks are hauling ore, call your km's in the pit. Be aware of machinery blind spots.

Sampling/Construction/Installation Notes:

Construction ongoing.

Communication:

Checked time lapse camera, all operations normal - taking photos every 2 hours.

Incidents:

No incidents.

Other General Remarks:

By signing below I agree that the above statements are an accurate representation of events.

Okane Consultants:

Victoria Gold Representative:

Eagle Mine 1370 Cover System Progress Report

Date:	Sep-22-20	**Owner/Client:**	
Day:	5	**Okane Project #:**	
Prepared by:	KT, KB	**Project Location:**	Eagle

Number of Pages in Report

Environmental Conditions:

Weather	Cloudy		Wind	High
Temperature (High/Low)	1	-4	Humidity	40 to 60%

Location of Work:

Overburden on the 1370 Bench.

Effects on Work (weather, incidents, breakdowns, delays, etc.):

Weather: High wind.

Health, Safety, & Environment:

Safety: To access the 1370 Bench, communication with Pit Supervisor is to be obtained prior to entry, Haul trucks are hauling re, call your km's in the pit. Be aware of machinery blind spots.

Sampling/Construction/Installation Notes:

Construction of the overburden spread is complete.

Took photos of overview shots, a shot showing the berms, a shot showing slope down where the slope weather station is going to go, and shots showing the least impacted rutting area and the most impacted rutting area.

Wx Plateau Proposed Location: 0460592N 7099173W
Wx Slope Proposed Location: 0460592 7099173

The weather station on the slope can not physically be on the slope as the incline is too great to achieve safe installation. This proposed location is right on the edge, close to where the time lapse camera is set up.

Communication:

See photos.

Incidents:

No incidents.

Other General Remarks:

By signing below I agree that the above statements are an accurate representation of events.

Okane Consultants:

Victoria Gold Representative:

Khale

Eagle Mine 1370 Cover System Progress Report

Date:	Sep-22-20	**Owner/Client:**	
Day:	5	**Okane Project #:**	
Prepared by:	KT, KB	**Project Location:**	Eagle

Number of Pages in Report

Environmental Conditions:

Weather	Cloudy		Wind	High
Temperature (High/Low)	1	-4	Humidity	40 to 60%

Location of Work:

Overburden on the 1370 Bench.

Effects on Work (weather, incidents, breakdowns, delays, etc.):

Weather: High wind.

Health, Safety, & Environment:

Safety: To access the 1370 Bench, communication with Pit Supervisor is to be obtained prior to entry, Haul trucks are hauling re, call your km's in the pit. Be aware of machinery blind spots.

Sampling/Construction/Installation Notes:

Construction of the overburden spread is complete.

Took photos of overview shots, a shot showing the berms, a shot showing slope down where the slope weather station is going to go, and shots showing the least impacted rutting area and the most impacted rutting area.

Wx Plateau Proposed Location: 0460592N 7099173W
Wx Slope Proposed Location: 0460592 7099173

The weather station on the slope can not physically be on the slope as the incline is too great to achieve safe installation. This proposed location is right on the edge, close to where the time lapse camera is set up.

Communication:

See photos.

Incidents:

No incidents.

Other General Remarks:

By signing below I agree that the above statements are an accurate representation of events.

Okane Consultants:

Victoria Gold Representative:

Khale

Eagle Mine 1370 Cover System Progress Report

Date:		**Owner/Client:**	
Day:		**Okane Project #:**	
Prepared by:		**Project Location:**	

Number of Pages in Report

Environmental Conditions:

Weather

Wind

Temperature (High/Low)

Humidity

Location of Work:

Effects on Work (weather, incidents, breakdowns, delays, etc.):

Health, Safety, & Environment:

Sampling/Construction/Installation Notes:

Communication:

Incidents:

Other General Remarks:

By signing below I agree that the above statements are an accurate representation of events.

Okane Consultants:

Victoria Gold Representative:

PHOTOGRAPHS

Photo #:

Photo #:

Photo #:

Photo #:

Eagle Mine 1370 Cover System Progress Report

Date:		**Owner/Client:**	
Day:		**Okane Project #:**	
Prepared by:		**Project Location:**	

Number of Pages in Report

Environmental Conditions:

Weather

Wind

Temperature (High/Low)

Humidity

Location of Work:

Effects on Work (weather, incidents, breakdowns, delays, etc.):

Health, Safety, & Environment:

Sampling/Construction/Installation Notes:

Communication:

Incidents:

Other General Remarks:

By signing below I agree that the above statements are an accurate representation of events.

Okane Consultants:

Victoria Gold Representative:

PHOTOGRAPHS

Photo #:

Photo #:

Photo #:

Photo #:

Eagle Mine 1370 Cover System Progress Report

Date:		**Owner/Client:**	
Day:		**Okane Project #:**	
Prepared by:		**Project Location:**	

Number of Pages in Report

Environmental Conditions:

Weather

Wind

Temperature (High/Low)

Humidity

Location of Work:

Effects on Work (weather, incidents, breakdowns, delays, etc.):

Health, Safety, & Environment:

Sampling/Construction/Installation Notes:

Communication:

Incidents:

Other General Remarks:

By signing below I agree that the above statements are an accurate representation of events.

Okane Consultants:

Victoria Gold Representative:

PHOTOGRAPHS

Photo #:

Photo #:

Photo #:

Photo #:

Date: October 26, 2020

Prepared by: Phil Emerson

Temp: -20 to -10

Location: 1370

Effects on work

Slope hole was started at 9:30am, material was >150cm, call to Larisa was made for guidance. Berm and slope were excavated back to stockpile in a section of about 20m. Slope was regraded with the excavator in order to get closer to the project scope of 50cm.

Frost has penetrated about 20-30cm into the ground

Heath, Safety and Environment

Cold conditions

Working around excavator

Sampling/Construction/Installation Notes:

Crew was ready to start at 9:00

Mueller electric - Mike & Kurt

VGC - Jessica &Phil

Ewing - Kevin

9:30- Issue with depth of material on the slope station - Larisa was called and it was decided to reshape the slope and get the depth closer to project scope of 50cm.

10:00- Decided to cut berm and slope and create a station on the slope instead of the berm

10:30- Excavator still has earthworks to complete on the slope. Operator was asked to dig a hole on the plateau station so the group could continue with the installation

10:45- Plateau hole has been dug, frozen the entire way down, large chunks of frozen earth in the work area. Overburden depth is approximately 60cm

11:15- Wiring has been fed through the PVC and rain gauge has been mounted

11:30- Area is within the blast radius, crew left work area

13:00- Returned to work area and started to prep plateau excavation for instrumentation

13:00- Slope station has been prepped, slope has been regraded and is less steep than before.

13:30 - Phil left site and group had instruction to install instrument in both locations.

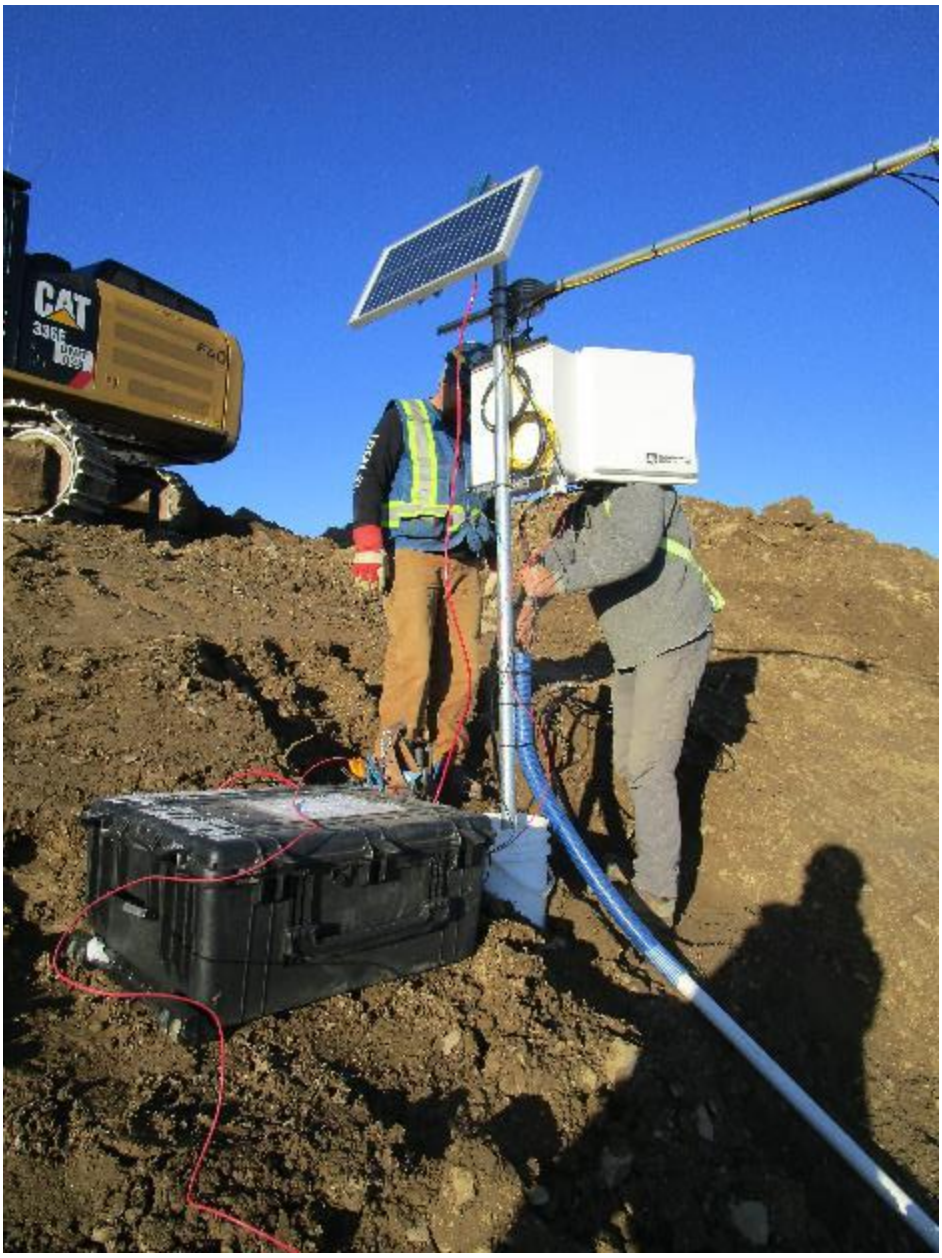
14:00- Plateau station instruments were installed, because of the frozen ground and rocks present in the overburden CS616 were partial set into the wall and then dirt was built up around them. CS229 sensors were left in the packaging overnight to avoid damage.

Communication:

Larisa was sent updated picture throughout the day



Pic 1: Hooking up sensors to the weather station



Pic 2: Wiring sensors



Pic 3: Icy/frozen conditions rock was placed around probe at the the OB/Dump interface



Pic 4: Excavator removing material at slope station to meet project specs of 50cm

Date: Oct 23, 2020

Prepared by: Phil Emerson

Weather: -20 to -10

Location: 1370 bench

Effects on Work (weather, incidents, breakdowns, delays, etc.)

Cold weather trucks were left running and used as warm up zones

Blast scheduled for 12pm must clear the area at 11:30

At slope station we could have positioned the weather station further up on the slope. Will require workers to upload information on the slope. Extra wiring has been secured to the weather station pole and station could be moved in the future if needed.

Health, Safety & Environment:

Cold weather

Working around excavator

Sampling/Construction/ Installation Notes:

8:15- Contacted Larisa to test the system via Team Viewer. Slope station was verified and we moved to plateau station to complete verification

8:45 - Verification has been completed at both stations Ewing operator starting moving material to cover excavation. hand tools were used to level area close to the weather station

9:30 - Slope station has been covered Slope sensors distance ground- snow 183cm, NRlite 241cm

and excavator started to reshape berm

10:00- Asked for unfrozen material to be tracked to the plateau station so field crew could move forward with completion of instrumentation installation (packing around instruments), leveling weather station, installation of ground, etc.

11:00- instruments have been packed and the hole was ready for backfill, combination of excavator and hand tools used

12:00- hole was backfilled and ground leveled

12:00- Excavator moved back to the slope station to completed packing the the berm before it tracked out back to site.



Pic 1: Instruments installation before program tested. CS229 probes were removed from case before hole was filled



Pic 2: Instrument installation before program test. CS229 sensors were removed from case prior to being buried



Pic 3: Excavator completing slope station fill and grading



Pic 4: Completed plateau station with Ewing operator completing finishing touches around station

APPENDIX U3

Cover System Performance Monitoring Instrumentation Record of Installation

Victoria Gold Cover System Performance Monitoring Instrumentation Record of Installation

February 3, 2021



Victoria GOLD CORP

okane

Integrated Mine Waste Management
and Closure Services
Specialists in Geochemistry and
Unsaturated Zone Hydrology

Victoria Gold
Cover System Performance Monitoring Instrumentation
Record of Installation

1048-05-005

February 2021

Prepared for:

Victoria Gold Corp.
1050 West Pender Street, Suite 1000
Vancouver, BC
V6E 3S7
604-682-5122

Prepared by:

Tara Baker
Sr. Geo-environmental Engineer
tbaker@okc-sk.com

Okane Consultants Inc.

Suite 1900, 736 6th Avenue SW
Calgary, AB T2P 3T7
Canada

Telephone: (587) 583 5741
Web: www.okc-sk.com

Rev. #	Rev. Date	Author	Reviewer	PM Sign-off
0	Jan 28, 2021	AH	TB	TB
1	April 8, 2021	AH	LD	LD

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1 BACKGROUND

Victoria Gold Corp. (VG) owns and operates the Eagle Gold Mine on the Dublin Gulch property located in central Yukon Territory. Version 2020-01 of the Reclamation and Closure Plan (RCP) was submitted to the Yukon Water Board (YWB) and the Department of Energy, Mines, and Resources (EMR) on October 23, 2020 in fulfillment of the requirements of the mine water use licences issued by the YWB.

Victoria Gold has committed to a phased approach to reclamation and closure through operations and into decommissioning. The current RCP outlined a series of tasks for a proposed research program in support of ongoing reclamation and closure planning. Previous research tasks in the RCP included research into reclamation cover system configurations and the processes governing performance. Relocation of an overburden stockpile presented an opportunity to advance cover system monitoring in support of progressive reclamation. VG contracted Okane for characterization and instrumentation of the relocated overburden stockpile to take advantage of the relocation by developing an understanding of performance for a base case cover system design configuration (Okane 2020a).

The base case cover system provided the opportunity to track the evolution of the cover system in response to site-specific processes (physical, chemical, and biological) to enhance understanding of key characteristics and processes that control cover system performance. Cover system performance will primarily be assessed in terms of net percolation of meteoric waters, and geotechnical, geomorphological, and geochemical stability. It was proposed that a performance monitoring system with automated measurements be implemented to evaluate the base case cover system constructed from relocation of the overburden stockpile. Okane provided VG an instruction manual (Okane, 2020c) that detailed the proposed sensor locations, depths, and installation procedures. Design drawings of the final station details are provided in Appendix A.

1.1 Project Objectives and Scope

A key objective of the proposed research program is to measure and understand a base case cover system (0.50 m overburden) water dynamics, such that an appropriate estimate can be made of net percolation rates through the cover system. Net percolation rates can then be used by VG to determine whether the base case cover system implementation is likely to result in achieving site water quality criteria both during operations and at closure and to update the proposed cover system configuration, if necessary. These efforts to instrument a cover system trial are in service of advancing commitments made in the RCP (Okane, 2020d).

A secondary objective of the research program is to demonstrate that the base case cover system design is geotechnically, geomorphologically, and geochemically stable. Thus, it will be necessary to demonstrate that the integrated performance of the system is sufficient to meet closure performance objectives without the need to re-slope the WRSAs from the current angle of repose.

The scope of work is to install a performance monitoring program for the relocated overburden at the Platinum Gulch WRSA 1370 Dump.

There are two full meteorological stations, the Potato Hills and Camp stations, are located near the 1370 waste rock storage area (WRSA) that are collecting parameters required for the water balance. Some data collected by the Potato Hills and Camp meteorological stations will be used for the trial study, although this does not present the ideal situation due to the distance and difference in elevation between the stations and the 1370 WRSA. Therefore, sensors to monitor net radiation, snow depth, and rainfall were installed to monitor site-specific parameters on the plateau of the base case cover system constructed from the relocated overburden. In addition, meteorological sensors were installed on the slope area soil monitoring station to monitor net radiation and snow depth, as these parameters are aspect dependent.

The soil monitoring system design is for one soil monitoring station on the covered area of the WRSA plateau at a proposed location of 8 W 460592 E 7099173 N and one soil monitoring station on the adjacent covered slope at a proposed location of 8 W 460550 E 7099045 N. The actual location of the plateau station is 8 W 460548 E 7099154 N, while the actual location of the slope station is 8 W 460551 E 7099045 N. Maps of the proposed and actual station locations are provided in Appendix A. This design ensures that spatial and slope variability of soil parameters is captured. It was recommended that five (5) volumetric water content probes and five (5) matric suction / temperature probes be installed at each monitoring station: four (4) pairs in the cover system, and one (1) pair in the upper waste material. The volumetric water content and matric suction measurements will monitor water movement through the cover system and confirm the timing and magnitude of net percolation. Five sensors are the minimum recommended for the soil monitoring station based on the 0.5 m cover system depth, in order to adequately determine soil water dynamics of the cover system and upper waste material.

2 INSTALLATION DETAILS

The monitoring system design for the cover system trial includes one monitoring station on the covered area of the WRSA plateau and one monitoring station on the adjacent covered southeast slope. Okane developed a finalized design and instrumentation installation plan to be completed by VG site personnel after cover system construction (Okane, 2020c). In addition, Okane provided virtual training via PowerPoint presentation to VG site personnel in instrumentation installation procedures prior to installation, as well as a PowerPoint presentation on maintenance and data collection procedures following installation. Qualified, experienced Okane personnel were available during the duration of instrumentation installation for virtual oversight. Reports were provided to Okane by VG personnel approximately every second day throughout the installation to facilitate oversight of instrumentation installation, and regularly scheduled meetings with VG and Okane staff were held to review progress. Survey control was provided by VG during instrumentation installation to assist in documentation.

Station profile design drawings are provided in Appendix A. The datalogger programs are described in Appendix B. Photographs of station installation are located in Appendix C.

2.1 Data Acquisition System

A robust power system was designed for the monitoring stations to maintain station power through long winters with low solar energy. Soil and meteorological sensors for each station are controlled with one (1) CS CR1000X-XT measurement and control datalogger supplied with power by one (1) CS SP30R 30 W solar panel with 12V regulator and two (2) NAPA Deep Cycle Battery BCI No. 31 650 A in parallel. Soil sensors are wired to a CS AM16/32B-XT multiplexer. Schematics of datalogger and multiplexer wiring are provided in Appendix A. The datalogger and multiplexer are contained in a CS ENC 14/16 fiberglass enclosure mounted to a 4x4" fencepost in a 20 L pail filled with concrete and grounded with a CS L31163 basic grounding kit. The batteries are protected in a watertight container. Sensor wires from the sensors to the data acquisition system (DAS) are protected in Schedule 40 PVC tubing. The datalogger programs are provided in Appendix B.

2.2 Meteorological Sensors

The purpose of the above ground components of the monitoring system is to quantify elements of an energy and water balance for the cover system. Net radiation and snow depth are measured at both the plateau and slope monitoring stations, as these parameters are aspect-specific, while rainfall is measured at the plateau station. Meteorological instruments installed include:

- Kipp and Zonen NRLite2 net radiometers measure the net input of radiation into or out of the soil-atmosphere boundary. Net radiation is important in understanding temperature fluctuations in the cover system and is the primary energy input for evaporating water from the cover system surface. The net radiometers are mounted to the station post with a CS L26120 mount kit with built-in leveling.

- Campbell Scientific (CS) SR50ATH sonic ranging sensors measure the depth of snow above the cover system surface. Snow represents a major input of water into the cover system. Knowing how snow is partitioned between runoff, storage in the cover system, or percolation through the cover system will have a large effect on the design of the closure system. Sonic sensors determine distance by emitting an ultrasonic pulse and then measuring the elapsed time between the emission and return of the pulse. The temperature probe allows the SR50ATH to output temperature-corrected values. The integrated heater prevents ice and frost from coating the transducer. The temperature sensor is mounted in a RM Young 41303-5A radiation shield.

- An EML Metric ARG314 tipping bucket rain gauge (TBRG) with 0.2 mm resolution measures the amount of liquid precipitation that is incident to the cover system surface. Rainfall is the primary input of liquid water to the cover system during periods when the cover system is not frozen. Knowing the volume of precipitation incident to the cover system will allow for development of a defensible cover system water balance. The aerodynamic shape of the TBRG reduces wind loss of rainfall over the orifice, improving accuracy of the measurement. The rain gauge is mounted on a 2" galvanized steel post in a concrete-filled pail with a flat platform.

Net radiation will be measured every minute, snow depth will be measured once per hour, and rainfall will be measured on an event basis. Meteorological parameters will be output into daily and hourly data tables.

2.3 Soil Monitoring Stations

Measurements taken within the cover system provide insight into the partitioning of water at the cover system-atmosphere interface and the cover system-waste material interface. Measured parameters are volumetric soil water content, soil temperature, and soil matric potential. Drawings of station locations and Schematics of the soil sensor installations are located in Appendix A.

High frequency data collection ensures that cover system water balances can be estimated on a daily basis. Soil parameters will be measured every four (4) hours to capture any changes that may occur following precipitation events.

2.3.1 CS 616 Sensors

CS616 time domain reflectometry (TDR) sensors measure the volume of water in the soil at given depths throughout the profile and add to measurements from adjacent sensors to determine cover system water storage. Soil water content is the primary parameter used when developing water balance inputs to a cover system model for a reclamation cover system. The changes of water storage in the cover system provide insight into how the system behaves, and whether water is stored and subsequently released through evaporation, runs off overland, or is transported through the cover system into the underlying waste material.

A CS616 sensor consists of two stainless steel rods (300 mm long x 3 mm in diameter; referred to as the wave guide) connected to a printed circuit board encapsulated in epoxy. An electromagnetic pulse is propagated along the wave guide and the time between sending the original pulse and receiving the reflected pulse is measured. The time period is a function of the apparent dielectric constant of the soil, which is strongly dependent on the volumetric water content of the soil.

Okane applies a temperature correction to CS616 TDR output when the period output is ≥27:

1) $p = \tau + (20 - T)(0.526 - 0.052 + 0.00136\tau^2)\ if\ \tau < 27$

2) $p = \tau + (20 - T)(0.009\tau - 0.013)\ if\ \tau \geq 27$

Where p = period corrected for soil temperature
τ = period measured by CS616 TDR and output by datalogger
T = soil temperature measured by 229 sensor (°C)

Material specific calibration curves are required for correction of CS616 data following installation and these calibration curves were developed in Okane's Saskatoon laboratory from overburden and waste rock material collected during construction and installation. It should be noted that the calibration for the waste rock material is currently being undertaken.

3) $VWC_{OB} = 0.0000408p^3 - 0.003961p^2 + 0.1349p - 1.326$

4) $VWC_{WR} = Ap^3 + Bp^2 + Cp + D$

Where VWC_{OB} = volumetric water content (cm^3/cm^3) of overburden
VWC_{WR} = volumetric water content (cm^3/cm^3) of waste rock

2.3.2 CS 229 Sensors

CS 229 heat dissipation matric potential sensors measure the temperature and stress state of the soil, expressing the wetness of the system in terms of a potential, at given depths

throughout the profile. Soil temperature is an important parameter of interest in cold regions, as temperature is indicative of the energy balance of the system and provides insight into how water is partitioned at the soil-atmosphere interface. Measurement of soil matric potential provides an indication of how tightly the soil is holding the pore water at a given depth. When used with water content sensors it allows for the calculation of gravitational gradients that are then used to calculate a flux through the system. The calculated flux is then used to calculate a rate of percolation of water through the cover system into the underlying waste, where it is then available to report to surface or groundwater receptors.

A CS 229 sensor consists of a probe inserted axially in a porous cylinder, which has a diameter of 15 mm and a length of 32 mm. The probe consists of a stainless steel tube in which a heating element and a thermocouple are embedded. The heating element and thermocouple are connected to lead wires; this connection is embedded in an electrical insulating resin. The thermal conductivity sensor is heated for 30 seconds to determine the change in temperature, which varies depending on the moisture content of the ceramic block.

The CS 229 sensor records heat dissipation from a current, referred to as temperature rise.

5) $T_{norm} = \frac{\Delta T_{max} - \Delta T}{\Delta T_{max} - \Delta T_{min}}$

Where T_{norm} = normalized temperature rise
ΔT = temperature rise measured by the 229 sensor and output by datalogger
ΔT_{max} = maximum of sensor calibration curve
ΔT_{min} = minimum of sensor calibration curve

Constants for the slope function of the CS 229 sensor response to temperature were developed from Flint et al (2002):

6) $s^* = F_1 {T_{norm}}^5 + F_2 {T_{norm}}^4 + F_3 {T_{norm}}^3 + F_4 {T_{norm}}^2 + F_5 T_{norm} + F_6$

Where s* = position of T_{norm} on the slope function s
F1 = Flint et al. 2002 constant to fit T_{norm} to the slope function = -0.00774
F2 = Flint et al. 2002 constant to fit T_{norm} to the slope function = 0.03311
F3 = Flint et al. 2002 constant to fit T_{norm} to the slope function = -0.044
F4 = Flint et al. 2002 constant to fit T_{norm} to the slope function = 0.01334
F5 = Flint et al. 2002 constant to fit T_{norm} to the slope function = 0.00498
F6 = Flint et al. 2002 constant to fit T_{norm} to the slope function = 0.00064

Matric suction is calculated from the temperature-corrected CS 229 sensor output ΔT_{corr}:

7) $\Delta T_{corr} = \Delta T_{max} - \big(T_{norm} - s^*(T - 20)\big)(\Delta T_{max} - \Delta T_{min})$

Where ΔT_{corr} = input to the matric suction function
T = soil temperature measured by CS 229 sensor (°C)

The calibration curve relating sensor response (ΔT_{corr}) to soil water potential or matric suction (Ψ) is empirical. The most commonly used form is:

8) $$ln(|\Psi|) = \alpha \Delta T_{corr} + \beta$$

Where Ψ = matric suction (kPa)
α = slope of the calibration curve
β = intercept of the calibration curve

CS 229 sensors were calibrated individually in Okane's Saskatoon laboratory prior to installation and matric suction is calculated using Okane's proprietary calibration curve. The calibration data are provided in Table 2.1.

Table 2.1: Calibration constants for CS 229 sensors.

Serial #	ΔT_{min}	ΔT_{max}	A	N	M
C00053	0.7	3.381062963	166.19595	0.684983096	1.702738108
C00054	0.7	3.363703704	123.7313659	0.693919339	1.48643876
C00055	0.7	3.605421	267.4119078	0.58479218	1.990568235
C00056	0.7	3.351222222	115.0315168	0.751271763	1.37375112
C00057	0.7	3.684347407	1158.382446	0.517049165	3.002732782
C00058	0.7	3.350796667	249.9352545	0.567754977	2.031540926
C00059	0.7	3.258717852	881.7285189	0.472391915	2.846740253
C00060	0.7	3.239192593	339.7080728	0.500493491	2.133795518
C00061	0.7	3.408955556	136.2338951	0.792949061	1.485130358
C00062	0.7	3.239305259	135.0778399	0.774170056	1.470275126

2.3.3 Plateau Performance Monitoring Station

The plateau performance monitoring was located in the middle of the bench to avoid edge effects (see Appendix A). The meteorological station equipment was installed on October 21, 2020. The soil pit was excavated, and the soil sensors installed on October 22. The CS616 sensors were partially set in the soil pit wall and then overburden built up around them because the overburden was frozen and contained rocks. The 229 sensors were left in packaging overnight to avoid freezing because the soil pit was not backfilled until October 23, after the sensors were wired and correct operation verified (Okane, 2021).

The overburden depth at the plateau station location was approximately 0.65 m instead of the target 0.5 m. Sensor depth was recorded during installation as elevation in meters above sea level (masl), with the surface of the pad at 1371.46 masl, after sensor installation as shown in Table 2.2.

Table 2.2: Sensors installed at the plateau monitoring station.

Elevation (masl)	Depth (cm)	CS616 #	CS229 #
1371.338	12.4		S/N 0057
1371.326	13.6	1	
1371.303	15.9	2	
1371.176	28.6		S/N 0060
1371.095	36.7	3	
1371.058	40.4		S/N 0058
1371.02	44.2	4	
1370.953	50.9		S/N 0059
1370.866	59.6	5	
1370.833	62.9		S/N 0062

The distance between the SR50ATH, NRLite2, TBRG and ground is 1.86 m, 1.88m and 1.89 m, respectively. These measurements were conducted by Victoria Gold at the plateau station on February 28, 2021.

2.3.4 Slope Performance Monitoring System

Sensor depth was recorded during installation as elevation, as shown in Table 2.3, and the surface of the overburden is located at 1367.58 masl and 1367.48 masl above the CS229 and CS616 profiles, respectively. The location of the slope station on the landform is shown in Appendix A. Installation at a mid-slope position on a shorter slope was desired to monitor a location with mid-grade texture and reduced segregation. The slope from the crest to the sensor installation location is 2.5H:1V and from the crest to the bottom toe is 2H:1V (Rear, 2021).

The meteorological station equipment was installed on October 21, 2020. The slope was regraded on October 22, reducing slope angle, to achieve desired overburden depth of 0.5 m; the monitoring station was then installed on the slope instead of the berm as planned. Based on surface and instrumentation elevations, it is estimated that the overburden depth is between 0.40 and 0.5 m. The soil pit was excavated, and the soil sensors installed on October 22, and the pit backfilled on October 23 following verification of station operation. The 229 sensors were left in packaging overnight to avoid freezing (Okane, 2021). Phil Emerson of VG observed on October 23 that the meteorological station could have been positioned further up the slope and secured extra wiring to the meteorological station mounting post to move the station in future if required.

Table 2.3: Sensors installed at the slope monitoring station.

Elevation (masl)	Depth (cm)	CS616 #	CS229 #
1367.407	7.3	1	
1367.405	17.5		S/N 0053
1367.321	25.9		S/N 0054
1367.315	16.5	2	
1367.232	34.8		S/N 0061
1367.219	26.1	3	
1367.167	31.3	4	
1367.157	42.3		S/N 0056
1367.036	54.4		S/N 0055
1367.024	45.6	5	

The distance between the SR50ATH and ground is 1.74 m. The distance between the NRLite2 and ground is 2.29 m. These values are approximate due to the difficulty to achieve precision due to the inherent angle of the slope and ground. Measurements were recorded by Victoria Gold on February 28, 2021.

3 CLOSURE

Please do not hesitate to contact me at (403) 815-0009 or tbaker@okc-sk.com should you have any questions or comments.

4 REFERENCES

Flint, A.L., Campbell, G.S., Ellett, K.M. and Calissendorff, C. 2002. Calibration and temperature correction of heat dissipation matric potential sensors. Soil Science Society of America Journal 66:1439-1445.

Okane Consultants Inc. 2020a. Eagle Gold Mine Overburden Stockpile Characterization and Instrumentation Scope of Services. July 23, 2020. Technical letter from Lindsay Tallon to Lindsay Rear, Environmental Manager, Victoria Gold Corp., Vancouver, British Columbia, Canada. Okane reference P-1048-005.

Okane Consultants Inc. 2020b. Eagle Mine Cover Trial Construction Quality Control Program Rev1. September 3, 2020. Memorandum from Lindsay Tallon and Larisa Doucette to Lindsay Rear, Environmental Manager, Victoria Gold Corp., Vancouver, British Columbia, Canada. Okane reference 1048-005.

Okane Consultants Inc. 2020c. Eagle Gold Mine Cover System Field Trial Instrumentation Installation Instruction Manual Rev1. September 9, 2020. Report 1048-005-003. Prepared for Victoria Gold Corp.

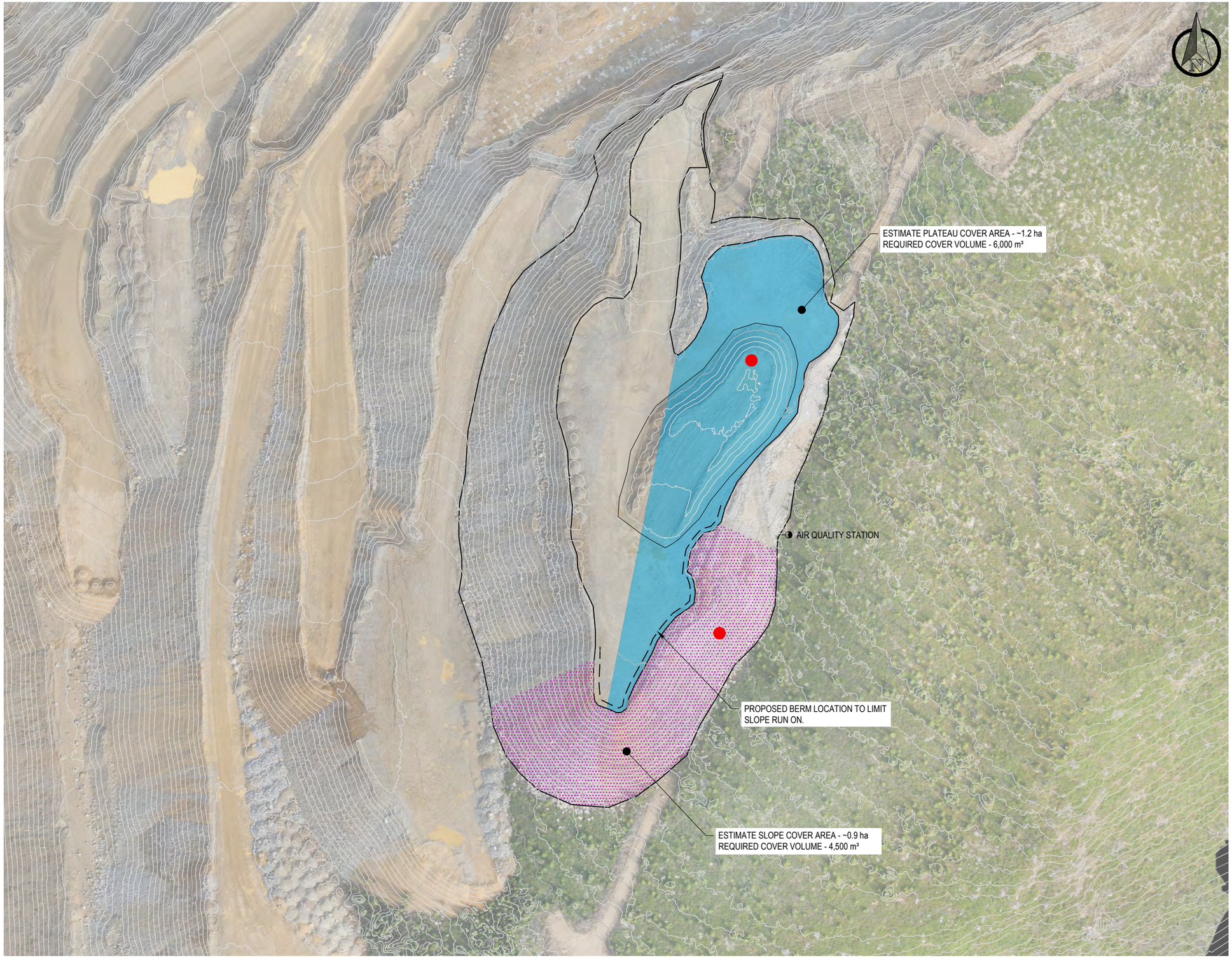
Okane Consultants Inc. 2020d. B-1048-005 Victoria Gold Eagle Gold Mine – 2020 Update to RCP. September 29, 2020. Memorandum from Lindsay Tallon to Lindsay Rear, Environmental Manager, Victoria Gold Corp., Vancouver, British Columbia, Canada. Okane reference B-1048-005.

Okane Consultants Inc. 2021. Victoria Gold Cover System Construction Quality Assurance and Quality Control Report. Report 1048-005-004 prepared for Victoria Gold Corp., February 2021.

Rear, L. 2021. Personal communication to Tara Baker, Engineer, Okane Consultants Inc. via email on January 13, 2021. Lindsary Rear, Environmental Manager, Victoria Gold Inc.

Appendix A

Drawings – Design and Wiring Diagrams



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PRELIMINARY
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Legend/Notes

NOTE

1. ALL UNITS IN METRES U.N.O.
2. IMAGERY AND TOPOGRAPHY PROVIDED BY THE CLIENT.
3. SOIL MONITORING STATION IS SUBJECT TO CHANGE BASED ON FIELD CONDITIONS. REFER TO INSTRUMENTATION PLAN FOR SELECTION CRITERIA.

LEGEND

EXISTING CONTOUR 1100

SOIL MONITORING STATION

PLATEAU COVER AREA

SLOPE COVER AREA

20 10 0 20 40 60 80 100m

SCALE 1:2000

Revision	Description	Date
3		
2		
1		
0		
A	ISSUED FOR CLIENT REVIEW	2020/08/17

Client/Project

VICTORIA GOLD CORP
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VICTORIA GOLD CORP
2020 RECLAMATION AND CLOSURE PLAN ACTIVITIES

Drawn by
H. COOPER

Designed by
OKANE CONSULTANTS

Approved by
L. DOUCETTE

Drawing title

OVERBURDEN MONITORING STATION PLAN

Project no.	Drawing no.	Sheet	Revision
1048-005	1048-005-001	ANSI B	A



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AS BUILT

Legend/Notes

NOTE

1. ALL UNITS IN METRES U.N.O.
2. IMAGERY AND TOPOGRAPHY PROVIDED BY THE CLIENT.
3. CLIENT PROVIDED AS-BUILT DATA FOR COVER SYSTEM PLACE ON PLATEAU, COLLECTED 10-29-2020.
4. FINAL TRIAL BOUNDARY ESTIMATED BASED ON CONTOUR DATA.

LEGEND

AS-BUILT COVER CONTOUR — 1300

EXISTING CONTOUR — 1300

TRIAL BOUNDARY

1370 DUMP BOUNDARY

20 10 0 20 40 60 80 100m

SCALE 1:2000

Revision	Description	Date
3		
2		
1		
0	AS-BUILT DATA	2020/11/24
A	ISSUED FOR CLIENT REVIEW	2020/09/24

Client/Project

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VICTORIA GOLD CORP.
WASTE ROCK STORAGE FACILITY
COVER SYSTEM TRIAL

Drawn by: H. COOPER

Designed by: L. DOUCETTE

Approved by: L. TALLON

Drawing title

PLATEAU COVER SYSTEM
PLACEMENT - AS-BUILT

Project no.	Drawing no.	Sheet	Revision
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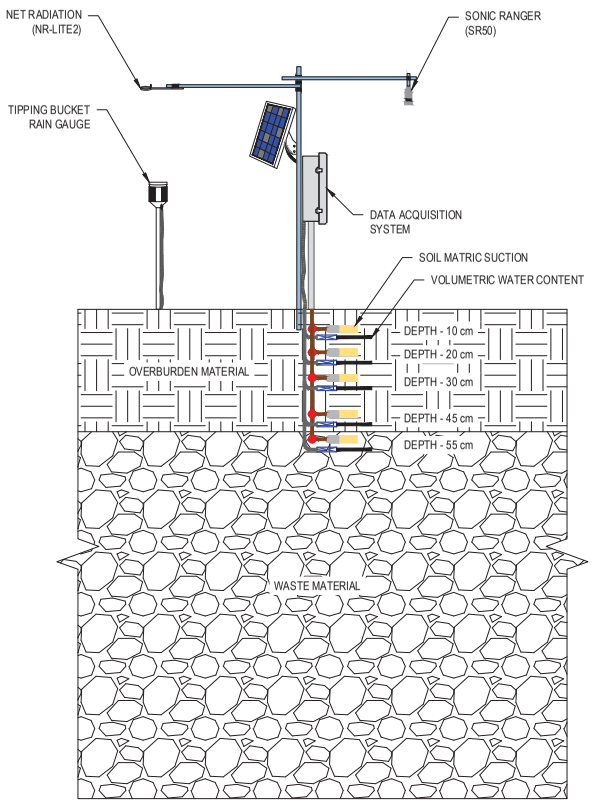
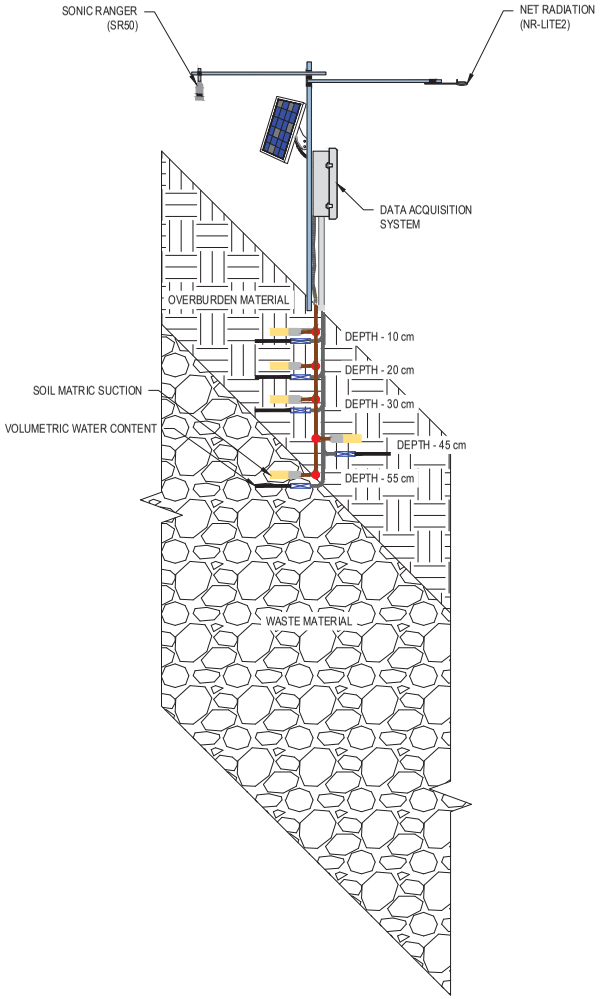


PLATEAU SURFACE MONITORING STATION
1:20



SLOPE SURFACE MONITORING STATION
1:20

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Legend/Notes

NOTE

1. ALL UNITS IN METRES U.N.O.
2. INSTRUMENTATION DEPTHS ARE PROPOSED AND SUBJECT TO CHANGE.

LEGEND

CS616 VOLUMETRIC WATER CONTENT SENSOR

CS229 SOIL MATRIC SUCTION SENSOR

Revision	Description	Date
3		
2		
1		
0		
A	ISSUED FOR CLIENT REVIEW	2020/09/01

Client/Project

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VICTORIA GOLD CORP
2020 RECLAMATION AND CLOSURE
PLAN ACTIVITIES

Drawn by
H. COOPER

Designed by
OKANE CONSULTANTS

Approved by
L. DOUCETTE

Drawing title

SOIL MONITORING STATION
COVER PROFILES

Project no.	Drawing no.	Sheet	Revision
1048-005	1048-005-002	ANSI B	A

Last Saved:9/1/2020 9:16 AM

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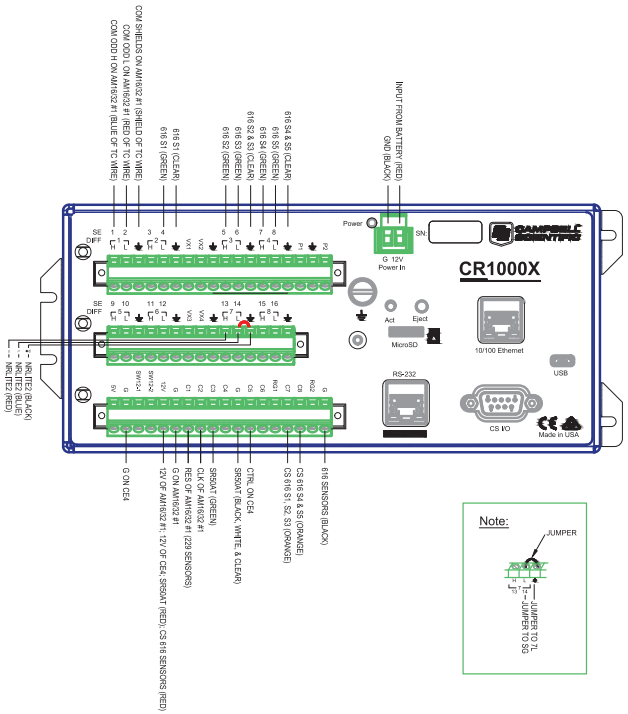
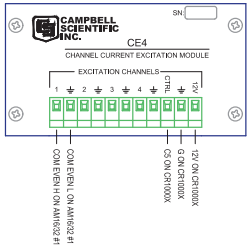
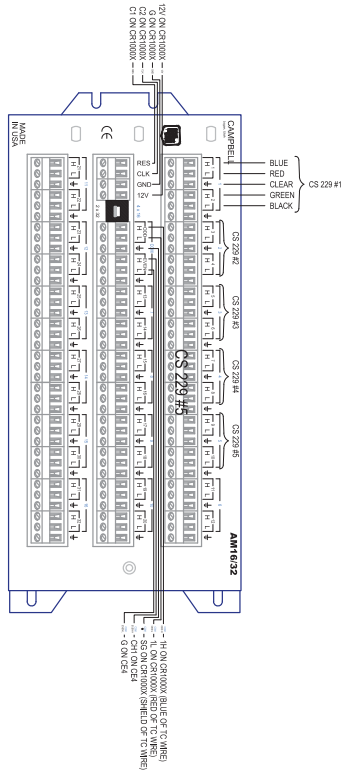


MEASUREMENT AND CONTROL DATALOGGER (CR1000X)
N.T.S.



4-CHANNEL CURRENT- EXCITATION MODULE (CE4)
N.T.S.



16/32 CHANNEL RELAY MULTIPLEXER (AM16/32 #1)
N.T.S.

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Legend/Notes

NOTE

1. THE CS229 SENSORS SENSORS ARE CONNECTED TO ONE AM16/32 MULTIPLEXER IN 4X16 MODE, AM16/32 #1 (RES TO C1).
2. THE CS616 SENSORS ARE CONNECTED DIRECTLY TO CR1000X. THERE ARE THREE 616 SENSORS (S1, S2, S3) PER CR1000 CHANNEL.

LEGEND

NR-LITE2-L = KIPP & ZONEN NR-LITE2-L NET RADIOMETER

SR50AT = CAMPBELL SCIENTIFIC SR50A SONIC DISTANCE SENSOR

CS616 = CAMPBELL SCIENTIFIC MODEL CS616 VOLUMETRIC WATER CONTENT SENSORS

CS229 = CAMPBELL SCIENTIFIC MODEL 229 MATRIC SUCTION SENSORS

Revision	Description	Date
3		
2		
1		
0		
A	ISSUED FOR CLIENT REVIEW	2020/08/17

Client/Project

VICTORIA GOLD CORP
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VICTORIA GOLD CORP
2020 RECLAMATION AND CLOSURE PLAN ACTIVITIES

Drawn by: J. DAND

Designed by: OKANE CONSULTANTS

Approved by: L. DOUCETTE

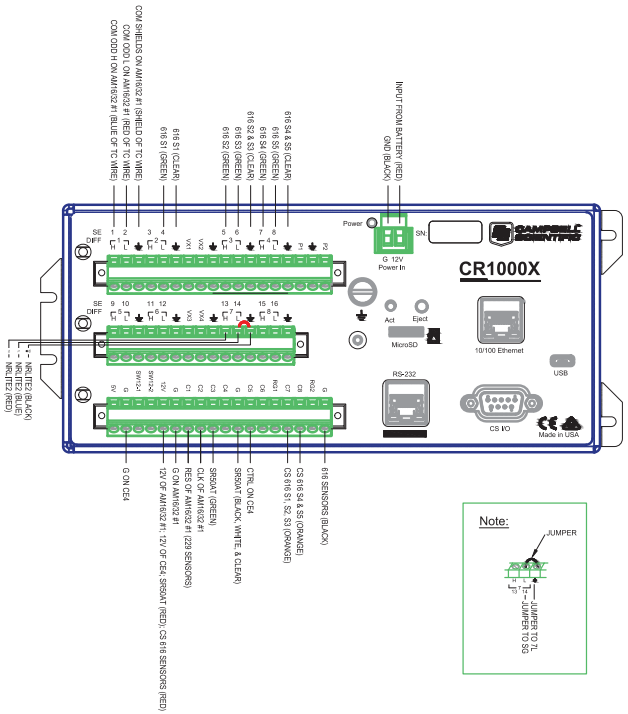
Drawing title

OVERBURDEN PLATEAU SOIL MONITORING STATION WIRING DIAGRAM

Project no.	Drawing no.	Sheet	Revision
1048-005	1048-005-003	ANSI B	A

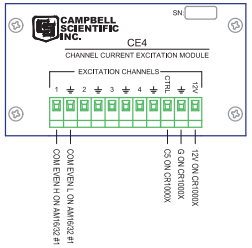
Last Saved:8/17/2020 4:24 PM

Cadfile Name:1048-005 Victoria Gold Wiring Diagrams.dwg

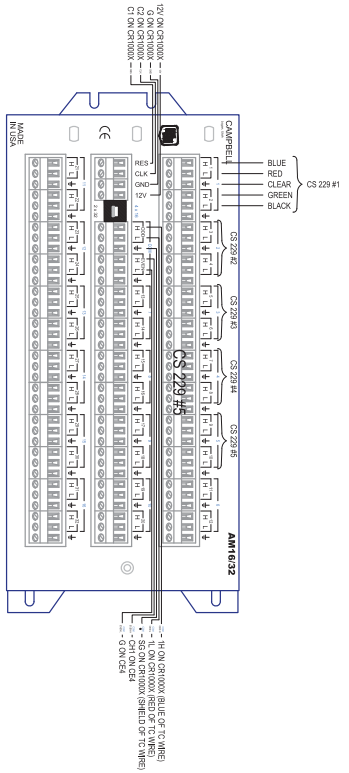


Note:

MEASUREMENT AND CONTROL DATALOGGER (CR1000X)
N.T.S.



4-CHANNEL CURRENT- EXCITATION MODULE (CE4)
N.T.S.



16/32 CHANNEL RELAY MULTIPLEXER (AM16/32 #1)
N.T.S.

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Specialists in Geochemistry and Unsaturated Zone Hydrology

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Legend/Notes

NOTE

1. THE CS229 SENSORS SENSORS ARE CONNECTED TO ONE AM16/32 MULTIPLEXER IN 4X16 MODE, AM16/32 #1 (RES TO C1).
2. THE CS616 SENSORS ARE CONNECTED DIRECTLY TO CR1000X. THERE ARE THREE 616 SENSORS (S1, S2, S3) PER CR1000 CHANNEL.

LEGEND

NR-LITE2-L = KIPP & ZONEN NR-LITE2-L NET RADIOMETER

SR50AT = CAMPBELL SCIENTIFIC SR50A SONIC DISTANCE SENSOR

CS616 = CAMPBELL SCIENTIFIC MODEL CS616 VOLUMETRIC WATER CONTENT SENSORS

CS229 = CAMPBELL SCIENTIFIC MODEL 229 MATRIC SUCTION SENSORS

Revision	Description	Date
3		
2		
1		
0		
A	ISSUED FOR CLIENT REVIEW	2020/08/17

Client/Project

VICTORIA GOLD CORP
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VICTORIA GOLD CORP
2020 RECLAMATION AND CLOSURE PLAN ACTIVITIES

Drawn by: J. DAND

Designed by: OKANE CONSULTANTS

Approved by: L. DOUCETTE

Drawing title

OVERBURDEN SLOPE SOIL MONITORING STATION WIRING DIAGRAM

Project no.	Drawing no.	Sheet	Revision
1048-005	1048-005-004	ANSI B	A

Last Saved:8/17/2020 4:24 PM

Cadfile Name:1048-005 Victoria Gold Wiring Diagrams.dwg

Appendix B

Datalogger Programs

Datalogger Program for Slope Monitoring Station

```
'CR1000X
'Program for Victoria Gold Overburden Monitoring
'Version August 2020
'Prepared by O'Kane Consultants Inc.

'This program controls the sensors installed in the slope soil profile
'including:

'- 5 CS616 Volumetric Water Content Sensors
'- 5 CS229 Matric Suction Sensors
'- 1 NR-LITE2 Net Radiometer (S/N ____)
'- 1 SR50AT Sonic Ranger (S/N ____)

'The 229 sensors are connected to AM16/32 Multiplexer (Res to C1)
'The 616 sensors are connected directly to the CR1000X. There are three 616
'sensors (S1, S2, S3) per CR1000 channel.

'Radiation measurements are taken every minute,
'Snow Depth is measured every hour
'Soil sensors are measured every four hours

'*********************************************************************************
'CR1000X Wiring:
'SG stands for 'Symbol Ground'

'1H  = COM ODD H on AM16/32 #1 (blue of TC wire)
'1L  = COM ODD L on AM16/32 #1 (red of TC wire)
'SG  = COM SHIELDS on AM16/32 #1 (shield of TC wire)
'2H  =
'2L  = Green of 616 S1
'SG  = Clear of 616 S1
'3H  = Green of 616 S2
'3L  = Green of 616 S3
'SG  = Clear of 616 S2 & S3
'4H  = Green of 616 S4
'4L  = Green of 616 S5
'SG  = Clear of 616 S4 & S5
'5H  =
'5L  =
'SG  =
'6H  =
'6L  =
'SG  =
'7H  = Red of NRLite2
'7L  = Blue of NRLite2 & Jumper to SG
'SG  = black of NRLite2 & Jumper to 7L
'8H  =
'8L  =
'SG  =
'VX1 =
```

'VX2 =
'SG =
'VX3 =
'VX4 =
'SG =
'P1 =
'SG =
'P2 =
'SG =
'C1 = RES on AM16/32 #1 (229s)
'C2 = CLK on AM16/32 #1
'C3 = Green of SR50AT
'C4 =
'G   = Black, white, and clear of SR50AT
'C5 = CTRL on CE4
'C6 =
'C7 = Orange of 616 S1, S2, S3
'C8 = Orange of 616 S4 & S5
'G   =
'5V =
'G   = G on CE4
'RG1 =
'RG2 =
'SW12(1) =
'SW12(2) =
'G   = G on AM16/32 #1
'12V = 12V on AM16/32 #1, 12V on CE4, Red of SR50AT
'12V = Red 616 sensors
'G   = Black 616 sensors

'CE4 Wiring
'CTRL = C5 on CR1000X
'G   = G on CR1000X
'CH1 = COM EVEN H on AM16/32 #1
'G   = COM EVEN L on AM16/32 #1

'AM16/32 No. 1 (229 Sensors) - 4x16 mode
'RES   = C1 on CR1000X
'CLK   = C2 on CR1000X
'12V   = 12V on CR1000X
'G   = G on CR1000X
'COM ODD H = 1H on CR1000X (blue of TC wire)
'COM ODD L = 1L on CR1000X (red of TC wire)
'COM SH   = SG on CR1000X (shield of TC wire)
'COM EVEN H = CH1 on CE4
'COM EVEN L = G on CE4

'CSCC Model 229 Matric Suction Sensor Wiring to AM16/32

'blue = ODD H
'red   = ODD L
'green = EVEN H

```
'black = EVEN L
'clear = shield
'*****************************************************************************

'Declare Station Name to be stored in the Status Table
StationName (VG_OB_Slope)

'Declare Public Variables, Alias', Dimensions, and Units
Public Batt_Volt
Public RefTemp_C
Public SoilTemp(5)
Public DelT(5)
Public Wat_Con_616(5)
Public NR_Wm2
Public NR_MJm2
Public SR50AT(2)
Public SR50AT_Temp
Public SnowDepth
Public Corr_Distance
Public Flag(2) As Boolean

Alias SR50AT(1)=SR50AT_Raw_Dist
Alias SR50AT(2)=SR50AT_Sig

'Declare Other Variables that remain hidden from the datalogger real-time tables
Dim k
Dim NRLite_mult
Dim PTemp_1sec_C(5),PTemp_30sec_C(5)

'Declare unit labels to be displayed in header of the tables
Units Batt_Volt=Volts
Units RefTemp_C=degC
Units SoilTemp()=degC
Units DelT()=degC
Units Wat_Con_616()=raw_value
Units NR_Wm2=W/meter^2
Units SnowDepth=m
Units SR50AT_Temp=degC
Units SR50AT_Raw_Dist=m

'Declare sensor-specific constants
Const NRLite_Sensitivity = 14.0    'enter NR-Lite2 specific sensitivity
Const SR50Disttoground = 1.74      'enter distance between SR50 and ground (in meters)

'*****************************************************************************

'Define Data Tables
'Output average net radiation, snow depth, signal quality and air temperature
'every hour - Output SR50 distance and panel temperature for snow depth measurement data
QC
DataTable(VG_Weather_Hourly_SL,True,-1)
  DataInterval(0,60,Min,10)
```

```
  Average(1,NR_Wm2,FP2,False)
  Sample(1,SnowDepth,IEEE4,False)
  Sample (1,SR50AT_Temp,FP2)
  Sample (1,SR50AT_Sig,FP2)
  Sample (1,SR50AT_Raw_Dist,IEEE4)
  Sample (1,RefTemp_C,FP2)
EndTable

'Output total net radiation in MJ/m2, average and min./max. snow depth
'and min. battery voltage for the past 24 hours
DataTable(VG_Weather_Daily_SL,True,-1)
  DataInterval(0,1440,Min,10)
  Totalize (1,NR_MJm2,FP2,False)
  Average(1,SnowDepth,IEEE4,False)
  Minimum(1,SnowDepth,IEEE4,False,False)
  Maximum(1,SnowDepth,IEEE4,False,False)
  Minimum(1,Batt_Volt,FP2,False,False)
EndTable

'Output data tables for soil sensors every time measurements are taken
DataTable(VG_Soil_SL,Flag(1)=True,1000)
  Sample(5,SoilTemp(),FP2)
  Sample (5,DelT(),FP2)
  Sample (5,Wat_Con_616(),FP2)
EndTable

'*********************************************************************************

'Main Program
BeginProg
  NRLite_mult=1000/NRLite_Sensitivity
  Scan(60,Sec,1,0)
    'Default Datalogger Battery Voltage measurement Batt_Volt:
    Battery(Batt_Volt)
    'Measure reference temperature before starting 229 measurements
    PanelTemp (RefTemp_C,_60Hz)

    'NR-LITE2 Net Radiometer (no wind speed correction) measurement 'NR_Wm2'
    VoltDiff(NR_Wm2,1,mV200,7,True,0,60,NRLite_mult,0)
    'Calculate the net radiation in MJ/m^2 over the previous 60 seconds by multiplying
    'NR_Wm2 by 60sec and dividing by 1x10^6
    NR_MJm2=0.00006*NR_Wm2

    'Measure snow depth every hour
    If TimeIntoInterval (59,60,Min) Then Flag(2)=True
    If Flag(2)=True Then
      'Use SDI12 command aM1! to receive the raw distance (m) and signal quality number
(independently from
      'temperature correction for control until the temperature sensor is protected in a radiation
shield)
      SDI12Recorder (SR50AT(),C3,"0","M1!",1.0,0,-1)
      'Use SDI12 command AM9! to receive the SR50AT temperature
```

```
    SDI12Recorder (SR50AT_Temp,C3,"0","M9!",1.0,0,-1)
    'Calculate temperature corrected distance (m)
    Corr_Distance = SR50AT_Raw_Dist*SQR((SR50AT_Temp+273.15)/273.15)
    'Subtract the temperature corrected distance from the SR50AT initial distance to ground
    'to get a result of snow depth in meters
    SnowDepth = SR50Disttoground-Corr_Distance
    Flag(2)=False
  EndIf

  'Set flags for sensor measurements high every four hours
  If IfTime (230,240,Min) Then Flag(1)=True
  If Flag(1)=True Then
    'Initiate measurements for 229 sensors controlled by AM16/32 #1
    'Enable Multiplexer (Set port C1 high)
    PortSet (C1,1)
    'Set Dim Variable k to measure sensors (1 x 229 sensor per channel)
    For k=1 To 5
      'Pulse port C2 for 20msec to switch to the next multiplexer channel
      PulsePort(C2,20000)
      'Measure 229 starting temperature before heating
      TCDiff (SoilTemp(k),1,mV200C,1,TypeT,RefTemp_C,True ,0,60,1.0,0)
      'Activate CE4 by setting port C5 high
      PortSet (C5,1)
      'Heat CS229 sensor for 1 second
      Delay (0,1,Sec)
      'Measure INITIAL sensor temperature after 1 second of heating
      TCDiff (PTemp_1sec_C(k),1,mV200C,1,TypeT,RefTemp_C,True ,0,60,1.0,0)
      'Heat CS229 sensor for 29 more seconds
      Delay (0,29,Sec)
      'Measure FINAL sensor temperature after 30 seconds of heating
      TCDiff (PTemp_30sec_C(k),1,mV200C,1,TypeT,RefTemp_C,True ,0,_60Hz,1.0,0)
      'Deactivate CE4 by setting port C5 low
      PortSet (C5,0)
      'Calculate temperature rise deltaT
      DelT(k)=PTemp_30sec_C(k)-PTemp_1sec_C(k)
      'Loop to next channel / sensor
    Next k
    'Disable Multiplexer to complete 229 measurements (set port C1 to low)
    PortSet (C1 ,0)

    'Initiate measurements for 616 sensors
    CS616 (Wat_Con_616(1),3,4,C7,3,1.0,0)  'SK - switched the CS616 signal wire (green) from SE 5-
9 to SE 4-8, program would not compile otherwise
    CS616 (Wat_Con_616(4),2,7,C8,2,1.0,0)  'SK - changed reps from 1 to 2, to measure CS616 #5

    'Call conditional data table for soil sensor measurements and store data
    CallTable VG_Soil_SL

    'Set Flag 1 low to end the measurements until the next time interval
    Flag(1)=false
  EndIf
```

```
  'Call time-controlled data tables
  CallTable VG_Weather_Hourly_SL
  CallTable VG_Weather_Daily_SL
NextScan

EndProg
```

Datalogger Program for Plateau Monitoring Station

```
'CR1000X
'Program for Victoria Gold Overburden Monitoring
'Version August 2020, edited October 2020
'Prepared by O'Kane Consultants Inc.

'This program controls the sensors installed in the plateau soil profile
'including:

'- 5 CS616 Volumetric Water Content Sensors
'- 5 CS229 Matric Suction Sensors
'- 1 NR-LITE2 Net Radiometer (S/N ____)
'- 1 SR50AT Sonic Ranger (S/N ____)
'- 1 ARG314 Tipping Bucket rain gauge

'The 229 sensors are connected to AM16/32 Multiplexer (Res to C1)
'The 616 sensors are connected directly to the CR1000X. There are three 616
'sensors (S1, S2, S3) per CR1000 channel.

'Radiation measurements are taken every minute,
'Snow Depth is measured every hour
'Rainfall measurements are taken on an event basis
'Soil sensors are measured every four hours

'*********************************************************************************
'CR1000X Wiring:
'SG stands for 'Symbol Ground'

'1H  = COM ODD H on AM16/32 #1 (blue of TC wire)
'1L  = COM ODD L on AM16/32 #1 (red of TC wire)
'SG  = COM SHIELDS on AM16/32 #1 (shield of TC wire)
'2H  =
'2L  = Green of 616 S1
'SG  = Clear of 616 S1
'3H  = Green of 616 S2
'3L  = Green of 616 S3
'SG  = Clear of 616 S2 & S3
'4H  = Green of 616 S4
'4L  = Green of 616 S5
'SG  = Clear of 616 S4 & S5
'5H  =
'5L  =
'SG  =
'6H  =
'6L  =
'SG  =
'7H  = Red of NRLite2
'7L  = Blue of NRLite2 & Jumper to SG
'SG  = black of NRLite2 & Jumper to 7L
'8H  =
'8L  =
```

'SG =
'VX1 =
'VX2 =
'SG =
'VX3 =
'VX4 =
'SG =
'P1 = ARG314 Rainfall Tipping Bucket (white of white/black, red of red/black, black of black/brown)
'SG = ARG314 Rainfall Tipping Bucket (black of white/black or red/black, brown of black/brown)
'P2 =
'SG =
'C1 = RES on AM16/32 #1 (229s)
'C2 = CLK on AM16/32 #1
'C3 = Green of SR50AT
'C4 =
'G = Black, white, and clear of SR50AT
'C5 = CTRL on CE4
'C6 =
'C7 = Orange of 616 S1, S2, S3
'C8 = Orange of 616 S4 & S5
'G =
'5V =
'G = G on CE4
'RG1 =
'RG2 =
'SW12(1) =
'SW12(2) =
'G = G on AM16/32 #1
'12V = 12V on AM16/32 #1, 12V on CE4, Red of SR50AT
'12V = Red 616 sensors
'G = Black 616 sensors

'CE4 Wiring
'CTRL = C5 on CR1000X
'G = G on CR1000X
'CH1 = COM EVEN H on AM16/32 #1
'G = COM EVEN L on AM16/32 #1

'AM16/32 No. 1 (229 Sensors) - 4x16 mode
'RES = C1 on CR1000X
'CLK = C2 on CR1000X
'12V = 12V on CR1000X
'G = G on CR1000X
'COM ODD H = 1H on CR1000X (blue of TC wire)
'COM ODD L = 1L on CR1000X (red of TC wire)
'COM SH = SG on CR1000X (shield of TC wire)
'COM EVEN H = CH1 on CE4
'COM EVEN L = G on CE4

'CSCC Model 229 Matric Suction Sensor Wiring to AM16/32

```
'blue  = ODD H
'red   = ODD L
'green = EVEN H
'black = EVEN L
'clear = shield

'*******************************************************************************

'Declare Station Name to be stored in the Status Table
StationName (VG_OB_Plateau)

'Declare Public Variables, Alias', Dimensions, and Units
Public Batt_Volt
Public RefTemp_C
Public SoilTemp(5)
Public DelT(5)
Public Wat_Con_616(5)
Public NR_Wm2
Public NR_MJm2
Public SR50AT(2)
Public SR50AT_Temp
Public SnowDepth
Public Corr_Distance
Public Rainfall
Public Flag(2) As Boolean
Alias SR50AT(1)=SR50AT_Raw_Dist
Alias SR50AT(2)=SR50AT_Sig

'Declare Other Variables that remain hidden from the datalogger real-time tables
Dim k
Dim NRLite_mult
Dim PTemp_1sec_C(5),PTemp_30sec_C(5)

'Declare unit labels to be displayed in header of the tables
Units Batt_Volt=Volts
Units RefTemp_C=degC
Units SoilTemp()=degC
Units DelT()=degC
Units Wat_Con_616()=raw_value
Units NR_Wm2=W/meter^2
Units SnowDepth=m
Units SR50AT_Temp=degC
Units SR50AT_Raw_Dist=m
Units Rainfall=mm

'Declare sensor-specific constants
Const NRLite_Sensitivity = 13.8    'enter NR-Lite2 specific sensitivity
Const SR50Disttoground = 1.86      'enter distance between SR50 and ground (in meters)

'*******************************************************************************

'Define Data Tables
```

```
'Output average net radiation, snow depth, signal quality and air temperature
'every hour - Output SR50 distance and panel temperature for snow depth measurement data
QC
DataTable(VG_Weather_Hourly_PL,True,-1)
  DataInterval(0,60,Min,10)
  Totalize(1,Rainfall,FP2,False)
  Average(1,NR_Wm2,FP2,False)
  Sample(1,SnowDepth,IEEE4,False)
  Sample (1,SR50AT_Temp,FP2)
  Sample (1,SR50AT_Sig,FP2)
  Sample (1,SR50AT_Raw_Dist,IEEE4)
  Sample (1,RefTemp_C,FP2)
EndTable

'Output total net radiation in MJ/m2, average and min./max. snow depth
'and min. battery voltage for the past 24 hours
DataTable(VG_Weather_Daily_PL,True,-1)
  DataInterval(0,1440,Min,10)
  Totalize(1,Rainfall,FP2,False)
  Totalize (1,NR_MJm2,FP2,False)
  Average(1,SnowDepth,IEEE4,False)
  Minimum(1,SnowDepth,IEEE4,False,False)
  Maximum(1,SnowDepth,IEEE4,False,False)
  Minimum(1,Batt_Volt,FP2,False,False)
EndTable

'Output data tables for soil sensors every time measurements are taken
DataTable(VG_Soil_PL,Flag(1)=True,1000)
  Sample(5,SoilTemp(),FP2)
  Sample (5,DelT(),FP2)
  Sample (5,Wat_Con_616(),FP2)
EndTable

DataTable(VG_PptEvent,Rainfall>= 0.1,-1)
  Totalize(1,Rainfall,FP2,False)
EndTable

'*************************************************************************

'Main Program
BeginProg
  NRLite_mult=1000/NRLite_Sensitivity
  Scan(60,Sec,1,0)
    'Default Datalogger Battery Voltage measurement Batt_Volt:
    Battery(Batt_Volt)
    'Measure reference temperature before starting 229 measurements
    PanelTemp (RefTemp_C,_60Hz)

    'NR-LITE2 Net Radiometer (no wind speed correction) measurement 'NR_Wm2'
    VoltDiff(NR_Wm2,1,mV200,7,True,0,60,NRLite_mult,0)
    'Calculate the net radiation in MJ/m^2 over the previous 60 seconds by multiplying
    'NR_Wm2 by 60sec and dividing by 1x10^6
```

```
  NR_MJm2=0.00006*NR_Wm2

  'Rainfall tipping bucket measurement:
              PulseCount(Rainfall,1,P1,5,0,0.2,0)

  'Set flag to measure snow depth every hour
  If TimeIntoInterval (59,60,Min) Then Flag(2)=True
  If Flag(2)=True Then
   'Use SDI12 command aM1! to receive the raw distance (m) and signal quality number (independently from
   'temperature correction for control until the temperature sensor is protected in a radiation shield)
    SDI12Recorder (SR50AT(),C3,"0","M1!",1.0,0,-1)
    'Use SDI12 command AM9! to receive the SR50AT temperature
    SDI12Recorder (SR50AT_Temp,C3,"0","M9!",1.0,0,-1)
    'Calculate temperature corrected distance (m)
    Corr_Distance = SR50AT_Raw_Dist*SQR((SR50AT_Temp+273.15)/273.15)
    'Subtract the temperature corrected distance from the SR50AT initial distance to ground
    'to get a result of snow depth in meters
    SnowDepth = SR50Disttoground-Corr_Distance
    'Set Flag 2 low to end the measurements until the next time interval
    Flag(2)=false
  EndIf

  'Set flag high for sensor measurements every four hours
  If IfTime (230,240,Min) Then Flag(1)=True
  If Flag(1)=True Then
   'Initiate measurements for 229 sensors controlled by AM16/32 #1
   'Enable Multiplexer (Set port C1 high)
   PortSet (C1,1)
   'Set Dim Variable k to measure sensors (1 x 229 sensor per channel)
   For k=1 To 5
    'Pulse port C2 for 20msec to switch to the next multiplexer channel
    PulsePort(C2,20000)
    'Measure 229 starting temperature before heating
    TCDiff (SoilTemp(k),1,mV200C,1,TypeT,RefTemp_C,True ,0,60,1.0,0)
    'Activate CE4 by setting port C5 high
    PortSet (C5,1)
    'Heat CS229 sensor for 1 second
    Delay (0,1,Sec)
    'Measure INITIAL sensor temperature after 1 second of heating
    TCDiff (PTemp_1sec_C(k),1,mV200C,1,TypeT,RefTemp_C,True ,0,60,1.0,0)
    'Heat CS229 sensor for 29 more seconds
    Delay (0,29,Sec)
    'Measure FINAL sensor temperature after 30 seconds of heating
    TCDiff (PTemp_30sec_C(k),1,mV200C,1,TypeT,RefTemp_C,True ,0,_60Hz,1.0,0)
    'Deactivate CE4 by setting port C5 low
    PortSet (C5,0)
    'Calculate temperature rise deltaT
    DelT(k)=PTemp_30sec_C(k)-PTemp_1sec_C(k)
    'Loop to next channel / sensor
   Next k
```

```
    'Disable Multiplexer to complete 229 measurements (set port C1 to low)
    PortSet (C1 ,0)

    'Initiate measurements for 616 sensors
    CS616 (Wat_Con_616(1),3,4,C7,3,1.0,0)
    CS616 (Wat_Con_616(4),2,7,C8,2,1.0,0)

    'Call conditional data table for soil sensor measurements and store data
    CallTable VG_Soil_PL

    'Set Flag 1 low to end the measurements until the next time interval
    Flag(1)=false
  EndIf

  'Call time-controlled data tables
  CallTable VG_Weather_Hourly_PL
  CallTable VG_Weather_Daily_PL
  CallTable VG_PptEvent
 NextScan

EndProg
```

Appendix C

Photo Log



Photo 1 View directly north across the 1370 bench with the staked 20x20 m area for the plateau monitoring station on October 19, 2020.



Photo 2 View east over the covered slope on October 19, 2020, showing the staked location for the slope climate station.



Photo 3 View south from the designated slope meteorological station area on October 19, 2020.

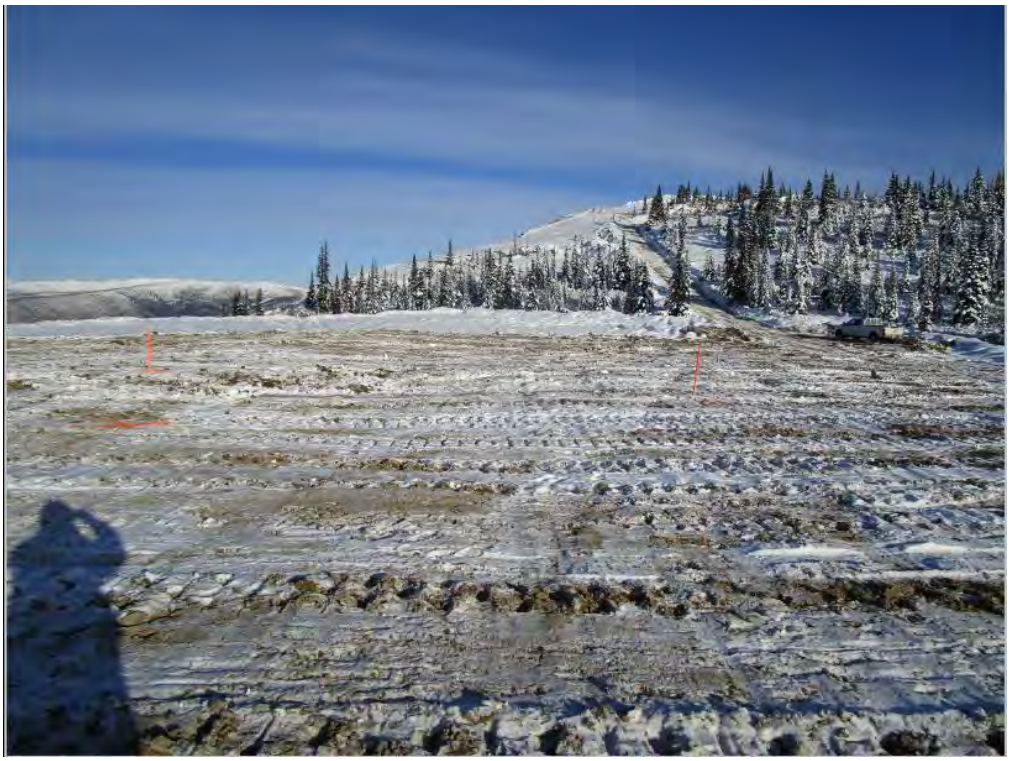

Photo 4 1370 bench on October 20, 2020 following removal of snow and grade stakes.

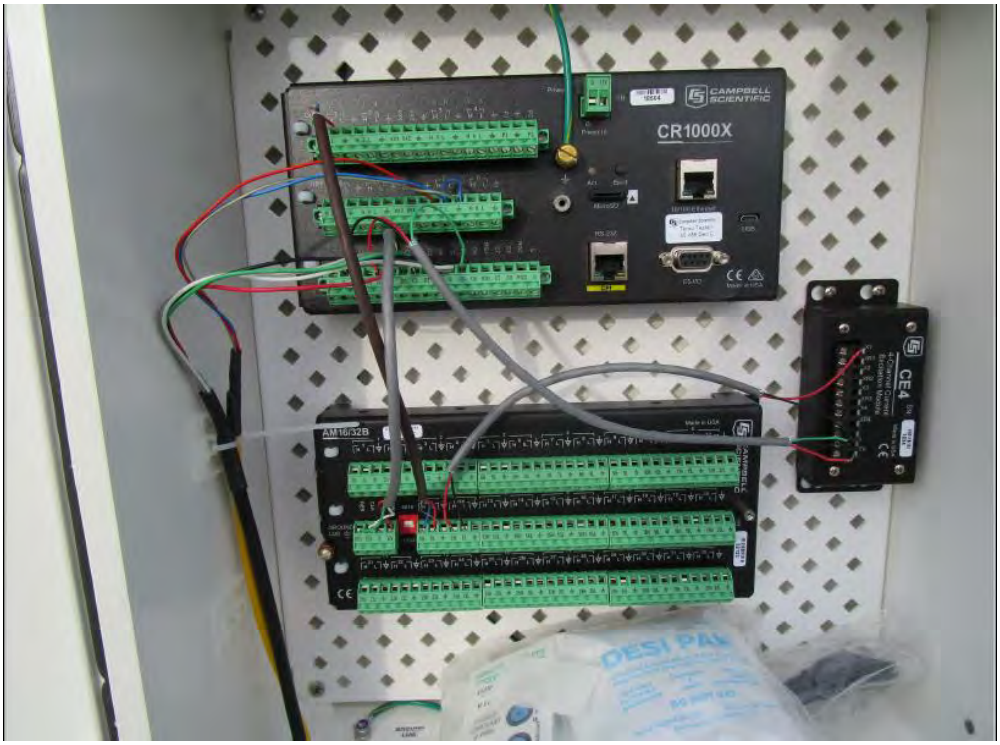

Photo 5 Wiring of slope monitoring station on October 21, 2020.



Photo 6 Stations were completed and laid on the pelican case overnight on October 21, 2020.

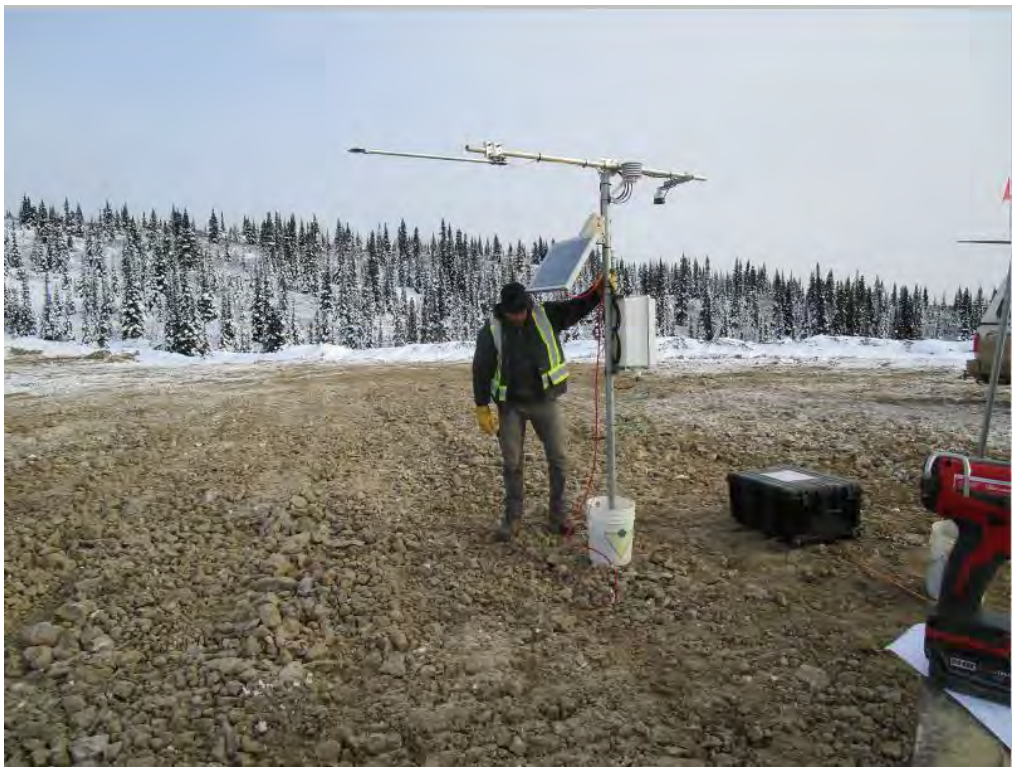

Photo 7 Plateau monitoring station set on October 21, 2020.



Photo 8 Attaching sensor to the plateau meteorological station on October 22, 2020.



Photo 9 Wiring sensors on October 22, 2020.



Photo 10 Icy/frozen rock was placed around sensors at the overburden / dump interface on October 22, 2020.



Photo 11 Excavator removing material at slope monitoring station on October 22, 2020 to meet project specification of 0.50 m.



Photo 12 Sensor installation before the datalogger program was tested on October 23, 2020. CS 229 sensors were removed from cases prior to backfilling pit.



Photo 12 Sensor installation before the datalogger program was tested on October 23, 2020. CS 229 sensors were removed from cases before the pit was filled.



Photo 13 Excavator completing slope monitoring station fill and grading on October 23, 2020.

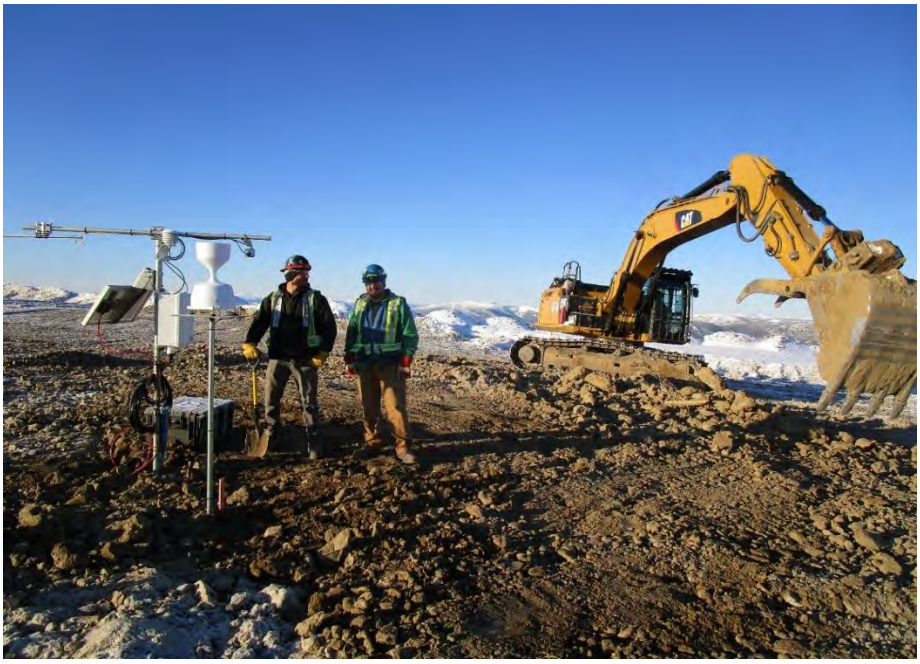

Photo 14 Completed plateau monitoring station with Ewing operator completing finishing touches around station on October 23, 2020.